SIEMENS

Industrial Controls

SIRIUS

Catalog IC 10

Edition 2014

Answers for industry.

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Related catalogs

Industrial Controls IC 10 AO
SIRIUS 3R_1*
in sizes S00/S0 to S12

PDF/E-Book (E86060-K1010-A191-A3-7600)

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SENTRON • SIVACON • ALPHA
Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems
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Safety Integrated SI 10
Safety Technology for Factory Automation

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Industrial Communication IK PI
SIMATIC NET

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SIMATIC ST 70
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SIRIUS
Industrial Controls

Catalog IC 10 · 2014

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Catalog News IC 10 N up to 09/2013

Refer to the Industry Mall for current updates of this catalog:
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The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Order No.:
E86060-D4001-A510-D3-7600 (DVD)

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NEW

CM 1243-2 communication module
AS-i master for SIMATIC S7-1200

Article No.: 3RK7243-2AA30-0XB0

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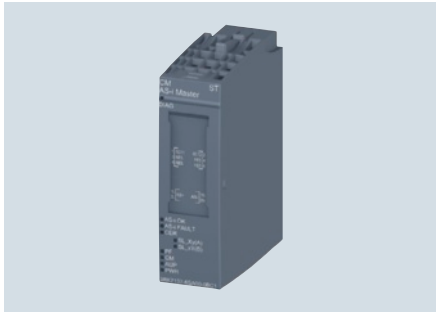

CM AS-i Master ST
communication module for ET 200SP

Article No.: 3RK7137-6SA00-0BC1

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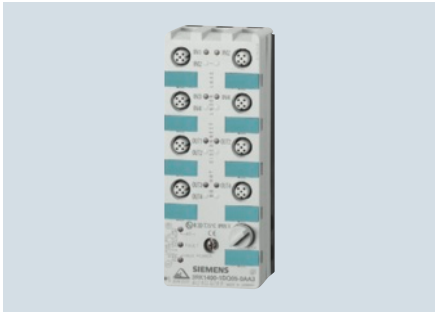

AS-Interface digital I/O modules IP67 - K60
for use in the field, high degree of protection

Article No.: 3RK2200-0CQ00-0AA3, 3RK2100-1CQ00-0AA3

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AS-Interface digital I/O modules IP67 – K45
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Article No.: 3RK2200-0DQ20-0AA3, 3RK2100-1CQ20-0AA3

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for expansion of an AS-Interface segment

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PROFINET communication module
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Article No.: 3RV2021-0..10, 3RV2021-0..20, 3RV2021-1.A.0, 3RV2321-1.C.0

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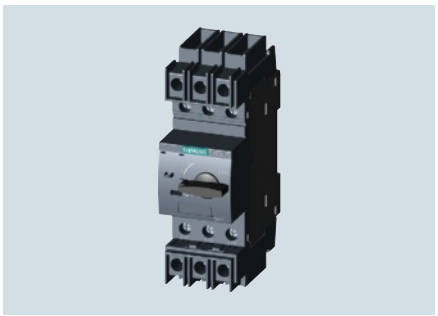

SIRIUS 3RV2 circuit breaker acc. to UL 489/ CSA C22.2 No.5, size S0 with screw terminal

Article No.: 3RV2721-4.D10, 3RV2821-4.D10

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SIRIUS 3RB24 solid-state overload relay
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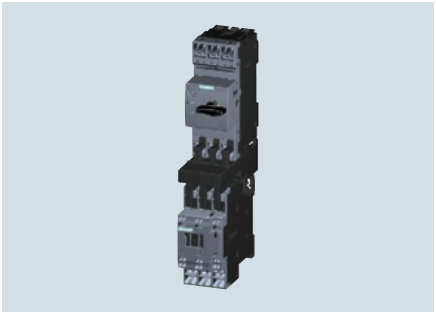

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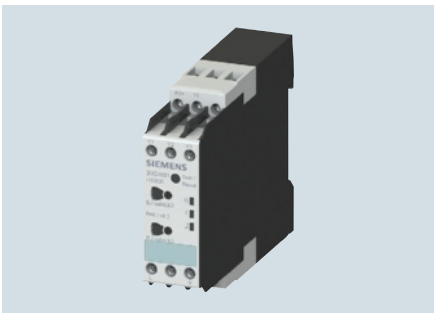

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Article No.: 3UG48

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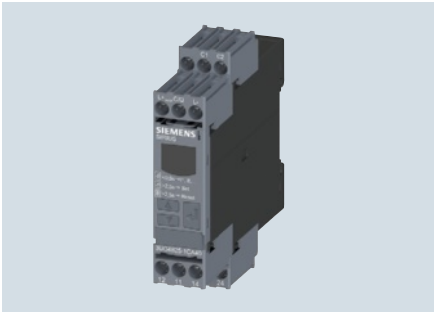

SIRIUS 3UG48 residual current monitoring device for IO-Link

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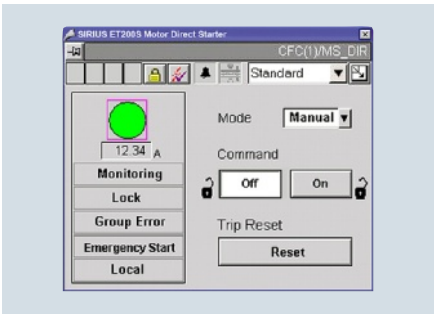

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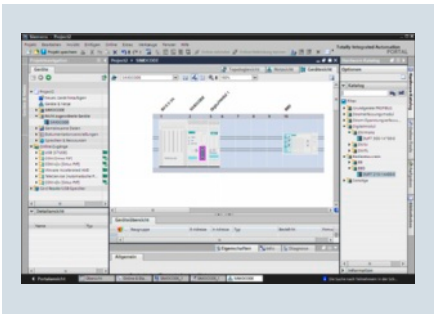

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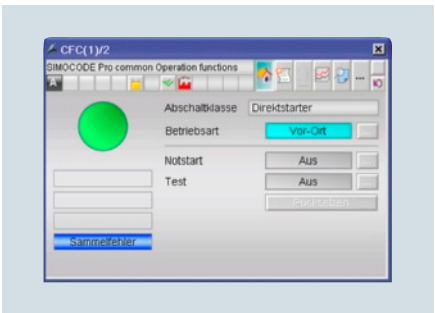

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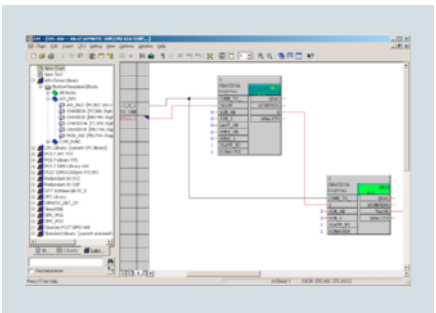

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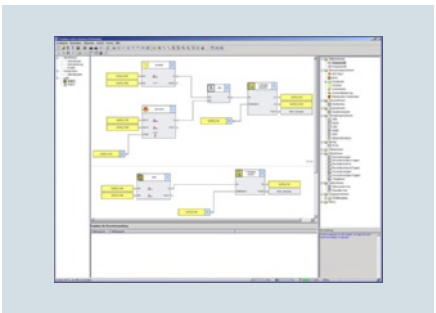

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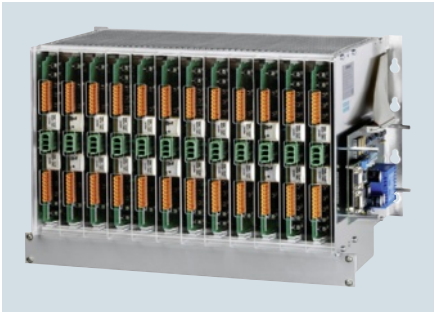

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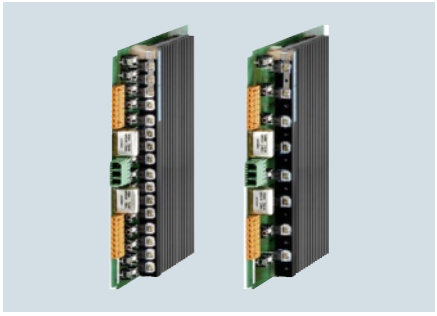

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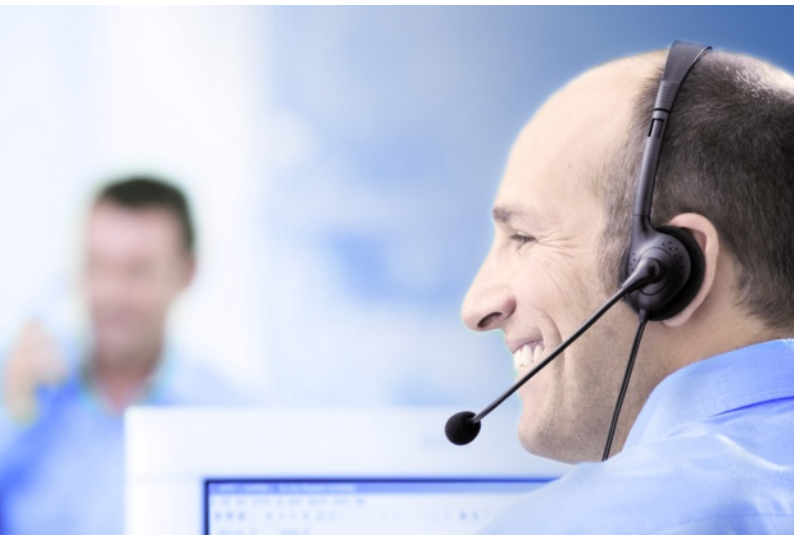

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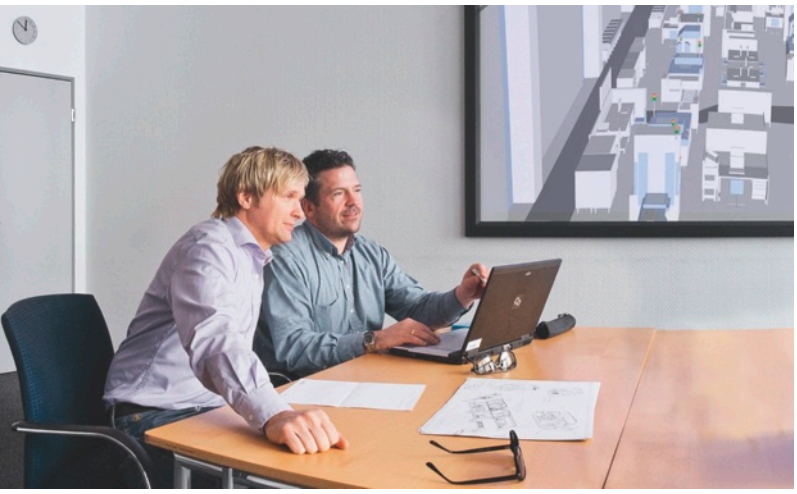

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Answers for industry.

Integrated technologies, vertical market expertise and services for greater productivity, energy efficiency, and flexibility.

The Siemens Industry Sector is the world's leading supplier of innovative and environmentally friendly products and solutions for industrial companies. End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers we use to increase our customers' productivity, efficiency and flexibility. With a global workforce of more than 100 000 employees, the Industry Sector comprises the Industry Automation, Drive Technologies, and Customer Services divisions, as well as the Metals Technologies Business Unit.

We consistently rely on integrated technologies and, thanks to our bundled portfolio, we can respond more quickly and flexibly to our customers' wishes. With our globally unmatched range of automation technology, industrial control and drive technology as well as industrial software, we equip companies with exactly what they need over their entire value chain – from product design and development to production, sales and service. Our industrial customers benefit from our comprehensive portfolio, which is tailored to their market and their needs.

Market launch times can be reduced by up to 50% due to the combination of powerful automation technology and intelligent industrial software from Siemens Industry. At the same time, the costs for energy or waste water for a manufacturing company can be reduced significantly. In this way, we increase our customers' competitive strength and make an important contribution to environmental protection with our energy-efficient products and solutions.

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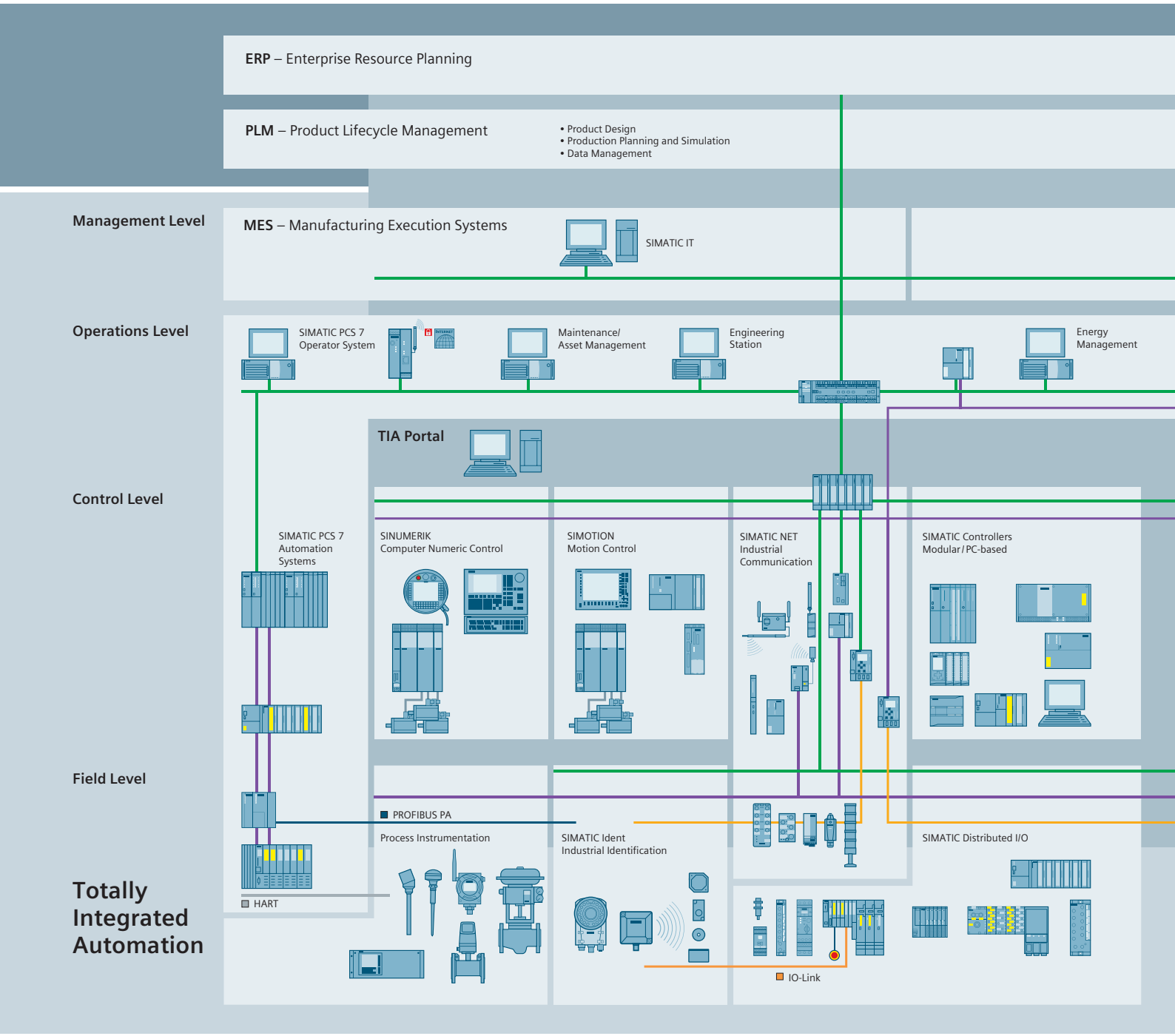

Setting standards in productivity and competitiveness.

Totally Integrated Automation.

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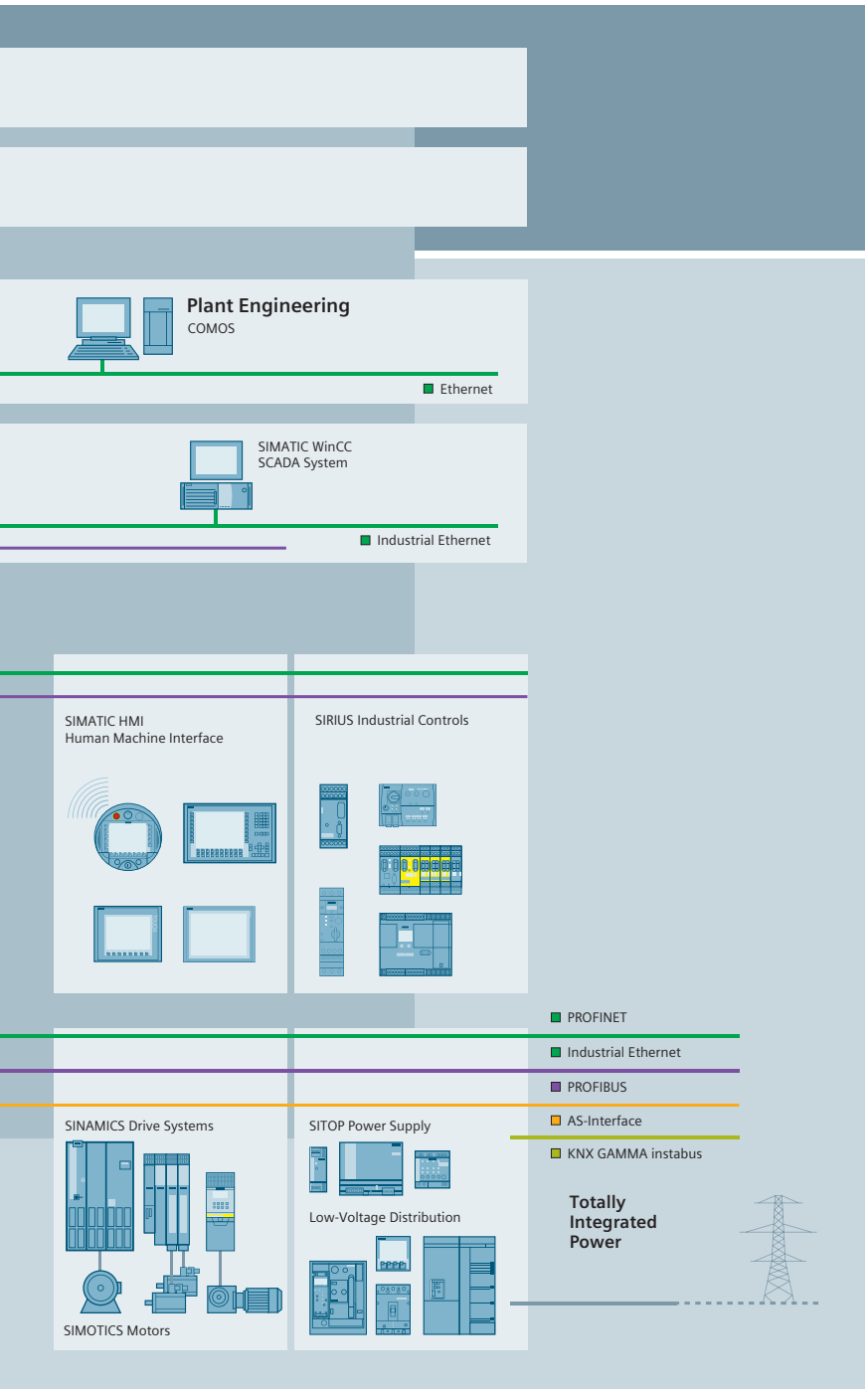

TIA is characterized by its unique continuity.

It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

The unique continuity is already a defined characteristic at the development stage of our products and systems.

The result: maximum interoperability – covering the controller, HMI, drives, up to the process control system. This reduces the complexity of the automation solution in your plant. You will experience this, for example, in the engineering phase of the automation solution in the form of reduced time requirements and cost, or during operation using the continuous diagnostics facilities of Totally Integrated Automation for increasing the availability of your plant.

Thanks to Totally Integrated Automation, Siemens provides an integrated basis for the implementation of customized automation solutions – in all industries from inbound to outbound.

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Equipment Manufacturing Plant Amberg

Awards include "Factory of the Year", "Bavarian Quality Award" and "The Best Factory/Industrial Excellence"

At Siemens Amberg, some 2 400 employees develop and manufacture industrial controls for the world market. Manufacturing includes the comprehensive SIRIUS product range used for switching and protecting loads, e.g. of motors, in particular in mechanical engineering.

In the industry competition "The Best Factory/Industrial Excellence Award 2011", the equipment manufacturing plant Amberg was honored as a national winner. The lead factory for industrial controls achieved the highest overall ranking and also excelled in all scoring categories such as business model, strategy, added value, product and process implementation, service and customer integration, along with continuous improvement.

The industry competition is staged under the auspices of the Federation of German Industries (BDI), several European business schools, including INSEAD in Paris, the Technical University of Eindhoven as well as the WHU-Otto Beisheim School of Management.

The key question of this industry competition, which has taken place in Germany since 1995, is: "What are the key factors of production excellence that will guarantee the company a long-term competitive advantage and will turn a factory into an outstanding differentiating factor?"

The ten-person jury, headed up by the deans of internationally-renowned management schools in Germany, France, Spain, and the Netherlands, not only scrutinized the operative unit itself but also the entire process chain, from the product idea, through development and manufacturing, right up to the final customer, along with interfaces and partners, such as suppliers.

Over the past few years, winning awards has become a normal occurrence in the equipment manufacturing plant Amberg. In 2007, it won the "Factory of the Year" award in the segment of "Excellent complexity management". In 2010 an additional outside award followed: the coveted Bavarian Quality Award.

The Amberg Siemens plants have made it a tradition to be at the top of national and international rankings. These awards are proof of our high quality standards – not only with respect to our products, but also to our processes. They demonstrate that we have achieved optimal mastery over the productivity and competitiveness showcased by our products and systems.

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Introduction

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Controls made easy: SIRIUS modular system

Overview

SIRIUS has long been synonymous world-wide with industrial controls, and was a trendsetter in this field from the very beginning.

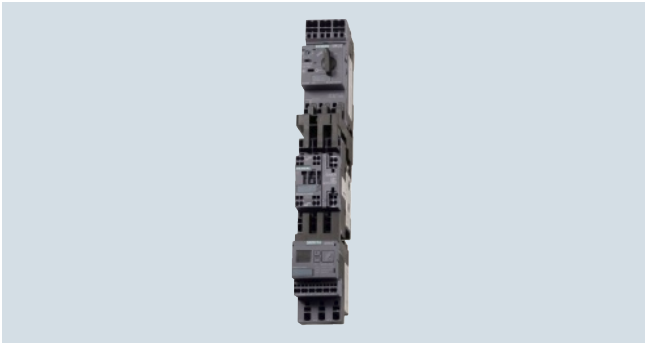
The SIRIUS modular system with its components for the switching, starting, protection and also monitoring of motors and industrial systems stands for the fast, flexible and space-saving design of control cabinets.

The consistent further development of SIRIUS takes even better account of current market requirements, particularly the call for fewer variants, greater flexibility and reduced cost and time. The advantages for you are: higher productivity and cost efficiency in your company.

More space in the control cabinet

The modular system packs powerful performance into its compact sizes:

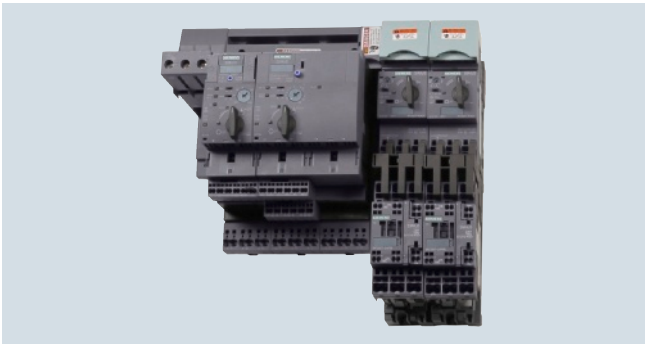
- Integrated monitoring relay in the motor feeder
- Application monitoring in the main circuit
- Integrated plug-in design combined with spring-type terminals



Achieve faster results with pre-configured components

Simply connect pre-configured components via the infeed system and save wiring outlay:

- Time-saving plug-in design for motor feeders
- Replacement of the compact starters and load feeders without disconnecting the main circuit wiring
- Reduce effort and downtimes
- Solutions for direct-on-line starters, reversing starters, contactor assemblies for wye-delta starting, soft starters and safe load feeders



Less wiring

The SIRIUS modular system is based on IO-Link:

- Less wiring outlay for actuators
- Connection of up to four starters with one IO-Link connection saves space
- Full transparency right down to the field level
- Simple installation

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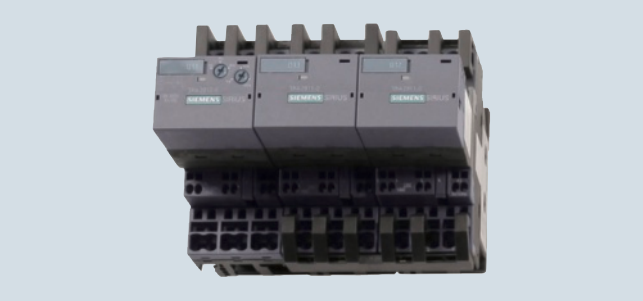
Time savings with full functionality

Select and order functions directly from the Siemens Industry Mall.

- Quick and easy product search
- Reliability and elimination of errors by means of pre-mounted elements
- Prefabricated function modules save engineering and time

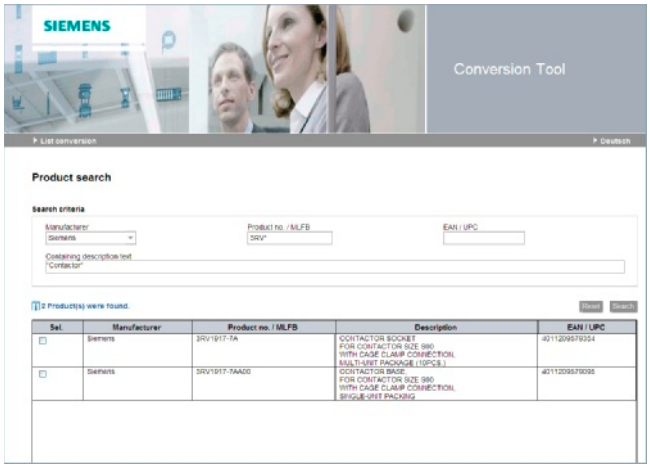


From old to new: The new conversion tool

Every automation system becomes obsolete at some time. Replacing installed products used to involve significant time and costs. But now, with the new conversion tool, you'll find the right product more quickly – this allows you to conveniently switch to SIRIUS Innovations:

- A user-friendly interface enables intuitive searches.
- Simply enter the article number of the current device or descriptive text (e.g. *contactor*).
- The search result provides you with the article number of the desired device, including current data and information for using the new product.
- Order conveniently through the Industry Mall.

You can find more information under
www.siemens.com/sirius/conversion-tool.



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Controls made easy: SIRIUS Planning Efficiency

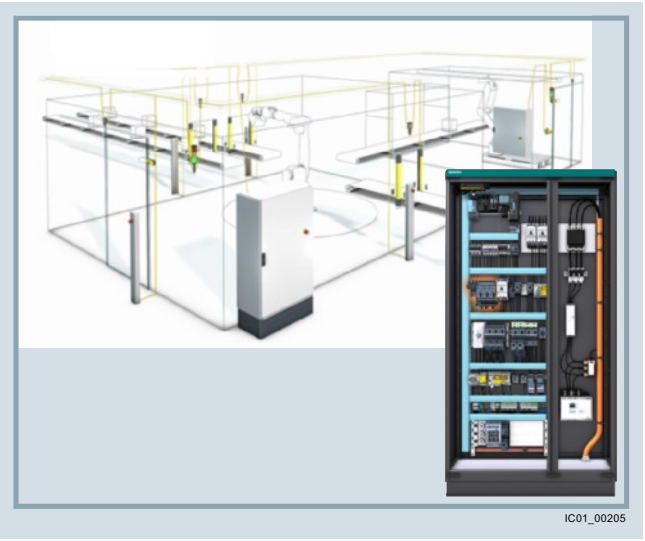
Overview

With Planning Efficiency, Siemens Industry has provided answers to typical questions that often come up in electrical planning:

- What is the right product for my application?
- Where can I find product data?
- How can I design processes in a more efficient and time-saving way?

Planning Efficiency brings together the whole of Siemens Industry's electronic support. At each stage of the project, online functions make the everyday life of the planner easier through greater efficiency. At the same time, Planning Efficiency focuses on aspects such as optimization in the configuring of control cabinets.

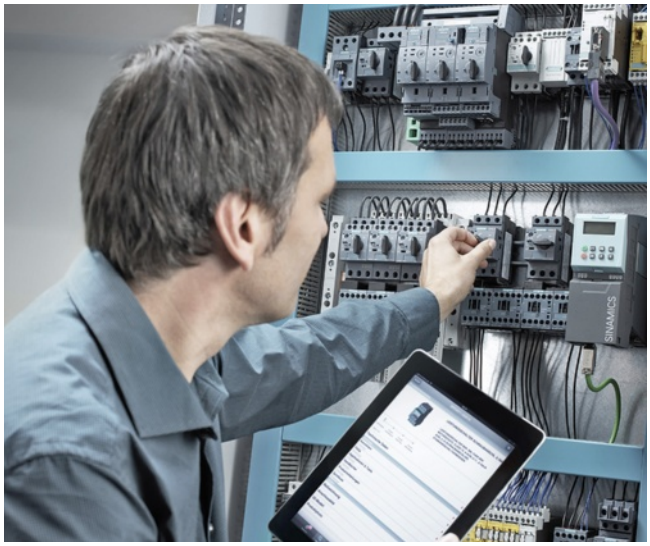
In this early phase in electrical planning in particular, savings of up to 80 % can be made in time and costs.



IC01_00205

In order to supply planners with everything they need and make modern electrical planning easier when configuring control cabinets, the electronic support provided by Planning Efficiency focuses on four advantages:

- Get to the right product faster with intuitive product selection
- Time savings of up to 80 % with universal product data for your CAE and CAD system
- User-friendly compilation of project-specific documentation
- Comprehensive support – anywhere, anytime



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Process phases

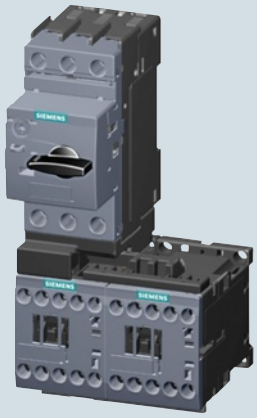
In each process phase, Siemens Industry provides comprehensive and online functions free of charge. This enables you access to all the information and product data you need worldwide and around the clock.

Concept & selection | Mechanical design | Electrical design | Plant-documentation | Ordering | Installation / service / commissioning / diagnostics

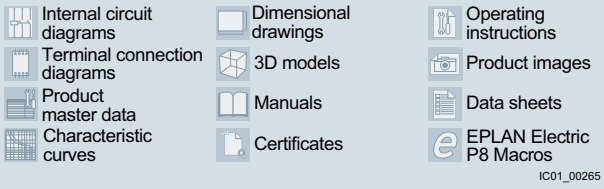
With the intuitive operation of the configurators, you can quickly and easily create individual feeders. The corresponding 3D models and dimensional drawings for the control cabinets are provided for this purpose.

Additional types of data for mechanical and electrical engineering can be directly called up via the CAx Download Manager. The universal CAx data types can be quickly and easily integrated into various CAE systems, e.g. E³.series, WSCAD, ELCAD, COMOS etc.

With only a few clicks, the standard-compliant plant documentation can be compiled individually in mySupport. Simply select the desired chapters from the existing manuals of the installed Siemens products. With this solution, quality goes up and workload comes down.

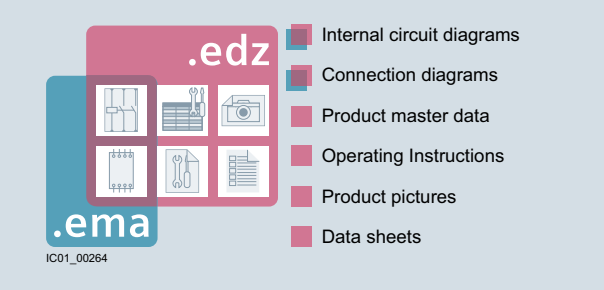


The 12 CAx data types in detail:



The benefits for EPLAN users

With the exchange format EPLAN Data Archived Zipped (.edz), the overall time required for integration can be reduced even further. With just a few clicks, the contained data types can be imported for any number of article numbers, and they remain linked. In this way, the installed Siemens products can be represented across different circuit diagram pages quickly and easily.



Without Planning Efficiency a lot of time used to be wasted in manual data transmission. Now you can concentrate on the essentials again.

All the information and product data you need are provided by Siemens Industry and are easily accessible.
This makes configuring control cabinets more efficient and makes your everyday work easier.

For more information see www.siemens.com/planning-efficiency.

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Controls made easy: SIRIUS configurators

Overview

For the SIRIUS product range, we offer a variety of configurators. These facilitate the selection of the right products and systems for your application.

Simply choose the desired characteristics and after a few clicks, the optimal solution will be presented to you.

The products can then be ordered conveniently through the Industry Mall.

You can find more information under www.siemens.com/sirius/configurators.

Detection/Signaling

SIRIUS 3SB3/3SF5 pushbuttons and indicator lights

- Individual control elements or complete enclosures can be assembled just the way you want them.
- All combinations of buttons, enclosures and switching elements can be selected individually.

SIRIUS 3SE5/3SF position switches

- Selection of basic switch, actuator head, as well as a matching actuator can be performed in just a few clicks.
- Individual elements can be mixed and matched and assembled to create your individual versions.

Evaluating

SIRIUS 3SK1 safety relays

- Fast and user-friendly creation of safety-related applications (e.g. EMERGENCY STOP and protective door monitoring)
- Simply enter the number of sensors or outputs and select any combination of accessories.
- Once the configuration is complete, you are presented with the article numbers along with technical data and 3D models corresponding to the products.

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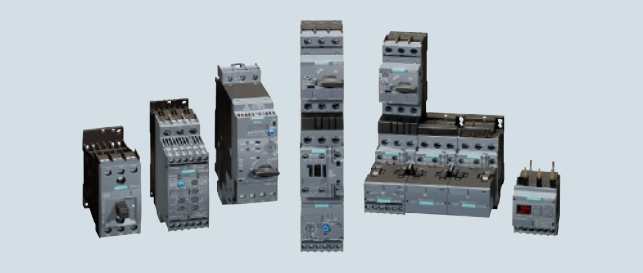
Switching/Protecting/Starting

SIRIUS Innovations system configurator

- The easy way to find the right combination of motor starter protectors/circuit breakers, contactors and matching accessories
- Input of motor data and your desired features
- Once configuration is complete, you are presented with all the necessary product numbers along with technical data and 3D models corresponding to the products
- It also allows for more complex designs such as 3-phase busbar systems, along with complete infeed systems



SIRIUS 3RM1 motor starter

- Create individual motor starters or a complex motor starter group
- Individual selection options, such as direct or reversing starting, spring-type or screw terminals, as well as motor current and control voltage
- Graphic representation of the design during configuration
- Automatic calculation of the matching motor starter protector/circuit breaker (for group configuration)

SIRIUS 3RA6 compact starter and infeed system for 3RA6

- Simple usage – from individual compact starters or also with corresponding infeed system and AS-i connection
- In the final configuration, you will be presented with additional technical information such as CAD data and product data sheets as well as characteristic curves, operating instructions, manuals etc.

SIRIUS 3RW soft starters

- Easy and quick selection option of matching soft starters
- Note: For the proper dimensioning of the soft starter, you should use the Win-Soft starter tool. The link to the software is provided in the configurator.

SIRIUS 3RF solid-state switching devices

- Simple selection of individual solid-state switching devices by means of technical characteristics (e.g. zero-point switching, spring-type terminal and rated current)
- Once configuration is complete, you receive the article numbers corresponding to the products.

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Controls made easy: SIRIUS apps

Overview

Apps for SIRIUS Planning Efficiency

Online Support app

The Online Support app allows you to access over 300 000 documents on all Siemens Industry products, anywhere and any time. Whether you need help with implementing your project or with troubleshooting, or want to expand your plant or plan a new one, you now have around-the-clock access to FAQs, manuals, certificates, characteristic curves, sample applications and tools, product news and more.

The app is available free of charge from the Apple App Store and on Google Play (Android Market) using the search string: "Siemens Industry Online Support".

For more information see www.siemens.com/sirius/support-app.

Industry Online Support App

SIRIUS Innovations DVD - also available as a web app

Thanks to the modular design of SIRIUS Innovations, our products are particularly easy to plan for the control cabinet, install and monitor. All the advantages of SIRIUS Innovations are available offline in 9 languages with 3D animations, films and screen recordings of our planning and configuring tools. Ask your sales contact person about the SIRIUS Innovations DVD.

The SIRIUS Innovations DVD is now also available as a web app[1] (Ge/En): www.siemens.com/sirius/dvd.

SIRIUS Innovations WebApp

[1] Optimized for use with a resolution of 1024 x 768 on iPads and tablet PCs.

Interactive control cabinet

The interactive control cabinet shows you a selected product overview, and provides you with useful information and technical data on the relevant components, thus allowing you to plan your control cabinet in advance, efficiently and easily. This saves precious time during project implementation.

Discover the interactive control cabinet[1] at www.siemens.com/sirius/cabinet.

Interactive control cabinet

[1] Now also available as an iPad app in the Apple App Store.

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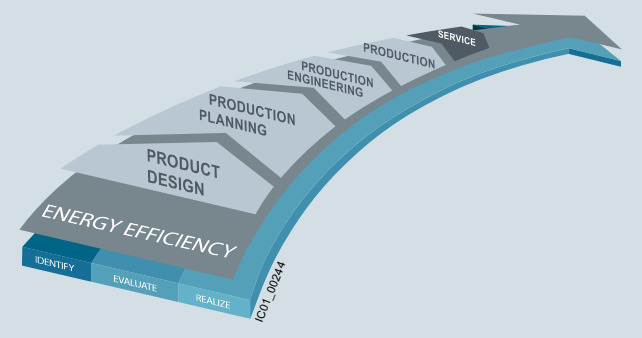
Overview

Energy management in industry



Overview of the energy management process

Whether you are a plant operator, planner or machine manufacturer: Energy-efficient production is a challenge and an opportunity in equal measure.

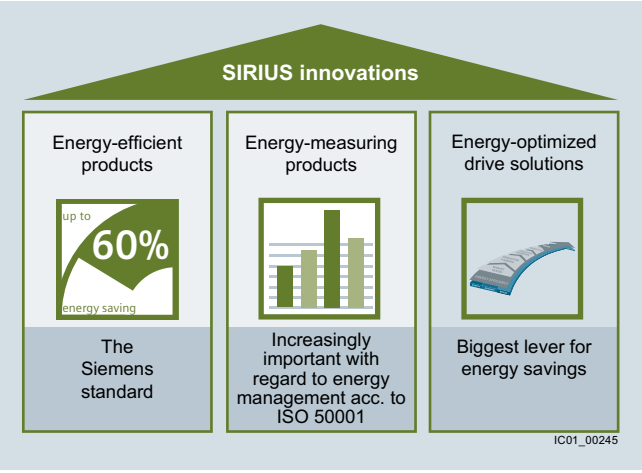
Energy-efficient production as a success factor

In order to harness energy potential, with our vast portfolio, we always maintain a clear view of the overall product development and production process. Because maximum energy efficiency in production can only be achieved through perfect interaction of all components.

That is why it is important to first create an awareness for existing energy-saving potential, recognize (identify) and assess (evaluate) opportunities for optimization through precise analysis. Finally, appropriate measures must be implemented (realized).

With our full-range portfolio of energy-efficient drive solutions, automation and services, you too will reach maximum energy efficiency, higher productivity and lasting competitiveness in your company.

Three columns of energy efficiency with innovative SIRIUS products



Energy-efficient products – SIRIUS reduces power loss

3RR2 monitoring relay, 3RB3 overload relay, 3RT2 contactor, 3RW soft starter, 3RV2 motor starter protector/circuit breaker and 3RA6 compact starter

SIRIUS Innovations controls are characterized by extremely low intrinsic power loss. This not only lowers energy costs, but also reduces the amount of waste heat in the control cabinet. This achieves higher packing density in the control cabinet and reduces the required cooling capacity in the control cabinet.

Energy-measuring products

SIMOCODE pro 3UF7 motor management and control device, 200D motor starter, ET 200S High-Feature motor starter/direct-on-line starter

Energy management can be instrumental in increasing plant productivity to bring about a significant improvement to the competitive ability of a company – in all industries.

Communication-capable SIRIUS switching and protection devices deliver measured energy data without any additional installation outlay.

Best drive solutions in terms of energy

In order to design processes for optimal energy efficiency, it is not enough to simply measure the energy flow and deploy energy-efficient products. The greatest lever for saving energy can be derived from closely examining the application:

With which load profile is the system being operated?

Example applications in the Internet:
www.siemens.com/sirius/energysaving → Applications

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Industrial Communication: SIRIUS for AS-Interface

Overview

AS-Interface

AS-Interface – the smart communication standard for universal connection of the field level to the control system

The AS-Interface (AS-i) – the Actuator-Sensor-Interface, to be more precise – is a smart bus system for the field level that connects all the sensors and actuators in the field to the higher-level control system more simply, flexibly and efficiently than any other.

The structure of a complex automation system is not always clear at first glance. The field level in particular, with its large numbers of devices with real-time requirements, needs a clear structure.

That is exactly what the AS-i fieldbus delivers: Via a simple two-wire cable – the yellow AS-i cable – in an AS-i network up to 62 bus nodes can be connected to the AS-i master and simultaneously supplied with power. The standard here is robust data transmission in a rugged environment with a high degree of protection for the AS-interface.

AS-i = simple!	AS-i = flexible!	AS-i = efficient!
• Only one cable for data and energy • Time-saving assembly/installation • Engineering in the TIA Portal • User-friendly maintenance	• Flexible topologies • Open standard • Expandability • Safety engineering	• User-friendly addressing • Fast device replacement • Ruggedness and stability • Device and network diagnostics

IC01_00210

AS-i from Siemens has everything in its favor

- Complete AS-i product range for bus-based standard and safety technology from a single source
- Consistent integration of the Siemens AS-i devices into the SIMATIC programming and diagnostics concepts and into the TIA Portal engineering framework
- Integration of ASIsafe applications into SIMATIC safety programming (e. g. distributed safety)
- Planning, calculation and verification of the whole safety chain based on ASIsafe in the Safety Evaluation Tool (TÜV-approved)
- Integration of lower-level AS-i networks into the PCS 7 process control system
- Global spare parts logistics, consulting and service

Engineering in the Totally Integrated Automation Portal (TIA Portal)

The TIA Portal – as a key component of TIA – is an innovative engineering framework for all automation tasks. It combines control programming and configuration of visualization, and integrates the parameterization of operating mechanisms and networks, together with the programming of fail-safe applications.

The TIA Portal is particularly intuitive to operate. For example, configuring is easy using drag & drop from the hardware catalog, and you get realistic displays of all network nodes and components down to actuator/sensor level.

In addition, the engineering framework allows you to get started quickly in safety programming by means of a library with certified safety functions.

Device and network diagnostics:

- Diagnostics and error signals can also be tracked through all bus hierarchies down to the lowest actuator/sensor level and described in plain text. The basis for this is a realistic depiction of the bus topology concerned.
- The TIA Portal also sets standards where efficiency is concerned. Data from lower-level AS-i networks can be flexibly integrated using drag & drop based on SIMATIC HMI and WinCC. All you need do is "drag" the signal information from any AS-i slave into the control display of an HMI basic panel.
- Furthermore, integrated web servers and diagnostics based on user-specific websites allow the data from all connected AS-i networks to be displayed and integrated into user-specific control concepts (e.g. website for documenting and operating a SIMATIC S7-1200).

Whatever your industry, the TIA Portal allows you not just to work more efficiently, but also to achieve lasting increases in productivity and competitiveness.

For more information see
www.siemens.com/as-interface
www.siemens.com/tia-portal.

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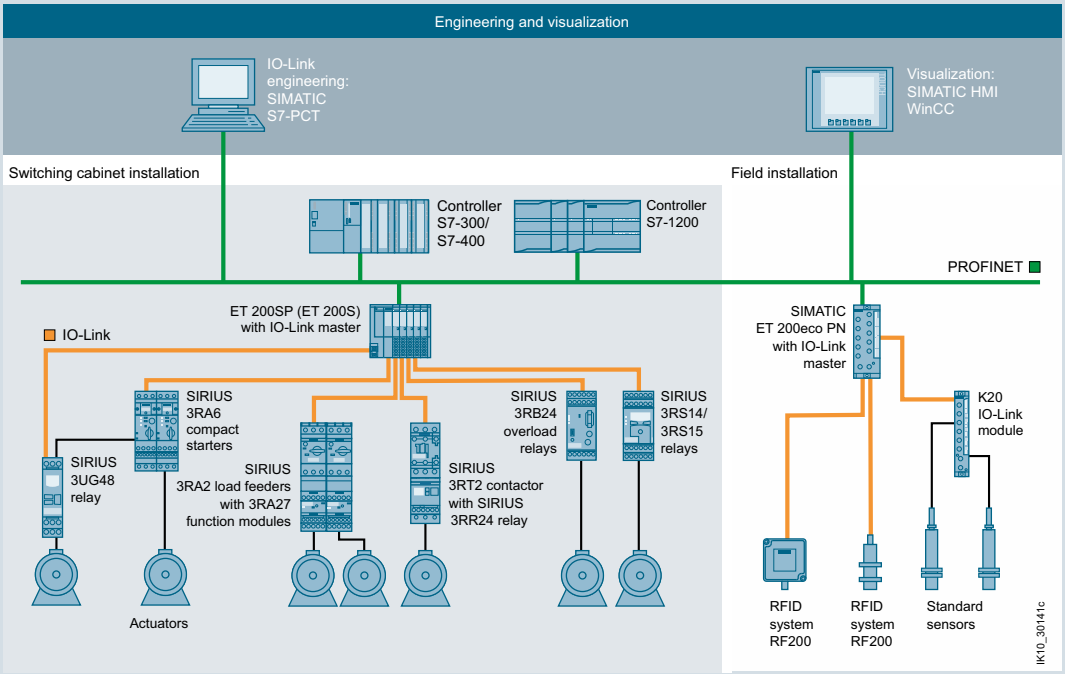
Overview



Engineering and visualization

IO-Link – more than just a further interface

IO-Link is a smart concept for the uniform connection of switching devices and sensors to the control level by means of a low-cost point-to-point connections.

The IO-Link communication standard below fieldbus level enables central error diagnostics and localization down to actuator/sensor level, and facilitates both start-up and maintenance by allowing parameter data to be dynamically changed directly from the application.

The increasing intelligence of field devices and their integration into automation as a whole now allows data to be accessed right down to the lowest field level. The result was: greater plant availability and less engineering work.

As an open interface, IO-Link can be integrated into all standard fieldbus and automation systems.

The advantages of IO-Link at a glance

- Engineering → reduced engineering times
  - Standardized, open system for greater flexibility (non-Siemens IO-Link devices can be integrated in engineering)
  - Uniform, transparent configuring and programming through integrated engineering (SIMATIC STEP 7)
  - Unassigned function blocks for SIMATIC for easy parameterization and diagnostics, and for reading out measured values
  - Efficient engineering thanks to pre-integration of Siemens devices into SIMATIC HMI
  - Low error rate in CAD circuit diagram design as a result of reduced control current wiring
- Installation and commissioning → reduced start-up times
  - Faster assembly with minimized error rate as a result of reduced control current wiring
  - Less space required in the control cabinet
  - Low-cost circuitry where there are several feeders by making unlimited use of existing Siemens components
- Operation and maintenance → greater plant availability
  - High transparency in the system right down to field level
  - Reduction in downtimes and maintenance times thanks to system-wide diagnostics and faster fault correction
  - Support of predictive maintenance
  - High transparency through integration into energy management systems, reading out of current values and diagnostic signals
  - Shorter changeover times, even for field devices, by means of parameter and recipe management

Transparency in the process through IO-Link

High system availability and data transparency are market requirements that must also be met by the connecting of innovative control technology to a control system. A systematic diagnostics concept and efficient handling of parameter data are required for this purpose in automation.

With the aid of the IO-Link communication standard, a communication link is established between switchgear and controller, and this allows data to be exchanged efficiently. Based on a standard cable, it is therefore possible to integrate parameter, process and diagnostic data and measured values into the plant automation with ease. For example, the available diagnostic data allow potential errors to be detected quickly, thus avoiding lengthy plant down times.

As a consequence of their basic function, such as overload protection (SIRIUS 3RB24), many controls have measured values. The availability of these via IO-Link now allows conclusions to be drawn at an early stage concerning wear and tear in the application.

At the same time the option of parameterizing via IO-Link supports the device not just when parameters concerning operating time are changed, but also when the device is replaced. In the case of a spare part, for example, the parameters can be quickly transmitted to a new device via the communication system.

For more information see www.siemens.com/io-link.

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Systematic industrial safety technology: SIRIUS Safety Integrated

Overview

Safety Integrated – safety engineering for machines and plants

Manufacturers and operators of machines must fulfill numerous requirements: reducing costs, improving productivity, and ensuring the safety of machines.

The industrial safety technology from Siemens offers innovative, economical solutions for the functional safety of machinery.

Machine safety – compliance with directives

Before any machines or plant can be supplied or operated, they must meet the fundamental safety requirements of the EU Directives.

In order to ensure compliance with the European Machinery Directive, it is recommended that the suitably harmonized European standards EN 62061 or EN ISO 13849-1 should be applied. This gives manufacturers and operators legal certainty regarding compliance with both national regulations and the EC Directive.

The machine manufacturer uses the CE marking to document the compliance with all relevant directives and regulations in the free movement of goods. As the European directives are recognized worldwide, their use is of great help when exporting to other countries.

The aim of safety technology is therefore to allow people, machines and the environment to be protected and statutory safety requirements to be satisfied.

The quick and easy way to safe machinery

In addition to the statutory regulations governing the protection of people there are also economic reasons for avoiding personal injury and the resulting down times, and for protecting both machinery and equipment from damage.

Safety Integrated benefits machine manufacturers and plant operators in many ways:

- Lower costs for hardware, assembly and engineering
- Higher availability thanks to faster diagnostics and fewer down times

At the same time, using modular safety concepts allows them to modernize their plants more easily and at lower cost.

Smart controls ensure the functional safety of machinery

Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept, based on Totally Integrated Automation. Whether for reliable detecting, commanding and signaling, monitoring and evaluating or starting and safe disconnection, our SIRIUS Safety Integrated controls provide cost-effective solutions for the safety of your machine or plant.

Take the new SIRIUS 3SK1 safety relays for example: They are modularly expandable, and can integrate compact motor starters such as the SIRIUS 3RM1 very simply via the the rear panel device connector. Or the SIRIUS 3RK3 Modular Safety System: this provides a high degree of functionality as an autonomous safety control downstream of a standard control, and also makes smart safety solutions possible via AS-Interface.

The SIMOCODE pro modular motor management system combines all required protection, monitoring, safety and control functions for motor feeders. It can be connected to fail-safe controllers via PROFIBUS or PROFINET and shut down motors in emergency situations.

Control technology for safety solutions – SIRIUS Safety Integrated

SIRIUS Safety Integrated uses fail-safe communication via standard fieldbus systems, such as ASIsafe via AS-Interface and PROFIsafe via PROFIBUS and PROFINET, to solve even networked safety tasks of greater complexity. This opens the door to flexible safety solutions for compact machines or large-scale plants – naturally compliant with current standards up to SIL 3/PL e.

A particular highlight: The world's first integrated ASIsafe connection to the distributed I/O system ensures even more consistency. With the SIMATIC AS-i F-Links, AS-i networks can be connected quite simply to safety controls via PROFIsafe via the SIMATIC ET 200SP.

Your partner for machine and plant safety

With Safety Integrated, Siemens has provided the smart answer to constantly increasing requirements for the functional safety of a machine and for its cost-effectiveness and flexibility. Our comprehensive portfolio of safe controls, control technology and drive technology provides scalable solutions for precisely tailored safety concepts for protecting people, machines and the environment. Our products meet the current safety standards in the industry, including IEC, ISO, NFPA and UL.

As a partner for machine and plant safety, Siemens also supports users with examples of functions and up-to-date know-how concerning international standards and directives. In addition to the free TÜV-approved Safety Evaluation Tool for evaluating safety functions in accordance with EN 62061 and EN ISO 13849-1, requirements-based training is available on CE marking, functional safety and risk assessment, and on our Safety Integrated Products.

For more information see www.siemens.com/safety-integrated.

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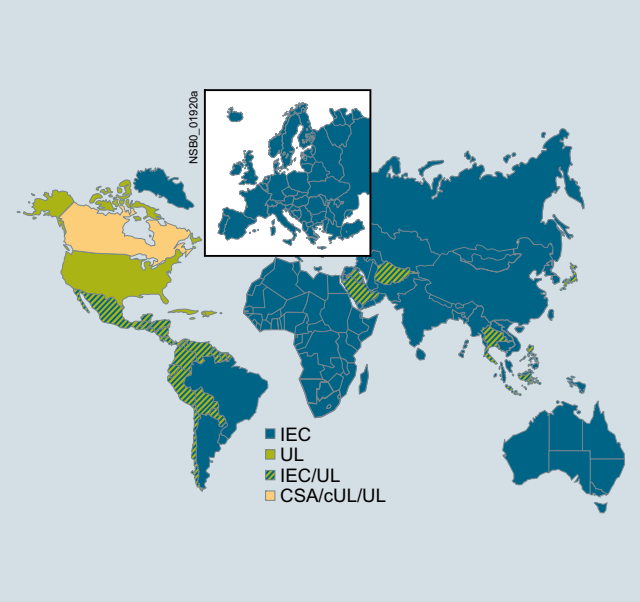
Applications: SIRIUS supports you where UL is concerned

Overview



SIRIUS applications

We support you where UL is concerned

Product liability laws in the USA are way stricter than in Europe. Whoever plans to export products to North America should have them UL-certified, particularly when it comes to electrical equipment. We can help you with our comprehensive know-how and broad portfolio of UL-certified low-voltage controls

Who or what is UL?

UL (Underwriters Laboratories Inc.®) is one of the world's leading organizations for testing and certification in the field of product safety. This independent, nonprofit US organization was founded in 1894 at the request of American fire insurance companies to analyze the fire hazards posed by electrically operated devices.

Today, UL tests and certifies the most varying materials, components and end products for their reliable operation, particularly with regard to potential personal injury and fire formation. The organization maintains subsidiaries in numerous European countries. Detailed information on the US organization as well as contact details for the various European subsidiaries are also available on the Internet at www.ul.com.

Differences between UL and IEC

The IEC standards for the IEC market merely specify the minimum safety requirements of a device or system. Technical details of the safety requirements' constructional implementation are up to the manufacturers.

In contrast, the standards for the American market are far more detailed. Depending on the standard, the required process may be monitored from product design to product production down to application, mounting and operation.

NFPA79 is the electrical standard for industrial machinery outside the control cabinet. As such it differs from and is the counterpart to the control cabinet standard UL 508A.

UL partner since 1969

Enlisting the expertise of a partner such as Siemens is a wise move for anyone who wishes to avoid unnecessary aggravation and save both time and money.

Ever since 1969 our production facility in Amberg, where the complete diversity of our low-voltage controls and distribution portfolio is developed and produced, has been working closely with Underwriters Laboratories Inc.

Our consideration not only of EU directives and IEC standards but also UL standards begins as early as in our products' development phase. This has resulted in a wide-ranging portfolio of UL-certified low-voltage switchgear, controlgear and protection circuit technology.

As a result we have comprehensive know-how on the subject of UL certification and approval, ranging from production down to the wiring of control cabinets (panels) according to UL standards, and we would be pleased to pass this knowledge on to you as part of our application consulting service.

Our portfolio of low-voltage controls ensures your being on the safer side in terms of UL and facilitates the easy and fast assembly of control cabinets according to UL.

Cost-efficiency in the construction and operation of industrial control panels for North America

- Stay flexible for a highly diverse range of solutions and add-ons with our comprehensive and matched product portfolio, from the supply of the industrial control panel to the machine's smallest actuator.
- Benefit from efficient stock-keeping thanks to the universal applicability of the products (IEC-UL/CSA).
- Arrive at a uniform operating and maintenance concept through our standard system.
- Save space and costs through coordinated product interfaces and compact designs.
- Experience convenient, efficient local operation thanks to easy-to-use systems.

UL-certified SIRIUS products and systems

UL-certified products to be found in this catalog include for example:

- Controls, from motor-protective circuit breakers and starters to contactors and overload relays
- Circuit breakers for plant and transformer protection
- Detection and command devices
- Transformers and power supplies

You will also find a complete selection of controls and components according to UL in catalog LV 16.

On the Internet you will find information on, for example, UL standards, UL classification and a number of technical particularities of UL.

Under "Information Material" → "Standards and Approvals" we have summarized the available products and product groups. A table lists the UL standards to which the products conform and contains links to the corresponding UL reports.

For more information see www.siemens.com/applicationconsulting/ul.

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Notes

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Industrial Communication

Price groups
PG 230, 250, 41B, 41H, 41L, 42C, 42D, 42F, 42J, 5K1, 5K2, 5N3

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AS-Interface

Introduction

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2/15 System components
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ASIsafe

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2/25 AS-Interface safety modules
Ch. 12 SIRIUS 3SF1, 3SF3 mechanical safety switches for AS-Interface
Ch. 13 SIRIUS 3SF2 cable-operated switches for AS-Interface
Ch. 13 SIRIUS EMERGENCY-STOP mushroom pushbuttons for AS-Interface
Ch. 13 AS-Interface F adapters for EMERGENCY-STOP devices

Masters

Masters for SIMATIC S7
2/28 - CM 1243-2 NEW
2/30 - CP 243-2
2/31 - CP 343-2P/CP 343-2

Masters for SIMATIC ET 200
2/33 - CM AS-i Master for ET 200SP NEW

Routers

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Ch. 15 24 V power supply units
2/74 S22.5 data decoupling modules NEW
2/76 Data decoupling modules for S7-1200 NEW

1) See Catalog D31 "SINAMICS and Motors for Single-Axis Drives".

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2/81 Addressing units NEW
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Masters for SIMATIC ET 200SP
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IO-Link master modules for ET 200S
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Ch. 10 - SIRIUS 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link
Ch. 10 - SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link NEW
Ch. 10 - SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link NEW
ID10[2)] RFID systems NEW
Ch. 14 Software

2) See Catalog ID 10 "Industrial Identification Systems".

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Overview

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AS-Interface: ASIsafe			
	ASIsafe enables the integration of safety-related components in an AS-Interface network, for example: • EMERGENCY-STOP pushbuttons • Protective door switches • Safety light arrays The simple wiring of AS-Interface, which is a major advantage, is maintained.		
 3RK3 Modular Safety System	**Modular Safety System (MSS)** Supplementing the service-proven concept of the safety monitors, the new 3RK3 Modular Safety System offers for example the following functions for ASIsafe: • Up to 50 enabling circuits including muting function • Expandable fail-safe and non-fail-safe inputs/outputs • Control of up to 12 ASIsafe outputs or 12 fail-safe independent switch-off groups • Memory module for parameters, e.g. for device replacement • Optional PROFIBUS interface for diagnostics and parameterization • Intuitive graphic parameterization and diagnostics software MSS ES • AS-i Power24V capability Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3	**3RK3**	2/20
 Safety monitor	**AS-Interface safety monitors** • For monitoring safe stations and for linking AS-Interface inputs and outputs • Ensures safe disconnection • Available with one or two release circuits with two-channel configuration • All versions with removable screw terminals or spring-type terminals • All safety monitors in revised Version 3 with additional options • Filtering out of brief single-channel interruptions in the sensor circuit with the expanded safety monitor Version 3 • Expanded safety monitor with integrated safe slave for controlling a distributed safe AS-i output or for safe coupling a safe signal from one AS-i network to another AS-i network • Configuration software ASIMON V3 with graphic function diagram presentation Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3	**3RK1**	2/24
 K45F S45F SlimLine module, safe AS-i output	**AS-Interface safety modules** • Complete portfolio of ASIsafe modules • For connection of safety switches with contacts (e.g. position switches) as well as solid-state safety sensors (ESPE) • Degree of protection IP65/IP67 or IP20 • Very compact dimensions, from 20 mm width • Up to four safe inputs per module • Up to one safe output per module • Standard outputs are available on the module in addition • Up to Category 4, PL e, SIL 3 Your advantage: Easy integration of safe signals, be it in the control cabinet or in the field	**3RK1**	2/25
 Position switch	**SIRIUS 3SF1, 3SF3 mechanical safety switches for AS-Interface** • Plastic with degree of protection IP65 and metal with degree of protection IP66/IP67 • ASIsafe electronics integrated in the enclosure, with low power consumption < 60 mA • Available with separate actuator or interlocking Your advantage: Conventional wiring of safety functions no longer required.	**3SF1, 3SF3**	Ch. 12
 Cable-operated switch	**SIRIUS 3SF2 cable-operated switches for AS-Interface** • Degree of protection IP65 • Direct connection of cable-operated switches for detection of signals • Metal enclosures	**3SF2**	Ch. 12

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AS-Interface: ASIsafe (continued)			
EMERGENCY-STOP for mounting on front plate	**SIRIUS EMERGENCY-STOP mushroom pushbuttons for AS-Interface** • Degree of protection IP65/IP67 • EMERGENCY-STOP directly on AS-Interface using integrated modules • Metal or plastic version Your advantage: Easy direct connection of service-proven control elements to ASIsafe	**3SF5**	Ch. 13
F adapter	**AS-Interface F adapters for EMERGENCY-STOP devices** • Connection of an EMERGENCY-STOP device according to ISO 13850 to AS-Interface • Is snap-mounted from behind onto the EMERGENCY-STOP device (actuator) • Can be used up to Category 4, PL e, SIL 3 Your advantage: Easy direct connection of service-proven control elements to ASIsafe	**3SF5**	Ch. 13
AS-Interface: Masters			
	The AS-Interface master connects SIMATIC control systems to AS-Interface. It automatically organizes the data traffic on the AS-Interface cable and sees not only to processing the signals but also to performing the parameter setting, monitoring and diagnostics functions.		
CM 1243-2 for SIMATIC S7-1200	**Masters for SIMATIC S7** AS-Interface master connections: • CM 1243-2 for SIMATIC S7-1200 • CP 343-2P, CP 343-2 for SIMATIC S7-300 and ET 200M • CP 243-2 for SIMATIC S7-200 Characteristics: • Connection of up to 62 AS-Interface slaves • Connection of up to 496 inputs and 496 outputs per master or AS-Interface network • Integrated analog value transmission • Simple configuration by adopting the actual configuration on the AS-Interface network • Easy operation in the input/output address area of the SIMATIC S7 comparable to standard I/O modules • Monitoring of the control supply voltage on the AS-Interface shaped cable Your advantage: Easy connection to SIMATIC controllers	**3RK7** **6GK7**	2/28 2/30, 2/31
CP 343-2, CP 343-2P for SIMATIC S7-300			
CM AS-i Master ST for SIMATIC ET 200SP	**Masters for SIMATIC ET 200** CM AS-i Master ST for SIMATIC ET 200SP • Connection of up to 62 AS-Interface slaves per master • Connection of up to 496 inputs and 496 outputs per AS-Interface network • Integrated analog value transmission (input/output via data record communication) • Simple configuration by adopting the actual configuration on the AS-Interface network • Easy operation in the input/output address area of the SIMATIC (or other controller) comparable to standard I/O modules • Monitoring of the control supply voltage on the AS-Interface shaped cable • Integrated ground-fault monitoring Your advantage: Easy connection of AS-i networks to distributed I/Os	**3RK7**	2/33

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AS-Interface: Routers			
	As an alternative to the CPs, it is also possible to use a link as AS-Interface master – at any position beneath the PROFIBUS DP or PROFINET IO.		
DP/AS-i LINK Advanced	**Routers** • Degree of protection IP20 • PROFIBUS slave or PROFINET IO device and AS-Interface master (single or double master in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • Connection of up to 62 AS-Interface slaves per AS-Interface network • Connection of up to 496 digital inputs and 496 outputs per AS-i network, with doubling of the project data volume for double master versions • Integrated ground-fault monitoring (in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • User-friendly local diagnostics and local startup by means of a full graphic display and control keys or through a web interface with a standard browser (in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • Integrated analog value transmission • Configuring and uploading of AS-Interface configuration in STEP 7 possible • User-friendly selection of AS-Interface slaves • Safety-related transition from ASIsafe to PROFIsafe also available as DP/AS-i F-Link Your advantage: Optimum transition to PROFIBUS or PROFINET, integrated in STEP 7	**3RK3** **6GK1**	2/41 2/36, 2/39, 2/45
DP/AS-Interface Link 20E			
DP/AS-i F-Link			
IE/AS-i LINK PN IO			
AS-Interface: Slaves			
	Slaves contain the AS-Interface electronics and connection options for sensors and actuators in the field and in the control cabinet. A total of up to 62 slaves can be connected to one bus. The slaves then exchange their data in cyclic mode with a control module (master).		
K20 digital module	**I/O modules for use in the field, high degree of protection** Digital I/O modules IP67 – K60, K60R, K45 and K20 • Degree of protection IP65/IP67 or IP68/IP69K • Modules available with up to degree of protection IP68/IP69K • ATEX-certified modules available for Ex Zone 22 • Connection sockets in M8/M12 • Up to eight inputs and four outputs • A/B technology available • Contacting protected against polarity reversal • Standard rail mounting and wall mounting possible • Mounting of the module on the base plate using just one screw • Diagnostics LEDs Your advantage: Reduction of mounting and startup times by up to 40 %	**3RK1, 3RK2**	2/49, 2/51, 2/53, 2/55
K45 digital module			
K60 digital module			

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Introduction

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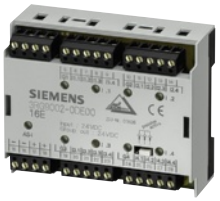
AS-Interface: Slaves (continued)			
K60 analog module	Analog I/O modules, IP67 – K60 • Degree of protection IP65/IP67 • Detects or transmits analog signals locally • 2-/4-channel • Input modules for up to four sensors with current signal, with voltage signal or with thermal resistor • Output modules for current or voltage • Fast analog modules available for higher access speeds Your advantage: Easy integration of analog values	**3RK1**	2/57
SlimLine  F90 module Flat module	**I/O modules for use in the control cabinet** • Degree of protection IP20 • No M12 plugs required for connection • Up to 16 inputs • Narrow design of the SlimLine modules with width from 22.5 mm • Removable, finger-safe terminal blocks that cannot be mixed up (SlimLine) • Flat design of the flat modules for small control cabinets and confined conditions • Connection with screw terminals or spring-type terminals • Standard rail mounting and wall mounting possible • Diagnostics LEDs Your advantage: Modules enable use in control cabinets and small local control cabinets.	**3RG9, 3RK1**	2/60
Counter module	**Modules with special functions: Counter modules** • Degree of protection IP20 • For evaluation of pulses • Connection with screw terminals or spring-type terminals Your advantage: Evaluation of pulses which exceed even the clock frequency of AS-Interface	**3RK1**	2/67
Ground-fault detection module	**Modules with special functions: Ground-fault detection modules** • Degree of protection IP20 • Display using LEDs • Two signaling outputs Your advantage: Automatic diagnostics of ground faults on AS-Interface	**3RK1**	2/68
Overvoltage protection module	**Modules with special functions: Overvoltage protection modules** • Degree of protection IP67 • Discharge through ground cable with oil-proof outer sheath • Protection at transition of lightning protection zones Your advantage: The AS-Interface overvoltage protection module protects downstream AS-Interface devices or individual sections in AS-Interface networks from conducted overvoltages	**3RK1**	2/69

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AS-Interface: Slaves (continued)			
3RT20 1.-1B...-0CC0 contactor	**Contactors and contactor assemblies** Power contactors for switching motors and contactor assemblies • Notable reduction of wiring in the control circuit • Integrated mechanical interlocking • Prevention of wiring errors in the main circuit • Connection to AS-Interface through function modules	**3RT2, 3RA23, 3RA24**	Ch. 3
SIRIUS 3RA2712... function module for AS-Interface	SIRIUS function modules for AS-Interface • For mounting onto SIRIUS 3RT2 contactors • Reduction of control current wiring through plug-in design and integrated monitoring of circuit breaker/motor starter protector and contactor • Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system • Easy configuration through operation of feeders instead of individual contactors • Enhanced operational reliability and quick wiring thanks to spring-type connections • Small number of variants by using identical modules for size S00 and S0 contactors Your advantage: Shortening of mounting and startup times	**3RA2712**	Ch. 3
3RA61 compact starter	**Motor starters for use in the control cabinet** SIRIUS 3RA6 compact starters, 3RA61 direct-on-line starters, 3RA62 reversing starters • Degree of protection IP20 • Very compact load feeders with the integrated functionality of a solid-state overload relay • As direct-on-line or reversing starters for motors up to 15 kW/400 V • Easy expansion into a communication-capable load feeder using AS-i add-on modules • On-site safe disconnection also possible using AS-i add-on modules • Standardized integration of the loads in higher-level control systems using AS-i Your advantage: Compact solution with minimum wiring outlay for actuating direct-on-line and reversing starters in the control cabinet	**3RA6**	Ch. 8
SIRIUS M200D motor starter	**Motor starters for use in the field, high degree of protection** SIRIUS M200D motor starters for AS-Interface • High degree of protection IP65 for cabinet-free design • As direct-on-line or reversing starters for motors up to 5.5 kW/400 V • Mechanical or electronic switching for high switching frequencies • Optional with manual operation and brake control • Expanded diagnostics and parameterization possible through AS-Interface • Easy and consistent integration in STEP 7 through AS-Interface Your advantage: The correct solution for all simple applications in conveyor systems with spatially distributed drives	**3RK1**	Ch. 9
SIRIUS MCU motor starter	SIRIUS MCU motor starters for AS-Interface • Degree of protection IP55 • Direct-on-line or reversing starters up to 5.5 kW at 400 V AC (50/60 Hz) • Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors/ circuit breakers Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC • Overload protection with thermal release (bimetal) Your advantage: Factory-wired motor starters in high degree of protection for use in the field	**3RK1**	Ch. 9
Motor starter for AS-Interface, 24 V DC	Motor starters for AS-Interface, 24 V DC • Degree of protection IP65/IP67 • Direct-on-line starters, double starters or reversing starters • Up to 70 W • Quick stop function Your advantage: Simple motor starter in service-proven module design for 24 V DC motors	**3RK1**	Ch. 9

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AS-Interface: Slaves (continued)			
Pushbutton	**Commanding and signaling devices** SIRIUS 3SF5 pushbuttons and indicator lights • Modular construction according to individual requirements • Up to 6 signaling points • Metal and plastic version • Any change of equipment possible even after installation • Indicator lights with integrated LED Your advantage: Complete 3SB3 operating system with simple AS-Interface connection for your plant	**3SF58**	Ch. 13
Signaling column	8WD4 signaling columns • Many optical and acoustic elements can be combined • Up to three signaling elements can be connected using an adapter element • With LEDs or incandescent lamps Your advantage: Signaling columns for monitoring production sequences and for visual or acoustic warnings in emergency situations, with easy AS-Interface connection	**8WD4**	Ch. 13
Connections for LOGO!	**AS-Interface connections for LOGO!** • AS-Interface slave for the connection of LOGO! • Distributed controller functionality Your advantage: Distributed intelligence can be used on-site and can be connected to the control system through AS-Interface	**3RK1**	2/70
AS-Interface: Power supply units and data decoupling modules			
	AS-Interface power supply units generate a controlled direct voltage of 30 V DC with high stability and low residual ripple in conjunction with data decoupling. They are an integral component of the AS-Interface network and enable the simultaneous transmission of data and energy on one cable. In conjunction with data decoupling modules, AS-Interface can also be operated with standard power supply units.		
IP20, 3 A IP20, 8 A	**AS-Interface power supply units** • With wide performance spectrum from 2.6 to 8 A • Degree of protection IP20 • Separation of data and energy by means of the integrated data decoupling • UL/CSA approval means the power supplies can be used worldwide. 2.6 A version with output power restricted to max. 100 W (for use in NEC Class 2 circuits) • Certified for global use • Integrated ground-fault and overload detection save the need for additional components and make applications reliable • Diagnostics memory, remote signaling and remote RESET allow fast detection of faults in the system • The ultra-wide input range enables single- and two-phase applications (8 A version) Your advantage: Optimum performance for each application	**3RX9**	2/71
SITOP PSU100M, 24 V DC, 20 A	**24 V power supply units** Standard 24 V power supply units (SITOP), without data decoupling • Performance spectrum 2.5 A to 40 A • Overload and short-circuit proof in every performance class • Add-on modules for signaling, redundancy, buffering and UPS • Single-phase, two-phase and three-phase versions Your advantage: Economical alternatives in conjunction with data decoupling modules	**6EP**	Ch. 15

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AS-Interface: Power supply units and data decoupling modules (continued)			
PSN130S 30 V DC, 8 A	**30 V power supply units** Standard 30 V power supply units without data decoupling • Power spectrum 3 A, 4 A and 8 A • Overload and short-circuit proof in every performance class • Diagnostics: With output voltage > 26.5 V DC LED and signaling contact for output voltage 30V O.K. • Primary-side connection to 120 V AC / 230 V AC (1-phase) with automatic range selection Your advantage: Economical alternatives in conjunction with data decoupling modules while making full use of the maximum AS-Interface cable length	**3RX9**	2/72
S22.5 data decoupling module	**S22.5 data decoupling modules** • Degree of protection IP20, narrow design 22.5 mm • Supply of several AS-i networks with a single power supply unit • Single and double data decoupling • Operation with 24 V DC or 30 V DC Your advantage: Cost-effective installation of AS-i networks in conjunction with standard power supply units	**3RK1**	2/74
DCM 1271 data decoupling module	**DCM 1271 data decoupling module for SIMATIC S7-1200** • Simple data decoupling in IP 20 design • Supply of several AS-i networks with a single power supply unit • Operation with 24 V DC or 30 V DC Your advantage: Cost-effective installation of AS-i networks in conjunction with standard power supply units in the design of a SIMATIC S7-1200 module	**3RK7**	2/76
AS-Interface: Transmission media			
	AS-Interface shaped cable for connection of network stations.		
Shaped cable	**AS-Interface shaped cables** • No polarity reversal thanks to trapezoidal shape • Cables made of optimized material for different operating conditions • Special version according to UL Class 2 available Your advantage: Fast replacement and connection to AS-Interface by piercing method	**3RX9**	2/78

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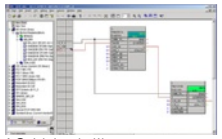
AS-Interface: System components and accessories			
	Accessories comprise tools for mounting, installation and operating as well as individual components.		
Repeater Compact extension plug	**Repeaters and extension plugs** • Repeaters for extending the AS-Interface cable by 100 m per repeater • Extension plug for extending the AS-Interface segment to max. 200 m • Parallel switching of several repeaters possible (star configuration option) • Maximum size increases (when combined) to more than 600 m • Easy mounting • IP67 module enclosure Your advantage: Lower infrastructure costs, more possibilities of use and greater freedom for plant planning	**3RK1, 6GK1**	Repeaters: 2/79 Extension plugs: 2/80
Addressing unit for AS-Interface V 3.0	**Addressing units** • Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses • Reading out the slave profile (IO, ID, ID2) and reading out and setting the ID1 code • Input/output test when commissioning the slaves, on all digital and analog slaves according to AS-Interface Specification V 3.0, including safe input slaves and complex CTT2 slaves • Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA) • Storage of complete network configurations (profiles of all slaves) to simplify the addressing Your advantage: Easiest way to address and test the slaves	**3RK1**	2/81
Analyzer	**AS-Interface analyzers** • Diagnostics units for completely checking the quality and function of an AS-Interface installation • Transmission of collected data through an RS 232 interface to a PC, evaluation by software • Easy and user-friendly operation • Automatically generated test logs • Advanced trigger functions enable exact analysis • Process data can be monitored online • In addition to digital I/O data it is possible to view analog values and safety slaves in data mode Your advantage: Preventative testing of an AS-Interface network is possible, recorded logs facilitate remote diagnostics	**3RK1**	2/83
M12 sealing cap Cable terminating piece	**Miscellaneous accessories** AS-Interface system manual, individual components such as sealing caps, cable adapters, distributors, M12 plugs and cables, etc.	**3RK2, 3RG7, 3RK1, 3RX9, 3UF7, 6ES7**	2/86
AS-Interface: Software			
 AS-i block library for PCS 7	**AS-Interface block library for SIMATIC PCS 7** • Engineering software and runtime software • Easy connection of AS-Interface to PCS 7 • Engineering work reduced to positioning and connecting the function blocks in the CFC • With no additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system is optimally guaranteed Your advantage: Easy connection of AS-Interface to PCS 7, little engineering and configuration	**3ZS1**	Ch. 14

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IO-Link			
IO-Link family	IO-Link is an open communication standard for sensors and actuators - defined by the Profibus User Organization (PNO). • Dynamic changing of sensor/actuator parameters directly by the PLC • Devices can be exchanged during operation, without a PC or programming device, through re-parameterization using the user program by means of a function block (FB) or parameter server • Fast commissioning thanks to central data storage • Consistent diagnostic information as far as the sensor/actuator level • Uniform and greatly reduced wiring of different sensors/actuators/controls Your advantage: Fast commissioning and flexible maintenance thanks to central data storage, less wiring work because no passive distributors are needed		2/89
IO-Link: Masters			
CM 4x IO-Link for ET 200SP	The IO-Link master modules form the heart of the IO-Link system. **IO-Link master modules for ET 200SP** CM 4xIO-Link electronic module • IO-Link master as serial communication module with 4 ports (channels) according to IO-Link Specification V1.1 • Module exchange with automatic data recovery without engineering for IO-Link master and device • Up to four IO-Link devices (3-wire connections) can be connected to each IO-Link master module • Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the data transmission rate supported by the device Your advantage: Easy connection of IO-Link connections to distributed I/Os	**6ES7**	2/95
SIRIUS 4SI electronic module for ET 200S	**IO-Link master modules for ET 200S** IO-Link 4SI electronic module • Up to 4 IO-Link devices (three-conductor connection) can be connected • Up to 4 standard actuators/sensors (two-conductor/three-conductor connection) can be connected	**6ES7**	2/97
	SIRIUS 4SI electronic modules • Up to 16 SIRIUS controls can be connected with IO-Link (grouped) • Supports firmware update (STEP 7 V5.4 SP4 and higher)	**3RK1**	2/98
IO-Link master modules for ET 200eco PN	**IO-Link master modules for ET 200eco PN** • Up to 4 IO-Link devices (three-conductor connection) can be connected • Up to 8 standard sensors (8 DI) and up to 4 standard actuators (4 DO) can be connected in addition Your advantage: Easy connection to the control system in IP20 as well as in IP65/IP67	**6ES7**	2/99
IO-Link: Input modules			
	IO-Link input modules make full use of the potential of IO-Link and are a more attractive solution economically than a direct sensor connection.		2/100
K20 IO-Link module with four digital inputs	**K20 IO-Link modules** • Four or eight digital inputs • Degree of protection IP65/IP67 • Connection sockets in M8/M12 • Contacting protected against polarity reversal Your advantage: Reduction of mounting and startup times by up to 40 %	**3RK5**	2/101

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IO-Link: Industrial controls		
Starters and contactor assemblies for direct-on-line, reversing and wye-delta starting can be connected to IO-Link through function modules without any additional, complicated wiring.		
Contactors and contactor assemblies Power contactors for switching motors and contactor assemblies • Notable reduction of wiring in the control circuit • Integrated mechanical interlocking • Prevention of wiring errors in the main circuit	**3RT2, 3RA23, 3RA24**	Ch. 3
 3RT201.-1B...-0CC0 contactor		
SIRIUS function modules for IO-Link • Connection of the communication-capable 3RT2, 3RA23, 3RA24 power contactors to IO-Link • Reduction of control current wiring through plug-in technology, feeder groups and integrated monitoring of circuit breaker/motor starter protector and contactor • Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system • Simple user program through operation of feeders instead of individual contactors • Enhanced operational reliability and quick wiring thanks to spring-type connections • Can be flexibly combined with many automation solutions using the open, standardized IO-Link wiring system • Small number of variants by using identical modules for size S00 and S0 contactors Your advantage: Shortening of mounting and startup times	**3RA2711**	Ch. 3
 SIRIUS 3RA2711 function module for IO-Link		
Overload relays SIRIUS 3RB24 solid-state overload relays for IO-Link • Diagnostics and current value transmission via IO-Link • Current measuring modules (3RB29) for current values from 0.3 ... 630 A • Controlling direct-on-line, reversing and wye-delta starters via IO-Link in conjunction with contactors • Full motor protection through PTC connection Your advantage: Communication-capable overload relay enables remote diagnostics and preventative maintenance	**3RB24**	Ch. 7
 SIRIUS 3RB24 overload relay		
Compact starter 3RA64, 3RA65 compact starters for IO-Link • Integrated functionality of a circuit breaker, contactor and solid-state overload relay and various functions of optional mountable accessories • Can be used for direct starting of standard induction motors up to 32 A (approx. 15 kW/400 V) • Compact design offers enormous savings in space and wiring in the control cabinet • Low variance of devices thanks to wide setting ranges for the rated current and wide voltage ranges Your advantage: The diagnostics data of the process collected by the 3RA6 compact starter, e.g. short circuit, end of service life, limit position etc., are not only indicated on the compact starter itself but also transmitted to the higher-level control system through IO-Link.	**3RA64, 3RA65**	Ch. 8
 SIRIUS 3RA64 compact starter		
Monitoring relays 3RR24 monitoring relays for IO-Link • Monitoring relays for mounting onto 3RT2 contactors • Parameterization and diagnostics via the display on the device or via IO-Link • Adjustable warning and switch-off limit values and on/tripping delay times • All current measured values available in the control system Your advantage: Communication-capable monitoring relay enables remote diagnostics and preventative maintenance.	**3RR24**	Ch. 10
 SIRIUS 3RR24		
SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link • Monitoring of - Network (3UG481) - Current (3UG482) - Voltage (3UG483) - Power factor (3UG484) - Speed (3UG485) • Parameterization and diagnostics via the display on the device or via IO-Link • Adjustable warning and switch-off limit values and on/tripping delay times • All current measured values available in the control system Your advantage: Communication-capable monitoring relay enables remote diagnostics and preventative maintenance.	**3UG48**	Ch. 10
 SIRIUS 3UG48		

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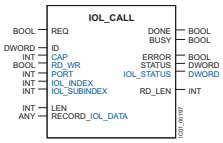
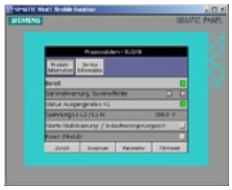
IO-Link: Industrial controls (continued)			
SIRIUS 3RS14, 3RS15	SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link • Measuring the temperature of solids, liquids and gases • Use of resistance sensors (3RS14) or thermocouples (3RS15) • Parameterization and diagnostics via the display on the device or via IO-Link; adjustable warning and switch-off limit values and on/tripping delay times • All current measured values available in the control system Your advantage: Independent monitoring easily linked to the control system	**3RS14, 3RS15**	Ch. 10
IO-Link: RFID systems			
RFID systems for IO-Link: SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF260R (top)	**SIMATIC RF200 RFID system in the HF range** • SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF260R products • Simple identification tasks (read-only), such as reading an ID number • No RFID-specific programming, ideal for those new to RFID • Simple connection via master modules for IO-Link, such as SIMATIC ET 200S and ET 200eco • Use with the tried and tested ISO 15693 transponders (MOBY D)	**6GT2**	Catalog ID 10
IO-Link: IODD files			
	IO-Link Device Description (IODD) files provide the device description for IO-Link • Comprehensive IODD catalog of SIEMENS IO-Link devices • Can be downloaded from http://support.automation.siemens.com/WW/view/en/29801139/133100		2/94
IO-Link: Software			
STEP 7 PCT	**STEP 7 PCT** Engineering software for configuring the IO-Link master modules for ET 200S and ET 200eco • Available as a stand-alone version or integrated into STEP 7 (Version 5.5 SP1 or later) • Retrieval of parameter and diagnostics data from the IO-Link devices connected to the master • Monitoring of the process image of the IO-Link devices • Open interface for importing further IODDs • Free-of-charge download from http://support.automation.siemens.com/WW/view/en/37936752		Ch. 14
 IO-Link Call function block	**IO-Link Call function block** STEP 7 function block for easy acyclical data exchange in the user program • Free-of-charge download from http://support.automation.siemens.com/WW/view/en/38487085		Ch. 14
 WinCC flexible template project	**WinCC flexible template project** Easy integration of IO-Link devices into the user program by using ready-made WinCC flexible templates • Free-of-charge download of the project from http://support.automation.siemens.com/WW/view/en/38006560		Ch. 14

Note:

	Screw terminals
	Spring-type terminals
	Combicon connectors (plug-in screw terminals)
	FastConnect
	The terminals are indicated in the selection and ordering data by orange backgrounds.

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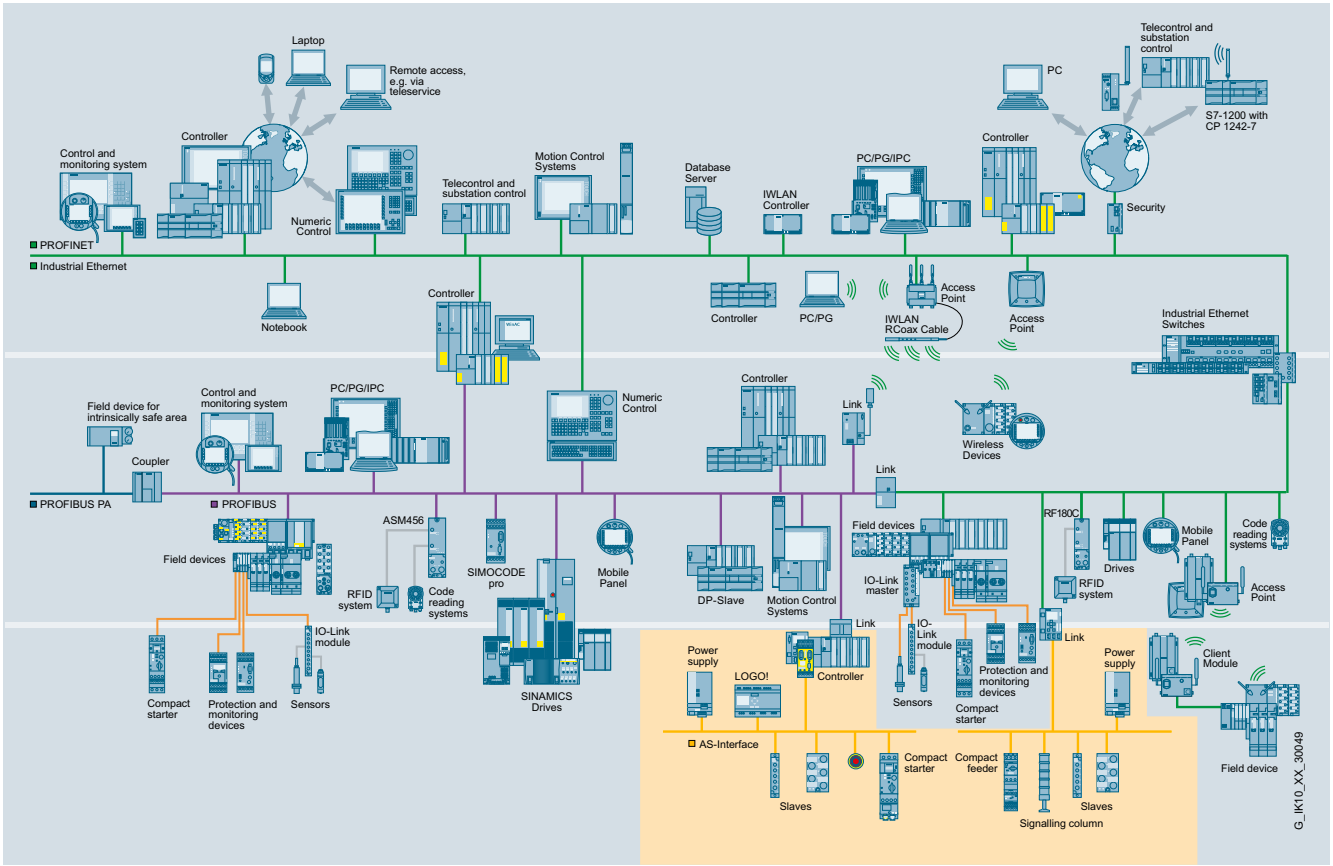
Communication overview

Overview

AS-Interface is an open, international standard according to EN 50295 and IEC 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

AS-Interface is a single master system. For automation systems from Siemens, there are communications processors (CPs) communications modules (CMs) and routers (links) that control the process or field communication as masters, and actuators and sensors that are activated as AS-Interface slaves.



Benefits

A key feature of AS-Interface technology is the use of a shared two-conductor cable for data transmission and the distribution of auxiliary power to the sensors/actuators. A power supply unit which meets the requirements of the AS-Interface transmission method and has an external data decoupling module if required is used for the distribution of auxiliary power. The AS-Interface cable used for the wiring is mechanically coded and hence protected against polarity reversal and can be easily contacted by the insulation piercing method.

Elaborately wired control cables in the control cabinet and marshalling racks can be replaced by AS-Interface.

The AS-Interface cable can be connected to any points thanks to a specially developed cable and connection by the insulation piercing method.

With this concept you become extremely flexible and achieve high savings.

Application

I/O data exchange

The AS-i master transmits automatically the inputs and outputs between the control system and the digital and analog AS-Interface slaves.

Slave diagnostics information is forwarded to the control system when required.

AS-Interface masters according to the AS-Interface Specification V2.1 or V3.0 support integrated analog value processing. This means that data exchange with analog AS-Interface slaves is just as easy as with digital slaves.

Command interface

In addition to I/O data exchange with binary and analog AS-Interface slaves the AS-Interface masters provide a number of other functions through the command interface.

Hence it is possible, for example, for slave addresses to be issued, parameter values transferred or configuration information read out from user programs.

You can find more information on the Internet, see http://support.automation.siemens.com/WW/view/en/51678777

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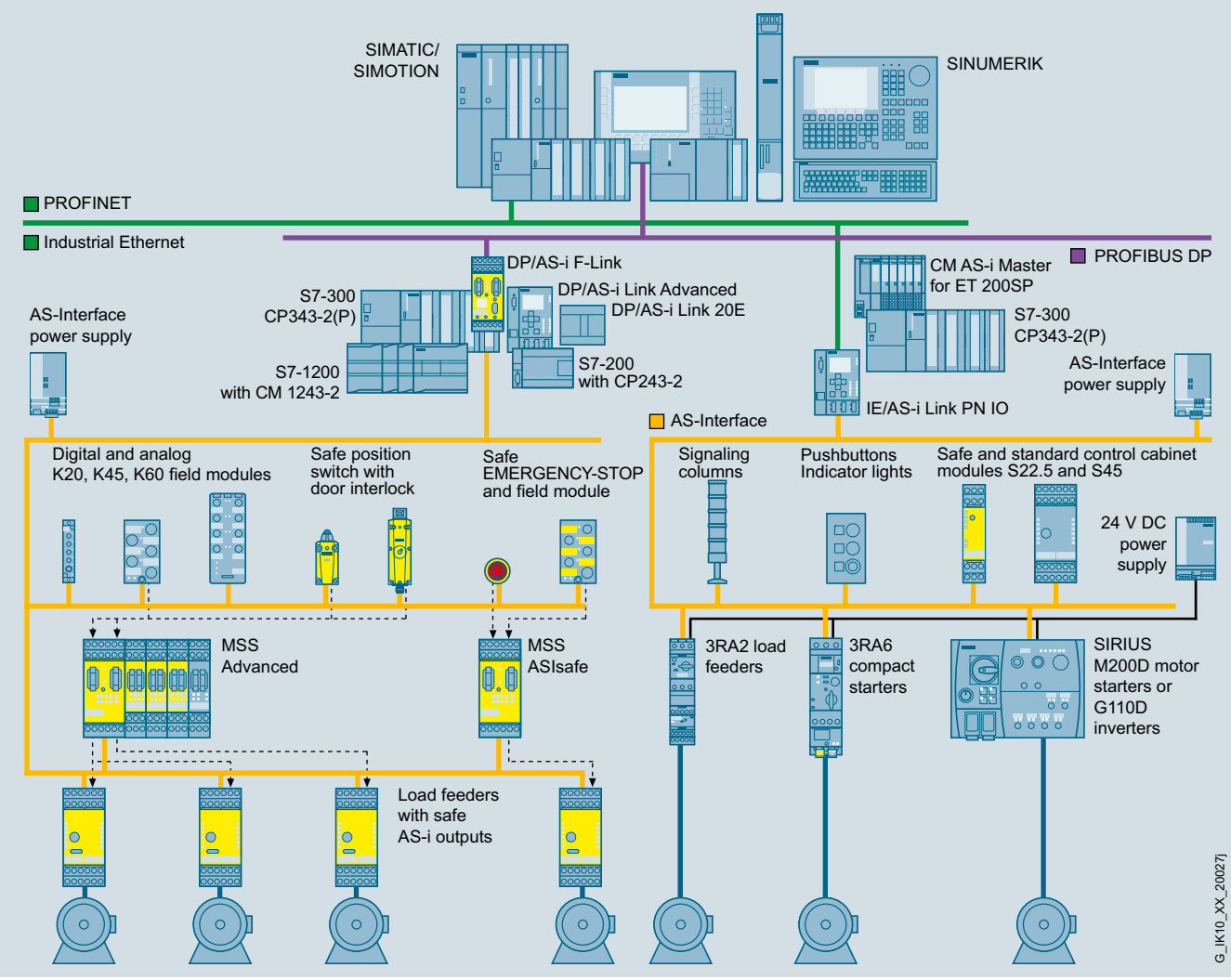
Overview

To implement communication, a system installation has the following main components:

- Master interface modules for central control units such as SIMATIC S7, ET 200/ET 200SP distributed peripherals, or routers from PROFIBUS/PROFINET to AS-Interface
- Power supply units, if required in combination with a data decoupling module for the power supply to the slaves
- AS-Interface shaped cables
- Network components such as repeaters and extension plugs (cannot be used for AS-i Power24V)
- Modules for connection of standard sensors/actuators
- Actuators and sensors with integrated AS-i slave
- Safety modules for transmitting safety-related data through AS-Interface
- Addressing units for setting the slave addresses during commissioning



Example of a configuration with the system components

Features

Standard	EN 50295 / IEC 62026-2
Topology	Line, star or tree structure (same as electrical wiring)
Transmission medium	Unshielded two-wire cable (2 x 1.5 mm^2) for data and auxiliary power
Connection methods	Contacting of the AS-Interface cable by insulation piercing method
Maximum cable length	• 100 m without repeater • 200 m with extension plug • 300 m with two repeaters in series connection • 600 m with extension plugs and two repeaters connected in parallel Larger cable lengths are also possible when additional repeaters are connected in parallel

Maximum cycle time	• 5 ms in full expansion with standard addresses • 10 ms in full expansion with A/B addresses, profile-specific for Spec 3.0 slaves
Number of stations per AS-Interface line	• 31 slaves acc. to AS-Interface Spec. V2.0 • 62 slaves (A/B technology) acc. to AS-Interface Spec. V2.1 and V3.0 • Integrated analog value transmission
Number of binary sensors and actuators	• Max. 124 DI/124 DO according to Spec. V2.0 • Max. 248 DI/186 DO according to Spec. V2.1 • Max. 496 DI/496 DO according to Spec. V3.0
Access control	• Cyclic polling master/slave procedure • Cyclic data acceptance from host (PLC, PC)
Error safeguard	Identification and repetition of faulty message frames

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AS-Interface specification Specification 2.0, 2.1 and 3.0

Overview

Scope of the AS-Interface specification

AS-Interface specification	Maximum number of slaves			Number of digital inputs	Number of digital outputs
	Digital	Analog	ASIsafe	DI	DO
Version 2.0	31	31	31	31 × 4 = 124	31 × 4 = 124
Version 2.1	62	31	31	62 × 4 = 248	62 × 3 = 186
Version 3.0	62	62	31	62 × 8 = 496	62 × 8 = 496

Basic data of AS-Interface Specification 2.0

- AS-Interface Specification 2.0 describes a fieldbus system with an AS-i master and up to 31 AS-i slaves.
- Each AS-i slave has up to 4 digital inputs and 4 digital outputs.
- With full expansion, the complete transmission of all input/output data requires max. 5 ms cycle time.

Expansions of AS-Interface Specification 2.1

AS-Interface Specification 2.1 enables the number of network stations to be doubled from 31 to 62 as follows:

- The standard slaves continue to occupy one AS-i address (1...31).
- Slaves with extended addressing divide an address into an A address (1A...31A) and a B address (1B...31B). Up to 62 A/B slaves can be connected accordingly to one AS-Interface network.
- Mixed operation of standard slaves and A/B slaves is possible without difficulty. The AS-i master identifies automatically which type of slave is connected. No special adjustments are required of the user.

Another function of the AS-Interface Specification V2.1 is the integrated analog value transmission function. Access to both analog values and digital values is possible without the need for any special function blocks.

Expansions of AS-Interface Specification 3.0

- AS-Interface Specification 3.0 enables the connection of nearly 1000 digital inputs/outputs (profile S-7.A.A: 8DI/8DO as A/B slave).
- New profiles have also enabled the option of expanded addressing for analog slaves.
- Acceleration of analog value transmission through "Fast Analog Profile".
- Variable use of analog modules: Optional parameterization of resolution (12/14 bit) and 1- and 2-channel capability.
- Asynchronous serial protocol 100 baud or 50 baud, bidirectional.

AS-Interface master for A/B slaves

To be able to operate A/B slaves on an AS-Interface network you must use master modules that meet the minimum requirements of Specification 2.1.

AS-Interface specification	Available masters
Version 2.1	CP 243-2 (S7-200)
Version 3.0	CP 343-2, 343-2P (S7-300/ET 200M), DP/AS-i Link Advanced, DP/AS-i F-Link, DP/AS-Interface Link 20E, IE/AS-i Link PN IO, CM 1243-2 (S7-1200), CM AS-i Master ST for ET 200SP NEW

The AS-Interface specification relevant for the respective slave is noted in the "Selection and ordering data".

For the exact slave profile see AS-Interface system manual.

Communication cycle

AS-Interface specification	Maximum cycle time (digital signals)
Version 2.0	5 ms
Version 2.1	5 ms with 31 slaves 10 ms with 62 slaves
Version 3.0	5 ms with 31 slaves 10 ms with 62 slaves, supplementary, up to 20 ms with A/B slaves using 4DI/4DO, up to 40 ms with A/B slaves using 8DI/8DO

Each address is queried in max. 5 ms cycle time. If two A/B slaves are operated on one basic address (e.g. 12A and 12B), a maximum 10 ms will be required for updating the data of both slaves.

All slave types can be mixed and used on a single AS-Interface network.
More information, e.g. whether an AS-Interface slave is a standard slave or an A/B slave, can be seen in the section "Selection and ordering data" or the "AS-Interface system manual".

More information

AS-Interface system manual

More information is available in the AS-Interface system manual.

The AS-Interface system manual can be downloaded free of charge, see
http://support.automation.siemens.com/WW/view/en/26250840

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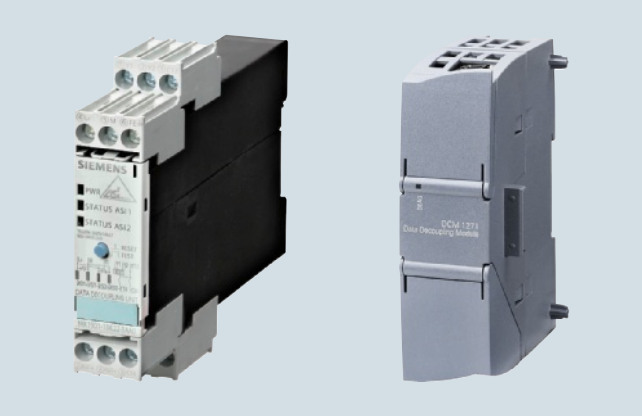
Overview



AS-Interface data decoupling modules for AS-i Power24V,
left: S22.5 data decoupling module,
right: DCM 1271 data decoupling module for SIMATIC S7-1200

Parallel wiring frequently dominates, above all, in applications with very few I/Os. Although AS-Interface is similarly well suited for small applications, its use is often prevented by the cost of the 30 V AS-Interface power supply unit which is required in addition. Through the expansion of AS-Interface with AS-i Power24V and the resulting possibility of using existing standard 24 V DC power supply units in AS-i networks, AS-Interface is now also attractive for applications with a very tight budget.

Data and power in standard AS-Interface networks up to now

One of the great advantages of AS-Interface is the ability to convey not only data, but also the power needed for the connected slaves and sensors over the same unshielded two-conductor cable. This is owed to the service-proven AS-Interface power supply units which provide integrated data decoupling as well as overload and short-circuit protection and integrated ground-fault monitoring.

The new technology

Through the expansion of AS-Interface with AS-i Power24V it is now also possible to use 24 V standard power supply units in AS-i networks. The communication technology of AS-Interfaces works at the same high level of quality with an operating voltage of both 30 V DC and 24 V DC.

	Key data of AS-i Power24V
Number of slaves	Up to 62 standard slaves and up to 31 safe slaves
Topology	Any
Range	Up to 50 m
Components	• 24 V power supply unit with little residual ripple and limitation to max. 40 V • AS-i Power24V-capable data decoupling with integrated ground-fault detection • AS-i Power24V-capable masters, slaves and components

Requirements for operation of an AS-i Power24V network

- When 24 V power supply units are used, the maximum network range of 50 m must be observed in order to reach slaves and sensors with a sufficient level of voltage (at least 18 V).
- The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mV_{pp}, and in the event of a fault must limit the output voltage to a maximum of 40 V. We recommend SITOP power supply units, see Chapter 15.
- When used in conjunction with standard 24 V power supply units, each AS-Interface network requires Power24V-capable data decoupling with adapted ground-fault detection, see page 2/68.
- For reliable operation of an AS-i network with 24 V voltage, it is important that the masters, slaves and other components are approved for AS-i Power24V. AS-i Power24V-capable AS-i components can also be used without restriction in standard 30 V AS-i networks.
- The use of repeaters or extension plugs in AS-i Power24V networks is not permitted.

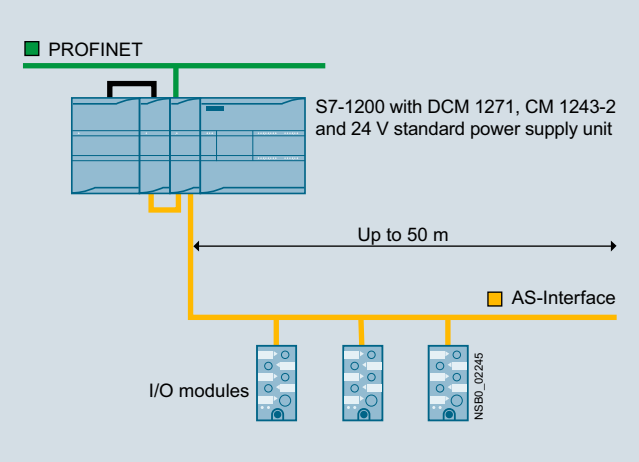
Benefits

AS-i Power24V networks incur no additional costs for an AS-Interface power supply unit because an already existing 24 V power supply unit can be used. This brings the user several benefits:

- The level of standardization of very small applications can be increased further.
- The additional advantages of a modern communication system in terms of commissioning, maintenance and diagnostics can be fully exploited.

Application

Construction of an AS-i Power24V network



Construction of an AS-i Power24V network with an AS-Interface DCM 1271 data decoupling module and S7-1200 (simple network)

More information

Complete overview of AS-i Power24V-capable units currently available from Siemens see
http://support.automation.siemens.com/WW/view/en/42806066

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Overview

Safety is included

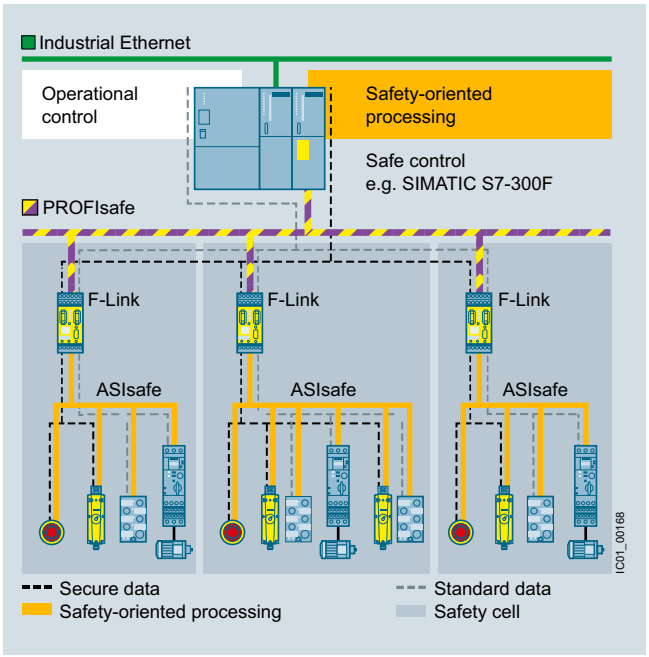
ASIsafe enables the integration of safety-related components, such as EMERGENCY-STOP pushbuttons, protective door switches or safety light arrays, in an AS-Interface network. These are fully compatible with the familiar AS-Interface components (masters, slaves, power supplies, repeaters, etc.) in accordance with IEC 62026-2 and are operated in conjunction with them on the yellow AS-Interface cable.

Tested safety

The system was tested and approved by TÜV (Germany), NRTL (USA) and INRS (France). The transmission method for safety-related signals is configured for implementing applications up to PL e according to EN ISO 13849-1 and up to SIL 3 according to IEC 62061/IEC 61508.

ASIsafe solutions

ASIsafe Solution PROFIsafe:
DP/AS-i F-Link

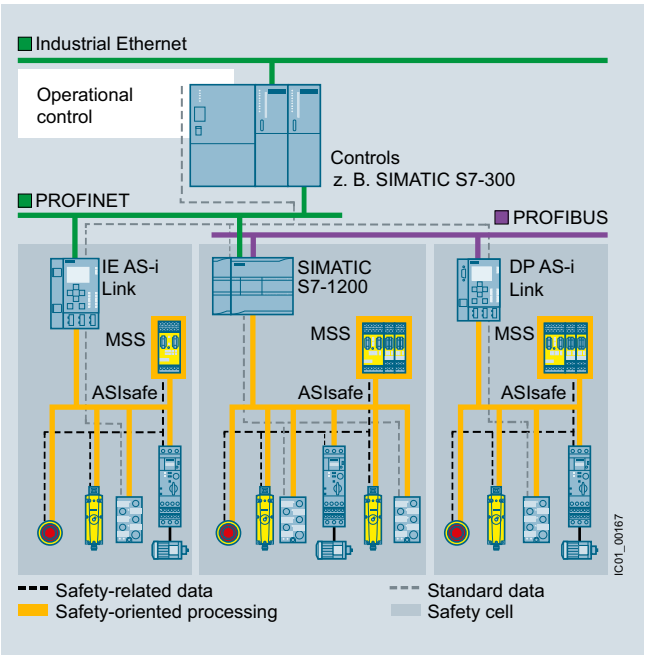


The DP/AS-i F-Link allows AS-Interface to be used with fail-safe SIMATIC or SINUMERIK controllers. As a link in bus-based safety technology it ensures that ASIsafe telegrams are converted to the PROFIsafe protocol.

The allocation of tasks is as follows:

- Identify: the safe sensors on the AS-Interface bus detect safety-related signals.
- Evaluate: the fail-safe SIMATIC or SINUMERIK control present performs the evaluation.
- Realize: the F-DO/F-RO modules (fail-safe digital/relay output modules) in the central controller or in the ET 200 fail-safe distributed peripherals react at PROFIsafe level.

ASIsafe Solution local:
3RK3 Modular Safety System



The local ASIsafe solution requires the Modular Safety System (MSS) and safe slaves. Neither fail-safe controllers nor special masters are required.

The allocation of tasks is as follows:

- Identify: the safe sensors on the AS-Interface bus detect safety-related signals.
- Evaluate: The Modular Safety System monitors safe sensors (e.g. EMERGENCY-STOP) and performs the evaluation.
- Realize: Shutdown is performed locally via ASIsafe in conjunction with safe AS-i outputs or via safe outputs integrated into the MSS.

Higher-level control

In ASIsafe solutions, higher-level operational control of the nodes on the AS-Interface bus is performed by the central SIMATIC or SINUMERIK control.

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Safe communication

The safe nodes (ASIsafe modules, EMERGENCY-STOP pushbuttons, position switches with built-in ASIsafe etc.) send their information to the master in response to a master call in the same way as the standard nodes. The DP/AS-i F-Link or the Modular Safety System monitors transmissions from the safe nodes. In the event of a fault, they switch to safe condition or send a shutdown signal to one or more distributed safe AS-i outputs, which in turn switch to safe condition.

Configuring safety functions

In order to implement safe functions, the information from the safe and standard nodes must be combined logically and further parameters set. The configuration of the safety functions depends on which safety solution is being used:

- PROFIsafe ASIsafe solution:
  In conjunction with the DP/AS-i F-Link as a safe master, all safety functions and combinations are configured via STEP 7 and processed in the controller.
- ASIsafe Solution local:
  In conjunction with the Modular Safety System all safety functions and combinations are configured using the MSS ES software and processed in the MSS.

Benefits

- No fail-safe PLC or master is required with the Modular Safety System for the ASIsafe Solution local
- Alternatively integration in SIMATIC / SINUMERIK safety architectures with DP/AS-i F-Link (ASIsafe Solution PROFIsafe)
- Simple system structure thanks to standardized AS-Interface technique
- Safety-related and standard data on the same bus
- Existing systems can be expanded quickly and easily
- Optimum integration in TIA (Safety Diagnostics) and Safety Integrated
- Inclusion of the safety signals in the plant diagnostics, also on existing HMI panels
- Approved to PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508
- ASIsafe is certified by TÜV (Germany), NRTL (USA) and INRS (France)

Application

Integrated safety technology in the AS-Interface system is used wherever EMERGENCY-STOP pushbuttons, protective door interlocks, stop Category 0 and 1, two-hand operator controls and light arrays are installed.

More information

For more information and circuit examples for safety systems with the Modular Safety system and DP/AS-i F-Link, see http://support.automation.siemens.com/WW/view/en/20208582

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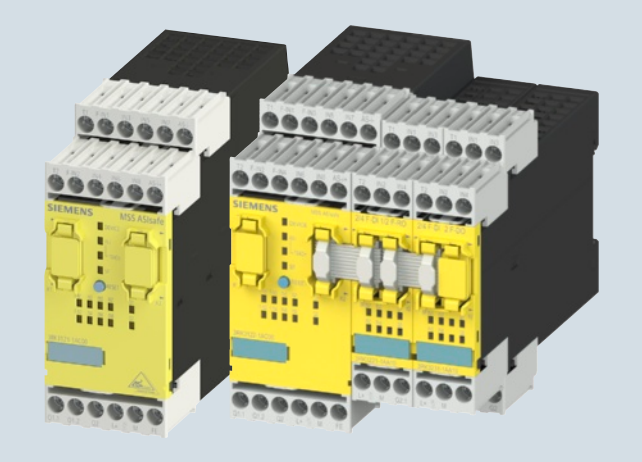
SIRIUS 3RK3 Modular Safety System

Overview



MSS ASIsafe basic (left) and
MSS ASIsafe extended with two expansion modules (right)

The Modular Safety System (MSS) is the centerpiece of ASIsafe Solution local. It allows safety-related response to signals from the ASIsafe nodes connected in the AS-i network, such as safe input modules, EMERGENCY-STOP pushbuttons or position switches.

The MSS thus supports safety-related applications up to Category 4 according to ISO 13849-1 or SIL3 according to IEC 62061.

Safe disconnection takes place via the local safe outputs of the MSS or via the distributed safe AS-Interface outputs in the AS-Interface network.

The safety functions are configured within the MSS using the MSS ES software. The configuration can be transmitted directly in the MSS via the system interface with the aid of a PC cable or memory module. If the DP interface module is used, transmission via PROFIBUS DP is also possible.

The MSS supports a large number of different safety functions. These can be tailored to individual needs in the form of ready-made function blocks.

The safety functions supported include the following:

- EMERGENCY-STOP
- Safety shutdown mat
- Protective door monitoring
- Protective door tumbler mechanism
- Approval switches
- Two-hand operator controls
- ESPE monitoring
- Muting
- Mode selector switches

Application

All the MSS that can be used for the AS-Interface bus support the same safety functions. Differences exist in the number of inputs/outputs and expansion modules that can be connected, and hence in the number of independent enabling circuits.

Several MSS can be used on the same AS-Interface bus.

AS-Interface is available in the following versions:

MSS ASIsafe basic

- A total of up to 10 independent (2-channel) enabling circuits
  - 2 of these enabling circuits via safe outputs integrated into the central unit
  - And another 8 enabling circuits via ASIsafe, e.g. with local, safe AS-i outputs

MSS ASIsafe extended

- A total of up to 20 independent (2-channel) enabling circuits
  - 2 of these enabling circuits via safe outputs integrated into the central unit
  - In addition, up to 8 enabling circuits via a maximum of 2 expansion modules
  - And another 10 enabling circuits via ASIsafe, e.g. with local, safe AS-i outputs

MSS Advanced

- A total of up to 50 independent (2-channel) enabling circuits
  - 2 of these enabling circuits via safe outputs integrated into the central unit
  - In addition, up to 36 enabling circuits via a maximum of 9 expansion modules
  - And another 12 enabling circuits via ASIsafe, e.g. with local, safe AS-i outputs

Expandability

All versions above can be expanded by adding a DP interface module and a diagnostics module. In addition, various safety and non-safety expansion modules can be selected for the MSS, and these can be used in any combination, see Chapter 11 "Safety Technology".

Comparison of the three MSS versions

MSS 3RK3	ASIsafe basic	ASIsafe extended	Advanced
Number of independent (2-channel) enabling circuits	2 ... 10	2 ... 20	2 ... 50
Inputs	1/2 F-DI and 6 DI	2/4 F-DI and 4 DI (expandable)	4/8 F-DI (expandable)
Outputs	1 F-DO and 1 F-RO	1 F-DO and 1 F-RO (expandable)	
Number of expansion modules	--	Up to 2	Up to 9
Connection to ASIsafe			
Number of safe AS-i outputs	Up to 8	Up to 10	Up to 12
Number of safe AS-i inputs	Up to 31		

-- Not available

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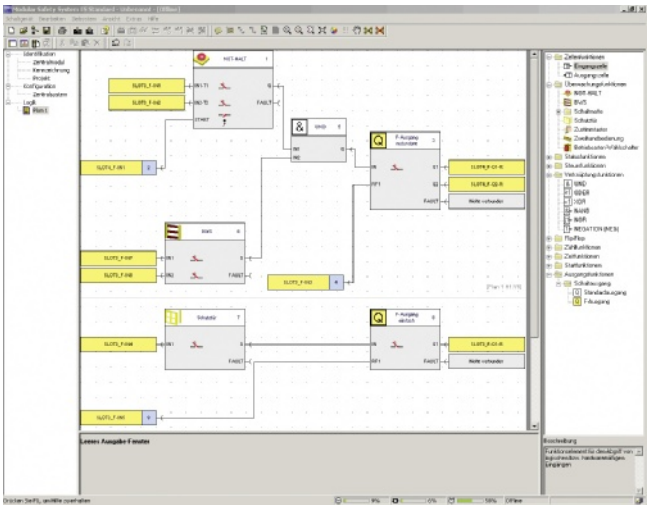
Software for startup, testing and diagnostics: Modular Safety System ES (MSS ES)

MSS ES is the engineering software for the configuration, startup and diagnostics of the 3RK3 Modular Safety System.

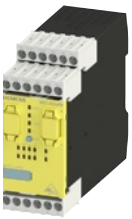
All function elements can be positioned using drag & drop. All functions – whether safety or logic functions – are available as blocks and can also be easily combined with one another.

MSS ES makes it possible to test the safety application by forcing. Outputs can be individually set in order to test in advance the reaction of the downstream safety function. In addition, the parameterization can be downloaded to the MSS via PROFIBUS. The integrated macro function allows you to compile a library of your own function elements for reuse in other projects. In addition, the parameterization software is suitable for use as a reliable diagnostics tool: the status of each element as well as the configuration as a whole can be viewed online.



MSS ES user interface showing the ISO-Plan display

Selection and ordering data

PU (UNIT, SET, M) = 1 PS*= 1 UNIT PG = 42B	Version	DT	Screw terminals	DT	Spring-type terminals
			Article No. / Price per PU		Article No. / Price per PU
Central units					
3RK3121-1AC00 3RK3121-2AC00	**3RK3 ASIsafe basic** Central units for connecting to AS-Interface with safety-related inputs and outputs • 1/2 safe inputs • 6 standard inputs • 1 two-channel relay output • 1 two-channel electronic output • Memory module 3RK3931-0AA00 is included in the scope of supply • No expansion modules can be connected	A	**3RK3121-1AC00**	A	**3RK3121-2AC00**
 3RK3122-1AC00 3RK3122-2AC00	**3RK3 ASIsafe extended** Central units for connecting to AS-Interface with safety-related inputs and outputs • 2/4 safe inputs • 4 standard inputs • 1 two-channel relay output • 1 two-channel electronic output • Memory module 3RK3931-0AA00 is included in the scope of supply • Max. 2 expansion modules can be connected	A	**3RK3122-1AC00**	A	**3RK3122-2AC00**
3RK3131-1AC10 3RK3131-2AC10	**3RK3 Advanced** Central units for connecting to AS-Interface with safety-related inputs and outputs • 4/8 safe inputs • 1 two-channel relay output • 1 two-channel electronic output • Memory module 3RK3931-0AA00 is included in the scope of supply • Max. 9 expansion modules can be connected	A	**3RK3131-1AC10**	A	**3RK3131-2AC10**

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RK3 Modular Safety System

PU (UNIT, SET, M) = 1
PS*= 1 UNIT
PG = 42B

		Version	DT	Screw terminals	DT	Spring-type terminals
				Article No. / Price per PU		Article No. / Price per PU
Expansion modules						
3RK3211-1AA10	3RK3211-2AA10	**4/8 F-DI** Safety-related input modules • 8 inputs	A	**3RK3211-1AA10**	A	**3RK3211-2AA10**
3RK3221-1AA10	3RK3221-2AA10	**2/4 F-DI 1/2 F-RO** Safety-related input/output modules • 4 inputs • 2 single-channel relay outputs	A	**3RK3221-1AA10**	A	**3RK3221-2AA10**
3RK3231-1AA10	3RK3231-2AA10	**2/4 F-DI 2F-DO** Safety-related input/output modules • 4 inputs • 2 two-channel electronic outputs	A	**3RK3231-1AA10**	A	**3RK3231-2AA10**
3RK3251-1AA10	3RK3251-2AA10	**4/8 F-RO** Safety-related output modules • 8 single-channel relay outputs	A	**3RK3251-1AA10**	A	**3RK3251-2AA10**
3RK3242-1AA10	3RK3242-2AA10	**4 F-DO** Safety-related output modules • 4 two-channel electronic outputs	A	**3RK3242-1AA10**	A	**3RK3242-2AA10**
3RK3321-1AA10	3RK3321-2AA10	**8 DI** Standard input module • 8 inputs	A	**3RK3321-1AA10**	A	**3RK3321-2AA10**
3RK3311-1AA10	3RK3311-2AA10	**8 DO** Standard output module • 8 electronic outputs	A	**3RK3311-1AA10**	A	**3RK3311-2AA10**

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT, SET, M) = 1 PS*= 1 UNIT PG = 42B	Version	DT	Screw terminals	DT	Spring-type terminals
			Article No. / Price per PU		Article No. / Price per PU
Interface modules					
3RK3511-1BA10 3RK3511-2BA10	**DP interface** PROFIBUS DP interface, 12 Mbit/s, RS 485, cyclic and acyclic data exchange	A	**3RK3511-1BA10**	A	**3RK3511-2BA10**
Operating and monitoring modules					
3RK3611-3AA00	**Diagnostics module** For direct display of errors, e.g. of crossover	A	**3RK3611-3AA00**		--

More information

For more information and technical specifications on the Modular Safety System (MSS), see Chapter 11 "Safety Technology"

For more information on the Modular Safety System ES (MSS ES) software, see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

Manuals for the Modular Safety System (MSS) see http://support.automation.siemens.com/WW/view/en/26493228

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AS-Interface safety monitors

Selection and ordering data

3RK1105-1BE04-0CA0

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic safety monitors Version 3 With screw terminals, removable terminals, width 45 mm		**Screw terminals**				
• One enabling circuit (monitor type 1)	A	**3RK1105-1AE04-0CA0**		1	1 unit	42C
• Two enabling circuits (monitor type 2)	A	**3RK1105-1BE04-0CA0**		1	1 unit	42C
Expanded safety monitors Version 3 With screw terminals, removable terminals, width 45 mm						
• One enabling circuit (monitor type 3)	A	**3RK1105-1AE04-2CA0**		1	1 unit	42C
• Two enabling circuits (monitor type 4)	A	**3RK1105-1BE04-2CA0**		1	1 unit	42C
Expanded safety monitors with integrated safe slave Version 3 With screw terminals, removable terminals, width 45 mm						
• Two enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6)	A	**3RK1105-1BE04-4CA0**		1	1 unit	42C
Basic safety monitors Version 3 With spring-type terminals, removable terminals, width 45 mm		**Spring-type terminals**				
• One enabling circuit (monitor type 1)	A	**3RK1105-1AG04-0CA0**		1	1 unit	42C
• Two enabling circuits (monitor type 2)	A	**3RK1105-1BG04-0CA0**		1	1 unit	42C
Expanded safety monitors Version 3 With spring-type terminals, removable terminals, width 45 mm						
• One enabling circuit (monitor type 3)	A	**3RK1105-1AG04-2CA0**		1	1 unit	42C
• Two enabling circuits (monitor type 4)	A	**3RK1105-1BG04-2CA0**		1	1 unit	42C
Expanded safety monitors with integrated safe slave Version 3 With spring-type terminals, removable terminals, width 45 mm						
• Two enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6)	A	**3RK1105-1BG04-4CA0**		1	1 unit	42C
Accessories						
ASIsafe CD Included in the scope of supply: • ASIMON V3 configuration software on CD ROM, for PC with the 32-bit operating systems Windows XP, Windows Vista Business/Ultimate, Windows 7	►	**3RK1802-2FB06-0GA1**		1	1 unit	42C
Cable sets Included in the scope of supply: • PC configuration cable for communication between PC (serial interface) and safety monitor, length approx. 1.50 m • Transfer cable between two safety monitors, length approx. 0.25 m	►	**3RK1901-5AA00**		1	1 unit	42C
Sealable covers For securing against unauthorized configuration of the safety monitor	B	**3RP1902**		1	5 units	41H
Push-in lugs For screw fixing	B	**3RP1903**		1	10 units	41H

3RK1901-5AA00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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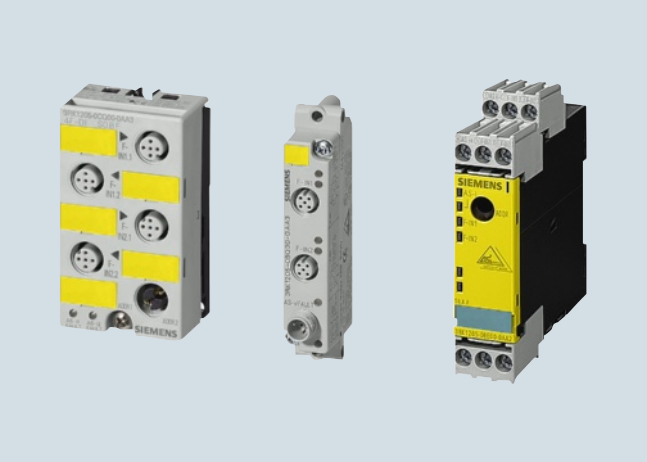
Overview



AS-Interface safety modules: K45F (left), K20F (center) and S22.5F (right)

S45F SlimLine module, safe AS-i output

Safety modules for AS-Interface (ASIsafe modules) are available for field use in degree of protection IP67 (K20F and K45F compact modules) and for the control cabinet (S22.5F SlimLine modules) in degree of protection IP20.

A very compact module with an optimum price/performance ratio is thus available for every application.

All modules for the connection of (mechanical) switches and safety sensors with contacts feature crossover monitoring of the connected sensor line. On versions for the connection of solid-state switches and safety sensors (e.g. light arrays) the crossover monitoring must be performed by the sensor.

The following modules are available for selection:

K20F compact safety modules for use in the field

Being only 20 mm wide, the K20F module is particularly well suited for applications where modules need to be arranged in the most confined space. The K20F modules are connected to the AS-Interface with a round cable with M12 cable box instead of with the AS-Interface flat cable. This enables extremely compact installation. The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

K45F compact safety modules for use in the field

The platform of the K45F modules covers the following variations:

- Connection of ("mechanical") switches/safety sensors with contacts:
  - K45F 2F-DI: Two safety-related inputs in operation up to Category 2 according to EN ISO 13849-1. If Category 4 is required, a two-channel input is available on the module.
  - K45F 2F-DI/2DO: There are also two standard outputs in addition to the safe inputs. Supplied from the yellow AS-i cable
  - K45F 2F-DI/2DO U_{aux}: same as K45F 2F-DI/2DO, but supplied from the black 24 V DC cable
  - K45F 4F-DI: Four safety-related inputs in operation up to Category 2, two for Category 4. Extremely compact double slave (uses two full AS-i addresses).
- Connection of solid-state switches / safety sensors (non-contact protective devices, ESPE):
  - K45F LS (light sensor): Safe input module for the connection of electronic safety sensors with testing semiconductor outputs (OSSD)
    In particular non-contact protective devices such as active, optoelectronic light arrays and light curtains for Type 2 and Type 4 according to IEC 61496.
    Transmitters as well as receivers are supplied with power from the yellow AS-i cable. Matching sensor cables and optionally a separate transmitter supply module are available as accessories.

S22.5F SlimLine safety modules for use in control cabinets and local control cabinets

The S22.5F SlimLine safety module has two safety inputs. The safe connection of signals to ASIsafe networks in the cabinet is also possible therefore. For operation up to Category 2, both inputs can be separately assigned; if Category 4 is required, a two-channel input is available on the module.

In addition there are two S22.5F module versions which have two standard outputs in addition to the two safety inputs; power is supplied either from only the yellow AS-Interface cable or as auxiliary voltage from the black 24 V DC cable.

S45F SlimLine safety modules with safe outputs for the safe distributed disconnection of actuators

With the safe SlimLine-Module S45F, the shutdown signal, for example from the Modular Safety System, can be used through the ASIsafe for distributed safety-related disconnection.

To this end, the module has a dual-channel relay output with which an enabling circuit up to safety category 4 and Performance Level e according to EN ISO 13849-1 and SIL 3 according to EN 62061 / IEC 61508 can be deactivated safely.

As an additional possibility the module offers normal switching of the output using an AS-i standard output bit.

The module has three digital inputs and two digital outputs for the additional connection of sensors and actuators. These can be used, inter alia, for the necessary monitoring of downstream contactors of the feedback circuit.

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AS-Interface safety modules

Selection and ordering data

3RK1205-0BQ30-0AA3

3RK1205-0BQ00-0AA3

3RK1205-0BE00-0AA2

3RK1405-1SE15-0AA2

Version			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
K20F compact safety modules								
I/O type		U_{aux} 24 V						
2 F-DI		--	A	**3RK1205-0BQ30-0AA3**		1	1 unit	42C
K45F compact safety modules Modules supplied without mounting plate								
I/O type		U_{aux} 24 V						
2 F-DI		--	▶	**3RK1205-0BQ00-0AA3**		1	1 unit	42C
4 F-DI[1]		--	A	**3RK1205-0CQ00-0AA3**		1	1 unit	42C
2 F-DI/2 DO		--	B	**3RK1405-0BQ20-0AA3**		1	1 unit	42C
2 F-DI/2 DO		✓	B	**3RK1405-1BQ20-0AA3**		1	1 unit	42C
2 F-DI LS type 2[2]		--	B	**3RK1205-0BQ21-0AA3**		1	1 unit	42C
2 F-DI LS type 4[3]		--	B	**3RK1205-0BQ24-0AA3**		1	1 unit	42C
S22.5F SlimLine safety modules								
Connection	I/O type	U_{aux} 24 V						
Screw	2 F-DI	--	A	**3RK1205-0BE00-0AA2**		1	1 unit	42C
	2 F-DI/2 DO	--	A	**3RK1405-0BE00-0AA2**		1	1 unit	42C
	2 F-DI/2 DO	✓	A	**3RK1405-1BE00-0AA2**		1	1 unit	42C
Spring-type	2 F-DI	--	A	**3RK1205-0BG00-0AA2**		1	1 unit	42C
	2 F-DI/2 DO	--	B	**3RK1405-0BG00-0AA2**		1	1 unit	42C
	2 F-DI/2 DO	✓	B	**3RK1405-1BG00-0AA2**		1	1 unit	42C
S45F SlimLine safety modules								
Connection	I/O type	U_{aux} 24 V						
Screw	1F-RO/3DI/2DO	✓	X	**3RK1405-1SE15-0AA2**		1	1 unit	42C
Spring-type	1F-RO/3DI/2DO	✓	X	**3RK1405-1SG15-0AA2**		1	1 unit	42C

✓ Available or possible

-- Not available or not possible

1) Module occupies two AS-Interface addresses

2) Connection of previous Siemens light curtain FS 400 3RG7843 (type 2) through socket 1/3

3) Connection of previous Siemens light curtain FS 400 3RG7846 (type 4) through socket 1/3, other makes through socket 2/3

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1901-2EA00	**K45 mounting plates**						
	For mounting K45F						
	• For wall mounting	►	**3RK1901-2EA00**		1	1 unit	42C
	• For standard rail mounting	►	**3RK1901-2DA00**		1	1 unit	42C
	24 V supply modules for K45F LS (light sensor) • Optional, for transmitter power supply for large protective field widths • Max. current carrying capacity 200mA • Modules supplied without mounting plate	B	**3RK1901-1NP00**		1	1 unit	42C
3RK1901-1AA00	**Input bridges for K45F**						
	• Black version	A	**3RK1901-1AA00**		1	1 unit	42C
	• Red version	D	**3RK1901-1AA01**		1	1 unit	42C
3RK1901-1KA00	**AS-Interface M12 sealing caps** For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
3RK1901-1KA01	**AS-Interface M12 sealing caps, tamper-proof** For free M12 sockets	A	**3RK1901-1KA01**		100	10 units	42C

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Illustrations are approximate

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Overview

CM 1243-2 communication module for S7-1200

The CM 1243-2 communication module is the AS-Interface master for the SIMATIC S7-1200 and has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Indication of the operating state on the front of the device displayed via LED
- Display of operating mode, AS-Interface voltage faults, configuration faults and peripheral faults via LED behind the front panel
- Compact enclosure in the design of the SIMATIC S7-1200
- Suitable for AS-i power 24V: In combination with the optional DCM 1271 data decoupling module, a standard 24 V power supply unit can be used.
- Configuration and diagnostics via the TIA portal

Design

The CM 1243-2 communication module is positioned to the left of the S7-1200 CPU and linked to the S7-1200 via lateral contacts.

It has:

- Terminals for two AS-i cables (internally jumpered) via two screw terminals each respectively
- One terminal for connection to the functional ground
- LEDs for indication of the operating state and fault statuses of the connected slaves

The screw terminals (included in scope of supply) can be removed to facilitate installation.

Function

The CM 1243-2 supports all specified functions of the AS-Interface Specification V3.0.

The values of the digital AS-i slaves can be activated via the process image of the S7-1200. During configuration of the slaves in the TIA Portal, the values of the analog AS-i slaves can also be accessed directly in the process image.

It is also possible to exchange all data of the AS-i master and the connected AS-i slaves with the S7-1200 via the data record interface.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM 1243-2 in the TIA Portal.

The optional DCM 1271 data decoupling module has an integrated detection unit for detecting ground faults on the AS-Interface cable. The integrated overload protection also disconnects the AS-Interface cable if the drive power required exceeds 4 A.

Notes on safety

The use of this product requires suitable protective measures (e.g. network segmentation for IT security among others) in order to ensure safe plant operation,
see www.siemens.com/industrialsecurity.

Configuration

To configure CM 1243-2, you require STEP 7 V11+ SP2 or STEP 7 V12 or higher.

For STEP 7 V11+ SP2 or higher, you require the additional Hardware Support Package for CM 1243-2, which is available via the Service & Support portal,
see under
http://support.automation.siemens.com/WW/view/en/54164095

The software enables user-friendly configuration and diagnostics of the AS-Interface master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration at the "touch of a button" via the control panel integrated in the TIA Portal/STEP 7.

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Benefits

- More flexibility and versatility in the use of SIMATIC S7-1200 as the result of a significant increase in the number of digital and analog inputs/outputs available
- Very easy configuration and diagnostics of the AS-Interface via the TIA Portal (STEP 7 V11+ SP2 or higher)
- No need for the AS-i power supply unit with AS-i Power24V: The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. For decoupling, the AS-i DCM 1271 data decoupling module is required, see page 2/76
- LEDs for indication of fault statuses for fast diagnostics
- Monitoring of AS-Interface voltage facilitates diagnostics

Application

The CM 1243-2 is the AS-Interface master connection for the 12xx CPUs of the SIMATIC S7-1200. Connection to the AS-Interface greatly increases the number of inputs and outputs available for S7-1200 (max. 496 DI/496 DO on the AS-Interface per CM).

The integrated analog value processing also makes the analog values available at the AS-Interface for the S7-1200 (per CM up to 31 standard analog slaves, each with up to 4 channels, or up to 62 A/B analog slaves, each with up to 2 channels).

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK7243-2AA30-0XB0	**CM 1243-2 communication modules** • AS-Interface masters for SIMATIC S7-1200 • Corresponds to AS-Interface Specification V3.0; • Dimensions (W × H × D / mm): 30 × 100 × 75	A	**3RK7243-2AA30-0XB0**		1	1 unit	42C

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	5-pole screw terminals for AS-i master CM 1243-2 and AS-i DCM 1271 data decoupling module						
	• With screw terminals	►	**3RK1901-3MA00**		1	1 unit	42C

More information

The manuals are available free of charge on the Internet, see http://support.automation.siemens.com/WW/view/en/50414115/133300

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Masters for SIMATIC S7
CP 243-2

Overview

CP 243-2

The CP 243-2 is the AS-Interface master for the SIMATIC S7-200 and has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission (Analog Profiles 7.3 and 7.4)
- Supports all AS-Interface master functions according to the extended AS-Interface specification V2.1
- Display of the operating state and readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (e.g. AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel
- Compact enclosure in the design of the SIMATIC S7-200

Design

The CP 243-2 is connected like an expansion module to the S7-200. It has:

- Two screw terminals for direct connection of the AS-Interface cable
- LEDs in the front panel for indicating the operating state and functional readiness of all connected slaves
- Two pushbuttons for displaying the status information of the slaves, for switching over the operating state and for adopting the existing ACTUAL configuration as the DESIRED configuration

Function

The CP 243-2 supports all specified functions of the extended AS-Interface Specification V2.1.

In the process image of the S7-200, the CP 243-2 occupies one digital input byte (status byte), one digital output byte (control byte), and 8 analog input and 8 analog output words. The CP 243-2 thus occupies two (logic) slots. The operating mode of the CP 243-2 can be set with the status byte and the control byte using the user program. Depending on the operating mode, the CP 243-2 saves either the digital or analog I/O data of the AS-Interface slaves or diagnostic values in the analog address area of the S7-200, or it enables master calls (e.g. re-addressing of the slaves).

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Benefits

- More flexibility and versatility in the use of SIMATIC S7-200 as the result of the distinct increase in the number of digital and analog inputs/outputs available
- Shorter startup times through simple configuration at the press of a button
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators
- Status of the CP
  - Display of all the slaves connected and their readiness for operation
  - Monitoring of the AS-Interface mains voltage

Application

The CP 243-2 is the AS-Interface master connection for the 22x CPUs of the SIMATIC S7-200. By means of connection to AS-Interface, the number of inputs and outputs available for the S7-200 is greatly increased (max. 248 DI / 186 DO on the AS-Interface per CP).

Analog values (per CP a maximum of 31 standard analog slaves with up to 4 channels each) also become available on the AS-Interface for the S7-200 thanks to the integrated analog value processing. On the S7-200, up to two CP 243-2 communications processors can be operated simultaneously.

Selection and ordering data

	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
6GK7243-2AX01-0XA0	**CP 243-2 communications processors** For connection of the SIMATIC S7-200 to AS-Interface; corresponds to AS-Interface Specification V2.1; not approved for AS-i Power24V; dimensions (W x H x D / mm): 71 x 80 x 62 (dimensions without fixing lugs)	►	**6GK7243-2AX01-0XA0**	1	1 unit	42C

More information

The manuals are also available on the Internet at
http://support.automation.siemens.com/WW/view/en/10805937/133300

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

CP 343-2P / CP 343-2

The CP 343-2P is the AS-Interface master for the SIMATIC S7-300 and the ET 200M distributed I/O station, with user-friendly parameterizing options.

The CP 343-2 is the basic version of the module.

The CP 343-2P / CP 343-2 performs the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission (all analog profiles)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (e.g. AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-i Power24V (from product version 2/firmware version 3.1) and for standard AS-i with 30 V voltage.
- With CP 343-2P additionally: Supports the configuration of the AS-Interface-network with STEP 7 V5.2 and higher

Design

The CP 343-2P / CP 343-2 is connected like an I/O module to the S7-300. It has:

- Two terminal connections for direct connection of the AS-Interface cable
- LEDs in the front panel for indicating the operating state and the readiness for operation of all connected and activated slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the DESIRED configuration

Function

The CP 343-2P / CP 343-2 supports all specified functions of the extended AS-Interface Specification V3.0.

The CP 343-2P / CP 343-2 occupies 16 bytes each in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves are saved in this area. The digital I/O data of the B slaves and the analog I/O data can be accessed with the S7 system functions for read/write data record.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

For more information see
http://support.automation.siemens.com/WW/view/en/51678777

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

With CP 343-2P additionally

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7 V5.2 and higher. Specifying the AS-i configuration in HW-Config facilitates the setting of slave parameters and documentation of the plant. Uploading the ACTUAL configuration of an already configured AS-Interface network is also supported. The saved configuration cannot be overwritten at the press of a button and is therefore tamper-proof.

Benefits

- Shorter startup times through simple configuration at the press of a button
- Using it in the ET 200M distributed I/O system allows flexible machine-related structures to be constructed
- Provides diagnostics of the AS-Interface network
- Well suited also for complex applications thanks to connection options for 62 slaves and integral analog value processing
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators:
  - Status of the AS-Interface network
  - Slaves connected and their readiness for operation
  - Monitoring of the AS-Interface mains voltage
- Lower costs for stock keeping and spare parts because the CP can be used for the SIMATIC S7-300 as well as for the ET 200M
- With CP 343-2P additionally: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- No need for the AS-i power supply unit with AS-i Power24V: The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. An AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see page 2/76.
- Operation with AS-Interface power supply (see page 2/76) possible without restrictions.

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Masters for SIMATIC S7
CP 343-2P, CP 343-2

Application

The CP 343-2P / CP 343-2 is the AS-Interface master connection for the SIMATIC S7-300 and the ET 200M.

Through connection to AS-Interface it is possible to access max. 248 DI/248 DO per CP, using 62 A/B slaves with 4DI/4DO each.

With the integrated analog value processing, it is easy to transmit analog signals (per CP up to 62 A/B analog slaves with a maximum of 2 channels each or up to 31 standard analog slaves with a maximum of 4 channels each).

The CP 343-2P is the further development of the CP 343-2 and contains its entire functionality. An existing STEP 7 user program for a CP 343-2 can thus be used without restrictions with a CP 343-2P. It is only in STEP 7 HW-Config that the two modules are configured differently, with the CP 343-2P offering additional options. This is why the CP 343-2P is recommended.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6GK7343-2AH11-0XA0	**CP 343-2P communications processors** For connection of SIMATIC S7-300 and ET 200M to AS-Interface; configuration of the AS-i network using the SET key or STEP 7 (V5.2 and higher); without front connector; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 40 x 125 x 120	►	**6GK7343-2AH11-0XA0**		1	1 unit	42C
6GK7343-2AH01-0XA0	**CP 343-2 communications processors** Basic version for connection of SIMATIC S7-300 and ET 200M to AS-Interface Configuration of the AS-i network using the SET key; without front connector; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 40 x 125 x 120	►	**6GK7343-2AH01-0XA0**		1	1 unit	42C

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Front connector, 20-pole						
• With screw terminals	A	**6ES7392-1AJ00-0AA0**		1	1 unit	230
• With spring-type terminals	A	**6ES7392-1BJ00-0AA0**		1	1 unit	230
• With FastConnect connection	A	**6ES7392-1CJ00-0AA0**		1	1 unit	2AP

More information

The manuals are available on the Internet at
http://support.automation.siemens.com/WW/view/en/14310380/133300

Information about AS-i block library for PCS 7 for easy connection of AS-Interface to PCS 7 see

- Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"
- Industry Mall: "Automation" → "Industrial controls" → "Parameterization, Configuration and Visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

CM AS-i Master ST for SIMATIC ET 200SP

The CM AS-i Master ST communication module is designed for use in the SIMATIC ET 200SP distributed I/O system and has the following features:

- Connection of up to 62 AS-Interface slaves
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- User-friendly configuration with graphic display of the AS-i line in TIA Portal V12.0 or in other systems by using GSD
- Supply via AS-Interface cable
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage
- Integrated ground-fault monitoring for the AS-Interface cable
- Through connection to AS-Interface and in combination with ET 200SP, the number of digital inputs and outputs available for the control system is greatly increased (max. 496 DI / 496 DO on the AS-Interface per CM).
- Integrated analog value processing (all analog profiles)

Basic unit: ET 200SP distributed I/O system

The SIMATIC ET 200SP distributed I/O system is a scalable and highly flexible I/O system for connecting the process signals to a central control system via PROFINET.

Up to eight CM AS-i Master STs can be plugged into a SIMATIC ET 200SP with IM 155-6 PN ST standard interface module.

For more information see "ET 200SP System Manual" at

http://support.automation.siemens.com/WW/view/en/58649293

Design

The CM AS-i Master ST has an ET 200SP module enclosure with a width of 20 mm. A BaseUnit is required for use in the ET 200SP. The CM AS-i Master ST can be plugged onto type C0 BaseUnits (BU) with automatic coding.

The CM AS-i Master ST has LED indicators for diagnostics, operation, AS-i voltage and AS-i slave status.

The CM AS-i Master ST offers informative front-side module inscription for

- Plain-text marking of the module type and function class
- 2D matrix code (article number and serial number)
- Circuit diagram
- Color coding of the CM module type: Blue
- Hardware and firmware version
- Complete order number

Function

The CM AS-i Master ST supports all specified functions of the AS-Interface Specification V3.0.

The input/output values of the digital AS-i slaves can be activated via the cyclic process image. The values of the analog AS-i slaves can be reached via data record transfer.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

Changeover of the operating mode, automatic application of the slave configuration and the re-addressing of a connected AS-i slave can be implemented via the control panel of the CM AS-i Master ST in the TIA Portal.

Notes on safety

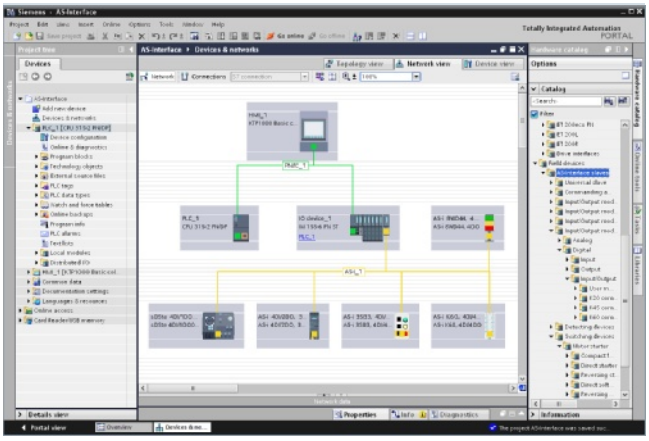
The use of this product requires suitable protective measures (e.g. network segmentation for IT security among others) in order to ensure safe plant operation, see www.siemens.com/industrialsecurity.

Configuration

Configuration of the CM AS-i Master ST requires TIA Portal V12 or the updated version of STEP 7 V5.5 SP4 or the GSD file.

The TIA Portal enables user-friendly configuration and diagnostics of the AS-i master and any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration as the DESIRED configuration at the "touch of a button" via the control panel integrated in the TIA Portal or an optional expansion button. Configuration with the GSD file is possible only with the button.



Configuration of an AS-Interface network with CM AS-i Master ST via TIA Portal

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Master for SIMATIC ET 200
CM AS-i Master for ET 200SP

Benefits

The CM AS-i Master ST for ET 200SP enables modular, easy and high-performance expansion of AS-Interface networks via engineering in the TIA Portal.

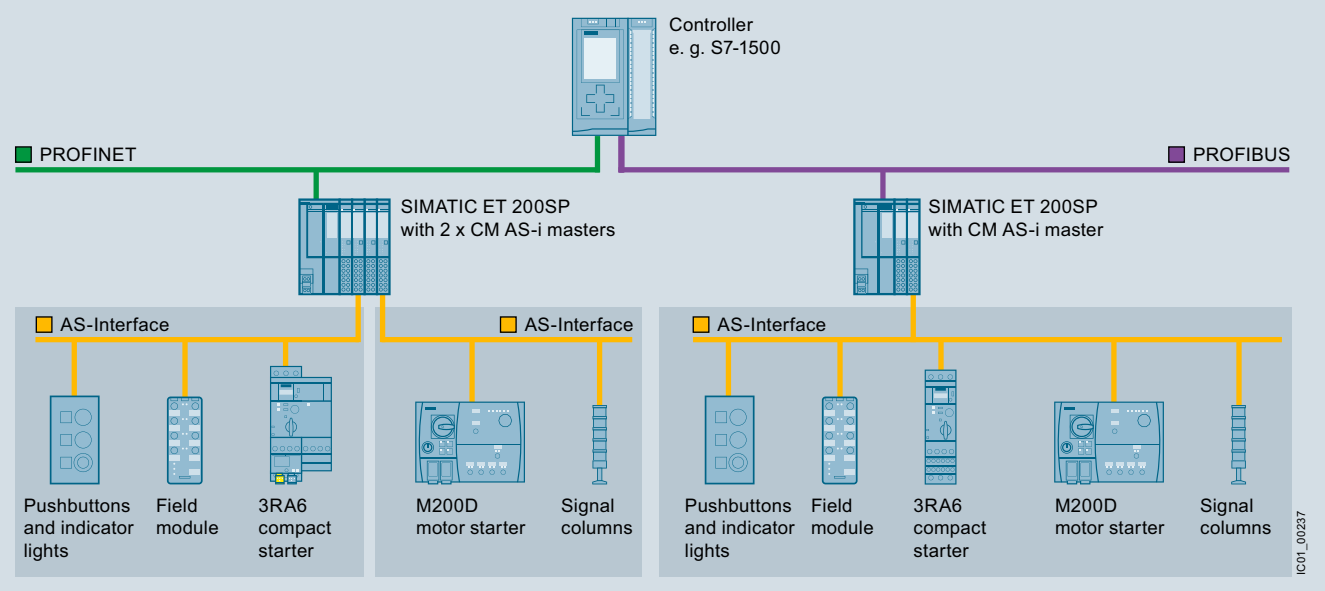
Up to eight CM AS-i masters can be plugged into one ET 200SP station with IM 155-6PN ST. The maximum configuration depends on the interface module used.

Multiple masters as well as single masters can thus be implemented in the ET 200SP depending on the number of modules.

Together with the interface module, a scalable PROFINET/AS-i Link or PROFIBUS/AS-i Link can be assembled.

Application

Configuration examples of AS-Interface networks with CM AS-i Master ST for SIMATIC ET 200SP



Configuration of AS-Interface networks under a SIMATIC ET 200SP

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK7137-6SA00-0BC1	**CM AS-i Master ST communication modules** • AS-Interface master for SIMATIC ET 200SP, can be plugged onto BaseUnit type C0 • Corresponds to AS-Interface Specification V3.0 • Dimensions (W × H × D / mm): 20 x 73 x 58	A	**3RK7137-6SA00-0BC1**		1	1 unit	42C
6ES7155-6AA00-0BN0	**PROFINET IM 155-6PN ST interface modules**						
	Including server module (bus adapter must be ordered separately)	A	**6ES7155-6AU00-0BN0**		1	1 unit	255
	Including server module and bus adapter 2 x RJ45	A	**6ES7155-6AA00-0BN0**		1	1 unit	255

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Variable bus adapters for PROFINET						
	For connection of the Ethernet cable to the PROFINET IM interface module						
6ES7193-6AR00-0AA0	• Connection 2 x RJ45	A	**6ES7193-6AR00-0AA0**		1	1 unit	255
6ES7193-6AF00-0AA0	• Connection 2 x FC (FastConnect)	A	**6ES7193-6AF00-0AA0**		1	1 unit	255

Accessories

	Version	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
6ES7193-6BP20-0DC0	**BaseUnits** • BU20-P6+A2+4D BaseUnit for CM AS-i Master ST to ET 200SP • Type C0 • For connection of AS-Interface cable to the CM AS-i master	A	**6ES7193-6BP20-0DC0**	1	1 unit	255

More information

Manuals

CM AS-i Master ST manual see
http://support.automation.siemens.com/WW/view/en/61757442/133300

BaseUnits manual see
http://support.automation.siemens.com/WW/view/en/59753521

ET 200SP system manual see
http://support.automation.siemens.com/WW/view/en/58649293

Industry Mall

More information
see Industry Mall at "Automation Technology"
→ "Industrial Communication" → "AS-Interface" → "Masters"
→ "Masters for SIMATIC ET 200"

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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DP/AS-i LINK Advanced

Overview

DP/AS-i LINK Advanced

PN	DP-M	DP-S	ASi-M		
		●	●		

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The DP/AS-i LINK Advanced is a compact router between PROFIBUS (DP Slave) and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface Specification V3.0) for connection of 62 AS-Interface slaves or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission (all analog profiles)
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and startup by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Optimum TIA integration using STEP 7
- Integration in non-Siemens engineering tools using the PROFIBUS GSD file
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply voltage from the AS-Interface shaped cable or alternatively with 24 V DC (optional)
- Suitable for AS-i Power24V (from product version 4 / firmware version 2.2) and for Standard AS-i with 30 V voltage
- Module exchange without entering the connection parameters (e.g. PROFIBUS address) using C-PLUG (optional)

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design:
  - Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
  - 6 pushbuttons for starting up and testing the AS-Interface line directly on the DP/AS-i LINK Advanced
  - LED display of the operating state of PROFIBUS DP and AS-Interface
  - Integrated Ethernet port (RJ45 socket) for user-friendly startup, diagnostics and testing of DP/AS-i LINK Advanced through a web interface using a standard browser
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

Functionality

Communications

The DP/AS-i LINK Advanced enables a PROFIBUS DP master to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment. Also supported are the expanded slave types with higher I/O data volume according to AS-i Specification V3.0.

The DP/AS-i LINK Advanced occupies the following address area:

- As a single master: 32 bytes of input data and 32 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.
- As double master, double the number of bytes
- Optional additional I/O bytes for data from analog slaves

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master. The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.
PROFIBUS DP-V1 Masters also provide the option of triggering AS-Interface Master calls over the acyclic PROFIBUS services (e.g. write parameters, amend addresses, read diagnostic values). Using an operating display in AS-i Link it is possible to fully commission the lower-level AS-Interface line.
DP/AS-i LINK Advanced is equipped with an additional Ethernet port which enables use of the integrated web server. The web server can be called up with any standard web browser (e.g. Internet Explorer) without additional software. It allows all diagnostics information to be shown on the PC and the bus configuration and, if applicable, any adjustments, to be displayed. Firmware updates are also possible using this port.
The optional C-PLUG supports module exchange without entering the connection parameters (PROFIBUS address etc.), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using LEDs, the display and control keys, web interface or STEP 7:

- Operating state of the DP/AS-i LINK Advanced
- Status of the link as a PROFIBUS DP slave
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- For the use of the web interfaces no network settings are necessary on the PC (Zeroconf procedure).
- The reporting of diagnostic events is optionally possible via E-Mail or SNMP Trap. The integrated diagnostic buffer saves the events including time stamp.

Notes on safety

The use of this product requires suitable protective measures (e.g. network segmentation for IT security among others) in order to ensure safe plant operation,
see www.siemens.com/industrialsecurity.

Configuration

The DP/AS-i LINK Advanced can be configured as follows:

- With STEP 7 as of V5.4: With STEP 7 the AS-Interface configuration can be uploaded in STEP 7. Furthermore, AS-Interface slaves can also be conveniently configured in HW-Config (slave selection dialog).
- By adopting the ACTUAL configuration of the AS-Interface on the display
- Alternatively DP/AS-i LINK Advanced can be integrated into the engineering tool over the PROFIBUS GSD file (e.g. STEP 7 versions below V5.4 or engineering tools from third-party software houses).

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Benefits

- Short startup times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface and through simple module exchange with the help of the C-PLUG exchange medium
- Reduced amount of engineering work thanks to user-friendly configuration of Siemens slaves using the slave catalog in HW-Config (STEP 7)
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Saves the need for AS-i power supply with AS-i Power24V: The AS-Interface cable assembly is fed through an existing 24 V DC PELV power supply unit. For decoupling, an AS-i data decoupling module is required, see power supply units and data decoupling modules.
- Standard mode with AS-Interface power supply (see power supply units and data decoupling modules) possible without restrictions, whereby no further operational voltage is required.

Application

The DP/AS-i LINK Advanced is a PROFIBUS DP-V1 slave (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from PROFIBUS DP.

Exchanging data with the PROFIBUS DP master

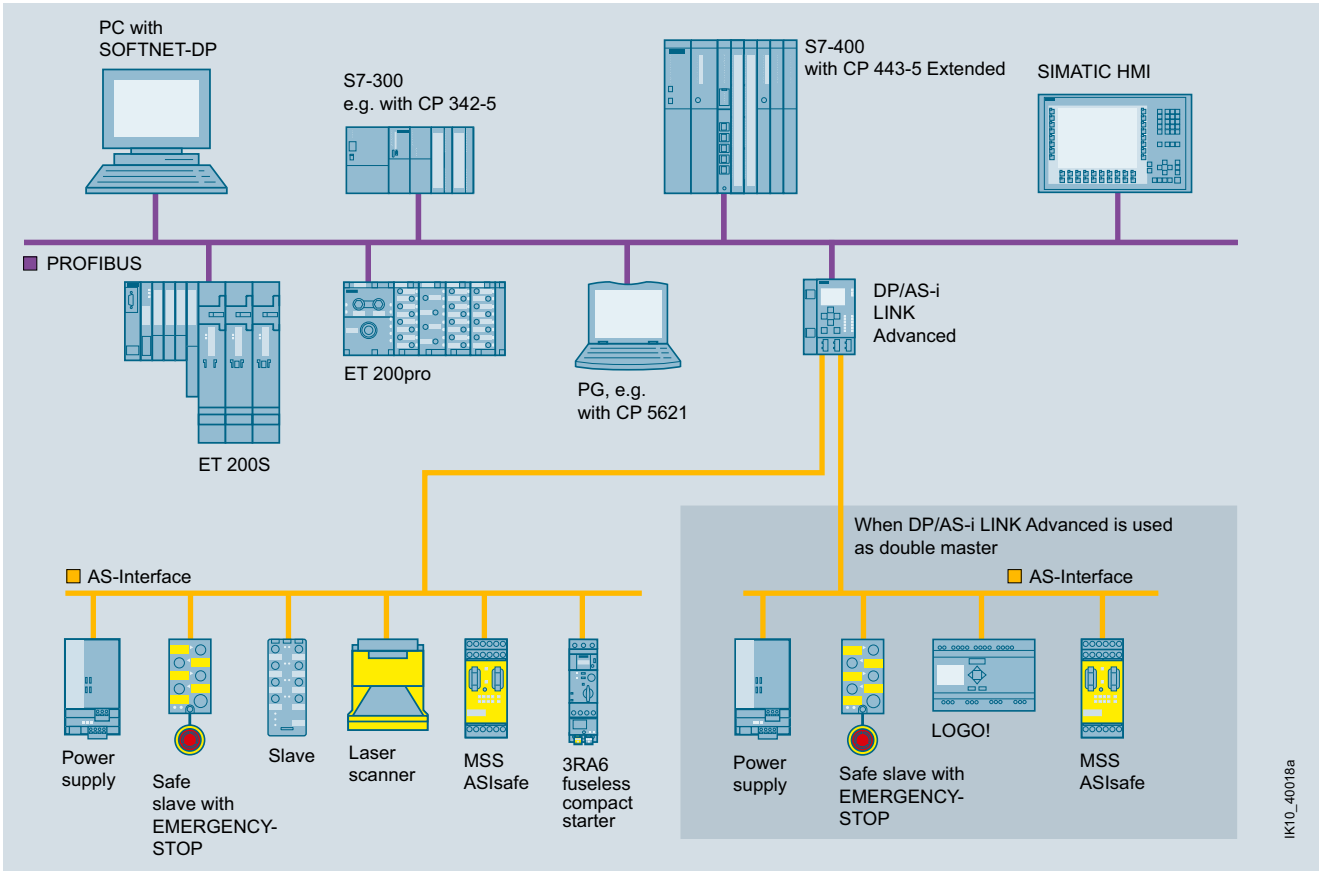
PROFIBUS DP masters (DP-V0) can exchange I/O data with AS-Interface in cyclic mode. PROFIBUS DP masters with acyclic services (DP-V1) are able in addition to initiate AS-Interface master calls (e.g. reading/writing the AS-i configuration during normal operation). As such, the DP/AS-i LINK Advanced is particularly well suited for a distributed construction and for connection of a lower-level AS-Interface network.

Single masters

For applications with typical volumes of project data, it is sufficient to use the DP/AS-i LINK Advanced in its version as an AS-Interface single master. The single master can operate up to 248 DI/248 DO, using 62 A/B slaves with 4 DI/4 DO each.

Double masters

For applications with large volumes of project data, the DP/AS-i LINK Advanced is used in its version as an AS-Interface double master. In this case, twice the volume of project data can be used on two AS-Interface lines running independently of each other. The double master can operate up to 496 DI/496 DO, using 2 AS-i networks each with 62 A/B slaves with 4DI/4DO each.



Integration of AS-Interface on PROFIBUS through DP/AS-i LINK Advanced as single/double master

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DP/AS-i LINK Advanced

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DP/AS-i LINK Advanced						
DP/AS-i LINK Advanced	Router between PROFIBUS DP and AS-Interface; Degree of protection IP20; including COMBICON plug-in screw terminals for connection of an AS-Interface cable (two AS-Interface cables for double masters) and the optional 24 V supply; corresponds to AS-Interface Specification 3.0; dimensions (W x H x D / mm): 90 x 132 x 88.5	**Combicon connection**				
	• Single master with display	► **6GK1415-2BA10**		1	1 unit	42C
	• Double master with display	► **6GK1415-2BA20**		1	1 unit	42C
Accessories						
	C-PLUG Exchange medium for the simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot	A	**6GK1900-0AB00**	1	1 unit	5N3
	PROFIBUS FastConnect Standard Cable GP FastConnect standard type with special design for fast installation, 2-core, shielded	A	**6XV1830-0EH10**	1	1 M	5K1
	PROFIBUS FastConnect RS485 bus connectors with angled cable feeder (35°) With insulation displacement connection, the max. transmission rate is 12 Mbit/s Activatable terminating resistor is integrated					
	• Without PG connection socket	A	**6ES7972-0BA60-0XA0**	1	1 unit	250
	• With PG connection socket	A	**6ES7972-0BB60-0XA0**	1	1 unit	250
	PROFIBUS FastConnect Stripping Tool Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables	A	**6GK1905-6AA00**	1	1 unit	5K2
	IE FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder					
	• 1 pack = 1 unit	A	**6GK1901-1BB20-2AA0**	1	1 unit	5K1
	• 1 pack = 10 units	A	**6GK1901-1BB20-2AB0**	1	10 units	5K1
	• 1 pack = 50 units	A	**6GK1901-1BB20-2AE0**	1	50 units	5K1

More information

The manuals are available on the Internet at
http://support.automation.siemens.com/WW/view/en/28602701/133300

AS-i block library for PCS 7 for easy connection of AS-Interface to PCS 7 see

- Chapter 14
  → "Parameterization, Configuration and Visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"
- Industry Mall: "Automation"
  → "Industrial controls"
  → "Parameterization, Configuration and Visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

DP/AS-Interface Link 20E

PN	DP-M	DP-S	ASi-M		
		●	●		

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DP/AS-Interface Link 20E connects PROFIBUS DP to AS-Interface and has the following features:

- PROFIBUS DP slave and AS-Interface master
- Up to 62 AS-Interface slaves, each with 4 digital inputs and 4 digital outputs as well as analog slaves can be connected
- Integrated analog value transmission (all analog profiles)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Supply from AS-Interface cable; hence no additional power supply required
- Suitable for AS-i Power24V (from product version 2 / firmware version 3.1) and for Standard AS-i with 30 V voltage
- Supports the uploading of the AS-Interface configuration in STEP 7 V5.2 and higher

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- LEDs in the front panel for indicating the operating state and functional readiness of all connected slaves
- Setting of PROFIBUS DP address is possible by pressing a button
- LED indication of the PROFIBUS DP slave address, DP bus faults and diagnostics
- Two pushbuttons for switching over the operating state and for adopting the existing ACTUAL configuration as the DESIRED configuration

Functionality

Communications

The DP/AS-Interface Link 20E enables a DP master to access all the slaves of an AS-Interface network.

The DP/AS-Interface Link 20E occupies a standard 32 bytes of input data and 32 bytes of output data in which the digital I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master.

The analog I/O data can be accessed with the S7 system functions for read/write data records.

Configuration

The DP/AS-Interface Link 20E is configured as follows:

- With STEP 7 as of Version V5.1 SP2:
  With STEP 7 configuring the AS-Interface configuration can be uploaded in STEP 7 V5.2 and higher. Furthermore, AS-Interface slaves from Siemens can also be conveniently configured in HW Config (slave selection dialog).
- By adopting the ACTUAL configuration of the AS-Interface by using the SET pushbutton on the front panel
- Alternatively, DP/AS-Interface Link 20E can be integrated by means of the PROFIBUS GSD file in the engineering tool (e.g. for STEP 7 V5.1 and lower or for non-Siemens engineering tools).

Benefits

- Reduction of installation costs because the power is supplied entirely via the AS-Interface cable, which means that no additional power supply is required
- Short startup times thanks to easy configuration at the touch of a button
- The LED indicators help reduce downtime and service times if a slave fails
- Easy and fast startup through reading out the AS-Interface configuration

Application

The DP/AS-Interface Link 20E is a PROFIBUS DP slave (according to IEC 61158 / IEC 61784) and an AS-Interface master (according to IEC 62026-2). It enables the AS-Interface to be operated on PROFIBUS DP.

DP/AS-Interface Link 20E can operate up to 248 DI/248 DO when using 62 A/B slaves with 4DI/4DO each.

PROFIBUS DP Masters (DP-V0) can exchange digital I/O data cyclically with the AS-Interface.

PROFIBUS DP masters with acyclic services (DP-V1) are also able to exchange analog I/O data and initiate AS-Interface master calls (e.g. reading/writing the AS-i configuration during normal operation).

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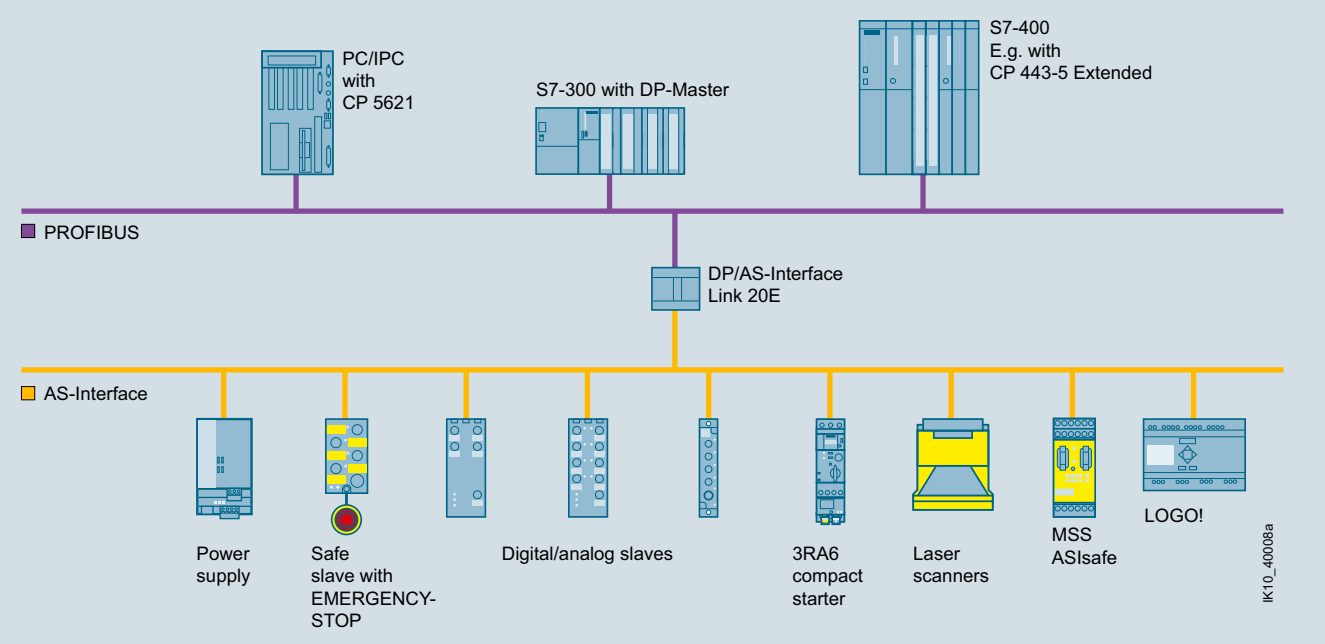
DP/AS-Interface Link 20E



Transition from PROFIBUS DP to AS-Interface using DP/AS-Interface Link 20E

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DP/AS-Interface Link 20E						
6GK1 415-2AA10		**Screw terminals**				
Router between PROFIBUS DP and AS-Interface in degree of protection IP20; including screw terminals for connection of the AS-Interface cable; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 90 x 80 x 60 (dimensions without fixing lugs)	▶	**6GK1415-2AA10**		1	1 unit	42C
Accessories						
PROFIBUS FC Standard Cable GP FastConnect standard type with special design for fast installation, 2-core, shielded	A	**6XV1830-0EH10**		1	1 M	5K1
PROFIBUS FastConnect With insulation displacement connection, the max. transmission rate is 12 Mbit/s Activatable terminating resistor is integrated						
• RS485 bus connector with 90° cable feeder						
- Without PG connection socket	A	**6ES7972-0BA52-0XA0**		1	1 unit	250
- With PG connection socket	A	**6ES7972-0BB52-0XA0**		1	1 unit	250
• RS485 bus connector with angled cable feeder (35°)						
- Without PG connection socket	A	**6ES7972-0BA60-0XA0**		1	1 unit	250
- With PG connection socket	A	**6ES7972-0BB60-0XA0**		1	1 unit	250
PROFIBUS FastConnect Stripping Tool Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables	A	**6GK1905-6AA00**		1	1 unit	5K2

More information

The manuals are available on the Internet at
http://support.automation.siemens.com/WW/view/en/28602858/133300

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

DP/AS-i F-Link

PN	DP-M	DP-S	ASi-M		
		●	●		

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The DP/AS-i F-Link is a compact, safety-related router between PROFIBUS (DP Slave) and AS-Interface, with the following features:

- Monitoring the inputs of safety-related digital AS-i slaves (ASIsafe slaves) and forwarding of data through PROFIsafe. No additional safety-related components required for the AS-Interface (e.g. MSS ASIsafe Modular Safety System)
- Can be used up to PL e according to EN ISO 13849-1 and to SIL 3 according to IEC 62061/IEC 61508.
- Connection of up to 62 AS-Interface slaves
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Typically easy transmission of non-safety-related input/output data of all AS-i slaves
- Integrated analog value transmission (all analog profiles)
- Direct integration in PROFIBUS networks.
  Optional integration in PROFINET environments through PROFINET/PROFIBUS gateway (IE/PB Link PN IO) or through SIMATIC S7-315/317/319 F PN/DP or S7-416F-3 PN/DP
- Connection to ET 200S with IM-F-CPU using DP master module is possible
- Optimum TIA integration in STEP 7 using Object Manager, integration in non-Siemens engineering tools using PROFIBUS GSD file
- Local diagnostics using LEDs and display with control keys

Design

- Rugged, slim plastic enclosure, degree of protection IP20, for standard mounting rail or wall mounting (with adapter)
- Compact design:
  - LEDs in the front panel for indicating the operating state and functional readiness of all connected slaves
  - 2 buttons on the front for startup and call-up of diagnostics information
  - 4 LEDs for display of the operating state of the device, of PROFIBUS DP and the AS-Interface network
  - Front PROFIBUS DP connection with sub D connector
  - Removable terminal blocks for connection of AS-i +/- and control supply voltage (over 24 V DC PELV power supply unit)
  - Narrow width (45 mm)
- Operation without fans and batteries
- Fast device replacement in the event of a fault

Functionality

Communication principle

The PROFIBUS DP master or the safe control communicates with the AS-Interface slaves over the DP/AS-i F-Link.
The AS-Interface process data are mapped in different data areas for non-safety-related input and output data and safety-related input data.

Diagnostics

Extensive diagnostics is possible using the four LEDs, display and control keys or SIMATIC S7. Further details can be found in the manual.

Configuration

The DP/AS-i F-Link is configured as follows:

- With STEP 7 as of Version V5.4 SP1: In particular, Siemens AS-Interface slaves can be conveniently configured via the slave selection dialog.
- Uploading the actual configuration of an already configured AS-Interface network in a STEP 7 project is possible.
- Alternatively, DP/AS-i F-Link can be integrated by means of the PROFIBUS GSD file in the engineering tool.
  As a startup aid, it is also possible to adopt the ACTUAL configuration in the appliance storage device directly on the appliance to activate the AS-interface slaves.

Programming

In contrast to the MSS ASIsafe Modular Safety System, the DP/AS-i F-Link is a pure gateway, which does not run through its own safety logic. Programming of the safety function is implemented at the level of the higher-level fail-safe PLC, e.g.:

- With Distributed Safety, Version V5.4 SP1 or higher for SIMATIC S7-300F/416F
- With the SAFETY INTEGRATED "SI-Basic" or "SI-COMFORT NCU" Software for SINUMERIK 840D pl/sl

The safety and standard range can access the digital and analog I/O data of the connected AS-Interface slaves directly through the I/O address area of the CPU.

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DP/AS-i F-Link

Benefits

- Gaps in (bus-based) safety technology closed: safety-related signals (EMERGENCY-STOP, door interlock, light curtains etc.) collected with AS-i and transferred to higher-level F-PLC. This enables:
  - Quick installation, easy commissioning: Use of AS-i virtues in the field now fully consistent for Safety Integrated
  - Cost-effective solution as ASIsafe is ideally suited for the collection of "fewer but more distributed fail-safe bits"
- Price advantage: As a fully fledged AS-i master according to Specification V3.0, more inputs and outputs can be used, e.g.:
  - Up to 248 DI/248 DO when using 62 A/B slaves with 4DI/4DO each
  - Up to 62 digital or analog slaves
- Investment protection:
  - Connection to PROFIBUS networks, such as DP/AS-i LINK Advanced or DP/AS-Interface Link 20E
  - Downward compatibility to AS-Interface specification V2
  - Open for modern automation concepts with AS-i
- Teaching the code sequences of ASIsafe slaves is possible at the press of a button
- Reduced amount of engineering work thanks to user-friendly configuration of all AS-i slaves from Siemens using the slave selection dialog in HW-Config (STEP 7), including setting the F-parameter of the ASIsafe slaves modeled on PROFIsafe slaves
- Cost-savings thanks to programming of the safety logic with the familiar, powerful commands of the distributed safety packages from the fail-safe SIMATIC PLC in F-FBD or F-LAD, incl. TÜV-certified function blocks for typical safety applications
- Use in machine tools under SINUMERIK 840 D (pl/sl) possible
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display and through simple module exchange (only a few settings by control keys are required, without use of the configuring tool)

Application

Links between PROFIsafe and ASIsafe

The DP/AS-i F-Link is a PROFIBUS DP-V1 slave (according to IEC 61158 and IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from PROFIBUS DP. The DP/AS-i F-Link is also an AS-i master with which safety-related input data can be passed from ASIsafe slaves via the PROFIsafe protocol to a fail-safe CPU with PROFIBUS DP master. No additional safety cabling or monitoring is required (in particular no MSS ASIsafe Modular Safety System).

The transmission of binary values or analog values is possible depending on the slave type. All slaves according to AS-Interface Specification V2.0, V2.1 or V3.0 can be used as AS-i slaves.

PROFIBUS DP masters according to DP-V0 or DP-V1 can exchange I/O data with lower-level AS-i slaves in cyclic mode. PROFIBUS DP masters with acyclic services according to DP-V1 are able in addition to initiate AS-i command calls (e.g. reading/writing the AS-i configuration during normal operation). In addition to digital I/O data, analog data can also be saved with high performance in the cyclic I/O of a fail-safe S7-300/ S7-416 F-CPU.

In configuring mode the DP/AS-i F-Link reads in the configuration data of the peripherals on the AS-Interface. Slave addresses can be set using the display and the control keys, and the code sequences of safe AS-i slaves can be taught.

During operation, four display LEDs and the display provide detailed diagnostics information, which directly localizes the fault if required. Using the PLC user program it is possible to read out diagnostics data records and make them available to a higher-level operating and monitoring system (e.g. WinCC flexible or TRANSLINE HMI).

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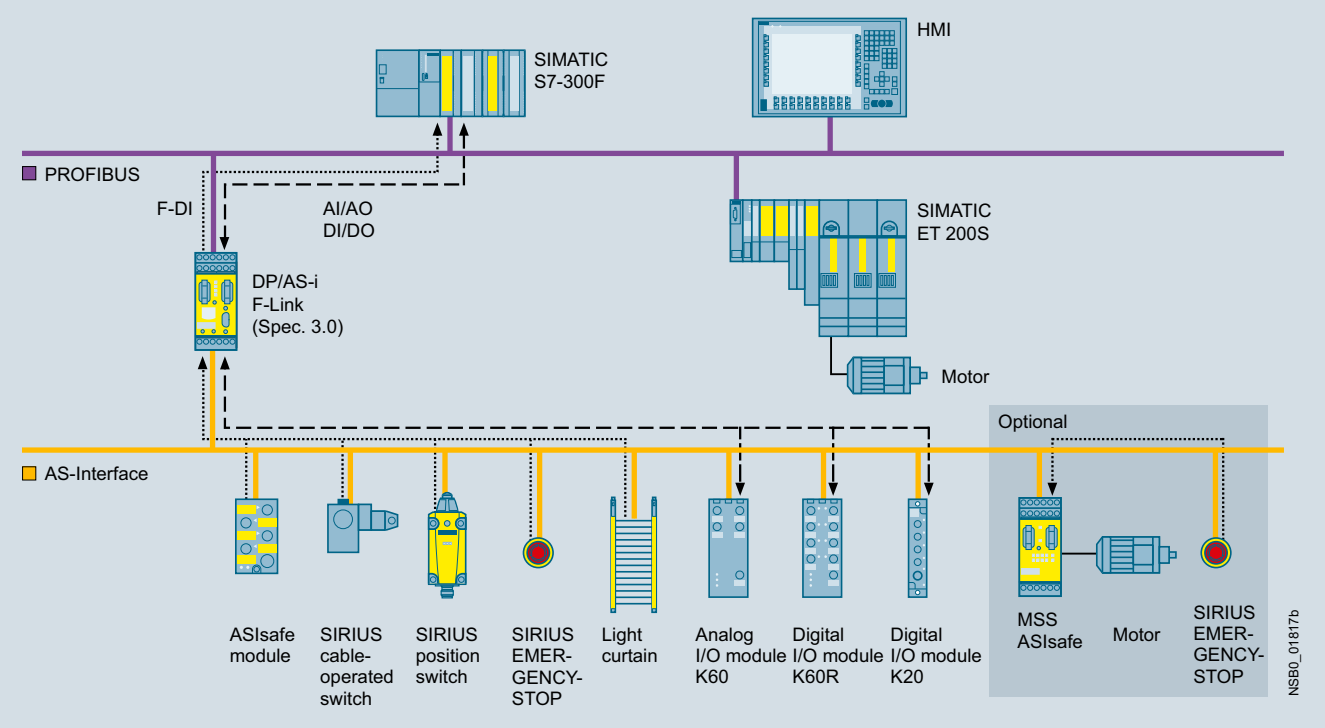
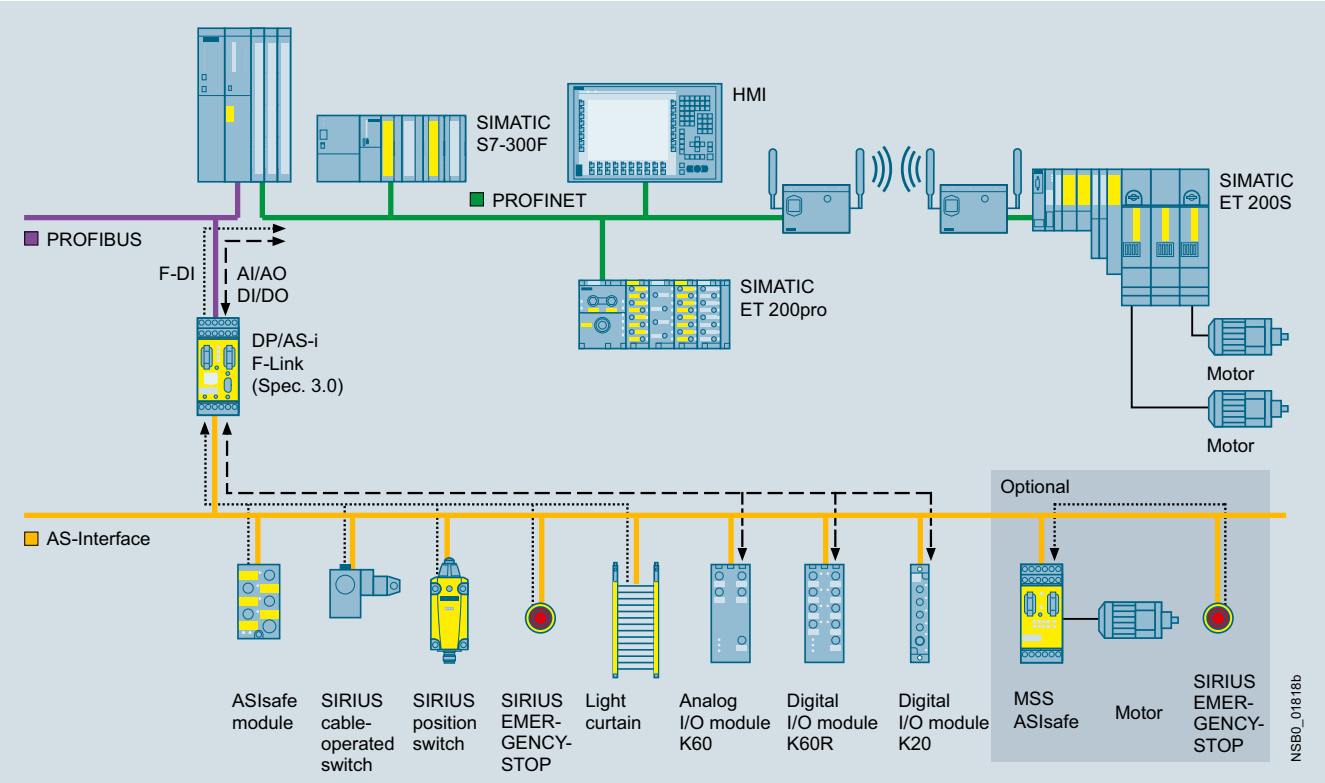
Network connectivity

The DP/AS-i F-Link can be used in PROFIBUS and PROFINET networks as follows:



Integration in PROFIBUS networks under SIMATIC F PLC



Integration in PROFINET networks under SIMATIC F PLC (alternatively through IE/PB Link)

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DP/AS-i F-Link

Further network connectivity options

- Integration in PROFINET networks under SIMATIC F PLC through IE/PB Link
- Integration in SINUMERIK Power Line and Solution Line
- Integration under non-Siemens fail-safe control systems using PROFIBUS GSD file, see http://support.automation.siemens.com/WW/view/en/113250

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DP/AS-i F-Link Router between PROFIBUS DP and AS-Interface for safety-related data transmission from ASIsafe to PROFIBUS DP – PROFIsafe in degree of protection IP20; corresponds to AS-Interface Specification V3.0; not approved for AS-i Power24V; dimensions (W x H x D / mm): 45 x 104 x 120						
• With screw terminals	A	**3RK3141-1CD10**		1	1 unit	42C
• With spring-type terminals	A	**3RK3141-2CD10**		1	1 unit	42C

DP/AS-i F-Link

More information

For more accessories for the PROFIBUS connection see page 2/40.

For the DP/AS-i F-Link manual see http://support.automation.siemens.com/WW/view/en/24196041

Circuit examples for safety systems with DP/AS-i F-Link see http://support.automation.siemens.com/WW/view/en/24509484

The F-Link Object Manager must be installed for configuration with STEP 7 / HW-Config see http://support.automation.siemens.com/WW/view/en/24724923

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

IE/AS-i LINK PN IO

PN	DP-M	DP-S	ASi-M		
●			●		

The IE/AS-i LINK PN IO is a compact router between PROFINET/Industrial Ethernet (PROFINET IO Device) and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface Specification V3.0) for connection of 62 AS-Interface slaves or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission (all analog profiles)
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and startup by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Optimum TIA integration using STEP 7
- Integration in non-Siemens engineering tools using the PROFINET GSD file
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply via AS-Interface cable or with 24 V DC
- Suitable for AS-i Power24V (from product version 4/firmware version 2.2) and for AS-Interface with 30 V voltage
- Module exchange without entering the connection parameters (IP address etc.) using C-PLUG (optional)
- Costs saved by the double AS-Interface master when large volumes of project data are involved

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design:
  - Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
  - Six pushbuttons for starting up and testing the AS-Interface line directly on the IE/AS-i LINK PN IO
  - LED display of the operating state of PROFINET IO and AS-Interface
  - Integrated 2-port switch (RJ45 socket) for connection to Industrial Ethernet
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

Functionality

Communications

The IE/AS-i LINK PN IO enables a PROFINET IO controller to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment. Also supported are the expanded slave types with higher I/O data volume according to AS-i Specification V3.0.

The IE/AS-i LINK PN IO occupies the following address area:

- As a single master with full expansion: 62 bytes of input data and 62 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.
- As double master, double the number of bytes
- Optional additional I/O bytes for data from analog slaves

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the IO controller.
The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.
PROFINET IO controllers are able in addition to initiate AS-Interface master calls (e.g. to write parameters, change addresses, read diagnostic values) through the acyclic PROFINET services.
Using an operating display in AS-Interface Link it is possible to fully commission the lower-level AS-i line.
The IE/AS-i LINK PN IO is equipped with two Ethernet ports which are connected by an internal switch. With the Ethernet it is possible in addition to use the integrated web server. The web server can be called up with any standard web browser (e.g. Internet Explorer) without additional software. It enables the PC to present all diagnostics information and to display the set bus configuration and parameters as well as their adaptation where applicable. Firmware updates are also possible using this port.
The optional C-PLUG supports module exchange without entering the connection parameters (e.g. IP address), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using the display and control keys, web interface or STEP 7:

- Operating state of the IE/AS-i LINK PN IO
- Status of the link as a PROFINET IO device
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- The reporting of diagnostic events is optionally possible via E-Mail or SNMP Trap. The integrated diagnostic buffer saves the events including time stamp.

Notes on safety

The use of this product requires suitable protective measures (e.g. network segmentation for IT security among others) in order to ensure safe plant operation,
see www.siemens.com/industrialsecurity.

Configuration

The IE/AS-i LINK PN IO is configured as follows:

- STEP 7 V5.4 or higher is required for configuring the full functional scope of the IE/AS-i LINK PN IO. With STEP 7 configuring the AS-Interface configuration can be uploaded in STEP 7 V5.4 SP2 and higher. Furthermore, AS-Interface slaves from Siemens can also be conveniently configured in HW Config (slave selection dialog).
- Alternatively, IE/AS-i LINK PN IO can be integrated by means of the PROFINET GSD file in the engineering tool (e.g. for STEP 7 V5.4 SP2 and lower, TIA portal, or for non-Siemens engineering tools).

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IE/AS-i LINK PN IO

Benefits

- Short startup times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Saves the need for AS-i power supply with AS-i Power24V: The AS-Interface cable assembly is fed through an existing 24 V DC PELV power supply unit. For decoupling, an AS-i data decoupling module is required, see power supply units and data decoupling modules.
- Standard mode with AS-Interface power supply (see power supply units and data decoupling modules) possible without restrictions, whereby no further operational voltage is required

Application

The DP/AS-i LINK PN IO is a PROFINET IO device (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from Industrial Ethernet.

Exchanging data with PROFINET IO controllers

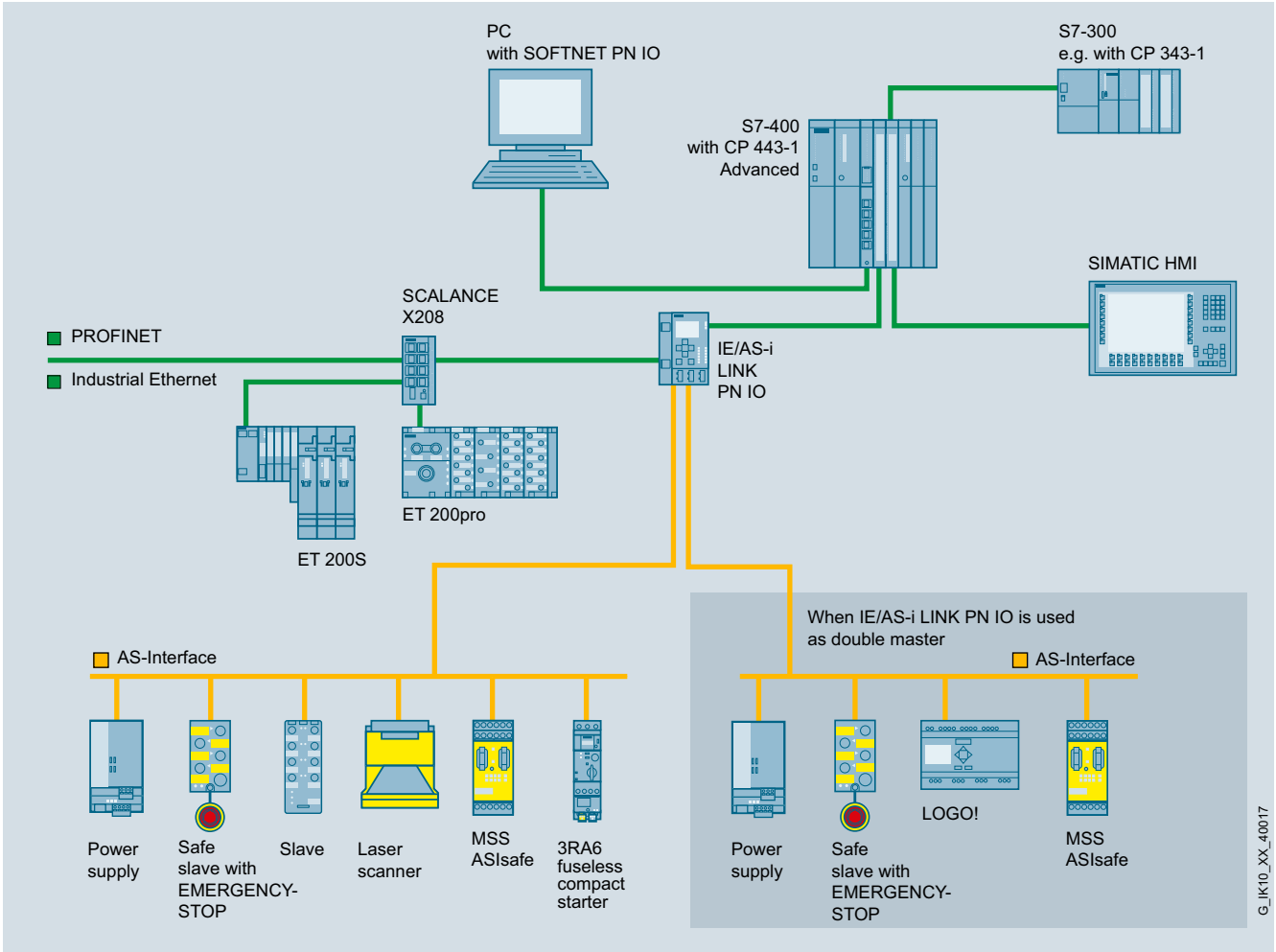
PROFINET IO controllers can exchange I/O data with AS-Interface in cyclic mode and can perform AS-i master calls in addition with acyclic services (e.g. reading/writing the AS-i configuration during normal operation). IE/AS-i LINK PN IO is, therefore, suitable for distributed configurations and for integrating a lower-level AS-Interface network.

Single masters

For applications with typical volumes of project data, it is sufficient to use the IE/AS-i LINK PN IO in its version as an AS-i single master. The single master can operate up to 248 DI/248 DO, using 62 A/B slaves with 4DI/4DO each.

Double masters

For applications with large volumes of project data, the IE/AS-i LINK PN IO is used in its version as an AS-i double master. In this case, twice the volume of project data can be used on two AS-i lines running independently of each other. The double master can operate up to 496 DI/496 DO, using 2 AS-i networks with 62 A/B slaves each with 4DI/4DO each.



Integration of AS-Interface on PROFINET through IE/AS-i LINK PN IO as single/double master

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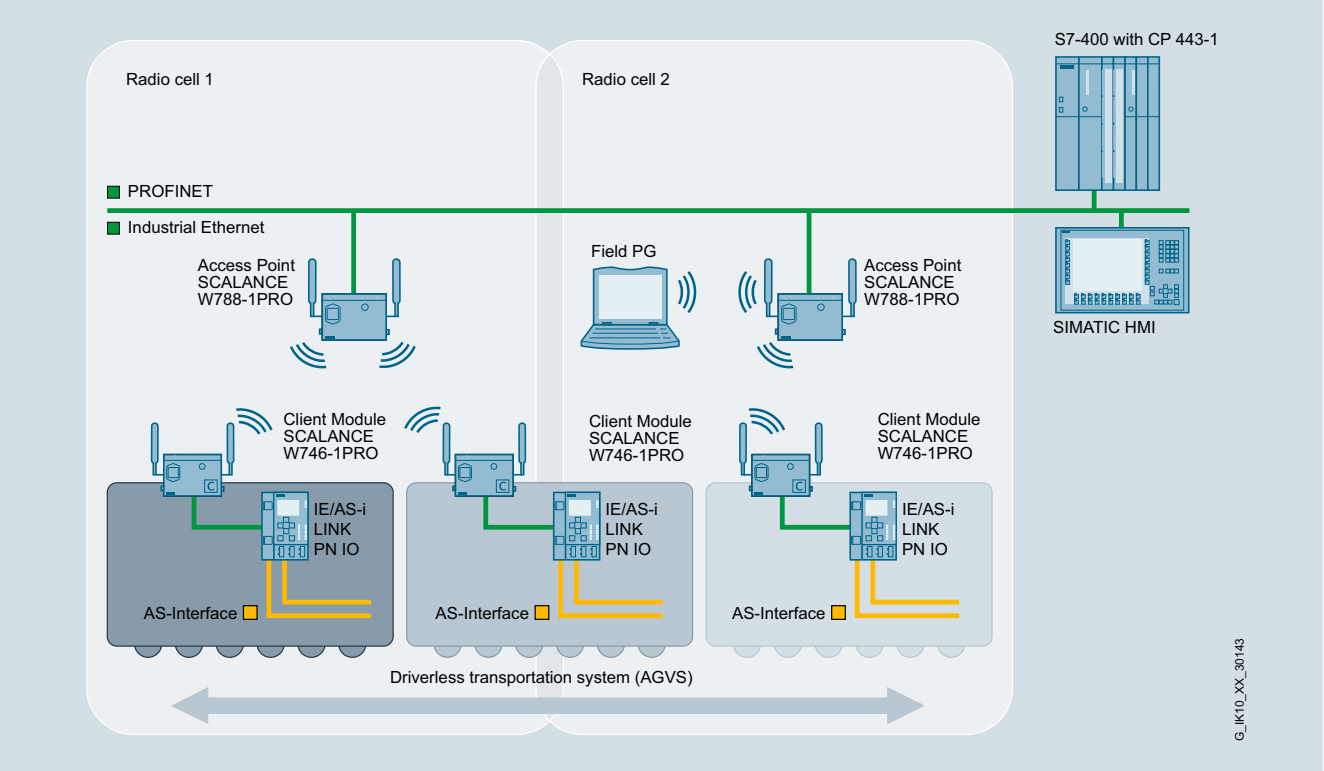
Wireless communication

Using an upstream IWLAN client module, e.g. SCALANCE W746-1PRO, an AS-Interface line can be integrated in the PROFINET world by wireless means.

Sample uses are applications which up to now have been performed with fault-prone tow chain or collector wire technology. Maintenance costs are thus reduced.



Wireless communication between Industrial Ethernet and AS-Interface components

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IE/AS-i LINK PN IO						
Router between PROFINET/Industrial Ethernet and AS-Interface in degree of protection IP20; including COMBICON plug-in screw terminals for connection of an AS-Interface cable, (two AS-Interface cables for double masters) and the optional 24 V supply; corresponds to AS-Interface Specification 3.0; dimensions (W x H x D / mm): 90 x 132 x 88.5		**Combicon connection**				
• Single master with display	►	**6GK1411-2AB10**		1	1 unit	42C
• Double master with display	►	**6GK1411-2AB20**		1	1 unit	42C
Accessories						
C-PLUG Exchange medium for the simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot	A	**6GK1900-0AB00**		1	1 unit	5N3
IE FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 pack = 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 1 pack = 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1
• 1 pack = 50 units	A	**6GK1901-1BB20-2AE0**		1	50 units	5K1

IE/AS-i LINK PN IO

More information

Manuals see http://support.automation.siemens.com/WW/view/en/29992487/13330

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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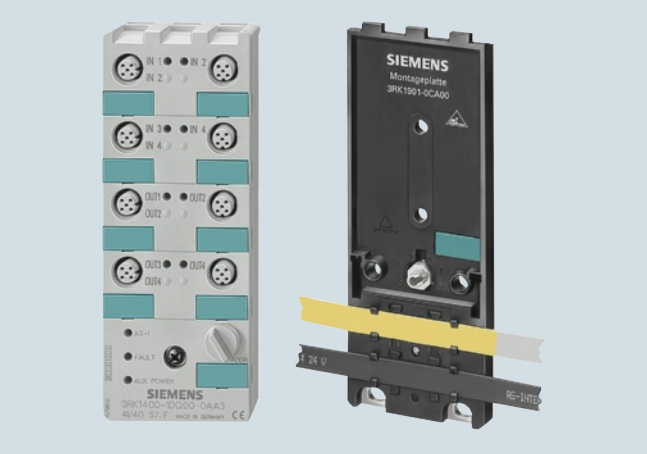
I/O modules for use in the field, high degree of protection: Digital I/O modules, IP67 - Introduction

Overview



K60

K20

K45

Three coordinated series of AS-Interface compact modules with digital and analog compact modules and a high degree of protection are available for use in the field:

- Series K60 (digital and analog)
- Series K45 (digital)
- Series K20 (digital)

All compact modules are characterized by particularly simple handling. The K60 and K45 modules are mounted with a mounting plate. The mounting plate is used to mount the AS-Interface flat cables and enables mounting on a wall or standard mounting rail.

The particularly narrow K20 modules are directly mounted without a mounting plate and connected to the AS-Interface using a round cable.

Connection types

For flexible connection of different sensors and actuators, the following PIN assignments are available on the I/O modules with M12 sockets:

Standard assignment

With the standard assignment, one sensor/actuator is connected per M12 socket. In this case the signal for the outputs is acquired at PIN4 while the signal for the inputs is acquired at PIN4 and PIN2. As the result, sensors can be connected directly to PIN2 and PIN4.

Y assignment

With the Y assignment, two sensors or two actuators can be connected to one M12 socket. In this case, both PIN4 and PIN2 are provided for one sensor signal and one actuator signal on each M12 socket.

Y-II assignment

The Y-II assignment offers the following options:

- Individual connection of a sensor/actuator to one M12 socket
- Connection of two sensors/actuators to one M12 socket as follows:
  - The signal of the first sensor/actuator is connected to PIN4 of the first socket.
  - The signal of the second sensor/actuator is connected to PIN2 of the first socket and to PIN4 of the second socket.

  In this case, the second socket is not required and is closed with a sealing cap.

Overview of digital compact modules

The following table provides an overview of the important features of the digital compact modules.

Version	K60	K45	K20
8 inputs/2 outputs	✓	--	--
8 inputs	✓	✓ NEW	--
4 inputs/4 outputs	✓	✓	✓
4 inputs/3 outputs	✓	--	--
4 inputs/2 outputs	✓	--	--
4 inputs	✓	✓	✓
2 inputs/2 outputs	--	✓	✓
4 outputs	✓	✓	✓
3 outputs	--	✓	--
AS-Interface connection	Flat cable / round cable	Flat cable	Round cable
I/O connection method	M12	M12/M8	M12/M8
Pin assignment	Standard/Y-II/Y	Standard/Y	Standard/Y
Degree of protection	IP65/IP67/IP68/IP69K	IP65/IP67	IP65/IP67
ATEX 3D (Zone 22)	✓	--	--
Extended address mode	✓	✓	✓

✓ Available

-- Not available

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Overview

The K60 digital AS-Interface compact modules are characterized by optimized handling characteristics and user-friendliness. They permit the mounting times and startup times of AS-Interface to be reduced by up to 40 %.

Mounting and connection of the AS-Interface shaped cables

Assembly of the K60 modules is performed with a mounting plate which accommodates the AS-Interface shaped cables. Two different mounting plates are offered for

- Wall mounting
- Standard rail mounting

The mounting plate and the compact module are joined together by means of a screw, with simultaneous contacting of the AS-Interface cable by the service-proven insulation piercing method.

Addressing and connection of the sensors/actuators

Addressing of the K60 modules is performed using an addressing socket integrated in the compact module. The addresses can also be assigned after installed.

K60 modules with a maximum of four digital inputs and outputs

These compact modules contain the M12 standard connections for inputs and outputs. Using M12 standard connectors, a maximum of four sensors and four actuators can be connected to the compact module.

K60 compact modules with a maximum of eight digital inputs

These modules have eight digital inputs for connection through M12 plugs.

The module requires two AS-Interface addresses for processing all eight inputs. The addressing can thus be performed through a double addressing socket integrated in the module.

K60 compact modules with four digital inputs and outputs according to AS-Interface Specification 3.0

The extended address mode (A/B addresses) AS-Interface Specification 3.0 enables the connection of up to 62 slaves on one AS-Interface network. With the extended address mode, four outputs are now possible even with A/B slaves (instead of only three outputs possible up to now with Specification 2.1). Hence with full expansion of an AS-Interface network, there are now 248 inputs as well as 248 outputs available on one AS-i network.

Please note, however,

- that these modules can be used only with a master according to AS-i Specification 3.0
- that the cycle times for the outputs may be up to 20 ms.

K60 data couplers

An AS-Interface data coupler has been added to the K60 compact module range. Integrated in this module are two AS-i slaves which are connected to two different AS-i networks. Each of the two integrated slaves has four virtual inputs and four virtual outputs. The bidirectional data transmission of four data bits between two AS-i networks is thus possible in a simple and cost-effective manner. The data coupler needs its own address in each AS-i network.

Each AS-i network works with a different cycle time depending on the number of stations. Hence two AS-i networks are not necessarily synchronous. For this reason the AS-i data coupler can be used to transmit only standard data and no safety data.

K60 compact modules for use in hazardous areas (ATEX)

Two versions of the K60 modules are available for operation in Zone 22 hazardous areas according to Classification II 3D (dusty atmosphere, non-conductive dust). The version with four inputs and four outputs has the designation (Ex) II 3D Ex tD A22 IP65X T75°C and the version with four inputs has the designation (Ex) II 3D Ex tD A22 IP65X T60°C.

Special conditions have to be observed for the safe operation of these devices. In particular the module must be protected by suitable protective measures from mechanical damage.

More information

For other conditions for safe operation see
http://support.automation.siemens.com/WW/view/en/18290447

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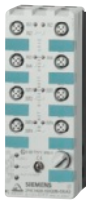
I/O modules for use in the field, high degree of protection: Digital I/O modules, IP67 - K60

Selection and ordering data



3RK1400-1DQ00-0AA3

Version					DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital I/O modules, IP67 - K60 • PNP transistor • Width 60 mm • Connection method: M12 • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assign-ment	Sensor power supply off						
8 inputs/ 2 outputs[1]	2 A	A/B	Special	AS-i	A	**3RK2400-1HQ00-0AA3**		1	1 unit	42C
8 inputs[1]	--	Standard	Y-II	AS-i	▶	**3RK1200-0DQ00-0AA3**		1	1 unit	42C
	--	A/B	Y-II	AS-i	▶	**3RK2200-0DQ00-0AA3**		1	1 unit	42C
	--	A/B	Y-II	U_{aux}	A	**3RK2200-1DQ00-1AA3**		1	1 unit	42C
4 inputs/ 4 outputs	2 A	Standard	Y-II	AS-i	▶	**3RK1400-1DQ00-0AA3**		1	1 unit	42C
	2 A	Standard	Standard	AS-i	▶	**3RK1400-1CQ00-0AA3**		1	1 unit	42C
	1 A	Standard	Y-II	AS-i	A	**3RK1400-1DQ01-0AA3**		1	1 unit	42C
	1 A	Standard	Standard	AS-i	▶	**3RK1400-1DQ03-0AA3**		1	1 unit	42C
	2 A	A/B (Spec. 3.0)	Y-II	AS-i	A	**3RK2400-1DQ00-0AA3**		1	1 unit	42C
	2 A	A/B (Spec. 3.0)	Y-II	U_{aux}	A	**3RK2400-1DQ00-1AA3**		1	1 unit	42C
4 inputs/ 3 outputs	2 A	A/B	Y-II	AS-i	▶	**3RK2400-1FQ03-0AA3**		1	1 unit	42C
4 inputs/ 2 outputs	2 A	Standard	Y-II	AS-i	▶	**3RK1400-1MQ00-0AA3**		1	1 unit	42C
4 inputs	--	Standard	Y-II	AS-i	▶	**3RK1200-0CQ00-0AA3**		1	1 unit	42C
NEW	--	A/B	Y-II	AS-i	A	**3RK2200-0CQ00-0AA3**		1	1 unit	42C
2x2 inputs/ 2x2 outputs	1 A	Standard	Y	AS-i	B	**3RK1400-1DQ02-0AA3**		1	1 unit	42C
4 outputs	2 A	Standard	Y-II	--	▶	**3RK1100-1CQ00-0AA3**		1	1 unit	42C
NEW	2 A	A/B (Spec. 3.0)	Y-II	--	A	**3RK2100-1CQ00-0AA3**		1	1 unit	42C
Digital I/O modules IP67 – K60, version ATEX (Ex) II 3D Ex tD A22 IP65X T75°C/60°C • PNP transistor • Width 60 mm • Current carrying capacity of the inputs: 200 mA • Connection method: M12 • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assignment							
4 inputs/ 4 outputs	2 A	Standard	Y-II		C	**3RK1400-1DQ05-0AA3**		1	1 unit	42C
4 inputs	--	Standard	Y-II		B	**3RK1200-0CQ05-0AA3**		1	1 unit	42C
Digital I/O modules IP67 - K60 data couplers • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assignment							
Data coupler 4 inputs/4 outputs (virtual)	--	Standard	--		C	**3RK1408-8SQ00-0AA3**		1	1 unit	42C

Accessories

3RK1901-0CA00

K60 mounting plates
Suitable for all K60 compact modules

• Wall mounting	▶	**3RK1901-0CA00**		1	1 unit	42C
• Standard rail mounting	▶	**3RK1901-0CB01**		1	1 unit	42C

3RK1901-1KA00

AS-Interface M12 sealing caps
For free M12 sockets

	▶	**3RK1901-1KA00**		100	10 units	42C

3RK1902-0AR00

Sealing sets
• For K60 mounting plate and standard distributor
• Cannot be used for K45 mounting plate
• One set contains one straight and one shaped seal

	A	**3RK1902-0AR00**		100	5 units	42D

[1] Module occupies two AS-Interface addresses

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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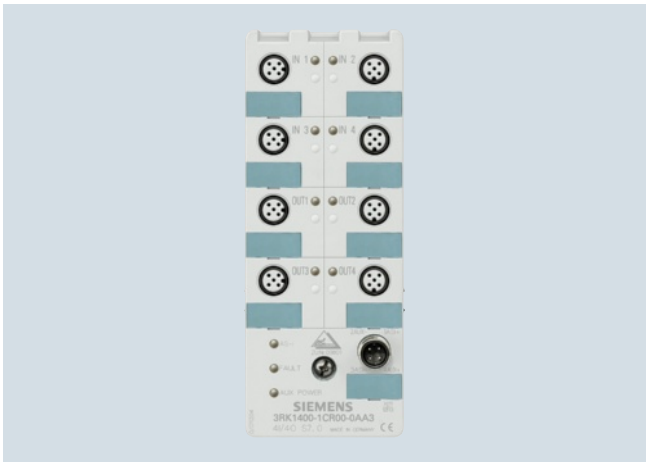
Overview

Operation in particularly harsh environments



K60R module in degree of protection IP68/IP69K

Modules with degree of protection IP67 cannot be used in areas exposed to permanently high levels of humidity, in applications with drilling emulsions and cutting oils or when cleaning with high-pressure cleaners. The answer for these applications is provided by the expansion of the K60 compact modules with the K60R module with degree of protection IP68/IP69K.

The K60R modules are connected instead of the AS-Interface flat cable using a round cable with M12 cable box.
The AS-Interface bus cable and the 24 V DC auxiliary power supply are routed in this case in a shared round cable.

Degree of protection IP68 permits many new applications that were impossible with the former field modules with degree of protection IP67. In applications such as filling plants or machine tools, the K60R with degree of protection IP68 enables the module to be used directly in zones exposed to permanent loading by humidity. It is thus possible to make even more rigorous savings in wiring with AS-Interface. For more information on IP68 test conditions see section "IP68/IP69K tests."

Cleaning with high-pressure cleaners, such as is regularly performed in the food and drinks industry for instance, is possible without difficulty (IP69K).

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. With the K60R module, a round cable connection is possible for direct connection to a round cable. No adapter is required.

Mounting

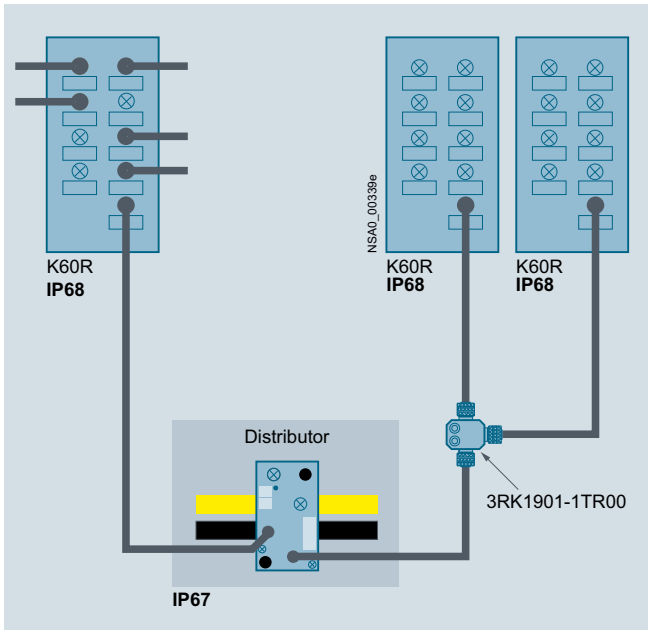
The same mounting plates are used as for the K60 modules. Instead of using flat cables, the K60R is connected using a 4-pole round cable with an M12 connection. With the K60R the mounting plate thus serves only as a fixture and ground terminal.

Addressing

Addressing is performed using the same socket as for the bus connection. Connecting the module to the addressing unit takes place over a 3-pole standard M12 cable.

When the mounting is finished, the module is connected with the addressing cable to the addressing unit and addressed. The addressing cable is then removed and the module connected to the bus cable.

Connection



K60R connection options

In the IP67 environment, the service-proven standard components are connected using flat cables. Spur lines are laid into the IP68 environment by means of an AS-Interface M12 feeder (3RK1901-1NR..). The module is connected with a round cable to an M12 cable box. For this purpose, the module has an M12 bus connection instead of the former addressing socket. The AS-Interface bus cable and the 24 V DC auxiliary voltage are routed together in a 4-pole round cable. There must be no ground conductor in this round cable. Connection to ground is made through the mounting plate.

In the IP68 environment, only cables with extruded M12 plugs may be used.

To connect more than one K60R module to one spur line, the spur line can be split again using a T distributor (3RK1901-1TR00) with degree of protection IP68.

Please note the following conditions:

- The configuration guidelines for AS-Interface apply. For all M12 connecting cables, the maximum permissible current is limited to 4 A. The cross-section of these cables amounts to just 0.34 mm^2. For connection of the K60R modules, the aforementioned M12 connecting cables can be used for the spur lines. The voltage drop caused by the ohmic resistance (approx. 0.11 Ω/m) must be taken into account.
- For round cable connections with shared AS-i and U_{aux} in a single cable, the following maximum lengths apply:
  - Per spur line from feeder to module: maximum 5 m
  - Total of all round cable segments in an AS-Interface network: maximum 20 m

IP68/IP69K tests

- K60R modules were tested with the following tests:
- Stricter test than IP67: 90 min at 1.8 m depth of water (IP67: 30 min at 1 m depth of water)
- Salt water test: Five months in salt water, 20 cm deep, at room temperature
- Test with particularly creepable oil: Five months completely under oil at room temperature

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I/O modules for use in the field, high degree of protection: Digital I/O modules, IP68/IP69K – K60R

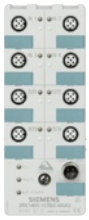
- Test with drilling emulsion: Five months at room temperature (components of the drilling emulsion: Anionic and non-ionic emulsifiers, paraffinic low-aromatic mineral oil, boric acid alkanolamines, corrosion inhibitors, oil content 40 %)
- Test in oil bath (Excelence 416 oil) with alternating oil bath temperature: 130 cycles of 15 to 55 °C, two months
- Cleaning with a high-pressure cleaner according to IP69K: 80 to 100 bar, 10 to 15 cm distance, time per side > 30 s, water temperature 80 °C

To simulate requirements as realistically as possible, the modules were artificially aged prior to the tests by 15 temperature cycles of -25/+85 °C. During the test, the modules were connected to 3RX1 connecting cables. Unassigned connections were closed with 3RK1901-1KA00 sealing caps.

Note:

Sealing caps and M12 connections must be tightened with the correct torque.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1400-1CR00-0AA3	**Digital I/O modules IP68/IP69K - K60R** • 4 inputs/4 outputs • Width 60 mm • IP68/IP69K • Standard assignment • Current carrying capacity: - 200 mA (inputs) - 2 A (outputs) • Standard slave • Modules supplied without mounting plate	A	**3RK1400-1CR00-0AA3**		1	1 unit	42C
Accessories							
3RK1901-0CA00	**K60 mounting plates** Suitable for all K60 and K60R compact modules						
	• Wall mounting	►	**3RK1901-0CA00**		1	1 unit	42C
	• Standard rail mounting	►	**3RK1901-0CB01**		1	1 unit	42C
3RK1901-1KA00	**AS-Interface M12 sealing caps** For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
3RK1901-1NR21	**AS-Interface M12 feeders, current carrying capacity up to 4 A**						
	For flat cable: AS-i/U_{aux} — For: M12 socket — Cable length: -- — Cable end in feeder: Not available	A	**3RK1901-1NR20**		1	1 unit	42C
	For flat cable: AS-i/U_{aux} — For: M12 cable box — Cable length: 1 m — Cable end in feeder: Not available	A	**3RK1901-1NR21**		1	1 unit	42C
	For flat cable: AS-i/U_{aux} — For: M12 cable box — Cable length: 2 m — Cable end in feeder: Not available	A	**3RK1901-1NR22**		1	1 unit	42C
3RK1901-1NR04	**AS-Interface M12 feeders, 4-fold, current carrying capacity up to 4 A**						
	For flat cable: AS-i/U_{aux} — For: 4-fold M12 socket delivery includes coupling module — Cable length: -- — Cable end in feeder: Not available	A	**3RK1901-1NR04**		1	1 unit	42C
3RK1901-1TR00	**M12-T distributors** • IP68 • 1 x M12 plug • 2 x M12 box	C	**3RK1901-1TR00**		1	1 unit	42C
3RK1902-4PB15-3AA0	**M12 connecting cables** • 3-pole • For addressing AS-i slaves with M12 bus connection • Cable length 1.5 m	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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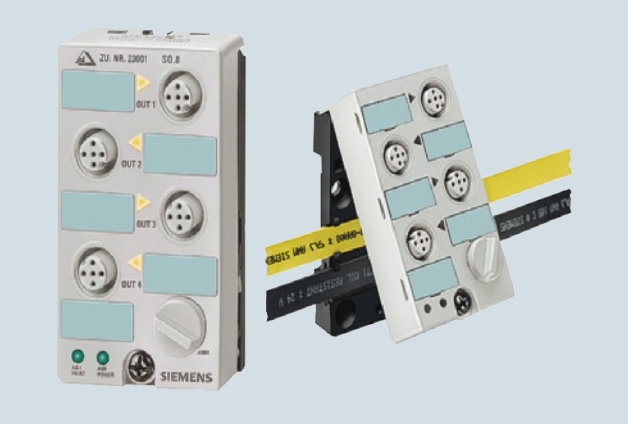
Overview



K45 compact modules

The K45 series of compact modules supplements the large K60 compact modules which have a proven track record in industry. They are the logical consequence for rounding off the bottom end of the existing product range.

The acclaimed advantages of the existing K60 compact modules are fully emulated by the K45 modules. The K45 modules, however, have a considerably smaller footprint and mounting depth.

Yet in spite of these small dimensions all the modules have large labels and an integrated addressing socket.

Two mounting plates are offered for the K45 compact modules:

- The mounting plate for wall mounting has a hole pattern that is identical to that of the K60 compact modules. This means that K60 compact modules can be mounted together with K45 modules in an aligned arrangement. The shaped cables can be inserted in the recesses of the mounting plates where they cause no hindrance.
- The mounting plate for standard rail mounting

Connection of the AS-Interface shaped cables

The mounting plate and the compact module are joined together by means of a screw, with simultaneous contacting of the AS-Interface cable by the service-proven insulation piercing method.

Now, mounting the AS-Interface shaped cables is in fact easier than ever. The yellow and black AS-Interface shaped cable can be inserted into the mounting plates from the left or right regardless of the position of the coding lug. The correct polarity of the applied voltages is thus guaranteed.

Addressing and connection of the sensors/actuators

Addressing of the K45 compact modules is performed using an addressing socket integrated in the module. The addresses can be assigned even when mounted.

K45 modules with a maximum of four digital inputs and outputs

These compact modules contain up to four M12 standard connections or M8 standard connections for inputs and outputs. Using M12 standard connectors or M8 standard connectors, a maximum of four sensors and four actuators can be connected to the compact module. Depending upon the module, the sockets can have a double assignment.
Pin assignment: Y i.e. via a socket, two sensors or one sensor/one actuator is connected.

K45 modules with a maximum of eight digital inputs

These modules have eight digital inputs for connection through M12 plugs. The sockets have a double assignment
Pin assignment: Y i.e. via a socket, two sensors or one sensor/one actuator is connected.

The module requires two AS-Interface addresses for processing all eight inputs. The addresses can be assigned through a double addressing socket integrated in the module.

K45 modules with four digital inputs and outputs according to AS-i Specification 3.0

The extended address mode (A/B addresses) according to AS-Interface Specification 3.0 enables the connection of up to 62 slaves on one AS-i network. With this extended address mode, four outputs are now possible even with A/B slaves (instead of only three outputs possible up to now with Specification 2.1). Hence with full expansion of an AS-Interface network, there are now 248 inputs as well as 248 outputs available on one AS-Interface network.

Please note, however,

- that these modules can be used only with a master according to AS-i Specification 3.0
- that the cycle times for the outputs may be up to 20 ms.

Depending upon the module, the sockets can have a double assignment.
Pin assignment: Y i.e. via a socket, two sensors or one sensor/one actuator is connected.

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I/O modules for use in the field, high degree of protection: Digital I/O modules, IP67 - K45

Selection and ordering data

3RK1400-0GQ20-0AA3

Digital I/O modules, IP67 - K45

- PNP transistor
- Width 45 mm
- Current carrying capacity of the inputs: 200 mA
- Modules supplied without mounting plate

	Type	Current carrying capacity of outputs	Slave type	Pin assign-ment	U_{aux} 24 V	Connection methods	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
NEW	8 inputs[1]	--	A/B	Y	--	M12	A	**3RK2200-0DQ20-0AA3**		1	1 unit	42C
	4 inputs	--	Standard	Standard	--	M12	▶	**3RK1200-0CQ20-0AA3**		1	1 unit	42C
		--	Standard	Standard	--	M8 screw	A	**3RK1200-0CT20-0AA3**		1	1 unit	42C
		--	A/B	Standard	--	M12	▶	**3RK2200-0CQ20-0AA3**		1	1 unit	42C
		--	A/B	Standard	--	M8 screw	B	**3RK2200-0CT20-0AA3**		1	1 unit	42C
	2 x 2 inputs	--	A/B	Y	--	M12	A	**3RK2200-0CQ22-0AA3**		1	1 unit	42C
	2 inputs/ 2 outputs	2 A[2]	Standard	Standard	✓	M12	▶	**3RK1400-1BQ20-0AA3**		1	1 unit	42C
	2 x (1 input/ 1 output)	0.2 A	Standard	Y	--	M12	A	**3RK1400-0GQ20-0AA3**		1	1 unit	42C
	4 x (1 input/ 1 output)	0.2 A	A/B (Spec. 3.0)	Y	--	M12	B	**3RK2400-0GQ20-0AA3**		1	1 unit	42C
	4 x (1 input/ 1 output)	0.5 A	A/B (Spec. 3.0)	Y	✓	M12	B	**3RK2400-1GQ20-1AA3**		1	1 unit	42C
NEW	4 outputs	1 A	A/B (Spec. 3.0)	Standard	✓	M12	A	**3RK2100-1CQ20-0AA3**		1	1 unit	42C
	3 outputs	1 A	A/B	Standard	✓	M12	▶	**3RK2100-1EQ20-0AA3**		1	1 unit	42C
	4 outputs	1 A	Standard	Standard	✓	M12	▶	**3RK1100-1CQ20-0AA3**		1	1 unit	42C
	2 outputs/ 2 inputs	2 A	A/B	Standard	✓	M12	A	**3RK2400-1BQ20-0AA3**		1	1 unit	42C

Accessories

3RK1901-2EA00

K45 mounting plates

• For wall mounting	▶	**3RK1901-2EA00**		1	1 unit	42C
• For standard rail mounting	▶	**3RK1901-2DA00**		1	1 unit	42C

3RK1901-1KA00

AS-Interface sealing caps

• For free M12 sockets	▶	**3RK1901-1KA00**		100	10 units	42C
• For free M8 sockets	A	**3RK1901-1PN00**		100	10 units	42C

3RK1901-1PN00

✓ Available

-- Not available

[1] Module occupies two AS-Interface addresses

[2] The typical current carrying capacity per output increases with version "E12" from 1.5 to 2 A (available since approx. 07/2003).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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I/O modules for use in the field, high degree of protection: Digital I/O modules, IP67 - K20

Overview

Digital I/O modules IP67 - K20

The K20 compact module series rounds off the AS-Interface compact modules with a particularly slim design and a width of a mere 20 mm. Thanks to its extremely compact dimensions, these modules are particularly suited for handling machine applications in the field of production engineering where modules need to be arranged in the smallest of spaces.

Robotics is yet another application area. Instead of the AS-Interface flat cable, the K20 modules are connected to AS-Interface over a round cable with M12 cable box.
The AS-Interface bus cable and the 24 V DC auxiliary power supply are routed in this case in a shared round cable.
This enables extremely compact installation.

The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. In this case, the K20 modules support direct connection to the round cable. No flat to round cable adapter is required.

The K20 compact module range includes standard AS-Interface modules, as well as an ASIsafe version for the connection of safety-related sensors, such as EMERGENCY-STOP pushbuttons or protective door monitoring. All standard AS-Interface K20 modules support, as far as technically possible, the expanded address mode (A/B addresses) according to AS-Interface specification 2.1, which enables connection of 62 stations to an AS-Interface network. The K20 module with four inputs and four outputs works in expanded address mode according to AS-Interface specification 3.0 which, for the first time, supports four outputs with an A/B slave, thus enabling 248 inputs and 248 outputs in a fully expanded AS-Interface network.

For particularly space-saving dimensions, the sensors and actuators are connected over M8 plug-in connectors. Alternatively, M12 connectors with Y assignment can be used.

Selection and ordering data

3RK2200-0CT30-0AA3

Version					DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital I/O modules, IP67 – K20										
Width 20 mm										
Type	Current carrying capacity of outputs	Slave type	Pin assignment	Connection methods						
4 inputs	--	A/B	Standard	M8	A	**3RK2200-0CT30-0AA3**		1	1 unit	42C
	--	A/B	Y	M12	A	**3RK2200-0CQ30-0AA3**		1	1 unit	42C
2 inputs/ 2 outputs	1	A/B	Standard	M8	A	**3RK2400-1BT30-0AA3**		1	1 unit	42C
	1	A/B	Y	M12	A	**3RK2400-1BQ30-0AA3**		1	1 unit	42C
4 outputs	1	A/B (Spec. 3.0)	Standard	M8	A	**3RK2100-1CT30-0AA3**		1	1 unit	42C
4 inputs/ 4 outputs	1	Standard	Standard	M8	C	**3RK1400-1CT30-0AA3**		1	1 unit	42C
	1	A/B (Spec. 3.0)	Standard	M8	A	**3RK2400-1CT30-0AA3**		1	1 unit	42C
2 safe inputs	--	Standard	Y-II	M12	A	**3RK1205-0BQ30-0AA3**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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I/O modules for use in the field, high degree of protection: Digital I/O modules, IP67 - K20

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
AS-Interface sealing caps						
• For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
• For free M8 sockets	A	**3RK1901-1PN00**		100	10 units	42C
AS-Interface compact distributors, for AS-Interface flat cable Current carrying capacity up to 8 A	A	**3RK1901-1NN10**		1	1 unit	42C
AS-Interface M12 feeders • Degree of protection IP67 • Current carrying capacity up to 2 A						
For flat cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Available	►	**3RX9801-0AA00**		1	1 unit	42C
AS-Interface M12 feeders • Degree of protection IP67/IP68/IP69K • Current carrying capacity up to 4 A						
For flat cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Not available	A	**3RK1901-1NR10**		1	1 unit	42C
For flat cable: AS-i; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available	A	**3RK1901-1NR11**		1	1 unit	42C
For flat cable: AS-i; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available	A	**3RK1901-1NR12**		1	1 unit	42C
For flat cable: AS-i/U_{aux}; For: M12 socket; Cable length: --; Cable end in feeder: Not available	A	**3RK1901-1NR20**		1	1 unit	42C
For flat cable: AS-i/U_{aux}; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available	A	**3RK1901-1NR21**		1	1 unit	42C
For flat cable: AS-i/U_{aux}; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available	A	**3RK1901-1NR22**		1	1 unit	42C
AS-Interface M12 feeders, 4-fold Current carrying capacity up to 4 A						
For flat cable: AS-i/U_{aux}; For: 4-fold M12 socket, delivery includes coupling module; Cable length: --; Cable end in feeder: Not available	A	**3RK1901-1NR04**		1	1 unit	42C
M12 T distributors • IP68 • 1 x M12 plug • 2 x M12 box	C	**3RK1901-1TR00**		1	1 unit	42C
M12 Y-shaped coupler plugs For connection of two sensors to one M12 socket with Y assignment	A	**6ES7194-1KA01-0XA0**		1	1 unit	250
M12 connecting cables • 3-pole • For addressing AS-i slaves with M12 bus connection • Cable length 1.5 m	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D

3RK1901-1KA00

3RK1901-1PN00

3RK1901-1NN10

3RX9801-0AA00

3RK1901-1NR10

3RK1901-1NR11

3RK1901-1NR04

3RK1901-1TR00

6ES7194-1KA01-0XA0

3RK1902-4PB15-3AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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I/O modules for use in the field, high degree of protection: Analog I/O modules, IP67 – K60

Overview

K60 analog compact module

AS-Interface analog modules from the K60 compact series detect or issue analog signals locally. These modules are linked to the higher-level controller through an AS-Interface master according to specification 2.1 or specification 3.0.

The analog modules are divided into the following groups:

- Input modules
  - for sensors with current signal
  - for sensors with voltage signal
  - for sensors with thermal resistor
- Output modules
  - for current actuators
  - for voltage actuators

The input modules according to profile 7.3/7.4 are available with two or four input channels. It is possible in addition to convert the two-channel module to using only one input channel, thus enabling very short times before the analog value is available. The conversion is effected by means of a jumper plug at socket 3. The transmission times achieved with analog modules according to Profile 7.A.9 are shorter by half than those achieved with Profile 7.3/7.4. Operation is adjustable in this case, e.g. it is possible to choose with the ID1 Code whether the module is operated with one or two channels.

The output modules are configured as two-channel modules as standard.

The input and output channels are electrically separated from the AS-Interface network. If sensors with a higher power requirement are to be connected, more power can be supplied through the auxiliary voltage as an alternative to the internal supply.

In the manual, the modules are presented in great detail along with their technical specifications and in-depth notes on operation. Sample function blocks round off the manual.

Benefits

- Analog modules are just as easy to integrate in AS-Interface as digital modules
- Analog values can be easily detected and issued locally
- Preprocessing of the analog value transmission in the master enables rapid evaluation of the analog values
- Up to four values can be detected using one analog module
- Faster transmission and conversion of analog values thanks to the new option for a switchover to single-channel operation

In addition, Specification 3.0 now also offers:

- A/B technology, now also with analog modules
- On average, double fast transmission times (only 3 or 4 cycles, depending on the resolution selected)
- Variable adjustable mode: 12 bit or 14 bit resolution, 1 or 2-channel, selectable over the ID1 code
- Extra simple handling of analog value processing with masters of Specification 3.0, the DP/AS-i LINK Advanced

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I/O modules for use in the field, high degree of protection: Analog I/O modules, IP67 – K60

Selection and ordering data

3RK1207-1BQ44-0AA3

3RK2207-2BQ50-0AA3

Version			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog I/O modules IP67 - K60, analog profile 7.3 • Slave type: Standard • Width 60 mm • Modules supplied without mounting plate								
Inputs	Type	Measuring range						
1 or 2 inputs (selectable using jumper plug at socket 3)	Current	4 ... 20 mA or ±20 mA (selectable)[1]	A	**3RK1207-1BQ40-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	A	**3RK1207-2BQ40-0AA3**		1	1 unit	42C
	Thermal resistance	Pt 100 or Ni 100 or 0 ... 600 Ω (selectable)[1]	A	**3RK1207-3BQ40-0AA3**		1	1 unit	42C
4 inputs	Current	4 ... 20 mA or ±20 mA (selectable)	A	**3RK1207-1BQ44-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	C	**3RK1207-2BQ44-0AA3**		1	1 unit	42C
	Thermal resistance	Pt 100 or Ni 100 or 0 ... 600 Ω (selectable)	A	**3RK1207-3BQ44-0AA3**		1	1 unit	42C
Outputs	Type	Output range						
2 outputs	Current for 2-wire actuators	4 ... 20 mA or ± 20 mA or 0 ... 20 mA (selectable)[1]	A	**3RK1107-1BQ40-0AA3**		1	1 unit	42C
	Voltage for 2-wire actuators	± 10 V or 0 ... 10 V or 1 ... 5 V (selectable)	A	**3RK1107-2BQ40-0AA3**		1	1 unit	42C
Analog I/O modules IP67 - K60, analog profile 7.A.9 • Slave type: A/B (Spec. 3.0) • Width 60 mm • Modules supplied without mounting plate								
Inputs	Type	Measuring range						
1 or 2 inputs (variably adjustable)	Current	4 ... 20 mA or ±20 mA (selectable)	A	**3RK2207-1BQ50-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	A	**3RK2207-2BQ50-0AA3**		1	1 unit	42C

[1] Some modules are available in the extended temperature range (from -25 to 70 °C) and for use in difficult environmental conditions (coated according to environment standard IEC 60721).

Description	SIPLUS Article No.	Corresponds to module
SIPLUS AS-Interface 2AA, IP67	6AG1107-1BQ40-7AA3	3RK1107-1BQ40-0AA3
SIPLUS AS-Interface 2AI, IP67	6AG1207-1BQ40-7AA3	3RK1207-1BQ40-0AA3
SIPLUS AS-Interface 2AI, IP67	6AG1207-3BQ40-7AA3	3RK1207-3BQ40-0AA3

For more information see www.siemens.com/siplus-extreme

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
	Manual "AS-Interface Analog Modules K60" see http://support.automation.siemens.com/WW/view/en/6007797						
 3RK1901-0CA00	**K60 mounting plates** • Wall mounting	►	**3RK1901-0CA00**		1	1 unit	42C
	• Standard rail mounting	►	**3RK1901-0CB01**		1	1 unit	42C
 3RK1901-1KA00	**M12 sealing caps**	►	**3RK1901-1KA00**		100	10 units	42C
 3RK1902-0AR00	**Sealing sets** • For mounting plate K60 and distributor • Cannot be used for K45 mounting plate • One set contains one straight and one shaped seal	A	**3RK1902-0AR00**		100	5 units	42D
 3RK1901-1AA00	**Jumper plugs** For changing over the 2-channel input modules	A	**3RK1901-1AA00**		1	1 unit	42C

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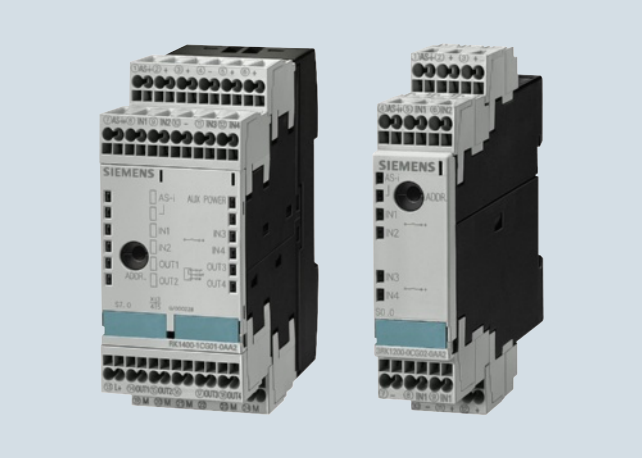
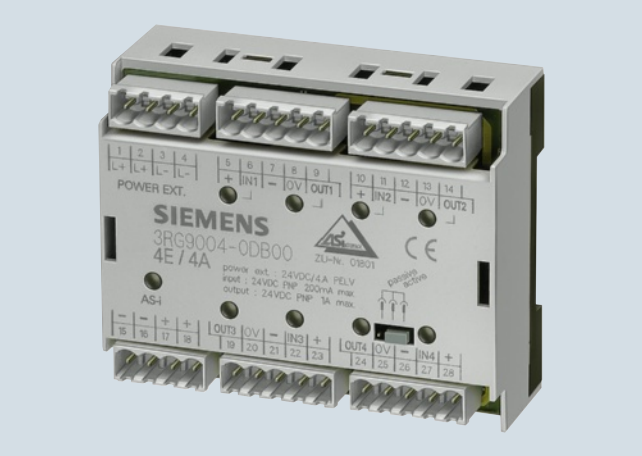
I/O modules for use in the control cabinet Introduction

Overview



SlimLine S22.5/S45

Flat module



F90 module

For AS-Interface applications inside control cabinets, there are various module series for the most diverse requirements:

- SlimLine S22.5
- SlimLine S45
- F90 module
- Flat module

All modules of these series can be snap-mounted directly on a standard mounting rail or be fastened using screws.

AS-Interface modules in IP20 have direct terminals for the AS-Interface cables and therefore do not require a base.

Series	Spectrum	Mounting onto TH35 standard mounting rails according to IEC 60715	Wall mounting using push-in lugs (type 3RP1 903)	Other possibilities
SlimLine S22.5	• 4I (standard and A/B modules) • 4O • 2I/2O (steady-state/relay outputs) • Counters[1)] • Ground-fault detection modules[1)]	✓	✓	--
SlimLine S45	• 4I/4O (steady-state/relay outputs) • 4I/4O with floating I/Os • 4I/3O (A/B modules) • 4I/4O (A/B modules Spec. 3.0)	✓	✓	--
F90 module	• 4I/4O (screw terminals) • 4I/4O (connection using Combicon connector) • 16I	✓	--	--
Flat module	• 4I/4O (screw terminals)	--	--	Integrated lugs for screw fixing

✓Available

-- Not available

1) For more information about these modules
see "Modules with Special Functions" from page 2/67.

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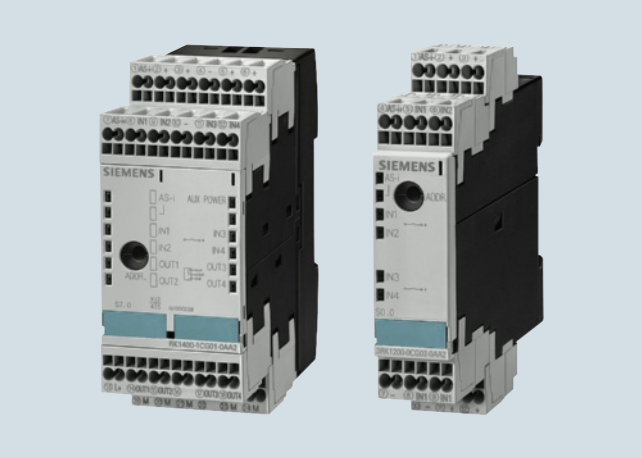
Overview

SlimLine modules of the S22.5 and S45 series



SlimLine S45 module (left) and S22.5 module (right)

The AS-Interface series of modules for the "SlimLine" control cabinet with degree of protection IP20 creates space in the cabinet and in distributed local boxes.

For these modules, the priority was placed on a narrow design. They have a width of only 22.5 mm or 45 mm.

Standard sensors/actuators and the AS-Interface cable can be connected using removable screw terminals or spring-type terminals.

Integrated adapters enable mounting onto a standard mounting rail. Disassembly from the standard mounting rail is quick and easy and requires no tools.

With an additional accessory (push-in lugs), the modules can also be screwed on.

All modules are fitted at the front with LEDs which indicate the module's status.

An addressing socket integrated at the front enables the module to be addressed also when it is installed.

In addition to the digital input/output modules, there are modules of design S22.5 with special functions. These include:

- Counter modules
- Ground-fault detection modules

For more information about these modules see

- the section "Modules with special functions" on page 2/67
- Industry Mall: Section "Automation"
→ "SIRIUS Industrial Controls"
→ "Industrial Communication"
→ "AS-Interface" → "Slaves"
→ "Modules with Special Functions"

The AS-Interface Specification 3.0 adds a number of completely new features to the AS-Interface bus system. The extended address mode (A/B addresses) enables the connection of up to 62 slaves on one AS-Interface network. With the extended address mode according to Specification 3.0, four outputs are now possible for the first time even with A/B slaves (instead of only three outputs possible up to now with Specification 2.1). Hence with full expansion of an AS-Interface network, there are now 248 inputs as well as 248 outputs available on one AS-Interface network.

Modules with four inputs and four outputs as A/B slaves according to Specification 3.0 are also available for the control cabinet as SlimLine S45 modules.

Note:

Please note that the modules according to Specification 3.0 can be used only with a new master according to AS-Interface Specification 3.0, and that the cycle times for the outputs must not exceed 20 ms.

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I/O modules for use in the control cabinet SlimLine

Selection and ordering data

3RK1200-0CE00-0AA2

3RK1400-0BG00-0AA2

3RK1400-1CG00-0AA2

Version					DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SlimLine S22.5 modules • Inputs: PNP transistor • Width 22.5 mm										
Type	Connection	Slave type	Inputs	Outputs						
4 inputs	Screw	Standard	2-wire	--	►	**3RK1200-0CE00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	--	►	**3RK1200-0CE02-0AA2**		1	1 unit	42C
		A/B slave	2- and 3-wire	--	►	**3RK2200-0CE02-0AA2**		1	1 unit	42C
	Spring-type	Standard	2-wire	--	A	**3RK1200-0CG00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	--	A	**3RK1200-0CG02-0AA2**		1	1 unit	42C
		A/B slave	2- and 3-wire	--	A	**3RK2200-0CG02-0AA2**		1	1 unit	42C
2 inputs/ 2 outputs	Screw	Standard	2-wire	PNP transistor 2 A	►	**3RK1400-0BE00-0AA2**		1	1 unit	42C
		Standard	2-wire	Relays	►	**3RK1402-0BE00-0AA2**		1	1 unit	42C
	Spring-type	Standard	2-wire	PNP transistor 2 A	B	**3RK1400-0BG00-0AA2**		1	1 unit	42C
		Standard	2-wire	Relays	B	**3RK1402-0BG00-0AA2**		1	1 unit	42C
4 outputs	Screw	Standard	--	PNP transistor 1 A	►	**3RK1100-1CE00-0AA2**		1	1 unit	42C
	Spring-type	Standard	--	PNP transistor 1 A	A	**3RK1100-1CG00-0AA2**		1	1 unit	42C
SlimLine S45 modules • Inputs: PNP transistor • Width 45 mm										
Type	Connection	Slave type	Inputs	Outputs						
4 inputs/ 4 outputs	Screw	Standard	2- and 3-wire	PNP transistor 1 A	►	**3RK1400-1CE00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	PNP transistor 2 A	►	**3RK1400-1CE01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire floating	PNP transistor 1 A floating	►	**3RK1402-3CE01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	Relays	►	**3RK1402-3CE00-0AA2**		1	1 unit	42C
		A/B (Spec. 3.0)	2- and 3-wire	PNP transistor 2 A	A	**3RK2400-1CE01-0AA2**		1	1 unit	42C
	Spring-type	Standard	2- and 3-wire	PNP transistor 1 A	A	**3RK1400-1CG00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	PNP transistor 2 A	B	**3RK1400-1CG01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire floating	PNP transistor 1 A floating	A	**3RK1402-3CG01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	Relays	A	**3RK1402-3CG00-0AA2**		1	1 unit	42C
		A/B (Spec. 3.0)	2- and 3-wire	PNP transistor 2 A	B	**3RK2400-1CG01-0AA2**		1	1 unit	42C
4 inputs/ 3 outputs	Screw	A/B slave	2- and 3-wire	PNP transistor 2 A	►	**3RK2400-1FE00-0AA2**		1	1 unit	42C
	Spring-type	A/B slave	2- and 3-wire	PNP transistor 2 A	A	**3RK2400-1FG00-0AA2**		1	1 unit	42C
Accessories										
Sealable covers To secure against unauthorized addressing					B	**3RP1902**		1	5 units	41H
Push-in lugs For screw fixing					B	**3RP1903**		1	10 units	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

3RG9002-0DB00

F90 modules
- Standard slave
- Width 90 mm
- With Combicon version: Delivery without Combicon connector

Version				DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	Connection	Inputs	Outputs						
4 inputs/ 4 outputs	Screw	2- and 3-wire PNP transistor	PNP transistor 1 A	B	**3RG9002-0DB00**		1	1 unit	42C
		2- and 3-wire PNP transistor	PNP transistor 2 A	B	**3RG9002-0DA00**		1	1 unit	42C
		2- and 3-wire PNP transistor floating	PNP transistor 2 A	B	**3RG9002-0DC00**		1	1 unit	42C
	Combicon	2- and 3-wire PNP transistor	PNP transistor 1 A	B	**3RG9004-0DB00**		1	1 unit	42C
		2- and 3-wire PNP transistor	PNP transistor 2 A	B	**3RG9004-0DA00**		1	1 unit	42C
		2- and 3-wire PNP transistor floating	PNP transistor 2 A	B	**3RG9004-0DC00**		1	1 unit	42C
16 inputs	Screw	PNP transistor	--	B	**3RG9002-0DE00**		1	1 unit	42C
	Combicon	PNP transistor	--	B	**3RG9004-0DE00**		1	1 unit	42C

Accessories

Combicon connector sets B **3RX9810-0AA00** 1 1 unit 42C

For 4I/4O modules with Combicon connection; one set comprises:
- 4 x 5-pole plug for connection
- Standard sensors/actuators
- 2 x 4-pole plug for AS-Interface and external auxiliary voltage

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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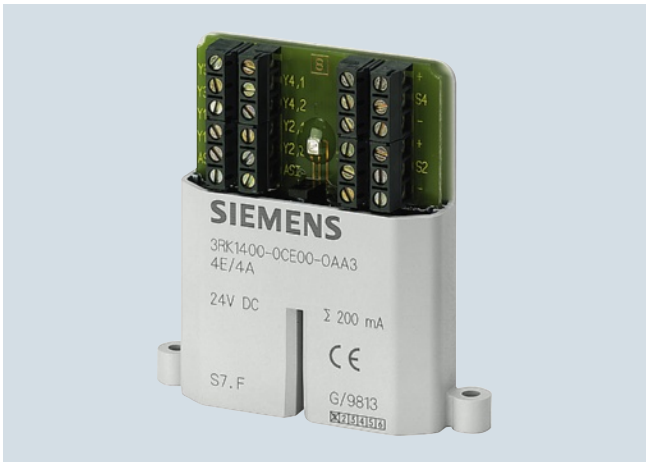
I/O modules for use in the control cabinet
Flat module

Overview



Flat module

The flat module for the control cabinet in degree of protection IP20 has 4 inputs and 4 outputs.

The module is fitted at the front with an LED which indicates the module's status.

With the integrated lugs, the modules can be screwed on.

An integrated addressing socket enables the module to be addressed when it is installed.

Standard sensors/actuators and the AS-Interface cable can be connected using screw terminals.

Selection and ordering data

	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Article No. Price per PU			
3RK1400-0CE00-0AA3	**Flat modules** • 4 inputs/4 outputs • 200 mA for all I/Os	A	**3RK1400-0CE00-0AA3**	1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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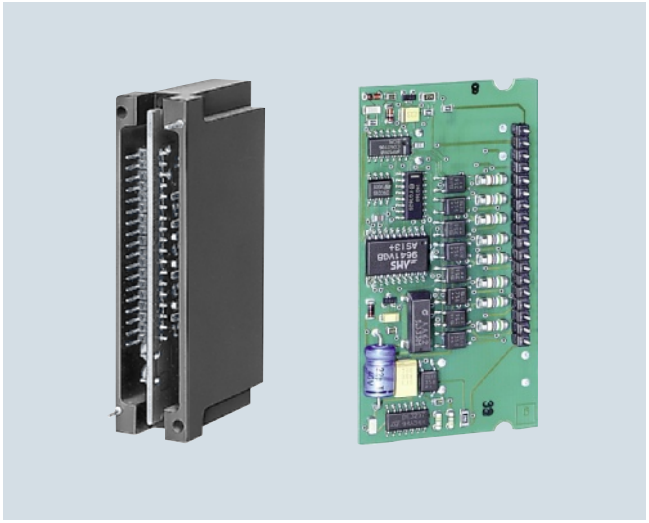
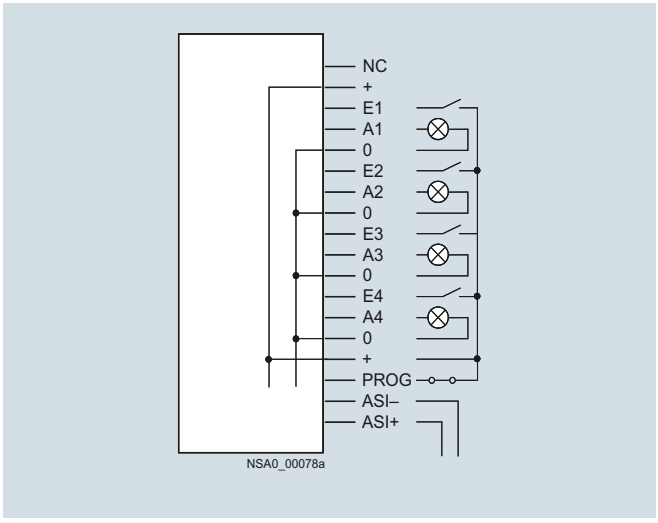
Overview

AS-Interface communication modules for printed circuit board installation



AS-Interface communication module 3RK1400-0CD00-0AA3 (left),
AS-Interface communication module 3RK2400-1FD00-0AA2 (right)

3RK1400-0CD00-0AA3 AS-Interface communication modules for printed circuit board installation



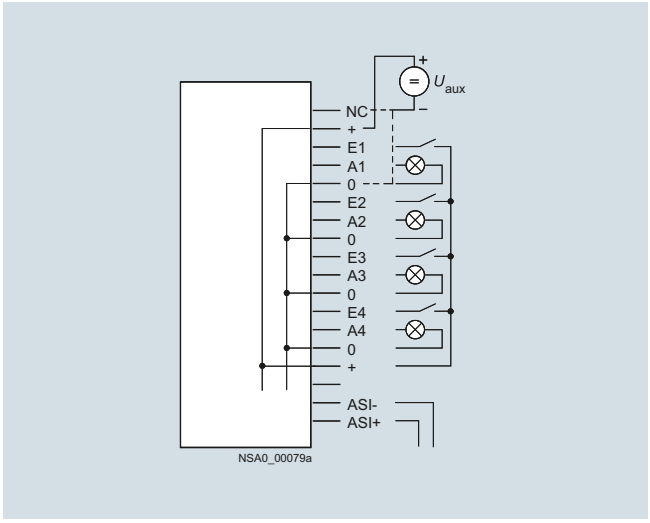
3RK1400-0CD00-0AA3

With the 4I/4O module for printed circuit board mounting, it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the necessary energy being provided by the AS-Interface system (yellow AS-Interface cable).

Note:

If the switching outputs are overloaded, the module does not respond to invoking by a master.

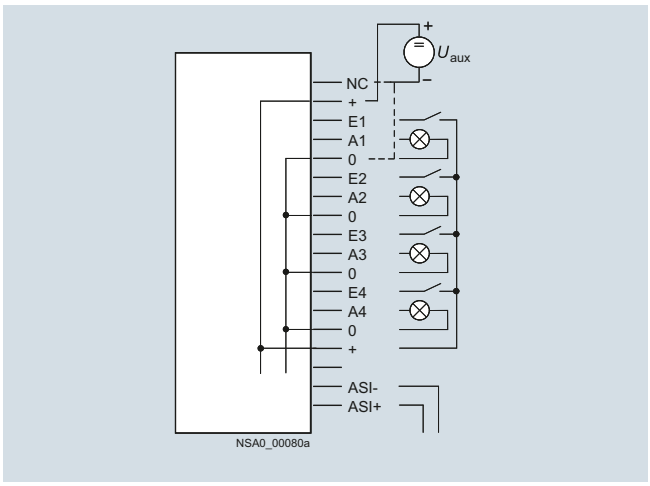
3RK1400-0CD01-0AA3 AS-Interface communication modules for printed circuit board installation



3RK1400-0CD01-0AA3

With the 4I/4O module 3RK1400-0CD01-0AA3 for printed circuit board mounting, it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the necessary energy for the inputs and outputs being provided from the auxiliary voltage (24 V PELV). If (+) is connected to U_{aux} + and (NC) to U_{aux} - , the outputs are not short-circuit and overload proof; if U_{aux} - is connected to (0), the outputs are overload and short-circuit proof (maximum summation current 200 mA). In this case, the module does not respond even to invoking by a master when the switching outputs are overloaded.

3RG9 005-0SA00 AS-Interface communication modules for printed circuit board installation



3RG9005-0SA00

With the 4I/4O module for printed circuit board mounting, it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the power for inputs and outputs being provided from an auxiliary voltage (24 V PELV). If (+) is connected to U_{aux}+ and (NC) to U_{aux}- , the outputs are not short-circuit and overload proof; if U_{aux}- is connected to (0), the outputs are overload and short-circuit proof (maximum summation current 200 mA). In this case, the module does not respond even to invoking by a master when the switching outputs are overloaded.

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Special integrated solutions
AS-Interface communication modules

3RK1400-1CD00-0AA2, 3RK2400-1FD00-0AA2 AS-Interface communication modules for printed circuit board installation

Connection	Connection pad
AS-i +	27, 29
AS-i -	28, 30
Sensor+	17, 18, 23, 24
Sensor-	13, 14, 19, 20
IN1	21
IN2	22
IN3	15
IN4	16
U_{aux} + (L24+)	2, 4
U_{aux} - (M24)	1, 3
OUT1	9
OUT2	10
OUT3	5
OUT4	6 (not assigned for 3RK2400-1FD00-0AA2 4I/3O module)
OUT-	7, 8
Not assigned	11, 12, 25, 26

With the 4I/4O or 4I/3O module for printed circuit board mounting, it is possible for up to four mechanical contacts or 3-conductor sensors according to IEC 947-5-2 to be connected. Up to four indicator lights via the 4I/4O module or up to three indicator lights via the 4I/3O module can also be controlled. The power for short-circuit proof solid-state switching outputs is provided from an auxiliary voltage (24 V PELV).

Mounting is very easy using a "Card Edge Board-to-Board Connector". This connector can be ordered for vertical and horizontal mounting from the company AMP, for example:

- 180° version for vertical mounting (AMP): Type 530843-2
- 90° version for horizontal mounting (AMP): Type 650118-1

If the inputs are loaded with more than 200 mA, the module does not respond to invoking by a master.

3RK1200-0CD00-0AA2 AS-Interface communication modules for printed circuit board installation

Connection	Connection pad
AS-i +	27, 29
AS-i -	28, 30
Sensor+	17, 18, 23, 24
Sensor-	13, 14, 19, 20
IN1	21
IN2	22
IN3	15
IN4	16
Not assigned	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 25, 26

With the 4I module for printed circuit board mounting, it is possible for up to four mechanical contacts or 3-conductor sensors to be connected, the power for inputs being provided from the AS-Interface cable.

Mounting is very easy using a "Card Edge Board-to-Board Connector". This connector can be ordered for vertical and horizontal mounting from the company AMP, for example:

- 180° version for vertical mounting (AMP): Type 530843-2
- 90° version for horizontal mounting (AMP): Type 650118-1

If the inputs are loaded with more than 200 mA, the module does not respond to invoking by a master.

Selection and ordering data

3RK1400-0CD00-0AA3

3RG9005-0SA00

Version	Slave type	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
4 inputs / 4 outputs							
• Supply of I/Os using AS-Interface cable (max. 200 mA) - Printed circuit board with solder pins, protected by enclosure	Standard	X	**3RK1400-0CD00-0AA3**		1	1 unit	42C
• Supply of I/Os using external auxiliary voltage (24 V PELV) - Printed circuit board with solder pins, protected by enclosure	Standard	D	**3RK1400-0CD01-0AA3**		1	1 unit	42C
- Printed circuit board with solder pins for horizontal mounting	Standard	D	**3RG9005-0SA00**		1	1 unit	42C
• Supply of outputs using external auxiliary voltage (24 V PELV) - Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	Standard	A	**3RK1400-1CD00-0AA2**		1	5 units	42C
4 inputs / 3 outputs • Supply of outputs using external auxiliary voltage (24 V PELV) - Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	A/B	B	**3RK2400-1FD00-0AA2**		1	5 units	42C
4 inputs • Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	Standard	C	**3RK1200-0CD00-0AA2**		1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Counter module with spring-type terminals

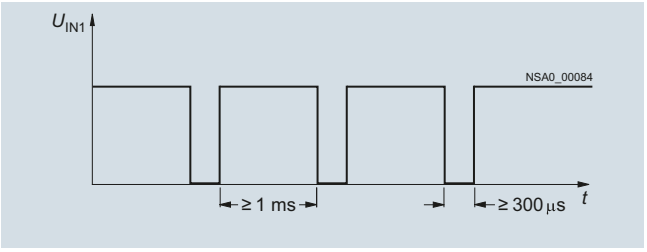
The counter module is used to send hexadecimally coded count values (LSB=D0, MSB=D3) to a higher-level controller.
The count value is increased by one for each valid count pulse at terminal 8. Beginning at 0, the module counts up to 15 and then begins again at 0. The controller adopts the current value and determines the number of pulses between two host invocations through subtraction from the previous value. The total number of count pulses is determined by adding these differences.

For the values sent to be unambiguous, no more than 15 count values are allowed between two host invocations or AS-Interface master invocations at terminal 8. The maximum permissible transmission frequency is calculated from these times:

$f_{TRmax} = 15 / T_{max}$

T_{max} : max. possible transmission time from the slave to the host

A further condition for the maximum frequency is the required pulse shape. For the counter to accept a pulse as valid, a Low must have been applied at the input for at least 300 µs and a High for at least 1 ms.
This results in a maximum frequency of $f_{Zmax} = 1 / 1.3$ ms = 769 Hz independently of the control system (see figure).



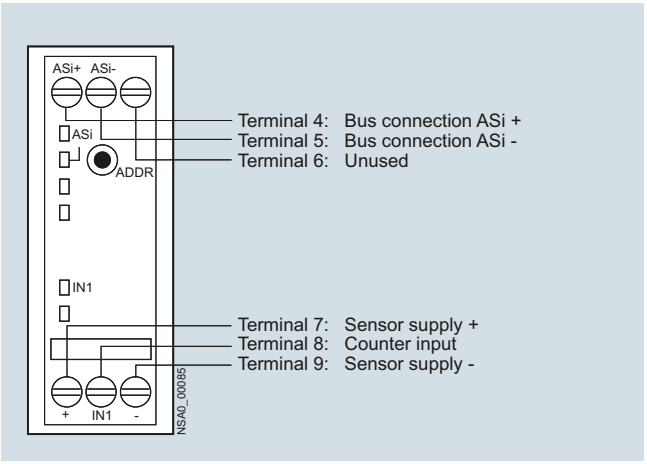
Maximum frequency for the counter module

If the time criterion stipulated in the figure is violated, the count value is rejected.

The counter is active only for the reset parameter P2 (default). The counter is deleted when P2 is set, and the incoming count pulses are not registered until after P2 is reset again.

Note:

A customized function block is necessary or must be programmed.



Counter module connection options

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Counter modules						
Width 22.5 mm						
• With screw terminals	A	**3RK1200-0CE03-0AA2**		1	1 unit	42C
• With spring-type terminals	C	**3RK1200-0CG03-0AA2**		1	1 unit	42C

3RK1200-0CE03-0AA2

3RK1200-0CG03-0AA2

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Modules with special functions
Ground-fault detection modules

Overview

Ground-fault detection module

"Ground faults in any control circuit must not lead to unintentional starting or potentially hazardous movements or prevent the machine from stopping." (IEC 60204-1/VDE 0113-1).

The AS-Interface ground-fault detection module is used to meet these requirements. Using this module from the SlimLine series, ground faults in AS-Interface systems can be reliably detected and reported.

The following ground faults are detected:

- Ground fault from AS-i "+"
- Ground fault from AS-i "-"
- Ground fault from sensors and actuators which are supplied from the AS-Interface voltage.

Note:

Not suitable for AS-Interface Power24V.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Ground-fault detection modules						
Width 22.5 mm						
• With screw terminals		**3RK1408-8KE00-0AA2**		1	1 unit	42C
• With spring-type terminals		**3RK1408-8KG00-0AA2**		1	1 unit	42C

3RK1408-8KE00-0AA2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

AS-Interface overvoltage protection module

The AS-Interface overvoltage protection module (protection module) protects downstream AS-Interface devices or individual sections in AS-i networks from conducted overvoltages which can be caused by switching operations and remote lightning strikes. The location of the protection module forms within the lightning protection zone concept the transition from zone 1 to 2/3. Direct lightning strikes must be coped with using additional protective measures at the transitions from lightning protection zone 0A to 1.

With the AS-Interface overvoltage protection module, it is now also possible to integrate AS-Interface in the overall overvoltage protection concept of a plant or machine.

The module has the same design and degree of protection (IP67) as the AS-Interface K45 compact modules. It is a passive module without AS-i IC and as such does not need its own address on the AS-Interface network. The module can be used to protect the AS-Interface cable and the cable for the auxiliary voltage from overvoltage. Overvoltages are discharged through a ground cable with a green/yellow oil-proof outer sheath. This cable is fixed in the module and must be connected with low resistance to the system's ground.

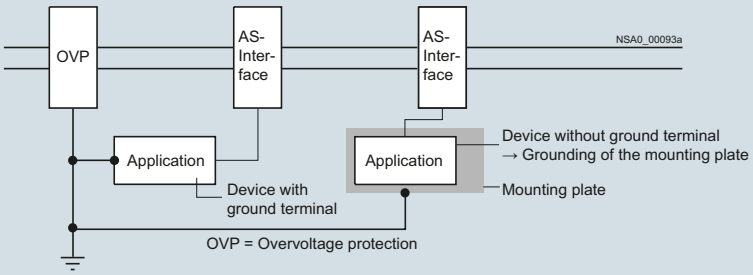
Rated discharge current I_{sn}

The rated discharge current is the peak value of a surge current of the form 8/20 µs (microseconds), for which the protection module is designed in accordance with a specified test program. With waveform 8/20, 100 % of the value is achieved after 8 µs and 50 % after 20 µs.

Protection level U_p

The protection level of a protection module is the highest momentary value of the voltage at the terminals, established in individual tests and characterizes the capability of a protection module to limit overvoltages to a residual level.

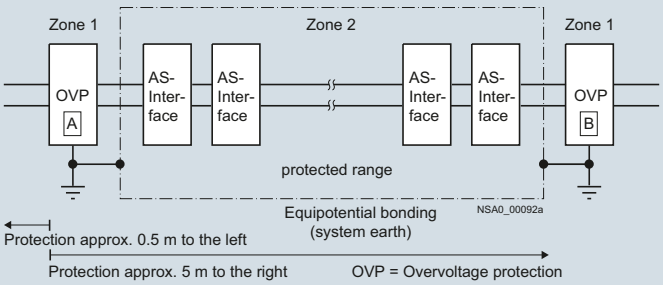
Configuration guidelines



The grounding of protection modules and the units to be protected must be effected through a shared grounding point.

If insulated devices are protected, their mounts must be included in the grounding points.

Sample application



Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	AS-Interface overvoltage protection module	B	**3RK1901-1GA01**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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AS-Interface connections for LOGO!

Overview

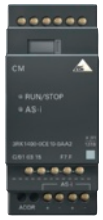
Every LOGO! can now be connected to the AS-Interface system

AS-Interface connection for LOGO!

Using the AS-Interface connection for LOGO!, an intelligent slave can be integrated in the AS-Interface system. With the modular interface, it becomes possible to integrate the different basic units in the system according to their functionality. Similarly, functionalities can be quickly and easily adapted to new requirements by exchanging the basic unit.

The interface module provides four inputs and four outputs on the system. These inputs and outputs do not actually exist in hardware terms, however, but are only virtually present through the interface on the bus.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1400-0CE10-0AA2	**AS-Interface connections for LOGO!** • 4 virtual inputs • 4 virtual outputs	A	**3RK1400-0CE10-0AA2**		1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

AS-Interface power supply unit for 3 A

AS-Interface power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components. They include power-optimized data decoupling for the separation of communication signals and control supply voltage. As the result, AS-Interface is able to convey both data and power along a single line. The power supply units are resistant to overloads and short circuits.

Dimensions

AS-Interface power supply units have compact dimensions in widths of 50 / 70 / 120 mm. No distances from other devices need to be observed when mounting the power supply units.

Features

- Higher rating: The power supply units deliver currents of 2.6 to 8 A.
- Integrated data decoupling: As the result, AS-Interface is able to convey both data and power along a single line.
- Integrated ground-fault detection: The power supply units perform the reliable detection and signaling of ground faults according to IEC 60204-1. The AS-Interface voltage can be disconnected automatically in the event of a ground fault.
- Integrated overload detection: An output overload is detected and reported over a diagnostics LED.
- Diagnostics memory: Any ground faults or overloads on the output side are stored in a diagnostics memory until the device is RESET.
- Remote RESET and remote signaling: Using relay contacts, a ground fault can be signaled and evaluated by a central controller and/or indicator light.
- Diagnostics LEDs: Three different LEDs indicate the status of the AS-Interface power supply locally at the power supply unit.
- Ultra-wide input range / two-phase connection: The ultra-wide input range of 120 to 500 V of the 8 A version means that the supply units can be used in virtually any network worldwide. In addition, this version dispenses with the need for an N conductor as the device can be connected directly between 2 phases of a network.
- Operation with 24 V DC: The 3 A power supply unit is also available as a version with a 24 V DC input. This power supply unit is suitable for use in battery-powered systems or in systems with UPS (uninterruptible power supply).
- Removable terminal blocks with spring-type connections: For easy exchanging of devices, each power supply unit has three removable terminal blocks: for the input side, for the output side and for Signal/RESET connections.

Benefits

- Complete solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Only AS-i masters and AS-i slaves need to be connected to the AS-Interface cable in order to operate AS-Interface
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with a high power requirement
- Integrated ground-fault and overload detection saves the need for additional components and enhances safety
- Fast fault detection and reduced downtimes thanks to diagnostics memory, remote signaling and remote RESET
- Reduced downtimes as the result of removable terminal blocks which enable the fast exchanging of devices
- Ultra-wide input range of the 8 A version permits single-phase and two-phase operation and saves the need for an N conductor
- Can be used world-wide, thanks to, for example, UL/CSA approval (UL 508)
- With the 2.6 A version the output power is restricted to max. 100 W for use in NEC Class 2 circuits

Selection and ordering data

3RX9501-0BA00

3RX9503-0BA00

Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface power supply units, IP20 • AS-i single output 30 V DC • With integrated ground-fault detection • With the 2.6 A version, the output power is restricted to max. 100 W (for use in NEC Class 2 circuits) • Dimensions: Width: 50 mm (3 A/2.6 A); 70 mm (5 A), 120 mm (8 A); Height: 125 mm; Depth: 125 mm							
Output current	Input voltage		**Spring-type terminals**				
2.6 A/max. 100 W	120/230 V AC (selectable)	►	**3RX9501-2BA00**		1	1 unit	42C
3 A	120/230 V AC (selectable)	►	**3RX9501-0BA00**		1	1 unit	42C
3 A	24 V DC	►	**3RX9501-1BA00**		1	1 unit	42C
5 A	120/230 V AC (selectable)	►	**3RX9502-0BA00**		1	1 unit	42C
8 A	120/230 ... 500 V AC (selectable)	►	**3RX9503-0BA00**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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30 V power supply units

Overview

PSN130S 30 V power supply units for 3 A, 4 A and 8 A

The PSN130S 30 V power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components, but do not include data decoupling. Data decoupling modules are needed in addition therefore to separate communication signals and control supply voltage, see page 2/74 and 2/76.

The power supply units are resistant to overload and short circuits.

Dimensions

The 30 V power supply units have compact dimensions in widths of 50 and 70 mm. No distances from other devices need to be observed when mounting the power supply units.

Features

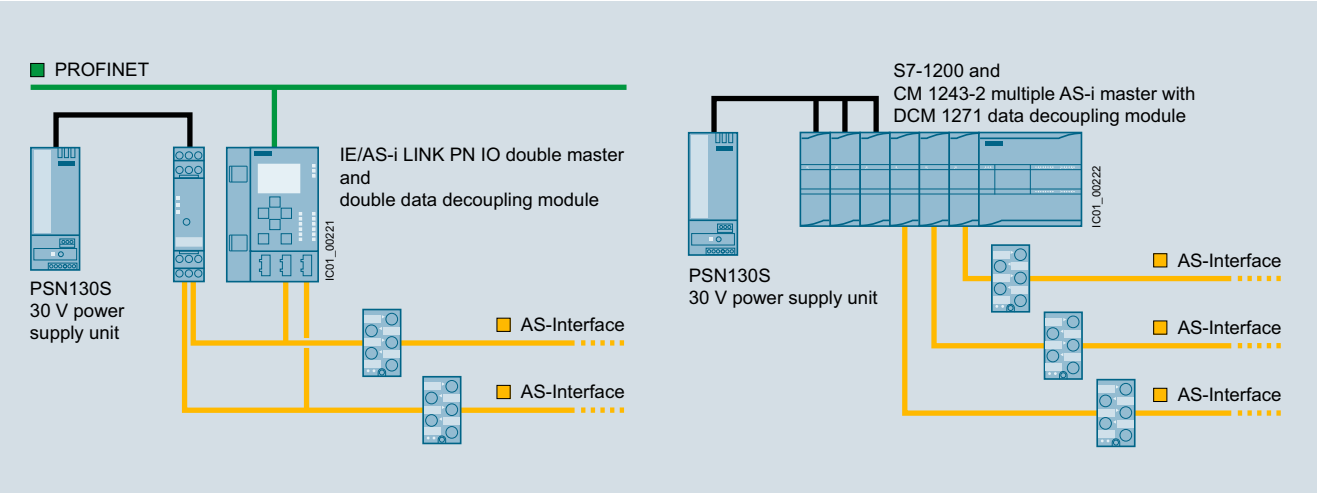
- Primary clocked power supply units for connection to a single-phase AC network
- Power for currents of 3, 4 and 8 A
- The output voltage is floating, and resistant to short-circuits and no-load operation. In the event of an overload, the output voltage will be reduced or switched off. After a short-circuit or overload the devices will start up again automatically.
- In the event of a device fault, the output voltage will be limited to max. 37 V.
- Modular installation devices in degree of protection IP20 and safety class I.
- Diagnostics: With an output voltage > 26.5 V DC, the green LED (30V O.K.) is lit and the signaling contact 13-14 is closed.

Benefits

- Low-cost alternative solution for supplying AS-Interface networks while making full use of the maximum possible cable length per AS-i segment
- Cost advantage particularly for multiple networks
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with a high power requirement
- Can be used world-wide thanks to, for example, UL/CSA approval (UL 508)

Application

Configuration examples of AS-Interface networks with a 30 V power supply unit



Configuration of AS-Interface multiple networks, each with one PSN130S 30 V power supply unit (examples with schematic representation):
Left: Double network based on the S22.5 double data decoupling module and IE/ASi LINK PN IO double master
Right: Triple network based on the SIMATIC S7-1200 with DCM 1271 data decoupling modules and CM 1243-2 communication processors

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Technical specifications

Version		3 A	4 A	8 A
Input data				
• Input voltage, rated value U_e	V AC	120 / 230 V, single-phase, automatic selection		
• Input voltage range	V AC	85 ... 132 / 174 ... 264		
• Mains frequency	Hz	50 / 60		
• Power consumption at full load, typ.	W	103	139	270
Output data				
• Output voltage, rated value U_a	V DC	30		
• Residual ripple	mV_{ss}	< 150		
• Output current, rated value at -20 °C ... +60 °C	A	3	4	8
• Max. output current at +60 °C ... +70 °C	A	3	3	4
Degree of efficiency in rated conditions				
• Degree of efficiency	%	87	88	90
• Power loss, typ.	W	12	17	25
Protection and monitoring				
• Output overvoltage protection	V	< 37		
• Current limit, typ.	A	4	5.5	11
Safety				
• Electrical separation primary / secondary		Output voltage PELV / SELV according to EN 60950 and EN 50178		
• Safety class		I		
• Degree of protection		IP20		

Version		3 A	4 A	8 A
Approvals				
• UL		UL 508 / CSA 22.2		
• Pollution degree		EN 60950		
• Overvoltage category and electrical separation		EN 50178 and IEC 61558		
EMC				
• Emitted interference (class B)		EN 61000-6-3		
• Line harmonics limit		EN 61000-3-2		
• Interference immunity		EN 61000-6-2		
Operating data				
Ambient temperature				
• Operation	°C	-20 ... +70		
• Transport / storage	°C	-40 ... +85		
Pollution degree		2		
Humidity class		Climate class according to DIN 50010, relative air humidity max. 100 %, without condensation		
Dimensions and weight				
• Width	mm	50	50	70
• Height x depth	mm	125 x 126.5		
• Weight	kg	0.4	0.4	0.7

Selection and ordering data

	Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	PSN130S 30 V DC power supply units (without AS-i data decoupling) • Output voltage 30 V DC • Dimensions: Width: 50 mm (3 A / 4 A); 70 mm (8 A), Height: 125 mm; Depth: 126.5 mm							
	Output current	Input voltage		**Screw terminals** ⊕				
 3RX9511-0AA00	3 A	120 / 230 V AC (automatic selection)	►	**3RX9511-0AA00**		1	1 unit	42C
 3RX9512-0AA00	4 A	120 / 230 V AC (automatic selection)	►	**3RX9512-0AA00**		1	1 unit	42C
 3RX9513-0AA00	8 A	120 / 230 V AC (automatic selection)	►	**3RX9513-0AA00**		1	1 unit	42C

More information

Operating instructions and more technical information see
http://support.automation.siemens.com/WW/view/en/64364000

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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S22.5 data decoupling modules

Overview

AS-Interface S22.5 double data decoupling modules
Left: screw terminal version, right: spring-type terminal version

With the aid of the S22.5 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.
The combination of data decoupling modules and standard power supply units is therefore a cost-efficient alternative to the service-proven AS-Interface power supply units.
The quality of the data signals and the reliable operation of the AS-i network are not negatively affected as the result.

Features of the S22.5 data decoupling module

- Degree of protection IP20
- Narrow design: 22.5 mm wide
- Version with screw or spring-type terminals
- Versions for single and double data decoupling
- Supply of several AS-i networks with a single power supply unit
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Adjustable current limiting up to 2 x 4 A
- Integrated ground-fault detection with fault storage
- Diagnostics LEDs and signaling contacts
- RESET by button or remote RESET

Ground-fault detection

The integrated ground-fault detection works with a grounded and non-grounded supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (downstream from the data decoupling module) is detected and stored as a fault and will be signaled using LEDs and a relay contact.

Benefits

- Compatible expansion of the AS-Interface system
- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning
- Easy and cost-efficient design of single and multiple networks is possible

Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V supply or 24 V supply (AS-iPower24V).

Operation of an AS-i network with the data decoupling module and a 30 V standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-Interface Power24V uses a 24 V power supply unit in conjunction with a data decoupling module and is particularly suitable for

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface connection of SIRIUS Innovations contactors and compact starters (3RT2 contactors through 3RA27 function modules or 3RA6 compact starters through 3RA69 AS-i add-on modules).

When using the double data decoupling module or other data decoupling units, several AS-Interface networks can be operated with a single power supply unit. This results in an additional cost advantage.

Note:

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mV_{pp}, and in the event of a fault, must limit the output voltage to a maximum of 40 V. We recommend SITOP power supply units, see Chapter 15 "Products for Specific Requirements" ➞ "Stabilized Power Supplies"or PSN130S 30 V power supplies, see page 2/72.

Note on AS-i Power24V:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

AS-i masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

Please also continue to observe the requirements specified in the section "Extension of AS-i Power24V" for implementation of AS-i Power24V, see page 2/17.

For more information on AS-i Power24V,
see "AS-Interface System Manual"
http://support.automation.siemens.com/WW/view/en/47052644

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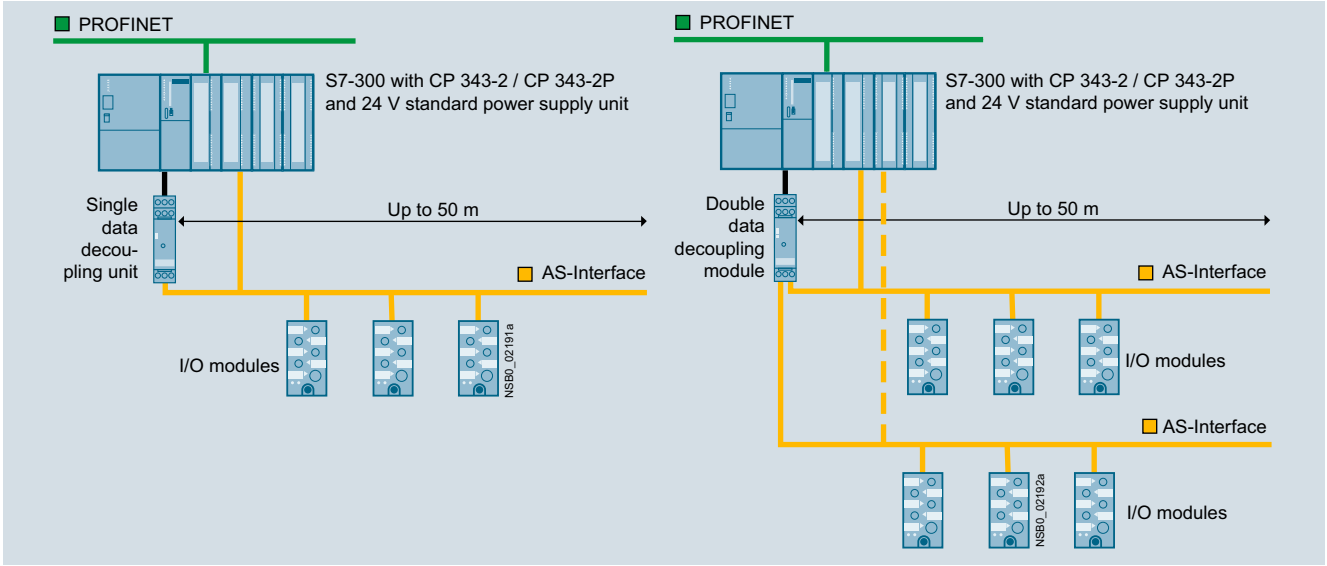
Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module

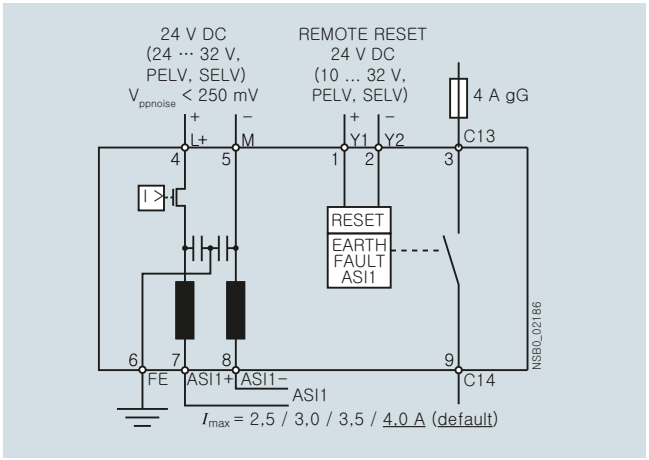


Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module: Left: single network, Right: multiple network

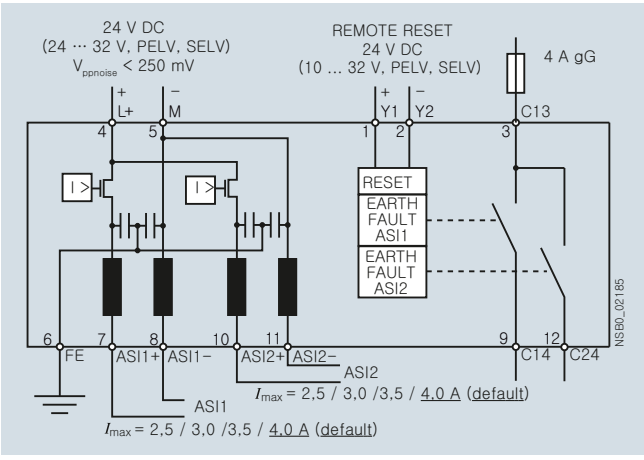
Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1901-1DE12-1AA0	**S22.5 data decoupling modules** With screw terminals, removable terminals, width 22.5 mm, height 101 mm, depth 115 mm		**Screw terminals**				
	• Single data decoupling module, 1 x 4 A	►	**3RK1901-1DE12-1AA0**		1	1 unit	42C
	• Double data decoupling module, 2 x 4 A	►	**3RK1901-1DE22-1AA0**		1	1 unit	42C
3RK1901-1DG12-1AA0	**S22.5 data decoupling modules** With spring-type terminals, removable terminals, width 22.5 mm, height 105 mm, depth 115 mm		**Spring-type terminals**				
	• Single data decoupling module, 1 x 4 A	►	**3RK1901-1DG12-1AA0**		1	1 unit	42C
	• Double data decoupling module, 2 x 4 A	►	**3RK1901-1DG22-1AA0**		1	1 unit	42C

Circuit diagrams



Single data decoupling module



Double data decoupling module

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Illustrations are approximate

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Data decoupling modules for S7-1200
DCM 1271 data decoupling module

Overview

DCM 1271 data decoupling module for SIMATIC S7-1200

With the aid of the DCM 1271 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.
The DCM 1271 data decoupling module has the same enclosure design as the S7-1200 module and is therefore ideal for combining with the CM 1243-2 AS-i master.

Features of the DCM 1271 data decoupling module

- Design: S7-1200, 30 mm wide, degree of protection IP 20
- Detachable terminals (scope of supply)
- Single data decoupling
- Supply of several AS-i networks with a single power supply unit
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Current limiting at 4 A
- Integrated ground-fault detection
- Diagnostics LEDs for ground faults and overloads
- Signaling contacts for ground-fault detection

Ground-fault detection

The integrated ground-fault detection works with a grounded and non-grounded supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (behind the data decoupling module) is identified and signaled via LED and a transistor output.

Benefits

- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning

Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V supply or 24 V supply (AS-Interface Power24V).

Operation of an AS-i network with the data decoupling module and a 30 V standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-Interface Power24V uses a 24 V power supply unit in conjunction with a data decoupling module and is particularly suitable for

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface connection of SIRIUS Innovations contactors and compact starters (3RT2 contactors through 3RA27 function modules or 3RA6 compact starters through 3RA69 AS-i add-on modules).

Note:

The power supply units must comply with the PELV (Protective Extra Low Voltage) or SELV (Safety Extra Low Voltage) standards, have a residual ripple of < 250 mV_{pp}, and in the event of a fault, must limit the output voltage to a maximum of 40 V. We recommend SITOP power supply units, see Chapter 15 "Products for Specific Requirements" → "Stabilized Power Supplies"or PSN130S 30 V power supplies, see page 2/72.

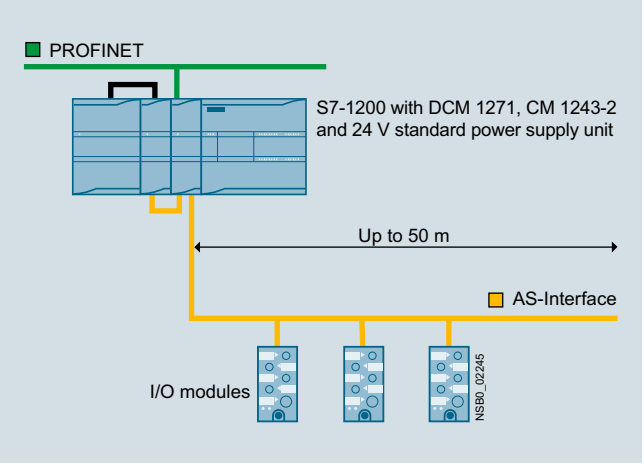
Note on AS-i Power24V:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

AS-i masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

Please also continue to observe the requirements specified in the section "Extension of AS-i Power24V" for implementation of AS-i Power24V, see page 2/17.

Construction of an AS-i Power24V network with AS-Interface DCM 1271 data decoupling module



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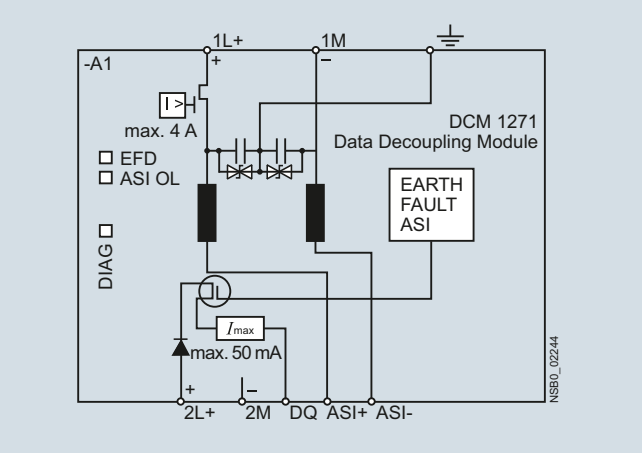
Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK7271-1AA30-0AA0	**DCM 1271 data decoupling modules** • With screw terminals, removable terminals (included in the scope of supply) • Dimensions (W × H × D / mm): 30 × 100 × 75	A	**3RK7271-1AA30-0AA0**		1	1 unit	42C

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	5-pole screw terminals for AS-i master CM 1243-2 and AS-i DCM 1271 data decoupling module						
	• With screw terminals		**3RK1901-3MA00**		1	1 unit	42C
	3-pole screw terminal for AS-i DCM 1271 data decoupling module for connecting the power supply unit						
	• With screw terminals		**3RK1901-3MB00**		1	1 unit	42C

Circuit diagrams



DCM 1271 single data decoupling module

More information

The manuals are available free of charge on the Internet, see http://support.automation.siemens.com/WW/view/en/50414115/133300

For more information on AS-i Power24V, see "AS-Interface System Manual", http://support.automation.siemens.com/WW/view/en/47052644

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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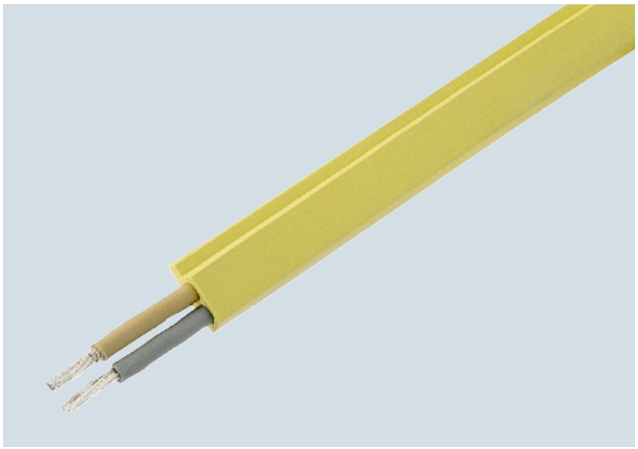
AS-Interface shaped cables

Overview



AS-Interface shaped cable

The actuator-sensor interface – the networking system used for the lowest field area – is characterized by very easy mounting and installation. A new connection method was developed specially for AS-Interface.

The stations are connected using the AS-Interface cable. This two-wire AS-Interface shaped cable has a trapezoidal shape, thus ruling out polarity reversal.

Connection is effected by the insulation piercing method. In other words, male contacts pierce the shaped AS-Interface cable and make reliable contact with the two wires. Cutting to length and stripping are superfluous. Consequently, AS-Interface stations (e.g. I/O modules, intelligent devices) can be connected in the shortest possible time and exchanging devices is quick.

To enable use in the most varied ambient conditions (e.g. in an oily environment), the AS-Interface cable is available in different materials (rubber, TPE, PUR).

For special applications it is also possible to use an unshielded standard round cable H05VV-F 2 x 1.5 mm^2 according to AS-i Specification. With AS-Interface, data and energy for the sensors (e.g. BERO proximity switches) and actuators (e.g. indicator lights) are transmitted over the yellow AS-Interface cable.

The black AS-Interface cable must be used for actuators with a 24 V DC supply (e.g. solenoid valves) and a high power requirement.

Suitable for operation in tow chains

The use of the AS-Interface shaped cables with TPE and PUR outer sheath was checked in a tow chain test with the following conditions:

Chain length	m	6
Travel	m	10
Bending radius	mm	75
Travel speed	m/s	4
Acceleration	m/s^2	4
Number of cycles		10 million
Duration of test		approx. 3 years (11 000 cycles per day)

After termination of the 10 million cycles, only slight wear was visible due to the lugs of the tow chain. No damage to the cores and core insulation could be detected.

Note:

When using a tow chain, the cables must be installed in such a way that they are not subject to tensile forces. On no account may the cables be twisted, but they must be routed flat through the tow chain.

Selection and ordering data

3RX90..-0AA00

Version			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface shaped cables								
Material	Color	Quantity						
Rubber	Yellow (AS-Interface)	100-m roll	►	**3RX9010-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9012-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9020-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9022-0AA00**		1	1 unit	42C
TPE	Yellow (AS-Interface)	100-m roll	►	**3RX9013-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9014-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9023-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9024-0AA00**		1	1 unit	42C
TPE special version according to UL Class 2	Yellow (AS-Interface)	100-m roll	B	**3RX9017-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	B	**3RX9027-0AA00**		1	1 unit	42C
PUR	Yellow (AS-Interface)	100-m roll	►	**3RX9015-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9016-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9025-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9026-0AA00**		1	1 unit	42C

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Illustrations are approximate

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Overview

AS-Interface repeater

The AS-Interface repeater is used to extend the AS-Interface cable.

- In its basic version, an AS-i network comprises one segment with a maximum cable length of 100 m. An extension plug (see next page) can be used to increase the cable length for a segment to a maximum of 200 m.
- If this is insufficient, however, you can use one or more repeaters.
- A repeater adds an extra segment to an existing segment. The extra segment can have a cable length of up to 100 m (without extension plug) or up to 200 m (with an extension plug in the extra segment).
- Each segment requires a separate AS-i power supply unit.
- Electrical separation of the two AS-Interface shaped cable lines
- Slaves can be used on both sides of the repeater.
- The additional power supply can increase the current infeed for slaves/sensors and lower the voltage drop on the AS-i cable.
- Separate display of the correct AS-Interface voltage for each segment.
- Installed in K45 module enclosure IP67 with mounting plate
- Easy mounting

Design of an AS-Interface network with repeaters

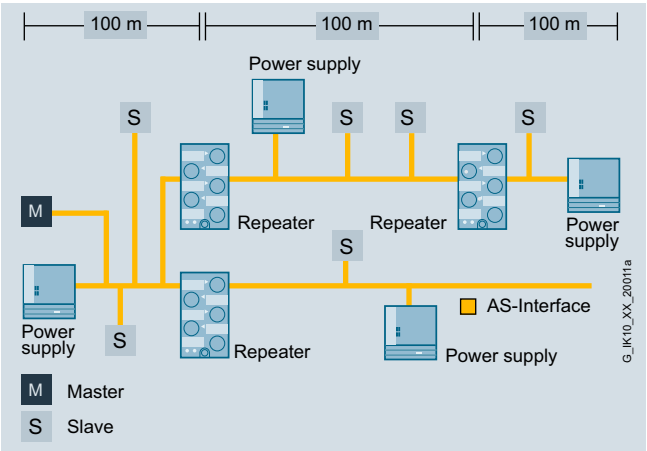
- Parallel switching of several repeaters possible (star configuration)
- Combination of series and parallel switching possible

The following conditions apply:

- When used without an extension plug no more than two repeaters are permitted between AS-i master and slave (repeaters connected in series).
- When used with an extension plug no more than one repeater is permitted between AS-i master and slave.

In safety-related applications the following also applies:

- When used without an extension plug, no more than two repeaters are permitted between evaluation unit (e.g. MSS ASIsafe Modular Safety System) and ASIsafe input slave or safe output module.
- When used with an extension plug, no more than one repeater is permitted between evaluation unit (e.g. MSS ASIsafe Modular Safety System) and ASIsafe input slave or safe output module.



Design of an example AS-Interface network with repeaters (without extension plug)

Note:

The AS-Interface repeater is not suitable for AS-i Power24V networks. It is recommended for use in AS-Interface networks with AS-Interface power supply units (e.g. 3RX9501-0BA00).

Benefits

- More possibilities of use and greater freedom for plant planning through extension of the AS-Interface network
- Reduced downtime and servicing times in the event of a fault thanks to separate display of the correct AS-Interface voltage for each side

Application

The repeater is used to extend the AS-Interface network. In this case there are AS-Interface slaves and one AS-Interface power supply unit on each side of the repeater.

In the case of a line topology with two repeaters and three extension plugs, the AS-Interface network can be extended by 600 m overall, see example design with extension plug on the next page.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Repeaters for AS-Interface For cable extension, including mounting plate	B	**6GK1210-0SA01**		1	1 unit	42C

6GK1 210-0SA01

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Extension plugs

Overview

AS-Interface extension plug:
left: extension plug compact, right: extension plug plus

With the extension plug, it is possible to double the cable length possible in an AS-Interface segment from 100 to 200 m.

Only one power supply unit is needed to supply power to the slaves on the up to 200 m long segment.

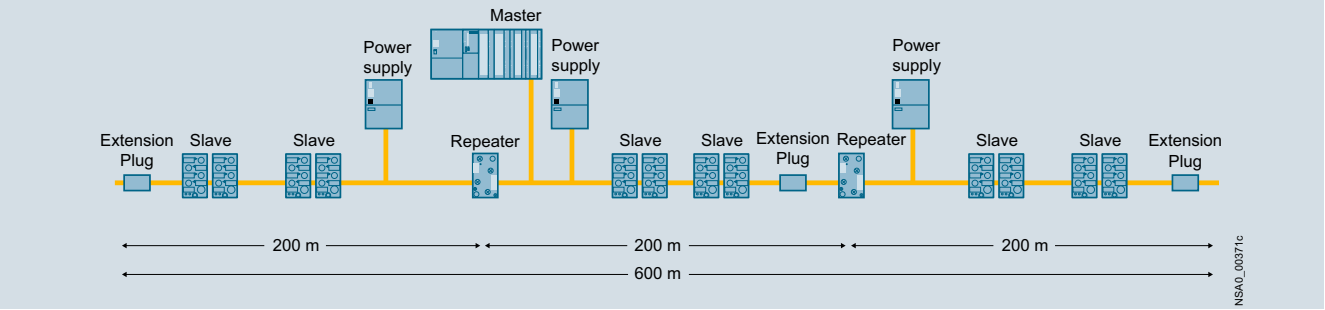
The extension plug is available in the following versions:
- Compact extension plug: Passive component that can be connected directly onto the AS-Interface shaped cable
- Extension plug plus: The Extension plug plus has an integrated A/B slave that enables any undervoltage supply to be signaled to the AS-Interface master. It has an M12 plug and can be connected to the AS-Interface M12 feeder with degree of protection IP67.

Design of an AS-Interface segment with an extension plug

With an AS-Interface segment with a cable length of more than 100 m and up to a maximum of 200 m, the extension plug is installed in a radius of approx. ± 10 m at that point of the network which is furthest from the power supply unit. The extension plug is not allowed to be used in AS-Interface networks smaller than 100 m. As with all AS-Interface networks, any network structure (line, tree, star) is possible when using the extension plug. Only one extension plug is required per 200 m segment even with a tree or star structure.

Note:

With the compact extension plug and the M12 feeder 3RK1901-1NR10 (4 A), the AS-Interface shaped cable has to be terminated using the cable terminating piece, see "miscellaneous accessories".
The AS-Interface extension plug is not suitable for AS-i Power24V networks.



Maximum network size with repeaters and extension plug (master at center of network)

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1901-1MX02	**AS-Interface extension plugs compact** • Doubling of the cable length to 200 m per AS-Interface segment • With direct connection to AS-Interface shaped cable	►	**3RK1901-1MX02**		1	1 unit	42C
3RK1901-1MX01	**AS-Interface extension plugs plus** • Doubling of the cable length to 200 m per AS-Interface segment • Mounting on AS-Interface M12 feeders (to be ordered separately) • Undervoltage monitoring signal through integrated AS-Interface slave to AS-Interface master	►	**3RK1901-1MX01**		1	1 unit	42C
Accessories							
3RX9801-0AA00	**AS-Interface M12 feeders** • Transition of shaped AS-Interface cable to a standard round cable • Current carrying capacity up to 2 A • Degree of protection IP67	►	**3RX9801-0AA00**		1	1 unit	42C
3RK1901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Max. 4 A • Degree of protection IP67/IP68/IP69K	A	**3RK1901-1NR10**		1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The innovated addressing unit for AS-Interface of the AS-i Specification V3.0

The addressing unit is used to assign an address during commissioning to each AS-Interface slave. The device detects a connected slave module or a complete AS-i network and displays the found module in the LCD display. Via the Up/Down keys each address can be individually set. By turning the rotary switch, further commissioning functions are selected intuitively. The innovative device has been adapted to the current AS-i Specification V3.0 and can now also handle the I/O data of the latest slaves.

Functionality

- Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses
- Reading out the slave profile (IO, ID, ID2)
- Reading out and adjusting the ID1 code
- Input/output test when commissioning the slaves:
  Read input signals and write outputs with all digital and analog slaves according to AS-Interface Specification V3.0, including safe input slaves and complex CTT2 slaves
- Measuring the voltage on the AS-Interface cable (measuring range from 2 to 35 V)
- Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA)
- Storage of complete network configurations (profiles of all slaves) to simplify the addressing
- Adjusting the slave parameters for commissioning
- Reading out the identification and diagnostics of CTT2 slaves
- Reading out the code table of safe input slaves (ASIsafe)

Note:

For operation of the addressing unit on an AS-Interface cable with connected power supply unit, the following applies:
The AS-Interface addressing unit is suitable for standard AS-i networks and AS-i Power24V networks (operational voltage on the AS-Interface cable min. 19 V).

Benefits

- Increased power supply to the slaves to 150 mA
- Better utilization of the battery capacity thanks to improved circuitry
- Support for the current AS-i Specification V3.0
- Expanded display for simultaneously displaying input and output states
- Clearly recognizable display of status of digital inputs/outputs in binary format (0 / 1), optionally also available as hexadecimal values
- Intuitive display of analog data either as decimal, hexadecimal or as a percentage (e.g. 100 % corresponds to input/output value 20 mA)
- I/O data of complex slaves (CTT2 profile) can be displayed
- Decoded display of the input data of safe input slaves, including code table
- Simplification of the operating steps when setting the slave address with automatic read back of the set address
- Addressing cable, ready for operation even without screwing in tight into the M12 socket, thus faster availability of the addressing unit
- Proven compact housing with smooth keys and rotary switch
- Connection of standard AS-i networks possible with 30 V as well as Power24V networks
- Complex slaves with high operating current can be addressed without external supply
- Longer operating time per battery pack
- Can be used with all types of digital and analog slaves
- Comprehensive and fast input/output test of plants, even for A/B modules with 4 DI / 4 DO and current analog modules with an A/B address
- Faster and more reliable commissioning of the AS-Interface modules
- One-hand operation possible, with unique selection of the functions
- Universal applicability for all AS-i networks

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Addressing units

Technical specifications

		3RK1904-2AB02 AS-Interface addressing unit
Parameters		
Measuring range		
• Voltage	V	2 ... 35
• Current (for slaves)	A	0 ... 0.150
Measuring accuracy in % of the measured value		
• Voltage	%	± 3.5 + 2 digits
• Current (for slaves)	%	± 5 + 2 digits
Input resistance for voltage measurement	kΩ	300
Power supply		
Standard power supply		4 batteries 1.5 V type AA, IEC LR6 (NEDA15) or corresponding batteries (preferably NiMH)
Recommendation for current-intensive application		4 high-grade alkaline manganese batteries 1.5 V type AA
Automatic disconnection for a longer battery life		Approx. 5 minutes (or approx. 1 minute when data exchange is active) after last operation
Ambient conditions		
Ambient temperature	°C	0 ... +50
Storage temperature	°C	-20 ... +75 without batteries
Relative air humidity, max.	%	75, condensation not permitted
Altitude above sea level, max.	m	2000
Location		Only indoors
Mechanical design		
Degree of protection		IP40
Dimensions, W x H x D	mm	84 x 195 x 35
Connection		M12 socket: Pin 1: ASI+; Pin 3: ASI–; Pin 2, 4, 5: Not used
Weight with batteries	kg	0.450

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1904-2AB02	**AS-Interface addressing unit V 3.0** • For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5m	►	**3RK1904-2AB02**		1	1 unit	42C
Accessories							
3RK1902-4PB15-3AA0	**Addressing cable, with M12 plug to M12 socket**[2] • For addressing slaves with M12 connection, e.g. K20 or K60R modules or light curtains • Length 1.5 m, 3-pole, 3 x 0.34 mm²	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D
3RX9801-0AA00	**AS-Interface M12 feeders** • Transition of AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Current carrying capacity up to 2 A	►	**3RX9801-0AA00**		1	1 unit	42C
3RK1901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable	A	**3RK1901-1NR10**		1	1 unit	42C
3RK 1902-4HB50-5AA0	**M12 cable plug**[3] • Extruded M12 plug (angled cable feeder 90°), other cable end open • Length: 5 m, 5-pole, color: Black	C	**3RK1902-4HB50-5AA0**		1	1 unit	42D
3RK1902-4BA00-5AA0	**M12 plug straight**[3] • For screw fixing, 5-pole screw terminal, max. 0.75 mm², • A-coded, max. 4 A	C	**3RK1902-4BA00-5AA0**		1	1 unit	42D
	Addressing cable, with M12 plug to addressing plug (hollow plug)[1] • Included in the scope of supply of the addressing unit • Length 1.5 m		**Z236A**				

[1] Can be ordered only via GMC-I Messtechnik GmbH, see Chapter 16 "Appendix" → "External partners"

[2] Not included in scope of supply of the 3RK1904-2AB02 addressing unit.

[3] For connecting the addressing unit to an AS-i network via AS-Interface M12 feeder, a connecting cable (M12 plug to M12 connector) must be produced and requires the following wiring:
- M12 cable plug: Pin 1 / core brown ↔ M12 plug: Pin 1
- M12 cable plug: Pin 3 / core blue ↔ M12 plug: Pin 3
- Pin 2, 4, 5 not connected.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

AS-Interface analyzer

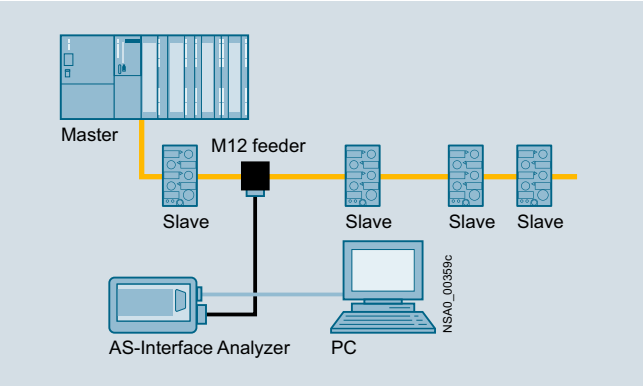
The AS-Interface analyzer is used to test AS-Interface networks.

Installation errors, e.g. loose contacts or EMC interference under extreme loads, can be revealed by this device.

Thanks to the easy-to-use software the user can assess the quality of complete networks even if he lacks detailed specialist knowledge of AS-Interface. In addition it is an easy matter with the AS-Interface analyzer to create test logs from the records produced, thus providing documentation for startups and service assignments.

For advanced AS-Interface users there are trigger functions for detailed diagnostics.

Connection



Connection of AS-Interface analyzer to PC and AS-Interface network

The AS-Interface analyzer follows the communication on the AS-Interface network as a passive station. The unit is supplied simultaneously from the AS-Interface cable.

This analyzer interprets the physical signals on the AS-Interface network and records the communication.

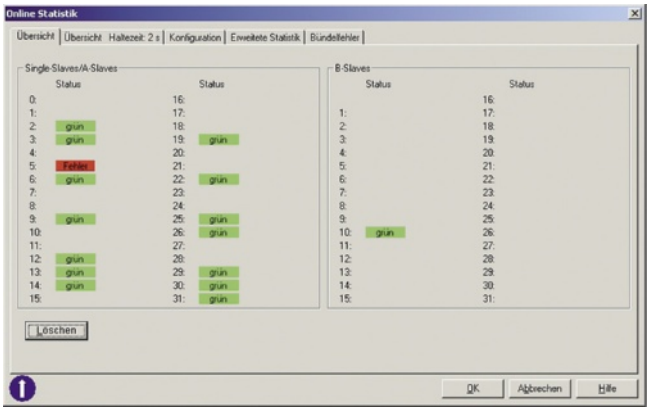
The data thus obtained are transferred through an RS 232 interface to a PC such as a notebook, for evaluation with the supplied diagnostics software.

Benefits

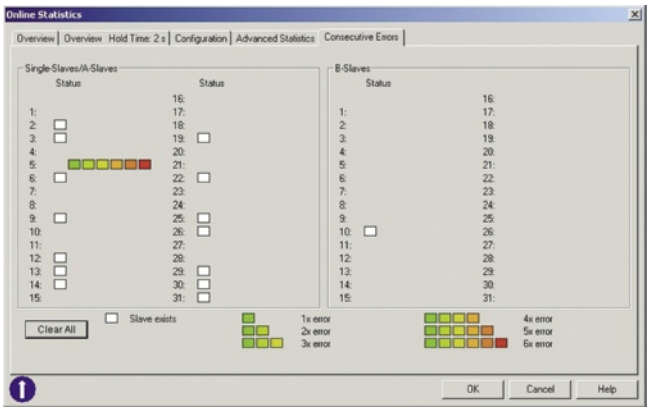
- Simple and user-friendly operation enables diagnostics of AS-Interface networks without help from specialists
- Speedy troubleshooting thanks to intuitive display in statistics mode
- Test logs provide verification of the state and quality of the installation for service and approval
- Recorded logs facilitate remote diagnostics by technical assistance
- Comprehensive trigger functions enable exact analysis
- Process data can be monitored online

Application

Online statistics



Online statistics, overview



Online statistics, details, e.g. here a fault on slave 5

This mode provides a quick overview of the existing AS-Interface system. The error rates are displayed per slave in a traffic-light function (green, yellow, red).

The bus configuration and the currently transmitted data of the slaves are shown in a well arranged presentation.

With the expanded statistics function, it is possible to determine the error rates as the number of transmitted or faulty bus message frames.

The bundle error overview shows in steps how many multiple repetitions of message frames occurred in order to enable a selective and look-ahead assessment of the transmission quality.

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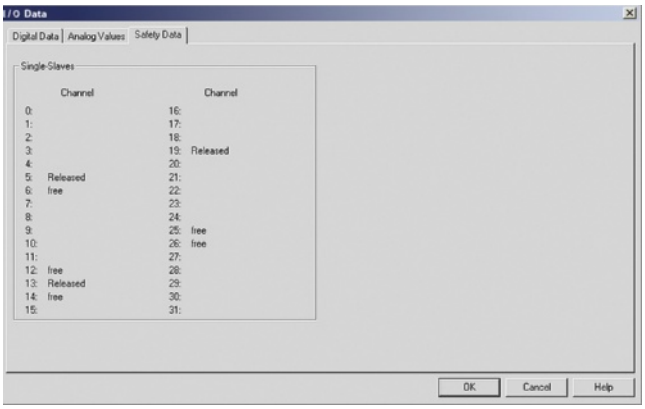
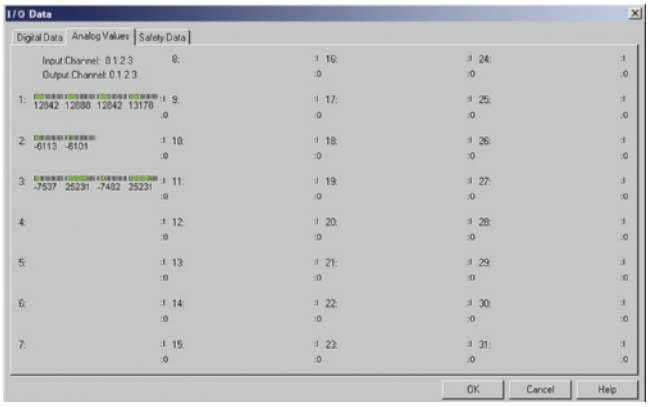
Analyzer

Data mode



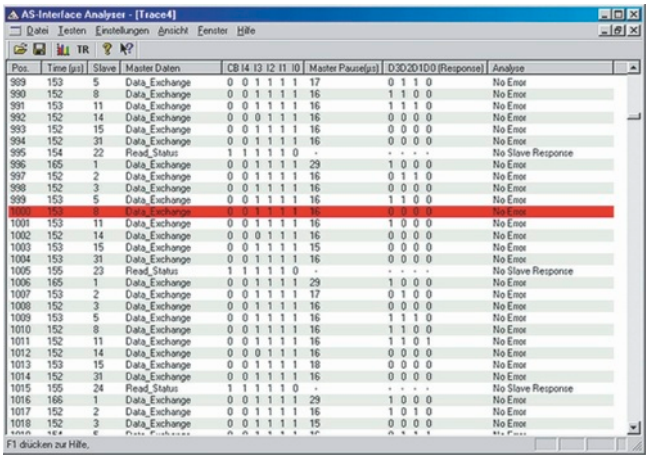
Presentation of the I/O data: Safety data



Presentation of the I/O data: Analog values

In this mode, the analyzer shows not only the digital input/output values but also the current analog values and the input status of the safety slaves.

Trace mode



Presentation of message frames in trace mode

The presentation of message frames in the style of a classic fieldbus analyzer is indispensable for complex troubleshooting. Extensive trigger functions and recording and viewing filters are available for this purpose.
An external trigger input and trigger output round off the scope of functions in order to find even the most difficult errors.

For troubleshooting in connection with ASIsafe applications, changes of status in the code tables of safety slaves are identified and assessed.

Test log

Example of a test log

The recorded data of the online statistics are easy to output and document using a test log. Verification of the state of the plant can thus be provided for approvals or service assignments.

The integrated measurement assistant records the bus signals for a variable duration, thereby triggering creation of an automatic test log. A standardized quality test of AS-i plants is thus possible.

Note:

The AS-Interface analyzer is suitable for standard AS-i networks and AS-i Power24V networks (operational voltage min. 20 V).

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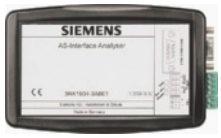
Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1904-3AB01	**AS-Interface analyzers** • For testing AS-Interface actuator/sensor interface systems • For troubleshooting and service assignments in installations and networks with AS-Interface systems • Dimensions (W x H x D): 145 x 30 x 92 mm • Scope of supply: - AS-Interface analyzers - RS 232 cable for connecting to PC - USB-to-serial/RS 232 adapter - Screwdriver - Magnetic adhesive tape for fastening the analyzer to metal surfaces - Service case with foam insert, dimensions (W x H x D / mm): approx. 260 x 70 x 200 - Diagnostics software (CD-ROM) for PC (Windows 95/98, ME, 2000, NT, XP, Vista Home Basic, Home Premium, Business, Ultimate, Windows 7)	►	**3RK1904-3AB01**		1	1 unit	42C
Accessories							
3RX9801-0AA00	**AS-Interface M12 feeders** • Transition of shaped AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Current carrying capacity up to 2 A • Degree of protection IP67	►	**3RX9801-0AA00**		1	1 unit	42C
3RK1901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Max. 4 A • Degree of protection IP67/IP68/IP69K	A	**3RK1901-1NR10**		1	1 unit	42C
3RK1902-4HB50-5AA0	**M12 cable plugs** • Cable: PUR, 5-pole • Length: 5 m • Color: Black • Extruded M12 plug (angled cable feeder 90°), other cable end open	C	**3RK1902-4HB50-5AA0**		1	1 unit	42D

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

	Version				DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK2703-3AB02-1AA1	**AS-Interface system manual** The AS-Interface system manual can be downloaded free of charge, see http://support.automation.siemens.com/WW/view/en/26250840									
3RK1901-1NN10	**AS-Interface compact distributors, for AS-Interface flat cable** • Current carrying capacity up to 8 A • Degree of protection IP67/IP68/IP69K				A	**3RK1901-1NN10**		1	1 unit	42C
3RX9801-0AA00	**AS-Interface M12 feeders** • Degree of protection IP67 • Current carrying capacity up to 2 A									
	For flat cable	For	Cable length	Cable end in feeder						
	AS-i	M12 socket	--	Available	►	**3RX9801-0AA00**		1	1 unit	42C
3RK1901-1NR10	**AS-Interface M12 feeders** • Degree of protection IP67/IP68/IP69K • Current carrying capacity up to 4 A									
	For flat cable	For	Cable length	Cable end in feeder						
	AS-i	M12 socket	--	Not available	A	**3RK1901-1NR10**		1	1 unit	42C
3RK1901-1NR11	AS-i	M12 cable box	1 m	Not available	A	**3RK1901-1NR11**		1	1 unit	42C
	AS-i	M12 cable box	2 m	Not available	A	**3RK1901-1NR12**		1	1 unit	42C
	AS-i/U_{aux}	M12 socket	--	Not available	A	**3RK1901-1NR20**		1	1 unit	42C
	AS-i/U_{aux}	M12 cable box	1 m	Not available	A	**3RK1901-1NR21**		1	1 unit	42C
	AS-i/U_{aux}	M12 cable box	2 m	Not available	A	**3RK1901-1NR22**		1	1 unit	42C
3RK1901-1NR04	**AS-Interface M12 feeders, 4-fold** • Degree of protection IP67 • Current carrying capacity up to 4 A									
	For flat cable	For	Cable length	Cable end in feeder						
	AS-i/U_{aux}	4-fold M12 socket, delivery includes coupling module	--	Not available	A	**3RK1901-1NR04**		1	1 unit	42C
3RK1901-1TR00	**M12-T distributors** • IP68 • 1 x M12 plug • 2 x M12 box				C	**3RK1901-1TR00**		1	1 unit	42C
6ES7194-1KA01-0XA0	**M12 Y-shaped coupler plugs** For connection of two sensors to one M12 socket with Y assignment				A	**6ES7194-1KA01-0XA0**		1	1 unit	250

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1901-1KA00	**AS-Interface M12 sealing caps** For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
3RK1901-1KA01	**AS-Interface M12 sealing caps, tamper-proof** For free M12 sockets	A	**3RK1901-1KA01**		100	10 units	42C
3RK1901-1PN00	**AS-Interface M8 sealing caps** For free M8 sockets	A	**3RK1901-1PN00**		100	10 units	42C
3RK1901-1MD00	**AS-Interface M20 seals** • For AS-Interface cable, shaped • For insertion in M20 glands	A	**3RK1901-1MD00**		100	10 units	42C
3RK1901-3QM00	**Cable adapters for flat cables** Connection of AS-Interface cable to metric gland with insulation piercing method						
	• Continuation using standard cable						
	- For M16 gland	B	**3RK1901-3QM00**		1	1 unit	42C
	- For M20 gland	B	**3RK1901-3QM10**		1	1 unit	42C
	• Continuation using pins						
	- For M16 gland	C	**3RK1901-3QM01**		1	1 unit	42C
	- For M20 gland	B	**3RK1901-3QM11**		1	1 unit	42C
3RK1901-3QA00	**Cable clips for cable adapters**	►	**3RK1901-3QA00**		100	10 units	42C
3RK1901-1MN00	**Cable terminating pieces** For sealing of open cable ends (shaped AS-Interface cable) in IP67	►	**3RK1901-1MN00**		1	10 units	42C
3RK1901-2EA00	**K45 mounting plates**						
	• For wall mounting	►	**3RK1901-2EA00**		1	1 unit	42C
	• For standard rail mounting	►	**3RK1901-2DA00**		1	1 unit	42C
3RK1901-0CA00	**K60 mounting plates**						
	Suitable for all K60 compact modules	►	**3RK1901-0CA00**		1	1 unit	42C
	• For wall mounting	►	**3RK1901-0CB01**		1	1 unit	42C
	• For standard rail mounting						

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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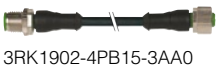
Miscellaneous accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1902-0AR00	**Sealing sets** • For K60 mounting plate and standard distributor • Cannot be used for K45 mounting plate • One set contains one straight and one shaped seal	A	**3RK1902-0AR00**		100	5 units	42D
	Inscription labels • For K45 and K60 compact modules • 20 x 9 mm, pastel turquoise • 19 frames with 20 labels each	C	**3RT1900-1SB50**		100	380 units	41B
3RK1902-4GB50-4AA0	**Control cables, assembled at one end** Angular M12 socket for screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 5 m	C	**3RK1902-4GB50-4AA0**		1	1 unit	42D
3RK1902-4CA00-4AA0	**Angular M12 socket** For screw fixing, 4-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4CA00-4AA0**		1	1 unit	42D
3RK1902-4BA00-5AA0	**M12 plug, straight** For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4BA00-5AA0**		1	1 unit	42D
3RK1902-4DA00-5AA0	**M12 plug, angled** For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4DA00-5AA0**		1	1 unit	42D
3RK1902-4H...-5AA0	**Control cable, assembled at one end** M12 plugs, angled, for screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1902-4HB15-5AA0**		1	1 unit	42D
	• Cable length 5 m	C	**3RK1902-4HB50-5AA0**		1	1 unit	42D
	• Cable length 10 m	C	**3RK1902-4HC01-5AA0**		1	1 unit	42D
 3RK1902-4PB15-3AA0	**Control cable, assembled at both ends** Straight M12 plug, straight M12 socket, for screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A • Cable length 1.5 m • Also for addressing AS-i slaves with M12 bus connection (e.g. K20, K60R compact modules, M200D motor starters)	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D

More information

The AS-Interface system manual can be downloaded free of charge, see
http://support.automation.siemens.com/WW/view/en/26250840

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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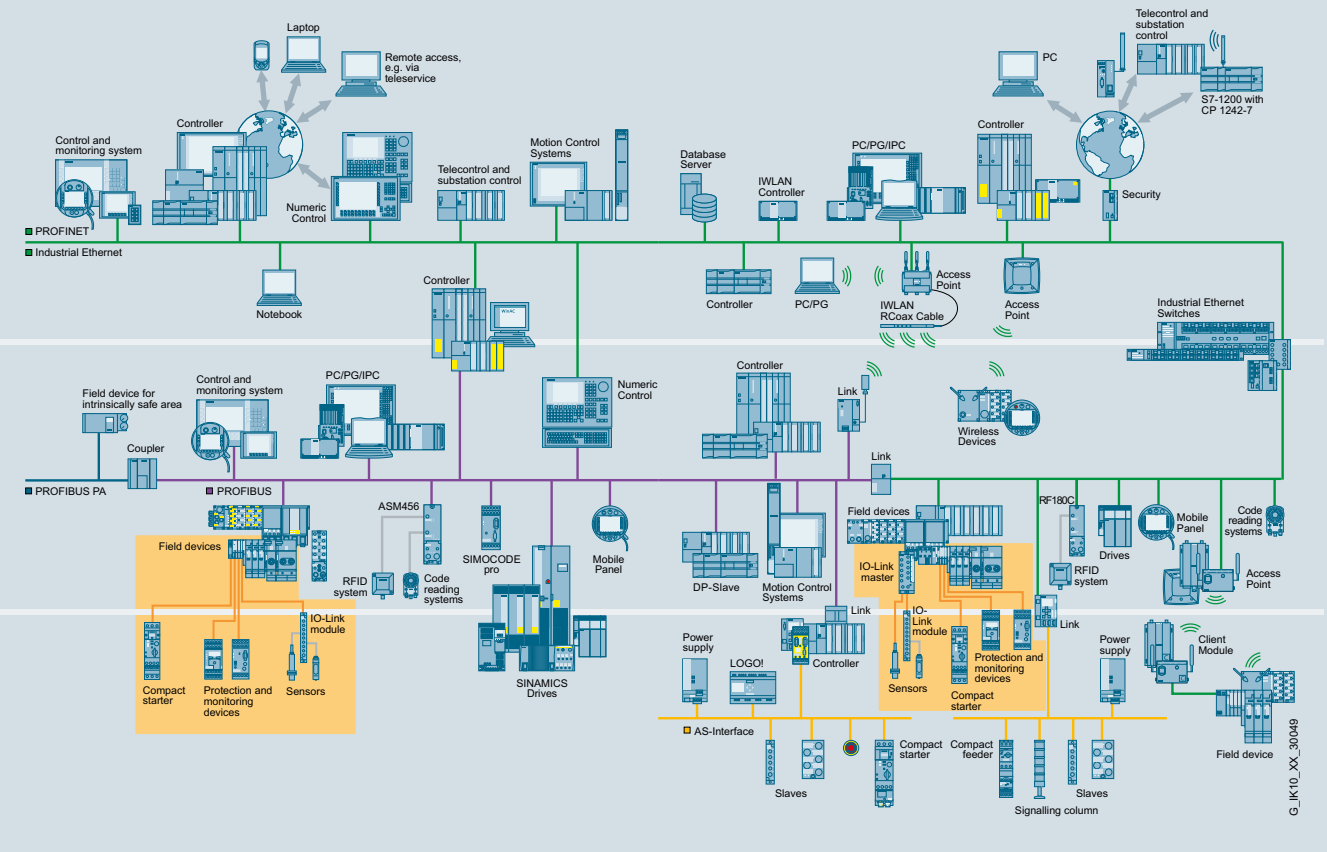
Overview

IO-Link is an open communication standard for sensors and actuators - defined by the Profibus User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system.

Parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensors/actuators. The simple, unshielded three-wire cable customary for standard sensors is used for this purpose.



Benefits

Engineering

- Standardized, open system for greater flexibility (non-Siemens IO-Link devices can be integrated in engineering)
- Uniform, transparent configuring and programming through integrated engineering (SIMATIC STEP 7)
- Unassigned SIMATIC function blocks for easy parameterization, diagnostics and read-out of measured values
- Efficient engineering thanks to pre-integration into SIMATIC HMI
- Low error rate in CAD circuit diagram design as a result of reduced control current wiring

Installation and commissioning

- Faster assembly with minimized error rate as a result of reduced control current wiring
- Less space required in the control cabinet
- Low-cost circuitry where there are several feeders by making full use of existing components

Operation and maintenance

- High transparency in the system right down to field level and integration into power management systems
- Reduction in downtimes and maintenance times thanks to system-wide diagnostics and faster fault correction
- Support of predictive maintenance
- Shorter changeover times, even for field devices, by means of parameter and recipe management

Application

IO-Link can be used in the following main applications:

- Easy connection of complex IO-Link sensors/actuators with a large number of parameters and diagnostic data to the control system
- Replacement of sensor boxes for connecting binary sensors with the IO-Link input modules optimized in terms of cabling
- Optimized cable connection of switching devices to the control system
- Simple transmission of energy values from the device to the control system for integration into a user program or power management

In these cases, all the diagnostics data are transmitted to the higher-level control system through IO-Link. The parameter settings can be changed during operation. Central data storage means that it is possible to exchange an IO-Link sensor/actuator without a PC or programming device.

Integration in STEP 7

Integration of the device configuration in the STEP 7 environment guarantees:

- Quick and easy engineering
- Consistent data storage
- Quick localization and rectification of faults

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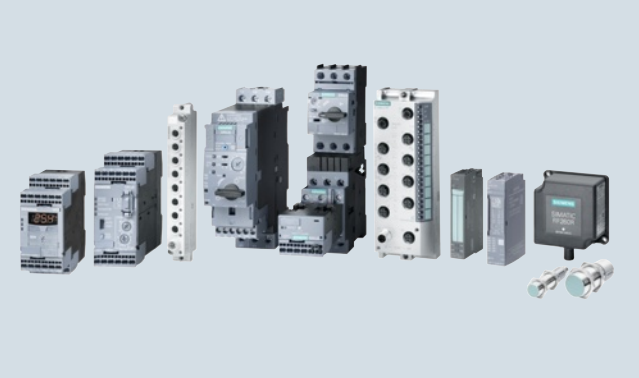
System components

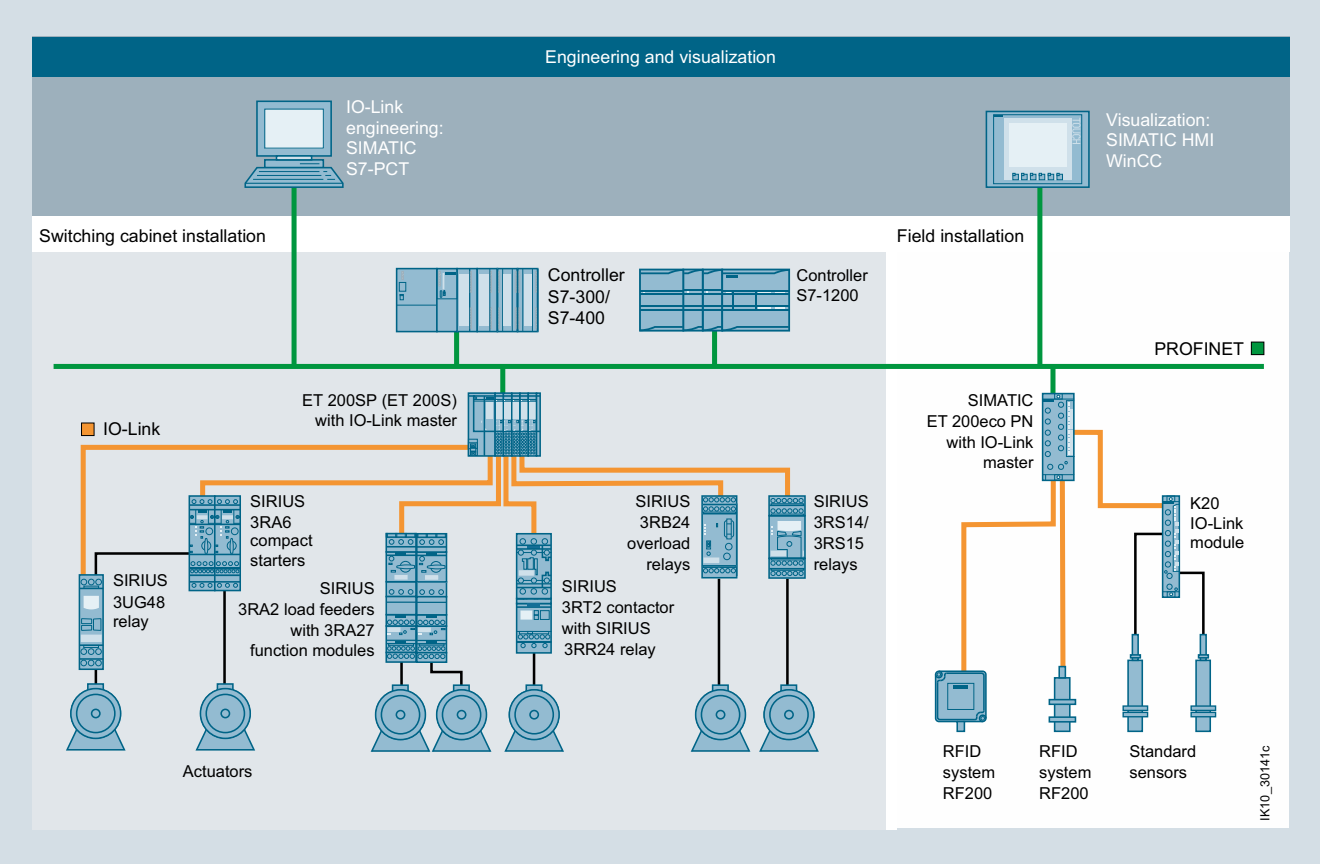
Overview



IO-Link product family

To implement communication, a system installation has the following main components:

- An IO-Link master
- Several IO-Link devices, usually sensors (RFID systems), actuators or combinations of these
- A standard 3-wire sensor/actuator cable



Example of a configuration with the system components

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Compatibility of IO-Link

IO-Link guarantees compatibility between IO-Link-capable modules and standard modules as follows:

- IO-Link sensors can be operated both on IO-Link modules (masters) and standard input modules.
- IO-Link sensors/actuators as well as today's standard sensors/actuators can be used on IO-Link masters.
- If conventional components are used in the IO-Link system, then of course only the standard functions are available at this point.

Analog signals

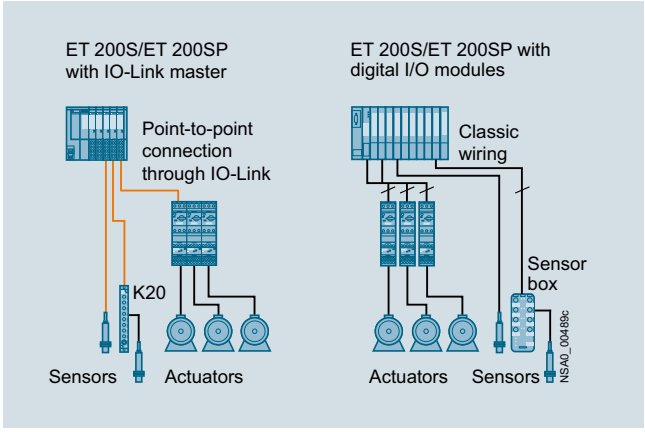
Another advantage of IO-Link technology is that analog signals are digitized already in the IO-Link sensor itself and are digitally transmitted by the IO-Link communication. As the result, faults are prevented and there is no extra cost for cable shielding.

Enhanced through IO-Link input modules

IO-Link compatibility also permits connection of standard sensors/actuators, i.e. conventional sensors/actuators can also be connected to IO-Link. This is particularly effective with the IO-Link input modules, which allow several sensors to be connected at one time via a cable to the controller.

Load feeders and motor starters

Through IO-Link it is possible to control not only sensors but also actuators in the form of load feeders and motor starters.



Possibilities for connecting load feeders and motor starters to IO-Link or in the conventional way

Grouping of motor starters

The SIRIUS controls allow four starters to be combined to form a group.

Connection of a motor starter group made up of three 3RA64 direct-online starters and a 3RA65 reversing starter

In this way up to 16 starters can be operated on a single IO-Link master. This leads to a reduction in the installation space and control wiring required.

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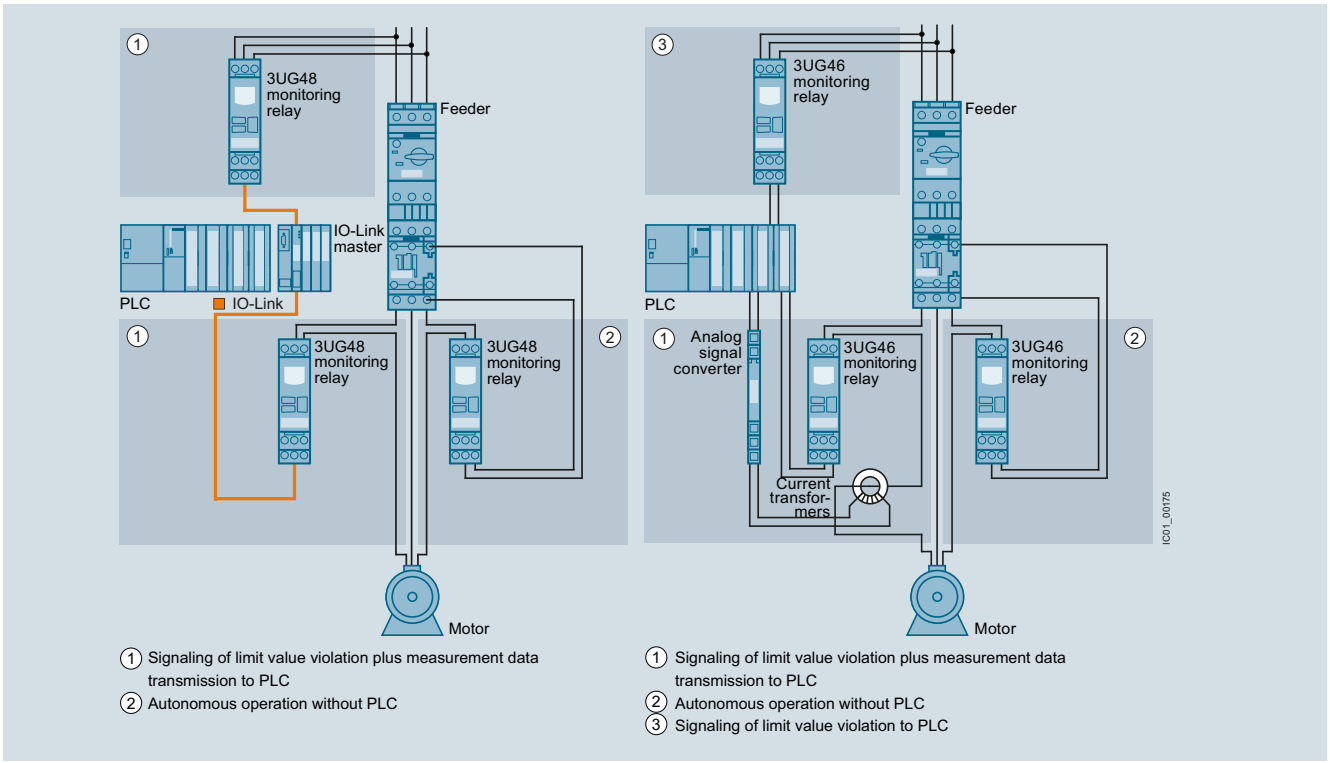
System components

Overload and monitoring relays

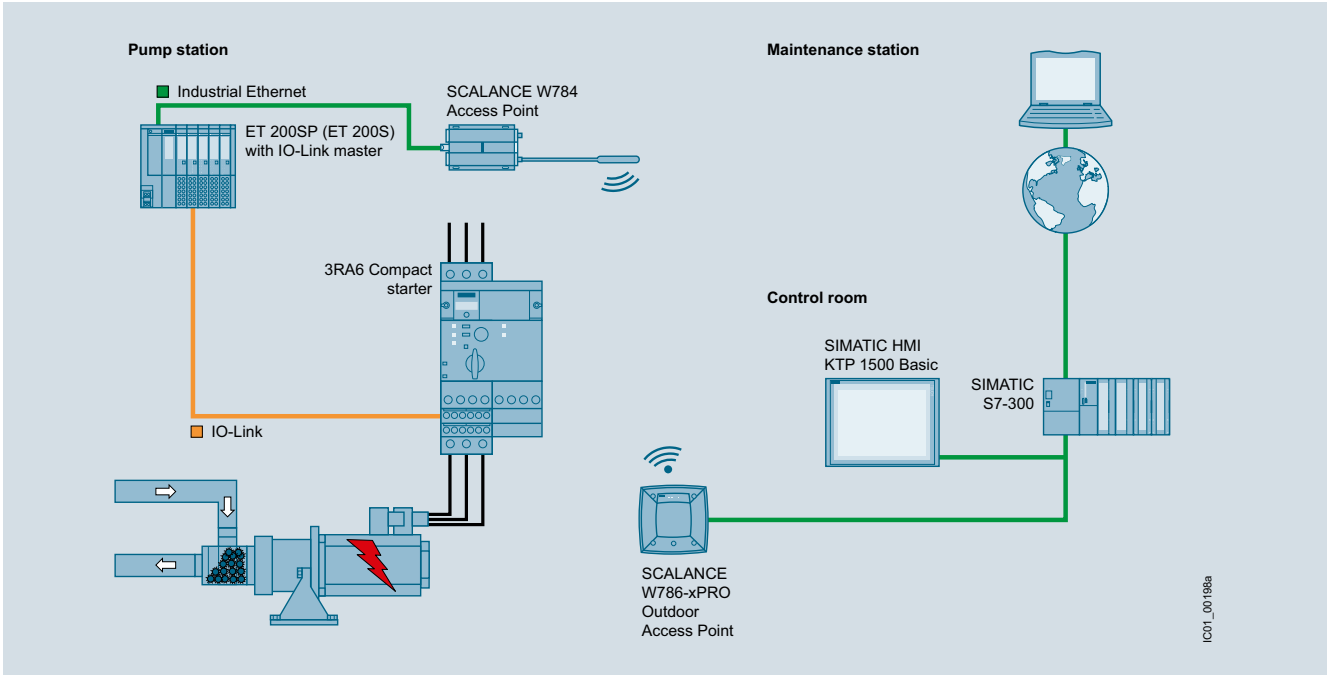
By combining overload/monitoring relays with IO-Link it is now possible to send data that has already been recorded and evaluated in the monitoring relays directly to the controller. This avoids the use of duplicated sensors.



Possibilities for connecting overload relays to IO-Link or in the conventional way

Wireless communication

Using an upstream IWLAN client module, such as SCALANCE W746-1PRO, allows IO-Link to be be integrated into the PROFINET world via a distributed I/O. Possible uses include acting as an alternative to fault-prone cable carrier or collector wire technology. The individual diagnostics options offered by the various IO-Link devices provide greater transparency for the production process. Just like the parameter data for a device, these diagnostics data can be evaluated remotely using the possibilities offered by SIMATIC. This supports remote maintenance down to the lowest level in the field.



Wireless communication between Industrial Ethernet and IO-Link components

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IO-Link components

IO-Link master, software, cables

CM 4x IO-Link
for ET 200SP

Masters

IO-Link master modules for ET 200SP

- CM 4xIO-Link

IO-Link master modules for ET 200S

- 4SI IO-Link electronic module
- SIRIUS 4SI electronic modules

IO-Link master modules for ET 200eco PN

See this chapter

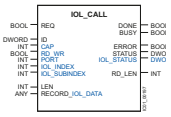
Software

STEP 7 PCT

STEP 7 PCT

Engineering software for configuring the IO-Link master modules for ET 200SP, ET 200S and ET 200eco

- Available as a stand-alone version or integrated into STEP 7 (Version 5.5 SP1 or later)
- Retrieval of parameter and diagnostics data from the IO-Link devices connected to the master
- Monitoring of the process image of the IO-Link devices
- Open interface for importing further IODDs
- Freely available for download from Industry Online Support[1)]



IO-Link Call
function block

IO-Link Call function block

STEP 7 function block for easy acyclical data exchange in the user program

- Freely available for download from Industry Online Support[2)]

WinCC flexible
template project

WinCC flexible template project

Easy integration of IO-Link devices into the user program by using ready-made WinCC flexible templates

- Freely available for download from Industry Online Support[3)]

IODD files

IO-Link Device Description (IODD) files provide the device description for IO-Link

- Comprehensive IODD catalog of SIEMENS IO-Link devices
- Freely available for download from Industry Online Support[4)]

Cable

3-wire standard cable

see for example catalog ID 10 "Industrial Identification Systems"

IO-Link devices

K20 input module

Detection with IO-Link

IO-Link input modules

K20 input module

- 4 inputs, M12 connections
- 8 inputs, standard M8 connections

See chapter 2 in IC 10 "Industrial Communication"

1) http://support.automation.siemens.com/WW/view/en/37936752
2) http://support.automation.siemens.com/WW/view/en/38487085
3) http://support.automation.siemens.com/WW/view/en/38006560
4) http://support.automation.siemens.com/WW/view/en/29801139/133100

IO-Link devices (continued)

SIMATIC RF210R,
SIMATIC RF220R,
SIMATIC RF260R

IO-Link RFID systems

SIMATIC RF200 RFID system in the HF range

- SIMATIC RF210R, SIMATIC RF220R, SIMATIC RF260R products
- Simple identification tasks (read-only), such as reading an ID number
- No RFID-spec. programming, ideal for those new to RFID
- Simple connection via master modules for IO-Link, such as SIMATIC ET 200S and ET 200eco
- Use with the tried and tested ISO 15693 transponders (MOBY D)

see Catalog ID 10 "Industrial Identification Systems"

Switching with IO-Link

SIRIUS 3RA2711
function modules
for IO-Link

Contactors and contactor assemblies

Power contactors for switching motors

- SIRIUS 3RT2 contactors, 3-pole, up to 18.5 kW

Contactor assemblies

- SIRIUS 3RA23 reversing contactor assemblies
- SIRIUS 3RA24 cont. assembl. for wye-delta starting

SIRIUS 3RA27 function modules for IO-Link

- For direct-on-line starters, reversing starters and wye-delta starters

See Chapter 3 in IC 10 "Switching Devices – Contactors and Contactor Assemblies – for Switching Motors"

Motor starters for use in the control cabinet

SIRIUS 3RA64
direct-on-line
starter

SIRIUS 3RA6 compact starters

- 3RA64 direct-on-line starters
- 3RA65 reversing starters
- Infeed systems for 3RA6

See chapter 8 in IC 10 "Load Feeders and Motor Starters for Use in the Control Cabinet"

Contactors with IO-Link

Overload relays

SIRIUS 3RB24
overload relays

SIRIUS 3RB24 solid-state overload relays for IO-Link

- Evaluation module
- Current measuring modules from 0.3 to 630 A
- Controlling direct-on-line, reversing and wye-delta starters via IO-Link in conjunction with contactors
- Full motor protection
- Diagnostics and current value transmission via IO-Link

See Chapter 7 in IC 10 "Protection Equipment"

Monitoring with IO-Link

Monitoring relays

SIRIUS 3UG48
monitoring relays

SIRIUS 3UG48 monitoring relays for IO-Link

- Monitoring voltage, current, residual current, network, speed or p.f. according to device design
- On/tripping delay time can be adjusted

See chapter 10 "Monitoring and Control Devices"

SIRIUS 3RS14
temperature
monitoring relays

SIRIUS 3RS14, 3RS15 temperature monitoring relays for IO-Link

- Temperature monitoring with connected sensors
- Two limit values, can be adjusted separately

See chapter 10 "Monitoring and Control Devices"

SIRIUS 3RR24
monitoring relays

SIRIUS 3RR24 monitoring relays for IO-Link

- Monitoring of current, phase failure, open circuit and phase sequence
- Designed for mounting on 3RT2 contactors

See chapter 10 "Monitoring and Control Devices"

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IO-Link specification

Overview

Principles of the IO-Link specification

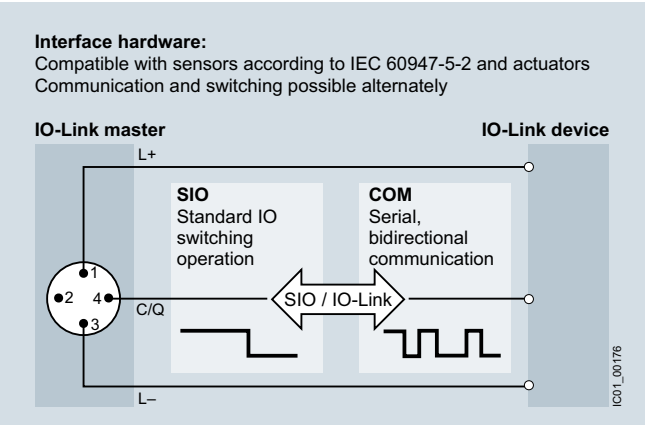
According to the IO-Link specification, communication functions as follows:

- Transmission takes place via an unshielded three-wire cable no more than 20 m long, of the kind normally used for standard sensors
- Analog values which have already been digitized are transmitted in the form of message frames, which may correspond to +/- 10 V or 4 to 20 mA
- Digital communication from 0 to 24 V on the so-called C/Q cable
- Most of the values transmitted are measured values from the sensors
- The sensors and actuators are described by the IO-Link Device Description (IODD)
- While the IO-Link specification permits an infinite number of ports, an IO-Link master currently only supports four ports. Only one IO-Link device (slave) can be connected to each port (point-to-point connection)
- The transmission rates between IO-Link master and the devices are as follows:
  - via COM1: 4 800 Bd
  - via COM2: 38 400 Bd
  - via COM3: 230 400 Bd
- The average cycle time is 2 ms for the reading/writing of 16 data bits at a transmission rate of 38 400 Bd

IO-Link protocol

For the dialog between device and master, IO-Link uses a standard protocol, the standard asynchronous communication interface (UART) in "semi-duplex" mode.

The IO-Link protocol supports both the Standard IO mode (SIO) and the IO-Link communication mode (COM).



The structure of the protocol and its message frames depends on the types of data to be transmitted.

Data types

In the IO-Link specification a distinction is made between the following data types:

Process data

The process data of the devices are transmitted cyclically in a data frame, provided the process data width does not exceed 2 bytes. In the case of larger process data widths up to 32 bytes, parts are transmitted one after the other in several cycles. As of Version V1.1 of the specification, up to 32 bytes of process data can be transferred in a single cycle.

Service data (SD)

With the aid of the service data, parameter values or device statuses can be read out. It is also possible to write the parameter values or transmit commands via the service data. Service data are always exchanged acyclically and in response to an inquiry from the IO-Link master.

Events

Via events it is possible to transmit device events or statuses such as contamination, overheating, short circuits etc., from the the device via the IO-Link master to the PLC or to visualize them.

The events are sent on the initiative of the devices via the "event flag", which the master evaluates. The master itself can also generate events.

Three categories of event are defined:

- Error signals (errors)
- Maintenance data (warnings)
- Device functions (notifications)

Data storage

As of Specification V1.1, a data storage concept has been created for IO-Link. In this concept, the IO-Link device initiates the storage of its data on a higher-level parameter server. In the event that a device is replaced, the parameter server can restore the original parameterization. It is therefore possible to replace the devices without re-parameterization.

The IO-Link master can contain the parameter server. The parameter server can also be implemented centrally in the PLC or in a system server. In this case the IO-link master passes on the corresponding information.

IO-Link master

The IO-Link master is the interface to higher-level control systems. The IO-Link master presents itself as a normal fieldbus node, and is integrated into the appropriate network configurator via the relevant device description (e.g. GSD, FDCML, EDS etc.).

IO-Link Device Description (IODD)

The IO-Link Device Description (IODD) has been defined to provide a full, transparent description of system characteristics as far as the IO-Link device. It is based on the open XML standard.

The IODD contains information on communication characteristics, device parameters, identification, process and diagnostics data, and is supplied by the manufacturer. The design of the IODD is the same for all devices from all manufacturers, and is always presented in the same way by the IODD Interpreter Tools. This therefore ensures that the handling is the same for all IO-Link devices, whatever the manufacturer.

New in IO-Link Specification 1.1

The IO-Link Specification is currently available in Version 1.1, and standardized according to IEC 61131-9.

Specification 1.1 offers the following new features compared with the previous Specification 1.0:

- Transmission of up to 32 bytes of process or service data in a single cycle.
- Data storage concept

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Overview

IO-Link master CM 4xIO-Link

The CM 4xIO-Link communication module is the IO-Link master, for use in the ET 200SP distributed I/O system.

Features

- IO-Link master as serial communication module with 4 ports according to IO-Link specification V1.1
- Module exchange with automatic data recovery without engineering for IO-Link master and device
- Up to four IO-Link devices (3-wire connections) can be connected to each IO-Link master module.
- Data transmission rates COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd), automatic adjustment to the transmission rate supported by the device
- Port-by-port parameterizable diagnostics
- PROFIenergy support
- Parameterization of IO-Link parameters by S7-PCT V3.0 and higher

Central data storage

If the communication module is pulled off the BaseUnit, part of the electronic coding element will remain in the BaseUnit. Stored in this part are the parameters of the CM 4xIO-Link and the parameters of the IO-Link devices. When a new (not yet parameterized) IO-Link master is plugged on, it will adopt the parameters from the electronic coding element.

Connection

All type A0 BaseUnits can be used for the CM 4xIO-Link communication module, i.e. all variants of the BaseUnit (without/with infeed, -AUX).

Configuration

Module integration

To integrate the module you need the engineering tool STEP 7 V5.5 and higher or STEP 7 V11 TIA Portal.

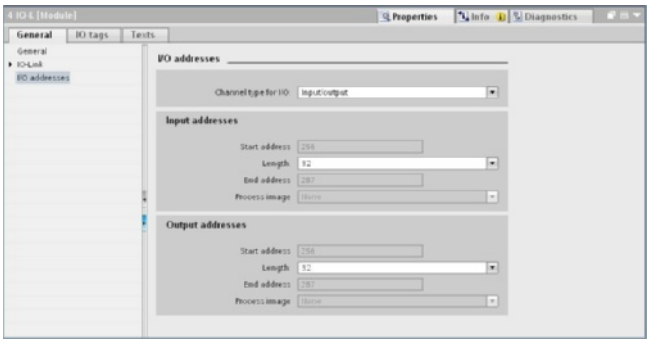
Configuration

S7-PCT V3.0 and higher is required in addition for IO-Link configuration.

The following diagram shows a PROFINET configuration in which PROFINET ET 200SP and ET 200ecoPN devices are integrated with IO-Link masters.

Configuration of a PROFINET network with lower-level IO-Link masters

The address areas for exchanging the cyclic data (process values) are defined by IO-Link in the device view of the PROFINET device.



Device view with setting of the address area by IO-Link via TIA Portal

Startup

For commissioning, S7-PCT V3.0 and higher is required in addition to an engineering tool in order to parameterize the IO-Link master.

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IO-Link master module for ET 200SP
CM 4xIO-Link

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6ES7137-6BD00-0BA0	**CM 4xIO-Link communication modules** • IO-Link master for SIMATIC ET 200SP, can be plugged onto BaseUnit A0 • Corresponds to IO-Link specification V1.1 • Dimensions (W × H × D / mm): 15 × 100 × 75	A	**6ES7137-6BD00-0BA0**		1	1 unit	255

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6ES7193-6BP20-0DA0	**BaseUnits** • BaseUnit BU15-P16+A10+2D for CM 4xIO-Link to ET 200SP • For opening a new voltage group via the plugged-in peripheral module • Current carrying capacity per process terminal max. 2 A	A	**6ES7193-6BP20-0DA0**		1	1 unit	255

More information

Manuals

Manual "SIMATIC IO-Link System" see http://support.automation.siemens.com/WW/view/en/65949252

System manual "ET 200SP Distributed I/O System" see http://support.automation.siemens.com/WW/view/en/58649293

Industry Mall

More information
see Industry Mall at "Automation Technology" → "Industrial Communication" → "IO-Link" → "Masters" → "IO-Link Master Module for ET 200SP"

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

4SI IO-Link electronic module for ET 200S

The 4SI IO-Link electronic module is an IO-Link master and enables easy integration of sensors and actuators from different manufacturers in the SIMATIC ET 200S multifunctional, distributed I/O system at a total of four ports.

Features

- Up to four IO-Link devices (3-wire connections) can be connected to each IO-Link master module. 3RA6 compact starters or load feeders with 3RA27 function modules can even be bundled in groups of four devices on one IO-Link port. It is possible therefore to connect up to 16 load feeders to the control system at one IO-Link master module.
- Up to four standard sensors (2-wire/3-wire connection) can be connected.
- The 4SI IO-Link electronic module has a width of 15 mm and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw terminals)
  - TM-E15C26-A1 (spring-type terminals)
  - TM-E15N26-A1 (FastConnect)
- Supports firmware update (STEP 7 V5.4 SP4 and higher).
- Corresponds to IO-Link Specification V1.0

Selection and ordering data

	Version	Connection	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6ES7138-4GA50-0AB0	**4SI IO-Link electronic modules**	Screw terminals, spring-type terminals or FastConnect, depending on universal terminal module	A	**6ES7138-4GA50-0AB0**		1	1 unit	250

Accessories

	Version	Connection	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Universal terminal modules for ET 200S							
	Connection	Module type						
	Screw	TM-E15S26-A1	A	**6ES7193-4CA40-0AA0**		1	1 unit	250
	Spring-type	TM-E15C26-A1	A	**6ES7193-4CA50-0AA0**		1	1 unit	250
	FastConnect	TM-E15N26-A1	A	**6ES7193-4CA80-0AA0**		1	1 unit	250

More information

Product manual "SIMATIC ET 200S distributed I/O 4SI IO-Link electronic modules" see http://support.automation.siemens.com/WW/view/en/29825814

More information and technical specifications see Industry Mall under "Automation" → "Industrial Communication"→ "IO-Link" → "Masters" → "IO-Link Master Modules for ET 200S".

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Illustrations are approximate

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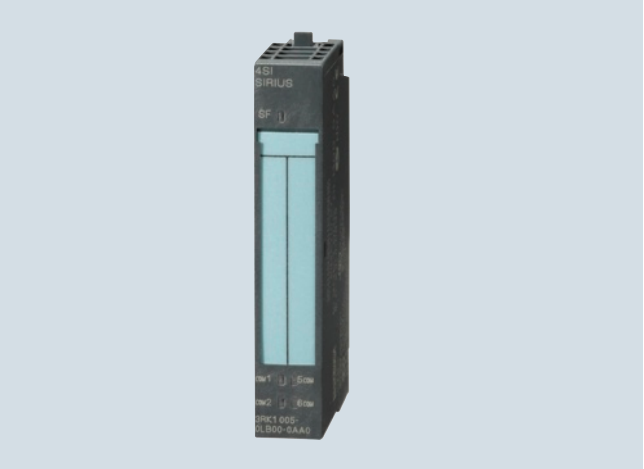
IO-Link master modules for ET 200S SIRIUS 4SI electronic modules

Overview



SIRIUS 4SI electronic module for ET 200S

The SIRIUS 4SI electronic module allows the simple and cost-effective connection of SIRIUS devices with IO-Link to the multifunctional, distributed I/O system SIMATIC ET 200S at a total of four ports.

Features

- Up to 4 SIRIUS devices can be connected at the 4 ports of the SIRIUS 4SI electronic module.
  3RA6 compact starters or load feeders with 3RA27 function modules can even be bundled in groups of four devices on one IO-Link port.
  It is possible therefore to connect up to 16 load feeders to the control system at one IO-Link master module.
- The SIRIUS 4SI electronic module has a width of 15 mm and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw terminals)
  - TM-E15C26-A1 (spring-type terminals)
  - TM-E15N26-A1 (FastConnect)
- Supports firmware update (STEP 7 V5.4 SP5 and higher)
- Corresponds to IO-Link Specification V1.0

Selection and ordering data

	Version	Connection	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1005-00LB00 -0AA00	**SIRIUS 4SI electronic modules**	Screw terminals, spring-type terminals or FastConnect, depending on universal terminal module	►	**3RK1005-0LB00-0AA0**		1	1 unit	42F

Accessories

	Version	Connection	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Universal terminal modules for ET 200S							
	Connection	Module type						
	Screw	TM-E15S26-A1	A	**6ES7193-4CA40-0AA0**		1	1 unit	250
	Spring-type	TM-E15C26-A1	A	**6ES7193-4CA50-0AA0**		1	1 unit	250
	FastConnect	TM-E15N26-A1	A	**6ES7193-4CA80-0AA0**		1	1 unit	250

More information

Manual "Distributed I/O system ET 200S - 4SI SIRIUS electronic module" see
http://support.automation.siemens.com/WW/view/en/37856470

More information and technical specifications
see Industry Mall under "Automation"
→ "Industrial Communication"→ "IO-Link" → "Masters"
→ "IO-Link Master Modules for ET 200S".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

IO-Link master modules for ET 200eco PN

The ET 200eco PN IO-Link master module is an IO-Link master and enables easy connection of sensors and actuators from different manufacturers to the I/Os directly in the machine's field area.

Features

- Up to four IO-Link devices (3-wire connection) can be connected to each IO-Link master module.
- Up to eight standard sensors (8 DI) and up to four standard actuators (4 DO) can be connected in addition.

Selection and ordering data

	Version	Connection	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6ES7148-6JA00-0AB0	**IO-Link master modules for ET 200eco PN** Block I/Os in IP65	M12	A	**6ES7148-6JA00-0AB0**		1	1 unit	250

More information

Manual "SIMATIC Distributed I/O ET 200eco PN"
see
http://support.automation.siemens.com/WW/view/en/29999018

More information and technical specifications
see Industry Mall under "Automation"
→ "Industrial Communication"→ "IO-Link" → "Masters"
→ "IO-Link Master Modules for ET 200eco PN".

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Illustrations are approximate

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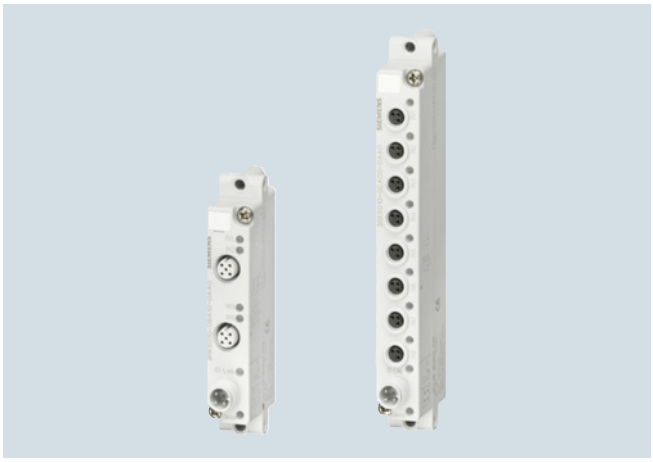
General data

Overview



IO-Link input modules

Using IO-Link technology, it is basically possible to connect standard sensors to IO-Link masters. However, connecting standard sensors directly to the IO-Link master does not exploit the full potential of IO-Link. The solution lies in the technology of the IO-Link modules. Their use is a more economically attractive solution in comparison with the direct connection of a sensor.

IO-Link input modules are a sensible addition to the ET 200S distributed peripherals. The IO-Link input module technology enhances IO-Link via a pure point-to-point cable connection towards decentralized structures. The maximum cable length of an IO-Link connection between an IO-Link module and an IO-Link master is 20 m. The use of sensor boxes with accordingly complex and error-prone wiring is no longer necessary.

Transmission of parameter and diagnostic signals

The IO-Link input modules also offer the possibility of transmitting parameters and diagnostic signals. This enables for example the inputs of modules to be parameterized as NC contacts or NO contacts through IO-Link. An overload or short circuit in the sensor supply is signaled to the control system through the IO-Link master.

M8 and M12 terminals

M8 and M12 terminals are available for connecting the sensors. Connection to the IO-Link master is made using a standard M12 connecting cable.

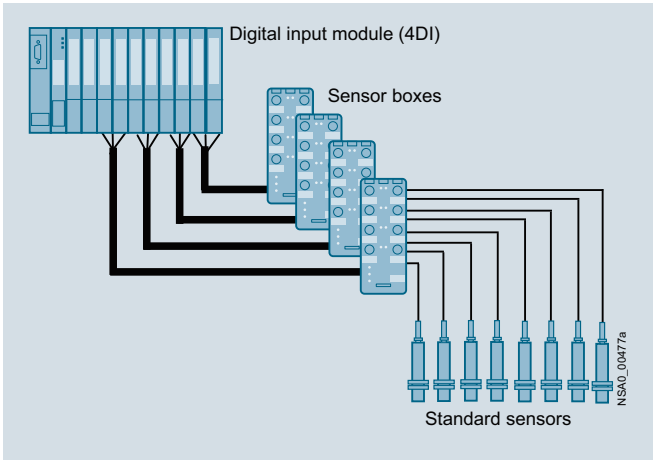
Benefits

The use of IO-Link input modules has the following benefits:

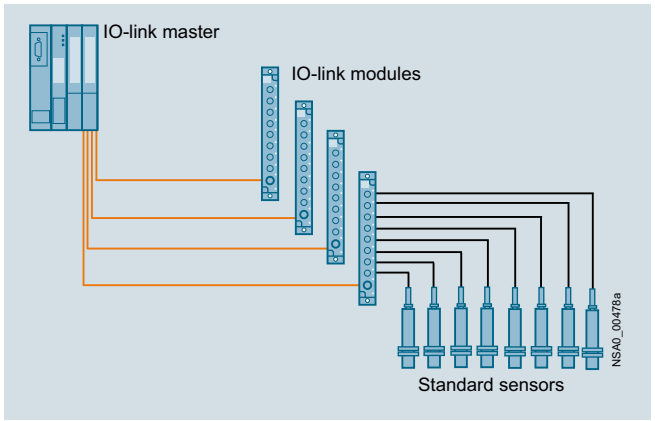
- Economical use of innovative IO-Link technology also for binary sensors
- Optimum use of all ports of the IO-Link master
- Connection of several binary sensors/actuators to one port of the IO-Link master, hence low-cost connection of also binary sensors/actuators to the control system through IO-Link
- Reduction of digital input modules in the peripheral station
- Use of parameters also for binary sensors (e.g. NC contacts, NO contacts and input delay can be parameterized)
- Reduction of cabling and hence less risk of wiring errors by dispensing with sensor boxes
- Expansion toward distributed structures using pure point-to-point wiring
- Easy and elegant integration of sensors within a radius of 20 m around an ET 200S station
- Possibility of transmitting parameter and diagnostic signals (e.g. sensor supply overload)
- Can also be used in harsh ambient conditions thanks to the very compact design and degree of protection IP67

Application

IO-Link input modules are particularly used where sensor boxes had previously been used for the connection of binary sensors.



Former technology with sensor boxes



Technology with IO-Link input modules

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Selection and ordering data

	Type	Pin assign-ment	Connec-tion methods	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	K20 IO-Link modules								
3RK5010-0BA10-0AA0	• 4 inputs	Y	M12	B	**3RK5010-0BA10-0AA0**		1	1 unit	42C
3RK5010-0CA00-0AA0	• 8 inputs	Standard	M8	B	**3RK5010-0CA00-0AA0**		1	1 unit	42C

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Illustrations are approximate

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K20 IO-Link modules

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RK1901-1KA00	**M12 sealing caps** For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
3RK1901-1PN00	**M8 sealing caps** For free M8 sockets	A	**3RK1901-1PN00**		100	10 units	42C
3RK1902-4GB50-4AA0	**Control cables, assembled at one end** Angular M12 socket for screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 5 m	C	**3RK1902-4GB50-4AA0**		1	1 unit	42D
3RK1902-4CA00-4AA0	**Angular M12 sockets** for screw fixing, 4-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4CA00-4AA0**		1	1 unit	42D
3RK1902-4BA00-5AA0	**M12 plugs, straight** For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4BA00-5AA0**		1	1 unit	42D
3RK1902-4DA00-5AA0	**M12 plugs, angled** For screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4DA00-5AA0**		1	1 unit	42D
3RK1902-4H...-5AA0	**Control cables, assembled at one end** M12 plugs, angled, for screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1902-4HB15-5AA0**		1	1 unit	42D
	• Cable length 5 m	C	**3RK1902-4HB50-5AA0**		1	1 unit	42D
	• Cable length 10 m	C	**3RK1902-4HC01-5AA0**		1	1 unit	42D
3RK1902-4PB15-3AA0	**Control cable, assembled at both ends** Straight M12 plug, straight M12 socket, for screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A • Cable length 1.5 m	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D
6ES7194-1KA01-0XA0	**M12 Y-shaped coupler plugs** For connection of two sensors to one M12 socket with Y assignment	A	**6ES7194-1KA01-0XA0**		1	1 unit	250

More information

More information and technical specifications
see Industry Mall under "Automation Technology"
→ "Industrial Communication" → "IO-Link"
→ "IO modules" → "IO-Link K20 Modules".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Switching Devices – Contactors and Contactor Assemblies – for Switching Motors

Price groups
PG 41A, 41B, 41H, 42F, 4N1

3/2 **Introduction**

Power contactors for switching motors
3/6 General data
3/13 SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW
3/40 Accessories for 3RT2 contactors
3/64 Spare parts for 3RT2 contactors
3/65 SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW
3/91 SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW
3/96 Accessories for 3RT1 contactors
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3/117 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW
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Coupling contactors
3/145 SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Contactor assemblies
3RA23, 3RA13, 3RA24, 3RA14 contactor assemblies
3/150 SIRIUS 3RA23 reversing contactor assemblies
3/158 SIRIUS 3RA13 reversing contactor assemblies
3/164 SIRIUS 3RA24 contactor assemblies for wye-delta starting
3/173 SIRIUS 3RA14 contactor assemblies for wye-delta starting
3TD, 3TE contactor assemblies
3/180 3TD6 reversing contactor assemblies, 335 kW
3/181 3TE6 contactor assemblies for wye-delta starting, 630 kW

Function modules for mounting onto SIRIUS 3RT2 contactors
3/183 Introduction
3/184 SIRIUS function modules
3/188 SIRIUS function modules for IO-Link
3/193 SIRIUS function modules for AS-Interface

Notes:

3RT1 contactors in sizes S00/S0 to S12 and 3RA1 contactor assemblies in sizes S00/S0 to S3 can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool, e.g. from 3RT10 to 3RT20 see www.siemens.com/sirius/conversion-tool

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Power Contactors for Switching Motors

Introduction

Overview

Size			S00				S0					
Type			3RT201				3RT202					
3RT20 contactors												
Type			**3RT2015**	**3RT2016**	**3RT2017**	**3RT2018**	**3RT2023**	**3RT2024**	**3RT2025**	**3RT2026**	**3RT2027**	**3RT2028**
AC, DC operation			(p. 3/28, 3/30)				(p. 3/33, 3/35)					
AC-3												
I_e/AC-3/400 V		A	7	9	12	16	9	12	17	25	32	38
400 V		**kW**	**3**	**4**	**5.5**	**7.5**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**
230 V		kW	1.5	2.2	3	4	2.2	3	4	5.5	7.5	11
690 V		kW	4	5.5	5.5	7.5	7.5	7.5	11	11	18.5	18.5
1 000 V		kW	--	--	--	--	--	--	--	--	--	--
AC-4 (for I_a = 6 x I_e)												
400 V		**kW**	**3**	**4**	**4**	**5.5**	**4**	**5.5**	**7.5**	**7.5**	**11**	**11**
400 V (200 000 operating cycles)		kW	1.15	2	2	2.5	2	2.6	3.5	4.4	6	6
AC-1 (40 °C, ≤ 690 V)												
I_e	3RT20	**A**	**18**	**22**	**22**	**22**	**40**	**40**	**40**	**40**	**50**	**50**

Accessories for contactors						
Auxiliary switch blocks	On front	**3RH2911**	(p. 3/53)	**3RH2911**	(p. 3/53)	
	Lateral	**3RH2911**	(p. 3/55)	**3RH2921**	(p. 3/55)	
Timing relay blocks		**3RA281.**	(p. 3/186)	**3RA281.**	(p. 3/186)	
Function modules		**3RA271.-. AA00**	(p. 3/157, 3/172)	**3RA271.-. AA00**	(p. 3/157, 3/172)	
Surge suppressors		**3RT2916**	(p. 3/59)	**3RT2926**	(p. 3/59)	

3RU2 and 3RB3 overload relays (Chapter 7, "Protection Equipment" → "Overload Relays")				
3RU21, thermal, CLASS 10	**3RU2116**	0.11 ... 16 A	**3RU2126**	1.8 ... 40 A
3RB30/3RB31, solid-state, CLASS 5, 10, 20 and 30	**3RB3016** **3RB3113**	0.1 ... 16 A	**3RB3026** **3RB3123**	0.1 ... 40 A

3RV20 motor starter protectors (Chapter 7, "Protection Equipment" → "Motor Starter Protectors")				
Type	**3RV2011**	0.11 ... 16 A	**3RV2021**	11 ... 40 A
Link modules	**3RA2911**		**3RA2921**	

3RA23 reversing contactor assemblies												
Complete units	Type	**3RA2315**	**3RA2316**	**3RA2317**	**3RA2318**	**--**	**3RA2324**	**3RA2325**	**3RA2326**	**3RA2327**	**3RA2328**
		(p. 3/153)					(p. 3/155)				
400 V	**kW**	**3**	**4**	**5.5**	**7.5**		**5.5**	**7.5**	**11**	**15**	**18.5**
Assembly kits/wiring modules		**3RA2913-2AA.**		(p. 3/156)		**--**	**3RA2923-2AA.**		(p. 3/156)		
Function modules		**3RA271.-. BA00**		(p. 3/157)		**--**	**3RA271.-. BA0**		(p. 3/157)		

3RA24 contactor assemblies for wye-delta starting								
Complete units	Type	**3RA2415**	**3RA2416**	**3RA2417**	**3RA2423**	**3RA2425**	**3RA2426**	
		(p. 3/168)			(p. 3/170)			
400 V	**kW**	**5.5**	**7.5**	**11**	**11**	**15/18.5**	**22**	
Assembly kits/wiring modules		**3RA2913-2BB.**		(p. 3/171)	**3RA2923-2BB.**		(p. 3/171)	
Function modules		**3RA271.-. CA00**		(p. 3/172)	**3RA271.-. CA00**		(p. 3/172)	

Note:

Safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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Size		S2			S3			S6		
Type		3RT103			3RT104			3RT105		
3RT10 contactors										
Type		**3RT1034**	**3RT1035**	**3RT1036**	**3RT1044**	**3RT1045**	**3RT1046**	**3RT1054**	**3RT1055**	**3RT1056**
AC, DC operation		(p. 3/83, 3/85)			(p. 3/84, 3/86)			(p. 3/87)		
AC-3										
I_e/AC-3/400 V	A	32	40	50	65	80	95	115	150	185
400 V	**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
230 V	kW	7.5	11	15	18.5	22	22	37	45	55
500 V	kW	18.5	22	30	37	45	55	75	90	110
690 V	kW	18.5	22	22	45	55	55	110	132	160
1 000 V	kW	--	--	--	30	37	37	75	90	90
AC-4 (for I_a = 6 x I_e)										
400 V	**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
400 V (200 000 operating cycles)	kW	8.2	9.5	12.6	15.1	17.9	22	29	38	45
AC-1 (40 °C, ≤ 690 V)										
I_e	**A**	**50**	**60**	**60**	**100**	**120**	**120**	**160**	**185**	**215**
3RT14 AC-1 contactors										
Type		**--**		(Chap. 4)	**3RT1446**		(Chap. 4)	**3RT1456**		(Chap. 4)
I_e/AC-1/40 °C/≤ 690 V	**A**	**--**			**140**			**275**		
Accessories for contactors										
Auxiliary switch blocks	On front	**3RH1921**		(p. 3/103)						
	Lateral	**3RH1921**		(p. 3/105)						
Terminal covers		**3RT1936-4EA2**		(p. 3/110)	**3RT1946-4EA1/2**		(p. 3/110)	**3RT1956-4EA1/2/3**		(p. 3/110)
Box terminal blocks		**--**			**--**			**3RT1955/56-4G**		(p. 3/110)
Surge suppressors		**3RT1926/36**		(p. 3/108)				**3RT1956-1C** (RC element)		(p. 3/108)
3RU1 and 3RB2 overload relays (Chapter 7, "Protection Equipment" → "Overload Relays")										
3RU11, thermal, CLASS 10		**3RU1136**	5.5 ... 50 A		**3RU1146**	18 ... 100 A		**--**		
3RB20/3RB21, solid-state, CLASS 5, 10, 20 and 30		**3RB2036** **3RB2136**	6 ... 50 A		**3RB2046** **3RB2146**	12.5 ... 100 A		**3RB2056** **3RB2156**	50 ... 200 A	
3RB22/3RB23, solid-state, CLASS 5, 10, 20 and 30		**3RB2.83 + 3RB2906** 10 ... 100 A						**3RB2.83 + 3RB2956** 20 ... 200 A		
3RV10 motor starter protectors (Chapter 7, "Protection Equipment" → "Motor Starter Protectors")										
Type		**3RV1031**	22 ... 50 A	(Chap. 7)	**3RV1041**	45 ... 100 A	(Chap. 7)	**3RV1063**	40 ... 200 A	
Link modules		**3RA1931**		(Chap. 7)	**3RA1941**		(Chap. 7)	**--**		
3RA13 reversing contactor assemblies										
Complete units	Type	**3RA1334** (p. 3/159)	**3RA1335**	**3RA1336**	**3RA1344** (p. 3/160)	**3RA1345**	**3RA1346**	**--**		
400 V	**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
Assembly kits/wiring modules		**3RA1933-2A**		(p. 3/162)	**3RA1943-2A**		(p. 3/162)	**3RA1953-2A**		(p. 3/162)
Mechanical interlocks		**3RA1924-1A/-2B**		(p. 3/161)				**3RA1954-2A**		(p. 3/161)
3RA14 contactor assemblies for wye-delta starting										
Complete units	Type	**3RA1434** (p. 3/176)	**3RA1435** (p. 3/177)	**3RA1436**	**3RA1444** (p. 3/178)	**3RA145**		**--**		
400 V	**kW**	**22/30**	**37**	**45**	**55**	**75**		**--**		
Assembly kits/wiring modules		**3RA1933-2B/-2C**		(p. 3/179)	**3RA1943-2B/-2C**		(p. 3/179)	**3RA1953-2B**		(p. 3/179)

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Power Contactors for Switching Motors

Introduction

Size			**S10**			**S12**		**14**	
Type			3RT1.6			3RT1.7		3TF6	
3RT10 contactors • 3RT12 and 3TF68/69 vacuum contactors									
Type AC, DC operation			**3RT1064** (p. 3/87)	**3RT1065**	**3RT1066**	**3RT1075** (p. 3/87)	**3RT1076**	**--**	
Type			**3RT1264** (p. 3/95)	**3RT1265**	**3RT1266**	**3RT1275** (p. 3/95)	**3RT1276**	**3TF68** (p. 3/123)	**3TF69**
AC-3									
I_e/AC-3/400 V		A	225	265	300	400	500	630	820
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**335**	**450**
230 V		kW	55	75	90	132	160	200	260
500 V		kW	160	160	200	250	355	434	600
690 V	3RT10/3RT12	kW	200	250	250	400	400/500	600	800
1 000 V	3RT10/3RT12	kW	90/315	132/355	132/400	250/560	250/710	600	800
AC-4 (for I_a = 6 x I_e)									
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**355**	**400**
400 V (200 000 operating cycles)	3RT10/3RT12	kW	54/78	66/93	71/112	84/140	98/161	168	191
AC-1 (40 °C, ≤ 690 V)									
I_e	3RT10/3RT12	**A**	**275/330**	**330**	**330**	**430/610**	**610**	**700**	**910**
3RT14 AC-1 contactors									
Type			**3RT1466**		(Chap. 4)	**3RT1476**	(Chap. 4)	**--**	
I_e/AC-1/40 °C/≤ 690 V		**A**	**400**			**690**		**--**	
Accessories for contactors									
Auxiliary switch blocks	On front		**3RH1921**		(p. 3/103)			**--**	
	Lateral		**3RH1921**		(p. 3/105)			**3TY7561**	(p. 3/125)
Terminal covers			**3RT1966-4EA1/-4EA2/-4EA3**		(p. 3/110)			**3TX7686/696**	(p. 3/125)
Box terminal blocks			**3RT1966-4G**		(p. 3/110)			**--**	
Surge suppressors			**3RT1956-1C** (RC element)		(p. 3/108)			**3TX7572**	(p. 3/125)
3RU1 and 3RB2 overload relays (Chapter 7, "Protection Equipment" → "Overload Relays")									
3RU11, thermal, CLASS 10			**--**			**--**		**--**	
3RB20/3RB21, solid-state, CLASS 5, 10, 20 and 30			**3RB2066** **3RB2166**	55 ... 630 A		**3RB2066** **3RB2166**	160 ... 630 A	**3RB2066** **3RB2166**	160 ... 630 A
3RB22/3RB23, solid-state, CLASS 5, 10, 20 and 30			**3RB2.83 + 3RB2966**	63 ... 630 A					
3RV10 motor starter protectors (Chapter 7, "Protection Equipment" → "Motor Starter Protectors")									
Type			**3RV1073**	160 ... 400 A		**3RV1083**	252 ... 630 A	**3RV1083**	252 ... 630 A
Link modules			**--**			**--**		**--**	
3RA13 reversing contactor assemblies									
Complete units		Type	**--**			**--**		**3TD6804** (p. 3/180)	
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**335**	
Assembly kits/wiring modules			**3RA1963-2A**		(p. 3/162)	**3RA1973-2A**	(p. 3/162)	**3TX7680-1A**	(Industry Mall)
Mechanical interlocks			**3RA1954-2A**		(p. 3/161)			**3TX7686-1A**	(Industry Mall)
3RA14 contactor assemblies for wye-delta starting									
Complete units		Type	**--**			**--**		**3TE6804** (p. 3/182)	
400 V		**kW**	**--**			**--**		**630**	
Assembly kits/wiring modules			**3RA1963-2B**		(p. 3/179)	**3RA1973-2B**	(p. 3/179)	**3TX7680-1B**	(Industry Mall)

Note:

Safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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Connection methods

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TF2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

	Screw terminals
	Spring-type terminals
	Flat connectors
	Solder pin connections
	Ring terminal lug connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

The 3RT20 contactors can also be ordered via an online configurator.

	Configurator available in the Industry Mall
	The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

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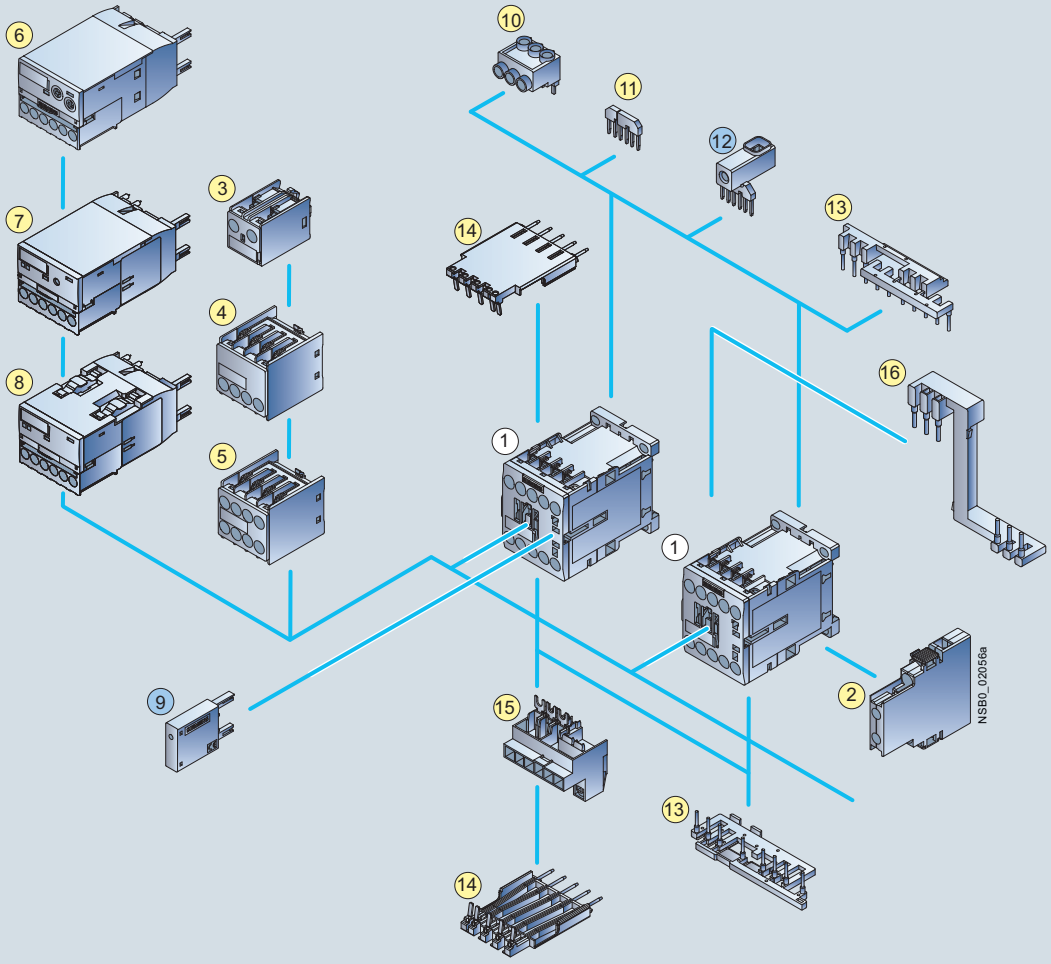
General data

Overview

The SIRIUS family of controls

The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.

3RT2 contactors and coupling contactors
Size S00 with mountable accessories



(1) Contactor size S00

(2) 1-pole auxiliary switch block, laterally mountable
(3) 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
(4) 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
(5) 4-pole auxiliary switch block, for snapping onto the front
(6) 3RA28 function module
(7) 3RA27 function module for AS-Interface, direct starting
(8) 3RA27 function module for IO-Link, direct starting
(9) Surge suppressor with/without LED
(10) Three-phase feeder terminal
(11) Star jumper, 3-pole, without connecting terminal
(12) Link for paralleling, 3-pole, with connecting terminal
(13) Wiring modules, on the top and bottom (reversing duty)
(14) Solder pin adapter
(15) Connection module (adapter and connector) for contactors with screw-type connection
(16) Safety main current connector for two contactors

○ For contactors
○ For contactors and coupling contactors (interface)

Accessories see pages 3/48 to 3/63.

Contactor assemblies see pages 3/153 to 3/155.

Assembly kit for reversing contactor assemblies (mech. interlocking, wiring modules) see page 3/156.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

Fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters" → "SIRIUS 3RA2 Load Feeders".

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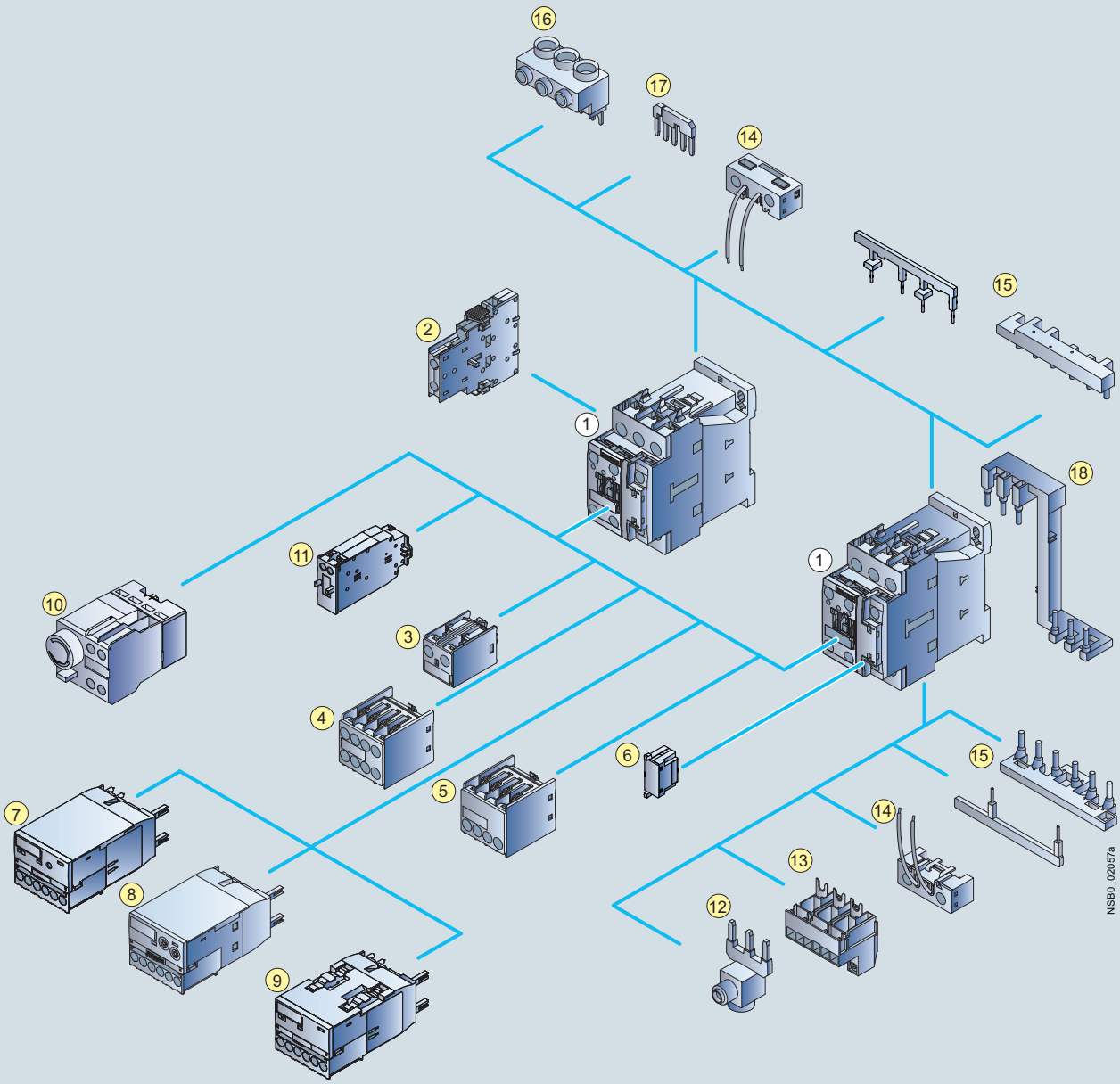
3RT2 contactors and coupling contactors
Size S0 with mountable accessories



① Contactor size S0

② 1-pole auxiliary switch block, laterally mountable
③ 1-pole auxiliary switch block, for snapping onto the front
Cable entry from the top
④ 4-pole auxiliary switch block, for snapping onto the front
⑤ 2-pole auxiliary switch block, for snapping onto the front
Cable entry from the bottom
⑥ Surge suppressor with/without LED
⑦ 3RA27 function module for AS-Interface, direct starting
⑧ 3RA28 function module
⑨ 3RA27 function module for IO-Link, direct starting
⑩ Pneumatic delay block
⑪ Mechanical latching block
⑫ Link for paralleling, 3-pole, with connecting terminal
⑬ Connection module (adapter and plug) for contactors
with screw-type connection
⑭ Coil terminal module, on the top and bottom
⑮ Wiring modules, on the top and bottom (reversing duty)
⑯ Three-phase feeder terminal
⑰ Link for paralleling (star jumper), 3-pole,
without connecting terminal
⑱ Safety main current connector for two contactors

Accessories see pages 3/48 to 3/63.

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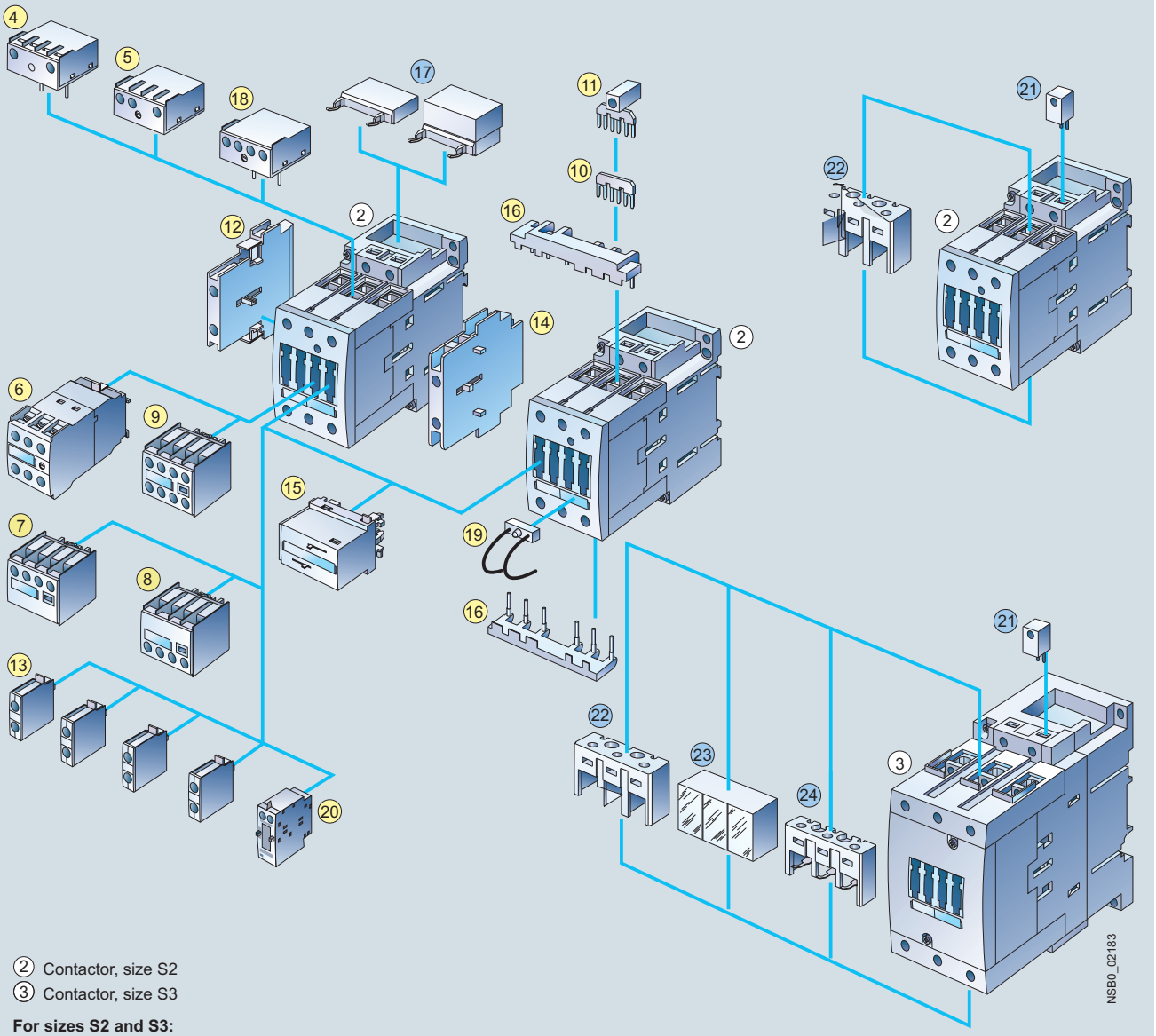
General data

3RT1 contactors
Sizes S2 and S3 with mountable accessories



(2) Contactor, size S2
(3) Contactor, size S3

For sizes S2 and S3:

(4) Solid-state timing relay block, ON-delay
(5) Solid-state timing relay block, OFF-delay
(6) Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
(7) 2-pole auxiliary switch block, cable entry from above
(8) 2-pole auxiliary switch block, cable entry from below
(9) 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
(10) Link for paralleling (star jumper), 3-pole, without connecting terminal
(11) Link for paralleling, 3-pole, with connecting terminal
(12) 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005)
(13) Single-pole auxiliary switch block (up to 4 can be snapped on)
(14) Mechanical interlock, laterally mountable
(15) Mechanical interlock, mountable to the front
(16) Wiring connectors on the top and bottom (reversing duty)
(17) Surge suppressor (varistor, RC element, diode assembly), can be mounted on the top or bottom
(18) Mechanical latching interface for mounting directly onto contactor coil
(19) LED module for indicating contactor operation

Only for size S2:

(20) Mechanical latching

Only for sizes S2 and S3:

(21) Coil repeat terminal for making contactor assemblies
(22) Terminal cover for box terminal

Only for size S3:

(23) Terminal cover for cable lug and bar connection
(24) Auxiliary conductor terminal, 3-pole

Accessories identical for sizes S2 and S3
Accessories differ according to size

Accessories see pages 3/103 to 3/111.

Fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters" → "SIRIUS 3RA1 Load Feeders".

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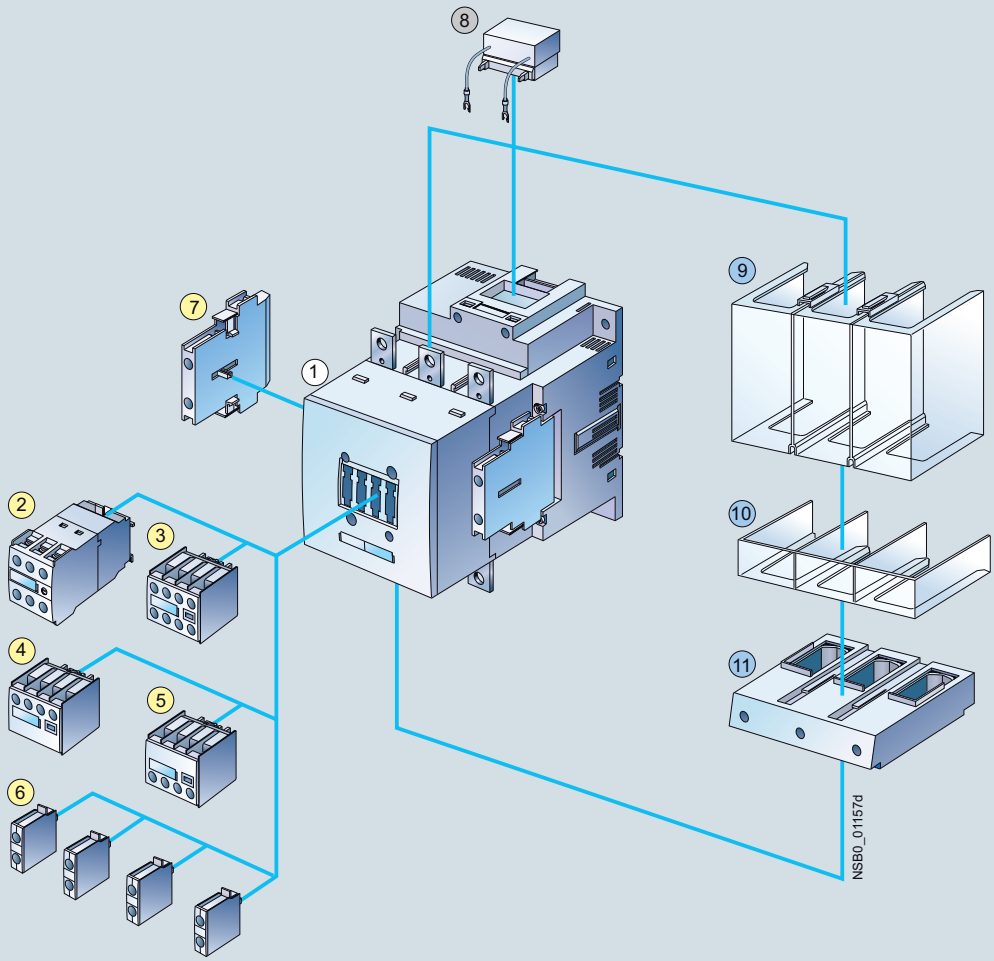
3RT1 contactors
Sizes S6 to S12 with mountable accessories
(illustration for basic unit)



① 3RT10 and 3RT14 air-break contactors, sizes S6, S10 and S12

② Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
③ 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
④ 2-pole auxiliary switch block, cable entry from above
⑤ 2-pole auxiliary switch block, cable entry from below
⑥ Single-pole auxiliary switch block (up to 4 can be snapped on)
⑦ 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005) (identical for S0 to S12)
⑧ Surge suppressor (RC element) for plugging into top of withdrawable coil

⑨ Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12
⑩ Terminal cover for box terminal, different for sizes S6 and S10/S12
⑪ Box terminal block, different for sizes S6 and S10/S12

Accessories identical for sizes S0 to S12
Accessories identical for sizes S6 to S12
Accessories differ according to size

Accessories see pages 3/103 to 3/111.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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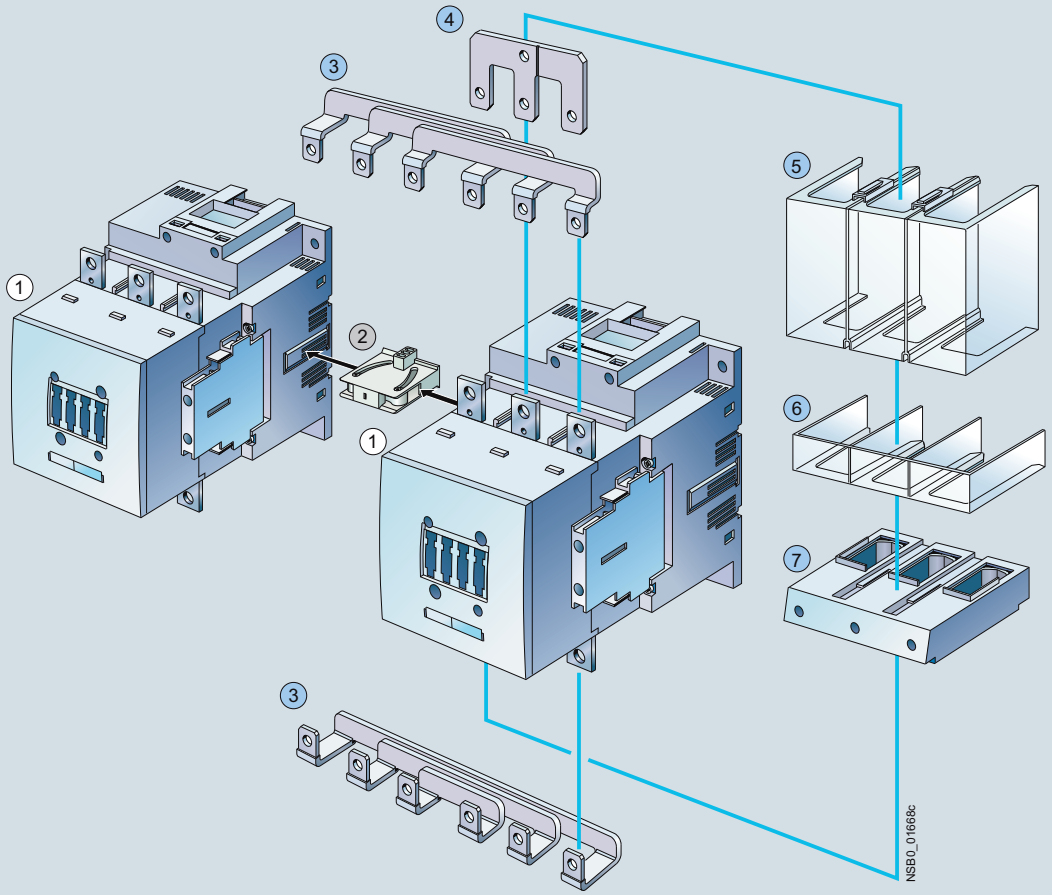
General data

3RA1 contactor assemblies, 3RT1 contactors
Size S6 with accessories



(1) 3RT10 and 3RT14 air-break contactor, size S6

(2) Mechanical interlock, laterally mountable
(3) Wiring modules on the top and bottom, 3RA1953-2A
(4) Link for paralleling (star jumper), 3-pole, with through-hole, 3RT1956-4BA31
(5) Terminal cover for cable lug and bar connection different for sizes S6 and S10/S12
(6) Terminal cover for box terminal different for sizes S6 and S10/S12
(7) Box terminal block, different for sizes S6 and S10/S12

Accessories identical for sizes S6 to S12
Accessories differ according to size

Accessories see pages 3/161 to 3/163 and 3/103 to 3/111.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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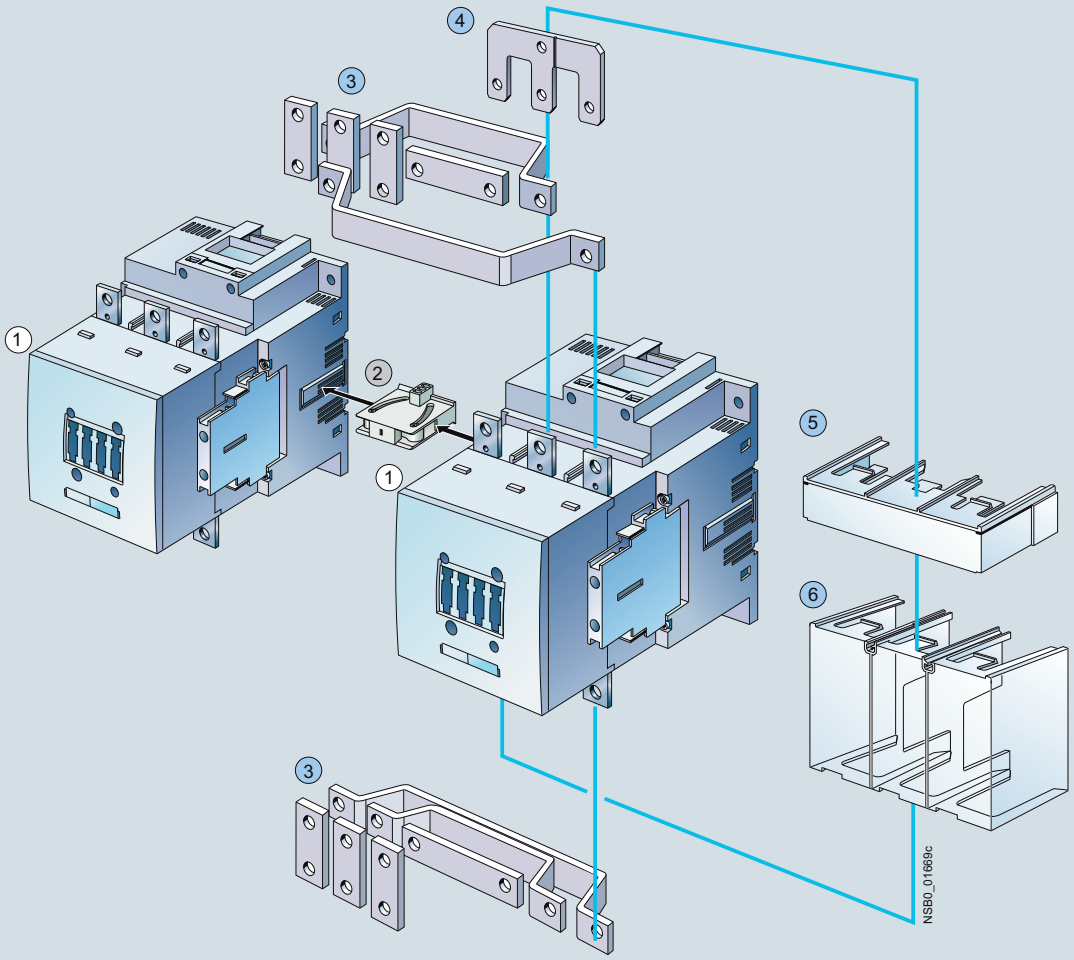
3RA1 contactor assemblies, 3RT1 contactors
Sizes S6, S10 and S12 with accessories



(1) 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12 or 3RT12 vacuum contactor, sizes S10 and S12

(2) Mechanical interlock, laterally mountable
(3) Wiring modules on the top and bottom, 3RA19
(4) Link for paralleling (star jumper), 3-pole, with through-hole, 3RT1956-4BA31
(5) Terminal cover for box terminal, different for sizes S6 and S10/S12
(6) Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12

Accessories identical for sizes S6 to S12
Accessories different according to size

Accessories see pages 3/161 to 3/163 and 3/103 to 3/111.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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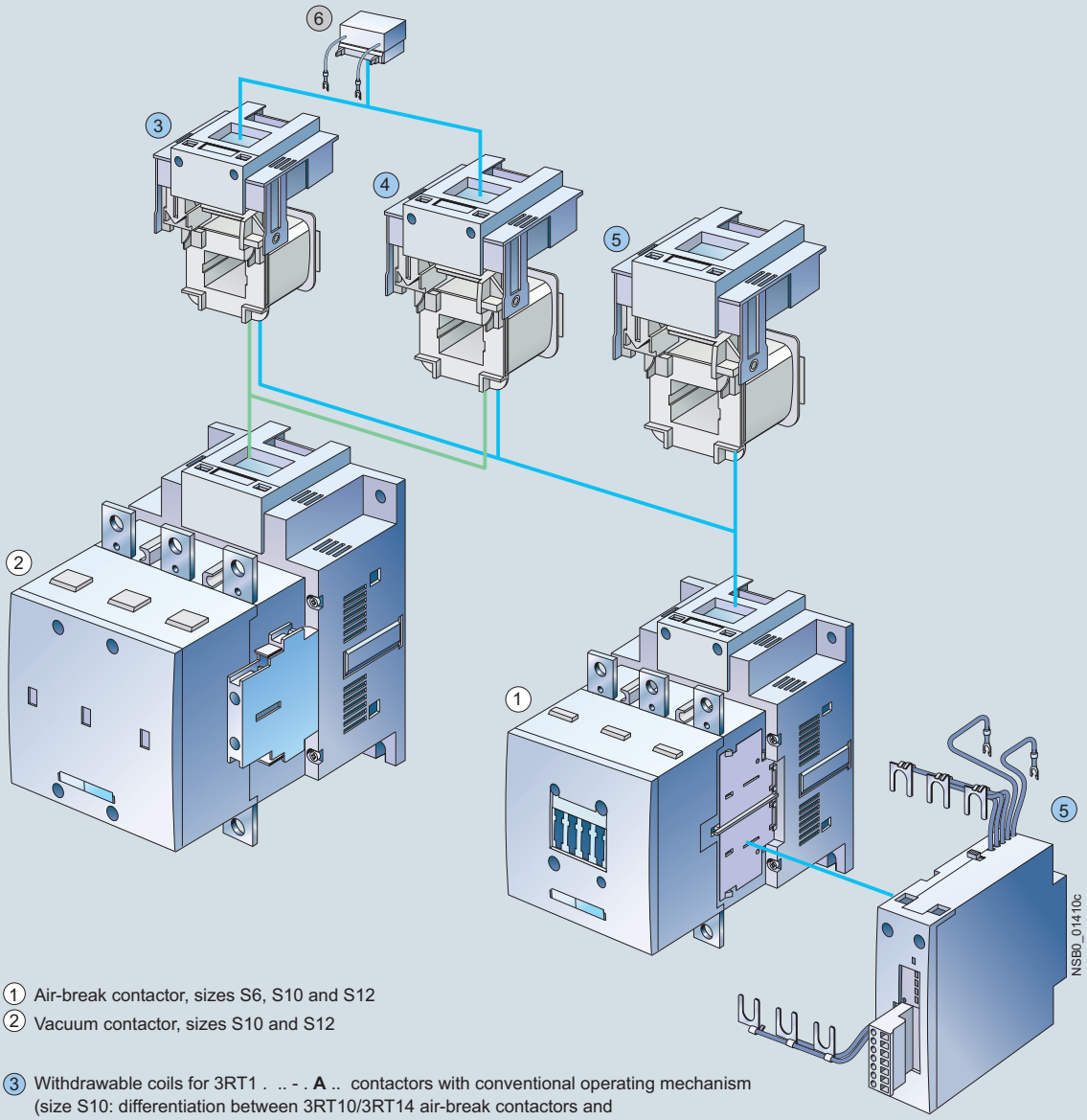
General data

3RT1 contactors
Sizes S6 to S12 with accessories



(1) Air-break contactor, sizes S6, S10 and S12
(2) Vacuum contactor, sizes S10 and S12

(3) Withdrawable coils for 3RT1 . .. - . **A** .. contactors with conventional operating mechanism
(size S10: differentiation between 3RT10/3RT14 air-break contactors and
3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)

(4) Withdrawable coils for 3RT1 . .. - . **N**.. contactors with solid-state operating mechanism.
(size S10: differentiation between 3RT10/3RT14 air-break contactors and
3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)

(5) Withdrawable coils and laterally mountable module (plug-on) for 3RT1. .. - . **P** .. air-break contactors with solid-state operating mechanism and remaining lifetime indicator

(6) Surge suppressor (RC element), plug-mountable on withdrawable coils
- 3RT1...-.**A**.. with conventional operating mechanism
- 3RT1...-.**N**.. with solid-state operating mechanism

○ Identical for sizes S6 to S12
● Different according to size

For surge suppressors see page 3/108,
for withdrawable coils see pages 3/114 and 3/115.

Mountable overload relays see Chapter 7,
"Protection Equipment" → "Overload Relays".

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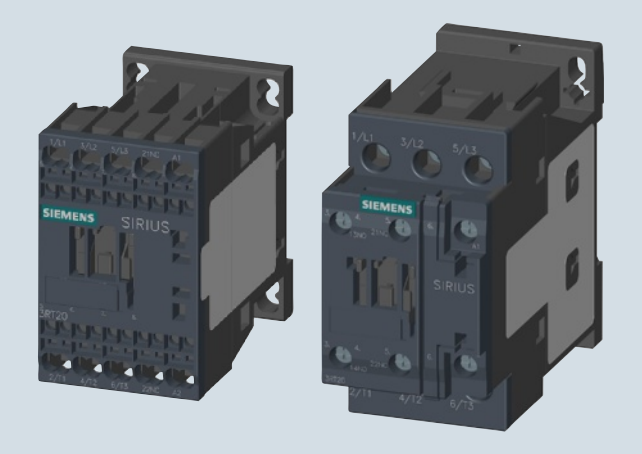
Overview

Sizes S00 and S0, up to 18.5 kW



Contactor size S00 with spring-type terminals and contactor size S0 with screw terminals

Compared to the former 3RT1 series, the 3RT2 series is notable for its higher rating: size S00 with up to 7.5 kW and size S0 with up to 18.5 kW.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT2 contactors are climate-proof and are suitable and tested for use worldwide.

If the devices are used in ambient conditions which deviate from common industrial conditions (IEC 60721-3-3 "Stationary Use, Weather-Protected"), information must be obtained about possible restrictions with regard to the reliability and endurance of the device and possible protective measures. In this case contact our Technical Assistance.

3RT2 contactors are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

Auxiliary contact complement

Size S00 contactors have an auxiliary contact integrated in the basic unit. The basic units size S0 contain two integrated auxiliary contacts (1 NO + 1 NC).

All basic units (except coupling contactors) can be extended with auxiliary switch blocks:

- Additional auxiliary switches with a maximum of four auxiliary contacts can be mounted. The combination of a 2-pole auxiliary switch for mounting on the front and an auxiliary switch for mounting on the side is not permitted.
- Of the maximum number of auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted for both sizes.

In addition, complete units with permanently mounted auxiliary switch block (2 NO + 2 NC) are offered for sizes S00 and S0.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of the 3RT2 contactor or 3RH21 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are suitable for electronic circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Connection methods

The 3RT2 contactors are available with screw terminals, spring-type terminals or ring terminal lug connections.

Short-circuit protection of the contactors

For short-circuit protection of contactors without overload relays see "Technical specifications" on pages 3/17 and 3/22.
For short-circuit protection of the contactors with overload relay, see Configuration Manual "Configuring SIRIUS Innovations" http://support.automation.siemens.com/WW/view/en/39714188.

To assemble fuseless motor feeders, you must select combinations of motor starter protector and contactor as explained in "SIRIUS 3RA2 Load Feeders" (see Chapter 8 "Load Feeders and Motor Starters").

Motor protection

3RU21 thermal overload relays or 3RB30 solid-state overload relays can be fitted to the 3RT2 contactors for protection against overload. The overload relays must be ordered separately (see Chapter 7, "Protection Equipment" → "Overload relays").

Ratings of three-phase motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

Control supply voltage

All contactors are available with AC or DC operation. For size S0 contactors, a UC operating mechanism is also available, which can be controlled with both AC (50 to 60 Hz) and DC.

Surge suppression

3RT2 contactors can be retrofitted with RC elements, varistors or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

The surge suppressors can be plugged onto the front of size S0 contactors.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor and suppressor diode +2 to 5 ms).

S00 and S0 contactors with communication interface

The S00 and S0 contactors with communication interface are special versions for mounting the SIRIUS function modules for connection to the control system through IO-Link or AS-Interface (see page 3/188 and 3/193).

When a function module is fitted, no additional auxiliary switches can be mounted. Without a function module, the contactors can be used like the standard versions.

Further information on IO-Link and AS-Interface see Chapter 2 "Industrial Communication".

Manuals

For more information, see

- System manual "SIRIUS Innovations – System Overview", http://support.automation.siemens.com/WW/view/en/60311318
- Manual "SIRIUS Innovations – SIRIUS 3RT2 Contactors/ Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/60306557

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS power contactors	**3 R T**															
2nd generation		**2**														
Device type (e. g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)			□													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e. g. 27 = 15 kW)					□											
Connection type (1 = screw, 2 = spring)							□									
Operating range / solenoid coil circuit (e. g. A = AC standard / without)								□								
Rated control supply voltage (e. g. P0 = 230 V, 50 Hz)									□	□						
Auxiliary switches (e. g. S0: 0 = 1 NO + 1 NC integrated)											□					
Special version													□	□	□	□
Example	**3 R T**	**2**	**0**	**2**	**7**	**–**	**1**	**A**	**P**	**0**	**0**					

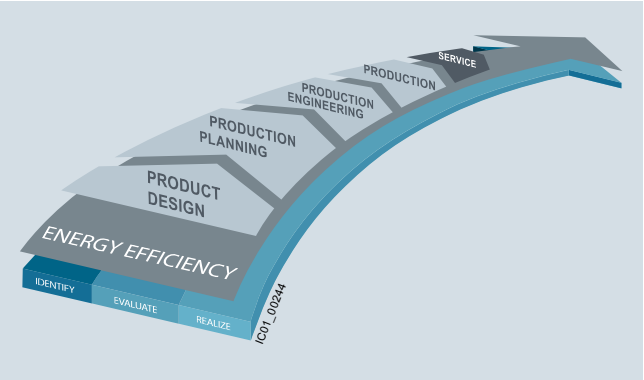
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RT20 contactors contribute to energy efficiency throughout the plant as follows:

- UC coils with electric control for reduced power consumption when closing and in the closed state
- Smaller power supply units in the control circuit through lower power consumption in the closed state with 24 V DC
- Reduced heating of control cabinet: Technology-reduced inherent power loss of the contactors, resulting in lower cooling costs and a more compact design

Accessories

Auxiliary switch blocks

Terminal designations according to EN 50012 or EN 50005.

Size S00 contactors have an auxiliary contact (NO or NC) integrated in the basic unit. Size S0 contactors have 2 auxiliary contacts (1 NO and 1 NC) integrated in the basic unit.

The contactors can be expanded with front-mounting 3RH2911 auxiliary switch blocks to form contactors with up to 5 auxiliary contacts (S00) or up to 6 auxiliary contacts (S0). Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.

Single- or 2-pole auxiliary switch blocks with connection options from above or below enable easy and clearly arranged wiring especially for the installation of feeders. These auxiliary switch blocks are offered only with screw terminals.

All the previously mentioned auxiliary switch variants can be snap-fitted onto the front of the contactor. The auxiliary switch block has a centrally positioned release lever for disassembly.

If the installation space is limited in depth, 2-pole auxiliary switch blocks can be attached laterally on the left or on the right. These auxiliary switch blocks can be used only when no 4-pole auxiliary switch blocks are snapped onto the front.

The solid-state compatible 3RH2911-.NF. . auxiliary switch blocks include 2 enclosed contacts. They are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The front NC auxiliary contacts are not mirror contacts. There are also versions for mounting on the side.

For details of selecting the auxiliary switches see pages 3/47 to 3/52.

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Technical specifications

Type			3RT2
Size			S00 and S0
Rated data of the auxiliary contacts			
Acc. to IEC 60947-5-1/EN 60947-5-1 The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S0			
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = **Rated operational current I_e/AC-12**		A	10
AC load			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	Up to 230 V	A	10[1]
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V	A	1
	690 V	A	1
DC load			
Rated operational current I_e/DC-12			
• For rated operational voltage U_e	24 V	A	10
	60 V	A	6
	110 V	A	3
	125 V	A	2
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	10[1]
	60 V	A	2
	110 V	A	1
	125 V	A	0.9
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
Contact reliability at 17 V, 1 mA according to IEC 60947-5-4/EN 60947-5-4			Frequency of contact faults < 10^{-8} i.e. < 1 fault per 100 million operating cycles

Endurance of the auxiliary contacts

It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

The characteristic curves apply to:
- Integrated auxiliary contacts on 3RT20
- 3RH2911, 3RH2921 auxiliary switch blocks[1]

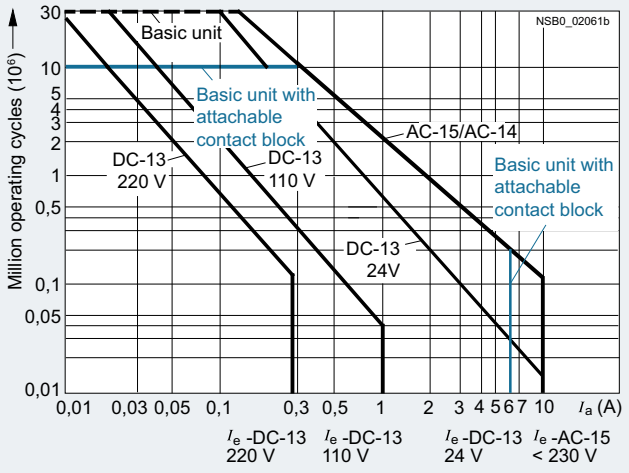

Diagram legend:
I_a = Breaking current
I_e = Rated operational current

[1] 3RH22, 3RH29, 3RT2....-....4: I_e = 6 A for AC-15/AC-14 and DC-13.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type	3RT2
Size	S00 and S0

Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- C Inching operations as a percentage of total switching operations

Size S00

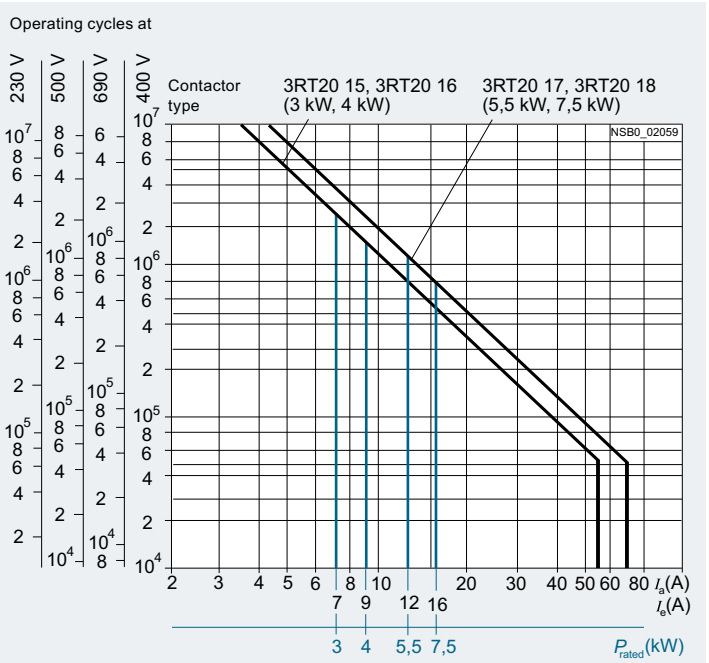

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

Size S0

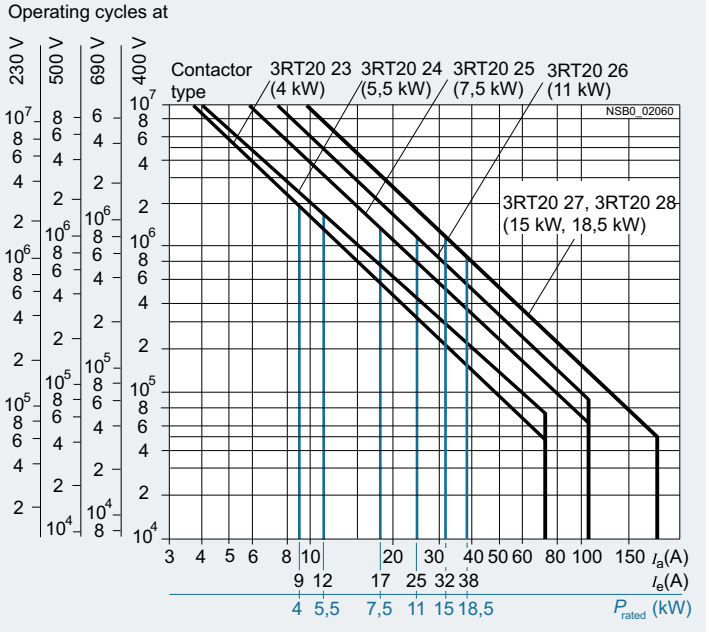

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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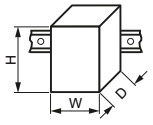
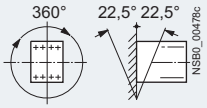
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			**3RT20 1 5, 3RT20 16**	**3RT20 1 7, 3RT20 18**
Size			**S00**	**S00**
Dimensions (W x H x D)[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73	
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121	
• With mounted function module		mm	45 x 57.5 x 142 / 45 x 70 x 142	
General technical specifications				
Permissible mounting position				
The contactors are designed for operation on a vertical mounting surface.				
Upright mounting position			Special version required	
Mechanical endurance				
• Basic units		Operating cycles	30 million	
• Basic units with snap-on auxiliary switch block		Operating cycles	10 million	
• Solid-state compatible auxiliary switch block		Operating cycles	5 million	
Electrical endurance			2)	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400	
Mirror contacts				
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.				
• 3RT201., 3RT231. (removable auxiliary switch block)			Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	
• 3RT201., 3RT231. (permanently mounted auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F, and SUVA	
• 3RH2919-.NF.. solid-state compatible auxiliary switch blocks			Have no mirror contact for size S00	
Ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C			IP20	
Touch protection acc. to EN 50274			Finger-safe	
Shock resistance rectangular pulse				
• AC operation		*g*/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
• DC operation		*g*/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
Shock resistance sine pulse				
• AC operation		*g*/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
• DC operation		*g*/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
Conductor cross-sections			3)	
Short-circuit protection for contactors without overload relays				
Main circuit				
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1				
- Type of coordination "1"		A	35	50
- Type of coordination "2"		A	20	25
- Weld-free[4]		A	10	10
• Miniature circuit breakers (up to 230 V) with C characteristic Short-circuit current 1 kA, type of coordination "1"		A	10	10
Auxiliary circuit				
Short-circuit test acc. to IEC 60947-5-1/EN 60947-5-1				
• With fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA		A	10	
• With 230 V miniature circuit breakers, C characteristic with short-circuit current I_k = 400 A		A	6	
Short-circuit protection for contactors with overload relays			See Configuration Manual "Configuring SIRIUS Innovations"[5]	
Short-circuit protection for fuseless load feeders			See Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders"	

1) Dimensions for devices with screw terminals / spring-type terminals.
2) For contact endurance of the main contacts see page 3/16.
3) For conductor cross-sections, see page 3/21.
4) Test conditions according to IEC 60947-4-1.
5) See http://support.automation.siemens.com/WW/view/en/39714188.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2015, 3RT2016	3RT2017, 3RT2018
Size			S00	S00
Control				
Solenoid coil operating range				
• AC operation	50 Hz		0.8 ... 1.1 x U_s	
	60 Hz		0.85 ... 1.1 x U_s	
• DC operation	Up to 50 °C		0.8 ... 1.1 x U_s	
	Up to 60 °C		0.85 ... 1.1 x U_s	
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)				
• AC operation, 50/60 Hz, standard version				
- Closing		VA	27/24.3	37/33
- P.f.			0.8/0.75	0.8/0.75
- Closed		VA	4.2/3.3	5.7/4.4
- P.f.			0.25/0.25	0.25/0.25
• AC operation, 50 Hz, for USA/Canada				
- Closing		VA	26.4	36
- P.f. for closing			0.81	0.8
- Closed		VA	4.4	5.9
- P.f. for closed			0.24	0.24
• AC operation, 60 Hz, for USA/Canada				
- Closing		VA	31.7	43
- P.f. for closing			0.81	0.8
- Closed		VA	4.8	6.5
- P.f. for closed			0.25	0.25
• DC operation (closing = closed)		W	4	4
Permissible residual current of the electronics (with 0 signal)				
• AC operation			< 3 mA x (230 V/U_s)[1)]	< 4 mA x (230 V/U_s)[1)]
• DC operation			< 10 mA x (24 V/U_s)[1)]	
Operating times[2)]				
Total break time = Opening delay + Arcing time				
• AC operation for 0.8 ... 1.1 x U_s	Closing delay	ms	9 ... 35	8 ... 33
	Opening delay	ms	3.5 ... 14	4 ... 15
• DC operation for 0.85 ... 1.1 × U_s	Closing delay	ms	30 ... 100	30 ... 100
	Opening delay	ms	7 ... 13	7 ... 13
• Arcing time		ms	10 ... 15	10 ... 15
Operating times for 1.0 x U_s[2)]				
• AC operation	Closing delay	ms	9.5 ... 24	9 ... 22
	Opening delay	ms	4 ... 14	4.5 ... 15
• DC operation	Closing delay	ms	35 ... 50	35 ... 50
	Opening delay	ms	7 ... 12	7 ... 12

1) The 3RT2916-1GA00 additional load module is recommended for higher residual currents.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, suppressor diode +1 ms to 5 ms; varistor +2 ms to 5 ms).

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Type			3RT2015	3RT2016	3RT2017	3RT2018
Size			S00	S00	S00	S00
Main circuit						
Load rating with AC						
Utilization category AC-1, Switching resistive loads						
• Rated operational current I_e	At 40 °C up to 690 V	A	18	22	22	22
	At 60 °C up to 690 V	A	16	20	20	20
• Rated power for AC loads[1] P.f.= 0.95 (at 60 °C)	230 V	kW	6	7.5	7.5	7.5
	400 V	kW	10.5	13	13	13
	690 V	kW	18	22	22	22
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	2.5	4	4	4
	At 60 °C	mm^2	2.5	2.5	2.5	2.5
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e	Up to 400 V	A	7	9	12	16
	440 V	A	7	9	11	14
	500 V	A	6	7.7	9.2	12.4
	690 V	A	4.9	6.7	6.7	8.9
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	1.5	2.2	3	4
	400 V	kW	3	4	5.5	7.5
	690 V	kW	4	5.5	5.5	7.5
Thermal load capacity	10 s current[2]	A	56	72	*96*	128
Power loss per conducting path	At I_e/AC-3	W	0.42	0.7	*1.24*	2.2
Utilization category AC-4 (for $I_a = 6 \times I_e$)[3]						
• Rated operational current I_e, maximum	Up to 400 V	A	6.5	8.5	8.5	11.5
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	Up to 400 V	A	3	4	4	5.5
• The following applies to a contact endurance of about 200 000 operating cycles:						
- Rated operational currents I_e	Up to 400 V	A	2.6	4.1	4.1	5.5
	690 V	A	1.8	3.3	3.3	4.4
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V	kW	0.67	1.1	1.1	1.5
	400 V	kW	1.15	2	2	2.5
	690 V	kW	1.15	2.5	2.5	3.5

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions
see Chapter 7, "Protection Equipment" → "Overload Relays".

3) The data only apply to 3RT2516 and 3RT2517 (2 NO + 2 NC) up to a rated operational voltage of 400 V.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type				3RT2015	3RT2016	3RT2017	3RT2018
Size				S00	S00	S00	S00
Main circuit							
Load rating with DC							
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A		15	20		
	60 V	A		15	20		
	110 V	A		1.5	2.1		
	220 V	A		0.6	0.8		
	440 V	A		0.42	0.6		
	600 V	A		0.42	0.6		
- 2 conducting paths in series	Up to 24 V	A		15	20		
	60 V	A		15	20		
	110 V	A		8.4	12		
	220 V	A		1.2	1.6		
	440 V	A		0.6	0.8		
	600 V	A		0.5	0.7		
- 3 conducting paths in series	Up to 24 V	A		15	20		
	60 V	A		15	20		
	110 V	A		15	20		
	220 V	A		15	20		
	440 V	A		0.9	1.3		
	600 V	A		0.7	1		
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A		15	20		
	60 V	A		0.35	0.5		
	110 V	A		0.1	0.15		
	220 V	A		--			
	440 V	A		--			
	600 V	A		--			
- 2 conducting paths in series	Up to 24 V	A		15	20		
	60 V	A		3.5	5		
	110 V	A		0.25	0.35		
	220 V	A		--			
	440 V	A		--			
	600 V	A		--			
- 3 conducting paths in series	Up to 24 V	A		15	20		
	60 V	A		15	20		
	110 V	A		15	20		
	220 V	A		1.2	1.5		
	440 V	A		0.14	0.2		
	600 V	A		0.14	0.2		
Switching frequency							
Switching frequency z in operating cycles/hour							
Contactors without overload relays							
• No-load switching frequency	AC/DC		h^{-1}	10 000			
• Switching frequency *z* during rated operation[1]							
- I_e/AC-1	At 400 V		h^{-1}	1 000			
- I_e/AC-2	At 400 V		h^{-1}	750			
- I_e/AC-3	At 400 V		h^{-1}	750			
- I_e/AC-4	At 400 V		h^{-1}	250			
Contactors with overload relays							
• Mean value			h^{-1}	15			

[1] Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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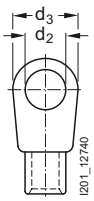
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type		3RT2015	3RT2016	3RT2017	3RT2018
Size		S00	S00	S00	S00
Conductor cross-sections					
Main and auxiliary conductors (1 or 2 conductors can be connected)		**Screw terminals**			
• Solid or stranded	mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]; max. 2 x 4			
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]			
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]; 2 x 12			
• Terminal screw		M3 (for Pozidriv size 2, ∅ 5 ... 6)			
• Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)			
Main conductors, auxiliary conductors and coil terminals[2] (1 or 2 conductors can be connected)		**Spring-type terminals**			
• Operating devices[3]	mm	3.0 x 0.5; 3.5 x 0.5			
• Solid or stranded	mm^2	2 x (0.5 ... 4)			
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 2.5)			
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded	AWG	2 x (20 ... 12)			
Auxiliary conductors for front and laterally mounted auxiliary switches[2] (1 or 2 conductors can be connected)					
• Operating devices[3]	mm	3.0 x 0.5; 3.5 x 0.5			
• Solid or stranded	mm^2	2 x (0.5 ... 2.5)			
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)			
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)			
Main conductors and auxiliary conductors		**Ring terminal lug connections**			
• Terminal screw		M3, Pozidriv 2			
• Operating devices	mm	Ø 5 ... 6			
• Tightening torque	Nm	0.8 ... 1.2			
• Usable ring terminal lugs	mm	d_2 = min. 3.2			
- DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve - DIN 46237 with insulation sleeve - JIS C2805 Type R without insulation sleeve - JIS C2805 Type RAV with insulation sleeve - JIS C2805 Type RAP with insulation sleeve	mm	d_3 = max. 7.5			



1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) Max. external diameter of the cable insulation: 3.6 mm. On spring-type terminals with conductor cross-sections ≤ 1 mm^2, an insulation stop must be used see Accessories, page 3/63.

3) Tool for opening the spring-type terminals, see Accessories, page 3/63.

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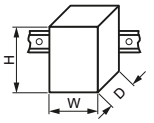
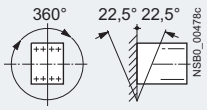
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Size			S0	S0	S0	S0	S0	S0
Dimensions (W x H x D) for AC operation[1]		mm	45 x 85 x 97 / 45 x 101.5 x 97					
• With mounted auxiliary switch block		mm	45 x 85 x 141 / 45 x 101.5 x 144					
• With mounted function module		mm	45 x 85 x 166 / 45 x 101.5 x 166					
Dimensions (W x H x D) for DC operation[1]		mm	45 x 85 x 107 / 45 x 101.5 x 107					
• With mounted auxiliary switch block		mm	45 x 85 x 151 / 45 x 101.5 x 154					
• With mounted function module		mm	45 x 85 x 176 / 45 x 101.5 x 176					
General data								
Permissible mounting position								
The contactors are designed for operation on a vertical mounting surface.								
Upright mounting position								
			Special version required, also applies to 3RT202.-.K.40. coupling contactors					
Mechanical endurance								
• Basic units		Operating cycles	10 million					
• Basic units with snap-on auxiliary switch block		Operating cycles	10 million					
• Solid-state compatible auxiliary switch block		Operating cycles	5 million					
Electrical endurance			[2]					
Rated insulation voltage U_i (pollution degree 3)		V	690					
Rated impulse withstand voltage U_{imp}		kV	6					
Protective separation between the coil and the main contacts (acc. to IEC 60947-1, Appendix N)		V	400					
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.								
• Integrated auxiliary switches			Yes, acc. to IEC 60947-4-1, Appendix F					
• 3RT202., 3RT232. (removable auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F					
• 3RT202., 3RT232. (permanently mounted auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F					
Permissible ambient temperature								
• During operation		°C	-25 ... +60					
• During storage		°C	-55 ... +80					
Degree of protection acc. to IEC 60947-1, Appendix C			IP20					
Touch protection acc. to EN 50274			Finger-safe					
Shock resistance rectangular pulse								
• AC operation		*g*/ms	7.5/5 and 4.7/10			8.3/5 and 5.310		
• DC operation		*g*/ms	10/5 and 7.5/10			10/5 and 7.5/10		
Shock resistance sine pulse								
• AC operation		*g*/ms	11.8/5 and 7.4/10			13.5/5 and 8.3/10		
• DC operation		*g*/ms	15/5 and 10/10			15/5 and 10/10		
Conductor cross-sections			[3]					
Short-circuit protection for contactors without overload relays								
Main circuit			Short-circuit protection for contactors with overload relays See Configuration Manual "Configuring SIRIUS Innovations" [4] Short-circuit protection for fuseless load feeders See Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders"					
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1								
- Type of coordination "1"		A	63			100	125	
- Type of coordination "2"		A	25			35	50	
- Weld-free[5]		A	10			16	16	
• Miniature circuit breakers with C characteristic (short-circuit current 3 kA, type of coordination "1")		A	25			32	40	
Auxiliary circuit								
• Fuse links, operational class gG: DIAZED, type 5SB; NEOZED, type 5SE (weld-free protection $I_k \leq 1$ kA)		A	10					
• Miniature circuit breakers 230 V, C characteristic (short-circuit current $I_k < 400$ A)		A	10					

1) Dimensions for devices with screw terminals / spring-type terminals.
2) For contact endurance of the main contacts see page 3/16.
3) For conductor cross-sections, see page 3/26.
4) See http://support.automation.siemens.com/WW/view/en/39714188
5) Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2023 ... 3RT2025	3RT2026 ... 3RT2028	3RT202. -.NB3	3RT202. -.NF3..	3RT202. -.NP3
Size			S0	S0	S0	S0	S0
Control							
Type of operating mechanism			AC or DC		UC (AC/DC)		
Solenoid coil operating range	AC/DC		0.8 ... 1.1 x U_s		0.7 ... 1.3 x U_s [1]		
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)							
• AC operation, 50 Hz, standard version							
- Closing		VA	65	77	6.6	11.9	12.7
- P.f.			0.82	0.82	0.98	0.98	0.98
- Closed		VA	7.6	9.8	1.9	1.6	3.9
- P.f.			0.25	0.25	0.86	0.79	0.51
• AC operation, 50/60 Hz, standard version							
- Closing		VA	68/67	81/79	6.6/6.7	11.9/12.0	12.7/14.7
- P.f.			0.72/0.74	0.72/0.74	0.98/0.98	0.98/0.98	0.98/0.98
- Closed		VA	7.9/6.5	10.5/8.5	1.9/2.0	1.6/1.8	3.9/4.3
- P.f.			0.25/0.28	0.25/0.28	0.86/0.82	0.79/0.74	0.51/0.56
• AC operation, 50 Hz, for USA/Canada							
- Closing		VA	65	77	--	--	--
- P.f.			0.82	0.82	--	--	--
- Closed		VA	7.6	9.8	--	--	--
- P.f.			0.25	0.28	--	--	--
• AC operation, 60 Hz, for USA/Canada							
- Closing		VA	73	87	--	--	--
- P.f.			0.76	0.76	--	--	--
- Closed		VA	7.2	9.4	--	--	--
- P.f.			0.28	0.28	--	--	--
• DC operation (closing = closed)		W	5.9/5.9	5.9/5.9	5.9/1.4	10.2/1.3	14.3/1.9
Permissible residual current of the electronics (with 0 signal)							
• AC operation		mA	< 6 mA x (230 V/U_s)	< 7 mA x (230 V/U_s)			
• DC operation		mA	<16 mA x (24 V/U_s)				
Operating times for 0.8 ... 1.1 x U_s [2]							
Total break time = Opening delay + Arcing time							
• AC operation							
- Closing delay		ms	9 ... 38	8 ... 40	60 ... 80	50 ... 70	60 ... 80
- Opening delay		ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	35 ... 45
• DC operation							
- Closing delay		ms	50 ... 170	50 ... 170	60 ... 75	50 ... 70	50 ... 75
- Opening delay		ms	15 ... 17.5	15 ... 17.5	30 ... 45	35 ... 45	40 ... 50
• Arcing time		ms	10	10	10	10	10
Operating times for 1.0 x U_s [2]							
• AC operation							
- Closing delay		ms	10 ... 18	10 ... 17	65 ... 80	50 ... 70	60 ... 80
- Opening delay		ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	30 ... 50
• DC operation							
- Closing delay		ms	55 ... 80	55 ... 80	60 ... 80	56 ... 70	60 ... 80
- Opening delay		ms	16 ... 17	16 ... 17	30 ... 45	35 ... 45	30 ... 50

[1] The following applies to $U_{s\,max}$ = 280 V: Upper limit =1.1 x $U_{s\,max}$.

[2] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Size			S0	S0	S0	S0	S0	S0
Main circuit								
Load rating with AC								
Utilization category AC-1, switching resistive loads								
• Rated operational current I_e	At 40 °C up to 690 V	A	40				50	
	At 60 °C up to 690 V	A	35				42	
• Rated power for AC loads[1] P.f. = 0.95 (at 60 °C)	230 V	kW	13.3				15.5	
	400 V	kW	23				27.5	
	690 V	kW	40				47.5	
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	10				10	
	At 60 °C	mm^2	10				10	
Utilization categories AC-2 and AC-3								
• Rated operational currents I_e	Up to 400 V	A	9	12	17	25	32	38
	440 V	A	9	12	17	22	32	35
	500 V	A	9	12	17	18	32	32
	690 V	A	9	9	13	13	21	21
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	2.2	3	4	5.5	7.5	11
	400 V	kW	4	5.5	7.5	11	15	18.5
	690 V	kW	7.5	7.5	11	11	18.5	18.5
Thermal load capacity	10 s current[2]	A	80	110	150	200	260	300
Power loss per conducting path	At I_e/AC-3	W	0.4	0.5	0.9	1.6	2.7	3.8
Utilization category AC-4 (for $I_a = 6 \times I_e$)								
• Rated operational current I_e, max.	Up to 400 V	A	8.5	12.5	15.5	15.5	22	
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	4	5.5	7.5	7.5	11	
• The following applies to a contact endurance of about 200 000 operating cycles:								
- Rated operational currents I_e	Up to 400 V	A	4.1	5.5	7.7	9	12	
	690 V	A	3.3	5.5	7.7	9	12	
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 110 V	kW	0.5	0.73	1	1.2	1.6	
	230 V	kW	1.1	1.5	2	2.5	3.4	
	400 V	kW	2	2.6	3.5	4.4	6	
	690 V	kW	2.5	4.6	6	7.7	10.3	

[1] Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

[2] According to IEC 60947-4-1.
Rated values for various start-up conditions
see Chapter 7, "Protection Equipment" → "Overload Relays".

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Type				3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Size				S0	S0	S0	S0	S0	S0
Main circuit									
Load rating with DC									
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)									
• Rated operational currents I_e (at 60 °C)									
- 1 conducting path	Up to 24 V	A		35					
	60 V	A		20					
	110 V	A		4.5					
	220 V	A		1					
	440 V	A		0.4					
	600 V	A		0.25					
- 2 conducting paths in series	Up to 24 V	A		35					
	60 V	A		35					
	110 V	A		35					
	220 V	A		5					
	440 V	A		1					
	600 V	A		0.8					
- 3 conducting paths in series	Up to 24 V	A		35					
	60 V	A		35					
	110 V	A		35					
	220 V	A		35					
	440 V	A		2.9					
	600 V	A		1.4					
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)									
• Rated operational currents I_e (at 60 °C)									
- 1 conducting path	Up to 24 V	A		20					
	60 V	A		5					
	110 V	A		2.5					
	220 V	A		1					
	440 V	A		0.09					
	600 V	A		0.06					
- 2 conducting paths in series	Up to 24 V	A		35					
	60 V	A		35					
	110 V	A		15					
	220 V	A		3					
	440 V	A		0.27					
	600 V	A		0.16					
- 3 conducting paths in series	Up to 24 V	A		35					
	60 V	A		35					
	110 V	A		35					
	220 V	A		10					
	440 V	A		0.6					
	600 V	A		0.6					
Switching frequency									
Switching frequency *z* in operating cycles/hour									
Contactors without overload relays									
• No-load switching frequency	AC	h^{-1}		5 000					
	DC	h^{-1}		1 500					
• Switching frequency *z* during rated operation[1]									
- I_e/AC-1	At 400 V	h^{-1}		1 000					
- I_e/AC-2	At 400 V	h^{-1}		1 000			750		
- I_e/AC-3	At 400 V	h^{-1}		1 000			750		
- I_e/AC-4	At 400 V	h^{-1}		300			250		
Contactors with overload relays									
• Mean value		h^{-1}		15					

[1] Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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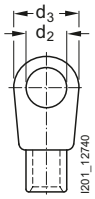
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Size			S0	S0	S0	S0	S0	S0
Conductor cross-sections (1 or 2 conductors connectable)								
Main conductors			Screw terminals					
Conductor cross-section								
• Solid or stranded		mm^2	2 x (1 ... 2.5)[1]; 2 x (2.5 ... 10)[1]					
• Finely stranded with end sleeves (DIN 46228-1)		mm^2	2 x (1 ... 2.5)[1]; 2 x (2.5 ... 6)[1]; 1 x 10					
• AWG cables, solid or stranded		AWG	2 x (16 ... 12)[1]; 2 x (14 ... 8)[1]					
• Terminal screws - Tightening torque		Nm	M4 (for Pozidriv size 2, Ø 5 ... 6) 2 ... 2.5 (18 ... 22 lb.in)					
Auxiliary conductors								
• Solid or stranded		mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]; 2 x 4					
• Finely stranded with end sleeves (DIN 46228-1)		mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]					
• Solid or stranded AWG (2 x)		AWG	2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]; 2 x 12					
• Terminal screws - Tightening torque		Nm	M3 (for Pozidriv size 2, Ø 5 ... 6) 0.8 ... 1.2 (7 ... 10.3 lb.in)					
Main conductors[2]			Spring-type terminals					
• Operating devices[3]		mm	3.0 x 0.5; 3.5 x 0.5					
• Solid or stranded		mm^2	2 x (1 ... 10)					
• Finely stranded with end sleeves (DIN 46228-1)		mm^2	2 x (1 ... 6)					
• Finely stranded without end sleeve		mm^2	2 x (1 ... 6)					
• AWG cables, solid or stranded		AWG	2 x (18 ... 8)					
Auxiliary conductors[2]								
• Operating devices[3]			3.0 x 0.5; 3.5 x 0.5					
• Solid or stranded		mm^2	2 x (0.5 ... 2.5)					
• Finely stranded with end sleeves (DIN 46228-1)		mm^2	2 x (0.5 ... 1.5)					
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)					
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)					
Main conductors			Ring terminal lug connections					
• Terminal screw		mm	M4, Pozidriv 2					
• Operating devices		mm	Ø 5 ... 6					
• Tightening torque		Nm	2 ... 2.5					
• Usable ring terminal lugs - DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve - DIN 46237 with insulation sleeve - JIS C2805 Type R without insulation sleeve - JIS C2805 Type RAV with insulation sleeve - JIS C2805 Type RAP with insulation sleeve		mm mm	d_2 = min. 4.3 d_3 = max. 12.2					
Auxiliary conductors								
• Terminal screw			M3, Pozidriv 2					
• Operating devices		mm	Ø 5 ... 6					
• Tightening torque		Nm	0.8 ... 1.2					
• Usable ring terminal lugs		mm	d_2 = min. 3.2					
		mm	d_3 = max. 7.5					



1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) Max. external diameter of the cable insulation: 3.6 mm. On spring-type terminals with conductor cross-sections ≤ 1 mm^2, an insulation stop must be used see Accessories, page 3/63.

3) Tool for opening the spring-type terminals, see Accessories, page 3/63.

Type			3RT201	3RT202	
Size			S00	S0	
			Integrated or mountable auxiliary switch block	Integrated	Mountable auxiliary switch block
CSA and UL rated data of the auxiliary contacts					
Rated voltage		V AC	600	600	600
Switching capacity			A 600, Q 600	A 600, P 600	A 600, Q 600
Uninterrupted current	At 240 V AC	A	10	10	10

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT2015	3RT2016	3RT2017	3RT2018
Size			S00	S00	S00	S00
cULus rated data						
Rated insulation voltage		V AC	600			
Uninterrupted current, at 40 °C, open and enclosed		A	20			
Maximum horsepower ratings (from cULus and cULus approved values)						
• Rated power for three-phase motors at 60 Hz	At 200 V	hp	1.5	2	3	3
	230 V	hp	2	3	3	5
	460 V	hp	3	5	7.5	10
	575 V	hp	5	7.5	10	10
Short-circuit protection[1] (contactor or overload relay)	At 600 V	kA	5	5	5	5
• Fuse CLASS J[2]		A	40	40	40	40
• Circuit breakers with overload protection acc. to UL 489		A	50	50	50	50
• Combination motor controllers type E according to UL 508			--[3]	--[3]	--[3]	--[3]
NEMA/EEMAC ratings						
NEMA/EEMAC size		hp	--			0
• Uninterrupted current						
- Open		A	--			18
- Enclosed		A	--			18
• Rated power for three-phase motors at 60 Hz	At 200 V	hp	--			3
	230 V	hp	--			3
	460 V	hp	--			5
	575 V	hp	--			5
Overload relays						
• Type			3RU211	/ 3RB301		
• Setting range		A	0.11 ... 16	/ 0.1 ... 16		

Type			3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Size			S0	S0	S0	S0	S0	S0
cULus rated data								
Rated insulation voltage		V AC	600				600	
Uninterrupted current, at 40 °C, open and enclosed		A	35				42	
Maximum horsepower ratings (from cULus and cULus approved values)								
• Rated power for three-phase motors at 60 Hz	At 200 V	hp	2	3	3	5	10	10
	230 V	hp	3	3	5	7.5	10	10
	460 V	hp	5	7.5	10	15	20	25
	575 V	hp	7.5	10	15	20	25	25
Short-circuit protection[1] (contactor or overload relay)	At 600 V	kA	5	5	5	5	5	5
• Fuse CLASS J[2]		A	125				150	
• Circuit breakers with overload protection acc. to UL 489		A	70				100	
• Combination motor controllers type E according to UL 508	At 480 V	Type	3RV202					
		A	--					
		kA	--[3]					
	At 600 V	Type	3RV202					
		A	--					
		kA	--[3]					
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--				1	
• Uninterrupted current								
- Open		A	--				27	
- Enclosed		A	--				27	
• Rated power for three-phase motors at 60 Hz	At 200 V	hp	--				7.5	
	230 V	hp	--				7.5	
	460 V	hp	--				10	
	575 V	hp	--				10	
Overload relays								
• Type			3RU212	/ 3RB302				
• Setting range		A	1.8 ... 40	/ 0.1 ... 40				

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL reports on the individual devices, www.siemens.com/sirius/manuals.

For the dimensioning of load feeders, see also the Configuration Manual "Configuring SIRIUS Innovations for UL", http://support.automation.siemens.com/WW/view/en/53433538.

[2] Values for RK5 fuses on request.

[3] Values on request.

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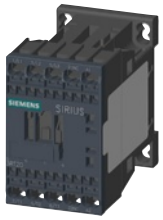
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Selection and ordering data

AC operation

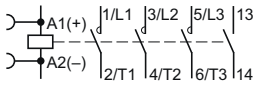
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT201.-1A...

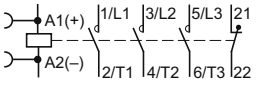


3RT201.-2A...

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to 400 V	Rating[1] of three-phase motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Article No.	Price per PU		Article No.	Price per PU
A	**kW**	A				V AC						
For screw and snap-on mounting onto TH 35 standard mounting rail												
Size S00[2)3)]												
• With auxiliary contact 1 NO, Ident. No. **10**												
7	**3**	18	**10**	1	--	24	▶	**3RT2015-1AB01**	▶		**3RT2015-2AB01**	
						110	▶	**3RT2015-1AF01**	▶		**3RT2015-2AF01**	
						230	▶	**3RT2015-1AP01**	▶		**3RT2015-2AP01**	
			01	--	1	24	▶	**3RT2015-1AB02**	▶		**3RT2015-2AB02**	
						110	▶	**3RT2015-1AF02**	▶		**3RT2015-2AF02**	
						230	▶	**3RT2015-1AP02**	▶		**3RT2015-2AP02**	
9	**4**	22	**10**	1	--	24	▶	**3RT2016-1AB01**	▶		**3RT2016-2AB01**	
						110	▶	**3RT2016-1AF01**	▶		**3RT2016-2AF01**	
						230	▶	**3RT2016-1AP01**	▶		**3RT2016-2AP01**	
			01	--	1	24	▶	**3RT2016-1AB02**	▶		**3RT2016-2AB02**	
						110	▶	**3RT2016-1AF02**	▶		**3RT2016-2AF02**	
						230	▶	**3RT2016-1AP02**	▶		**3RT2016-2AP02**	
12	**5.5**	22	**10**	1	--	24	▶	**3RT2017-1AB01**	▶		**3RT2017-2AB01**	
						110	▶	**3RT2017-1AF01**	▶		**3RT2017-2AF01**	
						230	▶	**3RT2017-1AP01**	▶		**3RT2017-2AP01**	
			01	--	1	24	▶	**3RT2017-1AB02**	▶		**3RT2017-2AB02**	
						110	▶	**3RT2017-1AF02**	▶		**3RT2017-2AF02**	
						230	▶	**3RT2017-1AP02**	▶		**3RT2017-2AP02**	
16	**7.5**	22	**10**	1	--	24	▶	**3RT2018-1AB01**	▶		**3RT2018-2AB01**	
						110	▶	**3RT2018-1AF01**	▶		**3RT2018-2AF01**	
						230	▶	**3RT2018-1AP01**	▶		**3RT2018-2AP01**	
			01	--	1	24	▶	**3RT2018-1AB02**	▶		**3RT2018-2AB02**	
						110	▶	**3RT2018-1AF02**	▶		**3RT2018-2AF02**	
						230	▶	**3RT2018-1AP02**	▶		**3RT2018-2AP02**	



• With auxiliary contact 1 NC, Ident. No. **01**



For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special versions.

3) For size S00: Coil operating range at 50 Hz: 0.8 ... 1.1 × U_s, at 60 Hz: 0.85 ... 1.1 × U_s.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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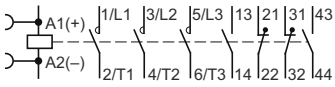
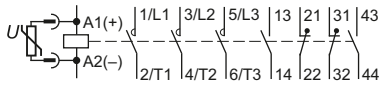
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT201.-1AP04-3MA0

3RT201.-2AP04-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to 400 V	Rating[1] of three-phase motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version				Article No. Price per PU		Article No. Price per PU
A	**kW**	A		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S00[2]										
With permanently mounted auxiliary switch block										
										
7	**3**	18	**22**	2	2	230	B	**3RT2015-1AP04-3MA0**	B	**3RT2015-2AP04-3MA0**
9	**4**	22	**22**	2	2	230	B	**3RT2016-1AP04-3MA0**	B	**3RT2016-2AP04-3MA0**
12	**5.5**	22	**22**	2	2	230	B	**3RT2017-1AP04-3MA0**	B	**3RT2017-2AP04-3MA0**
16	**7.5**	22	**22**	2	2	230	►	**3RT2018-1AP04-3MA0**	►	**3RT2018-2AP04-3MA0**
With permanently mounted auxiliary switch block and varistor plugged onto the front side										
										
7	**3**	18	**22**	2	2	230	B	**3RT2015-1CP04-3MA0**	B	**3RT2015-2CP04-3MA0**
9	**4**	22	**22**	2	2	230	B	**3RT2016-1CP04-3MA0**	B	**3RT2016-2CP04-3MA0**
12	**5.5**	22	**22**	2	2	230	B	**3RT2017-1CP04-3MA0**	B	**3RT2017-2CP04-3MA0**
16	**7.5**	22	**22**	2	2	230	B	**3RT2018-1CP04-3MA0**	B	**3RT2018-2CP04-3MA0**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 × U_s,
at 60 Hz: 0.85 ... 1.1 × U_s.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

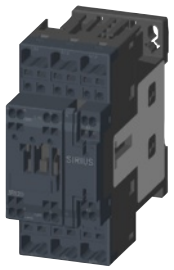
© Siemens AG 2013

SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1A.00



3RT202.-2A.00

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V AC						
For screw and snap-on mounting onto TH 35 standard mounting rail												
***Size S0*[2]**												
9	**4**	40	**11**	1	1	24	▶	**3RT2023-1AB00**		A	**3RT2023-2AB00**	
						110	▶	**3RT2023-1AF00**		A	**3RT2023-2AF00**	
						230	▶	**3RT2023-1AP00**		▶	**3RT2023-2AP00**	
12	**5.5**	40	**11**	1	1	24	▶	**3RT2024-1AB00**		A	**3RT2024-2AB00**	
						110	▶	**3RT2024-1AF00**		A	**3RT2024-2AF00**	
						230	▶	**3RT2024-1AP00**		▶	**3RT2024-2AP00**	
17	**7.5**	40	**11**	1	1	24	▶	**3RT2025-1AB00**		A	**3RT2025-2AB00**	
						110	▶	**3RT2025-1AF00**		A	**3RT2025-2AF00**	
						230	▶	**3RT2025-1AP00**		▶	**3RT2025-2AP00**	
25	**11**	40	**11**	1	1	24	▶	**3RT2026-1AB00**		A	**3RT2026-2AB00**	
						110	▶	**3RT2026-1AF00**		A	**3RT2026-2AF00**	
						230	▶	**3RT2026-1AP00**		▶	**3RT2026-2AP00**	
32	**15**	50	**11**	1	1	24	▶	**3RT2027-1AB00**		A	**3RT2027-2AB00**	
						110	▶	**3RT2027-1AF00**		A	**3RT2027-2AF00**	
						230	▶	**3RT2027-1AP00**		▶	**3RT2027-2AP00**	
38	**18.5**	50	**11**	1	1	24	▶	**3RT2028-1AB00**		A	**3RT2028-2AB00**	
						110	▶	**3RT2028-1AF00**		A	**3RT2028-2AF00**	
						230	▶	**3RT2028-1AP00**		B	**3RT2028-2AP00**	

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special versions.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.
For spare parts see page 3/64.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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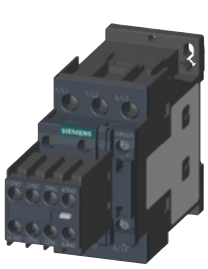
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT202.-1A.04

3RT202.-2A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_S at 50 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
***Size S0*[2]**												
With mounted auxiliary switch block (removable)[3]												
9	**4**	40	**22**	2	2	24 230	B ▶	**3RT2023-1AB04** **3RT2023-1AP04**		B A	**3RT2023-2AB04** **3RT2023-2AP04**	
12	**5.5**	40	**22**	2	2	24 110 230	B B ▶	**3RT2024-1AB04** **3RT2024-1AF04** **3RT2024-1AP04**		B B A	**3RT2024-2AB04** **3RT2024-2AF04** **3RT2024-2AP04**	
17	**7.5**	40	**22**	2	2	24 110 230	B B ▶	**3RT2025-1AB04** **3RT2025-1AF04** **3RT2025-1AP04**		B B A	**3RT2025-2AB04** **3RT2025-2AF04** **3RT2025-2AP04**	
25	**11**	40	**22**	2	2	24 110 230	B B ▶	**3RT2026-1AB04** **3RT2026-1AF04** **3RT2026-1AP04**		B B A	**3RT2026-2AB04** **3RT2026-2AF04** **3RT2026-2AP04**	
32	**15**	50	**22**	2	2	24 110 230	B B ▶	**3RT2027-1AB04** **3RT2027-1AF04** **3RT2027-1AP04**		B B A	**3RT2027-2AB04** **3RT2027-2AF04** **3RT2027-2AP04**	
38	**18.5**	50	**22**	2	2	24 110 230	B B ▶	**3RT2028-1AB04** **3RT2028-1AF04** **3RT2028-1AP04**		B B A	**3RT2028-2AB04** **3RT2028-2AF04** **3RT2028-2AP04**	

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special versions.

3) Article No. for the auxiliary switch block (removable): 3RH2911-.HA11

Other voltages according to page 3/39 on request.

For accessories see page 3/48.
For spare parts see page 3/64.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1AL24-3MA0

3RT202.-2AL24-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V AC						
For screw and snap-on mounting onto TH 35 standard mounting rail												
Size S0												
With permanently mounted auxiliary switch block[2]												
9	**4**	40	**22**	2	2	230	B	**3RT2023-1AL24-3MA0**		B	**3RT2023-2AL24-3MA0**	
12	**5.5**	40	**22**	2	2	230	B	**3RT2024-1AL24-3MA0**		B	**3RT2024-2AL24-3MA0**	
17	**7.5**	40	**22**	2	2	230	B	**3RT2025-1AL24-3MA0**		B	**3RT2025-2AL24-3MA0**	
25	**11**	40	**22**	2	2	230	B	**3RT2026-1AL24-3MA0**		B	**3RT2026-2AL24-3MA0**	
32	**15**	50	**22**	2	2	230	B	**3RT2027-1AL24-3MA0**		B	**3RT2027-2AL24-3MA0**	
38	**18.5**	50	**22**	2	2	230	B	**3RT2028-1AL24-3MA0**		B	**3RT2028-2AL24-3MA0**	
With permanently mounted auxiliary switch block and varistor plugged into the front side												
9	**4**	40	**22**	2	2	230	B	**3RT2023-1CL24-3MA0**		B	**3RT2023-2CL24-3MA0**	
12	**5.5**	40	**22**	2	2	230	B	**3RT2024-1CL24-3MA0**		B	**3RT2024-2CL24-3MA0**	
17	**7.5**	40	**22**	2	2	230	B	**3RT2025-1CL24-3MA0**		B	**3RT2025-2CL24-3MA0**	
25	**11**	40	**22**	2	2	230	B	**3RT2026-1CL24-3MA0**		B	**3RT2026-2CL24-3MA0**	
32	**15**	50	**22**	2	2	230	B	**3RT2027-1CL24-3MA0**		B	**3RT2027-2CL24-3MA0**	
38	**18.5**	50	**22**	2	2	230	B	**3RT2028-1CL24-3MA0**		B	**3RT2028-2CL24-3MA0**	

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) No retrofitting of surge suppressors.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.
For spare parts see page 3/64.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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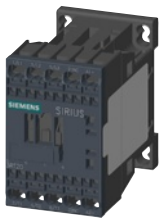
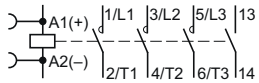
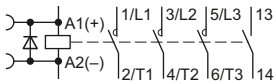
DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

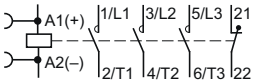
3RT201.-1B...



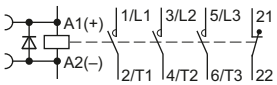
3RT201.-2B...

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V DC						
For screw and snap-on mounting onto TH 35 standard mounting rail												
Size S00[2]												
• With auxiliary contact 1 NO, Ident. No. **10**												
												
7	**3**	18	**10**	1	--	24	▶	**3RT2015-1BB41**		▶	**3RT2015-2BB41**	
						220	A	**3RT2015-1BM41**		B	**3RT2015-2BM41**	
			01	--	1	24	▶	**3RT2015-1BB42**		▶	**3RT2015-2BB42**	
						220	B	**3RT2015-1BM42**		B	**3RT2015-2BM42**	
9	**4**	22	**10**	1	--	24	▶	**3RT2016-1BB41**		▶	**3RT2016-2BB41**	
						220	B	**3RT2016-1BM41**		B	**3RT2016-2BM41**	
			01	--	1	24	▶	**3RT2016-1BB42**		▶	**3RT2016-2BB42**	
						220	B	**3RT2016-1BM42**		B	**3RT2016-2BM42**	
12	**5.5**	22	**10**	1	--	24	▶	**3RT2017-1BB41**		▶	**3RT2017-2BB41**	
						220	B	**3RT2017-1BM41**		B	**3RT2017-2BM41**	
			01	--	1	24	▶	**3RT2017-1BB42**		▶	**3RT2017-2BB42**	
						220	B	**3RT2017-1BM42**		B	**3RT2017-2BM42**	
16	**7.5**	22	**10**	1	--	24	▶	**3RT2018-1BB41**		▶	**3RT2018-2BB41**	
						220	B	**3RT2018-1BM41**		B	**3RT2018-2BM41**	
			01	--	1	24	▶	**3RT2018-1BB42**		▶	**3RT2018-2BB42**	
						220	B	**3RT2018-1BM42**		B	**3RT2018-2BM42**	
With integrated coil circuit (diode)												
• With auxiliary contact 1 NO, Ident. No. **10**												
												
7	**3**	18	**10**	1	--	24	▶	**3RT2015-1FB41**		▶	**3RT2015-2FB41**	
			01	--	1	24	▶	**3RT2015-1FB42**		▶	**3RT2015-2FB42**	
9	**4**	22	**10**	1	--	24	▶	**3RT2016-1FB41**		▶	**3RT2016-2FB41**	
			01	--	1	24	▶	**3RT2016-1FB42**		▶	**3RT2016-2FB42**	
12	**5.5**	22	**10**	1	--	24	▶	**3RT2017-1FB41**		▶	**3RT2017-2FB41**	
			01	--	1	24	▶	**3RT2017-1FB42**		▶	**3RT2017-2FB42**	
16	**7.5**	22	**10**	1	--	24	▶	**3RT2018-1FB41**		▶	**3RT2018-2FB41**	
			01	--	1	24	▶	**3RT2018-1FB42**		▶	**3RT2018-2FB42**	

• With auxiliary contact 1 NC, Ident. No. **01**



• With auxiliary contact 1 NC, Ident. No. **01**



For online configurator see www.siemens.com/sirius/configurators.

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

[2] The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special contactor versions with ring terminal lug connection.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

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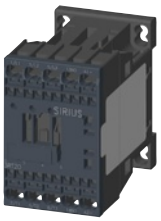
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

DC operation

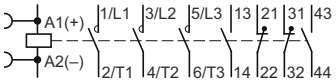
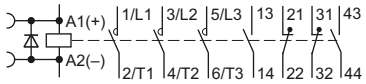
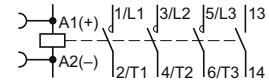
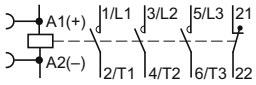
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT201.-1BB4.-0CC0


3RT201.-2BB4.-0CC0

3RT201.-1BB44-3MA0

3RT201.-2BB44-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals / Configurator	DT	Spring-type terminals / Configurator
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. / Price per PU		Article No. / Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V DC				
For screw and snap-on mounting onto TH 35 standard mounting rail										
Size S00										
With permanently mounted auxiliary switch block										
										
7	**3**	18	**22**	2	2	24	►	**3RT2015-1BB44-3MA0**	B	**3RT2015-2BB44-3MA0**
9	**4**	22	**22**	2	2	24	►	**3RT2016-1BB44-3MA0**	B	**3RT2016-2BB44-3MA0**
12	**5.5**	22	**22**	2	2	24	B	**3RT2017-1BB44-3MA0**	B	**3RT2017-2BB44-3MA0**
16	**7.5**	22	**22**	2	2	24	B	**3RT2018-1BB44-3MA0**	B	**3RT2018-2BB44-3MA0**
With permanently mounted auxiliary switch block and integrated coil circuit (diode)										
										
7	**3**	18	**22**	2	2	24	B	**3RT2015-1FB44-3MA0**	B	**3RT2015-2FB44-3MA0**
9	**4**	22	**22**	2	2	24	B	**3RT2016-1FB44-3MA0**	B	**3RT2016-2FB44-3MA0**
12	**5.5**	22	**22**	2	2	24	B	**3RT2017-1FB44-3MA0**	B	**3RT2017-2FB44-3MA0**
16	**7.5**	22	**22**	2	2	24	B	**3RT2018-1FB44-3MA0**	B	**3RT2018-2FB44-3MA0**
Contactor with communication interface (only available with 24 V DC coils)										
• With auxiliary contact 1 NO, Ident. No. **10** 										
• With auxiliary contact 1 NC, Ident. No. **01** 										
7	**3**	18	**10**	1	--	24	►	**3RT2015-1BB41-0CC0**	►	**3RT2015-2BB41-0CC0**
			01	--	1	24	►	**3RT2015-1BB42-0CC0**	A	**3RT2015-2BB42-0CC0**
9	**4**	22	**10**	1	--	24	►	**3RT2016-1BB41-0CC0**	A	**3RT2016-2BB41-0CC0**
			01	--	1	24	A	**3RT2016-1BB42-0CC0**	A	**3RT2016-2BB42-0CC0**
12	**5.5**	22	**10**	1	--	24	A	**3RT2017-1BB41-0CC0**	►	**3RT2017-2BB41-0CC0**
			01	--	1	24	A	**3RT2017-1BB42-0CC0**	A	**3RT2017-2BB42-0CC0**
16	**7.5**	22	**10**	1	--	24	A	**3RT2018-1BB41-0CC0**	►	**3RT2018-2BB41-0CC0**
			01	--	1	24	A	**3RT2018-1BB42-0CC0**	A	**3RT2018-2BB42-0CC0**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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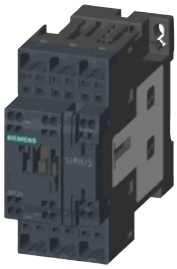
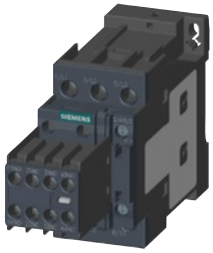
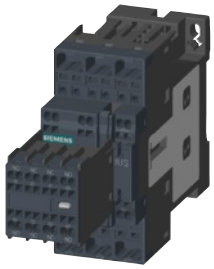
DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1B.40


3RT202.-2B.40


3RT202.-1B.44


3RT202.-2B.44

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals / Configurator	DT	Spring-type terminals / Configurator
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version						
				NO	NC			Article No. / Price per PU		Article No. / Price per PU
400 V	**400 V**	690 V								
A	**kW**	A				V DC				
For screw and snap-on mounting onto TH 35 standard mounting rail										
Size S0[2]										
9	**4**	40	**11**	1	1	24	▶	**3RT2023-1BB40**	▶	**3RT2023-2BB40**
12	**5.5**	40	**11**	1	1	24	▶	**3RT2024-1BB40**	▶	**3RT2024-2BB40**
						220	B	**3RT2024-1BM40**	B	**3RT2024-2BM40**
17	**7.5**	40	**11**	1	1	24	▶	**3RT2025-1BB40**	▶	**3RT2025-2BB40**
						220	B	**3RT2025-1BM40**	B	**3RT2025-2BM40**
25	**11**	40	**11**	1	1	24	▶	**3RT2026-1BB40**	▶	**3RT2026-2BB40**
						220	B	**3RT2026-1BM40**	B	**3RT2026-2BM40**
32	**15**	50	**11**	1	1	24	▶	**3RT2027-1BB40**	▶	**3RT2027-2BB40**
						220	B	**3RT2027-1BM40**	B	**3RT2027-2BM40**
38	**18.5**	50	**11**	1	1	24	▶	**3RT2028-1BB40**	▶	**3RT2028-2BB40**
						220	B	**3RT2028-1BM40**	B	**3RT2028-2BM40**
With coil circuit plugged in (diode assembly)										
9	**4**	40	**11**	1	1	24	B	**3RT2023-1FB40**	▶	**3RT2023-2FB40**
12	**5.5**	40	**11**	1	1	24	▶	**3RT2024-1FB40**	▶	**3RT2024-2FB40**
17	**7.5**	40	**11**	1	1	24	▶	**3RT2025-1FB40**	▶	**3RT2025-2FB40**
25	**11**	40	**11**	1	1	24	▶	**3RT2026-1FB40**	▶	**3RT2026-2FB40**
32	**15**	50	**11**	1	1	24	▶	**3RT2027-1FB40**	▶	**3RT2027-2FB40**
38	**18.5**	50	**11**	1	1	24	▶	**3RT2028-1FB40**	▶	**3RT2028-2FB40**
With mounted auxiliary switch block (removable)[3]										
9	**4**	40	**22**	2	2	24	▶	**3RT2023-1BB44**	▶	**3RT2023-2BB44**
12	**5.5**	40	**22**	2	2	24	▶	**3RT2024-1BB44**	▶	**3RT2024-2BB44**
17	**7.5**	40	**22**	2	2	24	▶	**3RT2025-1BB44**	▶	**3RT2025-2BB44**
25	**11**	40	**22**	2	2	24	▶	**3RT2026-1BB44**	▶	**3RT2026-2BB44**
32	**15**	50	**22**	2	2	24	▶	**3RT2027-1BB44**	▶	**3RT2027-2BB44**
38	**18.5**	50	**22**	2	2	24	▶	**3RT2028-1BB44**	▶	**3RT2028-2BB44**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special versions.

3) Article No. for the auxiliary switch block (removable): 3RH2911-.HA11

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

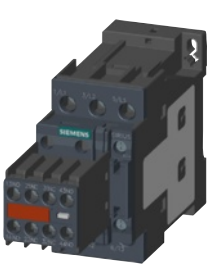
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

© Siemens AG 2013

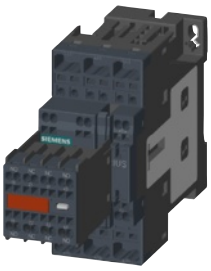
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT202.-1BB44-3MA0



3RT202.-2BB44-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V DC						
For screw and snap-on mounting onto TH 35 standard mounting rail												
Size S0												
With permanently mounted auxiliary switch block[2]												
9	**4**	40	**22**	2	2	24	B	**3RT2023-1BB44-3MA0**		B	**3RT2023-2BB44-3MA0**	
12	**5.5**	40	**22**	2	2	24	B	**3RT2024-1BB44-3MA0**		B	**3RT2024-2BB44-3MA0**	
17	**7.5**	40	**22**	2	2	24	B	**3RT2025-1BB44-3MA0**		B	**3RT2025-2BB44-3MA0**	
25	**11**	40	**22**	2	2	24	B	**3RT2026-1BB44-3MA0**		B	**3RT2026-2BB44-3MA0**	
32	**15**	50	**22**	2	2	24	B	**3RT2027-1BB44-3MA0**		B	**3RT2027-2BB44-3MA0**	
38	**18.5**	50	**22**	2	2	24	B	**3RT2028-1BB44-3MA0**		B	**3RT2028-2BB44-3MA0**	
With permanently mounted auxiliary switch block and coil circuit plugged in (varistor)												
12	**5.5**	40	**22**	2	2	24	B	**3RT2024-1DB44-3MA0**		X	**3RT2024-2DB44-3MA0**	
17	**7.5**	40	**22**	2	2	24	B	**3RT2025-1DB44-3MA0**		X	**3RT2025-2DB44-3MA0**	
25	**11**	40	**22**	2	2	24	B	**3RT2026-1DB44-3MA0**		X	**3RT2026-2DB44-3MA0**	
32	**15**	50	**22**	2	2	24	B	**3RT2027-1DB44-3MA0**		X	**3RT2027-2DB44-3MA0**	
With permanently mounted auxiliary switch block and coil circuit plugged in (diode assembly)												
9	**4**	40	**11**	1	1	24	B	**3RT2023-1FB44-3MA0**		B	**3RT2023-2FB44-3MA0**	
12	**5.5**	40	**11**	1	1	24	B	**3RT2024-1FB44-3MA0**		B	**3RT2024-2FB44-3MA0**	
17	**7.5**	40	**11**	1	1	24	B	**3RT2025-1FB44-3MA0**		B	**3RT2025-2FB44-3MA0**	
25	**11**	40	**11**	1	1	24	B	**3RT2026-1FB44-3MA0**		B	**3RT2026-2FB44-3MA0**	
32	**15**	50	**11**	1	1	24	B	**3RT2027-1FB44-3MA0**		B	**3RT2027-2FB44-3MA0**	
38	**18.5**	50	**11**	1	1	24	B	**3RT2028-1FB44-3MA0**		B	**3RT2028-2FB44-3MA0**	

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) No retrofitting of surge suppressors.

Other voltages according to page 3/39 on request.

For accessories see page 3/48.

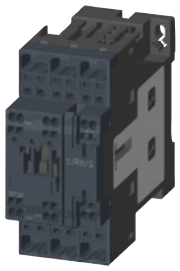
* You can order this quantity or a multiple thereof.
Illustrations are approximate

© Siemens AG 2013

DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1BB40-0CC0



3RT202.-2BB40-0CC0

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. Price per PU		Article No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V DC				
For screw and snap-on mounting onto TH 35 standard mounting rail										
Size S0										
Contactors with communication interface										
9	**4**	40	**11**	1	1	24	A	**3RT2023-1BB40-0CC0**	A	**3RT2023-2BB40-0CC0**
12	**5.5**	40	**11**	1	1	24	A	**3RT2024-1BB40-0CC0**	A	**3RT2024-2BB40-0CC0**
17	**7.5**	40	**11**	1	1	24	A	**3RT2025-1BB40-0CC0**	A	**3RT2025-2BB40-0CC0**
25	**11**	40	**11**	1	1	24	A	**3RT2026-1BB40-0CC0**	A	**3RT2026-2BB40-0CC0**
32	**15**	50	**11**	1	1	24	A	**3RT2027-1BB40-0CC0**	A	**3RT2027-2BB40-0CC0**
38	**18.5**	50	**11**	1	1	24	A	**3RT2028-1BB40-0CC0**	A	**3RT2028-2BB40-0CC0**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

For accessories see page 3/48.

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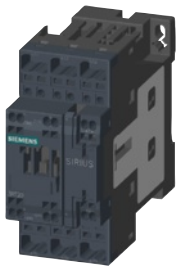
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

UC operating mechanism · AC/DC operation (50/60 Hz and DC)

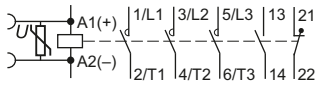
- Extended operating range of solenoid coil 0.7 ... 1.3 x U_S
- Reduced power consumption when closing and in the closed state

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1N.30



3RT202.-2N.30

Rated data			Auxiliary contacts			Rated control supply voltage U_S [1]	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. Price per PU		Article No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V AC/DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S0[2]										
With integrated coil circuit (varistor)										
										
12	**5.5**	40	**11**	1	1	21 ... 28	▶	**3RT2024-1NB30**	B	**3RT2024-2NB30**
						95 ... 130	▶	**3RT2024-1NF30**	B	**3RT2024-2NF30**
						200 ... 280[3]	▶	**3RT2024-1NP30**	▶	**3RT2024-2NP30**
17	**7.5**	40	**11**	1	1	21 ... 28	▶	**3RT2025-1NB30**	B	**3RT2025-2NB30**
						95 ... 130	▶	**3RT2025-1NF30**	B	**3RT2025-2NF30**
						200 ... 280[3]	▶	**3RT2025-1NP30**	▶	**3RT2025-2NP30**
25	**11**	40	**11**	1	1	21 ... 28	▶	**3RT2026-1NB30**	▶	**3RT2026-2NB30**
						95 ... 130	▶	**3RT2026-1NF30**	▶	**3RT2026-2NF30**
						200 ... 280[3]	▶	**3RT2026-1NP30**	▶	**3RT2026-2NP30**
32	**15**	50	**11**	1	1	21 ... 28	▶	**3RT2027-1NB30**	▶	**3RT2027-2NB30**
						95 ... 130	▶	**3RT2027-1NF30**	B	**3RT2027-2NF30**
						200 ... 280[3]	▶	**3RT2027-1NP30**	▶	**3RT2027-2NP30**
38	**18.5**	50	**11**	1	1	21 ... 28	B	**3RT2028-1NB30**	B	**3RT2028-2NB30**
						95 ... 130	B	**3RT2028-1NF30**	B	**3RT2028-2NF30**
						200 ... 280[3]	▶	**3RT2028-1NP30**	▶	**3RT2028-2NP30**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) Coil operating range: 0.7 x $U_{s\,min}$ ...1.3 x $U_{s\,max}$.

3) The following applies to $U_{s\,max}$ = 280 V: Upper limit =1.1 x $U_{s\,max}$.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Options

Rated control supply voltages, possible on request (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Contactor type	3RT201	3RT202	3RT231, 3RT251	3RT232, 3RT252
	Size	S00	S0	S00	S0
Sizes S00 and S0					
AC operation[1]					
Solenoid coils for 50 Hz (exception: Size S00: 50 and 60 Hz[2])					
24 V AC		B0	B0	B0	B0
42 V AC		D0	D0	D0	--
48 V AC		H0	H0	H0	--
110 V AC		F0	F0	F0	F0
230 V AC		P0	P0	P0	P0
240 V AC		U0	U0	--	--
400 V AC		V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[2]					
24 V AC		B0	C2	B0	C2
42 V AC		D0	D2	D0	D2
48 V AC		H0	H2	H0	H2
110 V AC		F0	G2	F0	G2
220 V AC		N2	N2	N2	N2
230 V AC		P0	L2	P0	L2
Solenoid coils (for USA and Canada[3]**)**					
50 Hz	**60 Hz**				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6
Solenoid coils (for Japan)					
50/60 Hz[4]	**60 Hz**[5]				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6
DC operation[1]					
12 V DC		A4	--	A4	--
24 V DC		B4	B4	B4	B4
42 V DC		D4	D4	D4	D4
48 V DC		W4	W4	W4	W4
60 V DC		E4	E4	--	--
110 V DC		F4	F4	F4	F4
125 V DC		G4	G4	G4	G4
220 V DC		M4	M4	M4	M4
230 V DC		P4	P4	P4	--

Examples

AC operation	3RT2023-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC
	3RT2023-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC
DC operation	3RT2025-2B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC
	3RT2025-2B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC

Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$[6]	Contactor type	--	3RT2. 2.-.N
	Size	S00	S0
Size S0			
UC operation (AC 50 up to 60 Hz, DC)			
21 ... 28 V AC/DC		--	B3
95 ... 130 V AC/DC		--	F3
200 ... 280 V AC/DC[7]		--	P3

1) For deviating coil voltages and coil operating ranges of sizes S00 and S0, the SITOP power 24 V DC power supply unit with wide range input (93 to 264 V AC; 30 to 264 V DC) can be used for coil excitation (see Chapter 15, "Products for Specific Requirements" → "SITOP Power Supplies").

2) Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

3) Coil operating range
Size S00: at 50 Hz: 0.85.... 1.1 x U_s
at 60 Hz: 0.8 ... 1.1 x U_s
Size S0: at 50 Hz and 60 Hz: 0.8 ... 1.1 x U_s.

4) Coil operating range
Size S00: at 50/60 Hz: 0.85 ... 1.1 x U_s
Size S0: at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

5) Coil operating range
at 60 Hz: 0.8 ... 1.1 x U_s.

6) Coil operating range: 0.7 x $U_{s\,min}$ ...1.3 x $U_{s\,max}$.

7) The following applies to $U_{s\,max}$ = 280 V: Upper limit =1.1 x $U_{s\,max}$.

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General data

Overview

Auxiliary switches

See also pages 3/14 and 3/47.

Positively driven contacts (for contactor relays)

Definition according to IEC 60947-5-1, Appendix L:

Positively-driven contact elements are a combination of "n" NO contact and "m" NC contact which are designed in such a way that they cannot be closed simultaneously.

Mirror contacts (for power contactors)

Definition according to IEC 60947-4-1, Appendix F:

A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact.

Solid-state time-delay auxiliary switches

The 3RA28 solid-state delayed auxiliary switches which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A./A2.

A protection circuit (varistor) is integrated in each module.

A sealable cover is available to protect against careless adjustment of the set times.

Note:

Mounting more auxiliary switches to the contactor is not permitted.

OFF-delay devices for contactors

AC and DC operation

IEC 60947, EN 60947

For screw and snap-on mounting onto TH 35 standard mounting rails. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RA2916 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays in the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

Operation

In the case of the versions for rated control supply voltages of 110 and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the variant for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output according to the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

Additional load module

Size S00 for plugging onto the front of the contactors with and without auxiliary switch block.

The module is used for increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.

Surge suppressors

- Without LED (also for spring-type terminals)
  Sizes S00 and S0
- With LED (also for spring-type terminals)
  Sizes S00 and S0

All 3RT2 contactors and 3RH2 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

Varistors, RC elements or diode assemblies can be plugged onto the front of size S0 contactors.

Coupling contactors are supplied either without overvoltage damping or with a suppressor diode, varistor or diode connected as standard, according to the version.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling links for control by PLC

DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC,
operating range 17 to 30 V.

Low power consumption of 0.5 W in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

Surge suppression

The 3RH2924-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

Mounting

The 3RH2924-1GP11 coupling link is mounted on the contactor coil size S0 using a coil connection module.

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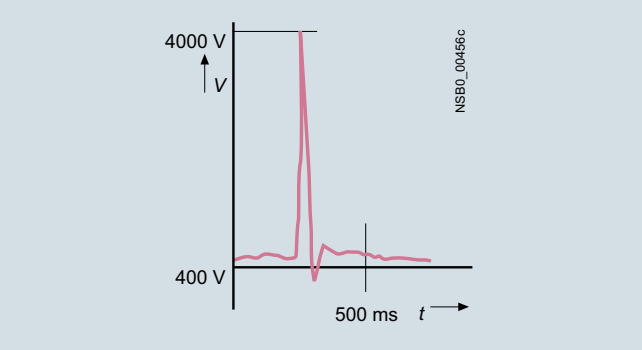
EMC suppression module, three-phase for size S00 contactors

EMC suppression modules

A so-called counter-e.m.f. (electromotive force) is produced when motors or various inductive loads are turned off. Voltage peaks of up to 4000 V may occur as a result, with a frequency spectrum from 1 kHz to 10 MHz and a rate of voltage variation from 0.1 to 20 V/ns.



Voltage curve without interference suppression

Capacitive input to various analog and digital signals makes it necessary to suppress interference in the load circuit.

Reducing contact arcing

The connection between the main current path and the EMC suppression module enables contact arcing, which is responsible for contact erosion and the majority of clicking noises, to be reduced; this in turn is conducive to an electromagnetically compatible design.

Higher operational reliability

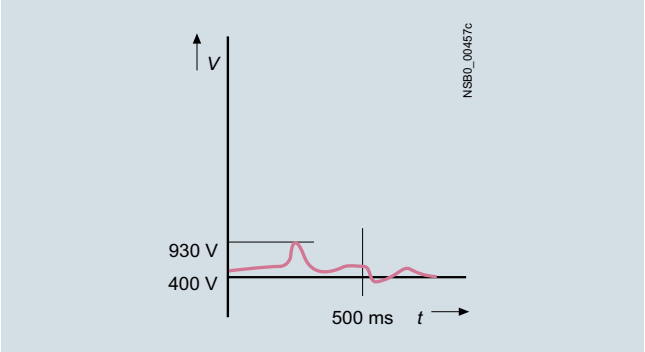
Since the EMC suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system as a whole.

Dispensing with fine graduations

There is no need for fine graduations within each performance class, as smaller motors inherently have a higher inductance, so that one solution for all fixed-speed operating mechanisms up to 5.5 kW is adequate.

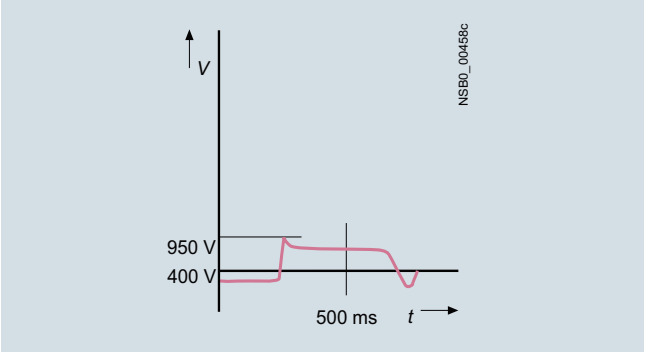
Two electrical versions are available:

- The advantages of the RC circuit lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.



Voltage curve with RC circuit

- The varistor circuit can absorb a high energy level and can also be used for frequencies ranging from 10 to 400 Hz (closed-loop controlled operating mechanisms). There is no limiting below the knee-point voltage, however.



Voltage curve with varistor circuit

Sealable covers

When contactors and contactor relays are used in safety-related applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

Solder pin adapters

The solder pin adapters for the contactors size S00, up to 5.5 kW or 12 A (AC-1/AC-3), are available in two versions:

- Solder pin adapter for contactors with one integrated auxiliary contact
- Solder pin adapter for contactors with mounted 4-pole auxiliary switch block

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General data

Technical specifications

Version	Type		3RA2813	3RA2814	3RA2815
	Function		ON-delay	OFF-delay with control signal	OFF-delay without control signal
	Dimensions		[1]		
General data					
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III		V AC	300		
Operating range of excitation			0.85 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency		
Rated power		W	1		
• Power consumption at 230 V AC, 50 Hz		VA	2		
Rated operational currents I_e					
• AC-140	At 24 ... 240 V, 50 Hz	A	--		
• AC-15	At 24 ... 240 V, 50 Hz	A	3		
• DC-13	At 24 V	A	1		
	At 125 V	A	0.2		
	At 250 V	A	0.1		
Short-circuit protection					
• Fuse links, operational class gG: DIAZED, type 5SB		A	4		
Switching frequency for load					
• With I_e at 230 V AC		h^{-1}	2 500		
• With 3RT2 contactor at 230 V AC		h^{-1}	2 500		
Recovery time		ms	150		--
Minimum ON period		ms	--	35	200
Residual current, max.		mA	--		
Voltage drop, max. with conducting output		VA	--		
Short-time loading capacity up to 10 ms		A	--		
Setting accuracy, typ. with reference to upper limit of scale			±15 %		
Repeat accuracy, max.			±1 %		
Mechanical endurance		Operating cycles	10 x 10^6		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
Shock resistance Half-sine acc. to IEC 60068-2-27		*g*/ms	15/11		
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35		
Electromagnetic compatibility (EMC)			IEC 61000-6-2, IEC 61000-6-4, IEC 61812-1, IEC 60947-1		
Overvoltage protection			Varistor integrated		
Permissible mounting position			Any		
Conductor cross-sections					
Connection type			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		
• Terminal screws			M3 (for standard screw driver size 2 or Pozidriv 2)		
• Tightening torque		Nm	0.8 ... 1.2		
Connection type			**Spring-type terminals**		
• Operating devices		mm	3.0 x 0.5		
• Solid		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded		mm^2	2 x (0.25 ... 1.5)		
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		

[1] Dimensions with mounted function module see 3RT20 contactors, pages 3/17 and 3/22.

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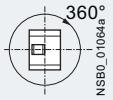
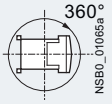
Version	Type	3RT2916-2BE01	3RT2916-2BK01	3RT2916-2BL01
	Function	OFF-delay devices		
General data				
Connectable contactor sizes Caution! Only contactors and contactor relays with DC operation can be connected.				
• DC supply		S00 ... S3	S00/S0	S00/S0
• AC supply		--	S00/S0	S00/S0
	Type	3RT20..-1BB4., 3RH2...-1BB40	3RT201.-1BF4, 3RT202.-1BF4, 3RH2...-1BF40	3RT201.-1BM4./1BP4., 3RT202.-1BM4./1BP4., 3RH2...-1BM40/1BP40
Permissible mounting position				
Mechanical endurance	Operating cycles	30 million		
Endurance, electrical approx.	Operating cycles	>1 million		
Switching frequency z max. (at T_u = 60 °C)	h^{-1}	300		
Permissible ambient temperature T_u				
• During operation				
- Side-by-side mounting without distance	°C	-25 ... +50		
- Side-by-side mounting with 5 mm distance	°C	-25 ... +60		
• During storage	°C	-40 ... +80		
Conductor cross-sections		[2]		
U_{sp} = Coil voltage T_{sp} = Coil temperature				
Control				
Rated control supply voltage U_s Operating range	V	24 (DC) 0.9 ... 1.1 U_s	110 (AC/DC)	220/230 (AC/DC)
Rated frequency *f* with AC supply	Hz ±5 %	--	50/60	50/60
OFF-delay [1]				
(minimum times at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)		Notes: In practice the mean value is 1.5 times the minimum time.		
• S00	t_{off} > ms	200	100	500
• S0	t_{off} > ms	100	80	300
ON-delay		Notes: The total ON-delay = Contactor make-time + t_{on}		
(maximum at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)				
• S00	t_{on} < ms	10	60	200
• S0	t_{on} < ms	10	80	250
Installed capacity C				
3RT1916-2B.01	µF	2 000	68	68
Capacitor voltage	V	35	180	350
Power loss P_v max. approx.	W	0.4	0.5	1
Surge suppression		With varistor, integrated		

[1] Doubling the delay time can be achieved by doubling the capacitance. Commercially available capacitors can be used, which can be connected to terminals C+ and Z–.

[2] See 3RT201 contactors, page 3/17.

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General data

Version	Type / Function		3RT2926-2P Pneumatic delay block[1]
General data			
Rated insulation voltage U_i (pollution degree 3)		V	690
Mechanical endurance		Operating cycles	5 million
Electrical endurance at I_e		Operating cycles	1 million
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Rated operational currents I_e According to IEC 60947 utilization categories			
• AC-12		A	10
• AC-15/AC-14 at U_e	Up to 230/220 V	A	6
	400/380 V	A	4
	500 V	A	2.5
	690/660 V	A	1.5
• DC-13 at U_e	At 24 V	A	4
	48 V	A	2
	110 V	A	0.7
	220 V	A	0.3
	440 V	A	0.15
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA according to IEC 60947-5-1		A	10
Conductor cross-sections			
• Solid, stranded:		mm^2	2 x (0.5 ... 1.5)[2] or 2 x (0.75 ... 2.5)[2]
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[2] or 2 x (0.75 ... 2.5)[2]
• AWG cables		AWG	2 x (20 ... 16)[2] or 2 x (18 ... 14)[2]
• Tightening torque of the terminal screws		Nm	0.8 ... 1.1
Time delay			
• Accuracy			±10 %
cULus and UL rated data			
• Rated voltage		V AC	600
• Switching capacity			A 600, Q 600

[1] For size S0.
In addition to the pneumatic delay block, no other auxiliary contacts are permitted.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Version	Type / Function		3RT2926-3A Mechanical latching block for 3RT2.2. contactors
General data			
Standards			IEC 61812-1
Rated insulation voltage U_i (pollution degree 3)		V	690
Mechanical endurance			
• With contactor 3RT2.2.		Operating cycles	3 million
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP20
Operating range of the solenoid coil At AC 50/60 Hz and DC			0.85 ... 1.1 x U_s
Power consumption of the solenoid coils of the unlocking magnet (for cold coil and 1.0 x U_s) AC and DC operation		W	Approx. 4
Command duration for de-energizing			
• AC operation		ms	18 ... 31
• DC operation		ms	18 ... 26
Conductor cross-sections			
• Solid		mm^2	2 x (0.5 ... 2.5); 1 x 4
• AWG cables, solid		AWG	2 x 14; 1 x 12
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5); 1 x 2.5
• AWG cables, finely stranded with end sleeve		AWG	2 x 14; 1 x 12
Tightening torque of the terminal screws		Nm lb.in	0.8 ... 1.1 7 ... 9.5

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Version	Type	3RT1900-4RE01	3RT1916-4RD01	3RT1926-4RD01
Connection modules for contactors with screw terminals		S00, S0 connectors	S00 adapters	S0 adapters
General data				
Rated insulation voltage U_i (pollution degree 3)	V	690		
Rated impulse withstand voltage U_{imp} (pollution degree 3)	kV	6		
Rated operational voltage U_e	V	440		
Rated frequency f For AC operation	Hz	50/60		
Rated operational current I_e AC-3 at 400 V	A	25	20	25
Mechanical endurance	Operating cycles	10 million		
Electrical endurance at I_e	Operating cycles	1 million		
Protective separation according to IEC 60947-1 (pollution degree 3)	V	400		
Permissible ambient temperature				
• During operation	°C	-25 ... +60		
• During storage	°C	-50 ... +80		
Degree of protection acc. to IEC 60529		IP20		
Conductor cross-sections				
Connection type		**Screw terminals**		
• Solid	mm^2	1 x (0.5 ... 6)		
• Finely stranded without/with end sleeve	mm^2	1 x (0.5 ... 6)		
• Stranded	mm^2	1 x (0.5 ... 6)		
• AWG cables, solid or stranded	AWG	1 x (20 ... 10)		
• Tightening torque	Nm	0.6 ... 0.8		
• Corresponding opening tool		Short-slot screwdriver PZ2		
CSA and UL rated data				
Rated operational voltage U_e	V	480		
Rated insulation voltage U_i	V	600		
Uninterrupted current, at 40 °C	A	16/25	16	25
Short-circuit protection[1)]				
• At 600 V	kA	5		
• CLASS RK5 fuse	A	100	60	100
• Circuit breakers with overload protection acc. to UL 489	A	100	60	100
Combination motor controllers type E according to UL 508				
At 480 V	Type	3RV202		
	A	22	--	22
	kA	65	--	65
At 600 V	Type	3RV202		
	A	22	--	22
	kA	10	--	10

1) For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL reports on the individual devices, www.siemens.com/sirius/manuals.

For the dimensioning of load feeders, see Configuration Manual "Configuring SIRIUS Innovations for UL", http://support.automation.siemens.com/WW/view/en/53433538.

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General data

Version	Type Function	3RH2924-1GP11 Coupling links for PLC for mounting on contactors
General data		
Standards		IEC 60947
Rated insulation voltage U_i (pollution degree 3)	V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N	V AC	Up to 300
Degree of protection acc. to IEC 60947-1, Appendix C		
• Connections		IP20
• Enclosure		IP40
Permissible ambient temperature		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
Conductor cross-sections		
• Solid	mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)
Terminal screws		M3
Control side		
Rated control supply voltage U_s	V DC	24
Operating range	V DC	17 ... 30
Power consumption at U_s	W	0.5
Nominal current input	mA	20
Release voltage	V	≥ 4
Function display		Yellow LED
Protection circuit		Varistor
Load side		
Mechanical endurance	Operating cycles	20 million
Electrical endurance at I_e	Operating cycles	0.1 million
Switching frequency	h^{-1}	5 000 operating cycles
Make-time	ms	Approx. 7
Break-time	ms	Approx. 4
Bounce time	ms	Approx. 2
Contact material		AgSnO
Switching voltage	V AC/DC	24 ... 250
Permissible residual current of the electronics (with 0 signal)	mA	2.5

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Options

Auxiliary switch: Terminal designations and identification numbers for auxiliary contacts

Terminal designations

The terminal designations are 2-digit, e.g. 13, 14, 21, 22:

- Tens digit: Sequence digit
  - Related terminals have the same sequence digit
- Units digit: Function digit
  - 1-2 for normally closed contacts (NC)
  - 3-4 for normally open contacts (NO)

Identification numbers

The identification number indicates the number and type of the auxiliary contacts, e.g. 40, 31, 22, 13:

- 1st digit: number of normally open contacts (NO)
- 2nd digit: number of normally closed contacts (NC)

Examples:

- 31 = 3 NO + 1 NC
- 40 = 4 NO

Selection aid for mountable auxiliary switch blocks for power contactors and contactor relays

The auxiliary switch blocks of the 3RH29 series for mounting on the front and side can be used for power contactors as well as for contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables on pages 3/48 to 3/52.

Where the columns and lines intersect (blue and green in the example) you will find the identification number for the combination of basic unit (column) and auxiliary switch block (line).

Additional auxiliary switch blocks			3-pole contactors		
Article No.	Auxiliary contacts		3RT201	3RT201	3RT202
	Version		S00	S00	S0
	NO	NC	10	01	11
			13 / 14	21 / 22	13 / 21 / 14 / 22
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.
			According to EN 50012[1]		
Auxiliary switches without NO contact					
3RH2911-☐HA01	--	1	11	02	12
3RH2911-☐HA02	--	2	12	03	13
3RH2911-☐HA03	--	3	13	04	14
3RH2911-☐FA04	--	4	14	--	--
Auxiliary switch with 1 NO contact					
3RH2911-☐HA10	1	--	20	11	21

1 For screw terminals
2 For spring-type terminals

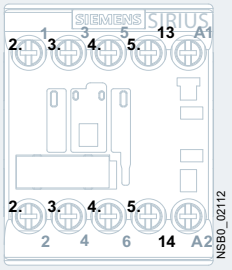
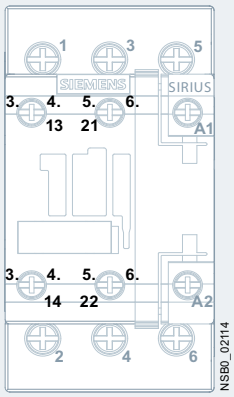
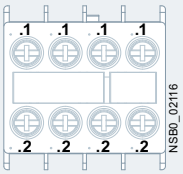
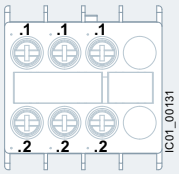
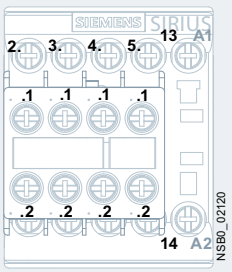
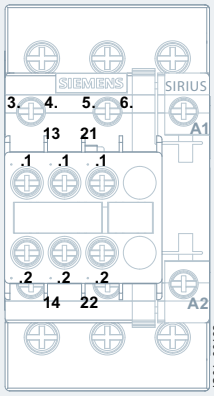
[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

Example 1

Basic unit: 3-pole 3RT2017 motor contactor with 1 NO
Required: 1 NO + 4 NC (Ident. No. 14)
Result: 3RH2911-.FA04 auxiliary switch block

Example 2

Basic unit: 3-pole 3RT2023 motor contactor with 1 NO + 1 NC
Required: 1 NO + 4 NC (Ident. No. 14)
Result: Auxiliary switch block 3RH2911-.HA03

	Example 1	Example 2
Type	3RT20 motor contactor, S00 with 1 NO	3RT20 motor contactor, S0 with 1 NO + 1 NC
		
Sequence digit	2. 3. 4. 5.	3. 4. 5. 6.
Type	Auxiliary switch with 4 NC, 3RH2911-.FA04	Auxiliary switch with 3 NC, 3RH2911-.HA03
		
Function digit	.1 .2 .1 .2 .1 .2 .1 .2	.1 .2 .1 .2 .1 .2
Combination	3RT20 motor contactor, S00 with aux. switch block	3RT20 motor contactor, S0 with aux. switch block
		
Terminal desig.	13 14 21 22 31 32 41 42 51 52	13 14 21 22 31 32 41 42 51 52
Result	Ident. No. 14	Ident. No. 14

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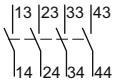
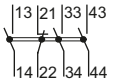
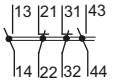
Auxiliary switch blocks

Selection and ordering data

Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Article No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT201	3RT201	3RT202	3RT231	3RT251	3RT232	3RT252	3RH21, 3RH24		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Front auxiliary switches												
Without NO contact												
3RH2911-□HA01	--	1	**11**	02	**12**	01	01	**12**	**12**	**41X**	**32X**	**23X**
3RH2911-□HA02	--	2	**12**	03	**13**	02	02	**13**	--	**42E**	**33X**	24
3RH2911-□HA03	--	3	**13**	04	14	03	--	--	--	43	34	--
3RH2911-□FA04	--	4	14	--	--	--	--	--	--	**44E**	--	--
With 1 NO contact												
3RH2911-□HA10	1	--	20	11	**21**	**10**	**10**	**21**	**21**	**50E**	**41E**	**32E**
3RH2911-□HA11	1	1	**21**	12	**22**	11	11	**22**	**22**	**51X**	**42X**	**33X**
3RH2911-□HA12	1	2	**22**	13	**23**	12	12	**23**	--	52	43	34
3RH2911-□HA13	1	3	**23**	14	24	13	--	--	--	**53X**	**44X**	--
With 2 NO contacts												
3RH2911-□HA20	2	--	30	21	**31**	20	20	**31**	**31**	**60E**	**51X**	**42X**
3RH2911-□HA21	2	1	**31**	22	**32**	21	21	**32**	**32**	61	52	43
3RH2911-□HA22	2	2	**32**	23	33	22	22	33	--	**62X**	53	**44X**
3RH2911-□FA22	2	2	32	23	33	**22**	**22**	33	--	**62X**	53	**44X**
With 3 NO contacts												
3RH2911-□HA30	3	--	40	31	**41**	30	30	**41**	**41**	70	61	52
3RH2911-□HA31	3	1	**41**	32	42	31	31	42	42	**71X**	**62X**	**53X**
With 4 NO contacts												
3RH2911-□FA40	4	--	50	41	51	40	40	51	51	**80E**	**71X**	**62X**

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

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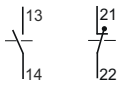
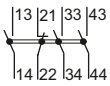
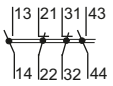
Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Article No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT201	3RT201	3RT202	3RT231	3RT251	3RT232	3RT252	3RH21, 3RH24		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50005			According to EN 50005				According to EN 50005		
Front auxiliary switches												
With make-before-break												
3RH2911-□FB11	--	1	21	12	22	11	11	22	22	51	42	33
3RH2911-□FB22	--	2	32	23	33	22	22	33	--	62	53	44
3RH2911-□FC22	--	3	32	23	33	22	22	33	--	62	53	44
With complete inscription[1]												
3RH2911-1AA10	1	--	20	11	21	10	10	21	21	50	41	32
3RH2911-1BA10	1	--	20	11	21	10	10	21	21	50	41	32
3RH2911-1AA01	--	1	11	02	12	01	01	12	12	41	32	23
3RH2911-1BA01	--	1	11	02	12	01	01	12	12	41	32	23
3RH2911-1LA11	1	1	21	12	22	11	11	22	22	51	42	33
3RH2911-1MA11	1	1	21	12	22	11	11	22	22	51	42	33
3RH2911-1LA20	2	--	30	21	31	20	20	31	31	60	51	42
3RH2911-1MA20	2	--	30	21	31	20	20	31	31	60	51	42

[1] Terminals from the top or bottom; see page 3/54.

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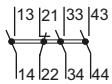
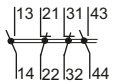
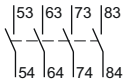
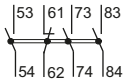
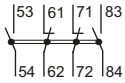
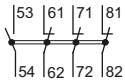
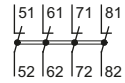
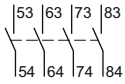
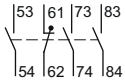
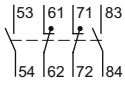
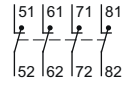
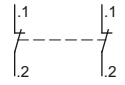
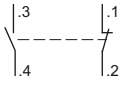
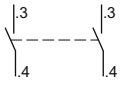
Auxiliary switch blocks

Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Article No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT201	3RT201	3RT202	3RT231	3RT251	3RT232	3RT252	3RH21, 3RH24		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50005			According to EN 50005				According to EN 50011[1]		
Front auxiliary switches												
With complete inscription (for contactor relays)[2]												
3RH2911-☐GA40	4	--		--	--	--	--	--	--	--	**80E**	--	--
3RH2911-☐GA31	3	1		--	--	--	--	--	--	--	**71E**	--	--
3RH2911-☐GA22	2	2		--	--	--	--	--	--	--	**62E**	--	--
3RH2911-☐GA13	1	3		--	--	--	--	--	--	--	**53E**	--	--
3RH2911-☐GA04	--	4		--	--	--	--	--	--	--	**44E**	--	--
With complete inscription; special version												
3RH2911-☐XA40 -0MA0	4	--		50	41	51	40	40	51	51	**80E**	**71X**	**62X**
3RH2911-☐XA31 -0MA0	3	1		41	32	42	31	31	42	42	**71E**	**62X**	53
3RH2911-☐XA22 -0MA0	2	2		32	23	33	22	22	33	--	**62E**	53	**44X**
3RH2911-☐XA04 -0MA0	--	4		14	--	--	--	--	--	--	**44E**	--	--
Solid-state compatible												
3RH2911-☐NF02	--	2		12	03	13	02	02	13	--	42	33	24
3RH2911-☐NF11	1	1		21	12	22	11	11	22	22	51	42	33
3RH2911-☐NF20	2	--		30	21	31	20	20	31	31	60	51	42

[1] Combinations according to EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

[2] Ordering data see Accessories for 3RH2 Contactor Relays, Chapter 5.

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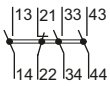
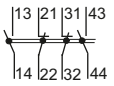
Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Article No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT201	3RT201	3RT202	3RT231	3RT251	3RT232	3RT252	3RH21, 3RH24		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Lateral auxiliary switches												
For size S00			Left	Right								
3RH2911-□DA02	--	2			**12**	--	--	02	02	--	--	--	--
3RH2911-□DA02	--	2			14	--	--	--	--	--	--	--	--
3RH2911-□DA11	1	1			**21**	--	--	11	11	--	--	--	--
3RH2911-□DA11	1	1			32	--	--	22	22	--	--	--	--
3RH2911-□DA20	2	--			30	--	--	20	20	--	--	--	--
3RH2911-□DA20	2	--			50	--	--	40	40	--	--	--	--
3RH2911-□DA20 + **3RH2911-□DA11**	2 1	-- 1			**41**	--	--	31	31	--	--	--	--
3RH2911-□DA20 + **3RH2911-□DA02**	2 --	-- 2			**32**	--	--	22	22	--	--	--	--
3RH2911-□DA11 + **3RH2911-□DA02**	1 --	1 2			**23**	--	--	13	--	--	--	--	--
For size S0			Left	Right									
3RH2921-□DA02	--	2			12	03	**13**	02	02	**13**	--	--	--	--
3RH2921-□DA02	--	2			14	--	--	--	--	--	--	--	--
3RH2921-□DA11	1	1			21	12	**22**	11	11	**22**	**22**	--	--	--
3RH2921-□DA11	1	1			32	23	33	22	22	33	--	--	--	--
3RH2921-□DA20	2	--			30	21	**31**	20	20	**31**	**31**	--	--	--
3RH2921-□DA20	2	--			50	41	51	40	40	51	51	--	--	--

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

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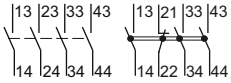
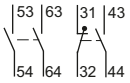
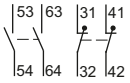
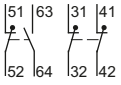
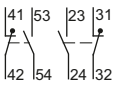
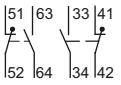
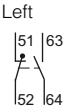
Auxiliary switch blocks

Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Article No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT201	3RT201	3RT202	3RT231	3RT251	3RT232	3RT252	3RH21, 3RH24		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Lateral auxiliary switches												
For size S0, S00			Left Right									
3RH2921-☐DA20 + **3RH2921-☐DA11**	2	--		41	32	42	31	31	42	42	--	--	--
	1	1											
3RH2921-☐DA20 + **3RH2921-☐DA02**	2	--		32	23	33	22	22	33	--	--	--	--
	--	2											
3RH2921-☐DA11 + **3RH2921-☐DA02**	1	1		23	14	24	13	--	--	--	--	--	--
	--	2											
For contactor relays			Left										
3RH2921-☐DA02	--	2		--	--	--	--	--	--	--	**42Z**	**33X**	24
3RH2921-☐DA11	1	1		--	--	--	--	--	--	--	**51X**	**42X**	**33X**
3RH2921-☐DA20	2	--		--	--	--	--	--	--	--	**60Z**	**51X**	**42X**
Solid-state compatible													
For size S00			Left Right										
3RH2911-2DE11	1	1		21	--	--	11	11	--	--	--	--	--
3RH2911-2DE11	1	1		32	--	--	22	22	--	--	--	--	--
For size S0, S00			Left Right										
3RH2921-2DE11	1	1		21	12	22	11	11	22	22	--	--	--
3RH2921-2DE11	1	1		32	23	33	22	22	33	--	--	--	--
For contactor relays			Left										
3RH2921-☐DE11	1	1		--	--	--	--	--	--	--	**51X**	**42X**	**33X**

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

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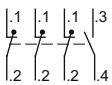
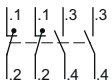
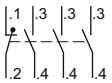
Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH2911-1HA22

3RH2911-2HA22

For contactors / contactor relays[1]	Auxiliary contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
Type	NO	NC							
Auxiliary switch blocks for snapping onto the front									
Sizes S00 and S0[2]									
3RT2.1., 3RT2.2. 3RH21, 3RH24	--	1		▶	**3RH2911-1HA01**		▶	**3RH2911-2HA01**	
	--	2		▶	**3RH2911-1HA02**		▶	**3RH2911-2HA02**	
	--	3		B	**3RH2911-1HA03**		B	**3RH2911-2HA03**	
	1	--		B	**3RH2911-1HA10**		B	**3RH2911-2HA10**	
	1	1		▶	**3RH2911-1HA11**		▶	**3RH2911-2HA11**	
	1	2		▶	**3RH2911-1HA12**		▶	**3RH2911-2HA12**	
	1	3		▶	**3RH2911-1HA13**		▶	**3RH2911-2HA13**	
	2	--		▶	**3RH2911-1HA20**		▶	**3RH2911-2HA20**	
	2	1		B	**3RH2911-1HA21**		B	**3RH2911-2HA21**	
	2	2		▶	**3RH2911-1HA22**		▶	**3RH2911-2HA22**	
	3	--		B	**3RH2911-1HA30**		B	**3RH2911-2HA30**	
	3	1		▶	**3RH2911-1HA31**		▶	**3RH2911-2HA31**	

[1] For detailed information on use see page 3/48.

[2] The 3RH29 auxiliary switches are also available with ring terminal lug connection. The 8th digit of the Article No. must be changed from a **"1"** to a **"4"**, e.g. 3RH2911-**1**HA22 ➞ 3RH2911-**4**HA22.

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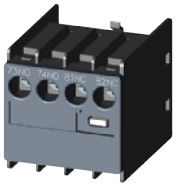
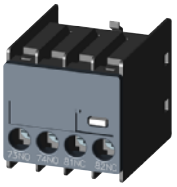
Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH2911-1FC22

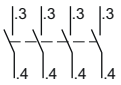
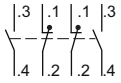
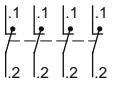
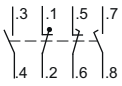
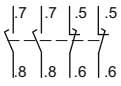
3RH2911-2FC22


3RH2911-1LA11


3RH2911-1MA11

3RH2911-1AA01

3RH2911-1BA01

For contactors / contactor relays[1]	Connections Position	Auxiliary contacts Version					DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Type		NO	NC	NO	NC							
Auxiliary switch blocks for snapping onto the front												
Sizes S00 and S0												
3RT2.1., 3RT2.2. 3RH21, 3RH24		4	--	--	--		▶	**3RH2911-1FA40**		▶	**3RH2911-2FA40**	
		2	2	--	--		B	**3RH2911-1FA22**		B	**3RH2911-2FA22**	
		--	4	--	--		B	**3RH2911-1FA04**		B	**3RH2911-2FA04**	
		--	--	1	1		▶	**3RH2911-1FB11**		▶	**3RH2911-2FB11**	
		1	1	1	1		▶	**3RH2911-1FB22**		▶	**3RH2911-2FB22**	
		--	--	2	2		▶	**3RH2911-1FC22**		▶	**3RH2911-2FC22**	
1- and 2-pole auxiliary switch blocks, cable entry from top or bottom												
3RT2.1., 3RT2.2. 3RH21, 3RH24	Top	1	--	--	--		▶	**3RH2911-1AA10**			**--**	
	Bottom	1	--	--	--		▶	**3RH2911-1BA10**			**--**	
	Top	--	1	--	--		▶	**3RH2911-1AA01**			**--**	
	Bottom	--	1	--	--		▶	**3RH2911-1BA01**			**--**	
	Top	1	1	--	--		▶	**3RH2911-1LA11**			**--**	
	Bottom	1	1	--	--		▶	**3RH2911-1MA11**			**--**	
	Top	2	--	--	--		▶	**3RH2911-1LA20**			**--**	
	Bottom	2	--	--	--		▶	**3RH2911-1MA20**			**--**	

[1] For detailed information on use see pages 3/48 and 3/49.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH2911-1DA02

3RH2911-2DA02

3RH2911-1XA22-0MA0

3RH2911-2XA22-0MA0

For contactors / contactor relays	Auxiliary contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
Type	NO	NC							
Auxiliary switch blocks for snapping onto the front									
Sizes S00 and S0									
3RT2.1., 3RT2.2.[1], 3RH21, 3RH24[1]	4	--	53 63 73 83 / 54 64 74 84	B	**3RH2911-1XA40-0MA0**		B	**3RH2911-2XA40-0MA0**	
	3	1	53 61 73 83 / 54 62 74 84	B	**3RH2911-1XA31-0MA0**		B	**3RH2911-2XA31-0MA0**	
	2	2	53 61 71 83 / 54 62 72 84	B	**3RH2911-1XA22-0MA0**		B	**3RH2911-2XA22-0MA0**	
	--	4	51 61 71 81 / 52 62 72 82	B	**3RH2911-1XA04-0MA0**		B	**3RH2911-2XA04-0MA0**	
Laterally mountable auxiliary switch blocks, mounting on the right and/or on the left									
Size S00			Left / Right						
3RT2.1.[2]	--	2	41 51 / 42 52 ; 21 31 / 22 32	A	**3RH2911-1DA02**		A	**3RH2911-2DA02**	
	1	1	41 53 / 42 54 ; 21 33 / 22 34	A	**3RH2911-1DA11**		A	**3RH2911-2DA11**	
	2	--	43 53 / 44 54 ; 23 33 / 24 34	A	**3RH2911-1DA20**		A	**3RH2911-2DA20**	
Size S0			Left / Right						
3RT2.2.[2][3]	--	2	51 61 / 52 62 ; 31 41 / 32 42	A	**3RH2921-1DA02**		A	**3RH2921-2DA02**	
	1	1	51 63 / 52 64 ; 31 43 / 32 44	A	**3RH2921-1DA11**		A	**3RH2921-2DA11**	
	2	--	53 63 / 54 64 ; 33 43 / 34 44	A	**3RH2921-1DA20**		A	**3RH2921-2DA20**	

[1] For detailed information on use see page 3/50.
[2] For detailed information on use see pages 3/51 and 3/52.
[3] With 3RT232., 3RT252., mountable only on the right.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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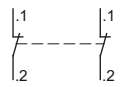
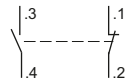
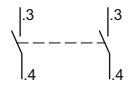
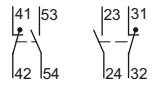
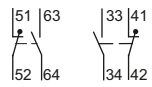
Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH2911-2DE11

3RH2911-1NF. .

3RH2911-2NF. .

For contactors / contactor relays[1]	Contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
Type	NO	NC							
Electronic compatible auxiliary switch blocks									
• For operation in dusty atmospheres • For electronic circuits with rated operational currents I_e/AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V • Hard gold-plated contacts • Mirror contacts acc. to IEC 60947-4-1, Appendix F, for auxiliary switches for mounting on the side (for auxiliary switches for snapping onto the front, see footnote)									
Auxiliary switch blocks for snapping onto the front[2]									
Sizes S00 and S0									
3RT2.1., 3RT2.2. 3RH21	--	2[3]		A	**3RH2911-1NF02**		A	**3RH2911-2NF02**	
	1	1[3]		▶	**3RH2911-1NF11**		▶	**3RH2911-2NF11**	
	2	--		▶	**3RH2911-1NF20**		▶	**3RH2911-2NF20**	
Laterally mountable auxiliary switch blocks, mounting on the right and/or on the left									
Size S00			Left Right						
3RT2.1.	1	1			--		A	**3RH2911-2DE11**	
Size S0			Left Right						
3RT2.2.	1	1			--		A	**3RH2921-2DE11**	

[1] For detailed information on use see pages 3/50 and 3/52.

[2] The 3RH2911-.NF.. auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Article No., the **"1"** must be replaced with **"4"**, e.g.: 3RH2911-**1**NF11 ➞ 3RH2911-**4**NF11

[3] The following applies to size S0 contactors: The NC contacts are mirror contacts.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RA2813-1AW10

3RA2813-2AW10

For contactors	Rated control supply voltage U_s [1]	Time setting range *t*	Output / auxiliary contacts	DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
Type	V	s							
Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5									
Sizes S00 and S0									
	The electrical connection between the solid-state time-delay auxiliary switch and the contactor underneath is established automatically when it is snapped on and locked.								
	ON-delay Varistor integrated								
3RT2., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA2813-1AW10**		A	**3RA2813-2AW10**	
			1 NO + 1 NC	A	**3RA2813-1FW10**		A	**3RA2813-2FW10**	
	OFF-delay with control signal Varistor integrated								
3RT2., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA2814-1AW10**		A	**3RA2814-2AW10**	
			1 NO + 1 NC	A	**3RA2814-1FW10**		A	**3RA2814-2FW10**	
	OFF-delay without control signal[3] Varistor integrated								
3RT2., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA2815-1AW10**		A	**3RA2815-2AW10**	
			1 NO + 1 NC	A	**3RA2815-1FW10**		A	**3RA2815-2FW10**	

1) AC voltage values apply for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling contactors.

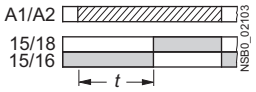
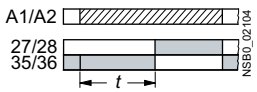
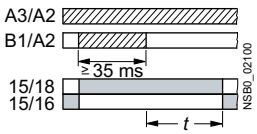
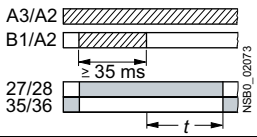
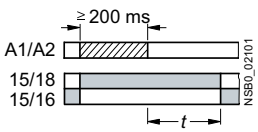
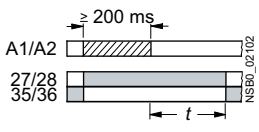
3) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact change-over to the correct setting.

For technical specifications see page 3/42.

Note:

When using the solid-state time-delay auxiliary switches, no other auxiliary switches are allowed to be connected to the basic units.

Technical specifications

Function	Function charts	
	Timing relay energized Contact closed Contact open	
Solid-state time-delay auxiliary switches	**With 1 CO contact**	**With 1 NO contact + 1 NC contact**
ON-delay (varistor integrated)	3RA2813-.AW10	3RA2813-.FW10
		
OFF-delay with control signal (varistor integrated)	3RA2814-.AW10	3RA2814-.FW10
		
OFF-delay without control signal (varistor integrated)	3RA2815-.AW10	3RA2815-.FW10
		

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Delay and latching blocks

Selection and ordering data

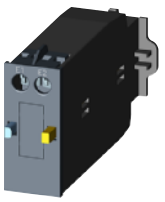
For contactors	Rated control supply voltage U_s	Time setting range t	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Type	V	s		Article No. / Price per PU			
OFF-delay devices							
Sizes S00 and S0							
For contactors with DC operation							
Non-adjustable delay time							
3RT2.1, 3RT2.2, 3RH2...-1BF40	110 AC/DC	S00: > 0.1 S0:> 0.08	B	**3RT2916-2BK01**	1	1 unit	41B
3RT2.1, 3RT2.2, 3RH2...-1BM40	220/230 AC/DC	S00: > 0.5 S0: > 0.3	B	**3RT2916-2BL01**	1	1 unit	41B
3RT2.1, 3RT2.2, 3RH2...-1BB40	24 DC	S00: > 0.2 S0: > 0.1	A	**3RT2916-2BE01**	1	1 unit	41B
Delay blocks · For snapping onto the front of contactors							
Solid-state timing relays with semiconductor output							
Sizes S00 and S0							
ON-delay Two-wire design, varistor integrated							
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240 AC/DC[1]	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2811-1CW10**	1	1 unit	41B
OFF-delay with control signal Varistor integrated							
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240 AC/DC[1]	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2812-1DW10**	1	1 unit	41B
ON-delay Two-wire design, varistor integrated				**Spring-type terminals**			
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240 AC/DC[1]	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2811-2CW10**	1	1 unit	41B
OFF-delay with control signal Varistor integrated							
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240 AC/DC[1]	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2812-2DW10**	1	1 unit	41B
Pneumatic[3] · size S0							
Auxiliary contacts 1 NO and 1 NC[4]				**Screw terminals**			
ON-delay							
3RT202.	--	0.1 ... 30	C	**3RT2926-2PA01**	1	1 unit	41B
		1 ... 60	C	**3RT2926-2PA11**	1	1 unit	41B
OFF-delay							
3RT202.	--	0.1 ... 30	C	**3RT2926-2PR01**	1	1 unit	41B
		1 ... 60	C	**3RT2926-2PR11**	1	1 unit	41B
Mechanical latching blocks							
Size S0							
For snapping onto the front of contactors							
The contactor remains in the energized state after a voltage failure							
3RT202.	24 AC/DC	--	B	**3RT2926-3AB31**	1	1 unit	41B
	110 AC/DC	--	B	**3RT2926-3AF31**	1	1 unit	41B
	230 AC/DC	--	B	**3RT2926-3AP31**	1	1 unit	41B

3RT2916-2B.01

3RA2811-1CW10

3RA2811-2CW10

3RT2926-2P...


3RT2926-3A.31

For technical specifications see pages 3/43, 3/44 and 3/185.

1) AC voltage values apply for 50 Hz and 60 Hz.
2) Cannot be fitted onto coupling contactors.
3) Certificate for versions for furnaces according to VDE 0116 on request.
4) In addition to these, no other auxiliary contacts are permitted.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Surge suppressors without LED (also for spring-type terminals)

3RT2916-1B.00

For contactors	Version	Rated control supply voltage U_s [1] AC operation	DC operation	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC						
Size S00									
	For plugging onto the front side of the contactors (with and without auxiliary switch block)								
3RT2.1, 3RH2.	**Varistor**	24 ... 48	24 ... 70	▶	**3RT2916-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2916-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2916-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT2916-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2916-1BF00**		1	1 unit	41B
3RT2.1, 3RH2.	**RC elements**	24 ... 48	24 ... 70	▶	**3RT2916-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2916-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2916-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT2916-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2916-1CF00**		1	1 unit	41B
3RT2.1, 3RH2.	**Noise suppression diodes**	--	12 ... 250	▶	**3RT2916-1DG00**		1	1 unit	41B
3RT2.1, 3RH2.	**Diode assemblies** (diode and Zener diode) for DC operation	--	12 ... 250	▶	**3RT2916-1EH00**		1	1 unit	41B
Size S0									
	For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)								
3RT2.2	**Varistor**	24 ... 48	24 ... 70	▶	**3RT2926-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2926-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2926-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT2926-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2926-1BF00**		1	1 unit	41B
3RT2.2	**RC elements**	24 ... 48	24 ... 70	▶	**3RT2926-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2926-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2926-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT2926-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2926-1CF00**		1	1 unit	41B
3RT2.2	**Diode assembly** for DC operation	--	24	▶	**3RT2926-1ER00**		1	1 unit	41B
		--	30 ... 250	▶	**3RT2926-1ES00**		1	1 unit	41B

3RT2926-1E.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

Surge suppressors with LED (also for spring-type terminals)

3RT2916-1J.00

For contactors	Version	Rated control supply voltage U_s [1] AC operation	DC operation	Power consumption P of the LED at U_s	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC	mW						
Size S00										
	For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RT2.1, 3RH2.	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT2916-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT2916-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT2916-1JL00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	A	**3RT2916-1JP00**		1	1 unit	41B
3RT2.1, 3RH2.	**Noise suppression diodes**	--	24 ... 70	20 ... 470	▶	**3RT2916-1LM00**		1	1 unit	41B
		--	50 ... 150	50 ... 700	A	**3RT2916-1LN00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	**3RT2916-1LP00**		1	1 unit	41B
Size S0										
	For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)									
3RT2.2	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT2926-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT2926-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT2926-1JL00**		1	1 unit	41B
3RT2.2	**Diode assembly**	--	24	20 ... 470	▶	**3RT2926-1MR00**		1	1 unit	41B

3RT2926-1MR00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Other function blocks

Selection and ordering data

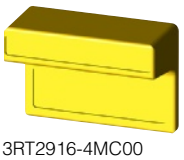
For contactors Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMC suppression modules; 3-phase, up to 7.5 kW							
Size S00 (for contactors with AC or DC operation)[1]							
			Screw terminals				
3RT201	**RC elements** (3 x 220 Ω/0.22 µF)						
	Up to 400 V	▶	**3RT2916-1PA1**		1	1 unit	41B
	Up to 575 V	A	**3RT2916-1PA2**		1	1 unit	41B
	Up to 690 V	C	**3RT2916-1PA3**		1	1 unit	41B
3RT201	**Varistor**						
	Up to 400 V	A	**3RT2916-1PB1**		1	1 unit	41B
	Up to 575 V	A	**3RT2916-1PB2**		1	1 unit	41B
	Up to 690 V	C	**3RT2916-1PB3**		1	1 unit	41B
Additional load modules							
Size S00							
3RT2.1, 3RH2.	**For plugging onto the front side of the contactors with or without auxiliary switch blocks**[2] For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor. Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x U_s	▶	**3RT2916-1GA00**		1	1 unit	41B
LED modules for displaying contactor operation							
Size S0							
3RT2.2	For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection.	B	**3RT2926-1QT00**		1	5 units	41B
Coupling links for control by PLC							
Size S0							
3RT2.2	**For mounting onto the coil terminals of the contactors** With LED for indicating switching state. With integrated varistor for damping opening surges. Operating range 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA Rated operational current I_e: • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A	▶	**3RH2924-1GP11**		1	1 unit	41B
Control kit							
Sizes S00 and S0	For manual operation of the contactor contacts for start-up and service[3]						
3RT2.1, 3RH2.		A	**3RT2916-4MC00**		1	5 units	41B
3RT2.2		A	**3RT2926-4MC00**		1	5 units	41B

3RT2916-1PA.

3RT2916-1GA00

3RT2926-1QT00

3RH2924-1GP11


3RT2916-4MC00

For technical specifications for coupling links see page 3/46.

1) See also description on page 3/41.

2) For packs of 10 units, the Article No. must be supplemented with "**-Z**" and order code "**X90**".

3) See also Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" ➞ "ET 200S Motor Starters" ➞ "Accessories", Article No. 3RK1903-0CA00.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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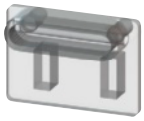
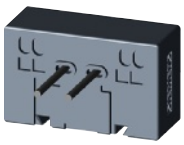
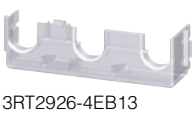
Selection and ordering data

	For contactors Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers								
	Sizes S00 and S0							
 3RT2916-4MA10	3RT2.1, 3RT2.2, 3RH2.[1]	Sealable covers for preventing manual operation (Not suitable for coupling contactors)	A	**3RT2916-4MA10**		1	5 units	41B
Connection modules for contactors with screw terminals								
	Sizes S00 and S0							
		Adapters for contactors Ambient temperature $T_{u\,max.}$ = 60 °C		**Screw terminals**				
3RT1926-4RD01	3RT2.1, 3RH2.	Size S00, rated operational current I_e at AC-3/400 V: 20 A	B	**3RT1916-4RD01**		1	1 unit	41B
	3RT2.2	Size S0, rated operational current I_e at AC-3/400 V: 25 A	B	**3RT1926-4RD01**		1	1 unit	41B
3RT1900-4RE01	3RT2.1, 3RT2.2, 3RH2.	**Plugs for contactors** Size S00, S0	B	**3RT1900-4RE01**		1	1 unit	41B
Coil connection modules								
	Size S0							
3RT2926-4RA11	3RT2.2	Connection from top	A	**3RT2926-4RA11**		1	1 unit	41B
		Connection from below	A	**3RT2926-4RB11**		1	1 unit	41B
		Connection diagonally	A	**3RT2926-4RC11**		1	1 unit	41B
				Spring-type terminals				
 3RT2926-4RA12	3RT2.2	Connection from top	A	**3RT2926-4RA12**		1	1 unit	41B
		Connection from below	A	**3RT2926-4RB12**		1	1 unit	41B
Covers for contactors with ring terminal lug connection								
	Size S00							
				Ring terminal lug connections				
3RT2916-4EA13	3RT2.1, 3RH2	**Covers for ring terminal lug connections** Single covers	B	**3RT2916-4EA13**		1	10 units	41B
	Size S0							
 3RT2926-4EB13	3RT2.2	**Covers for ring terminal lug connections** Set for one device, comprising 4 single covers	B	**3RT2926-4EB13**		1	1 unit	41B

For technical specifications for connection modules see page 3/45.

[1] Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

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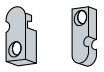
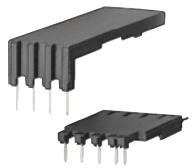
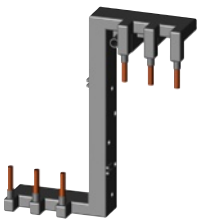
Terminals, covers, adapters, connectors

	For contactors Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Screw adapters for fixing the contactors								
	Size S0							
 NSB0_01470 3RT1926-4P	3RT2. 2	Screw adapters for easier screw fixing 2 units required per contactor (1 pack contains 10 sets for 10 contactors)	C	**3RT1926-4P**		1	10 units	41B
Solder pin adapters for contactors up to 5.5 kW/12 A								
	Size S00, up to 5.5 kW							
				Screw terminals				
3RT1916-4KA1	3RT2. 1, 3RH21	Assembly kit for soldering contactors onto a printed circuit board. For 1 contactor, 1 set is required.	A	**3RT1916-4KA1**		1	4 units	41B
Solder pin adapters for contactors up to 5.5 kW / 12 A with mounted 4-pole auxiliary switch block								
	Size S00, up to 5.5 kW							
 3RT1916-4KA2	3RT2. 1, 3RH21	Assembly kit for soldering contactors with an auxiliary switch block onto a printed circuit board. For 1 contactor, 1 set is required.	B	**3RT1916-4KA2**		1	4 units	41B
Safety main current connectors for 2 contactors								
	Sizes S00 and S0							
 3RA2926-1A		**For series connection of 2 contactors**						
	3RT2. 1		A	**3RA2916-1A**		1	1 unit	41B
	3RT2. 2		A	**3RA2926-1A**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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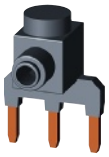
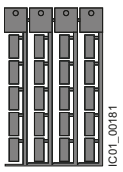
	For contactors Type	Max. conductor cross-sections mm²	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Links for paralleling								
	Sizes S00 and S0							
3RT1916-4BB31	**3-pole, with connection terminal**[1)2)]			**Screw terminals**				
	3RT201	25, stranded	▶	**3RT1916-4BB31**		1	1 unit	41B
	3RT202	50, stranded	A	**3RT2926-4BB31**		1	1 unit	41B
 3RT2926-4BB31								
3RT1916-4BB41	**4-pole, with connection terminal**[1)2)]							
	3RT231, 3RT251	25, stranded	C	**3RT1916-4BB41**		1	1 unit	41B

[1)] The links for paralleling can be reduced by one pole.

[2)] With sizes S00 and S0 the links for paralleling are insulated.

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
			Spring-type terminals				
3RT1916-4JA02	**Insulation stop strip** can be inserted in cable entry of the spring-type terminal (2 strips per contactor required)						
	• For basic units S00 (3RT201. or 3RH2.), removable individually	B	**3RT2916-4JA02**		1	20 units	41B
	• For auxiliary and control current on basic units size S0 (3RT202.) and for mountable 3RH29 auxiliary switches, removable in pairs	B	**3RT1916-4JA02**		1	20 units	41B
Tools for opening spring-type terminals							
3RA29 08-1A	**Screwdrivers** for all SIRIUS devices with spring-type terminals Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Blank labels							
 3RT2900-1SB20	**Unit labeling plates** for SIRIUS devices[1)]						
	• 10 mm × 7 mm, titanium gray	D	**3RT2900-1SB10**		100	816 units	41B
	• 20 mm × 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
	Adhesive labels for SIRIUS devices						
	• 19 mm × 6 mm, titanium gray	D	**3RT2900-1SB60**		100	3 060 units	41B

[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

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Solenoid coils

Selection and ordering data

For screw, spring-type and ring terminal lug connection

3RT2924-5A.01

For contactors		Rated control supply voltage U_s			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type	50 Hz	50/60 Hz	60 Hz						
		V	V	V						
Solenoid coils · AC operation										
S0	3RT2023, 3RT2024, 3RT2025	24	--	--	B	**3RT2924-5AB01**		1	1 unit	41B
		42	--	--	B	**3RT2924-5AD01**		1	1 unit	41B
		48	--	--	B	**3RT2924-5AH01**		1	1 unit	41B
		110	--	--	B	**3RT2924-5AF01**		1	1 unit	41B
		230	--	--	B	**3RT2924-5AP01**		1	1 unit	41B
		400	--	--	B	**3RT2924-5AV01**		1	1 unit	41B
		--	24	--	B	**3RT2924-5AC21**		1	1 unit	41B
		--	42	--	B	**3RT2924-5AD21**		1	1 unit	41B
		--	48	--	B	**3RT2924-5AH21**		1	1 unit	41B
		--	110	--	B	**3RT2924-5AG21**		1	1 unit	41B
		--	220	--	B	**3RT2924-5AN21**		1	1 unit	41B
		--	230	--	B	**3RT2924-5AL21**		1	1 unit	41B
		--	--	24	B	**3RT2924-5AC11**		1	1 unit	41B
		110	--	120	B	**3RT2924-5AK61**		1	1 unit	41B
		220	--	240	B	**3RT2924-5AP61**		1	1 unit	41B
		--	100	110	B	**3RT2924-5AG61**		1	1 unit	41B
		--	200	220	B	**3RT2924-5AN61**		1	1 unit	41B
		--	400	440	B	**3RT2924-5AR61**		1	1 unit	41B
S0	3RT2026, 3RT2027, 3RT2028	24	--	--	B	**3RT2926-5AB01**		1	1 unit	41B
		42	--	--	B	**3RT2926-5AD01**		1	1 unit	41B
		48	--	--	B	**3RT2926-5AH01**		1	1 unit	41B
	3RT2325, 3RT2326, 3RT2327	110	--	--	B	**3RT2926-5AF01**		1	1 unit	41B
		230	--	--	B	**3RT2926-5AP01**		1	1 unit	41B
		400	--	--	B	**3RT2926-5AV01**		1	1 unit	41B
	3RT2526	--	24	--	B	**3RT2926-5AC21**		1	1 unit	41B
		--	42	--	B	**3RT2926-5AD21**		1	1 unit	41B
		--	48	--	B	**3RT2926-5AH21**		1	1 unit	41B
		--	110	--	B	**3RT2926-5AG21**		1	1 unit	41B
		--	220	--	B	**3RT2926-5AN21**		1	1 unit	41B
		--	230	--	B	**3RT2926-5AL21**		1	1 unit	41B
		--	--	24	B	**3RT2926-5AC11**		1	1 unit	41B
		110	--	120	B	**3RT2926-5AK61**		1	1 unit	41B
		220	--	240	B	**3RT2926-5AP61**		1	1 unit	41B
		--	100	110	B	**3RT2926-5AG61**		1	1 unit	41B
		--	200	220	B	**3RT2926-5AN61**		1	1 unit	41B
		--	400	440	B	**3RT2926-5AR61**		1	1 unit	41B

Note:

Contactors with AC and DC coils have different depths.
Coils can only be exchanged with AC contactors and this is only possible with AC coils.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT1 contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

Connection methods

The 3RT1 contactors are available with screw terminals (box terminals) or spring-type terminals.

The size S3 contactors have removable box terminals for the main conductor connections. This permits connection of ring terminal lugs or busbars.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of the 3RT1 contactor or 3RH11 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Short-circuit protection of the contactors

Short-circuit protection of contactors without overload relay see "Technical specifications", pages 3/71 and 3/76. For short-circuit protection of contactors with overload relay, see Configuration Manual "Configuring SIRIUS" http://support.automation.siemens.com/WW/view/en/40625241.

To assemble fuseless motor feeders, you must select combinations of motor starter protector/circuit breaker and contactor as explained in "SIRIUS 3RA1 Load Feeders" (see Chapter 8 "Load Feeders and Motor Starters").

Motor protection

3RU11 thermal overload relays or 3RB20/3RB21 solid-state overload relays can be fitted to the 3RT1 contactors for protection against overload. The overload relays must be ordered separately.

Ratings of three-phase motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

Surge suppression

3RT1 contactors can be retrofitted with RC elements, varistors, diodes or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Sizes S00 and S0, up to 11 kW

For 3RT1 devices in these sizes see Catalog IC 10 AO.

Sizes S2 and S3, up to 45 kW

Auxiliary contact complement

The basic units of sizes S2 and S3 are delivered only with the main contacts and can be extended with auxiliary switch blocks.

For sizes S2 and S3, complete units with mounted auxiliary switch block 2 NO + 2 NC are available (terminal designation according to EN 50012); the auxiliary switch block can be removed. For more information see Accessories, page 3/96.

Note:

Auxiliary contact complement according to SUVA: Contactors with permanently mounted auxiliary switch block 2 NO + 2 NC are available for safety applications according to SUVA.

Surge suppression

For size S2 and S3 contactors, varistors and RC elements can be snapped on either on the top or directly below the coil terminals. Diode assemblies are available in 2 different versions on account of their polarity. Depending on the application they can be connected either only at the bottom (assembly with motor starter protector/circuit breaker) or only at the top (assembly with overload relay).

The plug-in direction of the diodes and diode assemblies is specified by coding.
Exceptions:
3RT1926-1T.00 and 3RT1936-1T.00,
in this case the plug-in direction is marked with "+" and "-".

Sizes S6 to S12, > 45 to 250 kW

- 3RT10, contactors for switching motors,
- 3RT12, vacuum contactors for switching motors,
- 3RT14, contactors for AC-1 applications (see Chapter 4 "Contactors for Special Applications").

Operating mechanism types

Two types of solenoid operation are available:

- Conventional operating mechanisms
- Solid-state operating mechanism
  (with two performance levels)

Control supply voltage

The contactors can be operated with an AC operating mechanism (50 to 60 Hz) as well as with DC.

Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

Auxiliary contact complement

Contactor sizes S6 to S12 are supplied with mounted auxiliary switch blocks.

For detailed information about the fitting of auxiliary switches see Accessories, page 3/96.

- 3RT10 and 3RT14 contactors:
  Auxiliary contacts mounted laterally and on front
- 3RT12 vacuum contactors:
  Auxiliary contacts mounted laterally

Contactors with conventional operating mechanism

Version 3RT1. ..-.A:

The solenoid coil is switched directly on and off with the control supply voltage U_S by way of terminals A1/A2.

Multi-voltage range for the control supply voltage U_S:

Only one coil covers several close-lying control supply voltages which are used worldwide, e.g. 110–115–120–127 V AC/DC or 220–230–240 V AC/DC. Allowance is made in addition for an operating range of 0.8 times the lower ($U_{S\,min}$) and 1.1 times the upper ($U_{S\,max}$) rated control supply voltage within which the contactor switches reliably and no thermal overload occurs.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactors with solid-state operating mechanism

The solenoid coil is supplied selectively with the power required for reliable switching and holding by upstream control electronics.

- Wide voltage range for the control supply voltage U_S: Compared with the conventional operating mechanism, the solid-state operating mechanism covers an even broader range of control supply voltages used worldwide within one coil version. For example, the coil for 200 to 277 V AC/DC ($U_{S\,min}$ to $U_{S\,max}$) covers the voltages 200-208-220-230-240-254-277 V used worldwide.
- Extended operating range 0.7 to 1.25 x U_S: The wide range for the rated control supply voltage and the additionally allowed coil operating range of 0.8 x $U_{S\,min}$ to 1.1 x $U_{S\,max}$ results in an extended coil operating range of at least 0.7 to 1.25 x U_S, within which the contactors will operate reliably, for the most common control supply voltages of 24, 110 and 230 V.
- Bridging temporary voltage dips: Control voltage failures dipping to 0 V (at A1/A2) are bridged for up to approx. 25 ms to avoid unintentional tripping.
- Defined ON and OFF thresholds: For voltages above 0.8 x $U_{S\,min}$ the electronics will reliably switch the contactor ON, and for voltages below the value 0.5 x $U_{S\,min}$ it is reliably switched OFF. The hysteresis in the switching thresholds prevents the main contacts from chattering as well as increased wear or welding when operated in weak, unstable networks. This also prevents thermal overloading of the contactor coil if the voltage applied is too low (contactor does not close properly and is continuously operated with overexcitation).
- Low control power consumption when closing and in the closed state.

Electromagnetic compatibility (EMC)

The contactors with solid-state operating mechanism conform to the requirements for operation in industrial plants:

- Interference immunity
  - Burst (IEC 61000-4-4): 4 kV
  - Surge (IEC 61000-4-5): 4 kV
  - Electrostatic discharge, ESD (IEC 61000-4-2): 8/15 kV
  - Electromagnetic field (IEC 61000-4-3): 10 V/m
- Emitted interference
  - Limit value class A according to EN 55011

Note:

In connection with converters, the control cables must be routed separately from the load cables to the converter.

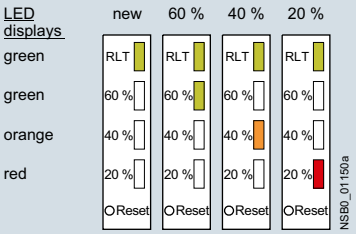
Indication of remaining lifetime (RLT)

Main contactor contacts are working parts which therefore must be replaced in good time when the end of their service life has been reached. The degree of contact erosion and thus the electrical endurance (= number of operating cycles) depends on the loading, utilization category, operating mode, etc. Up to now, routine checks or visual inspections by the maintenance personnel were needed in order to gain an insight into the state of the main contacts.

The remaining lifetime indication function now takes over this task. It does not count the number of operating cycles – which does not provide information about contact erosion – but instead electronically identifies, evaluates and stores the actual progress of erosion of each one of the three main contacts, and outputs a warning when specified limits are reached. The stored data are not lost even if the control supply voltage for A1/A2 fails. After replacement of the main contacts, measurement of the remaining lifetime must be reset using the "RESET" button (hold down RESET button for about 2 s using a pen or similar tool).

Advantages:

- Additional visual display of various levels of erosion by means of LEDs on the laterally mounted solid-state module when remaining lifetime is 60 % (green), 40 % (orange) and 20 % (red).

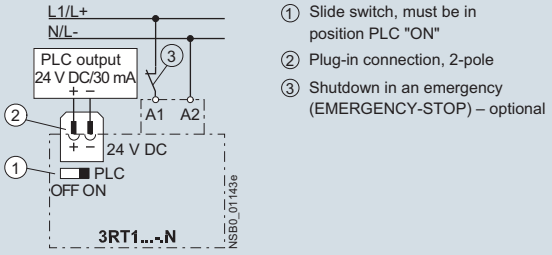


- Early warning to replace contacts
- Optimum utilization of contact material
- Visual inspection of the condition of contacts no longer necessary
- Reduction of ongoing operating costs
- Optimum planning of maintenance measures
- Avoidance of unforeseen plant downtimes

3RT1. . .-.N version: for 24 V DC PLC output

2 control options:

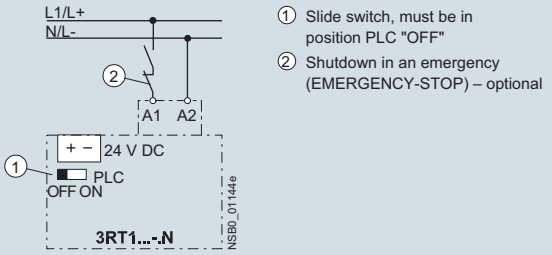
- Control without a coupling link directly through a 24 V DC/≥ 30 mA PLC output (IEC 61131-2). Connection by means of 2-pole plug-in connection. The screwless spring-type connection is part of the scope of supply. The control supply voltage which supplies the solenoid operating mechanism must be connected to A1/A2.



Note:

Before start-up, the slide switch for PLC operation must be moved to the "PLC ON" position (setting ex works: "PLC OFF").

- Conventional control by applying the control supply voltage at A1/A2 through a switching contact.



Note:

The slide switch must be in the "PLC OFF" position (= setting ex works).

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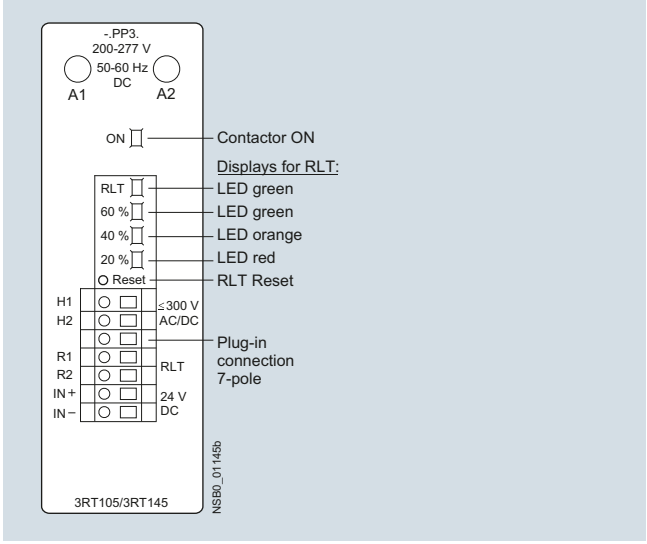
3RT1. ..-.P version: for 24 V DC PLC output or PLC relay output, with remaining lifetime indicator (RLT)

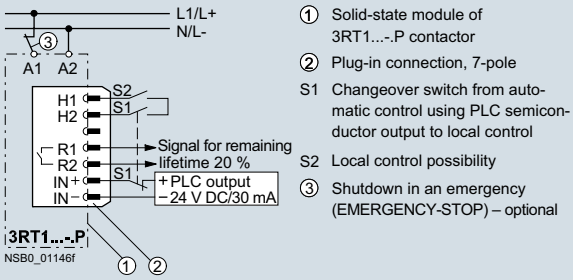


To supply the solenoid and the remaining lifetime indicator with power, the control supply voltage U_S must be connected to terminals A1/A2 of the laterally mounted electronic module. The control inputs of the contactor are connected to a 7-pole plug-in connection; the screwless spring-type connection is part of the scope of supply.

- The "Remaining Lifetime RLT" status signal is available at terminals R1/R2 through a floating relay contact (hard gold-plated, enclosed) and can be input to SIMOCODE, PLC or other devices for processing, for example.
  Permissible current-carrying capacity of the R1/R2 relay output:
  - I_e/AC-15/24 to 230 V: 3 A
  - I_e/DC-13/24 V: 1 A
- LED displays
  The following states are indicated by means of LEDs on the laterally mounted solid-state module:
  - Contactor ON (energized state): green LED ("ON")
  - Indication of remaining lifetime

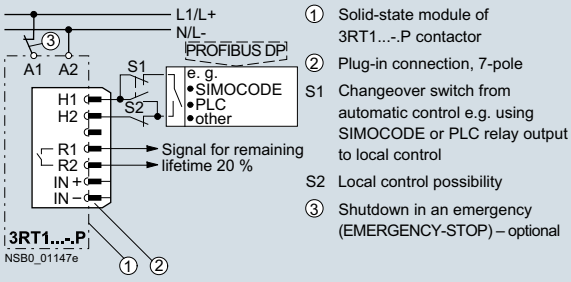
2 control options:

- Contactor control without a coupling link directly through a 24 V DC/≥ 30 mA PLC output (IEC 61131-2) by way of terminals IN+/IN-.



Possibility of switching from automatic control to local control by way of terminals H1/H2, i.e. automatic control through PLC or SIMOCODE/PROFIBUS DP can be deactivated e.g. at start-up or in the event of a fault and the contactor can be controlled manually.

- Contactor control through relay outputs at connections H1/H2, e.g. by
  - PLC or
  - SIMOCODE



Contact loading: U_S/approx. 5 mA

When operated through SIMOCODE, a communication link to PROFIBUS DP is also provided.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS power contactors	**3 R T**															
1st generation		**1**														
Device type (e.g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)			□													
Size of the contactor (3 = S2, 4 = S3, 5 = S6, etc.)				□												
Power dependent on size (e.g. 45 = 37 kW)					□											
Connection type (1 = screw, 3 = spring)							□									
Operating range / solenoid coil circuit (e.g. A = AC standard / without)								□								
Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)									□	□						
Auxiliary switches (e.g. 0 = without auxiliary switches)											□					
Special version													□	□	□	□
Example	**3 R T**	**1**	**0**	**4**	**5**	**–**	**1**	**A**	**P**	**0**	**0**					

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog and in the Industry Mall.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Technical specifications

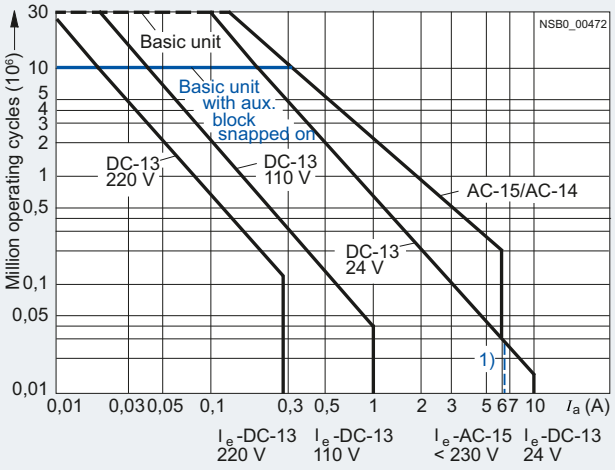
Type			3RT1
Size			S2 to S12
Rated data of the auxiliary contacts			
Acc. to IEC 60947-5-1/EN 60947-5-1 The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S12			
Rated insulation voltage U_i (pollution degree 3)		V	690
• For laterally mountable auxiliary switch blocks		V	500
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10
AC load			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	Up to 230 V	A	6
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V[2]	A	1
	690 V[2]	A	1
DC load			
Rated operational current I_e/DC-12			
• For rated operational voltage U_e	24 V	A	10
	60 V	A	6
	110 V	A	3
	125 V	A	2
	220 V	A	1
	440 V	A	0.3
	600 V[2]	A	0.15
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	10[1]
	60 V	A	2
	110 V	A	1
	125 V	A	0.9
	220 V	A	0.3
	440 V	A	0.14
	600 V[2]	A	0.1
Contact reliability at 17 V, 1 mA According to IEC 60947-5-4/EN 60947-5-4			Frequency of contact faults < 10^{-8} i.e. < 1 fault per 100 million operating cycles

Contact endurance of the auxiliary contacts

It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

The characteristic curves apply to:
- Integrated auxiliary contacts on 3RT10
- 3RH1911, 3RH1921 auxiliary switch blocks[1)]



1) For mountable auxiliary switch blocks size S00 and laterally mountable auxiliary switch blocks size S0 to S12: DC-13 max. 6 A.

2) For laterally mountable auxiliary switch blocks, only the rated operational voltages up to 500 V apply.

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Type	3RT1
Size	S2 and S3

Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- C Inching operations as a percentage of total switching operations

Size S2

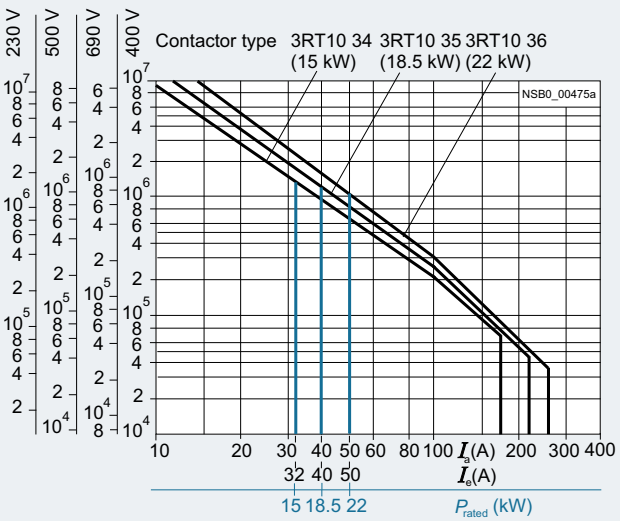

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

Size S3

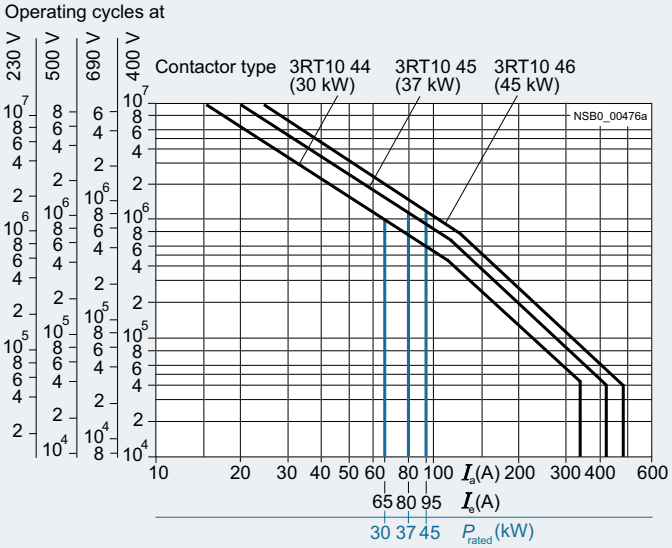

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type	**3RT1**
Size	**S6 to S12**

Contact endurance of the main contacts

Sizes S6 to S12

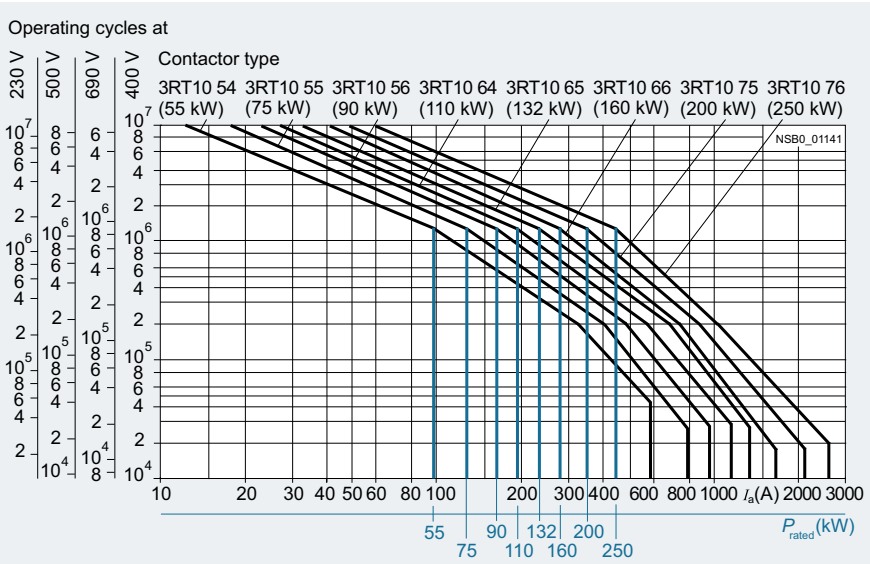

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

3RT12 vacuum contactors · Sizes S10 and S12

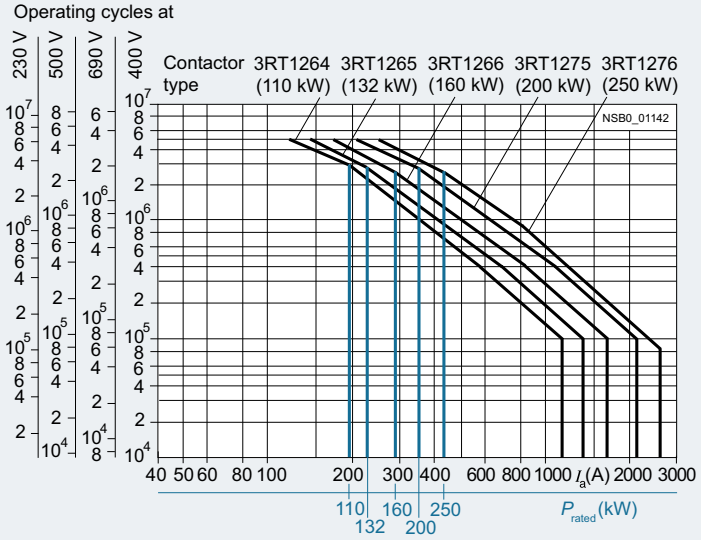

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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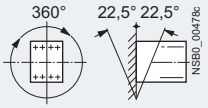
SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type			**3RT1034**	**3RT1035**	**3RT1036**	**3RT1044**	**3RT1045**	**3RT1046**
Size			**S2**			**S3**		
Dimensions (W x H x D), AC operation		mm	55 x 112 x 110			70 x 146 x 134		
• With mounted auxiliary switch block		mm	55 x 112 x 159			70 x 146 x 183		
Dimensions (W x H x D), DC operation			55 x 112 x 125			70 x 146 x 147		
• With mounted auxiliary switch block			55 x 112 x 174			70 x 146 x 196		
General data								
Permissible mounting position								
The contactors are designed for operation on a vertical mounting surface.								
For DC operation and up to 22.5° inclination in front, the coil operating range is reduced to 0.85 ... 1.1 x U_S.								
Upright mounting position			Special version required.					
Mechanical endurance								
• Basic units	Operating cycles		10 million					
• Basic units with snap-on auxiliary switch block	Operating cycles		10 million					
• Solid-state compatible auxiliary switch blocks	Operating cycles		5 million					
Electrical endurance			[1]					
Rated insulation voltage U_i (pollution degree 3)		V	690			1 000		
Rated impulse withstand voltage U_{imp}		kV	6			6		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400			690		
Mirror contacts								
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.								
• With removable auxiliary switch block			Yes, acc. to IEC 60947-4-1, Appendix F					
• With non-removable auxiliary switch block			Acc. to Swiss regulations (SUVA) on request					
Permissible ambient temperature								
• During operation		°C	-25 ... +60					
• During storage		°C	-55 ... +80					
Degree of protection acc. to IEC 60947-1, Appendix C			IP20					
• Connection range			IP00/open (where applicable, use additional terminal covers)					
Touch protection acc. to EN 50274			Finger-safe only for vertical contact from the front					
Shock resistance (AC and DC operation)								
• Rectangular pulse		*g*/ms	10/5 and 5/10			6.8/5 and 4/10		
• Sine pulse		*g*/ms	15/5 and 8/10			10.6/5 and 6.2/10		
Conductor cross-sections			[2]					
Short-circuit protection for contactors without overload relays								
Main circuit								
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1								
• Type of coordination "1"		A	125	125	160	250	250	
• Type of coordination "2"		A	63	63	80	125	160	
• Weld-free[3]		A	16	16	50	63	100	
Auxiliary circuit								
Short-circuit test								
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10					
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A		A	10					
Short-circuit protection for contactors with overload relays			See Configuration Manual "Configuring SIRIUS"[4]					
Short-circuit protection for fuseless load feeders			See Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA1 Load Feeders"					

1) For contact endurance of the main contacts see page 3/69.
2) For conductor cross-sections, see page 3/75.
3) Test conditions according to IEC 60947-4-1.
4) See http://support.automation.siemens.com/WW/view/en/40625241

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size			3RT1034 S2	3RT1035 S2	3RT1036 S2	3RT1044 S3	3RT1045 S3	3RT1046 S3
Control								
Solenoid coil operating range	AC/DC[1]		0.8 ... 1.1 x U_s					
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)								
• AC operation, 50 Hz, standard version								
- Closing		VA	104	145		218	270	
- P.f.			0.78	0.79		0.61	0.68	
- Closed		VA	9.7	12.5		21	22	
- P.f.			0.42	0.36		0.26	0.27	
• AC operation, 50/60 Hz, standard version								
- Closing		VA	127/113	170/155		247/211	298/274	
- P.f.			0.73/0.69	0.76/0.72		0.62/0.57	0.7/0.62	
- Closed		VA	11.3/9.5	15/11.8		25/18	27/20	
- P.f.			0.41/0.42	0.35/0.38		0.27/0.3	0.29/0.31	
• AC operation, 50 Hz, for USA/Canada								
- Closing		VA	108	150		218	270	
- P.f.			0.76	0.77		0.61	0.68	
- Closed		VA	9.6	12.5		21	22	
- P.f.			0.42	0.35		0.26	0.27	
• AC operation, 60 Hz, for USA/Canada								
- Closing		VA	120	166		232	300	
- P.f.			0.7	0.71		0.55	0.52	
- Closed		VA	10.1	12.6		20	21	
- P.f.			0.42	0.37		0.28	0.29	
• DC operation								
- Closing = Closed		W	13.3	13.3		15	15	
Permissible residual current of the electronics (with 0 signal)								
• AC operation		mA	<12 mA x (230 V/U_s)	<18 mA x (230 V/U_s)		<25 mA x (230 V/U_s)		
• DC operation		mA	<38 mA x (24 V/U_s)	<38 mA x (24 V/U_s)		<43 mA x (24 V/U_s)		
Operating times for 0.8 ... 1.1 x U_s[2] (Total break time = Opening delay + Arcing time)								
• AC operation								
- Closing delay		ms	11 ... 30	10 ... 24		16 ... 57	17 ... 90	
- Opening delay		ms	7 ... 10	7 ... 10		10 ... 19	10 ... 25	
• DC operation								
- Closing delay		ms	50 ... 95	60 ... 100		90 ... 230	90 ... 230	
- Opening delay		ms	20 ... 30	20 ... 25		14 ... 20	14 ... 20	
• Arcing time		ms	10	10		10 ... 15	10 ... 15	
Operating times for 1.0 x U_s[2]								
• AC operation								
- Closing delay		ms	13 ... 22	12 ... 20		18 ... 34	18 ... 30	
- Opening delay		ms	7 ... 10	7 ... 10		11 ... 18	11 ... 23	
• DC operation								
- Closing delay		ms	60 ... 75	70 ... 85		100 ... 120	100 ... 120	
- Opening delay		ms	20 ... 30	20 ... 25		16 ... 20	16 ... 20	

[1] For DC operation and up to 22.5° inclination in front, the coil operating range is reduced to 0.85 ... 1.1 x U_s (see also permissible mounting position, page 3/71).

[2] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

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Type Size		3RT1034 S2	3RT1035 S2	3RT1036 S2	3RT1044 S3	3RT1045 S3	3RT1046 S3
Main circuit							
Load rating with AC							
Utilization category AC-1 **Switching resistive loads**							
• Rated operational currents I_e							
- At 40 °C up to 690 V	A	50	60	60	100	120	120
- At 40 °C up to 1 000 V	A	--	--	--	50	60	70
- At 60 °C up to 690 V	A	45	55	55	90	100	100
- At 60 °C up to 1 000 V	A	--	--	--	40	50	60
• Rated power for AC loads[1] with p.f.= 0.95 (at 60 °C)							
- At 230 V	kW	18	22	22	34	38	38
- At 400 V	kW	31	38	38	59	66	66
- At 500 V	kW	39	46	46	74	82	82
- At 690 V	kW	54	66	66	102	114	114
- At 1 000 V	kW	--	--	--	66	82	98
• Minimum conductor cross-section for loads with I_e							
- At 40 °C	mm^2	16	16	16	35	50	50
- At 60 °C	mm^2	10	16	16	35	35	35
Utilization categories AC-2 and AC-3							
• Rated operational currents I_e							
- Up to 500 V	A	32	40	50	65	80	95
- At 690 V	A	20	24	24	47	58	58
- At 1 000 V	A	--	--	--	25	30	30
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz							
- At 230 V	kW	7.5	11	15	18.5	22	22
- At 400 V	kW	15	18.5	22	30	37	45
- At 500 V	kW	18.5	22	30	37	45	55
- At 690 V	kW	18.5	22	22	45	55	55
- At 1 000 V	kW	--	--	--	30	37	37
Thermal load capacity, 10 s current[2]	A	320	400	400	600	760	760
Power loss per conducting path at I_e/AC-3	W	1.8	2.6	5	4.6	7.7	10.8
Utilization category AC-4 (for $I_a = 6 \times I_e$)							
• Rated operational current I_e, maximum							
- Up to 400 V	A	29	35	41	55	66	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 400 V	kW	15	18.5	22	30	37	45
The following applies to a contact endurance of about 200 000 operating cycles:							
• Rated operational currents I_e							
- Up to 400 V	A	15.6	18.5	24	28	34	42
- Up to 690 V	A	15.6	18.5	24	28	34	42
- Up to 1 000 V	A	--	--	--	20	23	23
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 230 V	kW	4.7	5.4	7.3	8.7	10.4	12
- At 400 V	kW	8.2	9.5	12.6	15.1	17.9	22
- At 500 V	kW	9.8	11.8	15.8	18.4	22.4	27
- At 690 V	kW	13	15.5	21.8	25.4	30.9	38
- At 1 000 V	kW	--	--	--	22	30	30

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size			3RT1034 S2	3RT1035 S2	3RT1036 S2	3RT1044 S3	3RT1045 S3	3RT1046 S3
Main circuit								
Load rating with DC								
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)								
• Rated operational currents I_e (at 60 °C)								
- 1 conducting path	Up to 24 V	A	45	55	55	90	100	100
	60 V	A	20	23	23	23	60	60
	110 V	A	4.5	4.5	4.5	4.5	9	9
	220 V	A	2	2	2	1	2	2
	440 V	A	0.4	0.4	0.4	0.4	0.6	0.6
	600 V	A	0.25	0.25	0.25	0.26	0.4	0.4
- 2 conducting paths in series	Up to 24 V	A	45	55	55	90	100	100
	60 V	A	45	45	45	90	100	100
	110 V	A	45	45	45	90	100	100
	220 V	A	5	5	5	5	10	10
	440 V	A	1	1	1	1	1.8	1.8
	600 V	A	0.8	0.8	0.8	0.8	1	1
- 3 conducting paths in series	Up to 24 V	A	45	55	55	90	100	100
	60 V	A	45	55	55	90	100	100
	110 V	A	45	55	55	90	100	100
	220 V	A	45	45	45	70	80	80
	440 V	A	2.9	2.9	2.9	2.9	1.8	4.5
	600 V	A	1.4	1.4	1.4	1.4	1	2.6
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)								
• Rated operational currents I_e (at 60 °C)								
- 1 conducting path	Up to 24 V	A	35	35	35	40	40	40
	60 V	A	6	6	6	6	6.5	6.5
	110 V	A	2.5	2.5	2.5	2.5	2.5	2.5
	220 V	A	2	2	2	1	1	1
	440 V	A	0.1	0.1	0.1	0.15	0.15	0.15
	600 V	A	0.06	0.06	0.06	0.06	0.06	0.06
- 2 conducting paths in series	Up to 24 V	A	45	55	55	90	100	100
	60 V	A	45	45	45	90	100	100
	110 V	A	25	25	25	90	100	100
	220 V	A	5	5	5	7	7	7
	440 V	A	0.27	0.27	0.27	0.42	0.42	0.42
	600 V	A	0.16	0.16	0.16	0.16	0.16	0.16
- 3 conducting paths in series	Up to 24 V	A	45	55	55	90	100	100
	60 V	A	45	55	55	90	100	100
	110 V	A	45	55	55	90	100	100
	220 V	A	25	25	25	35	35	35
	440 V	A	0.6	0.6	0.6	0.8	0.8	0.8
	600 V	A	0.6	0.6	0.6	0.35	0.35	0.35
Switching frequency								
Switching frequency z in operating cycles/hour								
Contactors without overload relays								
• No-load switching frequency AC		h^{-1}	5 000			5 000		
• No-load switching frequency DC		h^{-1}	1 500			1 000		
• Switching frequency *z* during rated operation[1]								
- I_e/AC-1	At 400 V	h^{-1}	1 200	1 200	1 000	1 000	900	900
- I_e/AC-2	At 400 V	h^{-1}	750	600	400	400	400	350
- I_e/AC-3	At 400 V	h^{-1}	1 000	1 000	800	1 000	1000	850
- I_e/AC-4	At 400 V	h^{-1}	250	300	300	300	300	250
Contactors with overload relays								
• Mean value		h^{-1}	15					

[1] Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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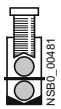
Type Size		3RT103. S2	3RT104. S3
Conductor cross-sections			
Main conductors (1 or 2 conductors can be connected)		**Screw terminals**	
Box terminals			
• Terminal screws - Tightening torque	Nm lb.in	3 ... 4.5 27 ... 40	4 ... 6 36 ... 53
Front clamping point connected			
 NSB0_00479			
• Finely stranded with end sleeve	mm^2	0.75 ... 25	2.5 ... 35
• Finely stranded without end sleeve	mm^2	0.75 ... 25	10 ... 50
• Stranded	mm^2	0.75 ... 35	10 ... 70
• Solid	mm^2	0.75 ... 16	2.5 ... 16
• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
Rear clamping point connected			
 NSB0_00480			
• Finely stranded with end sleeve	mm^2	0.75 ... 25	2.5 ... 50
• Finely stranded without end sleeve	mm^2	0.75 ... 25	10 ... 50
• Stranded	mm^2	0.75 ... 35	10 ... 70
• Solid	mm^2	0.75 ... 16	2.5 ... 16
• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
Both clamping points connected			
 NSB0_00481			
• Finely stranded with end sleeve	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 35)
• Finely stranded without end sleeve	mm^2	2 x (0.75 ... 16)	2 x (10 ... 35)
• Stranded	mm^2	2 x (0.75 ... 25)	2 x (10 ... 50)
• Solid	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• AWG cables, solid or stranded	AWG	2 x (18 ... 2)	2 x (10 ... 1/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Busbar connection (bored copper bars)[1]			
Connecting bar (max. width)	mm	--	10
Cable lug connection (without box terminals)[2]			
• Finely stranded with cable lug	mm^2	--	10 ... 50[3]
• Stranded with cable lug	mm^2	--	10 ... 70[3]
• AWG cables, solid or stranded	AWG	--	7 ... 1/0
• Terminal screws		--	M6
Auxiliary conductors			
• Solid	mm^2	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]; max. 2 x (0.75 ... 4)	
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]	
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[4]; 2 x (18 ... 14)[4]; 1 x 12	
• Terminal screws - Tightening torque	 Nm lb.in	M3 0.8 ... 1.2 7 ... 10.3	
Auxiliary conductors[5]		**Spring-type terminals**	
• Operating devices[6]		3.0 x 0.5; 3.5 x 0.5	
• Solid	mm^2	2 x (0.25 ... 2.5)	
• Finely stranded with end sleeve	mm^2	2 x (0.25 ... 1.5)	
• Finely stranded without end sleeve	mm^2	2 x (0.25 ... 2.5)	
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)	

1) If bars larger than 12 mm x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

2) When connecting conductors which are larger than 25 mm^2, the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

3) Only with crimped cable lugs according to DIN 46234, max. 20 mm wide.

4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

5) Max. external diameter of the cable insulation: 3.6 mm.
An "insulation stop" must be used for conductor cross-sections ≤ 1 mm^2;
see "Accessories" on page 3/111.

6) Tool for opening the spring-type terminals,
see Accessories, page 3/111.

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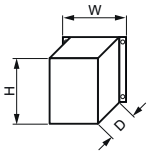
SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

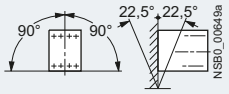
Type			3RT1054	3RT1055, 3RT1056	3RT1064, 3RT1065, 3RT1066	3RT1075	3RT1076
Size			S6		S10	S12	
Dimensions (W x H x D)		mm	120 x 172 x 170		145 x 210 x 202	160 x 214 x 225	
• With mounted auxiliary switch block		mm	120 x 172 x 217		145 x 210 x 251	160 x 214 x 271	



General data

Permissible mounting position

The contactors are designed for operation on a vertical mounting surface.



Mechanical endurance	Operating cycles	10 million					
Electrical endurance		[1]					
Rated insulation voltage U_i (pollution degree 3)	V	1 000					
Rated impulse withstand voltage U_{imp}	kV	8					
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	690					
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.		Yes, acc. to IEC 60947-4-1, Appendix F					
Permissible ambient temperature							
• During operation	°C	-25 ... +60					
• During operation, with AS-Interface interface	°C	-25 ... +55					
• During storage	°C	-55 ... +80					
Degree of protection acc. to IEC 60947-1, Appendix C		IP00/open (where applicable, use additional terminal covers)					
Touch protection acc. to EN 50274		Finger-safe only for vertical contact from the front					
Shock resistance							
• Rectangular pulse	*g*/ms	8.5/5 and 4.2/10					
• Sine pulse	*g*/ms	13.4/5 and 6.5/10					
Conductor cross-sections		[2]					
Electromagnetic compatibility (EMC)		[3]					

Short-circuit protection

Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"	A	355	355	500	630	630
• Type of coordination "2"	A	315	315	400	500	500
• Weld-free[4]	A	80	160	250	250	315
Auxiliary circuit Short-circuit test						
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	10				
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A	A	10				
Short-circuit protection for contactors with overload relays		See Configuration Manual "Configuring SIRIUS"[5]				

1) For contact endurance of the main contacts see page 3/70.
2) For conductor cross-sections, see page 3/80.
3) For electromagnetic compatibility (EMC) see page 3/66.
4) Test conditions according to IEC 60947-4-1.
5) See http://support.automation.siemens.com/WW/view/en/40625241

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size		3RT105. S6	3RT106. S10	3RT107. S12
Control				
Operating range of the solenoid AC/DC (UC)		0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid operation (when coil is cold and rated range $U_{s\,min}$ ... $U_{s\,max}$)				
Conventional operating mechanisms				
• AC operation				
- Closing at $U_{s\,min}$	VA/p.f.	250/0.9	490/0.9	700/0.9
- Closing at $U_{s\,max}$	VA/p.f.	300/0.9	590/0.9	830/0.9
- Closed at $U_{s\,min}$	VA/p.f.	4.8/0.8	5.6/0.9	7.6/0.9
- Closed at $U_{s\,max}$	VA/p.f.	5.8/0.8	6.7/0.9	9.2/0.9
• DC operation				
- Closing at $U_{s\,min}$	W	300	540	770
- Closing at $U_{s\,max}$	W	360	650	920
- Closed at $U_{s\,min}$	W	4.3	6.1	8.5
- Closed at $U_{s\,max}$	W	5.2	7.4	10
Solid-state operating mechanism				
• AC operation				
- Closing at $U_{s\,min}$	VA/p.f.	190/0.8	400/0.8	560/0.8
- Closing at $U_{s\,max}$	VA/p.f.	280/0.8	530/0.8	750/0.8
- Closed at $U_{s\,min}$	VA/p.f.	3.5/0.5	4/0.5	5.4/0.8
- Closed at $U_{s\,max}$	VA/p.f.	4.4/0.4	5/0.4	7/0.8
• DC operation				
- Closing at $U_{s\,min}$	W	250	440	600
- Closing at $U_{s\,max}$	W	320	580	800
- Closed at $U_{s\,min}$	W	2.3	3.2	4
- Closed at $U_{s\,max}$	W	2.8	3.8	5
PLC control input acc. to IEC 61131-2		Type 2		
• Rated voltage	V DC	24		
• Operating range	V DC	17 ... 30		
• Power consumption	mA	≤ 30		
Operating times (Total break time = Opening delay + Arcing time)				
Conventional operating mechanisms				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	20 ... 95	30 ... 95	45 ... 100
- Opening delay	ms	40 ... 60	40 ... 80	60 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	25 ... 50	35 ... 50	50 ... 70
- Opening delay	ms	40 ... 60	50 ... 80	70 ... 100
Solid-state operating mechanism, actuated via A1/A2				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	95 ... 135	105 ... 145	120 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	100 ... 120	110 ... 130	125 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
Solid-state operating mechanism, actuated via PLC input				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	35 ... 75	45 ... 80	60 ... 90
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	40 ... 60	50 ... 65	65 ... 80
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• Arcing time	ms	10 ... 15	10 ... 15	10 ... 15

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size		3RT1054 S6	3RT1055 S6	3RT1056 S6	3RT1064 S10	3RT1065 S10	3RT1066 S10	3RT1075 S12	3RT1076 S12
Main circuit									
Load rating with AC									
Utilization category AC-1 **Switching resistive loads**									
• Rated operational currents I_e									
- At 40 °C up to 690 V	A	160	185	215	275	330		430	610
- At 60 °C up to 690 V	A	140	160	185	250	300		400	550
- At 60 °C up to 1 000 V	A	80	90	100	100	150		200	200
• Rated power for AC loads[1] with p.f. = 0.95 (at 60 °C)									
- At 230 V	kW	53	60	70	94	113		151	208
- At 400 V	kW	92	105	121	164	197		263	362
- At 500 V	kW	115	131	152	205	246		329	452
- At 690 V	kW	159	181	210	283	340		454	624
- At 1 000 V	kW	131	148	165	164	246		329	329
• Minimum conductor cross-section for loads with I_e									
- At 40 °C	mm^2	70	95	95	150	185		2 x 150	2 x 185
- At 60 °C	mm^2	50	70	95	120	185		240	2 x 185
Utilization categories AC-2 and AC-3									
• Rated operational currents I_e									
- Up to 500 V	A	115	150	185	225	265	300	400	500
- At 690 V	A	115	150	170	225	265	280	400	450
- At 1 000 V	A	53	65	65	68	95	95	180	180
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz									
- At 230 V	kW	37	50	61	73	85	97	132	164
- At 400 V	kW	64	84	104	128	151	171	231	291
- At 500 V	kW	81	105	132	160	189	215	291	363
- At 690 V	kW	113	146	167	223	265	280	400	453
- At 1 000 V	kW	75	90	90	90	132	132	250	250
Thermal load capacity, 10 s current[2]	A	1 100	1 300	1 480	1 800	2 400	2 400	3 200	4 000
Power loss per main conducting path at I_e/AC-3/500 V	W	7	9	13	17	18	22	35	55
Utilization category AC-4 (for $I_a = 6 \times I_e$)									
• Rated operational current I_e, maximum									
- Up to 400 V	A	97	132	160	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 400 V	kW	55	75	90	110	132	160	200	250
The following applies to a contact endurance of about 200 000 operating cycles:									
• Rated operational currents I_e									
- Up to 500 V	A	54	68	81	96	117	125	150	175
- Up to 690 V	A	48	57	65	85	105	115	135	150
- Up to 1 000 V	A	34	38	42	42	57	57	80	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 230 V	kW	16	20	25	30	37	40	48	56
- At 400 V	kW	29	38	45	54	66	71	85	98
- At 500 V	kW	37	47	57	67	82	87	105	123
- At 690 V	kW	48	55	65	82	102	112	133	148
- At 1 000 V	kW	49	55	60	59	80	80	113	113

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".

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Type Size			3RT1054 S6	3RT1055 S6	3RT1056 S6	3RT1064 S10	3RT1065 S10	3RT1066 S10	3RT1075 S12	3RT1076 S12
Main circuit										
Load rating with DC										
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)										
• Rated operational currents I_e (at 60 °C)										
- 1 conducting path	Up to 24 V	A	160			200	300		400	
	60 V	A	160			200	300		330	
	110 V	A	18			18	33		33	
	220 V	A	3.4			3.4	3.8		3.8	
	440 V	A	0.8			0.8	0.9		0.9	
	600 V	A	0.5			0.5	0.6		0.6	
- 2 conducting paths in series	Up to 24 V	A	160			200	300		400	
	60 V	A	160			200	300		400	
	110 V	A	160			200	300		400	
	220 V	A	20			20	300		400	
	440 V	A	3.2			3.2	4		4	
	600 V	A	1.6			1.6	2		2	
- 3 conducting paths in series	Up to 24 V	A	160			200	300		400	
	60 V	A	160			200	300		400	
	110 V	A	160			200	300		400	
	220 V	A	160			200	300		400	
	440 V	A	11.5			11.5	11		11	
	600 V	A	4			4	5.2		5.2	
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)										
• Rated operational currents I_e (at 60 °C)										
- 1 conducting path	Up to 24 V	A	160			200	300		400	
	60 V	A	7.5			7.5	11		11	
	110 V	A	2.5			2.5	3		3	
	220 V	A	0.6			0.6	0.6		0.6	
	440 V	A	0.17			0.17	0.18		0.18	
	600 V	A	0.12			0.12	0.125		0.125	
- 2 conducting paths in series	Up to 24 V	A	160			200	300		400	
	60 V	A	160			200	300		400	
	110 V	A	160			200	300		400	
	220 V	A	2.5			2.5	2.5		2.5	
	440 V	A	0.65			0.65	0.65		0.65	
	600 V	A	0.37			0.37	0.37		0.37	
- 3 conducting paths in series	Up to 24 V	A	160			200	300		400	
	60 V	A	160			200	300		400	
	110 V	A	160			200	300		400	
	220 V	A	160			200	300		400	
	440 V	A	1.4			1.4	1.4		1.4	
	600 V	A	0.75			0.75	0.75		0.75	
Switching frequency										
Switching frequency z in operating cycles/hour										
Contactors without overload relays										
• No-load switching frequency		h^{-1}	2 000							
• Switching frequency *z* during rated operation[1]										
- I_e/AC-1	At 400 V	h^{-1}	800	800		750	800	750	700	500
- I_e/AC-2	At 400 V	h^{-1}	400	300		250	300	250	200	170
- I_e/AC-3	At 400 V	h^{-1}	1 000	750		500	700	500	500	420
- I_e/AC-4	At 400 V	h^{-1}	130	130		130	130	130	130	130
Contactors with overload relays										
• Mean value		h^{-1}	60							

[1] Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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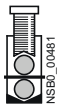
SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size			3RT105. S6		3RT106. S10	3RT107. S12
Conductor cross-sections						
Main conductors (1 or 2 conductors can be connected)			**Screw terminals**			
With mounted box terminals		Type	3RT19 55-4G (55 kW)	3RT19 56-4G	3RT19 66-4G	
• Terminal screws			M10 (hexagon socket, A/F 4)	M10 (hexagon socket, A/F 4)	M12 (hexagon socket, A/F 5)	
- Tightening torque		Nm lb.in	10 ... 12 90 ... 110	10 ... 12 90 ... 110	20 ... 22 180 ... 195	
Front clamping point connected						
NSB0_00479						
• Finely stranded with end sleeve		mm^2	16 ... 70	16... 120	70 ... 240	
• Finely stranded without end sleeve		mm^2	16 ... 70	16 ... 120	70 ... 240	
• Stranded		mm^2	16 ... 70	16 ... 120	95 ... 300	
• AWG cables, solid or stranded		AWG	6 ... 2/0	6 ... 250 kcmil	3/0 ... 600 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Rear clamping point connected						
NSB0_00480						
• Finely stranded with end sleeve		mm^2	16 ... 70	16... 120	120 ... 185	
• Finely stranded without end sleeve		mm^2	16 ... 70	16 ... 120	120 ... 185	
• Stranded		mm^2	16 ... 70	16 ... 120	120 ... 240	
• AWG cables, solid or stranded		AWG	6 ... 2/0	6 ... 250 kcmil	250 ... 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Both clamping points connected[1]						
 NSB0_00481						
• Finely stranded with end sleeve		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Finely stranded without end sleeve		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Stranded		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 70, max. 2 x 240	
• AWG cables, solid or stranded		AWG	Max. 2 x 1/0	Max. 2 x 3/0	Min. 2 x 2/0, max. 2 x 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Max. 2 x (6 x 15.5 x 0.8)	Max. 2 x (10 x 15.5 x 0.8)	Max. 2 x (20 x 24 x 0.5)	
Busbar connections						
• Connecting bar (max. width)		mm	17		25	
Cable lug connection (without box terminals)						
• Finely stranded with cable lug[2)3)]		mm^2	16 ... 95		50 ... 240	
• Stranded with cable lug[2)3)]		mm^2	25 ... 120		70 ... 240	
• AWG cables, solid or stranded		AWG	4 ... 250 kcmil		2/0 ... 500 kcmil	
• Terminal screws			M8 x 25 (A/F 13)		M10 x 30 (A/F 17)	
- Tightening torque		Nm lb.in	10 ... 14 90 ... 124		14 ... 24 124 ... 210	
Auxiliary conductors						
• Solid		mm^2	2 x (0.5 ... 1.5)[4)]; 2 x (0.75 ... 2.5)[4)]; max. 2 x (0.75 ... 4)			
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[4)]; 2 x (0.75 ... 2.5)[4)]			
• AWG cables, solid or stranded		AWG	2 x (18 ... 14)			
• Terminal screws			M3 (Pozidriv size 2)			
- Tightening torque		Nm lb.in	0.8 ... 1.2 7 ... 10.3			
Auxiliary conductors[5)]			**Spring-type terminals**			
• Operating devices[6)]			3.0 x 0.5; 3.5 x 0.5			
• Solid		mm^2	2 x (0.25 ... 2.5)			
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)			
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)			
• AWG cables, solid or stranded		AWG	2 x (24 ... 14)			

1) Minimum cross-section 16 mm^2.

2) 3RT105.: When connecting cable lugs to DIN 46235, use 3RT1956-4EA1 terminal cover for conductor cross-sections of 95 mm^2 and more to ensure phase spacing.

3) 3RT106. and 3RT107.: When connecting cable lugs to DIN 46234, the 3RT1966-4EA1 terminal cover must be used for conductor cross-sections of 240 mm^2 and more as well as DIN 46235 for conductor cross-sections of 185 mm^2 and more to keep the phase clearance.

4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

5) Max. external diameter of the cable insulation: 3.6 mm.
An "insulation stop" must be used for conductor cross-sections ≤ 1 mm^2;
see "Accessories" on page 3/111.

6) Tool for opening the spring-type terminals,
see Accessories, page 3/111.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size			3RT1034 S2	3RT1035 S2	3RT1036 S2	3RT1044 S3	3RT1045 S3	3RT1046 S3
SR and UL rated data								
Rated insulation voltage		V AC	600			600		
Uninterrupted current, at 40 °C, open and enclosed		A	45	55	50	90	105	105
Maximum horsepower ratings (from SR and UL approved values)								
• Rated power for three-phase motors at 60 Hz								
- At 200 V		hp	10	10	15	20	25	30
- At 230 V		hp	10	15	15	25	30	30
- At 460 V		hp	25	30	40	50	60	75
- At 575 V		hp	30	40	50	60	75	100
Short-circuit protection[1]								
• At 600 V (contactor or overload relay)		kA	5	5	5	10	10	10
• CLASS RK5 fuse		A	125	150	200	250	300	350
• Circuit breakers with overload protection acc. to UL 489		A	125	150	200	250	300	400
• Combination motor controllers type E according to UL 508								
- At 480 V	Type		3RV103			3RV104		
		A	32	40	50	63	75	100
		kA	65	65	65	65	65	65
- At 600 V	Type		3RV104			3RV104		
		A	32	40	50	63	75	75
		kA	25	25	25	30	30	30
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--		2	--		3
• Uninterrupted current								
- Open		A	--		45	--		90
- Enclosed		A	--		45	--		90
• Rated power for three-phase motors at 60 Hz								
- At 200 V		hp	--		10	--		25
- At 230 V		hp	--		15	--		30
- At 460 V		hp	--		25	--		50
- At 575 V		hp	--		25	--		50
Overload relays	Type		3RU113			3RU114		
• Setting range		A	5.5 ... 50			18 ... 100		

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL reports on the individual devices, www.siemens.com/sirius/manuals.

For the dimensioning of load feeders, see also the UL guide "Industrial Control Panels for North America", www.siemens.com/sirius/ul-download.

Size			**S2 to S12** **Screw terminals and spring-type terminals** Snap-on auxiliary switch block (1- and 4-pole)	**S2 to S12** **Screw terminals and spring-type terminals** Laterally mountable auxiliary switch block
SR and UL rated data of the auxiliary contacts				
Rated voltage		V AC	600	600
Switching capacity			A 600, Q 600	A 300, Q 300
• Uninterrupted current at 240 V AC		A	10	10

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type Size			3RT1054 S6	3RT1055 S6	3RT1056 S6	3RT1064 S10	3RT1065 S10	3RT1066 S10
SR and UL rated data								
Rated insulation voltage		V AC	600			600		
Uninterrupted current, at 40 °C, open and enclosed		A	140	195	195	250	330	330
Maximum horsepower ratings (from SR and UL approved values)								
• Rated power for three-phase motors at 60 Hz								
- At 200 V		hp	40	50	60	60	75	100
- At 230 V		hp	50	60	75	75	100	125
- At 460 V		hp	100	125	150	150	200	250
- At 575 V		hp	125	150	200	200	250	300
Short-circuit protection[1]								
• At 600 V		kA	10	10	10	10	18	18
• CLASS RK5/L fuse		A	450	500	500	700	800	800
• Circuit breakers with overload protection acc. to UL 489		A	350	450	500	500	700	800
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--	4	--	--	--	5
• Uninterrupted current								
- Open		A	--	150	--	--	--	300
- Enclosed		A	--	135	--	--	--	270
• Rated power for three-phase motors at 60 Hz								
- At 200 V		hp	--	40	--	--	--	75
- At 230 V		hp	--	50	--	--	--	100
- At 460 V		hp	--	100	--	--	--	200
- At 575 V		hp	--	100	--	--	--	200
Overload relays	Type		3RB2056			3RB2066		

Type Size			3RT1075 S12	3RT1076 S12
SR and UL rated data				
Rated insulation voltage		V AC	600	
Uninterrupted current, at 40 °C, open and enclosed		A	400	540
Maximum horsepower ratings (from SR and UL approved values)				
• Rated power for three-phase motors at 60 Hz				
- At 200 V		hp	125	150
- At 230 V		hp	150	200
- At 460 V		hp	300	400
- At 575 V		hp	400	500
Short-circuit protection[1]				
• At 600 V		kA	18	30
• CLASS RK5/L fuse		A	1000	1200
• Circuit breakers with overload protection acc. to UL 489		A	900	900
NEMA/EEMAC ratings				
NEMA/EEMAC size		hp	--	6
• Uninterrupted current				
- Open		A	--	600
- Enclosed		A	--	540
• Rated power for three-phase motors at 60 Hz				
- At 200 V		hp	--	150
- At 230 V		hp	--	200
- At 460 V		hp	--	400
- At 575 V		hp	--	400
Overload relays	Type		3RB2066	

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL reports on the individual devices, www.siemens.com/sirius/manuals.

For the dimensioning of load feeders, see also the UL guide "Industrial Control Panels for North America", www.siemens.com/sirius/ul-download.

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Selection and ordering data

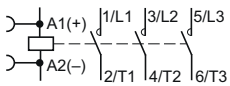
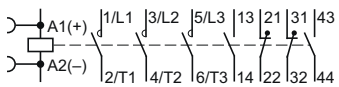
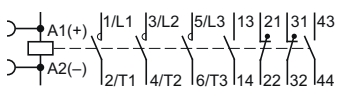
AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT103.-1A.00

3RT103.-3A.00

3RT103.-1A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Article No. / Price per PU		Article No. / Price per PU
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version						
500 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V AC				
For screw and snap-on mounting onto TH 35 standard mounting rail										
Size S2										
										
32	**15**	50	--	--	--	24	▶	**3RT1034-1AB00**	B	**3RT1034-3AB00**
						110	▶	**3RT1034-1AF00**	B	**3RT1034-3AF00**
						230	▶	**3RT1034-1AP00**	▶	**3RT1034-3AP00**
40	**18.5**	60	--	--	--	24	▶	**3RT1035-1AB00**	B	**3RT1035-3AB00**
						110	▶	**3RT1035-1AF00**	B	**3RT1035-3AF00**
						230	▶	**3RT1035-1AP00**	▶	**3RT1035-3AP00**
50	**22**	60	--	--	--	24	▶	**3RT1036-1AB00**	B	**3RT1036-3AB00**
						110	▶	**3RT1036-1AF00**	B	**3RT1036-3AF00**
						230	▶	**3RT1036-1AP00**	▶	**3RT1036-3AP00**
With mounted auxiliary switch block (removable)[2]										
										
32	**15**	50	**22**	2	2	24	▶	**3RT1034-1AB04**		--
						110	▶	**3RT1034-1AF04**		--
						230	▶	**3RT1034-1AP04**		--
40	**18.5**	60	**22**	2	2	24	▶	**3RT1035-1AB04**		--
						110	▶	**3RT1035-1AF04**		--
						230	▶	**3RT1035-1AP04**		--
50	**22**	60	**22**	2	2	24	▶	**3RT1036-1AB04**		--
						110	▶	**3RT1036-1AF04**		--
						230	▶	**3RT1036-1AP04**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
32	**15**	50	**22**	2	2	230	B	**3RT1034-1AP04-3MA0**		--
40	**18.5**	60	**22**	2	2	230	B	**3RT1035-1AP04-3MA0**		--
50	**22**	60	**22**	2	2	230	B	**3RT1036-1AP04-3MA0**		--

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/112.

For multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) Article No. for the auxiliary switch block (removable): 3RH1921-1HA22 (2 NO + 2 NC according to EN 50012; Ident. No. 22).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

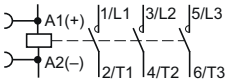
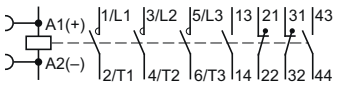
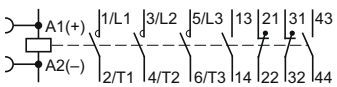
AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT104.-1A.00

3RT104.-3A.00

3RT104.-1A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminals	DT	Spring-type terminals for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. / Price per PU		Article No. / Price per PU
500 V	**400 V**	690 V		NO	NC					
A	**kW**	A				V AC				
For screw and snap-on mounting onto TH 35 and TH 75 standard mounting rail										
Size S3										
										
65	**30**	100	--	--	--	24	▶	**3RT1044-1AB00**	B	**3RT1044-3AB00**
						110	▶	**3RT1044-1AF00**	B	**3RT1044-3AF00**
						230	▶	**3RT1044-1AP00**	▶	**3RT1044-3AP00**
80	**37**	120	--	--	--	24	▶	**3RT1045-1AB00**	B	**3RT1045-3AB00**
						110	▶	**3RT1045-1AF00**	B	**3RT1045-3AF00**
						230	▶	**3RT1045-1AP00**	▶	**3RT1045-3AP00**
95	**45**	120	--	--	--	24	▶	**3RT1046-1AB00**	B	**3RT1046-3AB00**
						110	▶	**3RT1046-1AF00**	B	**3RT1046-3AF00**
						230	▶	**3RT1046-1AP00**	▶	**3RT1046-3AP00**
With mounted auxiliary switch block (removable)[2]										
										
65	**30**	100	**22**	2	2	24	▶	**3RT1044-1AB04**		--
						110	▶	**3RT1044-1AF04**		--
						230	▶	**3RT1044-1AP04**		--
80	**37**	120	**22**	2	2	24	B	**3RT1045-1AB04**		--
						110	▶	**3RT1045-1AF04**		--
						230	▶	**3RT1045-1AP04**		--
95	**45**	120	**22**	2	2	24	B	**3RT1046-1AB04**		--
						110	▶	**3RT1046-1AF04**		--
						230	▶	**3RT1046-1AP04**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
65	**30**	100	**22**	2	2	230	▶	**3RT1044-1AP04-3MA0**		--
80	**37**	120	**22**	2	2	230	B	**3RT1045-1AP04-3MA0**		--
95	**45**	120	**22**	2	2	230	▶	**3RT1046-1AP04-3MA0**		--

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/113.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) Article No. for the auxiliary switch block (removable): 3RH1921-1HA22 (2 NO + 2 NC according to EN 50012; Ident. No. 22).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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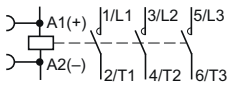
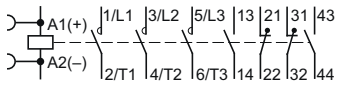
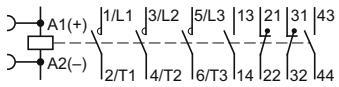
DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT103.-1B.40

3RT103.-3B.40

3RT103.-1B.44

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. Price per PU		Article No. Price per PU
500 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V DC				
For screw and snap-on mounting onto TH 35 standard mounting rail										
Size S2										
										
32	**15**	50	--	--	--	24 220	▶ B	**3RT1034-1BB40** **3RT1034-1BM40**	▶ B	**3RT1034-3BB40** **3RT1034-3BM40**
40	**18.5**	60	--	--	--	24 220	▶ B	**3RT1035-1BB40** **3RT1035-1BM40**	▶ B	**3RT1035-3BB40** **3RT1035-3BM40**
50	**22**	60	--	--	--	24 220	▶ B	**3RT1036-1BB40** **3RT1036-1BM40**	▶ B	**3RT1036-3BB40** **3RT1036-3BM40**
With mounted auxiliary switch block (removable)[2]										
										
32	**15**	50	**22**	2	2	24 220	▶ B	**3RT1034-1BB44** **3RT1034-1BM44**		-- --
40	**18.5**	60	**22**	2	2	24 220	▶ B	**3RT1035-1BB44** **3RT1035-1BM44**		-- --
50	**22**	60	**22**	2	2	24 220	▶ B	**3RT1036-1BB44** **3RT1036-1BM44**		-- --
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
32	**15**	50	**22**	2	2	24	B	**3RT1034-1BB44-3MA0**		--
40	**18.5**	60	**22**	2	2	24	B	**3RT1035-1BB44-3MA0**		--
50	**22**	60	**22**	2	2	24	B	**3RT1036-1BB44-3MA0**		--

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/113.

For multi-unit packing and reusable packaging
see Chapter 16, "Appendix" → "Ordering Notes".

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) Article No. for the auxiliary switch block (removable): 3RH1921-1HA22 (2 NO + 2 NC according to EN 50012; Ident. No. 22).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

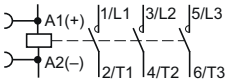
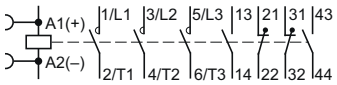
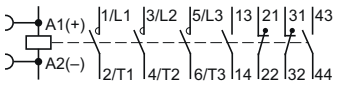
DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT104.-1B.40

3RT104.-3B.40

3RT104.-1B.44

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Article No. / Price per PU		Article No. / Price per PU
500 V	**400 V**	690 V		NO	NC					
A	**kW**	A				V DC				
For screw and snap-on mounting onto TH 35 and TH 75 standard mounting rail										
Size S3										
										
65	**30**	100	--	--	--	24	▶	**3RT1044-1BB40**	▶	**3RT1044-3BB40**
						220	B	**3RT1044-1BM40**	B	**3RT1044-3BM40**
80	**37**	120	--	--	--	24	▶	**3RT1045-1BB40**	▶	**3RT1045-3BB40**
						220	B	**3RT1045-1BM40**	B	**3RT1045-3BM40**
95	**45**	120	--	--	--	24	▶	**3RT1046-1BB40**	▶	**3RT1046-3BB40**
						220	B	**3RT1046-1BM40**	B	**3RT1046-3BM40**
With mounted auxiliary switch block (removable)[2]										
										
65	**30**	100	**22**	2	2	24	▶	**3RT1044-1BB44**		--
						220	B	**3RT1044-1BM44**		--
80	**37**	120	**22**	2	2	24	▶	**3RT1045-1BB44**		--
						220	B	**3RT1045-1BM44**		--
95	**45**	120	**22**	2	2	24	▶	**3RT1046-1BB44**		--
						220	B	**3RT1046-1BM44**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
65	**30**	100	**22**	2	2	24	▶	**3RT1044-1BB44-3MA0**		--
80	**37**	120	**22**	2	2	24	▶	**3RT1045-1BB44-3MA0**		--
95	**45**	120	**22**	2	2	24	▶	**3RT1046-1BB44-3MA0**		--

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/113.

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

[2] Article No. for the auxiliary switch block (removable): 3RH1921-1HA22 (2 NO + 2 NC according to EN 50012; Ident. No. 22).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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UC operating mechanism · AC/DC operation (50/60 Hz and DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT1054 (55 kW) box terminals[1)]

3RT105.

3RT106.

3RT107.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C Operational current I_e up to 500 V	Ratings[2)] of three-phase motors at 50 Hz and 230 V	400 V	500 V	690 V	AC-1, T_u: 40 °C Operational current I_e up to 690 V	Auxiliary contacts, lateral Version NO	NC	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A			V AC/DC						
Conventional operating mechanisms															
											Screw terminals				
S6	115	37	**55**	75	110	160	2	2	110 ... 127	▶	**3RT1054-1AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1054-1AP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	110 ... 127	▶	**3RT1055-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1055-6AP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	110 ... 127	▶	**3RT1056-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1056-6AP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	110 ... 127	▶	**3RT1064-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1064-6AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	▶	**3RT1065-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1065-6AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	▶	**3RT1066-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1066-6AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	110 ... 127	▶	**3RT1075-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1075-6AP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	110 ... 127	▶	**3RT1076-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1076-6AP36**		1	1 unit	41B
											Spring-type terminals for coil and auxiliary switch terminals				
S6	115	37	**55**	75	110	160	2	2	110 ... 127	B	**3RT1054-3AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1054-3AP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	110 ... 127	B	**3RT1055-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1055-2AP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	110 ... 127	B	**3RT1056-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1056-2AP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	110 ... 127	B	**3RT1064-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1064-2AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	B	**3RT1065-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1065-2AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	B	**3RT1066-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1066-2AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	110 ... 127	B	**3RT1075-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1075-2AP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	110 ... 127	B	**3RT1076-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT1076-2AP36**		1	1 unit	41B

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/114.

[1)] Alternatively the 3RT1054-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price. In the 8th position of the Article No., the **"1"** must be replaced with **"6"** for screw terminals, e.g. 3RT1054-**6**A.36; for spring-type terminals, the **"3"** must be replaced by **"2"**, e.g. 3RT1054-**2**A.36.

[2)] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

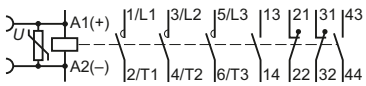
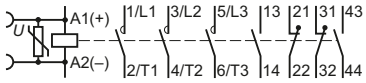
UC operating mechanism · AC/DC operation (50/60 Hz and DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT1054 (55 kW) box terminals[1)]

3RT105.

3RT106.

3RT107.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C Operational current I_e up to 500 V	Ratings[2)] of three-phase motors at 50 Hz and 230 V	400 V	500 V	690 V	AC-1, T_u: 40 °C Operational current I_e up to 690 V	Auxiliary contacts, lateral Version NO	NC	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A			V AC/DC						
Solid-state operating mechanisms · for 24 V DC PLC output															
											**Screw terminals**				
S6	115	37	**55**	75	110	160	2	2	96 ... 127	A	**3RT1054-1NF36**		1	1 unit	41B
									200 ... 277	►	**3RT1054-1NP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	96 ... 127	A	**3RT1055-6NF36**		1	1 unit	41B
									200 ... 277	►	**3RT1055-6NP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	96 ... 127	A	**3RT1056-6NF36**		1	1 unit	41B
									200 ... 277	►	**3RT1056-6NP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	96 ... 127	A	**3RT1064-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1064-6NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	A	**3RT1065-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1065-6NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT1066-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1066-6NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	96 ... 127	A	**3RT1075-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1075-6NP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	96 ... 127	A	**3RT1076-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1076-6NP36**		1	1 unit	41B
											**Spring-type terminals** for coil and auxiliary switch terminals				
S6	115	37	**55**	75	110	160	2	2	96 ... 127	B	**3RT1054-3NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1054-3NP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	96 ... 127	B	**3RT1055-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1055-2NP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	96 ... 127	B	**3RT1056-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1056-2NP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	96 ... 127	B	**3RT1064-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1064-2NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	B	**3RT1065-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1065-2NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT1066-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1066-2NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	96 ... 127	B	**3RT1075-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1075-2NP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	96 ... 127	B	**3RT1076-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1076-2NP36**		1	1 unit	41B

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/115.

[1)] Alternatively the 3RT1054-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price. In the 8th position of the Article No., the **"1"** must be replaced with **"6"** for screw terminals, e.g. 3RT1054-**6**A.36; for spring-type terminals, the **"3"** must be replaced by **"2"**, e.g. 3RT1054-**2**A.36.

[2)] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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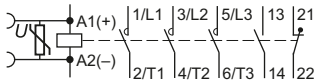
UC operating mechanism · AC/DC operation (50/60 Hz and DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections, for 3RT1054 (55 kW) box terminals[1)]
- Indication of remaining lifetime (RLT)

3RT1056-6P. .

Size	Rated data						Auxiliary contacts, lateral		Rated control supply voltage U_s	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
	AC-2 and AC-3, T_u: Up to 60 °C					AC-1, T_u: 40 °C	Version				Article No.	Price per PU			
	Operational current I_e up to	Ratings[2)] of three-phase motors at 50 Hz and				Operational current I_e up to									
	500 V	230 V	**400 V**	500 V	690 V	690 V									
	A	kW	**kW**	kW	kW	A	NO	NC	V AC/DC						
Solid-state operating mechanisms · with 24 V DC PLC relay output · with RLT															
															
S6	115	37	**55**	75	110	160	1	1	96 … 127	B	**3RT1054-1PF35**		1	1 unit	41B
									200 … 277	B	**3RT1054-1PP35**		1	1 unit	41B
	150	45	**75**	90	132	185	1	1	96 … 127	B	**3RT1055-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1055-6PP35**		1	1 unit	41B
	185	55	**90**	110	160	215	1	1	96 … 127	B	**3RT1056-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1056-6PP35**		1	1 unit	41B
S10	225	55	**110**	160	200	275	1	1	96 … 127	B	**3RT1064-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1064-6PP35**		1	1 unit	41B
	265	75	**132**	160	250	330	1	1	96 … 127	B	**3RT1065-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1065-6PP35**		1	1 unit	41B
	300	90	**160**	200	250	330	1	1	96 … 127	B	**3RT1066-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1066-6PP35**		1	1 unit	41B
S12	400	132	**200**	250	400	430	1	1	96 … 127	B	**3RT1075-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1075-6PP35**		1	1 unit	41B
	500	160	**250**	355	400	610	1	1	96 … 127	B	**3RT1076-6PF35**		1	1 unit	41B
									200 … 277	B	**3RT1076-6PP35**		1	1 unit	41B

Other voltages according to page 3/90 on request.
For accessories see page 3/103.
For spare parts see page 3/115.

1) Alternatively the 3RT1054-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals.
Without additional price. In the 8th position of the Article No., the **"1"** must be replaced with **"6"**, e.g. 3RT1054-**6**. .35.

2) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Options

Rated control supply voltages, possible on request (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Contactor type	3RT103, 3RT104	3RT144	3RT133, 3RT134, 3RT153	3RT1617, 3RT1627, 3RT1647
	Size	S2, S3	S3	S2, S3	S00, S0, S3
Sizes S2 and S3					
AC operation					
Solenoid coils for 50 Hz[1]					
24 V AC		B0	B0	B0	B0
42 V AC		D0	D0	--	--
48 V AC		H0	H0	--	--
110 V AC		F0	F0	F0	F0
230 V AC		P0	P0	P0	P0
240 V AC		U0	U0	U0	U0
400 V AC		V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[1]					
24 V AC		C2	C2	C2	C2
42 V AC		D2	D2	D2	--
48 V AC		H2	H2	H2	--
110 V AC		G2	G2	G2	G2
220 V AC		N2	N2	N2	N2
230 V AC		L2	L2	L2	L2
Solenoid coils (for USA and Canada[2]**)**					
50 Hz	**60 Hz**				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6
Solenoid coils (for Japan)					
50/60 Hz[3]	**60 Hz**[4]				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6
DC operation					
12 V DC		--	--	--	--
24 V DC		B4	B4	B4	--
42 V DC		D4	D4	D4	--
48 V DC		W4	W4	--	--
60 V DC		E4	E4	--	--
110 V DC		F4	F4	F4	--
125 V DC		G4	G4	G4	--
220 V DC		M4	M4	M4	--
230 V DC		P4	P4	--	--

Examples

AC operating mechanism	3RT1034-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC
	3RT1034-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC
DC operating mechanism	3RT1034-3B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC
	3RT1034-3B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC

Rated control supply voltage U_s	Contactor type	3RT1. 5.-.A 3RT1. 6.-.A 3RT1. 7.-.A	Rated control supply voltage U_s	Contactor type	3RT1. 5.-.N 3RT1. 6.-.N 3RT1. 7.-.N	3RT1. 5.-.P 3RT1. 6.-.P 3RT1. 7.-.P
$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	S6, S10, S12
Sizes S6 to S12						
UC operation (50/60 Hz AC, DC)						
Conventional operating mechanisms			**Solid-state operating mechanism**			
23 ... 26 V AC/DC		B3	21 ... 27.3 V AC/DC		B3	--
42 ... 48 V AC/DC		D3	96 ... 127 V AC/DC		F3	F3
110 ... 127 V AC/DC		F3	200 ... 277 V AC/DC		P3	P3
200 ... 220 V AC/DC		M3				
220 ... 240 V AC/DC		P3				
240 ... 277 V AC/DC		U3				
380 ... 420 V AC/DC		V3				
440 ... 480 V AC/DC		R3				
500 ... 550 V AC/DC		S3				
575 ... 600 V AC/DC		T3				

1) Coil operating range:
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 × U_s.

2) Coil operating range (sizes S2 and S3):
at 50 Hz and 60 Hz: 0.8 to 1.1 × U_s.

3) Coil operating range (sizes S2 and S3):
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 × U_s.

4) Coil operating range:
at 60 Hz: 0.8 to 1.1 × U_s.

5) Operating range:
0.8 x $U_{s\,min}$ to 1.1 × $U_{s\,max}$.

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Overview

UC operation

The contactors can be operated with AC (50 to 60 Hz) as well as with DC.

Two types of solenoid operation are available:

- Conventional operating mechanism, version 3RT12. .-.A
- Solid-state operating mechanism, version 3RT12. .-.N

Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

Vacuum interrupters

In contrast with the 3RT10 contactors – the main contacts operate in air under atmospheric conditions – the contact gaps of the 3RT12 vacuum contactors are contained in hermetically enclosed vacuum interrupters. Neither arcs nor arcing gases are produced. The particular benefit of 3RT12 vacuum contactors, however, is that their electrical endurance is at least twice as long as that of 3RT10 contactors. They are therefore particularly well suited to frequent switching in jogging/mixed operation, e.g. in crane control systems.

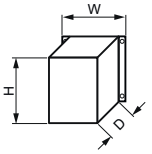
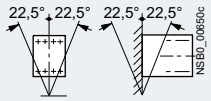
Note:

Vacuum contactors are basically unsuitable for switching DC voltage.

Auxiliary contact complement

The contacts can be fitted with up to 8 lateral auxiliary contacts (identical auxiliary switch blocks from S2 to S12). Of these, no more than 4 are permitted to be NC contacts.

Technical specifications

Type			**3RT1264**	**3RT1265**	**3RT1266**	**3RT1275** **3RT1276**
Size			**S10**			**S12**
Dimensions (W x H x D)		mm	145 x 210 x 206			160 x 214 x 225
General data						
Permissible mounting position The contacts are designed for operation on a vertical mounting surface.						
Mechanical endurance		Operating cycles	10 million			
Electrical endurance			[1]			
Rated insulation voltage U_i (pollution degree 3)		V	1000			
Rated impulse withstand voltage U_{imp}		kV	8			
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690			
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F			
Permissible ambient temperature						
• During operation		°C	-25 ... +60/+55 with AS-Interface			
• During storage		°C	-55 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open (where applicable, use additional terminal covers)			
Touch protection acc. to EN 50274			Finger-safe only for vertical contact from the front			
Shock resistance						
• Rectangular pulse		*g*/ms	8.5/5 and 4.2/10			
• Sine pulse		*g*/ms	13.4/5 and 6.5/10			
Conductor cross-sections			[2]			
Electromagnetic compatibility (EMC)			[3]			
Short-circuit protection						
Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	500			800
• Type of coordination "2"		A	500			800
• Weld-free[1]		A	400			500
Auxiliary circuit						
• Fuse links, operational class gG: DIAZED, type 5SB; NEOZED, type 5SE (weld-free protection $I_k \leq 1$ kA)		A	10			
• Miniature circuit breakers with C characteristic (short-circuit current $I_k \leq 400$ A)						

[1] For contact endurance of the main contacts see page 3/70.

[2] For conductor cross-sections, see page 3/94.

[3] For electromagnetic compatibility (EMC) see page 3/66.

[4] Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Type Size		3RT1264 S10	3RT1265 S10	3RT1266 S10	3RT1275 S12	3RT1276 S12
Control						
Operating range of the solenoid AC/DC (UC)		0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$				
Power consumption of the solenoid operation (when coil is cold and rated range $U_{s\ min}$ ... $U_{s\ max}$)						
Conventional operating mechanisms						
• AC operation						
- Closing at $U_{s\ min}$	VA/p.f.	530/0.9			700/0.9	
- Closing at $U_{s\ max}$	VA/p.f.	630/0.9			830/0.9	
- Closed at $U_{s\ min}$	VA/p.f.	6.1/0.9			7.6/0.9	
- Closed at $U_{s\ max}$	VA/p.f.	7.4/0.9			9.2/0.9	
• DC operation						
- Closing at $U_{s\ min}$	W	580			770	
- Closing at $U_{s\ max}$	W	700			920	
- Closed at $U_{s\ min}$	W	6.8			8.5	
- Closed at $U_{s\ max}$	W	8.2			10	
Solid-state operating mechanism						
• AC operation						
- Closing at $U_{s\ min}$	VA/p.f.	420/0.8			560/0.8	
- Closing at $U_{s\ max}$	VA/p.f.	570/0.8			750/0.8	
- Closed at $U_{s\ min}$	VA/p.f.	4.3/0.8			5.4/0.8	
- Closed at $U_{s\ max}$	VA/p.f.	5.6/0.8			7/0.8	
• DC operation						
- Closing at $U_{s\ min}$	W	460			600	
- Closing at $U_{s\ max}$	W	630			800	
- Closed at $U_{s\ min}$	W	3.4			4	
- Closed at $U_{s\ max}$	W	4.2			5	
PLC control input acc. to IEC 61131-2		Type 2				
• Rated voltage	V DC	24				
• Operating range	V DC	17 ... 30				
• Power consumption	mA	≤ 30				
Operating times (Total break time = Opening delay + Arcing time)						
Conventional operating mechanisms						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	30 ... 95			45 ... 100	
- Opening delay	ms	40 ... 80			60 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	35 ... 50			50 ... 70	
- Opening delay	ms	50 ... 80			70 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via A1/A2						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	105 ... 145			120 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	110 ... 130			125 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via PLC input						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	45 ... 80			60 ... 90	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	50 ... 65			65 ... 80	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Type Size		3RT1264 S10	3RT1265 S10	3RT1266 S10	3RT1275 S12	3RT1276 S12
Main circuit						
Load rating with AC						
Utilization category AC-1 **Switching resistive loads**						
• Rated operational currents I_e						
- At 40 °C up to 1 000 V	A	330			610	
- At 60 °C up to 1 000 V	A	300			550	
• Rated power for AC loads[1] with p.f. = 0.95 (at 60 °C)						
- At 230 V	kW	113			208	
- At 400 V	kW	197			362	
- At 500 V	kW	246			452	
- At 690 V	kW	340			624	
- At 1 000 V	kW	492			905	
• Minimum conductor cross-section for loads with I_e						
- At 40 °C	mm^2	185			2 x 185	
- At 60 °C	mm^2	185			2 x 185	
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e						
- Up to 1000 V	A	225	265	300	400	500
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz						
- At 230 V	kW	73	85	97	132	164
- At 400 V	kW	128	151	171	231	291
- At 500 V	kW	160	189	215	291	363
- At 690 V	kW	223	265	288	400	507
- At 1 000 V	kW	320	378	428	578	728
Thermal load capacity	A	1 800	2 120	2 400	3 200	4 000
Power loss per conducting path at I_e/AC-3	W	9	12	14	21	32
Utilization category AC-4 (for $I_a = 6 \times I_e$)						
• Rated operational current I_e, maximum						
- Up to 690 V	A	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 400 V	kW	110	132	160	200	250
The following applies to a contact endurance of about 200 000 operating cycles:						
• Rated operational currents I_e						
- Up to 690 V	A	97	115	140	175	215
- Up to 1 000 V	A	68	81	98	123	151
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 230 V	kW	30	37	45	56	70
- At 400 V	kW	55	65	79	98	122
- At 500 V	kW	68	81	98	124	153
- At 690 V	kW	94	112	138	172	212
- At 1 000 V	kW	95	114	140	183	217
Switching frequency						
Switching frequency *z* in operating cycles/hour						
Contactors without overload relays						
• No-load switching frequency	h^{-1}	2 000				
• Switching frequency *z* during rated operation[3]						
- I_e/AC-1 at 400 V	h^{-1}	800	750		700	
- I_e/AC-2 at 400 V	h^{-1}	300	250		250	
- I_e/AC-3 at 400 V	h^{-1}	750	750		750	
- I_e/AC-4 at 400 V	h^{-1}	250	250		250	
Contactors with overload relays						
• Mean value	h^{-1}	60				

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" ➞ "Overload Relays".

3) Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*:
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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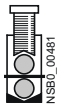
SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Type Size			3RT126. S10	3RT127. S12
Conductor cross-sections				
Main conductors			Screw terminals	
With mounted box terminals		Type	3RT19 66-4G	
• Terminal screws - Tightening torque		 Nm	M12 (hexagon socket, A/F 5) 20 ... 22 (180 ... 195 lb.in)	
Front clamping point connected				
NSB0_00479	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded	mm² mm² mm²	70 ... 240 70 ... 240 95 ... 300	
	• AWG cables, solid or stranded	AWG	3/0 ... 600 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5	
Rear clamping point connected				
NSB0_00480	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded	mm² mm² mm²	120 ... 185 120 ... 185 120 ... 240	
	• AWG cables, solid or stranded	AWG	250 ... 500 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5	
Both clamping points connected				
 NSB0_00481	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded	mm² mm² mm²	Min. 2 x 50, max. 2 x 185 Min. 2 x 50, max. 2 x 185 Min. 2 x 70, max. 2 x 240	
	• AWG cables, solid or stranded	AWG	Min. 2 x 2/0, max. 1 x 500 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	Max. 2 x (20 x 24 x 0.5)	
Busbar connections				
	• Connecting bars (max. width)	mm	25	
Cable lug connection				
	• Finely stranded with cable lug[1)] • Stranded with cable lug[1)] • AWG cables, solid or stranded	mm² mm² AWG	50 ... 240 70 ... 240 2/0 ... 500 kcmil	
	• Terminal screws - Tightening torque	 Nm	M10 x 30 (A/F 17) 14 ... 24 (124 ... 210 lb.in)	
Auxiliary conductors				
	• Solid	mm²	2 x (0.5 ... 1.5)[2)]; 2 x (0.75 ... 2.5)[2)] according to IEC 60947; max. 2 x (0.75 ... 4)	
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[2)]; 2 x (0.75 ... 2.5)[2)]	
	• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	
	• Terminal screws - Tightening torque	 Nm	M3 (Pozidriv size 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)	

1) When connecting cable lugs to DIN 46234, the 3RT1966-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Type Size		3RT1264 S10	3RT1265 S10	3RT1266 S10	3RT1275 S12	3RT1276 S12
cULus and cULus rated data						
Rated insulation voltage	V AC	600			600	
Uninterrupted current, at 40 °C, open and enclosed	A	330			540	
Maximum horsepower ratings (cULus and cULus approved values)						
• Rated power for three-phase motors at 60 Hz						
- At 200 V	hp	60	75	100	125	150
- At 230 V	hp	75	100	125	150	200
- At 460 V	hp	150	200	250	300	400
- At 575 V	hp	200	250	300	400	500
Short-circuit protection[1)]	kA	10	18	18	18	30
• CLASS L fuse	A	700	800	800	1200	1200
• Circuit breakers acc. to UL 489	A	500	700	900	1000	1200
NEMA/EEMAC ratings						
• NEMA/EEMAC size	hp	--	--	5	--	6
• Uninterrupted current						
- Open	A	--	--	300	--	600
- Enclosed	A	--	--	270	--	540
• Rated power for three-phase motors at 60 Hz						
- At 200 V	hp	--	--	75	--	150
- At 230 V	hp	--	--	100	--	200
- At 460 V	hp	--	--	200	--	400
- At 575 V	hp	--	--	200	--	400
Overload relays	Type	3RB2066			3RB2066	

1) For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL reports on the individual devices, www.siemens.com/sirius/manuals, or the UL Guide "Industrial Control Panels for North America", www.siemens.com/sirius/ul-download.

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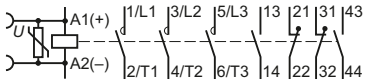
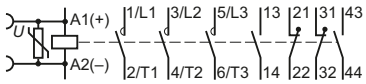
Selection and ordering data

UC operation (50/60 Hz AC, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections

3RT126.

3RT127.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C					AC-1, T_u: 40 °C	Auxiliary contacts, lateral		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Ratings[1] of three-phase motors at 50 Hz and				Operational current I_e up to					Article No.	Price per PU			
	1 000 V	230 V	**400 V**	500 V	690 V	1 000 V									
	A	kW	**kW**	kW	kW	A	NO	NC	V AC/DC						
Conventional operating mechanisms															
															
S10	225	55	**110**	160	200	330	2	2	110 ... 127	A	**3RT1264-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT1264-6AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	A	**3RT1265-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT1265-6AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	A	**3RT1266-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT1266-6AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	610	2	2	110 ... 127	A	**3RT1275-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT1275-6AP36**		1	1 unit	41B
	500	160	**250**	355	500	610	2	2	110 ... 127	A	**3RT1276-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT1276-6AP36**		1	1 unit	41B
Solid-state operating mechanisms · for 24 V DC PLC output															
															
S10	225	55	**110**	160	200	330	2	2	96 ... 127	B	**3RT1264-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1264-6NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	B	**3RT1265-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1265-6NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT1266-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1266-6NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	610	2	2	96 ... 127	B	**3RT1275-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1275-6NP36**		1	1 unit	41B
	500	160	**250**	355	500	610	2	2	96 ... 127	B	**3RT1276-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT1276-6NP36**		1	1 unit	41B

Other voltages according to page 3/90 on request.
For more 3TF68/3TF69 vacuum contactors (335 kW and 450 kW) see page 3/123.
For accessories see page 3/105.

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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General data

Overview

Snap-on auxiliary switch blocks

Various auxiliary switch blocks can be added to the 3RT1 basic units depending on the application:

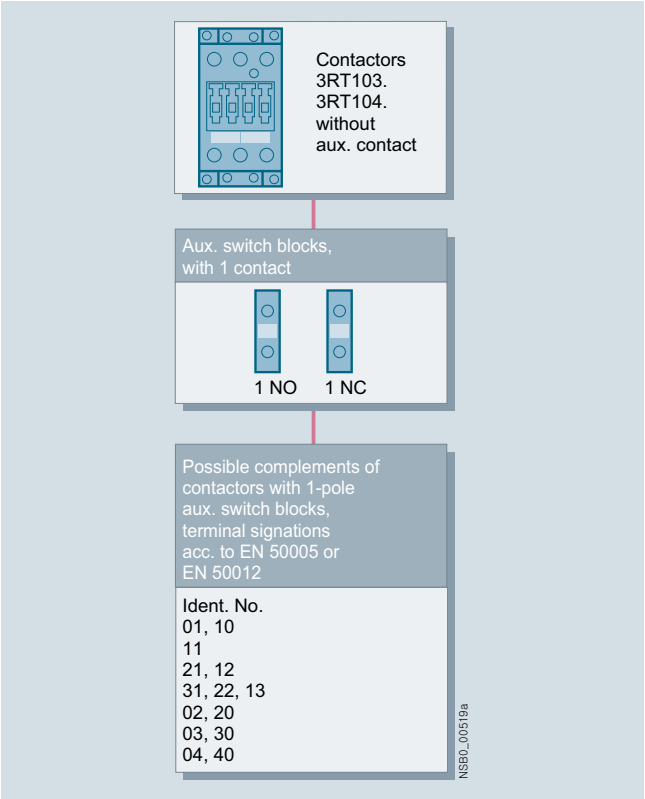
Sizes S2 to S12

Terminal designations according to EN 50005 or EN 50012

One 4-pole or up to four single-pole auxiliary switch blocks (screw or spring-type connections) can be snapped on. When the contactors are switched on, the NC contacts are opened first and then the NO contacts are closed.

Also available are 2-pole auxiliary switch blocks (screw terminals) for cable entry from above or below in the design of a quad block (feeder auxiliary switch).

If the installation space is limited in depth, 2-pole auxiliary switch blocks (screw or spring-type connections) can be attached laterally (on the left or on the right).

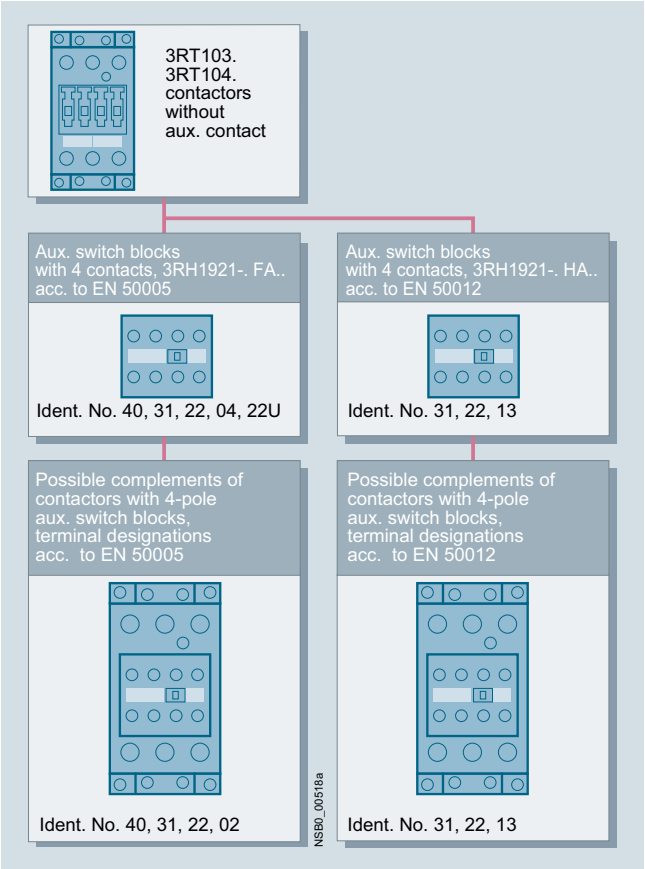


1-pole auxiliary switch blocks for 3RT1 contactors

The terminal designations of the single-pole auxiliary switch blocks are comprised of identification numbers (location identifiers) on the basic unit and of function numbers on the auxiliary switch blocks.

The terminal designations of the individual auxiliary switch blocks correspond to EN 50005 or EN 50012, those of the complete contactors with auxiliary switch block 2 NO + 2 NC correspond to EN 50012.

The auxiliary switch blocks attached to the front can be disassembled with the help of a centrally arranged release lever; the laterally attached auxiliary switch blocks are easy to remove by pressing on the checkered surfaces.



4-pole auxiliary switch blocks for 3RT1 contactors

The laterally mountable auxiliary switch blocks according to EN 50012 can be used only when no 4-pole auxiliary switch blocks are snapped onto the front. If single-pole auxiliary switch blocks are used in addition, the location identifiers on the contactor must be noted.

Two enclosed and two standard contacts are available with the 3RH1921-.FE22 solid-state compatible auxiliary switch block, which can be attached to the front. The laterally mountable, solid-state compatible 3RH1921-2DE11 auxiliary switch block contains two enclosed contacts (1 NO + 1 NC). The enclosed contacts are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The NC auxiliary contacts are mirror contacts.

Size S2

A maximum of four auxiliary contacts can be attached; the auxiliary switch blocks used can be of any version. For reasons of symmetry, when two 2-pole laterally mountable auxiliary switch blocks are used, one block must be attached on the right and one on the left.

More auxiliary contacts are permissible with size S2 under certain conditions (please ask).

Sizes S3 to S12

A maximum of eight auxiliary contacts can be attached; please note the following:

- Of these eight auxiliary contacts, there must be no more than four NC contacts.
- Ensure the symmetry of laterally mounted auxiliary switch blocks

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Solid-state time-delay auxiliary switch blocks

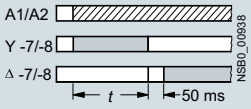
The solid-state, time-delay auxiliary switch block is fitted onto the front side of the contactor.

The timer module, which is available in the "ON-DELAY" and "OFF-DELAY" versions, allows time-delayed functions up to 100 s (three delay ranges).

It contains a relay with one NO contact and one NC contact; depending on the version, the relay is switched either after an ON-delay or after an OFF-delay.

The timer module with WYE-DELTA FUNCTION is equipped with one delayed and one instantaneous NO contact, with a dead time of 50 ms between the two. The delay time of the NO contact can be adjusted between 1.5 s and 30 s.

Wye-delta function



The contactor on which the solid-state time-delay auxiliary switch block is mounted operates without a delay.

Sizes S2 to S12

The timer module is supplied with power through two terminals (A1/A2); the time delay of the auxiliary switch block can be activated either by a parallel link to any contactor coil or by any power source.

The OFF-delay version operates without a control signal; the minimum ON period is 200 ms.

A single-pole auxiliary switch block can be snapped onto the front of the contactor in addition to the timer module.

The timer module has no integrated components for overvoltage damping.

Solid-state timing relay blocks with semiconductor output

The timer module, which is available in the "ON-DELAY" and "OFF-DELAY" versions with control signal, allows time-delayed functions up to 100 s (three delay ranges). Contactors fitted with a timing relay block close or open after a delay according to the set time.

The ON-delay variant of the timing relay is connected in series with the contactor coil; terminal A1 of this coil must not be connected.

With the OFF-delay variant of the timing relay, the contactor coil is contacted directly through the relay; terminals A1 and A2 of the contactor coil must not be connected.

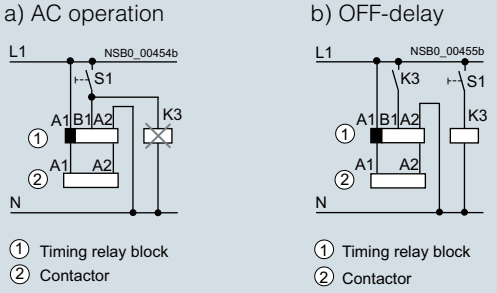
The timing relays are suitable for both AC and DC operation.

Sizes S2 and S3

The timing relay block for size S0 to S3 contactors is plugged into coil terminals A1 and A2 on top of each contactor; the timing relay is connected both electrically and mechanically by means of pins.

A varistor is integrated in the timer module in order to damp opening surges in the contactor coil.

Configuration



The activation of loads parallel to the start input is not permissible with AC operation (see (a) in the circuit diagram).

The 3RT1926-2D. . . OFF-delay timing relay blocks have a zero potential start input B1. This means that if there is a parallel load on terminal B1, activation can be simulated with AC voltage. In this case, the additional load (e.g. contactor K3) must be wired (see (b) in the circuit diagram).

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General data

OFF-delay device for size S00 and S0 contactors

AC and DC operation

IEC 60947, EN 60947

For screw and snap-on mounting onto TH 35 standard mounting rails. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RT1916 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays in the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

Operation

In the case of the versions for rated control supply voltages of 110 V and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the version for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output according to the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

Surge suppressors

- Without LED (also for spring-type terminals)
  Sizes S2, S3, S6 to S12

All 3RT1 contactors and 3RH1 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

With the size S2 and S3 contactors, varistors, RC elements and diode assemblies can be plugged on directly at the coil terminals, either on the top or underneath.

The plug-in direction of the diodes and diode assemblies is determined by a coding device.

Coupling contactors are supplied either without overvoltage damping or with a varistor or diode connected as standard, according to the version.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling links for mounting on contactors of sizes S2 and S3

DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC,
operating range 17 to 30 V.

Low power consumption in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

Surge suppression

The 3RH1924-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

Mounting

The 3RH1924-1GP11 coupling link is mounted directly on the contactor coil.

Sealable covers for sizes S2 to S12

When contactors and contactor relays are used in safety-related applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

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Technical specifications

Contactor	Type		3RT1926-2C	3RT1926-2D	3RT1926-2E	3RT1926-2F	3RT1926-2G
			Solid-state timing relay blocks with semiconductor output		Solid-state time-delay auxiliary switch blocks		
General data							
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III according to IEC 60664-1		V AC	250				
Permissible ambient temperature							
• During operation		°C	-25 ... +60				
• During storage		°C	-40 ... +80				
Degree of protection acc. to IEC 60947-1, Appendix C • Cover • Terminals			 IP40 IP20				
Shock resistance Half-sine acc. to IEC 60068-2-27		*g*/ms	15/11				
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35				
EMC tests	Basic specification		IEC 61000-6-4				
Conductor connections							
• Solid		mm^2	2 x (0.5 ... 1.5), 2 x (0.75 ... 4)				
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)				
• AWG cables, solid or stranded		AWG	2 x (18 ... 14)				
• Terminal screws			M3				
• Tightening torque		Nm lb.in	0.8 ... 1.2 7 ... 10.3				
Permissible mounting position			Any				
Control							
Operating range of excitation			0.8 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency		0.85 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency		
Rated power		W	1		2		
• Power consumption at 230 V AC, 50 Hz		VA	1		4		
Overvoltage protection			Varistor integrated in timing relay		--		
Recovery time		ms	50		150		
Minimum ON period		ms	35		200 (with OFF-delay)		
Setting accuracy With reference to upper limit of scale	Typ.	%	±15				
Repeat accuracy	Max.	%	±1				
Load side							
Rated operational currents I_e							
• Load current		A	0.3		--		
• AC-15, 230 V, 50 Hz		A	--		3		
• DC-13, 24 V		A	--		1		
• DC-13, 110 V		A	--		0.2		
• DC-13, 230 V		A	--		0.1		
Short-time loading capacity	Up to 10 ms	A	10		--		
DIAZED protection operational class gG		A	--		4		
Residual current	Max.	mA	5		--		
Voltage drop With conducting output	Max.	VA	3.5		--		
Mechanical endurance	Operating cycles		100 x 10^6		10 x 10^6		
Switching frequency for load							
• With I_e at 230 V AC		h^{-1}	2 00		2 500		
• With 3RT2016 contactor at 230 V AC		h^{-1}	2 500		5 000		

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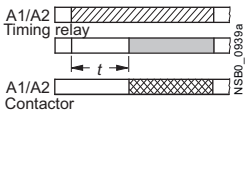
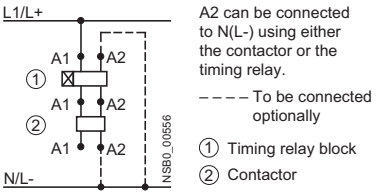
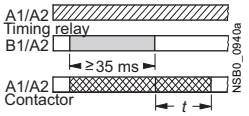
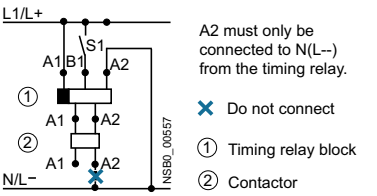
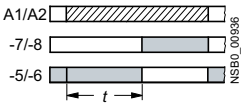
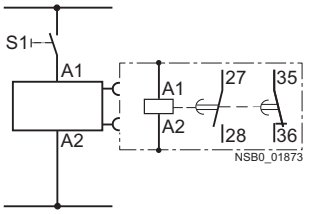
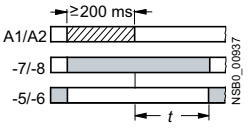
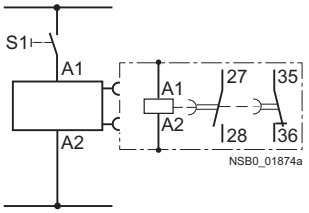
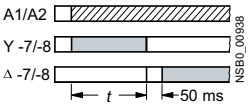
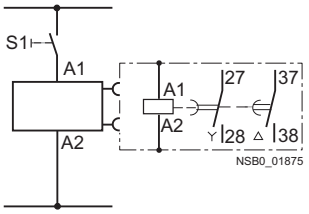
General data

Function	Function chart
	▨ Timing relay energized ▩ Contact closed □ Contact open
Solid-state timing relay blocks	**1 NO contact (semiconductor output)**
ON-delay, two-wire design (varistor integrated)	3RT1926-2C   A2 can be connected to N(L-) using either the contactor or the timing relay. – – – – To be connected optionally ① Timing relay block ② Contactor
OFF-delay with control signal (varistor integrated)	3RT1926-2D   A2 must only be connected to N(L--) from the timing relay. ✕ Do not connect ① Timing relay block ② Contactor
Solid-state time-delay auxiliary switch blocks	**1 NO + 1 NC**
ON-delay	3RT1926-2E  
OFF-delay without control signal	3RT1926-2F  
Solid-state time-delay auxiliary switch blocks	**2 NO**
Wye-delta function: 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)	3RT1926-2G  

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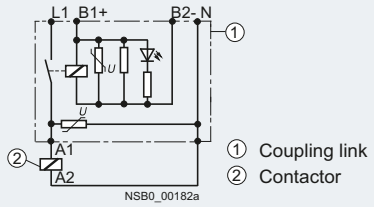
Contactor	Type		3RH1924, 3TX7090 Coupling links for mounting on contactors acc. to IEC 60947/EN 60947
General data			
Rated insulation voltage U_i (pollution degree 3)		V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N		V AC	Up to 300
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			
• Connections			IP20
• Enclosure			IP40
Circuit diagram			
Conductor cross-sections			
• Solid		mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)
Terminal screws			M3
Control side			
Rated control supply voltage U_s		V DC	24
Operating range		V DC	17 ... 30
Power consumption at U_s		W	0.5
Nominal current input		mA	20
Release voltage		V	≥ 4
Function display			Yellow LED
Protection circuit			Varistor
Load side			
Mechanical endurance	Operating cycles		20 x 10^6
Electrical endurance at I_e	Operating cycles		1 x 10^5
Switching frequency	Operating cycles/h		5 000
Make-time		ms	Approx. 7
Break-time		ms	Approx. 4
Bounce time		ms	Approx. 2
Contact material			AgSnO
Switching voltage	AC/DC	V	24 ... 250
Permissible residual current of the electronics (with 0 signal)		mA	2.5

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General data

Contactor	Type		3RT1926-3A Mechanical latching blocks
General data			
Rated insulation voltage U_i (pollution degree 3)		V	690
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP20
Mechanical endurance			
• With 3RT1.2	Operating cycles		3 x 10^6
• With 3RT1.3	Operating cycles		50 000
Conductor cross-sections			
• Solid		mm^2 AWG	2 x (0.5 ... 2.5); 1 x 4 2 x 14; 1 x 12
• Finely stranded with end sleeve		mm^2 AWG	2 x (0.5 ... 2.5); 1 x 2.5 2 x 14; 1 x 12
Tightening torque of the terminal screws		Nm lb.in	0.8 ... 1.1 7 ... 9.5
Control			
Operating range of the solenoid coil At AC 50/60 Hz and DC			0.85 ... 1.1 x U_s
Power consumption of the solenoid coils of the unlocking magnet (for cold coil and 1.0 x U_s) AC and DC operation		W	Approx. 4
Command duration for de-energizing			
• AC operation		ms	18 ... 31
• DC operation		ms	18 ... 26

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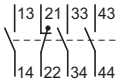
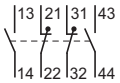
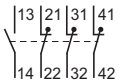
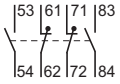
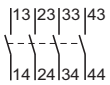
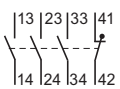
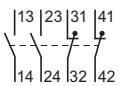
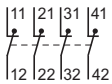
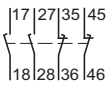
Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH1921-1HA..,
3RH1921-1FA..

3RH1921-2HA..,
3RH1921-2FA..

For contactors	Auxiliary contacts						DT	Screw terminals		DT	Spring-type terminals	
	Ident. No.	Version						Article No.	Price per PU		Article No.	Price per PU
Type		NO	NC	NO	NC							
Auxiliary switch blocks for snapping onto the front according to EN 50012												
Sizes S2 and S3[1]												
	4-pole auxiliary switch blocks											
3RT1.3, 3RT1.4	**31**	3	1	--	--		▶	**3RH1921-1HA31**		▶	**3RH1921-2HA31**	
	22	2	2	--	--		▶	**3RH1921-1HA22**		▶	**3RH1921-2HA22**	
	13	1	3	--	--		▶	**3RH1921-1HA13**		▶	**3RH1921-2HA13**	
Sizes S2 to S12[2]												
	4-pole auxiliary switch blocks											
3RT1.3 ... 3RT1.7	**22**	2	2	--	--		B	**3RH1921-1XA22-0MA0**		D	**3RH1921-2XA22-0MA0**	
Auxiliary switch blocks for snapping onto the front according to EN 50005												
Sizes S2 and S3[1]												
	4-pole auxiliary switch blocks											
3RT1.3, 3RT1.4	**40**	4	--	--	--		▶	**3RH1921-1FA40**		▶	**3RH1921-2FA40**	
	31	3	1	--	--		▶	**3RH1921-1FA31**		▶	**3RH1921-2FA31**	
	22	2	2	--	--		▶	**3RH1921-1FA22**		▶	**3RH1921-2FA22**	
	04	--	4	--	--		▶	**3RH1921-1FA04**		A	**3RH1921-2FA04**	
	22 U	--	--	2	2		▶	**3RH1921-1FC22**		A	**3RH1921-2FC22**	

For multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

1) Exception: 3RT16.
2) Exception: 3RT12, 3RT16.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH1921-1LA..

3RH1921-1MA..

3RH1921-1C..

3RH1921-2C..

For contactors	Auxiliary contacts						DT	Screw terminals		DT	Spring-type terminals	
	Ident. No.	Version						Article No.	Price per PU		Article No.	Price per PU
Type		NO	NC	NO	NC							
Auxiliary switch blocks for snapping onto the front according to EN 50005												
***Sizes S2 and S3*[1)]												
	2-pole auxiliary switch blocks with cable entry on one side • **Cable entry from above**											
3RT1.3, 3RT1.4	**11**	1	1	--	--	13 21 / 14 22	▶	**3RH1921-1LA11**			**--**	
	20	2	--	--	--	13 23 / 14 24	▶	**3RH1921-1LA20**			**--**	
	02	--	2	--	--	11 21 / 12 22	▶	**3RH1921-1LA02**			**--**	
	• **Cable entry from below**											
3RT1.3, 3RT1.4	**11**	1	1	--	--	13 21 / 14 22	▶	**3RH1921-1MA11**			**--**	
	20	2	--	--	--	13 23 / 14 24	▶	**3RH1921-1MA20**			**--**	
	02	--	2	--	--	11 21 / 12 22	▶	**3RH1921-1MA02**			**--**	
***Sizes S2 to S12*[2)]												
	1-pole auxiliary switch blocks according to EN 50005 and EN 50012											
3RT1.3 ... 3RT1.7	**10**	1	--	--	--	.3 / .4	▶	**3RH1921-1CA10**		▶	**3RH1921-2CA10**	
	01	--	1	--	--	.1 / .2	▶	**3RH1921-1CA01**		▶	**3RH1921-2CA01**	
	10	--	--	1	--	.7 / .8	▶	**3RH1921-1CD10**			**--**	
	01	--	--	--	1	.5 / .6	▶	**3RH1921-1CD01**			**--**	

[1)] Exception: 3RT16.
[2)] Exception: 3RT12, 3RT16

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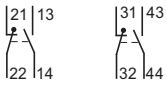
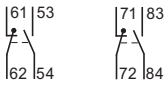
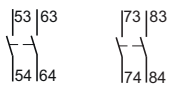
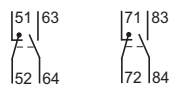
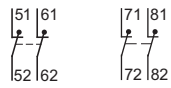
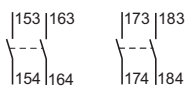
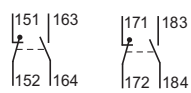
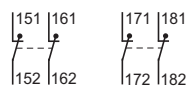
Auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH1921-1DA11
3RH1921-1JA11
3RH1921-1EA..
3RH1921-1KA..

3RH1921-2DA11
3RH1921-2JA11
3RH1921-2EA..
3RH1921-2KA..

For contactors	Auxiliary contacts			DT	Screw terminals		DT	Spring-type terminals	
	Version				Article No.	Price per PU		Article No.	Price per PU
Type	NO	NC							
Laterally mountable auxiliary switch blocks according to EN 50012									
Sizes S2 and S3			Left Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1.3, 3RT1.4	1	1		►	**3RH1921-1DA11**		►	**3RH1921-2DA11**	
Sizes S3 to S12			Left Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1.4 ... 3RT1.7	1	1		►	**3RH1921-1JA11**		►	**3RH1921-2JA11**	
Laterally mountable auxiliary switch blocks according to EN 50005									
Sizes S2 to S12			Left Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1.3 ... 3RT1.7	2	--		►	**3RH1921-1EA20**		►	**3RH1921-2EA20**	
	1	1		►	**3RH1921-1EA11**			**--**	
	--	2		►	**3RH1921-1EA02**		►	**3RH1921-2EA02**	
Sizes S3 to S12			Left Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1.4 ... 3RT1.7	2	--		►	**3RH1921-1KA20**		D	**3RH1921-2KA20**	
	1	1		►	**3RH1921-1KA11**			**--**	
	--	2		►	**3RH1921-1KA02**		D	**3RH1921-2KA02**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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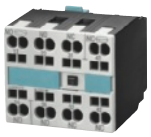
Auxiliary switches

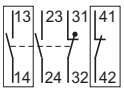
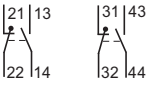
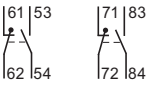
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RH1921-2DE11,
3RH1921-2JE11

3RH1921-1FE22



3RH1921-2JE22

For contactors	Contacts / Version					DT	Screw terminals		DT	Spring-type terminals	
							Article No.	Price per PU		Article No.	Price per PU
Type	NO	NO[1]	NC[1]	NC							
Solid-state compatible auxiliary switch blocks											
	• For operation in dusty atmospheres • For solid-state circuits with rated operational currents I_e/AC-14 and DC-13 of 1 ... 300 mA at 3 ...60 V • Hard gold-plated contacts • Mirror contacts according to IEC 60947-4-1, Appendix F										
Auxiliary switch blocks for snapping onto the front according to EN 50005											
Sizes S2 and S3											
3RT1.3 ... 3RT1.7	1	1	1	1		▶	**3RH1921-1FE22**		B	**3RH1921-2FE22**	
Laterally mountable auxiliary switch blocks according to EN 50012											
Sizes S2 to S12					Left / Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole										
3RT1.3 ... 3RT1.7	1	--	--	1			--		▶	**3RH1921-2DE11**	
Sizes S3 to S12					Left / Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole										
3RT1.4 ... 3RT1.7	1	--	--	1			--		▶	**3RH1921-2JE11**	

[1] 1 NO + 1 NC standard auxiliary switches:
See descriptions on page 3/96.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For contactors	Auxiliary contacts	Rated control supply voltage U_s [1]	Time setting range t	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V	s						
Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5									
Sizes S2 to S12									
	With ON-delay[2]								
3RT1926-2....									
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0.05 ... 1	C	**3RT1926-2EJ11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2EJ21**		1	1 unit	41H
			5 ... 100	A	**3RT1926-2EJ31**		1	1 unit	41H
		100 ... 127 AC	0.05 ... 1	C	**3RT1926-2EC11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2EC21**		1	1 unit	41H
			5 ... 100	C	**3RT1926-2EC31**		1	1 unit	41H
		200 ... 240 AC	0.05 ... 1	B	**3RT1926-2ED11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2ED21**		1	1 unit	41H
			5 ... 100	B	**3RT1926-2ED31**		1	1 unit	41H
	OFF-delay without control signal[2)3)]								
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0.05 ... 1	▶	**3RT1926-2FJ11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2FJ21**		1	1 unit	41H
			5 ... 100	▶	**3RT1926-2FJ31**		1	1 unit	41H
		100 ... 127 AC/DC	0.05 ... 1	B	**3RT1926-2FK11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2FK21**		1	1 unit	41H
			5 ... 100	B	**3RT1926-2FK31**		1	1 unit	41H
		200 ... 240 AC/DC	0.05 ... 1	B	**3RT1926-2FL11**		1	1 unit	41H
			0.5 ... 10	A	**3RT1926-2FL21**		1	1 unit	41H
			5 ... 100	A	**3RT1926-2FL31**		1	1 unit	41H
	Wye-delta function (varistor integrated)[2]								
3RT10, 3RT13, 3RT14, 3RT15	1 NO delayed + 1 NO instantaneous, dead time 50 ms	24 AC/DC	1.5 ... 30	▶	**3RT1926-2GJ51**		1	1 unit	41H
		100 ... 127 AC	1.5 ... 30	▶	**3RT1926-2GC51**		1	1 unit	41H
		200 ... 240 AC	1.5 ... 30	▶	**3RT1926-2GD51**		1	1 unit	41H
Solid-state timing relay blocks with semiconductor output									
Sizes S2 and S3									
	For mounting onto top-lying coil terminals, only for devices with screw terminals **• ON-delay (varistor integrated)**								
3RT1926-2C...									
3RT103, 3RT104, 3RT13[4] 3RT15	--	24 ... 66 AC/DC	0.05 ... 1	B	**3RT1926-2CG11**		1	1 unit	41H
			0.5 ... 10	B	**3RT1926-2CG21**		1	1 unit	41H
			5 ... 100	B	**3RT1926-2CG31**		1	1 unit	41H
	--	90 ... 240 AC/DC	0.05 ... 1	▶	**3RT1926-2CH11**		1	1 unit	41H
			0.5 ... 10	▶	**3RT1926-2CH21**		1	1 unit	41H
			5 ... 100	▶	**3RT1926-2CH31**		1	1 unit	41H
	• OFF-delay with control signal (varistor integrated)								
3RT1926-2D...									
3RT103, 3RT104, 3RT13[4] 3RT15	--	24 ... 66 AC/DC	0.05 ... 1	C	**3RT1926-2DG11**		1	1 unit	41H
			0.5 ... 10	B	**3RT1926-2DG21**		1	1 unit	41H
			5 ... 100	D	**3RT1926-2DG31**		1	1 unit	41H
	--	90 ... 240 AC/DC	0.05 ... 1	B	**3RT1926-2DH11**		1	1 unit	41H
			0.5 ... 10	B	**3RT1926-2DH21**		1	1 unit	41H
			5 ... 100	C	**3RT1926-2DH31**		1	1 unit	41H
OFF-delay devices									
Sizes S2 and S3									
3RT1916-2BE01									
3RT103, 3RT104		24 DC Only for contactors with DC operation	S2: 90 fixed S3: 70 fixed	B	**3RT1916-2BE01**		1	1 unit	41H

For technical specifications, operating travel diagrams and circuit diagrams see pages 3/99 and 3/100.

1) The AC voltages are valid for 50 and 60 Hz.

2) Terminals A1 and A2 for the control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting cables.

3) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact changeover to the correct setting.

4) In addition to these, no other auxiliary contacts are permitted.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Surge suppressors

Selection and ordering data

For contactors	Version	Rated control supply voltage U_s [1] AC operation	Rated control supply voltage U_s [1] DC operation	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC						
Surge suppressors without LED									
Sizes S2 and S3 (also for spring-type terminals)									
	For fitting onto the coil terminals at top or bottom								
3RT1926-1B.00									
3RT1.3, 3RT1.4	**Varistor**	24 ... 48	24 ... 70	▶	**3RT1926-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT1926-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT1926-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT1926-1BE00**		1	1 unit	41B
		400 ... 600		B	**3RT1926-1BF00**		1	1 unit	41B
3RT1936-1C.00									
3RT1.3[3], 3RT1.4	**RC elements**	24 ... 48	24 ... 70	▶	**3RT1936-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT1936-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT1936-1CD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT1936-1CE00**		1	1 unit	41B
		400 ... 600	--	B	**3RT1936-1CF00**		1	1 unit	41B
3RT1.3, 3RT1.4	**Diode assembly** for DC operation								
	• Connectable at the top	--	24	▶	**3RT1936-1ER00**		1	1 unit	41B
	(e.g. for contactor with overload relay)	--	30 ... 250	▶	**3RT1936-1ES00**		1	1 unit	41B
	• Connectable at the bottom	--	24	▶	**3RT1936-1TR00**		1	1 unit	41B
	(e.g. for fuseless load feeders)	--	30 ... 250	B	**3RT1936-1TS00**		1	1 unit	41B
Sizes S6 to S12									
3RT1956-1C.00	**For connecting to withdrawable coil for contactors with** **• conventional operating mechanism 3RT1...-.A...** **• solid-state operating mechanism 3RT1...-.N...**				**Screw terminals**				
3RT1.5, 3RT1.6, 3RT1.7	**RC elements**	24 ... 48	24 ... 70	▶	**3RT1956-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT1956-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT1956-1CD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT1956-1CE00**		1	1 unit	41B
		400 ... 600		C	**3RT1956-1CF00**		1	1 unit	41B
					Spring-type terminals				
3RT1.5, 3RT1.6, 3RT1.7	**RC elements**	24 ... 48	24 ... 70	▶	**3RT1956-1CB02**		1	1 unit	41B
		48 ... 127	70 ... 150	A	**3RT1956-1CC02**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT1956-1CD02**		1	1 unit	41B
		240 ... 400	--	A	**3RT1956-1CE02**		1	1 unit	41B
		400 ... 600		C	**3RT1956-1CF02**		1	1 unit	41B

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

[3] For 3RT1.3 with AC operation mountable only at the top.

For contactors	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
Main current path surge suppression modules for 3RT12 vacuum contactors							
Sizes S10 and S12							
3RT12	For damping overvoltages and protecting motor windings against multiple re-ignition when switching off three-phase motors.						
	For connection on the contactor feeder side (2-T1/4-T2/6-T3). For separate installation.						
	Rated operational voltage U_e = 690 V AC	C	**3RT1966-1PV3**		1	1 unit	41B
	Rated operational voltage U_e = 1 000 V AC	C	**3RT1966-1PV4**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For contactors Type	Rated control supply voltage U_s V	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical latching blocks							
Size S2							
	For mounting on 1 contactor[1] **The contactor remains in the energized state even after a voltage failure**						
3RT1.3	24 AC/DC	A	**3RT1926-3AB31**		1	1 unit	41B
	110 AC/DC	B	**3RT1926-3AF31**		1	1 unit	41B
	230 AC/DC	B	**3RT1926-3AP31**		1	1 unit	41B

3RT1926-3A.31

[1] Two front-mounted auxiliary switch blocks can be mounted in addition.

For contactors Type	Version V	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Coupling links for control by PLC							
Sizes S2 and S3							
	For mounting onto the coil terminals of the contactors With LED for indicating switching state						
3RT1.3, 3RT1.4	Operating range: 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA Rated operational current I_e: • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A With integrated varistor for damping opening surges.	►	**3RH1924-1GP11**		1	1 unit	41B

3RH1924-1GP11

For contactors Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LED modules for displaying contactor operation							
Sizes S2 to S12[1] ***(also for spring-type terminals)***							
3RT1.3, 3RT1.4	For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection	B	**3RT1926-1QT00**		1	5 units	41B
Auxiliary terminals, 3-pole							
Size S3							
3RT104.	For connection of auxiliary and control cables (0.5 to 2.5 mm²) to the main conductor connections (for one side)	B	**3RT1946-4F**		1	1 unit	41B

3RT1926-1QT00
mounted on contactor

3RT1946-4F

For technical specifications for latching blocks see page 3/102.

For technical specifications and circuit diagram for coupling links see page 3/101.

[1] For sizes S6 to S12 the connecting leads have to be extended.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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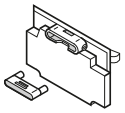
Miscellaneous accessories

	For contactors Size	Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Box terminal blocks									
3RT195.-4G	**S6**		**For round and ribbon cables**[1]						
		3RT1.5 (3RB205)	Up to 70 mm² [2]	▶	**3RT1955-4G**		1	1 unit	41B
			Up to 120 mm²	▶	**3RT1956-4G**		1	1 unit	41B
			Auxiliary conductor connection for box terminals	B	**3TX7500-0A**		1	1 unit	41B
	S10, S12	3RT1.6, 3RT1.7 (3RB206,3 RB216)	Up to 240 mm²	▶	**3RT1966-4G**		1	1 unit	41B
			With auxiliary conductor connection						
Covers									
3RT1936-4EA2			**Terminal covers for box terminals** (additional touch protection)						
			To be fitted at the box terminals (2 units required per contactor)						
	S2	3RT103	--	B	**3RT1936-4EA2**		1	1 unit	41B
		3RT133, 3RT153	For 4-pole contactors	B	**3RT1936-4EA4**		1	1 unit	41B
3RT1956-4EA2	**S3**	3RT104, 3RT144	--	▶	**3RT1946-4EA2**		1	1 unit	41B
		3RT134	For 4-pole contactors	B	**3RT1946-4EA4**		1	1 unit	41B
	S6[3]	3RT1.5	Length: 25 mm	▶	**3RT1956-4EA2**		1	1 unit	41B
	S10, S12[3]	3RT1.6, 3RT1.7	Length: 30 mm	▶	**3RT1966-4EA2**		1	1 unit	41B
3RT1956-4EA1			**Terminal covers for cable lugs and busbar connection**[3]						
			For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per contactor)						
	S3	3RT104, 3RT144	--	B	**3RT1946-4EA1**		1	1 unit	41B
	S6	3RT1.5	Length: 100 mm	▶	**3RT1956-4EA1**		1	1 unit	41B
	S10/S12	3RT1.6, 3RT1.7	Length: 120 mm	▶	**3RT1966-4EA1**		1	1 unit	41B
3TX6526-3B			Can be screwed on free screw end; covers one busbar connection (1 set = 6 units)						
	S6	3RT1.5	M8	B	**3TX6526-3B**		1	1 unit	41B
	S10, S12	3RT1.6, 3RT1.7	M10	B	**3TX6546-3B**		1	1 unit	41B
			For busbar cover between contactor and 3RB2 overload relay or wiring module for contactor assemblies						
	S6	3RT1.5	Length: 27 mm	▶	**3RT1956-4EA3**		1	1 unit	41B
	S10/S12[4]	3RT1.6, 3RT1.7	Length: 42 mm	▶	**3RT1966-4EA3**		1	1 unit	41B
			For busbar cover of the flat line connectors for reversing and wye-delta assemblies						
	S6	3RT1.5	Length: 38 mm	▶	**3RT1956-4EA4**		1	1 unit	41B
Sealable covers									
 IC01_00162 3RT1926-4MA10	**S2 ... S12**	3RT1.3... 3RT1.7[5]	1 unit required per contactor	C	**3RT1926-4MA10**		1	5 units	41B

1) Connectable cross-sections of the contactors see Technical Specifications, pages 3/75 and 3/80).
2) As standard for 3RT1054-1 contactor (55 kW).
3) Also fits on contactors S6 to S12 with box terminals.
4) The 3RT1966-4EA3 cover is required in addition for use in contactor assemblies (reversing/wye-delta).
5) Exception: contactors and contactor relays with auxiliary switch block mounted onto the front.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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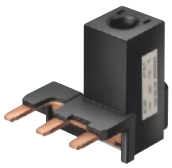
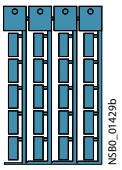
	For contactors		Max. conductor cross-sections	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Size	Type	mm²		Article No.	Price per PU			
Links for paralleling									
 3RT1936-4BB31		**3-pole, with connection terminal**[1)2)]							
	S2	3RT103	95	▶	**3RT1936-4BB31**		1	1 unit	41B
3RT1956-4BA31		**3-pole, with through hole (star jumpers)**[1)2)3)]							
	S3	3RT104, 3RT144	185	▶	**3RT1946-4BB31**		1	1 unit	41B
	S6	3RT1.5	--	▶	**3RT1956-4BA31**		1	1 unit	41B
	S10/S12	3RT1.6, 3RT1.7	--	▶	**3RT1966-4BA31**		1	1 unit	41B

1) The links for paralleling can be reduced by one pole.

2) Size S2: The links for paralleling are insulated.
Size S3: A cover plate is included for touch protection.
(Can only be used when the box terminal is removed.)
Sizes S6 to S12: The 3RT1956-4EA1 (for S6) or 3RT1966-4EA1 (for S10 and S12) cover can be used for touch protection.

3) The star jumpers to the contactors of sizes S6 and S10/S12 are approved according to UL and CSA.

	Version	DT	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG
			Article No.	Price per PU			
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
3RT1916-4JA02	Insulation stop strip can be inserted in cable entry of spring-type terminals (2 strips per contactor required, can be removed in pairs) For all SIRIUS devices with spring-type terminals, up to 2.5 mm² conductor cross-section.	B	**3RT1916-4JA02**		1	20 units	41B
Tools for opening spring-type terminal points							
3RA2908-1A	For all SIRIUS devices with spring-type terminals, for conductor cross-sections up to 2.5 mm² Not suitable for devices with removable terminal Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels							
 3RT1900-1SB20	**Unit labeling plates** for SIRIUS devices[1)]						
	• 10 mm × 7 mm, pastel turquoise	C	**3RT1900-1SB10**		100	816 units	41B
	• 20 mm × 7 mm, pastel turquoise	D	**3RT1900-1SB20**		100	340 units	41B
	Adhesive labels for SIRIUS devices						
	• 19 mm × 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
	• 19 mm × 6 mm, zinc/yellow	C	**3RT1900-1SD60**		100	3 060 units	41B

1) PC labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" ➞ "External Partners").

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Solenoid coils

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1934-5A.01

For contactors		Rated control supply voltage U_s			DT	Screw terminals		DT	Spring-type terminals	
		50 Hz	50/60 Hz	60 Hz		Article No.	Price per PU		Article No.	Price per PU
Size	Type	V	V	V						
Solenoid coils · AC operation										
S2	3RT1034	24	--	--	B	**3RT1934-5AB01**		B	**3RT1934-5AB02**	
		42	--	--	B	**3RT1934-5AD01**		B	**3RT1934-5AD02**	
		48	--	--	B	**3RT1934-5AH01**		B	**3RT1934-5AH02**	
		110	--	--	B	**3RT1934-5AF01**		B	**3RT1934-5AF02**	
		230	--	--	B	**3RT1934-5AP01**		B	**3RT1934-5AP02**	
		400	--	--	C	**3RT1934-5AV01**		B	**3RT1934-5AV02**	
		--	24	--	B	**3RT1934-5AC21**		B	**3RT1934-5AC22**	
		--	42	--	B	**3RT1934-5AD21**		B	**3RT1934-5AD22**	
		--	48	--	B	**3RT1934-5AH21**		B	**3RT1934-5AH22**	
		--	110	--	C	**3RT1934-5AG21**		B	**3RT1934-5AG22**	
		--	220	--	C	**3RT1934-5AN21**		B	**3RT1934-5AN22**	
		--	230	--	C	**3RT1934-5AL21**		B	**3RT1934-5AL22**	
		110	--	120	B	**3RT1934-5AK61**		B	**3RT1934-5AK62**	
		220	--	240	B	**3RT1934-5AP61**		B	**3RT1934-5AP62**	
		--	100	110	B	**3RT1934-5AG61**		B	**3RT1934-5AG62**	
		--	200	220	B	**3RT1934-5AN61**		B	**3RT1934-5AN62**	
		--	400	440	B	**3RT1934-5AR61**		B	**3RT1934-5AR62**	
	3RT1035, 3RT1036, 3RT133., 3RT153.	24	--	--	B	**3RT1935-5AB01**		B	**3RT1935-5AB02**	
		42	--	--	B	**3RT1935-5AD01**		B	**3RT1935-5AD02**	
		48	--	--	B	**3RT1935-5AH01**		B	**3RT1935-5AH02**	
		110	--	--	▶	**3RT1935-5AF01**		B	**3RT1935-5AF02**	
		230	--	--	▶	**3RT1935-5AP01**		B	**3RT1935-5AP02**	
		400	--	--	C	**3RT1935-5AV01**		B	**3RT1935-5AV02**	
		--	24	--	B	**3RT1935-5AC21**		B	**3RT1935-5AC22**	
		--	42	--	B	**3RT1935-5AD21**		B	**3RT1935-5AD22**	
		--	48	--	B	**3RT1935-5AH21**		B	**3RT1935-5AH22**	
		--	110	--	B	**3RT1935-5AG21**		B	**3RT1935-5AG22**	
		--	220	--	B	**3RT1935-5AN21**		B	**3RT1935-5AN22**	
		--	230	--	B	**3RT1935-5AL21**		B	**3RT1935-5AL22**	
		110	--	120	B	**3RT1935-5AK61**		B	**3RT1935-5AK62**	
		220	--	240	B	**3RT1935-5AP61**		B	**3RT1935-5AP62**	
		--	100	110	B	**3RT1935-5AG61**		B	**3RT1935-5AG62**	
		--	200	220	B	**3RT1935-5AN61**		B	**3RT1935-5AN62**	
		--	400	440	C	**3RT1935-5AR61**		B	**3RT1935-5AR62**	

Note:

Contactors with AC and DC coils have different depths. That is why when replacing coils it is only possible to replace AC coils with AC coils and DC coils with DC coils.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1944-5A.01

3RT1944-5B.42

3RT1945-5A.01

3RT1945-5A.02

For contactors		Rated control supply voltage U_s				DT	Screw terminals		DT	Spring-type terminals	
		AC			DC		Article No.	Price per PU		Article No.	Price per PU
		50 Hz	50/60 Hz	60 Hz							
Size	Type	V	V	V	V						
Solenoid coils · AC operation											
S3	3RT1044	24	--	--	--	B	**3RT1944-5AB01**		B	**3RT1944-5AB02**	
		42	--	--	--	B	**3RT1944-5AD01**		B	**3RT1944-5AD02**	
		48	--	--	--	B	**3RT1944-5AH01**		B	**3RT1944-5AH02**	
		110	--	--	--	B	**3RT1944-5AF01**		B	**3RT1944-5AF02**	
		230	--	--	--	B	**3RT1944-5AP01**		B	**3RT1944-5AP02**	
		400	--	--	--	B	**3RT1944-5AV01**		B	**3RT1944-5AV02**	
		--	24	--	--	B	**3RT1944-5AC21**		B	**3RT1944-5AC22**	
		--	42	--	--	B	**3RT1944-5AD21**		B	**3RT1944-5AD22**	
		--	48	--	--	B	**3RT1944-5AH21**		B	**3RT1944-5AH22**	
		--	110	--	--	B	**3RT1944-5AG21**		B	**3RT1944-5AG22**	
		--	220	--	--	B	**3RT1944-5AN21**		B	**3RT1944-5AN22**	
		--	230	--	--	B	**3RT1944-5AL21**		B	**3RT1944-5AL22**	
		110	--	120	--	B	**3RT1944-5AK61**		B	**3RT1944-5AK62**	
		220	--	240	--	B	**3RT1944-5AP61**		B	**3RT1944-5AP62**	
		--	100	110	--	B	**3RT1944-5AG61**		B	**3RT1944-5AG62**	
		--	200	220	--	B	**3RT1944-5AN61**		B	**3RT1944-5AN62**	
		--	400	440	--	B	**3RT1944-5AR61**		B	**3RT1944-5AR62**	
	3RT1045, 3RT1046, 3RT134., 3RT1446, 3RT154.	24	--	--	--	B	**3RT1945-5AB01**		B	**3RT1945-5AB02**	
		42	--	--	--	B	**3RT1945-5AD01**		B	**3RT1945-5AD02**	
		48	--	--	--	B	**3RT1945-5AH01**		B	**3RT1945-5AH02**	
		110	--	--	--	B	**3RT1945-5AF01**		B	**3RT1945-5AF02**	
		230	--	--	--	B	**3RT1945-5AP01**		B	**3RT1945-5AP02**	
		400	--	--	--	C	**3RT1945-5AV01**		B	**3RT1945-5AV02**	
		--	24	--	--	B	**3RT1945-5AC21**		B	**3RT1945-5AC22**	
		--	42	--	--	B	**3RT1945-5AD21**		B	**3RT1945-5AD22**	
		--	48	--	--	B	**3RT1945-5AH21**		B	**3RT1945-5AH22**	
		--	110	--	--	B	**3RT1945-5AG21**		B	**3RT1945-5AG22**	
		--	220	--	--	B	**3RT1945-5AN21**		B	**3RT1945-5AN22**	
		--	230	--	--	B	**3RT1945-5AL21**		B	**3RT1945-5AL22**	
		110	--	120	--	B	**3RT1945-5AK61**		B	**3RT1945-5AK62**	
		220	--	240	--	B	**3RT1945-5AP61**		B	**3RT1945-5AP62**	
		--	100	110	--	B	**3RT1945-5AG61**		B	**3RT1945-5AG62**	
		--	200	220	--	C	**3RT1945-5AN61**		B	**3RT1945-5AN62**	
		--	400	440	--	B	**3RT1945-5AR61**		B	**3RT1945-5AR62**	
Solenoid coils · DC operation											
S2	3RT103., 3RT133., 3RT153.	--	--	--	24	B	**3RT1934-5BB41**		B	**3RT1934-5BB42**	
		--	--	--	42	B	**3RT1934-5BD41**		B	**3RT1934-5BD42**	
		--	--	--	48	B	**3RT1934-5BW41**		B	**3RT1934-5BW42**	
		--	--	--	60	B	**3RT1934-5BE41**		B	**3RT1934-5BE42**	
		--	--	--	110	B	**3RT1934-5BF41**		B	**3RT1934-5BF42**	
		--	--	--	125	B	**3RT1934-5BG41**		B	**3RT1934-5BG42**	
		--	--	--	220	B	**3RT1934-5BM41**		B	**3RT1934-5BM42**	
		--	--	--	230	B	**3RT1934-5BP41**		B	**3RT1934-5BP42**	
S3	3RT104., 3RT134., 3RT144., 3RT154.	--	--	--	24	B	**3RT1944-5BB41**		B	**3RT1944-5BB42**	
		--	--	--	42	C	**3RT1944-5BD41**		B	**3RT1944-5BD42**	
		--	--	--	48	B	**3RT1944-5BW41**		B	**3RT1944-5BW42**	
		--	--	--	60	B	**3RT1944-5BE41**		B	**3RT1944-5BE42**	
		--	--	--	110	B	**3RT1944-5BF41**		B	**3RT1944-5BF42**	
		--	--	--	125	B	**3RT1944-5BG41**		B	**3RT1944-5BG42**	
		--	--	--	220	B	**3RT1944-5BM41**		B	**3RT1944-5BM42**	
		--	--	--	230	B	**3RT1944-5BP41**		B	**3RT1944-5BP42**	

Note:

Contactors with AC and DC coils have different depths. That is why when replacing coils it is only possible to replace AC coils with AC coils and DC coils with DC coils.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Spare parts for 3RT1 Contactors

Solenoid coils

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1955-5A..1

For contactors		Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$	DT	Screw terminals		DT	Spring-type terminals	
				Article No.	Price per PU		Article No.	Price per PU
Size	Type	V AC/DC						
Withdrawable coils								
Conventional operating mechanisms								
S6	3RT105, 3RT145	23 ... 26	B	**3RT1955-5AB31**		B	**3RT1955-5AB32**	
		42 ... 48	B	**3RT1955-5AD31**		B	**3RT1955-5AD32**	
		110 ... 127	B	**3RT1955-5AF31**		B	**3RT1955-5AF32**	
		200 ... 220	B	**3RT1955-5AM31**		B	**3RT1955-5AM32**	
		220 ... 240	B	**3RT1955-5AP31**		B	**3RT1955-5AP32**	
		240 ... 277	B	**3RT1955-5AU31**		B	**3RT1955-5AU32**	
		380 ... 420	B	**3RT1955-5AV31**		B	**3RT1955-5AV32**	
		440 ... 480	B	**3RT1955-5AR31**		B	**3RT1955-5AR32**	
		500 ... 550	B	**3RT1955-5AS31**		B	**3RT1955-5AS32**	
		575 ... 600	B	**3RT1955-5AT31**		B	**3RT1955-5AT32**	
S10	3RT106, 3RT146	23 ... 26	B	**3RT1965-5AB31**		B	**3RT1965-5AB32**	
		42 ... 48	B	**3RT1965-5AD31**		B	**3RT1965-5AD32**	
		110 ... 127	B	**3RT1965-5AF31**		B	**3RT1965-5AF32**	
		200 ... 220	C	**3RT1965-5AM31**		B	**3RT1965-5AM32**	
		220 ... 240	B	**3RT1965-5AP31**		B	**3RT1965-5AP32**	
		240 ... 277	B	**3RT1965-5AU31**		B	**3RT1965-5AU32**	
		380 ... 420	B	**3RT1965-5AV31**		B	**3RT1965-5AV32**	
		440 ... 480	B	**3RT1965-5AR31**		B	**3RT1965-5AR32**	
		500 ... 550	C	**3RT1965-5AS31**		B	**3RT1965-5AS32**	
		575 ... 600	C	**3RT1965-5AT31**		B	**3RT1965-5AT32**	
S10	3RT126 vacuum contactors	23 ... 26	B	**3RT1966-5AB31**			--	
		42 ... 48	B	**3RT1966-5AD31**			--	
		110 ... 127	A	**3RT1966-5AF31**			--	
		200 ... 220	C	**3RT1966-5AM31**			--	
		220 ... 240	A	**3RT1966-5AP31**			--	
		240 ... 277	C	**3RT1966-5AU31**			--	
		380 ... 420	B	**3RT1966-5AV31**			--	
		440 ... 480	C	**3RT1966-5AR31**			--	
		500 ... 550	C	**3RT1966-5AS31**			--	
		575 ... 600	C	**3RT1966-5AT31**			--	
S12	3RT107, 3RT147, 3RT12 7 vacuum contactors	23 ... 26	B	**3RT1975-5AB31**		B	**3RT1975-5AB32**	
		42 ... 48	B	**3RT1975-5AD31**		B	**3RT1975-5AD32**	
		110 ... 127	B	**3RT1975-5AF31**		B	**3RT1975-5AF32**	
		200 ... 220	C	**3RT1975-5AM31**		B	**3RT1975-5AM32**	
		220 ... 240	B	**3RT1975-5AP31**		B	**3RT1975-5AP32**	
		240 ... 277	B	**3RT1975-5AU31**		B	**3RT1975-5AU32**	
		380 ... 420	B	**3RT1975-5AV31**		B	**3RT1975-5AV32**	
		440 ... 480	B	**3RT1975-5AR31**		B	**3RT1975-5AR32**	
		500 ... 550	C	**3RT1975-5AS31**		B	**3RT1975-5AS32**	
		575 ... 600	C	**3RT1975-5AT31**		B	**3RT1975-5AT32**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1955-5N..1

For contactors		Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
				Article No. / Price per PU		Article No. / Price per PU
Size	Type	V AC/DC				
Withdrawable coils						
Solid-state operating mechanism						
For 24 V DC PLC output						
S6	3RT105, 3RT145	21 ... 27.3	C	**3RT1955-5NB31**	B	**3RT1955-5NB32**
		96 ... 127	B	**3RT1955-5NF31**	B	**3RT1955-5NF32**
		200 ... 277	B	**3RT1955-5NP31**	B	**3RT1955-5NP32**
S10	3RT106, 3RT146	21 ... 27.3	B	**3RT1965-5NB31**	B	**3RT1965-5NB32**
		96 ... 127	B	**3RT1965-5NF31**	B	**3RT1965-5NF32**
		200 ... 277	B	**3RT1965-5NP31**	B	**3RT1965-5NP32**
	3RT12 6 vacuum contactors	21 ... 27.3	B	**3RT1966-5NB31**		--
		96 ... 127	C	**3RT1966-5NF31**		--
		200 ... 277	C	**3RT1966-5NP31**		--
S12	3RT107, 3RT147, 3RT12 7 vacuum contactors	21 ... 27.3	B	**3RT1975-5NB31**	B	**3RT1975-5NB32**
		96 ... 127	B	**3RT1975-5NF31**	B	**3RT1975-5NF32**
		200 ... 277	B	**3RT1975-5NP31**	B	**3RT1975-5NP32**
For 24 V DC PLC output/PLC relay output, with remaining lifetime indicator (RLT) (withdrawable coil with laterally mounted solid-state module)						
S6	3RT105, 3RT145	96 ... 127	B	**3RT1955-5PF31**		--
		200 ... 277	B	**3RT1955-5PP31**		--
S10	3RT106, 3RT146	96 ... 127	B	**3RT1965-5PF31**		--
		200 ... 277	B	**3RT1965-5PP31**		--
S12	3RT107, 3RT147	96 ... 127	B	**3RT1975-5PF31**		--
		200 ... 277	B	**3RT1975-5PP31**		--

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Contacts and arc chutes

Selection and ordering data

For contactors		Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type							
Contacts with fixing parts								
For contactors with 3 main contacts								
S2	3RT1034	Main contacts (3 NO contacts) for utilization category AC-3	▶	**3RT1934-6A**		1	1 unit	41B
	3RT1035	(1 set = 3 movable and 6 fixed switching elements with fixing parts)	▶	**3RT1935-6A**		1	1 unit	41B
	3RT1036		▶	**3RT1936-6A**		1	1 unit	41B
S3	3RT1044		B	**3RT1944-6A**		1	1 unit	41B
	3RT1045		B	**3RT1945-6A**		1	1 unit	41B
	3RT1046		B	**3RT1946-6A**		1	1 unit	41B
S6	3RT1054		▶	**3RT1954-6A**		1	1 unit	41B
	3RT1055		▶	**3RT1955-6A**		1	1 unit	41B
	3RT1056		▶	**3RT1956-6A**		1	1 unit	41B
S10	3RT1064		▶	**3RT1964-6A**		1	1 unit	41B
	3RT1065		▶	**3RT1965-6A**		1	1 unit	41B
	3RT1066		▶	**3RT1966-6A**		1	1 unit	41B
S12	3RT1075		▶	**3RT1975-6A**		1	1 unit	41B
	3RT1076		A	**3RT1976-6A**		1	1 unit	41B
S3	3RT1446	Main contacts (3 NO contacts) for utilization category AC-1	B	**3RT1946-6D**		1	1 unit	41B
S6	3RT1456	(1 set = 3 movable and 6 fixed switching elements with fixing parts)	B	**3RT1956-6D**		1	1 unit	41B
S10	3RT1466		B	**3RT1966-6D**		1	1 unit	41B
S12	3RT1476		A	**3RT1976-6D**		1	1 unit	41B
For 3RT12 vacuum contactors								
S10	3RT1264	3 vacuum interrupters with fixing parts	B	**3RT1964-6V**		1	1 unit	41B
	3RT1265		B	**3RT1965-6V**		1	1 unit	41B
	3RT1266		B	**3RT1966-6V**		1	1 unit	41B
S12	3RT1275		B	**3RT1975-6V**		1	1 unit	41B
	3RT1276		B	**3RT1976-6V**		1	1 unit	41B
For contactors with 4 main contacts								
S2	3RT1336	Main contacts (4 NO contacts) for utilization category AC-1	B	**3RT1936-6E**		1	1 unit	41B
S3	3RT1344	(1 set = 4 movable and 8 fixed switching elements with fixing parts)	B	**3RT1944-6E**		1	1 unit	41B
	3RT1346		B	**3RT1946-6E**		1	1 unit	41B
Arc chutes								
S2	3RT103.	Arc chutes, 3-pole	B	**3RT1936-7A**		1	1 unit	41B
S3	3RT104., 3RT1446		B	**3RT1946-7A**		1	1 unit	41B
S6	3RT1054		B	**3RT1954-7A**		1	1 unit	41B
	3RT1055		B	**3RT1955-7A**		1	1 unit	41B
	3RT1056		B	**3RT1956-7A**		1	1 unit	41B
S10	3RT1064		B	**3RT1964-7A**		1	1 unit	41B
	3RT1065		B	**3RT1965-7A**		1	1 unit	41B
	3RT1066		B	**3RT1966-7A**		1	1 unit	41B
S12	3RT1075		B	**3RT1975-7A**		1	1 unit	41B
	3RT1076		B	**3RT1976-7A**		1	1 unit	41B
S6	3RT1456		B	**3RT1956-7B**		1	1 unit	41B
S10	3RT1466		B	**3RT1966-7B**		1	1 unit	41B
S12	3RT1476		B	**3RT1976-7B**		1	1 unit	41B

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Illustrations are approximate

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Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3TF68/3TF69 contactors are suitable for use in any climate.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 3/125).

Main contacts

Contact erosion indication with 3TF68/3TF69 vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base. If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, then the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters simultaneously.

Auxiliary contacts

Contact reliability

These auxiliary contacts are particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Electromagnetic compatibility

The 3TF68/3TF69..-.**C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high interference immunity (for EMC values see page 3/120). The solenoid coil is connected to varistors for protection against overvoltages.

The 3TF68/3TF69..-.**Q**.. contactors for AC operation are designed for operation in systems with AC control supply voltage which is subject to strong interference. The solenoid systems of these contactors are configured in the DC economy circuit with rectification. The rectifier bridge is connected to varistors for protection against overvoltages.

Protection of the main current paths

An integrated RC varistor connection for the main current paths dampens the switching overvoltage rises to safe values. This prevents multiple restricting. It can therefore be assumed that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

Note:

During operation in installations in which the emitted interference limits cannot be observed, e.g. when used for output contactors in converters, 3TF68/3TF69..-.**Q** contactors – without connection of the main current path circuit – are recommended.

Technical specifications

Contactor	Type	3TF68 and 3TF69
Rated data of the auxiliary contacts		According to IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)	V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12	A	10
AC load		
Rated operational current I_e/AC-15/AC-14		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 110 V	A	10
- At 125 V	A	10
- At 220 V	A	6
- At 230 V	A	5.6
- At 380 V	A	4
- At 400 V	A	3.6
- At 500 V	A	2.5
- At 660 V	A	2.5
- At 690 V	A	2.3
DC load		
Rated operational current I_e/DC-12		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 60 V	A	10
- At 110 V	A	3.2
- At 125 V	A	2.5
- At 220 V	A	0.9
- At 440 V	A	0.33
- At 600 V	A	0.22
Rated operational current I_e/DC-13		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 60 V	A	5
- At 110 V	A	1.14
- At 125 V	A	0.98
- At 220 V	A	0.48
- At 440 V	A	0.13
- At 600 V	A	0.07
CSA and UL rated data of the auxiliary contacts		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor

3TF68 and 3TF69

Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The characteristic curves apply to 230 V AC.

Contactor

3TF68 and 3TF69

Contact erosion indication with vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of three white double slides on the contactor base.

If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all three vacuum interrupters at once.

Contact endurance of the main contacts

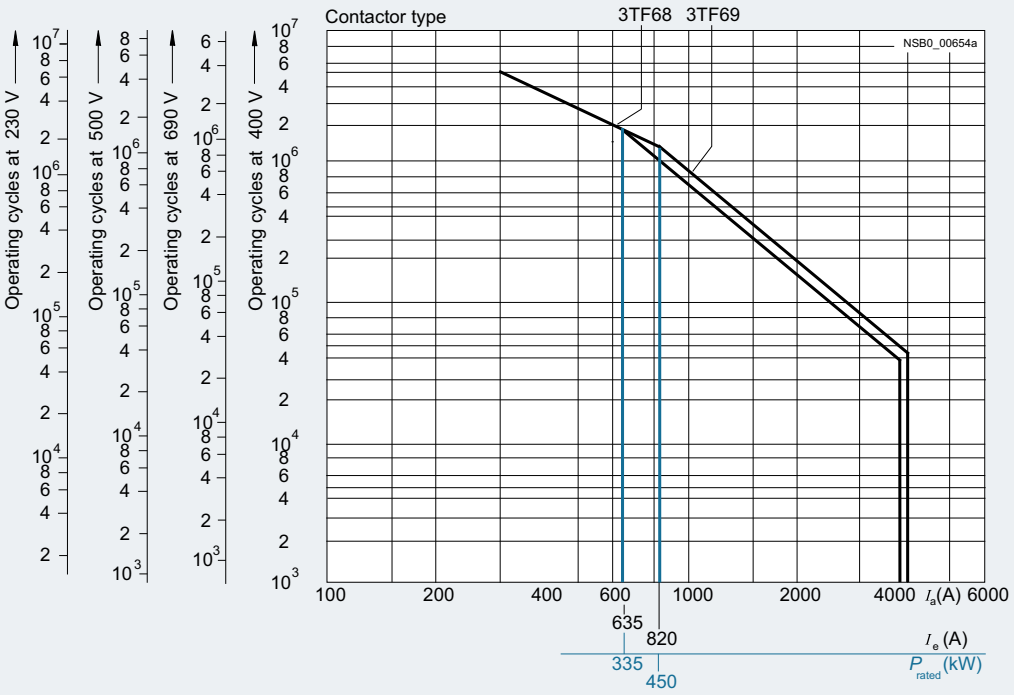

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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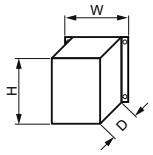
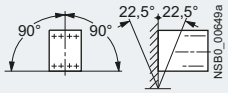
Type			**3TF68**	**3TF69**
Size			**14**	**14**
Dimensions (W x H x D)		mm	230 x 276 x 237	230 x 295 x 237

General data

Permissible mounting position, installation instructions[1)2)] The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance	Operating cycles	5 million	
Electrical endurance	Operating cycles	[3)]	
Rated insulation voltage U_i (pollution degree 3)	kV	1	
Rated impulse withstand voltage U_{imp}	kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N	kV	1	
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact. One NC contact each must be connected in series for the right and left auxiliary switch block respectively.		Yes, acc. to IEC 60947-4-1, Appendix F	
Permissible ambient temperature			
• During operation	°C	-25 ... +55	
• During storage	°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C		IP00/open (where applicable, use additional terminal covers)	
Touch protection acc. to EN 50274		Finger-safe only for vertical contact from the front	
Shock resistance			
• Rectangular pulse			
- AC operation	*g*/ms	8.1/5 and 4.7/10	9.5/5 and 5.7/10
- DC operation	*g*/ms	9/5 and 5.7/10	8.6/5 and 5.1/10
• Sine pulse			
- AC operation	*g*/ms	12.8/5 and 7.4/10	13.5/5 and 7.8/10
- DC operation	*g*/ms	14.4/5 and 9.1/10	13.5/5 and 7.8/10
Conductor cross-sections		See "Conductor cross-sections" on page 3/122	
Electromagnetic compatibility (EMC)		See "Electromagnetic compatibility (EMC)" on page 3/120	

Short-circuit protection

Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1			
• Type of coordination "1"	A	1 000	1 250
• Type of coordination "2"	A	500	630
• Weld-free[4)]	A	400	500
Auxiliary circuit			
Short-circuit test			
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	10	
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A	A	10	

1) To easily replace the laterally mounted auxiliary switches it is recommended to maintain a minimum distance of 30 mm between the contactors.

2) If mounted at a 90° angle (current paths are horizontally above each other), the switching frequency is reduced by 80 % compared with the normal values.

3) See "Endurance of the auxiliary contacts", page 3/118.

4) Test conditions according to IEC 60947-4-1.

Note:

For short-circuit protection of contactors with overload relay, see Configuration Manual "Configuring SIRIUS" http://support.automation.siemens.com/WW/view/en/40625241.

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor		Type	3TF68	3TF69
		Size	14	14
Control				
Solenoid coil operating range			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)				
• AC operation, $U_{s\,max}$	- Closing	VA/p.f.	1850/1	950/0.98
	- Closed	VA/p.f.	49/0.15	30.6/0.31
• AC operation, $U_{s\,min}$	- Closing	VA/p.f.	1200/1	600/0.98
	- Closed	VA/p.f.	13.5/0.47	12.9/0.43
• DC economy circuit[1]	- Closing at 24 V	W	1010	960
	- Closed	W	28	20.6
For contactors of type 3TF68/3TF69..-.**Q**:				
• AC operation, $U_{s\,min}$[2]	- Closing	VA/p.f.	1 000/0.99	1 150/0.99
	- Closed	VA/p.f.	11/1	11/1
Operating times for 0.8 ... **1.1 x U_s** (Total break time = Opening delay + Arcing time)			(Values apply to cold and warm coil)	
• AC operation	- Closing delay	ms	70 ... 120 (22 ... 65)[3]	80 ... 120
	- Opening delay	ms	70 ... 100	70 ... 80
• DC economy circuit	- Closing delay	ms	76 ... 110	86 ... 280
	- Opening delay	ms	50	19 ... 25
• Arcing time		ms	10 ... 15	10
For contactors of type 3TF68/3TF69..-.**Q**:				
• AC operation	- Closing delay	ms	35 ... 90	45 ... 160
	- Opening delay	ms	65 ... 90	30 ... 80
Operating times for 1.0 x U_s (Total break time = Opening delay + Arcing time)				
• AC operation	- Closing delay	ms	80 ... 100 (30 ... 45)[3]	85 ... 100
	- Opening delay	ms	70 ... 100	70
• DC economy circuit	- Closing delay	ms	80 ... 90	90 ... 125
	- Opening delay	ms	50	19 ... 25
Minimum command duration for closing	Standard	ms	120	120
	Reduced make-time	ms	90	--
Minimum interval time between two ON commands		ms	100	300

1) At 24 V DC; for further voltages, deviations of up to ±10 % are possible.
2) Including reversing contactor.
3) Values in brackets apply to contactors with reduced operating times.

Contactor	Type	3TF6.44-.CF7	3TF6.44-.CM7	3TF6.44-.CP7	3TF6.44-.CQ7	3TF6.44-.CS7
Electromagnetic compatibility						
Rated control supply voltage U_s	V AC	110 ... 132	200 ... 240	230 ... 277	380 ... 460	500 ... 600
Overvoltage type acc. to IEC 60801		Burst/Surge				
Degree of severity acc. to IEC 60801						
• Burst		3	4	4	4	4
• Surge		4	4	4	4	4
Overvoltage resistance						
• Burst	kV	2	4	4	4	4
• Surge	kV	6	5	5	6	6

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor		Type		3TF68	3TF69
		Size		14	14
Main circuit					
Load rating with AC					
Utilization category AC-1 Switching resistive loads					
• Rated operational currents I_e	At 40 °C up to 690 V		A	700	910
	At 55 °C up to 690 V		A	630	850
	At 55 °C 1 000 V		A	450	800
• Rated power for AC loads with p.f. = 0.95 at 55 °C	230 V		kW	240	323
	400 V		kW	415	558
	500 V		kW	545	735
	690 V		kW	720	970
	1 000 V		kW	780	1385
• Minimum conductor cross-sections for loads with I_e	At 40°C		mm^2	2 x 240	$I_e \geq 800$ A: 2 x 60 x 5 (copper busbars)
	At 55°C		mm^2	2 x 185	$I_e < 800$ A: 2 x 240
Utilization categories AC-2 and AC-3					
• Rated operational currents I_e	Up to 690 V		A	630	820
	1 000 V		A	435	580
• Rated power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	At 230 V		kW	200	260
	400 V		kW	347	450
	500 V		kW	434	600
	690 V		kW	600	800
	1 000 V		kW	600	800
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
• Rated operational current I_e, maximum	Up to 690 V		A	610	690
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V		kW	355	400
The following applies to a contact endurance of about 200 000 operating cycles:					
• Rated operational currents I_e	Up to 690 V		A	300	360
	1 000 V		A	210	250
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V		kW	97	110
	400 V		kW	168	191
	500 V[1]		kW	210	250
	690 V[1]		kW	278	335
	1 000 V[1]		A	290	350
Switching frequency					
Switching frequency z in operating cycles/hour					
• Contactors without overload relays	No-load switching frequency AC		1/h	2 000	1 000
	No-load switching frequency DC		1/h	1 000	1 000
		AC-1	1/h	700	700
		AC-2	1/h	200	200
		AC-3	1/h	500	500
		AC-4	1/h	150	150
• Contactors with overload relays (mean value)			1/h	15	15

[1] Max. permissible rated operational current I_e/AC-4 = I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency.

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type	3TF68	3TF69
	Size	14	14
Conductor cross-sections			
Main conductors:		Screw terminals	
• Busbar connections			
- Finely stranded with cable lug	mm^2	50 ... 240	50 ... 240
- Stranded with cable lug	mm^2	70 ... 240	50 ... 240
- Solid or stranded	AWG	2/0 ... 500 MCM	2/0 ... 500 MCM
- Connecting bar (max. width)	mm	50	60 ($U_e \leq 690$ V) 50 ($U_e > 690$ V)
• Terminal screw		M10 x 30	M12 x 40
- Tightening torque	Nm	14 ... 24	20 ... 35
	lb.in	124 ... 210	177 ... 310
• With box terminal[1]			
- Connectable copper bars			
- Width	mm	15 ... 25	15 ... 38
- Max. thickness	mm	1 x 26 or 2 x 11	1 x 46 or 2 x 18
- Terminal screw		A/F 6 (hexagon socket)	A/F 8 (hexagon socket)
- Tightening torque	Nm	25 ... 40 (221 ... 354 lb.in)	35 ... 50 (266 ... 443 lb.in)
Auxiliary conductors:			
• Solid	mm^2	2 x (0.5 ... 1)[2]/2 x (1 ... 2.5)[2]	
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1)[2]/2 x (0.75 ... 2.5)[2]	
• Pin-end connector to DIN 46231	mm^2	2 x (1 ... 1.5)	
• Solid or stranded	AWG	2 x (18 ... 12)	
• Tightening torque	Nm	0.8 ... 1.4	
	lb.in	7 ... 12	

1) See "Accessories and Spare Parts", page 3/125.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Contactor	Type	3TF68	3TF69
	Size	14	14
CSA and UL rated data			
Rated insulation voltage	V AC	600	600
Uninterrupted current			
• Open and enclosed	A	630	820
Maximum horsepower ratings (CSA and UL approved values)			
• Rated power for three-phase motors at 60 Hz			
- At 200 V	hp	231	290
- At 230 V	hp	266	350
- At 460 V	hp	530	700
- At 575 V	hp	664	860
NEMA/EEMAC ratings			
SIZE	hp	6	7
• Uninterrupted current			
- Open	A	600	820
- Enclosed	A	540	810
• Rated power for three-phase motors at 60 Hz			
- At 200 V	hp	150	--
- At 230 V	hp	200	300
- At 460 V	hp	400	600
- At 575 V	hp	400	600
Overload relays	Type	3RB12	
• Setting range	A	200 ... 820	

Short-circuit protection with overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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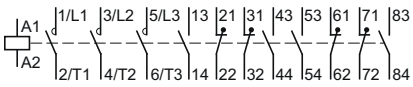
Selection and ordering data

Contactors for AC control

- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals
- Electronically controlled solenoid operating mechanism with high EMC[1)]
- With overvoltage protection of the coil (varistor)

3TF68/69

Rated data							Auxiliary contacts		Rated control supply voltage U_s	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
AC-2 and AC-3 (up to 55 °C)						AC-1									
Operational current I_e up to 690 V	Ratings[2)] of three-phase motors at 50 Hz and 230 V	**400 V**	500 V	690 V	1 000 V	Operational current I_e (at 40 °C)	Version				Article No.	Price per PU			
							NO	NC							
A	kW	**kW**	kW	kW	kW	A			V						
AC operation 50/60 Hz[1)]															
Size 14															
															
630	200	**335**	434	600	--	700	4	4	110 ... 132 AC	A	**3TF6844-0CF7**		1	1 unit	41B
									200 ... 240 AC	▶	**3TF6844-0CM7**		1	1 unit	41B
630	200	**335**	434	600	600	700	4	4	110 ... 132 AC	C	**3TF6844-8CF7**		1	1 unit	41B
									200 ... 240 AC	A	**3TF6844-8CM7**		1	1 unit	41B
820	260	**450**	600	800	--	910	4	4	110 ... 132 AC	A	**3TF6944-0CF7**		1	1 unit	41B
									200 ... 240 AC	▶	**3TF6944-0CM7**		1	1 unit	41B
820	260	**450**	600	800	800	910	4	4	110 ... 132 AC	C	**3TF6944-8CF7**		1	1 unit	41B
									200 ... 240 AC	C	**3TF6944-8CM7**		1	1 unit	41B

1) For electromagnetic compatibility (EMC) see page 3/120.
For use of 3TF6 vacuum contactors in the environment of frequency converters, we recommend ordering a special version:
3TF6 ...-....-Z A02.
3TF68/3TF69 vacuum contactors in their basic version are supplied with integrated overvoltage damping for the main current paths. The surge suppression circuit is not required for operation in circuits with DC choppers, frequency converters or speed-variable operating mechanisms, for example.
The circuit could be damaged by the voltage peaks and harmonics and thus cause phase-to-phase short circuits. For this reason, the contactors can also be supplied without integrated overvoltage damping. Without additional price.
The Article No. must be supplemented by **"-Z"** and the order code **"A02"**.

2) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

Other voltages see page 3/124.
For accessories see page 3/125,
for spare parts see page 3/126.

Footnotes for page 3/124:

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) On these versions, a magnetic system is used in the DC economy circuit. A varistor can be retrofitted. A 3TC4417-4AB4 reversing contactor with preassembled connecting cable (approx. 1 m) and plug is included in the scope of supply of the vacuum contactor.

3) On this version, a magnetic system with rectifier is used in the DC economy circuit. Varistor integrated. A 3TC4417-4A. reversing contactor with preassembled connecting cable (approx. 1 m) is included in the scope of supply of the vacuum contactor.

4) For electromagnetic compatibility (EMC) see page 3/120.
For use of 3TF6 vacuum contactors in the environment of frequency converters, we recommend ordering a special version:
3TF6 ...-....-Z A02.
3TF68/3TF69 vacuum contactors in their basic version are supplied with integrated overvoltage damping for the main current paths. The surge suppression circuit is not required for operation in circuits with DC choppers, frequency converters or speed-variable operating mechanisms, for example.
The circuit could be damaged by the voltage peaks and harmonics and thus cause phase-to-phase short circuits. For this reason, the contactors can also be supplied without integrated overvoltage damping. Without additional price.
The Article No. must be supplemented by **"-Z"** and the order code **"A02"**.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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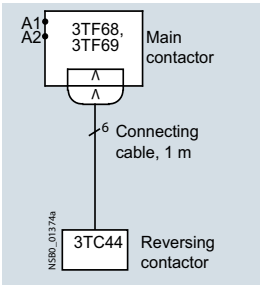
3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactors for DC operation and for AC operation which is subject to strong interference

- Main conductors: busbar connections
- Auxiliary and control conductors: Screw terminals
- DC solenoid system with 3TC44 reversing contactor for series resistor



3TF6.33-.Q.7

Rated data AC-2 and AC-3 (up to 55 °C) Operational current I_e up to 690 V	Ratings[1] of three-phase motors at 50 Hz and 230 V	**400 V**	500 V	690 V	1 000 V	AC-1 Operational current I_e (at 40 °C)	Auxiliary contacts Version NO	NC	Rated control supply voltage U_s	DT	**Screw terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	kW	A			V						
DC operation · DC economy circuit[2)3)]															
Size 14															
630	200	**335**	434	600	--	700	3	3	24 DC	C	**3TF6833-1DB4**		1	1 unit	41B
					600	700	3	3	24 DC	C	**3TF6833-8DB4**		1	1 unit	41B
820	260	**450**	600	800	--	910	3	3	24 DC	C	**3TF6933-1DB4**		1	1 unit	41B
					800	910	3	3	24 DC	C	**3TF6933-8DB4**		1	1 unit	41B
AC operation 50/60 Hz with DC economy circuit[3)4)] For AC operation which is subject to strong interference															
Size 14															
630	200	**335**	434	600	--	700	3	3	110 ... 120 AC	C	**3TF6833-1QG7**		1	1 unit	41B
									220 ... 240 AC	A	**3TF6833-1QL7**		1	1 unit	41B
									380 ... 420 AC	C	**3TF6833-1QV7**		1	1 unit	41B
					600	700	3	3	220 ... 240 AC	C	**3TF6833-8QL7**		1	1 unit	41B
820	260	**450**	600	800	--	910	3	3	110 ... 120 AC	C	**3TF6933-1QG7**		1	1 unit	41B
									220 ... 240 AC	A	**3TF6933-1QL7**		1	1 unit	41B
									380 ... 420 AC	C	**3TF6933-1QV7**		1	1 unit	41B
					800	910	3	3	110 ... 120 AC	C	**3TF6933-8QG7**		1	1 unit	41B
									220 ... 240 AC	C	**3TF6933-8QL7**		1	1 unit	41B

For footnotes see page 3/123.
For accessories see page 3/125,
for spare parts see page 3/126.

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	**Contactor type**	**3TF6844-.C.., 3TF6944-.C..**
	Size	**14**
AC operation		
Solenoid coils for 50/60 Hz		
110 ... 132 V AC		F7
200 ... 240 V AC		M7
230 ... 277 V AC		P7
380 ... 460 V AC		Q7
500 ... 600 V AC		S7

Rated control supply voltage U_s	**Contactor type**	**3TF6833-.D.., 3TF6933-.D..**
	Size	**14**
DC operation		
Solenoid coils for DC economy circuit		
24 V DC		B4
110 V DC		F4
125 V DC		G4
220 V DC		M4
230 V DC		P4

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version	Rated control supply voltage U_s V AC	Rated control supply voltage U_s V DC	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors[1] · Varistors								
3TX7572-3. **Varistors**[2]	--	24 ... 48	C	**3TX7572-3G**		1	1 unit	41B
For DC economy circuit; for lateral snapping onto auxiliary switches	--	48 ... 127	D	**3TX7572-3H**		1	1 unit	41B
	--	127 ... 240	C	**3TX7572-3J**		1	1 unit	41B

[1] The surge suppressor (varistor) is included in the scope of supply of the 3TF68 and 3TF69 contactors with AC operation.

[2] Includes the peak value of the alternating voltage on the DC side.

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid-state compatible auxiliary switch blocks with screw terminals						
For operation in dusty atmospheres and in solid-state circuits with rated operational currents I_e AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V						
5TY7561-1. For mounting onto the side of contactors	►	**3TY7561-1UA00**		1	1 unit	41B
With 1 changeover contact. 2nd auxiliary switch block, left or right (replacement for 3TY6561-1U, 3TY6561-1V)						
Mounting on the left: 51, 52, 54 — Mounting on the right: 61, 62, 64						
Coupling links for control by PLC						
For snapping onto the side of auxiliary switch, with surge suppression. Operating range: 17 V to 30 V DC. Power consumption: 0.5 W at 24 V DC. Fitted with varistor.[1]	►	**3TX7090-0D**		1	1 unit	41B
Terminal covers						
3TX76.6-0A For protection against inadvertent contact with exposed busbar connections	B	**3TX7686-0A**		1	1 unit	41B
	B	**3TX7696-0A**		1	1 unit	41B
Can be screwed onto free screw end on middle connecting bar. 2 units required per contactor. (1 set = 2 units)						
Links for paralleling (star jumpers), 3-pole						
Link for paralleling without connection terminals[2]	C	**3TX7680-0D**		1	1 unit	41B
Cover plates for links for paralleling						
A cover plate must be used in order to protect against inadvertent contact with exposed busbar connections (EN 50274).	C	**3TX7680-0E**		1	1 unit	41B
Box terminals for laminated copper bars						
Without auxiliary conductor connection for 3TF68 (1 set = 3 units)						
With single covers for protection against inadvertent contact (EN 50274)	D	**3TX7570-1E**		1	1 unit	41B
With auxiliary conductor connection for 3TF69 (1 set = 3 units)						
Conductor cross-sections for auxiliary conductors: • Solid 2 x (0.75 ... 2.5) mm² • Finely stranded with end sleeve 2 x (0.5 ... 2.5) mm² • Solid or stranded 2 x (18 ... 12) AWG • Tightening torque 0.8 ... 1.4 Nm (7 ... 12 lb.in)	D	**3TX7690-1F**		1	1 unit	41B

[1] Technical specifications for coupling links see "Accessories for 3RT10 Contactors", page 3/101.

[2] The link for paralleling can be reduced by one pole

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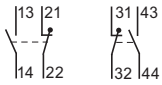
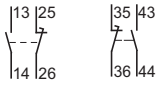
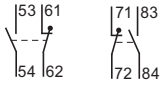
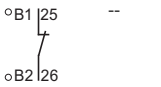
3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Spare parts

Version	Auxiliary contacts Version	Connections	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	NO NC NC							
Auxiliary switch blocks								
For lateral mounting		Left Right						
1st auxiliary switch block (replacement for 3TY7561-1A/ -1B)	1 1 --		▶	**3TY7561-1AA00**		1	1 unit	41B
1st auxiliary switch block	1 -- 1		▶	**3TY7561-1EA00**		1	1 unit	41B
2nd auxiliary switch block (replacement for 3TY7561-1K/ -1L)	1 1 --		C	**3TY7561-1KA00**		1	1 unit	41B
For reconnection of the coil with DC economy circuit	-- -- 1	 --	▶	**3TY7681-1G**		1	1 unit	41B

3TY7561-1.A00

Version	For type	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solenoid coils							
AC operation[1]							
The solenoid coils are fitted as standard with varistors against overvoltage; the coil is supplied with switch-on electronics.	3TF68		**3TY7683-0C..**				
	3TF69		**3TY7693-0C..**				
DC operation[1] **· DC economy circuit**							
The solenoid coils for size 14 are supplied without reversing contactor.	3TF68		**3TY7683-0D..**				
	3TF69		**3TY7693-0D..**				
Vacuum interrupters							
Set with 3 vacuum interrupters with components	3TF68	B	**3TY7680-0B**		1	1 unit	41B
In order to ensure reliable operation of the contactors, only **original replacement interrupters** should be used.	3TF69	C	**3TY7690-0B**		1	1 unit	41B

3TY76.3-0...

[1] Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Article No. must be supplemented according to page 3/124.

Version	Rated control supply voltage U_s V AC	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3TC44 reversing contactors							
Complete with series resistor, 1 m connecting cable and plug-in connector	110 ... 120	D	**3TY7684-0QG7**		1	1 unit	41B
	220 ... 240	D	**3TY7684-0QL7**		1	1 unit	41B
For 3TF68..-.Q, 3TF69..-.Q	380 ... 420	D	**3TY7684-0QV7**		1	1 unit	41B
Solenoid coils for main contactor, with rectifier bridge							
For 3TF68..-.Q	110 ... 120	D	**3TY7683-0QG7**		1	1 unit	41B
	220 ... 240	D	**3TY7683-0QL7**		1	1 unit	41B
	380 ... 420	D	**3TY7683-0QV7**		1	1 unit	41B
For 3TF69..-.Q	110 ... 120	D	**3TY7693-0QG7**		1	1 unit	41B
	220 ... 240	D	**3TY7693-0QL7**		1	1 unit	41B
	380 ... 420	D	**3TY7693-0QV7**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Overview

The 3TB5 contactors are suitable for use in any climate.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 3/133).

Auxiliary contacts

The contactors are equipped with two lateral auxiliary switch blocks each with 1 NO + 1 NC contact. Further auxiliary switch blocks cannot be fitted to the DC-operated contactors.

Technical specifications

Contactor	Type	3TB50	3TB52 ... 3TB56
	Size	6	8 ... 12
Rated data of the auxiliary contacts		According to IEC 60947-5-1	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Conventional thermal current I_{th} = Rated operational current I_e/AC-12	A	10	
AC load			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e			
- At 24 V	A	10	
- At 110 V	A	10	
- At 125 V	A	10	
- At 220 V	A	6	
- At 230 V	A	5.6	
- At 380 V	A	4	
- At 400 V	A	3.6	
- At 500 V	A	2.5	
- At 660 V	A	2.5	
- At 690 V	A	--	
DC load			
Rated operational current I_e/DC-12			
• For rated operational voltage U_e			
- At 24 V	A	10	10
- At 60 V	A	10	10
- At 110 V	A	3.2	8
- At 125 V	A	2.5	6
- At 220 V	A	0.9	2
- At 440 V	A	0.33	0.6
- At 600 V	A	0.22	0.4
Rated operational current I_e/DC-13 [1]			
• For rated operational voltage U_e			
- At 24 V	A	10 (10)	10 (10)
- At 60 V	A	5 (7)	5 (4)
- At 110 V	A	1.14 (3.2)	2.4 (1.8)
- At 125 V	A	0.98 (2.5)	2.1 (1.6)
- At 220 V	A	0.48 (0.9)	1.1 (0.9)
- At 440 V	A	0.13 (0.33)	0.32 (0.27)
- At 600 V	A	0.075 (0.22)	0.21 (0.18)
CSA and UL rated data of the auxiliary contacts			
Rated voltage, max.	V AC	600	
Switching capacity		A 600, P 600	

[1] Values in brackets apply to auxiliary contacts with delayed NC contact.

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	3TB5

Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- C Inching operations as a percentage of total switching operations

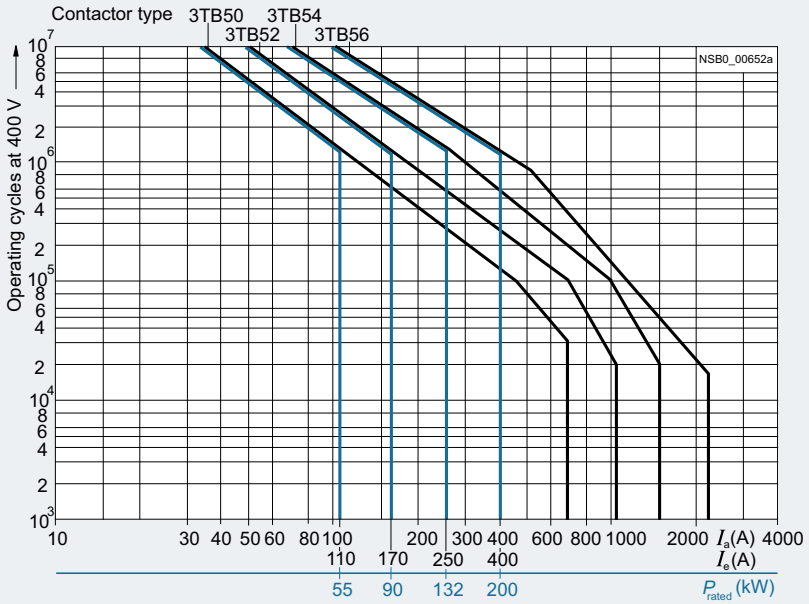

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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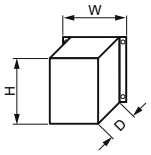
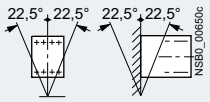
3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Type			**3TB50**	**3TB52**	**3TB54**	**3TB56**
Size			**6**	**8**	**10**	**12**
Dimensions (W x H x D)		mm	120 x 150 x 198	135 x 180 x 217	145 x 252 x 264	160 x 252 x 282
General data						
Permissible mounting position, installation instructions[1] The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance		Operating cycles	10 million			
Electrical endurance			[2]			
Rated insulation voltage U_i		V	1000			
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690			
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F			
Permissible ambient temperature						
• During operation		°C	-25 ... +55			
• During storage		°C	-50 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open (where applicable, use additional terminal covers)			
Touch protection acc. to EN 50274			Finger-safe only for vertical contact from the front			
Shock resistance (rectangular pulse)		*g*/ms	5/10	5.9/10	5.9/10	5.9/10
Short-circuit protection						
Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB						
• Type of coordination "1"		A	250	315	400	630
• Type of coordination "2"		A	224	250	315	500
Auxiliary circuit						
Short-circuit test						
• with fuse links of operational class gG: LV HRC, type 3NA; DIAZED, type 5SB with short-circuit current I_k = 1 kA according to IEC 60947-5-1		A	16			
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A		A	10			
Control						
Solenoid coil operating range			0.8 ... 1.1 x U_s			
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)						
• Closing = Closed		W	25	30	60	86
Operating times for 0.8 ... 1.1 x U_s Total break time = Opening delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• Closing delay		ms	105 ... 360	115 ... 400	105 ... 400	110 ... 400
• Opening delay[3]		ms	18 ... 30	22 ... 35	24 ... 55	40 ... 110
• Arcing time		ms	10 ... 15	10 ... 15	10 ... 15	10 ... 15
Operating times for 1.0 x U_s						
• Closing delay		ms	120 ... 230	130 ... 250	115 ... 250	120 ... 250
• Opening delay[3]		ms	20 ... 26	24 ... 32	35 ... 50	60 ... 95

1) For reversing duty, deviations from the vertical axis are not permitted.

2) See "Contact endurance of the main contacts", page 3/128.

3) The opening delay times can increase if the contactor coils are damped against voltage peaks.

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	Type	3TB50	3TB52	3TB54	3TB56
	Size	6	8	10	12
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
• Rated operational current I_e					
- At 40 °C up to 690 V	A	170	230	325	425
- At 55 °C up to 690 V	A	160	200	300	400
• Rated power for AC loads[1] with p.f.= 0.95 (at 55 °C)					
- At 230 V	kW	61	76	114	152
- At 400 V	kW	105	132	195	262
- At 500 V	kW	138	173	260	345
- At 690 V	kW	183	228	340	455
• Minimum conductor cross-sections for loads with I_e	mm^2	70	95	185	240
Utilization categories AC-2 and AC-3		[2]			
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
The following applies to a contact endurance of about 200 000 operating cycles:					
• Rated operational current I_e	A	52	72	103	120
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz					
- At 230 V	kW	15.6	21	31	37.5
- At 400 V	kW	27	37	55	65
- At 500 V	kW	35	48	72	85.5
- At 690 V	kW	45	64	92	106
• Max. permisible operational current I_e/AC-4					
- At 400 V	A	110	170	250	400
Load rating with DC					
Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)					
• Rated operational currents I_e (at 55 °C)					
- 1 conducting path	Up to 24 V A	160	200	300	400
	60 V A	80	80	300	330
	110 V A	18	18	33	33
	220 V A	3.4	3.4	3.8	3.8
	440 V A	0.8	0.8	0.9	0.9
	600 V A	0.5	0.5	0.6	0.6
- 2 conducting paths in series	Up to 24 V A	160	200	300	400
	60 V A	160	200	300	400
	110 V A	160	200	300	400
	220 V A	20	20	300	400
	440 V A	3.2	3.2	4	4
	600 V A	1.6	1.6	2	2
- 3 conducting paths in series	Up to 24 V A	160	200	300	400
	60 V A	160	200	300	400
	110 V A	160	200	300	400
	220 V A	160	200	300	400
	440 V A	11.5	11.5	11	11
	600 V A	4	4	5.2	5.2
Utilization category DC-3/DC-5, shunt-wound and series-wound motors ($L/R \leq 15$ ms)					
• Rated operational currents I_e (at 55 °C)					
- 1 conducting path	Up to 24 V A	16	16	35	35
	60 V A	7.5	7.5	11	11
	110 V A	2.5	2.5	3	3
	220 V A	0.6	0.6	0.6	0.6
	440 V A	0.17	0.17	0.18	0.18
	600 V A	0.12	0.12	0.125	0.125
- 2 conducting paths in series	Up to 24 V A	160	200	300	400
	60 V A	160	200	300	400
	110 V A	160	200	300	400
	220 V A	2.5	2.5	2.5	2.5
	440 V A	0.65	0.65	0.65	0.65
	600 V A	0.37	0.37	0.37	0.37
- 3 conducting paths in series	Up to 24 V A	160	200	300	400
	60 V A	160	200	300	400
	110 V A	160	200	300	400
	220 V A	160	200	300	400
	440 V A	1.4	1.4	1.4	1.4
	600 V A	0.75	0.75	0.75	0.75

[1] Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

[2] See "Selection and Ordering Data" 3/132.

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	Type	3TB50	3TB52	3TB54	3TB56
Size		6	8	10	12
Main circuit					
Switching frequency					
Switching frequency *z* in operating cycles/hour					
• Contactors without overload relays					
- AC-1	h^{-1}	1 000			
- AC-2	h^{-1}	500			
- AC-3	h^{-1}	500			
- AC-4	h^{-1}	250			
• Contactors with overload relays (mean value)	h^{-1}	15			
Conductor cross-sections					
Main conductors:		Screw terminals			
• Finely stranded with cable lug	mm^2	16 ... 70	35 ... 95	50 ... 240	50 ... 240
• Stranded with cable lug	mm^2	25 ... 70	50 ... 120	70 ... 240	70 ... 240
• Busbars	mm	15 x 3	20 x 3	25 x 5	2 x (25 x 3)
• Terminal screw		M6	M8	M10	M10
Auxiliary conductors:					
• Solid	mm^2	1 ... 2.5			
• Finely stranded with end sleeve	mm^2	0.75 ... 1.5			
• Pin-end connector (DIN 46231)	mm^2	2 x 1 ... 2.5			
Protective conductors:					
• Stranded with cable lug	mm^2	--	25 ... 70	35 ... 70	50 ... 120
CSA and UL rated data					
CSA rated data					
• Uninterrupted current					
- Open	A	150	170	240	300
- Enclosed	A	135	153	215	270
• Rated power for three-phase motors at 60 Hz (enclosed)					
- 115 V	hp	25	30	40	50
- 230 V	hp	50	60	75	100
- 460 V	hp	100	120	150	200
- 575 V	hp	125	160	200	250
• Overload relays	Type	3RB2056	3RB2056	3RB2066	3RB2066
- Setting range	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
UL rated data					
• Uninterrupted current					
- Open	A	150	150	240	390
- In enclosure	A	135	135	215	350
• Rated power for three-phase motors at 60 Hz					
- 115 V	hp	25	25	30	--
- 230 V	hp	50	50	75	125
- 460 V	hp	100	100	150	250
- 575 V	hp	125	125	200	300[1)]
• Overload relays	Type	3RB2056	3RB2056	3RB2066	3RB2066
- Setting range	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
Short-circuit protection devices					
• CLASS RK5 fuses	A	400	400	450	600
• Circuit breakers acc. to UL 489	A	175	175	250	600

1) At 575/600 V AC max. rated motor current 325 A and motor starting current 3 250 A.

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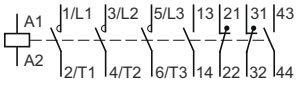
3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Selection and ordering data

Main conductors: Busbar connections
Auxiliary and control conductors: Screw terminals

3TB50

Size	Rated data AC-2 and AC-3 (up to 55 °C) Operational current I_e up to 690 V	Ratings[1] of three-phase motors at 50 Hz and 230 V	**400 V**	500 V	690 V	AC-1 Operational current I_e (at 40 °C)	Auxiliary contacts Version NO	NC	Rated control supply voltage U_s	DT	**Screw terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A			V DC						
DC operation · DC solenoid system															
															
6	110	37	**55**	75	90	170	2	2	24	A	**3TB5017-0BB4**		1	1 unit	41B
8	170	55	**90**	110	132	230	2	2	24	A	**3TB5217-0BB4**		1	1 unit	41B
10	250	75	**132**	160	200	325	2	2	24	C	**3TB5417-0BB4**		1	1 unit	41B
12	400	115	**200**	255	355	425	2	2	24	C	**3TB5617-0BB4**		1	1 unit	41B

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

For accessories see page 3/133.
For spare parts see page 3/134.

Options

Rated control supply voltages
(change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	**Contactor type** **Size**	**3TB50, 3TB52, 3TB54** **6, 8, 10**	**3TB56** **12**
DC operation			
24 V DC		B4	B4
110 V DC		F4	--
220 V DC		M4	M4

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

For contactors Size	Type	Version	Rated control supply voltage U_s V AC	V DC	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors · Varistors										
3TX7462-3.										
6	3TB50	**Varistors**[1] for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	A	**3TX7462-3G**		1	1 unit	41B
			48 ... 127	70 ... 150	B	**3TX7462-3H**		1	1 unit	41B
			127 ... 240	150 ... 250	A	**3TX7462-3J**		1	1 unit	41B
			240 ... 400	--	B	**3TX7462-3K**		1	1 unit	41B
			400 ... 600	--	B	**3TX7462-3L**		1	1 unit	41B
3TX7522-3.										
8 ... 12	3TB52 ... 3TB56	**Varistors**[1] for separate screw fixing or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	**3TX7522-3G**		1	1 unit	41B
			--	70 ... 150	B	**3TX7522-3H**		1	1 unit	41B
			--	150 ... 250	B	**3TX7522-3J**		1	1 unit	41B
Surge suppressors · RC elements										
3TX7522-3.										
6	3TB50	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	**3TX7522-3R**		1	1 unit	41B
			48 ... 127	--	B	**3TX7522-3S**		1	1 unit	41B
			127 ... 240	--	B	**3TX7522-3T**		1	1 unit	41B
			240 ... 400	--	B	**3TX7522-3U**		1	1 unit	41B
			400 ... 600	--	B	**3TX7522-3V**		1	1 unit	41B
Surge suppressors · Diodes										
3TX7462-3.										
6 ... 12	3TB50 ... 3TB56	**Diode assemblies**[2] (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	A	**3TX7462-3D**		1	1 unit	41B

[1] Includes the peak value of the alternating voltage on the DC side.

[2] Not for DC economy circuit.

For contactors Size	Type	Version		DT	**Screw terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers									
3TX6526-3B									
6	3TB50	For protection against inadvertent contact with exposed busbar connections	M6	B	**3TX6506-3B**		1	1 unit	41B
8	3TB52		M8	B	**3TX6526-3B**		1	1 unit	41B
10 and 12	3TB54, 3TB56	Can be screwed on free screw end For covering one busbar connection (1 set = 6 units)	M10	B	**3TX6546-3B**		1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Spare parts

For contactors		Auxiliary contacts					DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
		Version			Connections			Article No.	Price per PU			
Size	Type	NO	NC	NC								
Auxiliary switch blocks												
For lateral mounting					Left	Right						
6	3TB50	(replacement for 3TY6501-1A/-1B)										
		1	1	--	13 21 / 14 22	31 43 / 32 44	▶	**3TY6501-1AA00**		1	1 unit	41B
		1	--	1	--	35 43 / 36 44	▶	**3TY6501-1E**		1	1 unit	41B
8 ... 12	3TB52 ... 3TB56	1	1	--	13 21 / 14 22	--	▶	**3TY6561-1A**		1	1 unit	41B
		1	1	--	--	31 43 / 32 44	▶	**3TY6561-1B**		1	1 unit	41B
		1	--	1	--	35 43 / 36 44	▶	**3TY6561-1E**		1	1 unit	41B

3TY6561-1A

For contactors		Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type							
Contacts with fixing parts								
		In order to ensure reliable operation of the contactors, only **original replacement contacts** should be used.						
6	3TB50	(1 set = 3 moving and 6 fixed switching elements)	B	**3TY6500-0A**		1	1 unit	41B
8	3TB52		B	**3TY6520-0A**		1	1 unit	41B
10	3TB54		B	**3TY6540-0A**		1	1 unit	41B
12	3TB56		B	**3TY6560-0A**		1	1 unit	41B
Arc chutes								
6	3TB50	1 arc chute, 3-pole	▶	**3TY6502-0A**		1	1 unit	41B
8	3TB52		▶	**3TY6522-0A**		1	1 unit	41B
10	3TB54		▶	**3TY6542-0A**		1	1 unit	41B
12	3TB56		▶	**3TY6562-0A**		1	1 unit	41B
Solenoid coils								
DC operation[1]								
6	3TB50			**3TY6503-0B..**				
8	3TB52			**3TY6523-0B..**				
10	3TB54			**3TY6543-0B..**				
12	3TB56			**3TY6563-0B..**				

3TY6520-0A

3TY6502-0A

3TY65.

[1] Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Article No. must be supplemented according to page 3/132.

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Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate.

The contactors with screw terminals are finger-safe acc. to EN 50274.

Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

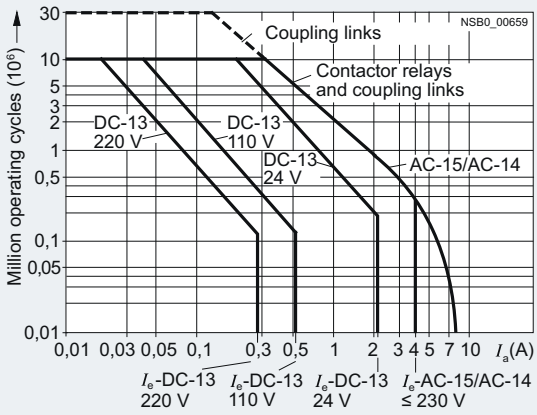
Technical specifications

Contactor	Type	3TF2

Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

Diagram legend:
I_a = Breaking current
I_e = Rated operational current



Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200 000 operating cycles. If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:
X = Contact endurance for mixed operation in operating cycles
A = Contact endurance for normal operation ($I_a = I_e$) in operating cycles
B = Contact endurance for inching (I_a = multiple of I_e) in operating cycles
C = Inching operations as a percentage of total switching operations

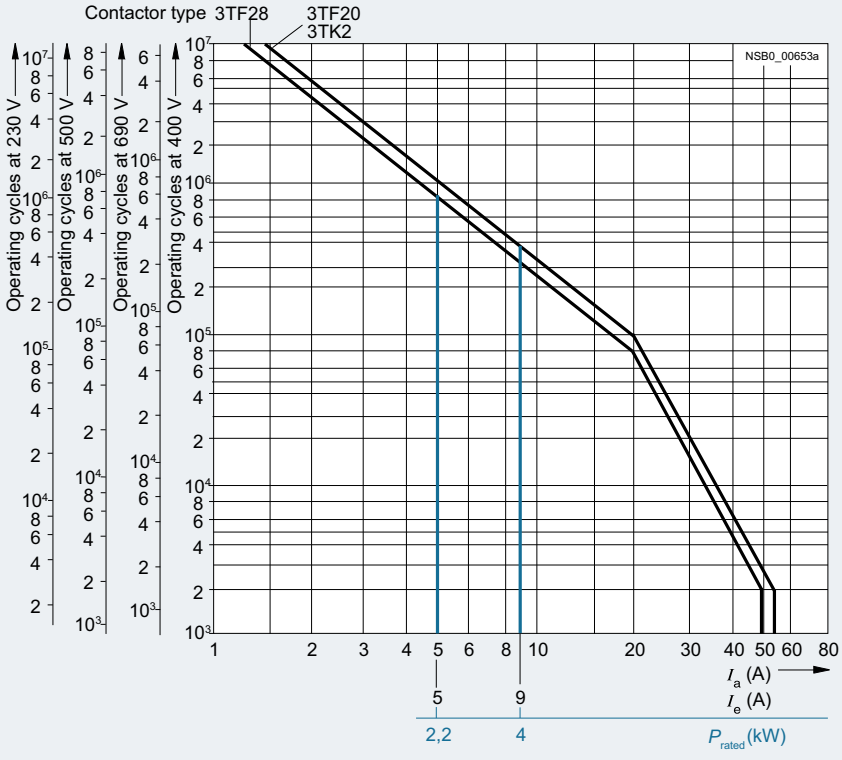


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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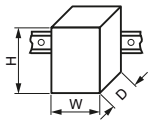
3TF2 contactors, 3-pole, 2.2 ... 4 kW



			3TF20, 3TF28	3TF22, 3TF29
Type				
Size			**00**	**00**
Dimensions (W x H x D)		mm	45 x 48 x 63	--
• With mounted auxiliary switch block		mm	45 x 48 x 91	45 x 48 x 91
• With 3TX4490 surge suppressor		mm	45 x 48 x 88	45 x 48 x 116
General data				
Permissible mounting position			Any	
Mechanical endurance				
• AC operation	Operating cycles		10 million	
• DC operation	Operating cycles		30 million	
Auxiliary switch block	Operating cycles		10 million	
Rated insulation voltage U_i (pollution degree 3)				
• Screw terminals		V	690	690[1]
• Flat connectors 6.3 mm x 0.8 mm		V	500	--
• Solder pin connections		V	500	--
Rated impulse withstand voltage U_{imp} (pollution degree 3)				
• Screw terminals		kV	6	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6	--
• Solder pin connections		kV	6	--
Protective separation between coil and main contacts (according to IEC 60947-1, Appendix N)		V	Up to 300	
Mirror contacts				
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.			Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	Yes, acc. to IEC 60947-4-1, Appendix F and SUVA
Permissible ambient temperature[2]				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1 Appendix C			IP00/open	
• Connection range for screw terminals			IP20	
Touch protection acc. to EN 50274			Finger-safe for screw terminals	
Shock resistance				
• Without 3TX44 auxiliary switch block				
- Rectangular pulse	AC operation	*g*/ms	8.3/5 and 5.2/10	--
	DC operation	*g*/ms	11.3/5 and 9.2/10	--
- Sine pulse	AC operation	*g*/ms	13/5 and 8/10	--
	DC operation	*g*/ms	17.4/5 and 12.9/10	--
• With 3TX44 auxiliary switch block				
- Rectangular pulse	AC operation	*g*/ms	5/5 and 3.6/10	5/5 and 3.6/10
	DC operation	*g*/ms	9/5 and 6.9/10	9/5 and 7.3/10
- Sine pulse	AC operation	*g*/ms	7.8/5 and 5.6/10	7.8/5 and 5.6/10
	DC operation	*g*/ms	13.9/5 and 10.1/10	14/5 and 11/10
Conductor cross-sections			[3]	
Short-circuit protection for contactors without overload relays				
Main circuit[4]				
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1				
- Type of coordination "1"		A	25	
- Type of coordination "2"[5]		A	10	
- Weld-free		A	10	
• Miniature circuit breaker with C characteristic		A	10	
Auxiliary circuit				
Short-circuit test				
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	6	

1) Auxiliary contacts 500 V

2) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

3) See "Conductor Cross-Sections" on page 3/139.

4) According to excerpt from IEC 60947-4-1
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay can be replaced if necessary.
Type of coordination "2":
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.

5) A short-circuit current of $I_q \leq 6$ kA applies to type of coordination "2".

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Contactor		Type	3TF2
		Size	00
Control			
Solenoid coil operating range[1]			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)			
Standard version:			
• AC operation, 50 Hz	Closing	VA	15
	P.f.		0.41
	Closed	VA	6.8
	P.f.		0.42
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.36
	Closed	VA	6.1
	P.f.		0.46
• AC operation, 50/60 Hz[1]	Closing	VA	16.5/13.2
	P.f.		0.43/0.38
	Closed	VA	8.0/5.4
	P.f.		0.48/0.42
For USA and Canada:			
• AC operation, 50 Hz	Closing	VA	14.6
	P.f.		0.38
	Closed	VA	6.5
	P.f.		0.40
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.30
	Closed	VA	6.0
	P.f.		0.44
• DC operation	Closing = Closed	W	3
Permissible residual current of the electronic circuit[2] (with 0 signal)			
	• AC operation	mA	≤ 3 x (230 V/U_s)
	• DC operation	mA	≤ 1 x (230 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[3]			
Total break time = Opening delay + Arcing time			
Values apply with coil in cold state and at operating temperature for operating range			
• AC operation	Closing delay	ms	5 ... 19
	Opening delay	ms	2 ... 22
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	16 ... 65
	Opening delay	ms	2 ... 5
• Arcing time		ms	10 ... 15
Operating times for 1.0 x U_s[3]			
• AC operation	Closing delay	ms	5 ... 18
	Opening delay	ms	3 ... 21
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	19 ... 31
	Opening delay	ms	3 ... 4
• Arcing time		ms	10 ... 15

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) The 3TX4490-1J additional load module is recommended for higher residual currents see Accessories, page 3/144.

3) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF28, 3TF29	3TF20..-0..., 3TF22..-0...	3TF20..-3..., 3TF20..-6..., 3TF20..-7...
	Size		00	00	00
Main circuit					
Load rating with AC					
Utilization category AC-1 Switching resistive loads					
• Rated operational current I_e (at 40 °C)	Up to 400/380 V	A	18	18	18
	690/660 V	A	18	18	--
• Rated operational current I_e (at 55 °C)	400/380 V	A	16	16	16
	690/660 V	A	16	16	--
• Rated power of AC loads P.f. = 1	At 230/220 V	kW	6.0	6.0	6.0
	400/380 V	kW	10	10	10
	500 V	kW	13	13	13
	690/660 V	kW	17	17	--
• Minimum conductor cross-section for loads with I_e		mm^2	2.5	2.5	2.5
Utilization categories AC-2 and AC-3					
• Rated operational current I_e	Up to 220 V	A	5.1	9.0	9.0
	230 V	A	5.1	9.0	9.0
	380 V	A	5.1	9.0	9.0
	400 V	A	5.1	8.4	8.4
	500 V	A	4.8	6.5	6.5
	660 V	A	4.8	5.2	--
	690 V	A	4.8	5.2	--
• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz and	At 110 V	kW	0.7	1.2	1.2
	115 V	kW	0.7	1.2	1.2
	120 V	kW	0.7	1.3	1.3
	127 V	kW	0.8	1.4	1.4
	200 V	kW	1.2	2.2	2.2
	220 V	kW	1.3	2.4	2.4
	230 V	kW	1.4	2.5	2.5
	240 V	kW	1.5	2.6	2.6
	380 V	kW	2.2	4.0	4.0
	400 V	kW	2.2	4.0	4.0
	415 V	kW	2.5	4.0	4.0
	440 V	kW	2.5	4.0	4.0
	460 V	kW	2.7	4.0	4.0
	500 V	kW	2.9	4.0	4.0
	575 V	kW	3.2	4.0	--
	660 V	kW	3.8	4.0	--
	690 V	kW	4.0	4.0	--
Utilization category AC-4					
(contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)					
• Rated operational current I_e [1]	Up to 400 V	A	1.9	2.6	2.6
	690 V	A	1.4	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz and	At 110 V	kW	0.23	0.32	0.32
	115 V	kW	0.24	0.33	0.33
	120 V	kW	0.26	0.35	0.35
	127 V	kW	0.27	0.37	0.37
	200 V	kW	0.42	0.58	0.58
	220 V	kW	0.47	0.64	0.64
	230 V	kW	0.49	0.67	0.67
	240 V	kW	0.51	0.70	0.70
	380 V	kW	0.81	1.10	1.10
	400 V	kW	0.85	1.15	1.15
	415 V	kW	0.93	1.20	1.20
	440 V	kW	1.0	1.27	1.27
	460 V	kW	1.0	1.33	1.33
	500 V	kW	1.1	1.45	1.45
	575 V	kW	1.0	1.30	--
	660 V	kW	0.86	1.10	--
	690 V	kW	0.89	1.15	--
Thermal load capacity	10 s current	A	70		
Power loss per conducting path	At I_e/AC-3	W	0.3		

[1] The following applies:
Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF28, 3TF29	3TF20..-0..., 3TF22..-0...	3TF20..-3..., 3TF20..-6..., 3TF20..-7...
	Size		00	00	00
Main circuit					
Load rating with DC					
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)					
• Rated operational currents I_e (at 55 °C)					
- 1 conducting path	Up to 24 V	A	10	16	16
	60 V	A	4	6	6
	110 V	A	1.5	2	2
	220/240 V	A	0.6	1	1
- 2 conducting paths in series	Up to 24 V	A	10	16	16
	60 V	A	10	16	16
	110 V	A	4	6	6
	220/240 V	A	1.5	2	2
- 3 conducting paths in series	Up to 24 V	A	10	16	16
	60 V	A	10	16	16
	110 V	A	10	16	16
	220/240 V	A	4	6	6
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (*L/R* ≤ 15 ms)					
• Rated operational currents I_e (at 55 °C)					
- 1 conducting path	Up to 24 V	A	4	6	6
	60 V	A	1.8	3	3
	110 V	A	0.3	0.5	0.5
	220/240 V	A	--	0.1	0.1
- 2 conducting paths in series	Up to 24 V	A	6	10	10
	60 V	A	3	5	5
	110 V	A	1.5	2	2
	220/240 V	A	0.3	0.5	0.5
- 3 conducting paths in series	Up to 24 V	A	10	16	16
	60 V	A	10	16	16
	110 V	A	10	16	16
	220/240 V	A	1.5	2	2
Switching frequency					
Switching frequency *z* in operating cycles/hour					
• Contactors without overload relays for rated operation[1]	No-load switching frequency	h^{-1}	10000		
	AC-1	h^{-1}	1000		
	AC-2	h^{-1}	500		
	AC-3	h^{-1}	1000		
• Contactors with overload relays (mean value)		h^{-1}	15		
Conductor cross-sections					
Main and auxiliary conductors			**Screw terminals**		
• Solid		mm^2	2 x (0.5 ... 2.5), 1 x 4 2 x (20 ... 14) AWG, 1 x 12 AWG		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5), 1 x 2.5		
• Pin-end connector (DIN 46231)		mm^2	1 x 1 ... 2.5		
• Terminal screw			M3		
• Prescribed tightening torque for terminal screws		Nm lb.in	0.8 ... 1.3 7 ... 11		
			Flat connectors		
• When using a plug-in sleeve 6.3 – 1		mm^2	0.5 ... 1		
• Finely stranded with 6.3 – 2.5		mm^2	1 ... 2.5		
			Solder pin connections (only for printed circuit boards)		
• Solder pin cross-section		mm^2	0.8 x 1.2		
• Solder pin cross-section, plug-in base		mm^2	0.32 x 1.0		

[1] Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*: $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF20 ..-0...	3TF20..-3..., 3TF20..-6..., 3TF20..-7...
	Size		00	00
cULus and cULus rated data of the 3TF20 contactors				
Rated insulation voltage U_i		V AC	600	300
Uninterrupted current	Open and enclosed	A	16	16 (10 for solder pin connection)
Maximum horsepower ratings (cULus and cULus approved values)				
• Rated power for three-phase motors at 60 Hz				
- Single-phase	At 115 V	hp	0.5	--
	200 V	hp	1	1
	230 V	hp	1.5	1
	460/575 V	hp	--	--
- 3-phase	At 115 V	hp	--	--
	200 V	hp	3	3 (1 for 3TF20..-6)
	230 V	hp	3	3 (1 for 3TF20..-6)
	460/575 V	hp	5	--
Overload relays				
• Type			3UA7	
• Setting range		A	8 ... 10	

Contactor	Type		3TF2
	Size		00
Rated data of the auxiliary contacts according to IEC 60947-1			
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10
AC load Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	24 V	A	4
	110 V	A	4
	125 V	A	4
	220 V	A	4
	230 V	A	4
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V	A	1
	690 V	A	1
DC load Rated operational current I_e/DC-12			
• For rated operational voltage U_e	24 V	A	4
	48 V	A	2.2
	110 V	A	1.1
	125 V	A	1.1
	220 V	A	0.5
	440 V	A	--
	600 V	A	--
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	2.1
	48 V	A	1.1
	110 V	A	0.52
	125 V	A	0.52
	220 V	A	0.27
	440 V	A	--
	600 V	A	--
cULus, cULus and CSA rated data of the auxiliary contacts			
Rated voltage, max.		V AC	600
Auxiliary switch blocks, max.		V AC	300
Switching capacity			A 600, Q 300
Uninterrupted current at 240 V AC		A	10

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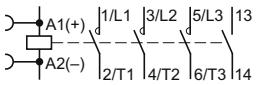
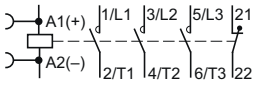
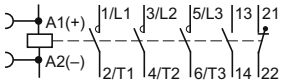
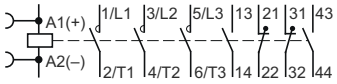
Selection and ordering data

Size 00
AC-1: Operational current I_e = 16 A (at 55 °C)
Screw terminals

Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts			DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings[1] of three-phase motors at 50 Hz and				Ident. No.	Version			Article No. Price per PU			
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V		NO	NC					
A	kW	**kW**	kW	kW								
Contactors with screw terminals · for screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Ident. No. **10** 									Ident. No. **01** 			
AC operation												
5	1.3	**2.2**	2.9	3.8	**10**	1	--	D	**3TF2810-0AP0**	1	1 unit	41B
					01	--	1	B	**3TF2801-0AP0**	1	1 unit	41B
9	2.4	**4**	4	4	**10**	1	--	A	**3TF2010-0AP0**	1	1 unit	41B
					01	--	1	A	**3TF2001-0AP0**	1	1 unit	41B
DC operation												
5	1.3	**2.2**	2.9	3.8	**10**	1	--	C	**3TF2810-0BB4**	1	1 unit	41B
					01	--	1	C	**3TF2801-0BB4**	1	1 unit	41B
9	2.4	**4**	4	4	**10**	1	--	A	**3TF2010-0BB4**	1	1 unit	41B
					01	--	1	C	**3TF2001-0BB4**	1	1 unit	41B
With permanently mounted auxiliary switch blocks												
Terminal designations of the auxiliary contacts according to EN 50012												
Ident. No. **11** 									Ident. No. **22** 			
AC operation												
5	1.3	**2.2**	2.9	3.8	**11**	1	1	D	**3TF2911-0AP0**	1	1 unit	41B
					22	2	2	D	**3TF2922-0AP0**	1	1 unit	41B
9	2.4	**4**	4	4	**11**	1	1	D	**3TF2211-0AP0**	1	1 unit	41B
					22	2	2	D	**3TF2222-0AP0**	1	1 unit	41B
DC operation												
5	1.3	**2.2**	2.9	3.8	**11**	1	1	D	**3TF2911-0BB4**	1	1 unit	41B
					22	2	2	C	**3TF2922-0BB4**	1	1 unit	41B
9	2.4	**4**	4	4	**11**	1	1	C	**3TF2211-0BB4**	1	1 unit	41B
					22	2	2	C	**3TF2222-0BB4**	1	1 unit	41B

3TF20 . .-0. . .,
3TF28 . .-0. . .

3TF22 . .-0. . .,
3TF29 . .-0. . .

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

For accessories, see pages 3/143 and 3/144.

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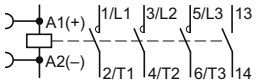
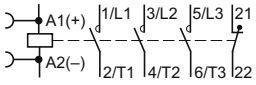
3TF2 contactors, 3-pole, 2.2 ... 4 kW

Size 00
AC-1: Operational current I_e = 16 A (at 55 °C)
Flat connectors and solder pin connections

Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings[1] of three-phase motors at 50 Hz and				Ident. No.	Version							
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V		NO	NC						
A	kW	**kW**	kW	kW									
Ident. No. **10** 													
Ident. No. **01** 													
Contacts with 6.3 mm x 0.8 mm flat connectors · for screw fixing and snap-on mounting onto TH 35 standard mounting rail													
3TF20..-3...	***AC operation***								**Flat connectors**				
	9	2.4	**4**	4	--	**10**	1	--	D	**3TF2010-3AP0**	1	1 unit	41B
						01	--	1	D	**3TF2001-3AP0**	1	1 unit	41B
	DC operation												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF2010-3BB4**	1	1 unit	41B
						01	--	1	D	**3TF2001-3BB4**	1	1 unit	41B
Contacts with 6.3 mm x 0.8 mm flat connectors · for screw fixing (diagonal)													
3TF20..-7...	***AC operation***												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF2010-7AP0**	1	1 unit	41B
						01	--	1	D	**3TF2001-7AP0**	1	1 unit	41B
	DC operation												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF2010-7BB4**	1	1 unit	41B
						01	--	1	C	**3TF2001-7BB4**	1	1 unit	41B
Contacts with solder pin connections for printed circuit boards · for screw fixing (diagonal)													
3TF20..-6...	***AC operation***								**Solder pin connections**				
	9	2.4	**4**	4	--	**10**	1	--	D	**3TF2010-6AP0**	1	1 unit	41B
						01	--	1	D	**3TF2001-6AP0**	1	1 unit	41B
	DC operation												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF2010-6BB4**	1	1 unit	41B
						01	--	1	C	**3TF2001-6BB4**	1	1 unit	41B

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

For accessories, see pages 3/143 and 3/144.

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Contactor type	3TF20, 3TF28
	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
110 V AC	132 V AC	F0
230/220 V AC	276 V AC	P0[1]
AC operation		
Solenoid coils for AC 50/60 Hz		
230 V AC		L2
DC operation		
24 V DC		B4

Rated control supply voltage U_s	Contactor type	3TF22, 3TF29
	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
230/220 V AC	276 V AC	P0[1]
DC operation		
24 V DC		B4

[1] Operating range at 220 V:
0.85 to 1.15 × U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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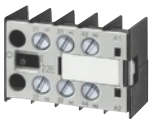
Accessories

Rated operational current I_e/AC-15/AC-14 at			Auxiliary contacts					DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Ident. No.	Version			Connections					
230/ 220 V	400/ 380 V	500 V		NO	NC	NO	NC		Article No. / Price per PU			
A	A	A										
Snap-on auxiliary switch blocks												
For expansion to 2, 4 or 5 auxiliary contacts according to EN 50012 Only for 3TF2. Ident. No. 10 (with auxiliary contact 1 NO)												
4	3	2	**11**	--	1	--	--	▶	**3TX4401-1A**	1	1 unit	41A
			22	1	2	--	--	▶	**3TX4412-1A**	1	1 unit	41A
			23	1	3	--	--	▶	**3TX4413-1A**	1	1 unit	41A
			32	2	2	--	--	▶	**3TX4422-1A**	1	1 unit	41A
For expansion to 3 or 5 auxiliary contacts according to EN 50005												
4	3	2	**20**	2	--	--	--	▶	**3TX4420-2A**	1	1 unit	41A
			11	1	1	--	--	▶	**3TX4411-2A**	1	1 unit	41A
			02	--	2	--	--	▶	**3TX4402-2A**	1	1 unit	41A
			11; U	--	--	1	1	D	**3TX4411-2G**	1	1 unit	41A
4	3	2	**40**	4	--	--	--	▶	**3TX4440-2A**	1	1 unit	41A
			31	3	1	--	--	▶	**3TX4431-2A**	1	1 unit	41A
			22	2	2	--	--	▶	**3TX4422-2A**	1	1 unit	41A
			22; 2 U	--	--	2	2	B	**3TX4422-2G**	1	1 unit	41A



3TX44..-.A

For contactors	Rated control supply voltage U_s	Time setting range (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Type	V DC	s		Article No. / Price per PU			
OFF-delay devices							
For DC-operated contactors for bridging short-time power failures up to 0.8 s							
3TF2...-0BB4	24	0.25 or 0.5	A	**3TX4490-1H**	1	1 unit	41B

3TX4490-1H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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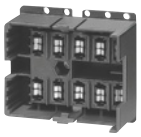
3TF2 contactors, 3-pole, 2.2 ... 4 kW

For contactors Type	Rated control supply voltage U_s V AC	V DC	Power consumption of LED at U_s mW	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors for plugging onto contactors with and without auxiliary switch blocks									
3TX4490-3A	***Version without LED***								
	RC elements								
3TF2...-0..., 3TF2...-1...	24 ... 48	24 ... 70	--	B	**3TX4490-3R**		1	1 unit	41B
	48 ... 127	70 ... 150	--	B	**3TX4490-3S**		1	1 unit	41B
	127 ... 240	150 ... 250	--	B	**3TX4490-3T**		1	1 unit	41B
	240 ... 400	--	--	B	**3TX4490-3U**		1	1 unit	41B
	400 ... 600	--	--	B	**3TX4490-3V**		1	1 unit	41B
	Varistors								
3TF2...-0..., 3TF2...-1...	≤ 48	24 ... 70	--	►	**3TX4490-3G**		1	1 unit	41B
	48 ... 127	70 ... 150	--	B	**3TX4490-3H**		1	1 unit	41B
	127 ... 240	150 ... 250	--	B	**3TX4490-3J**		1	1 unit	41B
	240 ... 400	--	--	B	**3TX4490-3K**		1	10 units	41B
	400 ... 600	--	--	B	**3TX4490-3L**		1	10 units	41B
	Noise suppression diodes								
3TF2...-0..., 3TF2...-1...	--	12 ... 250	--	►	**3TX4490-3A**		1	1 unit	41B
	Diode assemblies (diode and Zener diode) For DC operation and short break times								
3TF2...-0..., 3TF2...-1...	--	24 ... 250	--	B	**3TX4490-3B**		1	1 unit	41B
3TX4490-4G	***Version with LED***								
	Varistors								
3TF2...-0..., 3TF2...-1...	24 ... 48	12 ... 24	10 ... 120	B	**3TX4490-4G**		1	1 unit	41B
	48 ... 127	24 ... 70	20 ... 470	B	**3TX4490-4H**		1	1 unit	41B
	127 ... 240	70 ... 150	50 ... 700	B	**3TX4490-4J**		1	1 unit	41B
	--	150 ... 250	160 ... 950	D	**3TX4490-4K**		1	1 unit	41B
	Noise suppression diodes								
3TF2...-0..., 3TF2...-1...	--	24 ... 70	20 ... 470	B	**3TX4490-4A**		1	1 unit	41B
	--	70 ... 150	50 ... 700	B	**3TX4490-4B**		1	1 unit	41B
	--	150 ... 250	160 ... 950	B	**3TX4490-4C**		1	1 unit	41B
Additional load modules for plugging onto contactors with and without auxiliary switch blocks[1]									
	For increasing the permissible residual current and for limiting the residual voltage.								
3TF2...-0A.., 3TF2...-1A..	230/220, 50 Hz 230, 60 Hz 230, 50/60 Hz Operating range 0.8 ... 1.1 × U_s.		--	D	**3TX4490-1J**		1	1 unit	41B
Plug-in bases with solder pin connections for printed circuit boards, width 45 mm									
 3TX4491-2A	Rated insulation voltage U_i: 400 V (for pollution degree 3); rated impulse withstand voltage U_{imp}: 6 kV; rated operational current I_e: 6 A; CSA and UL rated data: max. 300 V, 6 A								
3TF20..-3..., 3TF20..-7...	For contactors with 6.3 mm x 0.8 mm flat connectors			D	**3TX4491-2A**		1	5 units	41A
Release tools									
3TF2...-7...	For releasing contactors from 3TX4491-2A plug-in bases			D	**3TX4491-2K**		1	1 unit	41A

[1] Dimensions as for 3TX4490-3 surge suppressor.

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Overview

DC operation

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT20 coupling contactors for switching motors are tailored to the special requirements of working with electronic controls.

The 3RT201 coupling contactors cannot be extended with auxiliary switch blocks.

Coupling contactors have a low power consumption and an extended solenoid coil operating range.

Depending on the version, the solenoid coils are supplied either without overvoltage damping (3RT201.-1HB4. and 3RT201.-.MB4.-0KT0) or with a diode, suppressor diode or varistor connected as standard.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT20 contactors for switching motors; see pages 3/17 and 3/22.

Contactor		Type	3RT201.-.HB4.	3RT201.-.JB4.	3RT201.-.KB4.	3RT202.-.KB4.
		Size	S00	S00	S00	S0
General data						
Mechanical endurance		Operating cycles	30 million			10 million
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400			
Control						
Solenoid coil operating range			0.7 ... 1.25 x U_s			
Power consumption of the solenoid coil (for cold coil) Closing = Closed	At U_s 17 V	W	1.6			2.3
	24 V	W	2.8			4.5
	30 V	W	4.4			7
Permissible residual current of the electronics (with 0 signal)			< 6 mA x (24 V/U_s)			< 10 mA x (24 V/U_s)
Overvoltage configuration of the solenoid coil			No overvoltage damping	With diode	With suppressor diode	With varistor
Operating times						
• Closing						
- At 17 V	ON-delay NO	ms	40 ... 130			70 ... 270
	OFF-delay NC	ms	30 ... 80			60 ... 250
- At 24 V	ON-delay NO	ms	35 ... 60			65 ... 90
	OFF-delay NC	ms	25 ... 40			55 ... 80
- At 30 V	ON-delay NO	ms	25 ... 50			52 ... 65
	OFF-delay NC	ms	15 ... 30			43 ... 57
• Closing at 17 ... 30 V	OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20	19 ... 21
	ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30	25 ... 31

Contactor		Type	3RT201.-1MB4.-0KT0	3RT201.-1VB4.	3RT201.-1SB4.
		Size	S00	S00	S00
		Width mm	45	45	45
General data					
Mechanical endurance		Operating cycles	30 million		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400		
Control					
Solenoid coil operating range			0.85 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed	At U_s 24 V	W	1.6		
Permissible residual current, upright mounting position			On request		
Overvoltage configuration of the solenoid coil			No overvoltage damping	With diode	With suppressor diode

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

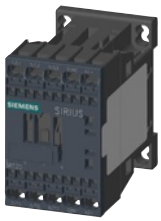
Contactor		Type Size	3RT201.-1MB4.-0KT0 S00	3RT201.-1VB4. S00	3RT201.-1SB4. S00
Control					
Operating times					
• Closing					
- At 20.5 V	ON-delay NO	ms	30 ... 120		
	OFF-delay NC	ms	20 ... 110		
- At 24 V	ON-delay NO	ms	25 ... 90		
	OFF-delay NC	ms	15 ... 80		
- At 44 V	ON-delay NO	ms	15 ... 60		
	OFF-delay NC	ms	10 ... 50		
• Opening	OFF-delay NO	ms	5 ... 20	20 ... 80	5 ... 20
	ON-delay NC	ms	10 ... 30	30 ... 90	10 ... 30

Selection and ordering data

DC operation
Low power consumption
Extended operating range of the solenoid coil

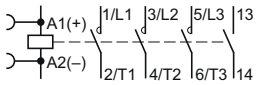
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

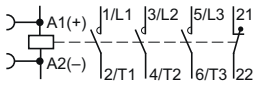
3RT201.-1.B4.



3RT201.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Ident. No.	Version		Configurator		Configurator
400 V	**400 V**				Article No. Price per PU		Article No. Price per PU
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S00							
Diode, varistor or RC element, attachable							
(no auxiliary switch blocks can be mounted)							
• 1 NO, Ident. No. **10**							
• 1 NC, Ident. No. **01**							
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25 x U_s** Power consumption of the solenoid coils **2.8 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT2015-1HB41**	B	**3RT2015-2HB41**
		01	-- 1	B	**3RT2015-1HB42**	B	**3RT2015-2HB42**
9	**4**	**10**	1 --	B	**3RT2016-1HB41**	B	**3RT2016-2HB41**
		01	-- 1	B	**3RT2016-1HB42**	B	**3RT2016-2HB42**
12	**5.5**	**10**	1 --	B	**3RT2017-1HB41**	B	**3RT2017-2HB41**
		01	-- 1	▶	**3RT2017-1HB42**	B	**3RT2017-2HB42**
Rated control supply voltage U_s = 24 V DC, operating range **0.85 to 1.85 x U_s** Power consumption of the solenoid coils **1.6 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT2015-1MB41-0KT0**	B	**3RT2015-2MB41-0KT0**
		01	-- 1	B	**3RT2015-1MB42-0KT0**	B	**3RT2015-2MB42-0KT0**
9	**4**	**10**	1 --	B	**3RT2016-1MB41-0KT0**	B	**3RT2016-2MB41-0KT0**
		01	-- 1	B	**3RT2016-1MB42-0KT0**	B	**3RT2016-2MB42-0KT0**
12	**5.5**	**10**	1 --	B	**3RT2017-1MB41-0KT0**	B	**3RT2017-2MB41-0KT0**
		01	-- 1	B	**3RT2017-1MB42-0KT0**	B	**3RT2017-2MB42-0KT0**





For surge suppressors, see page 3/59.

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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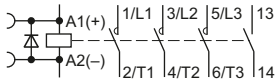
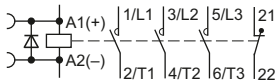
SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT201.-1.B4.

3RT201.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals		DT	Spring-type terminals	
					Configurator			Configurator	
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Ident. No.	Version		Article No.	Price per PU		Article No.	Price per PU
400 V	**400 V**								
A	**kW**		NO NC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00									
With integrated coil circuit (diode)									
(no auxiliary switch blocks can be mounted)									
• 1 NO, Ident. No. **10** 									
• 1 NC, Ident. No. **01** 									
Rated control supply voltage U_S = 24 V DC, coil operating range **0.7 to 1.25 x U_S** Power consumption of the solenoid coils **2.8 W** at 24 V									
7	**3**	**10**	1 --	B	**3RT2015-1JB41**		B	**3RT2015-2JB41**	
		01	-- 1	B	**3RT2015-1JB42**		B	**3RT2015-2JB42**	
9	**4**	**10**	1 --	▶	**3RT2016-1JB41**		B	**3RT2016-2JB41**	
		01	-- 1	A	**3RT2016-1JB42**		B	**3RT2016-2JB42**	
12	**5.5**	**10**	1 --	B	**3RT2017-1JB41**		B	**3RT2017-2JB41**	
		01	-- 1	B	**3RT2017-1JB42**		B	**3RT2017-2JB42**	
Rated control supply voltage U_S = 24 V DC, operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V									
7	**3**	**10**	1 --	B	**3RT2015-1VB41**		B	**3RT2015-2VB41**	
		01	-- 1	B	**3RT2015-1VB42**		B	**3RT2015-2VB42**	
9	**4**	**10**	1 --	B	**3RT2016-1VB41**		B	**3RT2016-2VB41**	
		01	-- 1	B	**3RT2016-1VB42**		B	**3RT2016-2VB42**	
12	**5.5**	**10**	1 --	B	**3RT2017-1VB41**		B	**3RT2017-2VB41**	
		01	-- 1	B	**3RT2017-1VB42**		B	**3RT2017-2VB42**	

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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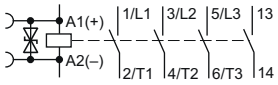
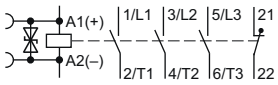
SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT201.-1.B4.

3RT201.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
					Configurator		Configurator
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Ident. No.	Version		Article No. Price per PU		Article No. Price per PU
400 V	**400 V**						
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S00							
With integrated coil circuit (suppressor diode)							
(no auxiliary switch blocks can be mounted)							
• 1 NO, Ident. No. **10** 							
• 1 NC, Ident. No. **01** 							
Rated control supply voltage U_S = 24 V DC, coil operating range **0.7 to 1.25 x U_S** Power consumption of the solenoid coils **2.8 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT2015-1KB41**	B	**3RT2015-2KB41**
		01	-- 1	B	**3RT2015-1KB42**	▶	**3RT2015-2KB42**
9	**4**	**10**	1 --	A	**3RT2016-1KB41**	B	**3RT2016-2KB41**
		01	-- 1	B	**3RT2016-1KB42**	B	**3RT2016-2KB42**
12	**5.5**	**10**	1 --	B	**3RT2017-1KB41**	▶	**3RT2017-2KB41**
		01	-- 1	B	**3RT2017-1KB42**	▶	**3RT2017-2KB42**
Rated control supply voltage U_S = 24 V DC, operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT2015-1SB41**	B	**3RT2015-2SB41**
		01	-- 1	B	**3RT2015-1SB42**	B	**3RT2015-2SB42**
9	**4**	**10**	1 --	B	**3RT2016-1SB41**	B	**3RT2016-2SB41**
		01	-- 1	B	**3RT2016-1SB42**	B	**3RT2016-2SB42**
12	**5.5**	**10**	1 --	B	**3RT2017-1SB41**	B	**3RT2017-2SB41**
		01	-- 1	B	**3RT2017-1SB42**	B	**3RT2017-2SB42**

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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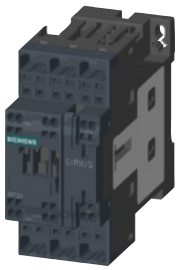
SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

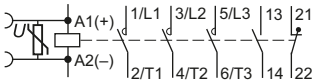
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT202.-1KB40



3RT202.-2KB40

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating[1] of three-phase motors at 50 Hz and	Ident. No.	Version		Configurator		Configurator
400 V	**400 V**		NO NC		Article No. Price per PU		Article No. Price per PU
A	**kW**						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S0							
With integrated coil circuit (varistor)							
(no auxiliary switch blocks can be mounted)							
1 NO + 1 NC, Ident. No. **11**							
9	**4**	**11**	1 1	▶	**3RT2023-1KB40**	▶	**3RT2023-2KB40**
12	**5.5**	**11**	1 1	▶	**3RT2024-1KB40**	B	**3RT2024-2KB40**
17	**7.5**	**11**	1 1	▶	**3RT2025-1KB40**	B	**3RT2025-2KB40**
25	**11**	**11**	1 1	▶	**3RT2026-1KB40**	B	**3RT2026-2KB40**
32	**15**	**11**	1 1	▶	**3RT2027-1KB40**	B	**3RT2027-2KB40**



Rated control supply voltage U_S = 24 V DC, coil operating range **0.7 to 1.25 x U_S**
Power consumption of the solenoid coils **4.5 W** at 24 V

For online configurator see www.siemens.com/sirius/configurators.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

For accessories see page 3/56.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RA23 reversing contactor assemblies

Overview

The 3RA23 contactor assemblies for reversing can be ordered as follows:

Sizes S00 and S0

- Fully wired and tested, with mechanical and electrical interlock
- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays".

The 3RA23 contactor assemblies have screw or spring-type terminals (main and control circuits) and are suitable for screwing or snapping onto TH 35 standard mounting rails.

Complete reversing contactor assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

The contactor assemblies size S00 and S0 each consist of two contactors with the same power, with one NC contact (S00) or one NO contact and one NC contact (S0) in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU2 or 3RB3 overload relays for direct mounting or stand-alone installation, or 3RN1 thermistor motor protection releases must be ordered separately.

Reversing contactor assemblies with communication interface

The reversing contactor assemblies with communication interface are required for mounting the function modules for connection to the controller via the IO-Link or AS-Interface communication systems.

For more information on IO-Link and AS-Interface see Chapter 2 "Industrial Communication".

Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays and – for momentary-contact operation of size S00 – auxiliary switches (NO contacts) for self-locking must be ordered separately. (With S0, the NO contacts integrated into the basic unit can be used.)

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Article No.		
Rating	Operational current I_e		Contactor	Assembly kit	**Fully wired and tested contactor assemblies**
kW	A				
			Screw terminals	**Screw terminals**	**Screw terminals**
3	7	**S00**	3RT2015-1…2	3RA2913-2AA1	**3RA2315-8XB30-1…**
4	9		3RT2016-1…2		**3RA2316-8XB30-1…**
5.5	12		3RT2017-1…2		**3RA2317-8XB30-1…**
7.5	16		3RT2018-1…2		**3RA2318-8XB30-1…**
5.5	12	**S0**	3RT2024-1…0	3RA2923-2AA1	**3RA2324-8XB30-1…**
7.5	16		3RT2025-1…0		**3RA2325-8XB30-1…**
11	25		3RT2026-1…0		**3RA2326-8XB30-1…**
15	32		3RT2027-1…0		**3RA2327-8XB30-1…**
18.5	38		3RT2028-1…0		**3RA2328-8XB30-1…**
			Spring-type terminals	**Spring-type terminals**	**Spring-type terminals**
3	7	**S00**	3RT2015-2…2	3RA2913-2AA2[1)]	**3RA2315-8XB30-2…**
4	9		3RT2016-2…2		**3RA2316-8XB30-2…**
5.5	12		3RT2017-2…2		**3RA2317-8XB30-2…**
7.5	16		3RT2018-2…2		**3RA2318-8XB30-2…**
5.5	12	**S0**	3RT2024-2…0	3RA2923-2AA2[2)]	**3RA2324-8XB30-2…**
7.5	16		3RT2025-2…0		**3RA2325-8XB30-2…**
11	25		3RT2026-2…0		**3RA2326-8XB30-2…**
15	32		3RT2027-2…0		**3RA2327-8XB30-2…**
18.5	38		3RT2028-2…0		**3RA2328-8XB30-2…**

1) The assembly kit contains: Mechanical interlock; connecting clips for 2 contactors, wiring modules on the top and bottom (for main, control and auxiliary circuits).

2) The assembly kit contains: Mechanical interlock; connecting clips for 2 contactors, wiring modules on the top and bottom (for main circuits).

Operating times

The operating times of the individual 3RT20 contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked by way of their auxiliary switches (NC contact interlock) and the mechanical interlock.

For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.

The operating times of the individual contactors are not affected by the mechanical interlock.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor assemblies	**3 R A**															
2nd generation		**2**														
Device type (e.g. 3 = reversing contactor assembly)			**3**													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e.g. 27 = 15 kW)					□											
Type of overload relay (8X = without)							□	□								
Assembly (B = ready-assembled, E = ready-assembled with communication)									□							
Interlock (3 = mechanical and electrical)										□						
Free auxiliary switches (e.g. S00: 0 = none, S0: 0 = 2 NO total)											□					
Connection type (1 = screw, 2 = spring)													□			
Operating range / solenoid coil circuit (e.g. A = AC standard / without)														□		
Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)															□	□
Example	**3 R A**	**2**	**3**	**2**	**7**	**–**	**8**	**X**	**B**	**3**	**0**	**–**	**1**	**A**	**L**	**2**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Using wiring kits for reversing starters has the following advantages:

- Notable reduction of wiring in the control circuit
- Integrated mechanical interlocking
- Prevention of wiring errors in the main circuit

Connecting combs for screw terminals also result in:

- Prevention of wiring errors in the control circuit
- Reduction of testing costs
- Ready-jumpered actuation of the auxiliary switches and the frame (A2)
- Integrated electrical interlocking

Accessories

Selecting the auxiliary switches

The following points should be noted:

Size S00

- For maintained-contact operation:
  Use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation:
  Use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

Size S0

- For maintained-contact operation:
  The contactors have two integrated auxiliary contacts (1 NO + 1 NC); the NC contact can be used for electrical interlocking.
- For momentary-contact operation:
  Electrical interlock as for maintained-contact operation; the NO contact in the basic unit can be used for the latching.

Surge suppression

Sizes S00 and S0

All contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or be plugged into the front of the contactors (S0).

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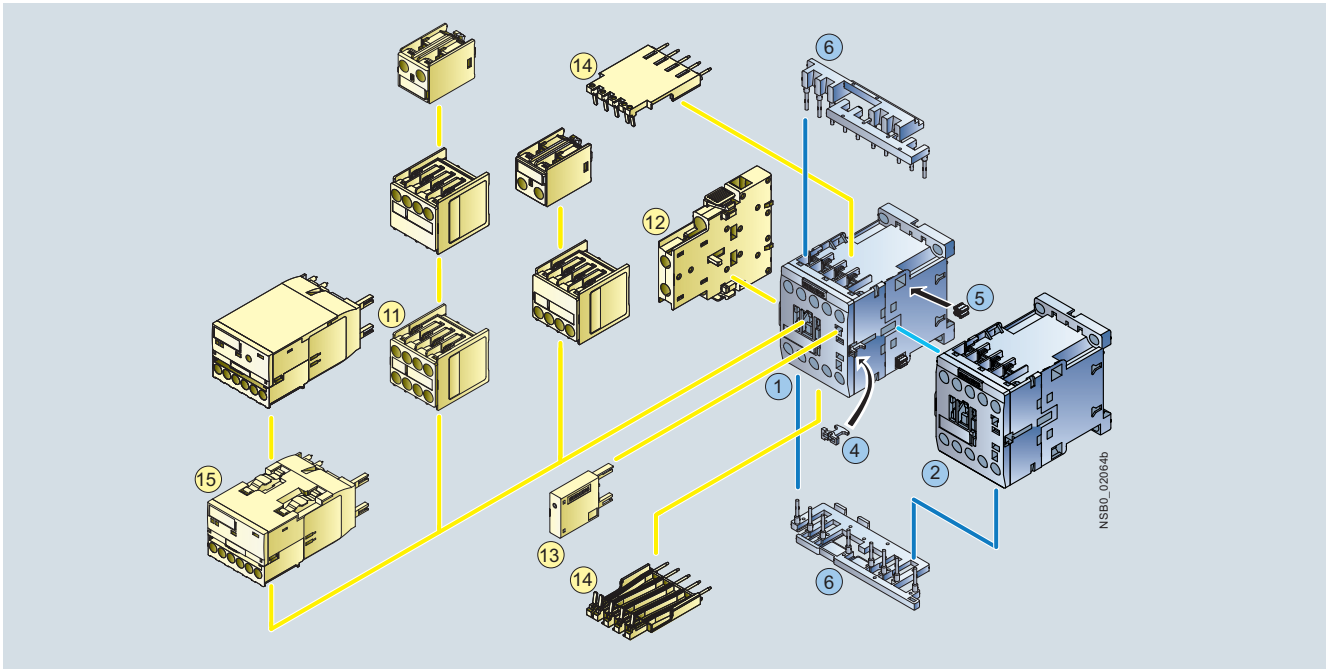
SIRIUS 3RA23 reversing contactor assemblies

Selection and ordering data

Fully wired and tested contactor assemblies · Size S00 · up to 7.5 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Article No.	Page
(11) Auxiliary switch block, front[1]	3RH2911-1....	3/53
(12) Auxiliary switch block, lateral	3RH2921-1DA..	3/55
(13) Surge suppressors	3RT2916-1....	3/59
(14) Solder pin adapters	3RT1916-4KA1	3/62
(15) Function module for connection to the control system	3RT271.-1BA00	3/157

Complete contactor assemblies

Individual parts		Article No. Q11	Article No. Q12	Page
(1)(2)	Contactor, 3 kW	3RT2015	3RT2015	3/28, 3/33
(1)(2)	Contactor, 4 kW	3RT2016	3RT2016	3/28, 3/33
(1)(2)	Contactor, 5.5 kW	3RT2017	3RT2017	3/28, 3/33
(1)(2)	Contactor, 7.5 kW	3RT2018	3RT208	3/28, 3/33
(4)(5)(6)	Assembly kit comprising:	3RA2913-2AA1		3/156
	(4) Mechanical interlock[2]			3/156
	(5) 2 connecting clips for 2 contactors[2]			3/156
	(6) Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included[3], interruptible (NC contact interlock)			3/156

1) Auxiliary switch block according to EN 50005 must be used.

2) The parts (4) and (5) can only be ordered together as 3RA2912-2H mechanical connectors.

3) 3RT201. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation.

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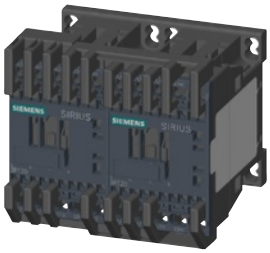
***Fully wired and tested contactor assemblies*[2] · Size S00 · up to 7.5 kW**

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RA231. -8XE30-1BB4

3RA231. -8XB30-1A. 0



3RA231. -8XB30-2A. 0

Rated data AC-2 and AC-3				Rated control supply voltage	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and			U_s[1]		Article No. Price per PU		Article No. Price per PU
400 V	230 V	**400 V**	690 V					
A	kW	**kW**	kW	V				
AC operation, 50/60 Hz								
7	2.2	**3**	4	24 AC	B	**3RA2315-8XB30-1AB0**	B	**3RA2315-8XB30-2AB0**
				110 AC	B	**3RA2315-8XB30-1AF0**	B	**3RA2315-8XB30-2AF0**
				230 AC	A	**3RA2315-8XB30-1AP0**	A	**3RA2315-8XB30-2AP0**
9	3	**4**	5.5	24 AC	B	**3RA2316-8XB30-1AB0**	B	**3RA2316-8XB30-2AB0**
				110 AC	B	**3RA2316-8XB30-1AF0**	B	**3RA2316-8XB30-2AF0**
				230 AC	A	**3RA2316-8XB30-1AP0**	A	**3RA2316-8XB30-2AP0**
12	3	**5.5**	5.5	24 AC	B	**3RA2317-8XB30-1AB0**	B	**3RA2317-8XB30-2AB0**
				110 AC	B	**3RA2317-8XB30-1AF0**	B	**3RA2317-8XB30-2AF0**
				230 AC	A	**3RA2317-8XB30-1AP0**	A	**3RA2317-8XB30-2AP0**
16	4	**7.5**	7.5	24 AC	B	**3RA2318-8XB30-1AB0**	B	**3RA2318-8XB30-2AB0**
				110 AC	B	**3RA2318-8XB30-1AF0**	B	**3RA2318-8XB30-2AF0**
				230 AC	A	**3RA2318-8XB30-1AP0**	A	**3RA2318-8XB30-2AP0**
DC operation								
7	2.2	**3**	4	24 DC	A	**3RA2315-8XB30-1BB4**	A	**3RA2315-8XB30-2BB4**
9	3	**4**	5.5	24 DC	A	**3RA2316-8XB30-1BB4**	A	**3RA2316-8XB30-2BB4**
12	3	**5.5**	5.5	24 DC	A	**3RA2317-8XB30-1BB4**	A	**3RA2317-8XB30-2BB4**
16	4	**7.5**	7.5	24 DC	A	**3RA2318-8XB30-1BB4**	A	**3RA2318-8XB30-2BB4**
With communication interface								
7	2.2	**3**	4	24 DC	A	**3RA2315-8XE30-1BB4**	B	**3RA2315-8XE30-2BB4**
9	3	**4**	5.5	24 DC	A	**3RA2316-8XE30-1BB4**	B	**3RA2316-8XE30-2BB4**
12	3	**5.5**	5.5	24 DC	A	**3RA2317-8XE30-1BB4**	A	**3RA2317-8XE30-2BB4**
16	4	**7.5**	7.5	24 DC	A	**3RA2318-8XE30-1BB4**	A	**3RA2318-8XE30-2BB4**

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s;
at 60 Hz: 0.85 ... 1.1 x U_s.

[2] The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts. When used with a communication interface and function module, the auxiliary contacts are unassigned.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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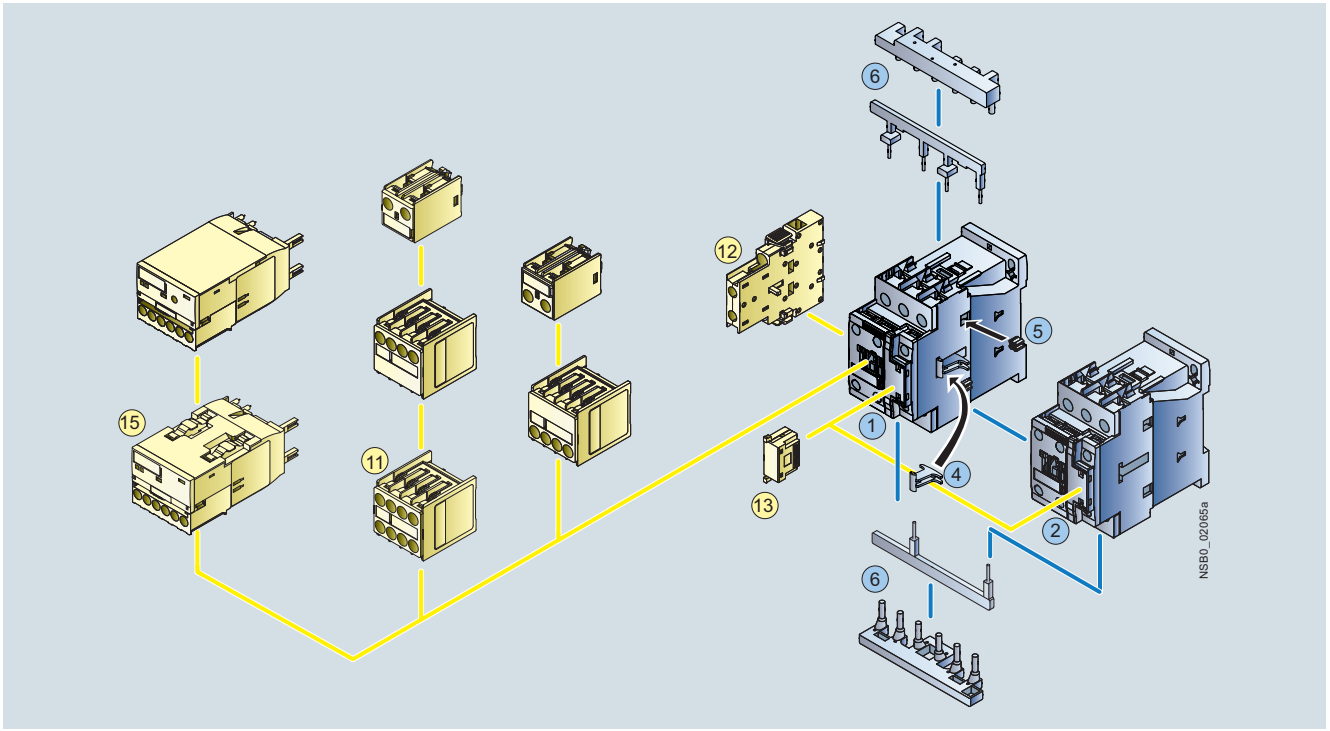
SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately		Article No.	Page
11	Auxiliary switch block, front	3RH2921-1....	3/53
12	Auxiliary switch block, lateral	3RH2921-1DA..	3/55
13	Surge suppressors	3RT2926-1....	3/59
15	Function module for connection to the control system	3RT271.-1BA00	3/157

Complete contactor assemblies

Individual parts		Article No. Q11	Article No. Q12	Page
1 2	Contactor, 5.5 kW	3RT2024	3RT2024	3/30, 3/35
1 2	Contactor, 7.5 kW	3RT2025	3RT2025	3/30, 3/35
1 2	Contactor, 11 kW	3RT2026	3RT2026	3/30, 3/35
1 2	Contactor, 15 kW	3RT2027	3RT2027	3/30, 3/35
1 2	Contactor, 18.5 kW	3RT2028	3RT2028	3/30, 3/35
4 5 6	Assembly kit comprising:	3RA2923-2AA1		3/156
	4 Mechanical interlock[1)]			3/156
	5 2 connecting clips for 2 contactors[1)]			3/156
	6 Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)			3/156

[1)] The parts 4 and 5 can only be ordered together as 3RA2922-2H mechanical connectors.

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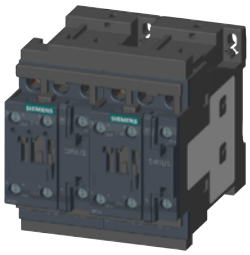
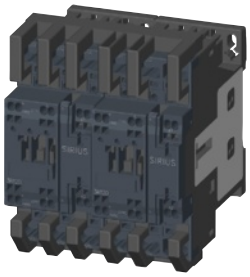
Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA2324-8XE30-1BB4

3RA232.-8XB30-1A.2



3RA232.-8XB30-2A.2

Rated data AC-2 and AC-3				Rated control supply voltage U_s [1]	DT	Screw terminals		DT	Spring-type terminals	
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and					Article No.	Price per PU		Article No.	Price per PU
400 V	230 V	**400 V**	690 V							
A	kW	**kW**	kW	V						
AC operation, 50/60 Hz										
12	3	**5.5**	7.5	24 AC	B	**3RA2324-8XB30-1AC2**		B	**3RA2324-8XB30-2AC2**	
				110 AC	B	**3RA2324-8XB30-1AG2**		B	**3RA2324-8XB30-2AG2**	
				230 AC	B	**3RA2324-8XB30-1AL2**		B	**3RA2324-8XB30-2AL2**	
17	4	**7.5**	11	24 AC	B	**3RA2325-8XB30-1AC2**		B	**3RA2325-8XB30-2AC2**	
				110 AC	B	**3RA2325-8XB30-1AG2**		B	**3RA2325-8XB30-2AG2**	
				230 AC	B	**3RA2325-8XB30-1AL2**		B	**3RA2325-8XB30-2AL2**	
25	5.5	**11**	11	24 AC	B	**3RA2326-8XB30-1AC2**		B	**3RA2326-8XB30-2AC2**	
				110 AC	B	**3RA2326-8XB30-1AG2**		B	**3RA2326-8XB30-2AG2**	
				230 AC	B	**3RA2326-8XB30-1AL2**		B	**3RA2326-8XB30-2AL2**	
32	7.5	**15**	18.5	24 AC	B	**3RA2327-8XB30-1AC2**		B	**3RA2327-8XB30-2AC2**	
				110 AC	B	**3RA2327-8XB30-1AG2**		B	**3RA2327-8XB30-2AG2**	
				230 AC	B	**3RA2327-8XB30-1AL2**		B	**3RA2327-8XB30-2AL2**	
38	11	**18.5**	18.5	24 AC	B	**3RA2328-8XB30-1AC2**		B	**3RA2328-8XB30-2AC2**	
				110 AC	B	**3RA2328-8XB30-1AG2**		B	**3RA2328-8XB30-2AG2**	
				230 AC	B	**3RA2328-8XB30-1AL2**		B	**3RA2328-8XB30-2AL2**	
DC operation										
12	3	**5.5**	7.5	24 DC	A	**3RA2324-8XB30-1BB4**		A	**3RA2324-8XB30-2BB4**	
17	4	**7.5**	11	24 DC	A	**3RA2325-8XB30-1BB4**		A	**3RA2325-8XB30-2BB4**	
25	5.5	**11**	11	24 DC	A	**3RA2326-8XB30-1BB4**		A	**3RA2326-8XB30-2BB4**	
32	7.5	**15**	18.5	24 DC	A	**3RA2327-8XB30-1BB4**		A	**3RA2327-8XB30-2BB4**	
38	11	**18.5**	18.5	24 DC	A	**3RA2328-8XB30-1BB4**		A	**3RA2328-8XB30-2BB4**	
With communication interface										
12	3	**5.5**	7.5	24 DC	A	**3RA2324-8XE30-1BB4**		A	**3RA2324-8XE30-2BB4**	
17	4	**7.5**	11	24 DC	A	**3RA2325-8XE30-1BB4**		A	**3RA2325-8XE30-2BB4**	
25	5.5	**11**	11	24 DC	A	**3RA2326-8XE30-1BB4**		A	**3RA2326-8XE30-2BB4**	
32	7.5	**15**	18.5	24 DC	A	**3RA2327-8XE30-1BB4**		A	**3RA2327-8XE30-2BB4**	
38	11	**18.5**	18.5	24 DC	A	**3RA2328-8XE30-1BB4**		A	**3RA2328-8XE30-2BB4**	

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 × U_s; at 60 Hz: 0.85 ... 1.1 × U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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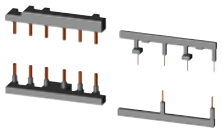
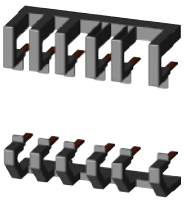
SIRIUS 3RA23 reversing contactor assemblies

Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA2923-2AA1



3RA2923-2AA2

For contactors / Type	Size	Version		DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Assembly kits for making 3-pole contactor assemblies									
3RT201	**S00-S00**	The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA2913-2AA1**		▶	**3RA2913-2AA2**	
3RT202	**S0-S0**	The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA2923-2AA1**			**--**	
		• Only for main circuit[1]			**--**		▶	**3RA2923-2AA2**	
Individual components for making 3 and 4-pole contactor assemblies									
Wiring modules									
3RT201	**S00-S00**	Top (in-phase)	PS = 5 units	B	**3RA2913-3DA1**		B	**3RA2913-3DA2**	
		Bottom (with phase reversal)	PS = 5 units	B	**3RA2913-3EA1**		B	**3RA2913-3EA2**	
3RT202	**S0-S0**	Top (in-phase)	PS = 5 units	B	**3RA2923-3DA1**		B	**3RA2923-3DA2**	
		Bottom (with phase reversal)	PS = 5 units	B	**3RA2923-3EA1**		B	**3RA2923-3EA2**	
Mechanical connectors									
		The connectors consist of a mechanical interlock and two connecting clips							
3RT201, 3RT231	**S00-S00**	For lateral interlock, without contactor clearance	PS = 10 units	B	**3RA2912-2H**		B	**3RA2912-2H**	
3RT202, 3RT232	**S0-S0**	For lateral interlock, without contactor clearance	PS = 10 units	B	**3RA2922-2H**		B	**3RA2922-2H**	

[1] Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B

3RA2711-1BA00

3RA2711-2BA00

For contactors Type	Size	Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Function modules for connection to the control system								
3RT201, 3RT202	**S00, S0**	**IO-Link connection**, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	A	**3RA2711-1BA00**		A	**3RA2711-2BA00**	
3RT201, 3RT202	**S00, S0**	**AS-Interface connection**, comprising one basic and one coupling module	A	**3RA2712-1BA00**		A	**3RA2712-2BA00**	
Accessories for 3RA27 function modules								
3RT201, 3RT202	**S00, S0**	**Module connector set**, comprising: • 2 module connectors, 14-pole, short + 2 interface covers	A	**3RA2711-0EE01**		A	**3RA2711-0EE01**	
		Module connectors						
3RT201, 3RT202	**S00, S0**	• 14-pole, 8 cm For size jump S00-S0 + 1 space	A	**3RA2711-0EE02**		A	**3RA2711-0EE02**	
3RT201, 3RT202	**S00, S0**	• 14-pole, 21 cm For various space combinations	A	**3RA2711-0EE03**		A	**3RA2711-0EE03**	
3RT201, 3RT202	**S00, S0**	• 10-pole, 8 cm For separate control signal infeed within an IO-Link group	A	**3RA2711-0EE04**		A	**3RA2711-0EE04**	
3RT201, 3RT202	**S00, S0**	**Sealable covers** PS = 5 units	A	**3RA2910-0**		A	**3RA2910-0**	

Operator panels for IO-Link see page 3/192.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RA13 reversing contactor assemblies

Overview

The 3RA13 reversing contactor assemblies can be ordered as follows:

Sizes S2 and S3

- Fully wired and tested, with mechanical and electrical interlock
- As individual parts for customer assembly

Sizes S6 to S12

- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays".

The 3RA13 contactor assemblies have screw terminals. Sizes S2 to S3 are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Complete units

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

The contactor assemblies consist of two contactors with the same power, with one NC contact in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU11 or 3RB2 overload relays for direct mounting or stand-alone installation or 3RN1 thermistor motor protection releases must be ordered separately.

Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays and the mechanical interlock and – for momentary-contact operation – auxiliary switches (NO contacts) for latching must be ordered separately.

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Article No.					
Rating	Operational current I_e		Contactor	Mechanical interlock[1]	Mechanical interlock[2]	Mechanical interlock[3]	Assembly kit	**Fully wired and tested contactor assemblies**
kW	A							
15	32	**S2**	3RT1034	3RA1924-1A	3RA1924-2B	--	3RA1933-2A[4]	**3RA1334-8XB30-1…**
18.5	40		3RT1035					**3RA1335-8XB30-1…**
22	50		3RT1036					**3RA1336-8XB30-1…**
30	65	**S3**	3RT1044	3RA1924-1A	3RA1924-2B	--	3RA1943-2A[4]	**3RA1344-8XB30-1…**
37	80		3RT1045					**3RA1345-8XB30-1…**
45	95		3RT1046					**3RA1346-8XB30-1…**
55	115	**S6**	3RT1054	--	--	3RA1954-2A	3RA1953-2M[5]	**--**
75	150		3RT1055					
90	185		3RT1056					
110	225	**S10**	3RT1064	--	--	3RA1954-2A	3RA1963-2A[5]	**--**
132	265		3RT1065					
160	300		3RT1066					
200	400	**S12**	3RT1075	--	--	3RA1954-2A	3RA1973-2A[5]	**--**
250	500		3RT1076					

1) Can be mounted onto the front.

2) Laterally mountable with one auxiliary contact.

3) Laterally mountable without auxiliary contact.

4) The assembly kit contains: two connecting clips for contactors as well as wiring modules on the top and bottom.

5) The assembly kit contains a wiring module on the top and bottom.

Operating times

The operating times of the individual 3RT10 contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, provided they are interlocked by way of their auxiliary switches (NC contact interlock) and the mechanical interlock.

For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.

The operating times of the individual contactors are not affected by the mechanical interlock

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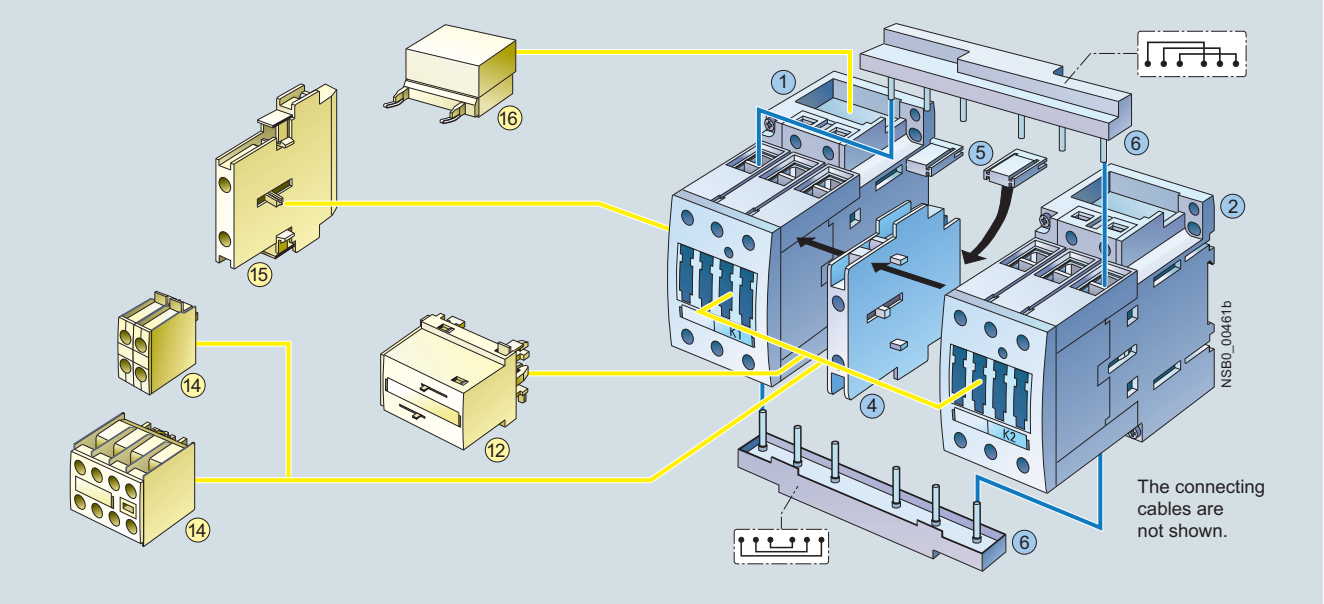
Selection and ordering data

Fully wired and tested contactor assemblies · Size S2 · up to 22 kW



Mountable accessories (optional)

To be ordered separately		Article No.	Page
12	Mech. interlock, front	3RA1924-1A	3/161
14	Auxiliary switch block, front	3RH1921-1CA..	3/103
15	Auxiliary switch block, lateral	3RH1921-1EA..	3/105
16	Surge suppressors	3RT1926-1.... 3RT1936-1....	3/108

Complete contactor assemblies

Individual parts		Article No. Q1	Q2	Page
1 2	Contactor, 15 kW	3RT1034	3RT1034	3/83
1 2	Contactor, 18.5 kW	3RT1035	3RT1035	3/83
1 2	Contactor, 22 kW	3RT1036	3RT1036	3/83
4	Mech. interlock, lateral	3RA1924-2B		3/161
5 6	Assembly kit	3RA1933-2A		3/162

The assembly kit contains:

5 2 connecting clips for two contactors with 10 mm distance

6 Wiring modules on the top and bottom for connecting the main current paths

3RA133.-8XB30-1...

Rated data AC-2 and AC-3 Operational current I_e up to 500 V	Ratings of three-phase motors at 50 Hz and 230 V	**400 V**	500 V	690 V	Rated control supply voltage U_s [1]	DT	**Screw terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
32	7.5	**15**	18.5	18.5	24 AC	A	**3RA1334-8XB30-1AC2**		1	1 unit	41B
					110 AC	A	**3RA1334-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA1334-8XB30-1AL2**		1	1 unit	41B
40	11	**18.5**	22	22	24 AC	A	**3RA1335-8XB30-1AC2**		1	1 unit	41B
					110 AC	A	**3RA1335-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA1335-8XB30-1AL2**		1	1 unit	41B
50	15	**22**	30	22	24 AC	B	**3RA1336-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1336-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA1336-8XB30-1AL2**		1	1 unit	41B
DC operation											
32	7.5	**15**	18.5	18.5	24 DC	A	**3RA1334-8XB30-1BB4**		1	1 unit	41B
40	11	**18.5**	22	22	24 DC	A	**3RA1335-8XB30-1BB4**		1	1 unit	41B
50	15	**22**	30	22	24 DC	A	**3RA1336-8XB30-1BB4**		1	1 unit	41B

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

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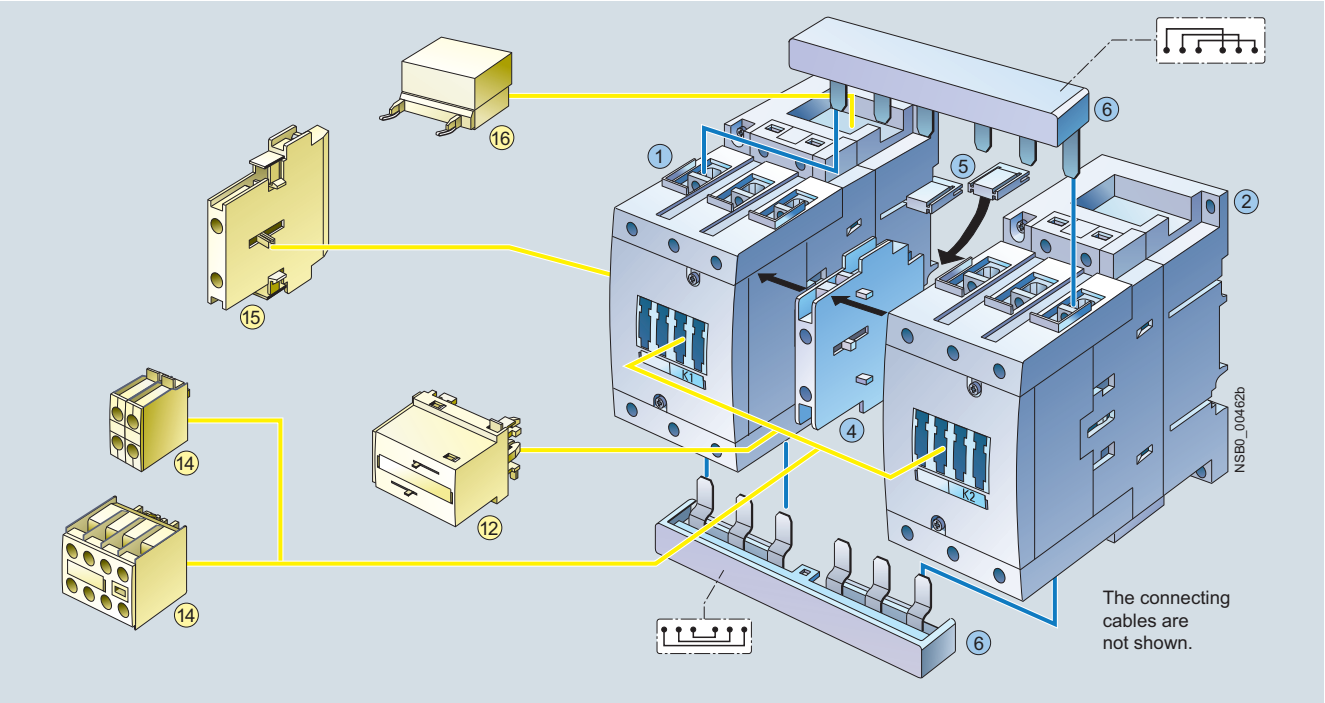
SIRIUS 3RA13 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S3 · up to 45 kW



Mountable accessories (optional)

To be ordered separately		Article No.	Page
12	Mech. interlock, front	3RA1924-1A	3/161
14	Auxiliary switch block, front	3RH1921-1CA..	3/103
15	Auxiliary switch block, lateral	3RH1921-1EA..	3/105
16	Surge suppressors	3RT1926-1.... 3RT1936-1....	3/108

Complete contactor assemblies

Individual parts		Article No. Q1	Q2	Page
1 2	Contactor, 30 kW	3RT1044	3RT1044	3/84
1 2	Contactor, 37 kW	3RT1045	3RT1045	3/84
1 2	Contactor, 45 kW	3RT1046	3RT1046	3/84
4	Mech. interlock, lateral	3RA1924-2B		3/161
5 6	Assembly kit	3RA1943-2A		3/162

The assembly kit contains:

5 2 connecting clips for two contactors with 10 mm distance

6 Wiring modules on the top and bottom for connecting the main current paths

3RA134.-8XB30-1...

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and						Article No.	Price per PU			
500 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	V						
AC operation at 50/60 Hz											
65	18.5	**30**	37	45	24 AC	B	**3RA1344-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1344-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA1344-8XB30-1AL2**		1	1 unit	41B
80	22	**37**	45	55	24 AC	B	**3RA1345-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1345-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA1345-8XB30-1AL2**		1	1 unit	41B
95	22	**45**	55	55	24 AC	B	**3RA1346-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1346-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA1346-8XB30-1AL2**		1	1 unit	41B
DC operation											
65	18.5	**30**	37	45	24 DC	B	**3RA1344-8XB30-1BB4**		1	1 unit	41B
80	22	**37**	45	55	24 DC	B	**3RA1345-8XB30-1BB4**		1	1 unit	41B
95	22	**45**	55	55	24 DC	B	**3RA1346-8XB30-1BB4**		1	1 unit	41B

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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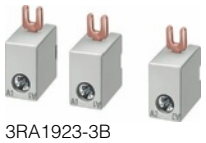
Components for customer assembly

	For contactors Type	Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical interlocks									
3RA1924-1A mounted onto 2 contactors	3RT103 3RT104 3RT133 3RT134 3RT144 3RT153	**S2** **S3**	**Laterally mountable**[1] Each with one auxiliary contact (1 NC contact) per contactor (can only be used to connect contactors which are not more than 1 size larger or smaller). The mounting depth of the smaller contactor has to be adapted.)	►	**3RA1924-2B**		1	1 unit	41B
	3RT103 3RT104	**S2** **S3**	**Can be mounted onto the front**[2] Onto contactor sizes S2 and S3 (for contactors of the same size) Note: Sizes S2 and S3: Use 3RA1932-2C mechanical connectors.	►	**3RA1924-1A**		1	1 unit	41B
3RA1954-2A	3RT1.5 3RT1.6 3RT1.7	**S6** **S10** **S12**	**Laterally mountable**, without auxiliary contacts Contactor sizes S6, S10 and S12 can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm.	►	**3RA1954-2A**		1	1 unit	41B
3RA1954-2C	3RT104.-A with 3RT105	**S3** with **S6**	**Adapter, laterally mountable**, for mechanical interlocking of contactor S3 (only for AC operation) with contactor S6 using 3RA1954-2A locking device (must be ordered separately) incl. connecting clips	A	**3RA1954-2C**		1	1 unit	41B
Coil repeat terminals									
 3RA1923-3B	3RT103 3RT104	**S2, S3**	For the coil terminals A1 and A2 for reversing starters (contactor sizes S2 and S3). 2 x A1 and 1 x A2 required per assembly (one set contains 10 x A1 and 5 x A2)	B	**3RA1923-3B**		1	1 unit	41B
Base plates									
	3RT105	**S6**	For customer assembly of reversing contactor assemblies	B	**3RA1952-2A**		1	1 unit	41B
	3RT1.6	**S10**		B	**3RA1962-2A**		1	1 unit	41B
	3RT1.7	**S12**		B	**3RA1972-2A**		1	1 unit	41B

[1] Can also be used for 4-pole contactors with sizes S2 and S3.

[2] Can also be used for size S0 4-pole contactors.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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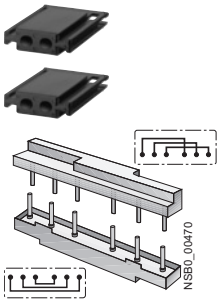
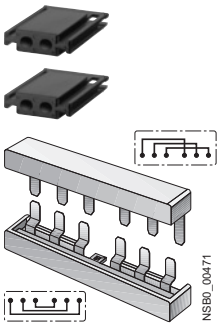
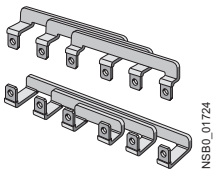
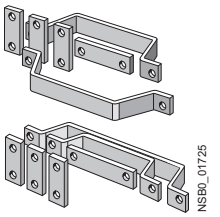
SIRIUS 3RA13 reversing contactor assemblies

	For contactors Type	Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Assembly kits for making 3-pole contactor assemblies									
 3RA1933-2A	3RT103	**S2**	The assembly kit contains: 2 connecting clips for two contactors, wiring modules on the top and bottom	►	**3RA1933-2A**		1	1 unit	41B
 3RA1943-2A	3RT104	**S3**	The assembly kit contains: 2 connecting clips for two contactors, wiring modules on the top and bottom	►	**3RA1943-2A**		1	1 unit	41B
 3RA1953-2A	3RT105	**S6**	The assembly kit contains: Wiring modules on the top and bottom (for connection with box terminal)	A	**3RA1953-2A**		1	1 unit	41B
 3RA1953-2M	3RT105 3RT1.6 3RT1.7	**S6** **S10** **S12**	The assembly kit contains: Wiring modules on the top and bottom (for connection without box terminal)	A A A	**3RA1953-2M** **3RA1963-2A** **3RA1973-2A**		1 1 1	1 unit 1 unit 1 unit	41B 41B 41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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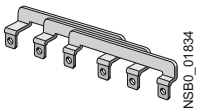
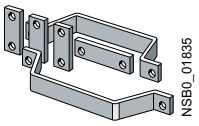
	For contactors Type	Size	Contactor clearance mm	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Wiring modules, single										
	3RT103	**S2-S2**	10	Top (in-phase)	►	**3RA1933-3D**		1	1 unit	41B
				Bottom (with phase reversal)	►	**3RA1933-3E**		1	1 unit	41B
	3RT104	**S3-S3**	10	Top (in-phase)	►	**3RA1943-3D**		1	1 unit	41B
				Bottom (with phase reversal)	►	**3RA1943-3E**		1	1 unit	41B
 NSB0_01834 3RA1953-3D	3RT105	**S6-S6**	10	Top (in-phase, for connection with box terminal)	A	**3RA1953-3D**		1	1 unit	41B
 NSB0_01835 3RA1953-3P				Top (with phase reversal, for connection without box terminal)	A	**3RA1953-3P**		1	1 unit	41B

	For contactors Type	Size	Contactor clearance mm	Interlocking	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical connectors							1 pack = 10 units for 10 combinations				
3RA1932-2C	3RT1.3 3RT1.4	**S2-S2** **S3-S3**	0	On front	For 3-pole contactors	►	**3RA1932-2C**		1	10 units	41B
3RA1932-2D	3RT1.3 3RT1.4 3RT1.5	**S2-S2** **S3-S3** **S6-S6**	10	Lateral	For 3-pole contactors	►	**3RA1932-2D**		1	10 units	41B
3RA1932-2G	3RT1.3	**S2-S2**	10	Lateral	For 4-pole contactors	A	**3RA1932-2G**		1	10 units	41B
3RA1942-2G	3RT1.4	**S3-S3**	10	Lateral	For 4-pole contactors	B	**3RA1942-2G**		1	10 units	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RA24 contactor assemblies for wye-delta starting

Overview

These 3RA24 contactor assemblies for wye-delta starting are designed for standard applications.

Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting[1)] or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA24 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S00 and S0

- Fully wired and tested, with electrical and mechanical interlock
- As individual parts for customer assembly

A dead interval of 50 ms on reversing is already integrated in the function module for wye-delta starting.

The 3RA24 contactor assemblies have screw or spring-type terminals and are suitable for screwing or snapping onto TH 35 standard mounting rails.

With the fully wired and tested 3RA24 contactor assemblies, the auxiliary contacts included in the basic devices are unassigned.

There is also a range of accessories (lateral auxiliary switch blocks, etc.) that must be ordered separately.

1) For effective support from Technical Assistance you must provide the following details:
- Rated motor voltage
- Rated motor current
- Service factor, operating values
- Motor starting current factor
- Starting time
- Ambient temperature

Rated data at 50 Hz 400 V AC			Size	Article No.		
Rating	Operational current I_e	Motor current		Line/delta contactor	Star contactor	**Complete assemblies**
kW	A	A				
				Screw terminals	**Screw terminals**	**Screw terminals**
5.5	12	9.5 ... 13.8	**S00-S00-S00**	3RT2015-1....	3RT2015-1....	**3RA2415-8XF31-1...**
7.5	16	12.1 ... 17		3RT2017-1....	3RT2015-1....	**3RA2416-8XF31-1...**
11	25	19 ... 25		3RT2018-1....	3RT2016-1....	**3RA2417-8XF31-1...**
11	25	19 ... 25	**S0-S0-S0**	3RT2024-1...0	3RT2024-1...0	**3RA2423-8XF32-1...**
15	32	24.1 ... 34		3RT2026-1...0	3RT2024-1...0	**3RA2425-8XF32-1...**
18.5	40	34.5 ... 40		3RT2026-1...0	3RT2024-1...0	**3RA2425-8XF32-1...**
22	50	31 ... 43		3RT2027-1...0	3RT2026-1...0	**3RA2426-8XF32-1...**
				Spring-type terminals	**Spring-type terminals**	**Spring-type terminals**
5.5	12	9.5 ... 13.8	**S00-S00-S00**	3RT2015-2....	3RT2015-2....	**3RA2415-8XF31-2...**
7.5	16	12.1 ... 17		3RT2017-2....	3RT2015-2....	**3RA2416-8XF31-2...**
11	25	19 ... 25		3RT2018-2....	3RT2016-2....	**3RA2417-8XF31-2...**
11	25	19 ... 25	**S0-S0-S0**	3RT2024-2...0	3RT2024-2...0	**3RA2423-8XF32-2...**
15	32	24.1 ... 34		3RT2026-2...0	3RT2024-2...0	**3RA2425-8XF32-2...**
18.5	40	34.5 ... 40		3RT2026-2...0	3RT2024-2...0	**3RA2425-8XF32-2...**
22	50	31 ... 43		3RT2027-2...0	3RT2026-2...0	**3RA2426-8XF32-2...**

Note:

The selection of contactor types refers to fused designs.

Function modules for wye-delta starting

The 3RA2816-0EW20 wye-delta function module (see page 3/172) replaces the complete wiring in the control circuit and can be used in the voltage range from 24 to 240 V AC/DC. It is snapped onto the front of the contactor assembly size S00 or S0.

One function module comprises a complete module kit:

- 3RA2912-0 basic module with integrated control logic and time setting
- Two 3RA2911-0 coupling modules with corresponding connecting cables

The scope of supply thus comprises a complete module kit for one contactor assembly for wye-delta starting size S00 or S0, regardless of the connection method.

Data of the control circuit

- Wide voltage range 24 to 240 V AC/DC
- Time setting range 0.5 to 60 s (3 selectable settings)
- Dead interval of 50 ms, non-adjustable

Surge suppression

Surge suppression (varistor) is included in the function modules for wye-delta starting.

Motor protection

As overload protection, the 3RU21 or 3RB3 overload relays (see table on the next page) or 3RN1 thermistor motor protection releases can be used.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB3 Solid-State Overload Relays".

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Components for customer assembly

Assembly kits with wiring modules and mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, function modules for wye-delta starting or wye-delta timing relays, auxiliary switches for electrical interlock – if required also infeed terminals and base plates – must be ordered separately.

The wiring kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and star contactors (bottom).

Assemblies 3RT20	Accessories for customer assembly		Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
Rating	Function modules for wye-delta starting	Assembly kit B, for single infeed	Setting range	Article No.	Setting range	Article No.
kW			A		A	
	Without external connection	**Screw terminals**	**Screw terminals**		**Screw terminals**	
5.5	3RA2816-0EW20	3RA2913-2BB1[1]	5.5 ... 8	3RU2116-1HB0	4 ... 16	3RB3016-1TB0
7.5			7 ... 10	3RU2116-1JB0		
11			11 ... 16	3RU2116-4AB0		
11	3RA2816-0EW20	3RA2923-2BB1[2]	11 ... 16	3RU2126-4AB0	6 ... 25	3RB3026-1QB0
15			14 ... 20	3RU2126-4BB0		
18.5			20 ... 25	3RU2126-4DB0		
22			20 ... 25	3RU2126-4DB0		
	Without external connection	**Spring-type terminals**	**Spring-type terminals**		**Spring-type terminals**	
5.5	3RA2816-0EW20	3RA2913-2BB2[1]	5.5 ... 8	3RU2116-1HC0	4 ... 16	3RB3016-1TE0
7.5			7 ... 10	3RU2116-1JC0		
11			11 ... 16	3RU2116-4AC0		
11	3RA2816-0EW20	3RA2923-2BB2[2]	11 ... 16	3RU2126-4AC0	6 ... 25	3RB3026-1QE0
15			14 ... 20	3RU2126-4BC0		
18.5			20 ... 25	3RU2126-4DC0		
22			20 ... 25	3RU2126-4DC0		

[1] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper and auxiliary circuit wiring.

[2] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor assemblies	**3 R A**															
2nd generation		**2**														
Device type (e.g. 4 = contactor assembly for wye-delta starting)			**4**													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e.g. 25 = 15 kW)					□											
Type of overload relay (8X = without)							□	□								
Assembly (B = ready-assembled, E, H = ready-assembled with communication)									□							
Interlock (3 = mechanical and electrical)										□						
Free auxiliary switches (e.g. S00: 1 = 3 NO total, S0: 2 = 3 NO + 3 NC total)											□					
Connection type (1 = screw, 2 = spring)													□			
Operating range / solenoid coil circuit (e.g. A = AC standard / without)														□		
Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)															□	□
Example	**3 R A**	**2**	**4**	**2**	**5**	**–**	**8**	**X**	**F**	**3**	**2**	**–**	**1**	**A**	**L**	**2**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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SIRIUS 3RA24 contactor assemblies for wye-delta starting

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT2 contactors and 3RU2 overload relays

			3RA2415 00-00-00	3RA2416 00-00-00	3RA2417 00-00-00	3RA2423 0-0-0	3RA2425 0-0-0	3RA2426 0-0-0
Type								
Sizes **S..-S..-S..**								
Dimensions (W x H x D) with function module								
• AC operation[1]		mm	135 x 68 x 145 / 135 x 84 x 145			135 x101 x 171 / 135 x114 x 171		
• DC operation[1]		mm	135 x 68 x 145 / 135 x 84 x 145			135 x101 x 181 / 135 x114 x 181		
General data								
Individual contactors								
• Q11 line contactor		Type	3RT2015	3RT2017	3RT2018	3RT2024	3RT2026	3RT2027
• Q13 delta contactor		Type	3RT2015	3RT2017	3RT2018	3RT2024	3RT2026	3RT2027
• Q12 star contactor		Type	3RT2015	3RT2015	3RT2016	3RT2024	3RT2024	3RT2026
Mechanical endurance		Operating cycles	3 million					
Unassigned auxiliary contacts of the individual contactors			[2]					
Short-circuit protection								
Main circuit without overload relays[3]								
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed								
Highest rated current of the fuse according to IEC 60947-4-1								
• Type of coordination "1"		A	35	35	63	63	100	125
• Type of coordination "2"		A	20	20	25	25	35	63
Control circuit								
Short-circuit test								
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A A	10 6[4], if the auxiliary contact of the overload relay is connected in the contactor coil circuit.					
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A		A A	10 6[4], if the auxiliary contact of the overload relay is connected in the contactor coil circuit.					
Main circuit								
Current-carrying capacity with reversing time up to 10 s								
• Rated operational current I_e	At 400 V 690 V	A A	12 6.9	17 9	25 20.8	25 20.8	40 22.5	55 35
• Rated power for three-phase motors with 50 Hz and 60 Hz	At 230 V 400 V 690 V 1000 V	kW kW kW kW	3.3 5.8 5.8 --	4.7 8.2 7.5 --	7.2 12.5 18 --	7.2 12.5 18 --	12 21 20.4 --	16.6 30.1 33 --
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 15 s								
• Rated operational current I_e	At 400 V 690 V	A A	12 6.9	17 9	25 20.8	25 20.8	31 22.5	44 35
• Rated power for three-phase motors with 50 Hz and 60 Hz	At 230 V 400 V 690 V 1000 V	kW kW kW kW	3.3 5.8 5.8 --	4.7 8.2 7.5 --	7.2 12.5 18 --	7.2 12.5 18 --	9.4 16.3 20.4 --	13.8 24 33 --
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 20 s								
• Rated operational current I_e	At 400 V 690 V	A A	12 6.9	17 9	25 20.8	25 20.8	28 22.5	39 35
• Rated power for three-phase motors with 50 Hz and 60 Hz	At 230 V 400 V 690 V 1000 V	kW kW kW kW	3.3 5.8 5.8 --	4.7 8.2 7.5 --	7.2 12.5 18 --	7.2 12.5 18 --	8.5 14.7 20.4 --	12.2 21.3 33 --
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15

1) Dimensions for devices with screw terminals/spring-type terminals.

2) For circuit diagrams of the control circuit see "Operating Instructions", http://support.automation.siemens.com/WW/view/en/34291016.

3) For short-circuit protection with overload relays See the Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", Article No. 3ZX1012-0RA21-1AB0, http://support.automation.siemens.com/WW/view/en/39714188.

4) Up to I_k < 0.5 kA; ≤ 260 V.

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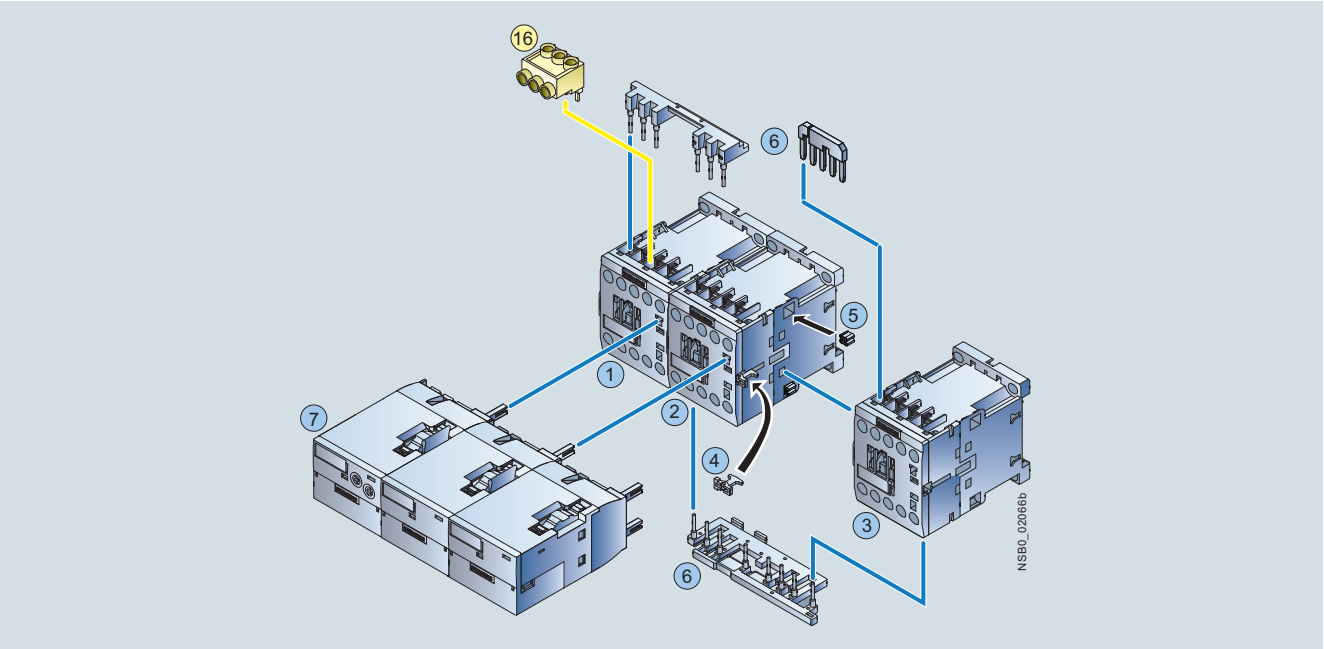
Selection and ordering data

Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Article No.	Page
16 Three-phase infeed terminal[2]	3RA2913-3K	3/172

Complete contactor assemblies

Individual parts		Article No. Q11[1]	Q13	Q12	Page
1 2 3	Contactor, 5.5 kW	3RT2015	3RT2015	3RT2015	3/28, 3/33
1 2 3	Contactor, 7.5 kW	3RT2017	3RT2017	3RT2015	3/28, 3/33
1 2 3	Contactor, 11 kW	3RT2018	3RT2018	3RT2016	3/28, 3/33
4 5 6	Assembly kit comprising 4 Mechanical interlock 5 4 connecting clips for 3 contactors 6 Wiring modules on the top and bottom for connecting the main current paths	3RA2913-2BB1			3/172
7	Function modules for wye-delta starting	3RA2816-0EW20			3/172

[1] The version with 1 NO is required for momentary-contact operation.

[2] Part 16 can only be mounted with contactors with screw terminal.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

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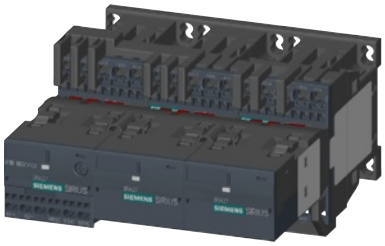
SIRIUS 3RA24 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



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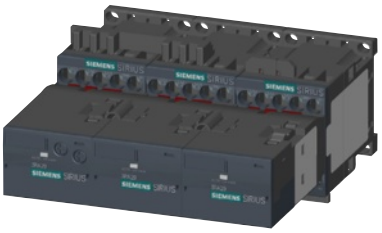

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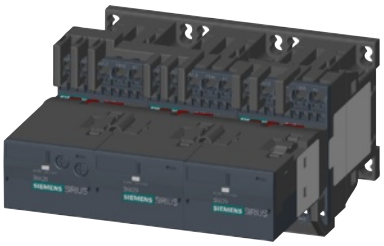

3RA241.-8XF31-2A.0

Rated data AC-3				Rated control supply voltage U_s [1]	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and					Article No. / Price per PU		Article No. / Price per PU
400 V	230 V	**400 V**	690 V					
A	kW	**kW**	kW	V				
AC operation, 50/60 Hz								
12	3.3	**5.5**	9.2	24 AC	A	**3RA2415-8XF31-1AB0**	A	**3RA2415-8XF31-2AB0**
				110 AC	A	**3RA2415-8XF31-1AF0**	B	**3RA2415-8XF31-2AF0**
				230 AC	A	**3RA2415-8XF31-1AP0**	A	**3RA2415-8XF31-2AP0**
16	4.7	**7.5**	9.2	24 AC	A	**3RA2416-8XF31-1AB0**	B	**3RA2416-8XF31-2AB0**
				110 AC	A	**3RA2416-8XF31-1AF0**	B	**3RA2416-8XF31-2AF0**
				230 AC	A	**3RA2416-8XF31-1AP0**	A	**3RA2416-8XF31-2AP0**
25	5.5	**11**	11	24 AC	A	**3RA2417-8XF31-1AB0**	B	**3RA2417-8XF31-2AB0**
				110 AC	A	**3RA2417-8XF31-1AF0**	B	**3RA2417-8XF31-2AF0**
				230 AC	A	**3RA2417-8XF31-1AP0**	A	**3RA2417-8XF31-2AP0**
DC operation								
12	3.3	**5.5**	9.2	24 DC	A	**3RA2415-8XF31-1BB4**	A	**3RA2415-8XF31-2BB4**
16	4.7	**7.5**	9.2	24 DC	A	**3RA2416-8XF31-1BB4**	A	**3RA2416-8XF31-2BB4**
25	5.5	**11**	11	24 DC	A	**3RA2417-8XF31-1BB4**	A	**3RA2417-8XF31-2BB4**
For IO-Link connection								
12	3.3	**5.5**	9.2	24 DC	A	**3RA2415-8XE31-1BB4**	A	**3RA2415-8XE31-2BB4**
16	4.7	**7.5**	9.2	24 DC	A	**3RA2416-8XE31-1BB4**	A	**3RA2416-8XE31-2BB4**
25	5.5	**11**	11	24 DC	A	**3RA2417-8XE31-1BB4**	A	**3RA2417-8XE31-2BB4**
For AS-Interface connection								
12	3.3	**5.5**	9.2	24 DC	A	**3RA2415-8XH31-1BB4**	A	**3RA2415-8XH31-2BB4**
16	4.7	**7.5**	9.2	24 DC	A	**3RA2416-8XH31-1BB4**	A	**3RA2416-8XH31-2BB4**
25	5.5	**11**	11	24 DC	A	**3RA2417-8XH31-1BB4**	A	**3RA2417-8XH31-2BB4**

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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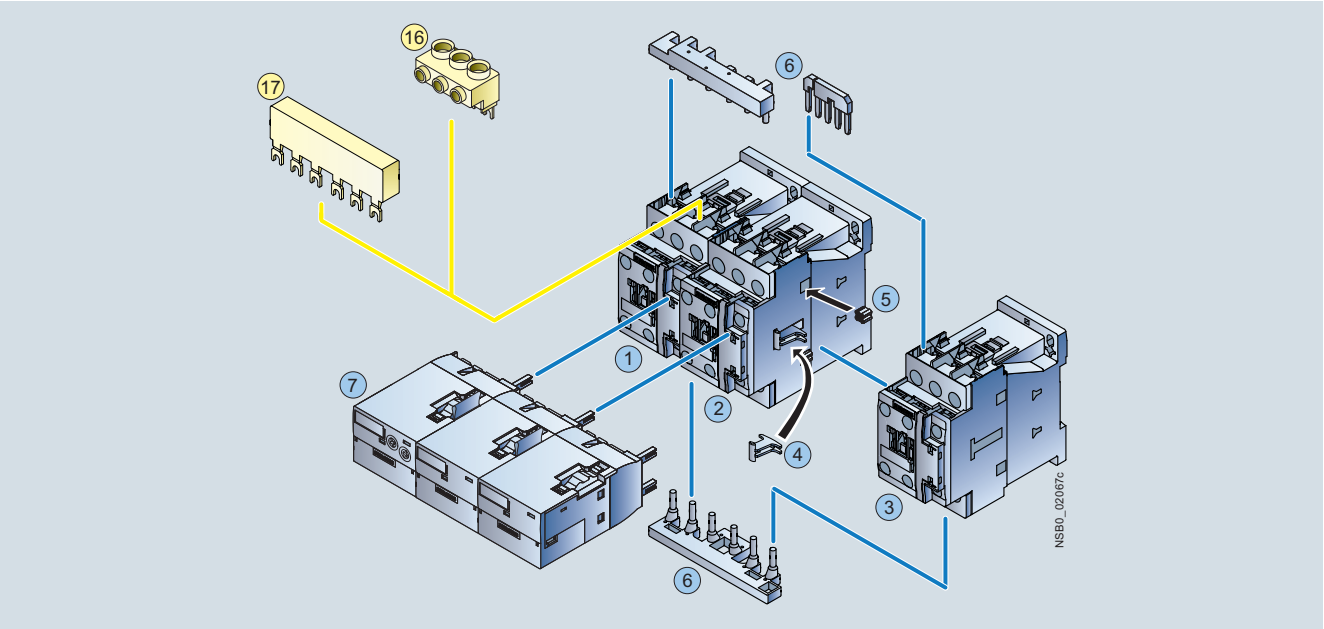
Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Article No.	Page
16 Three-phase infeed terminal[1)]	3RV2925-5AB	3/171
17 Three-phase busbar[1)]	3RV1915-1AB	3/171

Complete contactor assemblies

Individual parts		Article No. Q11	Q13	Q12	Page
1 2 3	Contactor, 11 kW	3RT2024	3RT2024	3RT2024	3/30, 3/35
1 2 3	Contactor, 15/18.5 kW	3RT2026	3RT2026	3RT2024	3/30, 3/35
1 2 3	Contactor, 22 kW	3RT2027	3RT2027	3RT2026	3/30, 3/35
4 5 6	Assembly kit	3RA2923-2BB1			3/171
	The assembly kit contains:				
	4 Mechanical interlock				
	5 4 connecting clips for 3 contactors				
	6 Wiring modules on the top and bottom for connecting the main current paths				
7	Function modules for wye-delta starting	3RA2816-0EW20			3/172

[1)] The parts 16 and 17 Can only be mounted with contactors with screw terminal.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

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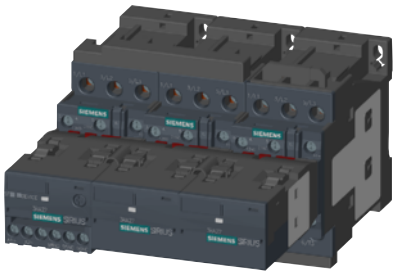
3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

SIRIUS 3RA24 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



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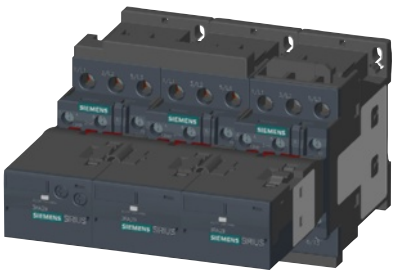
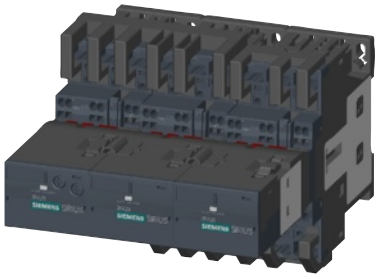


3RA242.-8XF32-1A.2



3RA242.-8XF32-2A.2

Rated data AC-3				Rated control supply voltage U_s [1]	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and					Article No. / Price per PU		Article No. / Price per PU
400 V	230 V	**400 V**	690 V					
A	kW	**kW**	kW	V				
AC operation, 50/60 Hz								
25	7.1	**11**	19	24 AC	A	**3RA2423-8XF32-1AC2**	A	**3RA2423-8XF32-2AC2**
				110 AC	A	**3RA2423-8XF32-1AG2**	B	**3RA2423-8XF32-2AG2**
				230 AC	B	**3RA2423-8XF32-1AL2**	B	**3RA2423-8XF32-2AL2**
32 / 40	11.4	**15 / 18.5**	19	24 AC	A	**3RA2425-8XF32-1AC2**	A	**3RA2425-8XF32-2AC2**
				110 AC	A	**3RA2425-8XF32-1AG2**	B	**3RA2425-8XF32-2AG2**
				230 AC	B	**3RA2425-8XF32-1AL2**	B	**3RA2425-8XF32-2AL2**
50	--	**22**	19	24 AC	A	**3RA2426-8XF32-1AC2**	B	**3RA2426-8XF32-2AC2**
				110 AC	A	**3RA2426-8XF32-1AG2**	B	**3RA2426-8XF32-2AG2**
				230 AC	B	**3RA2426-8XF32-1AL2**	B	**3RA2426-8XF32-2AL2**
DC operation								
25	7.1	**11**	19	24 DC	A	**3RA2423-8XF32-1BB4**	A	**3RA2423-8XF32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	24 DC	A	**3RA2425-8XF32-1BB4**	A	**3RA2425-8XF32-2BB4**
50	--	**22**	19	24 DC	A	**3RA2426-8XF32-1BB4**	A	**3RA2426-8XF32-2BB4**
For IO-Link connection								
25	7.1	**11**	19	24 DC	A	**3RA2423-8XE32-1BB4**	A	**3RA2423-8XE32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	24 DC	A	**3RA2425-8XE32-1BB4**	A	**3RA2425-8XE32-2BB4**
50	--	**22**	19	24 DC	A	**3RA2426-8XE32-1BB4**	A	**3RA2426-8XE32-2BB4**
For AS-Interface connection								
25	7.1	**11**	19	24 DC	A	**3RA2423-8XH32-1BB4**	A	**3RA2423-8XH32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	24 DC	A	**3RA2425-8XH32-1BB4**	A	**3RA2425-8XH32-2BB4**
50	--	**22**	19	24 DC	A	**3RA2426-8XH32-1BB4**	A	**3RA2426-8XH32-2BB4**

[1] Coil operating range
- at 50 Hz: 0.8 ... 1.1 x U_s;
- at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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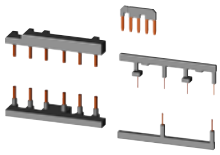
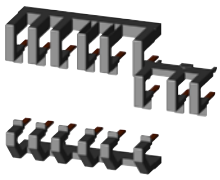
Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA2923-2BB1

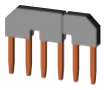


3RA2923-2BB2

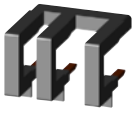
For contactors Type	Size	Version		DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Assembly kits[1] for making 3-pole contactor assemblies									
3RT201	**S00**	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA2913-2BB1**		▶	**3RA2913-2BB2**	
3RT202	**S0**	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA2923-2BB1**			--	
		• Only for main circuit[2]			--		▶	**3RA2923-2BB2**	
3RT202	**S0**	The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom, 3-phase infeed terminals							
		• For main, auxiliary and control circuits		B	**3RA2924-2BB1**			--	

3RV2925-5AB

3RV1915-1AB



3RT1916-4BA31



3RT2916-4BA32

Three-phase infeed terminals									
		Infeed terminal blocks for the line contactor for large conductor cross-sections							
3RT201	**S00**	• Conductor cross-section 6 mm^2	PS = 10 units	A	**3RA2913-3K**			--	
3RT202	**S0**	• Conductor cross-section 16 mm^2		▶	**3RV2925-5AB**			--	
Three-phase busbars									
3RT202	**S0**	Bridging phase-by-phase of all input terminals of the line contactor (Q11) and the delta contactor (Q13)		▶	**3RV1915-1AB**			--	
Links for paralleling, 3-pole (star jumpers)									
3RT201	**S00**	Without connection terminal (the links for paralleling can be reduced by one pole)		▶	**3RT1916-4BA31**		A	**3RT2916-4BA32**	
3RT202	**S0**			▶	**3RT1926-4BA31**		A	**3RT2926-4BA32**	

1) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

2) Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RA24 contactor assemblies for wye-delta starting

Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B

3RA2816-0EW20

3RA2712-1CA00

3RA2711-2CA00

For contactors Type	Size	Version		DT	Article No.	Price per PU	DT	Article No.	Price per PU
Function modules for wye-delta starting									
3RT201, 3RT202	**S00, S0**	Comprising one basic module and two coupling modules Rated control supply voltage 24 ... 240 V AC/DC Time setting range 0.5 ... 60 s (10, 30, 60 s selectable)		A	**3RA2816-0EW20**		A	**3RA2816-0EW20**	
Accessories for 3RA28 function modules									
3RT201, 3RT202	**S00, S0**	**Sealable covers**	PS = 5 units	A	**3RA2910-0**		A	**3RA2910-0**	
Function modules for wye-delta starting for connection to the control system									
					Screw terminals		DT	**Spring-type terminals**	
3RT201, 3RT202	**S00, S0**	**IO-Link connection**, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group		A	**3RA2711-1CA00**		A	**3RA2711-2CA00**	
3RT201, 3RT202	**S00, S0**	**AS-Interface connection**, comprising one basic module and two coupling modules		A	**3RA2712-1CA00**		A	**3RA2712-2CA00**	
Accessories for 3RA27 function modules									
3RT201, 3RT202	**S00, S0**	**Module connector set**, comprising: • 2 module connectors, 14-pole, short + 2 interface covers		A	**3RA2711-0EE01**		A	**3RA2711-0EE01**	
		Module connectors							
3RT201, 3RT202	**S00, S0**	• 14-pole, 8 cm For size jump S00-S0 + 1 space		A	**3RA2711-0EE02**		A	**3RA2711-0EE02**	
3RT201, 3RT202	**S00, S0**	• 14-pole, 21 cm For various space combinations		A	**3RA2711-0EE03**		A	**3RA2711-0EE03**	
3RT201, 3RT202	**S00, S0**	• 10-pole, 8 cm For separate control signal infeed within an IO-Link group		A	**3RA2711-0EE04**		A	**3RA2711-0EE04**	
3RT201, 3RT202	**S00, S0**	**Sealable covers**	PS = 5 units	A	**3RA2910-0**		A	**3RA2910-0**	

Operator panels for IO-Link see page 3/192.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3RA14 contactor assemblies for wye-delta starting are designed for standard applications.

Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting[1)] or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA14 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S2 and S3

- Fully wired and tested, with electrical interlock, reversing time up to 10 s
- As individual parts for customer assembly

Sizes S6 to S12

- Only as individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection, see Chapter 7, "Protection Equipment" ➞ "Overload Relays" ➞ "SIRIUS 3RB2 Solid-State Overload Relays".

The 3RA14 contactor assemblies have screw terminals. Sizes S2 to S3 are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Complete units

Fully wired and tested 3RA14 contactor assemblies have one unassigned NO contact which is mounted onto the front of the Q3 delta contactor.

With the preassembled contactor assembly sizes S2 and S3, 22 to 75 kW, a timing relay is laterally mounted. A dead interval of 50 ms on reversing is already integrated in the time relay function.

1) For effective support from Technical Assistance you must provide the following details:
- Rated motor voltage
- Rated motor current
- Service factor, operating values
- Motor starting current factor
- Starting time
- Ambient temperature

Rated data at 50 Hz 400 V AC			Size			
Rating *P*	Operational current I_e	Motor current		Line/delta contactor	Star contactor	**Article No. complete assembly**
kW	A	A				
22	50	31 ... 43	**S2-S2-S0**	3RT1034	3RT1026	**3RA1434-8XC21-1...**
30	50	48.3 ... 65		3RT1034		**--**
37	80	62.1 ... 77.8	**S2-S2-S2**		3RT1034	**3RA1435-8XC21-1...**
45	86	69 ... 86		3RT1036		**3RA1436-8XC21-1...**
55	115	77.6 ... 108.6	**S3-S3-S2**	3RT1044	3RT1035	**3RA1444-8XC21-1...**
75	150	120.7 ... 150		3RT1045	3RT1036	**3RA1445-8XC21-1...**
90	160	86 ... 160	**S6-S6-S3**	3RT1054	3RT1044	**--**
110	195	86 ... 195				
132	230	86 ... 230		3RT1055	3RT1045	
160	280	86 ... 280		3RT1056	3RT1046	
200	350	95 ... 350	**S10-S10-S6**	3RT1064	3RT1054	**--**
250	430	95 ... 430		3RT1065	3RT1055	
315	540	277 ... 540	**S12-S12-S10**	3RT1075	3RT1064	**--**
355	610	277 ... 610				
400	690	277 ... 690			3RT1065	
500	850	277 ... 850		3RT1076	3RT1066	

Surge suppression

Sizes S2 and S3

All contactor assemblies can be fitted with RC elements, varistors or diode assemblies for damping opening surges in the coil. As with the individual contactors, the surge suppressors can either be plugged onto the top or bottom coil terminals.

Sizes S6 to S12

The contactors are fitted with varistors as standard.

Motor protection

As overload protection, the 3RU11 or 3RB2 overload relays (see table on the next page) or 3RN1 thermistor motor protection releases can be used.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

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SIRIUS 3RA14 contactor assemblies for wye-delta starting

Components for customer assembly

Assembly kits with wiring modules and, if necessary, mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, wye-delta timing relays, auxiliary switches for electrical interlock – if required also infeed terminals, mechanical interlocks and base plates – must be ordered separately.

In the case of sizes S2 to S12 only the bottom main conducting path connection between the delta and star contactors is included in the wiring module, owing to the larger conductor cross-section at the infeed.

Note:

The selection of contactor types refers to fused design.

	Accessories for customer assembly					Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
P **kW**	Timing relays	Assembly kit A, for double infeed	Assembly kit B, for single infeed	Star jumper	Base plates	Setting range A	Article No.	Setting range A	Article No.
22	3RP1574-1N.30	3RA1933-2C [1]	3RV1935-1A	3RT1926-4BA31	3RA1932-2E	18 ... 25	3RU1136-4DB0	12.5 ... 50	3RB2036-1UB0
30						28 ... 40	3RU1136-4FB0		
37	3RP1574-1N.30	3RA1933-2B [1]	3RV1935-1A	3RT1936-4BA31	3RA1932-2F	36 ... 45	3RU1136-4GB0	12.5 ... 50	3RB2036-1UB0
45						40 ... 50	3RU1136-4HB0		
55	3RP1574-1N.30	3RA1943-2C [1]	--	3RT1936-4BA31	3RA1942-2E	45 ... 63	3RU1146-4JB0	25 ... 100	3RB2046-1EB0
75						70 ... 90	3RU1146-4LB0		
90	3RP1574-1N.30	--	3RA1953-3D [2]	3RT1946-4BA31	3RA1952-2E	--	--	50 ... 200	3RB2056-1FC2
110									
132									
160									
200	3RP1574-1N.30	--	--	3RT1956-4BA31	3RA1962-2E	--	--	55 ... 250	3RB2066-1GC2
250								160 ... 630	3RB2066-1MC2
315	3RP1574-1N.30	--	--	3RT1966-4BA31	3RA1972-2E	--	--	160 ... 630	3RB2066-1MC2
355									
400									
500									

[1] Assembly kit contains wiring module on the bottom (connection between delta and star contactor) and star jumper.

[2] Wiring module on top from reversing contactor assembly (note conductor cross-sections).

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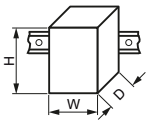
Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT1 contactors and 3RU1 overload relays



			3RA1435	3RA1436	3RA1444	3RA1445
Type						
Size			S2-S2-S2	S2-S2-S2	S3-S3-S2	S3-S3-S2
Dimensions (W x H x D) with base plate						
• DC operation		mm	198 x 140 x 184		218 x 180 x 207	
• AC operation		mm	198 x 140 x 169		218 x 180 x 194	
General data						
Individual contactors						
• Q1 line contactor		Type	3RT1035	3RT1036	3RT1044	3RT1045
• Q3 delta contactor		Type	3RT1035	3RT1036	3RT1044	3RT1045
• Q2 star contactor		Type	3RT1034	3RT1034	3RT1035	3RT1036
Mechanical endurance		Operating cycles	3 million			
Unassigned auxiliary contacts of the individual contactors			[1]			
Short-circuit protection						
Main circuit without overload relays[2]						
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed						
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	125	160	250	250
• Type of coordination "2"		A	63	80	125	160
Control circuit						
Short-circuit test						
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A A	10 6[3], if the auxiliary contact of the overload relay is connected in the contactor coil circuit			
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A		A A	10 6[3], if the auxiliary contact of the overload relay is connected in the contactor coil circuit			
Main circuit						
Current-carrying capacity with reversing time up to 10 s						
• Rated operational current I_e	At 400 V	A	80	86	115	150
	500 V	A	69.3	86	112.6	138.6
	690 V	A	69.3	69.3	98.7	138.6
• Rated power for three-phase motors at 50 Hz and 60 Hz and	At 230 V	kW	25.5	27.8	37	49
	400 V	kW	44	48	65	85
	500 V	kW	48	60	80	98
	690 V	kW	66	67	97	136
	1 000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15
Current-carrying capacity with reversing time up to 15 s						
• Rated operational current I_e	At 400 V	A	57	67	97	106
	500 V	A	57	67	97	106
	690 V	A	57	67	97	106
• Rated power for three-phase motors at 50 Hz and 60 Hz and	At 230 V	kW	18.2	21.6	32	35
	400 V	kW	31.6	38	55	60
	500 V	kW	40	47	69	75
	690 V	kW	55	65	95	104
	1 000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15
Current-carrying capacity with reversing time up to 20 s						
• Rated operational current I_e	At 400 V	A	51	57	85	92
	500 V	A	51	57	85	92
	690 V	A	51	57	85	92
• Rated power for three-phase motors at 50 Hz and 60 Hz and	At 230 V	kW	16.3	18.4	28	30
	400 V	kW	28	32	48	52
	500 V	kW	35	40	60	65
	690 V	kW	49	55	83	90
	1 000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15

[1] For circuit diagrams for the control circuit see Reference Manual "Switching Devices – Contactors and Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/35554359.

[2] For short-circuit protection with overload relay see Configuration Manual "SIRIUS Configuration – Selection Data for Fuseless Load Feeders", Article No. 3ZX1012-0RA21-0AB0, http://support.automation.siemens.com/WW/view/en/40625241.

[3] Up to I_k < 0.5 kA; ≤ 260 V.

[4] Selection data for fuseless load feeders.

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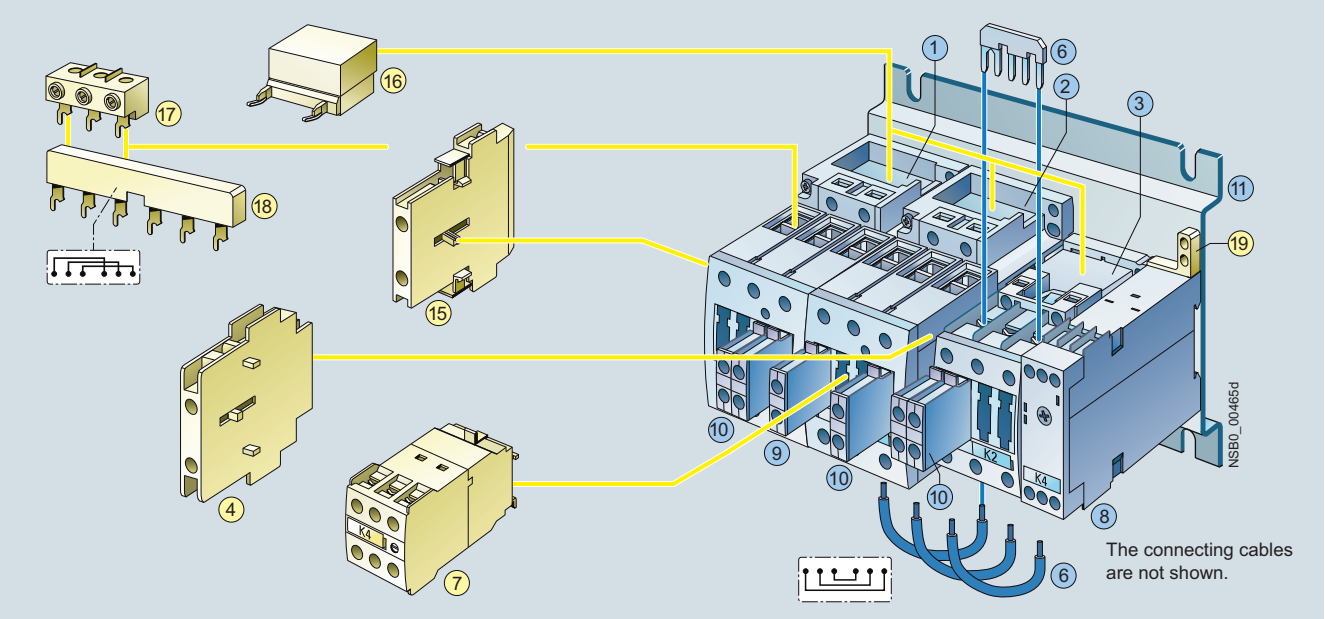
SIRIUS 3RA14 contactor assemblies for wye-delta starting

Selection and ordering data

Fully wired and tested contactor assemblies · Size S2-S2-S0 · up to 30 kW



Mountable accessories (optional)

To be ordered separately		Article No.	Page
④	Mech. interlock, lateral Depth compensation required Q3: 1.5 mm; Q2: 0 mm[1]	3RA1924-2B	3/161
⑦	Solid-state time-delay auxiliary switch block, front[2]	3RT1926-2G...	3/107
⑮	Auxiliary switch block, lateral	3RH1921-1EA..	3/105
⑯	Surge suppressors	3RT1926-1.... 3RT1936-1....	3/108, 3/108
⑰	Three-phase infeed terminals	3RV1935-5A	3/179
⑱	Three-phase busbars	3RV1935-1A	3/179
⑲	Push-in lug for timing relay screw mounting	3RP1903	[3]

[1] Use the 3RA1932-2B base plate for this design.

[2] Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of Q3, an auxiliary switch block can only be mounted onto the side.

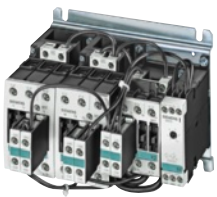
Complete contactor assemblies

Individual parts		Article No. Q1	Q3	Q2	Page
①②③	Contactor, 22/30 kW	3RT1034	3RT1034	3RT1026	3/83
⑧	Timing relay, lateral	3RP1574-1N.30			[3]
⑨	Auxiliary switch block with 1 unassigned NO contact	3RH1921-1CA10			3/103
⑩	Auxiliary switch block for local control				
	2 units	3RH1921-1CA01			3/103
	3 units	3RH1921-1CA10			
⑪	Base plate	3RA1932-2E			3/179
⑥	Assembly kit	3RA1933-2C			3/179

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

[3] See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".

Rated data AC-3					Rated control supply voltage U_s[1]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and						Article No.	Price per PU			
400 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
50 / 65	19.6	**22 / 30**	35	34	24 AC	A	**3RA1434-8XC21-1AC2**		1	1 unit	41B
					110 AC	A	**3RA1434-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA1434-8XC21-1AL2**		1	1 unit	41B
DC operation											
50 / 65	19.6	**22 / 30**	35	34	24 DC	▶	**3RA1434-8XC21-1BB4**		1	1 unit	41B



3RA1434-8XC21-1...

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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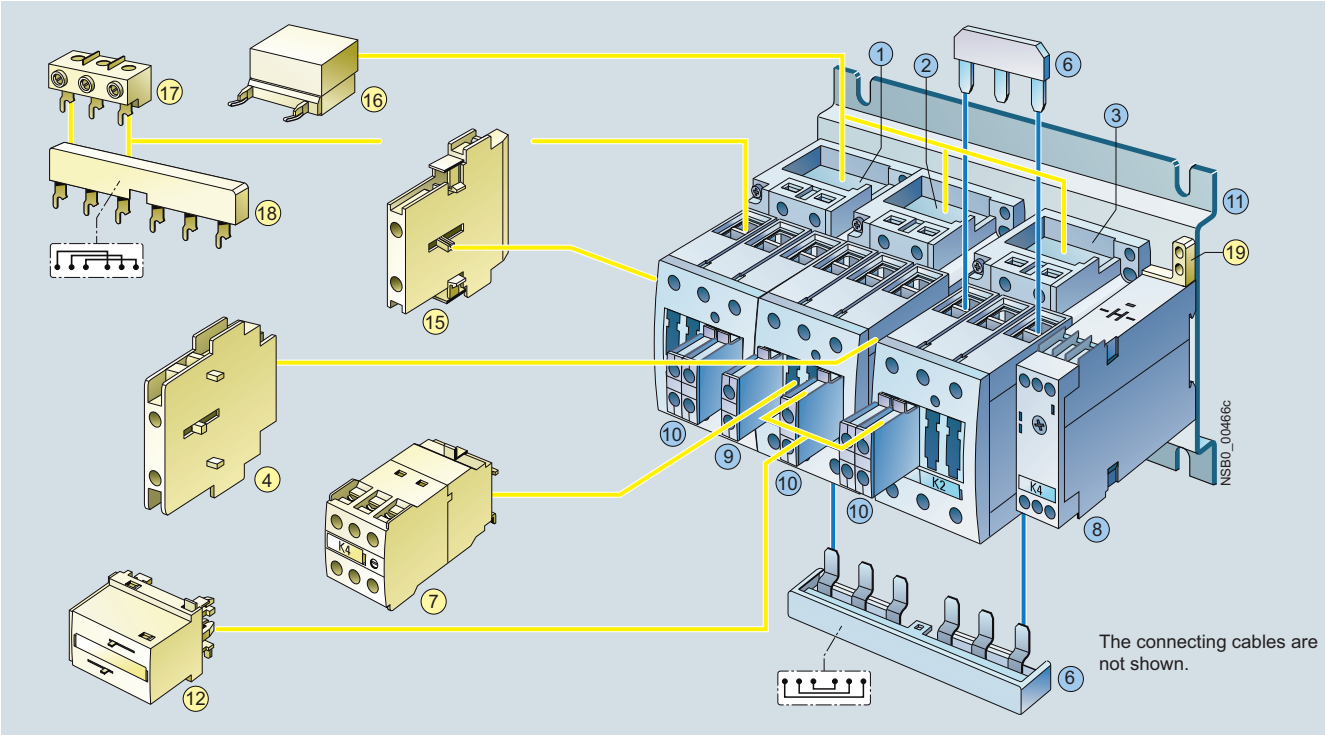
Fully wired and tested contactor assemblies · Size S2-S2-S2 · up to 45 kW



Mountable accessories (optional)

To be ordered separately		Article No.	Page
④	Mech. interlock, lateral	3RA1924-2B	3/161
⑦	Solid-state time-delay auxiliary switch block, front[1]	3RT1926-2G...	3/107
⑫	Mech. interlock, front	3RA1924-1A	3/161
⑮	Auxiliary switch block, lateral	3RH1921-1EA..	3/105
⑯	Surge suppressors	3RT1926-1.... 3RT1936-1....	3/108, 3/108
⑰	Three-phase infeed terminal	3RV1935-5A	3/179
⑱	Three-phase busbar	3RV1935-1A	3/179
⑲	Push-in lug for timing relay screw mounting	3RP1903	[2]

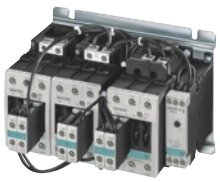
Complete contactor assemblies

Individual parts		Article No. Q1	Q3	Q2	Page
①②③	Contactor, 37 kW	3RT1035	3RT1035	3RT1034	3/83
①②③	Contactor, 45 kW	3RT1036	3RT1036	3RT1034	3/83
⑧	Timing relay, lateral	3RP1574-1N.30			[2]
⑨	Auxiliary switch block with 1 unassigned NO contact	3RH1921-1CA10			3/103
⑩	Auxiliary switch block for local control 2 units 3 units	 3RH1921-1CA01 3RH1921-1CA10			 3/103
⑪	Base plate	3RA1932-2F			3/179
⑥	Assembly kit	3RA1933-2B			3/179

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

[1] Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of Q3, an auxiliary switch block can only be mounted onto the side.

[2] See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA143.-8XC21-1...

Rated data AC-3 Operational current I_e up to	Ratings of three-phase motors at 50 Hz and				Rated control supply voltage U_s[1]	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
400 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
80	25	**37**	51	63	24 AC	A	**3RA1435-8XC21-1AC2**		1	1 unit	41B
					110 AC	A	**3RA1435-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA1435-8XC21-1AL2**		1	1 unit	41B
86	27	**45**	55	63	24 AC	A	**3RA1436-8XC21-1AC2**		1	1 unit	41B
					110 AC	A	**3RA1436-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA1436-8XC21-1AL2**		1	1 unit	41B
DC operation											
80	25	**37**	51	63	24 DC	A	**3RA1435-8XC21-1BB4**		1	1 unit	41B
86	27	**45**	55	63	24 DC	A	**3RA1436-8XC21-1BB4**		1	1 unit	41B

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s;
at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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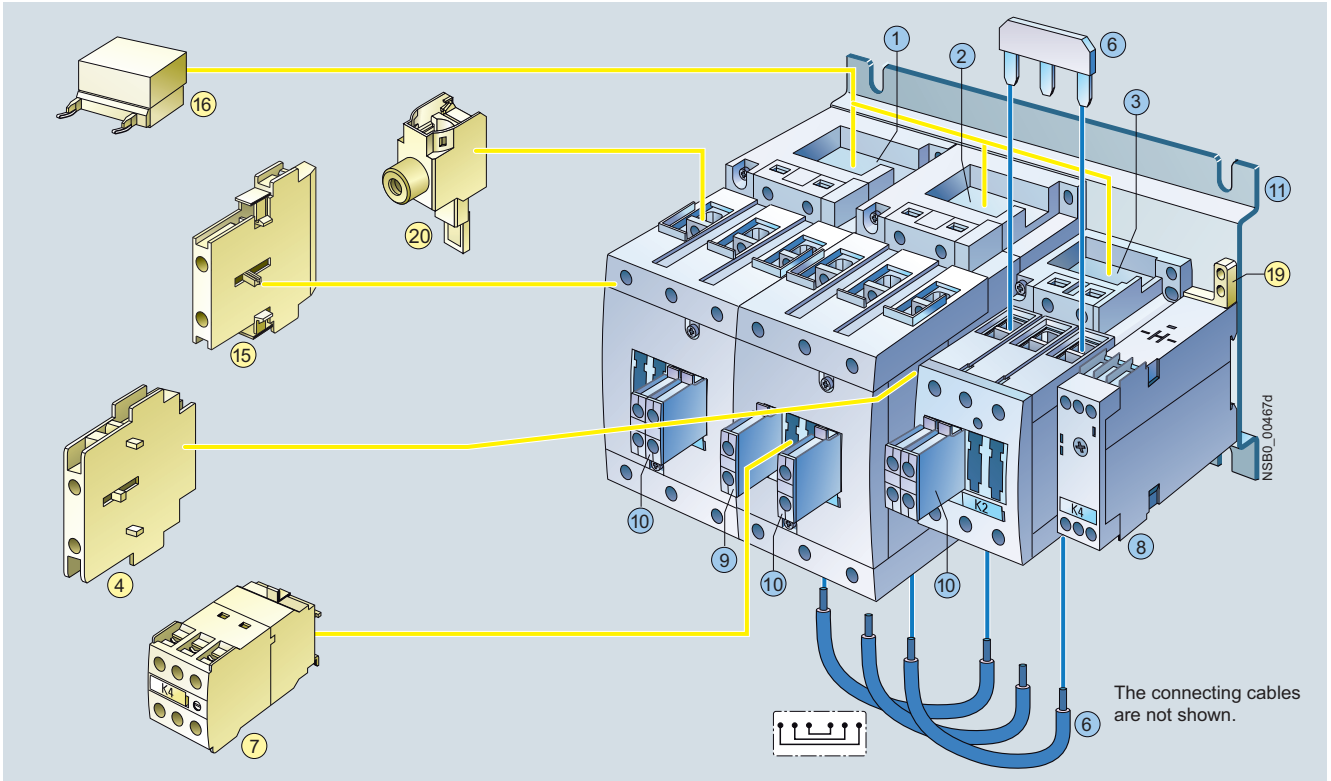
Contactor Assemblies

3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

SIRIUS 3RA14 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S3-S3-S2 · Up to 75 kW



Mountable accessories (optional)

To be ordered separately		Article No.	Page
④	Mech. interlock, lateral, depth compensation required Q3: 0 mm; Q2: 27.5 mm[1)]	3RA1924-2B	3/161
⑦	Solid-state time-delay auxiliary switch block, front[2)]	3RT1926-2G...	3/107
⑮	Auxiliary switch block, lateral	3RH1921-1EA..	3/105
⑯	Surge suppressors	3RT19.6-1....	3/108
⑲	Push-in lug for timing relay screw mounting	3RP1903	[3)]
⑳	Single-phase infeed terminals	3RA1943-3L	3/179

Complete contactor assemblies

Individual parts		Article No. Q1	Q3	Q2	Page
①②③	Contactor, 55 kW	3RT1044	3RT1044	3RT1035	3/83
①②③	Contactor, 75 kW	3RT1045	3RT1045	3RT1036	3/83
⑧	Timing relay, lateral	3RP1574-1N.30			[3)]
⑨	Auxiliary switch block with 1 unassigned NO contact	3RH1921-1CA10			3/103
⑩	Auxiliary switch block for local control				
	2 units	3RH1921-1CA01			3/103
	3 units	3RH1921-1CA10			
⑪	Base plate	3RA1942-2E			3/179
⑥	Assembly kit	3RA1943-2C			3/179

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

[1)] Use the 3RA1942-2B base plate for this design.

[2)] Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of Q3, an auxiliary switch block can only be mounted onto the side.

[3)] See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".

Rated data AC-3					Rated control supply voltage U_s[1)]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and						Article No.	Price per PU			
400 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
115	37	**55**	81	93	24 AC	B	**3RA1444-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1444-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA1444-8XC21-1AL2**		1	1 unit	41B
150	47	**75**	103	110	24 AC	B	**3RA1445-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA1445-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA1445-8XC21-1AL2**		1	1 unit	41B
DC operation											
115	37	**55**	81	93	24 DC	B	**3RA1444-8XC21-1BB4**		1	1 unit	41B
150	47	**75**	103	110	24 DC	B	**3RA1445-8XC21-1BB4**		1	1 unit	41B

3RA144..-8XC21-1...

[1)] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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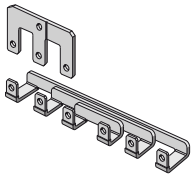
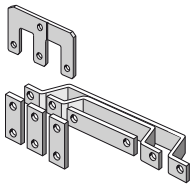
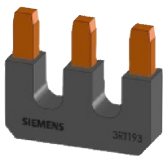
Components for customer assembly

	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Assembly kits								
 NSB0_01836 3RA1953-2B	The assembly kit contains: star jumper, wiring module on the bottom (Wiring module on the top is not included in the scope of supply. A double infeed between the line contactor and the delta contactor is recommended.)	**S2-S2-S0**	▶	**3RA1933-2C**		1	1 unit	41B
		S2-S2-S2	▶	**3RA1933-2B**		1	1 unit	41B
		S3-S3-S2	▶	**3RA1943-2C**		1	1 unit	41B
		S3-S3-S3	▶	**3RA1943-2B**		1	1 unit	41B
		S6-S6-S6	A	**3RA1953-2B**		1	1 unit	41B
		S6-S6-S6	A	**3RA1953-2N**		1	1 unit	41B
		S10-S10-S10	A	**3RA1963-2B**		1	1 unit	41B
		S12-S12-S12	B	**3RA1973-2B**		1	1 unit	41B
 NSB0_01837 3RA1953-2N, 3RA1963-2B, 3RA1973-2B								
Single-phase infeed terminals								
	Conductor cross-section: 95 mm²	**S3**	A	**3RA1943-3L**		1	1 unit	41B
Three-phase infeed terminals								
	Infeed terminal blocks for the line contactor for large conductor cross-sections							
	Conductor cross-section: 50 mm²	**S2**	▶	**3RV1935-5A**		1	1 unit	41E
Three-phase busbars								
	Bridging phase-by-phase of all input terminals of the line contactor Q1 and the delta contactor Q3							
		S2	▶	**3RV1935-1A**		1	1 unit	41E
Links for paralleling, 3-pole (star jumpers)								
 3RT1936-4BA31	Without connection terminal (the links for paralleling can be reduced by one pole)	**S2**	▶	**3RT1936-4BA31**		1	1 unit	41B
		S3	▶	**3RT1946-4BA31**		1	1 unit	41B
		S6[1)2)]	▶	**3RT1956-4BA31**		1	1 unit	41B
		S10, S12[1)2)]	▶	**3RT1966-4BA31**		1	1 unit	41B
Base plates								
	For customer assembly of contactor assemblies for wye-delta starting with a **laterally mounted** timing relay							
	Side-by-side mounting	**S2, S2, S0**	B	**3RA1932-2E**		1	1 unit	41B
	10 mm distance between Q3 and Q2	**S2, S2, S2**	B	**3RA1932-2F**		1	1 unit	41B
	Side-by-side mounting	**S3, S3, S2**	B	**3RA1942-2E**		1	1 unit	41B
	10 mm distance between Q1, Q3 and Q2	**S6, S6, S3**	B	**3RA1952-2E**		1	1 unit	41B
		S6, S6, S6	B	**3RA1952-2F**		1	1 unit	41B
		S10, S10, S6	B	**3RA1962-2E**		1	1 unit	41B
		S10, S10, S10	B	**3RA1962-2F**		1	1 unit	41B
		S12, S12, S10	B	**3RA1972-2E**		1	1 unit	41B
		S12, S12, S12	B	**3RA1972-2F**		1	1 unit	41B
	For customer assembly of contactor assemblies for wye-delta starting with a **front-mounted** timing relay							
	10 mm distance between Q1, Q3 and Q2	**S2, S2, S0**	B	**3RA1932-2B**		1	1 unit	41B
		S2, S2, S2	B	**3RA1932-2B**		1	1 unit	41B
		S3, S3, S2	B	**3RA1942-2B**		1	1 unit	41B

1) The 3RT1956-4EA1 (for S6) or 3RT1966-4EA1 (for S10 and S12) cover can be used for touch protection.

2) Sizes S6 and S10/S12 are approved as star jumpers according to UL and CSA.

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3TD6 reversing contactor assemblies, 335 kW

Overview

The contactor assemblies are suitable for use in any climate and the contactors are mechanically interlocked. They are finger-safe according to EN 50274.

Complete units and components for customer assembly are available. For motor protection, either overload relays for stand-alone installation or thermistor motor protection releases must be ordered separately.

Complete units

The 3TD68 contactor assemblies each consist of two 3TF68 contactors that are mechanically interlocked with 3TX7686-1A. Electrical interlocking is wired. The main and control circuits are wired according to the circuit diagrams.

An internal circuit diagram, a type designation and an unit labeling plate are provided on a common cover.

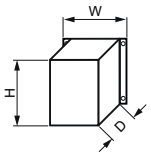
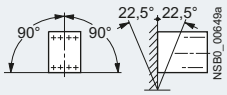
Auxiliary contacts

The contactor assemblies have 4 NO + 4 NC contacts per individual contactor. 3 NO + 3 NC contacts are unassigned for momentary-contact operation and 4 NO + 3 NC contacts unassigned for continuous contacting.

For the wiring of individual contactors, see the circuit diagrams of the control circuits in the Reference Manual "Contactors and Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/35554359.

Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type			**3TD68**
Size			**14**
Dimensions (W x H x D) with base plate		mm	520 x 310 x 278
General data			
Permissible mounting position, installation instructions[1] The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance	Operating cycles		5 million
and rated data			
Rated insulation voltage		V AC	600
Uninterrupted current enclosed		A	550
Maximum horsepower ratings (and approved values)			
• Rated power for three-phase motors at 60 Hz	At 200 V 230 V 460 V 575 V	hp hp hp hp	200 229 464 582
NEMA/EEMAC ratings	NEMA/EEMAC SIZE		6
• Uninterrupted current			
- Open - Enclosed		A A	600 540
• Rated power for three-phase motors at 60 Hz	At 200 V 230 V 460 V 575 V	hp hp hp hp	150 200 400 400
Overload relays	Type		3RB2066
• Setting range		A	160 ... 630

[1] If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

Short-circuit protection with overload relays see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

Selection and ordering data

Size	Rated data AC-3					Auxiliary contacts per direction of rotation		Rated control supply voltage U_s	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Ratings of three-phase motors at 50 Hz and				Version				Article No.	Price per PU			
	690 V	230 V	**400 V**	500 V	690 V									
	A	kW	**kW**	kW	kW	NO	NC	V AC						
Complete units														
AC operation, 50/60 Hz														
14	630	200	**335**	434	600	4	4	110 … 132	C	**3TD6804-2CF7**		1	1 unit	41B
								200 … 240	C	**3TD6804-2CM7**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

3TE contactor assemblies are available as complete units and components for customer assembly. They consist of two 3TF68 contactors, and the 3RT1075 contactor as star (wye) contactor.

The complete unit combinations are optionally supplied without a main conducting path connection between the line contactor and the delta contactor.

Control circuit (auxiliary contacts)

The 3TF68 contactors have four lateral auxiliary switches, each with 1 NO + 1 NC contact. The following auxiliary contacts are required for the control circuit of the assembly:

- Line contactor Q1: 13-14, 43-44
- Star (wye) contactor Q2: 13-14, 21-22
- Delta contactor Q3: 13-14, 21-22

The star-delta (wye-delta) changeover is implemented via a lateral time relay 3RP1574 (1 ... 20 ms) or 3RP1576 (3 ... 60 ms).

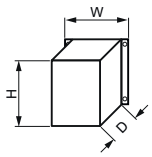
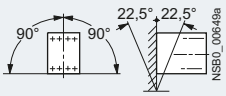
Motor protection

3TE68 contactor assemblies are supplied without overload protection. Overload relays or thermistor motor protection releases must be ordered separately.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type			**3TE68**
Size			**14**
Dimensions (W x H x D) with base plate		mm	665 x 325 x 278
General data			
Permissible mounting position, installation instructions[1]			
The contactors are designed for operation on a vertical mounting surface.			
Individual contactors			
• Q1 line contactor		Type	3TF68
• Q2 star contactor		Type	3RT1075
• Q3 delta contactor		Type	3TF68
Mechanical endurance		Operating cycles	3 million
Unassigned auxiliary contacts of the individual contactors			[2]
Main circuit			
Current-carrying capacity with reversing time up to 10 s			
• Rated operational current I_e	Up to 690 V	A	1 090
• Rated power for three-phase motors at 50 Hz	At 230 V	kW	355
	400 V	kW	612
	500 V	kW	800
	690 V	kW	1 046
• Switching frequency with overload relay		h^{-1}	3
Current-carrying capacity with reversing time up to 15 s			
• Rated operational current I_e	Up to 500 V	A	923
	690 V	A	883
• Rated power for three-phase motors at 50 Hz	At 230 V	kW	295
	400 V	kW	515
	500 V	kW	677
	690 V	kW	885
• Switching frequency with overload relay		h^{-1}	2
Current-carrying capacity with reversing time up to 20 s			
• Rated operational current I_e	Up to 500 V	A	800
	690 V	A	765
• Rated power for three-phase motors at 50 Hz	At 230 V	kW	244
	400 V	kW	444
	500 V	kW	590
	690 V	kW	770
• Switching frequency with overload relay		h^{-1}	2

1) If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

2) See circuit diagrams of the control circuits in Reference Manual "Contactors and Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/35554359.

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3TE6 contactor assemblies for wye-delta starting, 630 kW

Contactor	Type	3TE68
Short-circuit protection		
Main circuit		
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE		
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1		
• Type of coordination "1"	A	1 000
• Type of coordination "2"	A	500[1]
Auxiliary circuit		
Short-circuit test		
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	10
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A	A	10
Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA and 690 V		
Rated motor current	A	277 ... 1 090
Overload relays	Type	3RB2066
Setting range (The overload relays must be set to 0.58 times the rated motor current.)	A	160 ... 630
Permissible back-up fuses for starters, comprising contactor assemblies and overload relays. Single or double infeed[1]		
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE		
- Type of coordination "1"	A	1 000
- Type of coordination "2"	A	500
• Fuse links, aM operational class: LV HRC, type 3ND		
- Type of coordination "2"	A	630
• Fuse links, Siemens Canada, HRC fuses, Type II	A	1 000
• Fuse links, UL-listed fuses, CLASS L	A	1 200
• Fuse links, British Standard Fuses, BS88		
- Type of coordination "1"	A	1 000
- Type of coordination "2"	A	500

[1] The maximum rated motor current must not be exceeded.

Short-circuit protection with overload relays see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

Use double infeed for higher rated motor currents; see the circuit diagrams in the Reference Manual "Contactors and Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/35554359.

Selection and ordering data

Size	Rated data AC-3					Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Ratings of three-phase motors at 50 Hz and						Article No. / Price per PU			
	690 V	230 V	**400 V**	500 V	690 V						
	A	kW	**kW**	kW	kW	V AC					
Complete units, reversing time up to 10 s											
AC operation, 50/60 Hz											
Without main current path connection between line and delta contactor											
14	1 090	315	**630**	800	1 000	110	C	**3TE6804-5CF0**	1	1 unit	41B
						230/220[1]	D	**3TE6804-5CP0**	1	1 unit	41B

[1] Operating range at 220 V: 0.85 ... 1.15 x U_s; lower operating range limit according to IEC 60947.

For motor protection, overload relays for stand-alone installation must be ordered separately; see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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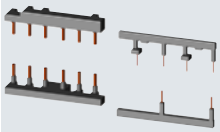
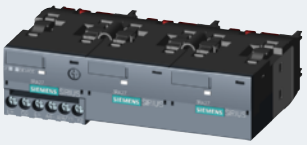
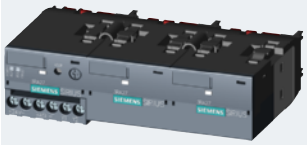
Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components.

They include the key control functions required for the particular feeder, e.g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

Version	SIRIUS 3RA28 function modules	SIRIUS 3RA27 function modules for IO-Link[1]	SIRIUS 3RA27 function modules for AS-Interface[1]
For direct-on-line starting	Timing relays: ON-delay or OFF-delay with semiconductor output With screw or spring-type terminals 	With screw or spring-type terminals 	With screw or spring-type terminals
For reversing starting	Wiring modules for sizes S00 and S0 With screw or spring-type terminals (with screw terminals for main and control circuit) 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[1] 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[1]
For wye-delta starting	1 function module for size S00 and S0 with screw or spring-type terminals plus the respective wiring modules[2] 	1 function module for size S00 and S0 with screw or spring-type terminals plus the respective wiring modules[2] 	1 function module for size S00 and S0 with screw or spring-type terminals plus the respective wiring modules[2] 
Accessories	Sealable covers 	Operator panel for autonomous control of up to four feeders Module connector for the grouping of starters Connection cable between the operator panel and the feeder group Sealable covers 	AS-Interface addressing unit 3RK1904-2AB02 (see Chapter 2, "Industrial Communication") Sealable covers

[1] Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 3/34 and 3/37).

[2] The modules for the control current wiring, which are included in the wiring kit, are not required.

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

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SIRIUS 3RA28 Function Modules for Mounting on 3RT2 and 3RH21 Contactors

Introduction

Overview

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the feeder. The function modules and wiring kits thus help to reduce the wiring work within the feeder practically to zero.

SIRIUS function modules for direct-on-line starting

All solid-state timing relays which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two contact legs to actuate the contactor underneath by means of a semiconductor after the set time *t* has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

SIRIUS function modules for reversing starting

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 18.5 kW.

For detailed description see page 3/150.

SIRIUS function modules for wye-delta starting

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable star time *t* from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the two sizes S00 and S0. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

Application

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay variant of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The function modules for wye-delta starting are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

Benefits

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- Reduction of control current wiring
- Prevention of wiring errors
- Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

For advantages of using wiring kits for the assembly of reversing starters see page 3/151.

The use of function modules for wye-delta starting results in the following advantages:

- Operation solely through the line contactor A1/A2 – no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated – no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions – one module kit for screw and spring-type connection and for the two sizes S00 and S0
- Mechanical interlocking (with wiring kit for the main circuit)

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Technical specifications

Type			**3RA2811**	**3RA2812**	**3RA2816**
Function			**ON-delay**	**OFF-delay with control signal**	**Wye-delta function**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/22.		
General data					
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III		V AC	300		
Operating range of excitation			0.85 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency		
Overvoltage protection			Varistor integrated		
Rated power		W	1		1
• Power consumption at 230 V AC, 50 Hz		VA	1		2
Rated operational currents I_e					
• Load current	- At 24 ... 240 V, 50 Hz	A	0.4		--
	- At 24 ... 240 V, DC	A	0.4		--
• AC-15	At 24 ... 240 V, 50 Hz	A	--		3
• DC-13	- At 24 V	A	--		1
	- At 125 V	A	--		0.2
	- At 250 V	A	--		0.1
DIAZED protection	Operational class gG	A	--		4
Switching frequency for load					
• With I_e at 230 V AC		h^{-1}	2 500		--
• With 3RT2 contactor at 230 V AC		h^{-1}	2 500		--
Recovery time		ms	50		150
Minimum ON period		ms	--	35	--
Residual current	Max.	mA	5		--
Voltage drop With conducting output	Max.	VA	3.5		--
Short-time loading capacity	Up to 10 ms	A	10		--
Setting accuracy With reference to upper limit of scale	Typ.		±15 %		
Repeat accuracy	Max.		±1 %		
Mechanical endurance		Operating cycles	100 x 10^6		10 x 10^6
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
Shock resistance Half-sine acc. to IEC 60068-2-27		*g*/ms	15/11		
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35		
Electromagnetic compatibility (EMC)			IEC 61812-1, IEC 61000-6-2, IEC 61000-6-4		IEC 60947-4-1
Permissible mounting position			Any		
Conductor cross-sections					
Connection type (1 or 2 conductors can be connected)			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		--
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		--
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		--
• Terminal screws			M3 (for standard screw driver size 2 or Pozidriv 2)		--
• Tightening torque		Nm	0.8 ... 1.2		--
Connection type (1 or 2 conductors can be connected)			**Spring-type terminals**		
• Operating devices		mm	3.0 x 0.5		--
• Solid		mm^2	2 x (0.25 ... 1.5)		--
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)		--
• Finely stranded		mm^2	2 x (0.25 ... 1.5)		--
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		--

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SIRIUS 3RA28 Function Modules for Mounting on 3RT2 and 3RH21 Contactors

For direct-on-line starting

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RA2811-1CW10

3RA2811-2CW10

For contactors	Rated control supply voltage U_s [1]	Time setting range t	DT	Screw terminals	DT	Spring-type terminals
Type	V AC/DC	s		Article No. / Price per PU		Article No. / Price per PU
Solid-state timing relays with semiconductor output, for snapping onto the front						
	The electrical connection between the timing relay and the contactor underneath is established automatically when it is snapped on and locked.					
	ON-delay Two-wire design, varistor integrated					
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2811-1CW10**	A	**3RA2811-2CW10**
	OFF-delay with control signal Varistor integrated					
3RT201., 3RT202., 3RH21[2], 3RH24	24 ... 240	0.05 ...100 (1, 10, 100; selectable)	A	**3RA2812-1DW10**	A	**3RA2812-2DW10**
Accessories						
	Sealable covers for 3RA27, 3RA28, 3RA29		A	**3RA2910-0**	A	**3RA2910-0**

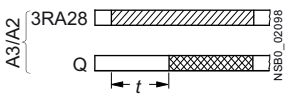
[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Cannot be fitted onto coupling contactors.

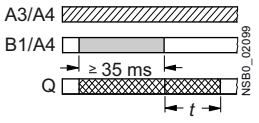
Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
	Timing relay energized Contact closed Contact open
1 NO contact (semiconductor output)	
ON-delay	3RA2811-.CW10



OFF-delay with control signal	3RA2812-.DW10



* You can order this quantity or a multiple thereof.
Illustrations are approximate

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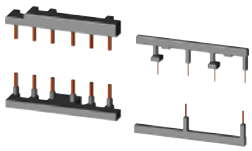
SIRIUS 3RA28 Function Modules for Mounting on 3RT2 and 3RH21 Contactors

For reversing starting / for wye-delta starting

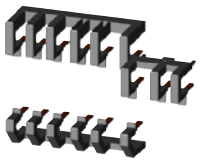
Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RA2816-0EW20



3RA2923-2AA1



3RA2923-2BB2

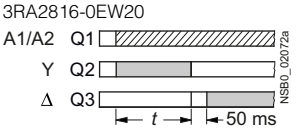
For contactors	Rated control supply voltage U_s [1]	Time setting range t	DT	Screw terminals	DT	Spring-type terminals
Type	V AC/DC	s		Article No. / Price per PU		Article No. / Price per PU
Assembly kits for reversing starting						
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: Mechanical interlock, 2 connecting clips for 2 contactors, wiring modules on the top and bottom					
3RT201.	• For size S00		▶	**3RA2913-2AA1**	▶	**3RA2913-2AA2**
3RT202.	• For size S0		▶	**3RA2923-2AA1**	▶	**3RA2923-2AA2**
Assembly kits for wye-delta starting						
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom					
3RT201.	• For size S00		▶	**3RA2913-2BB1**	▶	**3RA2913-2BB2**
3RT202.	• For size S0 (only main current for version with spring-type terminals)		▶	**3RA2923-2BB1**	▶	**3RA2923-2BB2**
Function modules for wye-delta starting						
	The electrical connection between the function module and the contactor assembly is established automatically by snapping on and plugging in the connecting cables.					
	Wye-delta function (varistor integrated)					
3RT201. 3RT202. [2]	24 ... 240	0.5 ... 60 (10, 30, 60; selectable)	A	**3RA2816-0EW20**	A	**3RA2816-0EW20**
	Individual modules					
	24 ... 240	Basic modules for wye-delta starting	A	**3RA2912-0**	A	**3RA2912-0**
	--	Coupling modules for wye-delta starting	A	**3RA2911-0**	A	**3RA2911-0**
Accessories						
	Sealable covers for 3RA27, 3RA28, 3RA29		A	**3RA2910-0**	A	**3RA2910-0**

[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Cannot be fitted onto coupling contactors.

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
	Timing relay energized Contact closed Contact open
2 NO contacts (interconnected internally)	
Wye-delta function • 1 NO contact delayed • 1 NO contact instantaneous	3RA2816-0EW20 

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

Introduction

Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

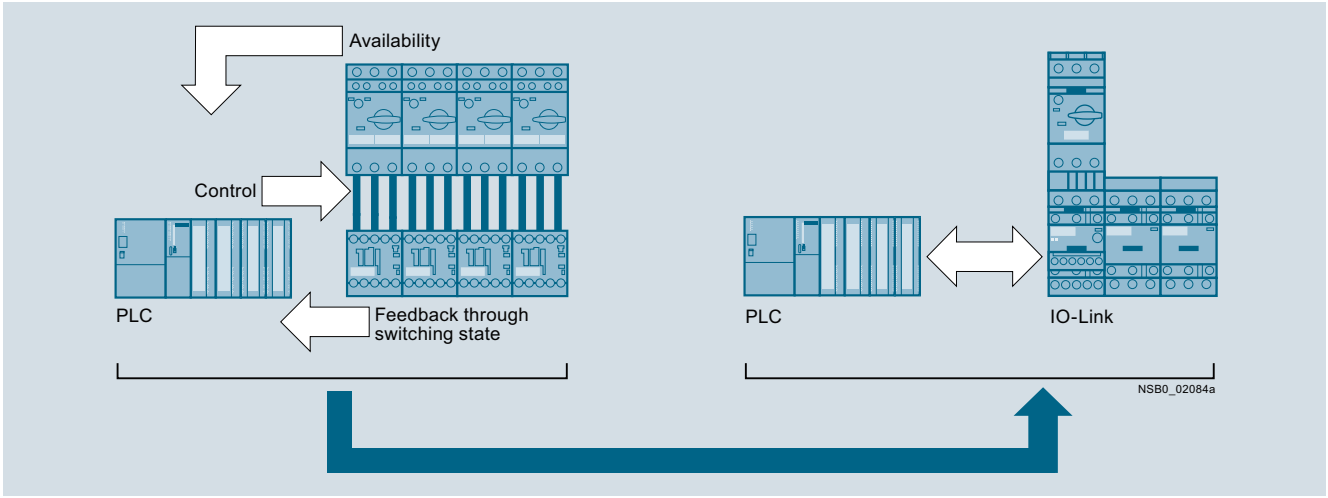
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

The starters are connected to the higher-level control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

Through this type of connection to the control system, a maximum of wiring is saved.

The following essential signals are transmitted:

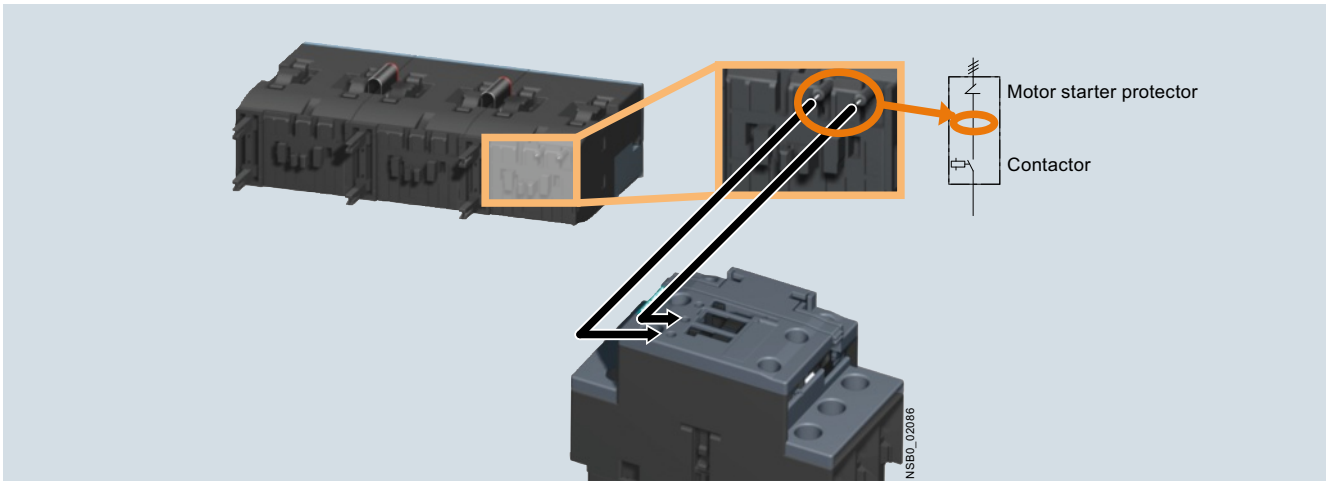
- Availability of the feeder in response to an indirect inquiry from the motor starter protector/circuit breaker
- Starter control
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link

The inquiry from the motor starter protector/circuit breaker does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with communication interface (see pages 3/34 and 3/37).



Availability signal through voltage pick-off

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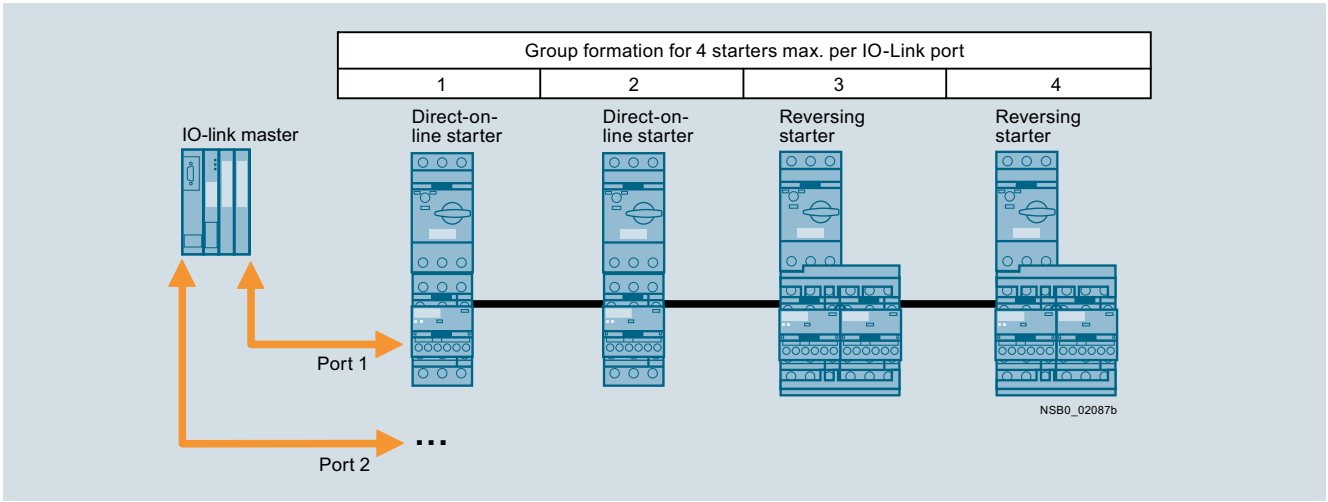
SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

Introduction

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET 200S. In this case all the signals of the individual controls are made available directly in the process image of the input through only 3 individual wires per starter group. If the potential at the master of the ET 200S is the same as that of the controls, a further reduction of wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.



Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using a hand-held device. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning.

Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor feeders in one control cabinet. Using IO-Link, the connection of these feeders to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET 200S is far smaller.

Benefits

- Reduction of the control current wiring to no more than three cables for four feeders
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

For further information on the IO-Link see Chapter 2 "Industrial Communication".

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SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

Introduction

Technical specifications

Type			**3RA2711**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/22.
General data			
Suitable for IO-Link masters acc. to specification			1.0
Permissible ambient temperature			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2	°C	-40 ... +80
Degree of protection			IP20
Operational voltage U_{Hi}		V DC	24 ± 20 %
Power consumption, max. at U_{Hi}		A	2
Max. length of the cables for the input Y1–Y2	According to EN 50295	m	30
EMC interference immunity			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	2/1
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type (1 or 2 conductors can be connected)			**Screw terminals**
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables		AWG	2 x (20 ... 14)
• Terminal screws			M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)
• Tightening torque of the terminal screws		Nm	0.8 ... 1.2
Connection type (1 or 2 conductors can be connected)			**Spring-type terminals**
• Operating devices		mm	3.0 x 0.5
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables		AWG	2 x (24 ... 16)

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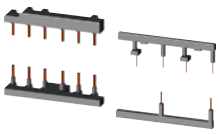
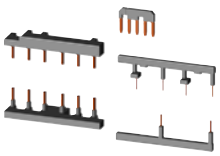
SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Function modules for direct-on-line starting						
 3RA2711-1AA00 3RA2711-2AA00 **IO-Link connection** Includes one module connector for assembling an IO-Link group	A	**3RA2711-1AA00**		A	**3RA2711-2AA00**	
Function modules for reversing starting[1]						
 3RA2711-1BA00 **IO-Link connection**, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	A	**3RA2711-1BA00**		A	**3RA2711-2BA00**	
 3RA2923-2AA1 **Assembly kits for making 3-pole contactor assemblies**[3] The assembly kit contains: mechanical interlock, 2 connecting clips for two contactors, wiring modules on the top and bottom						
• For size S00	▶	**3RA2913-2AA1**		▶	**3RA2913-2AA2**	
   3RA2923-2AA2 • For size S0						
- For main, auxiliary and control current	▶	**3RA2923-2AA1**			**--**	
- Only for main current[4]		**--**		▶	**3RA2923-2AA2**	
Function modules for wye-delta starting[2]						
 3RA2711-1CA00 **IO-Link connection**, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	A	**3RA2711-1CA00**		A	**3RA2711-2CA00**	
 3RA2923-2BB1 **Assembly kits for making 3-pole contactor assemblies**[3] The assembly kit contains: mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom						
• For size S00	▶	**3RA2913-2BB1**		▶	**3RA2913-2BB2**	
• For size S0						
- For main, auxiliary and control current	▶	**3RA2923-2BB1**			**--**	
- Only for main current[4]		**--**		▶	**3RA2923-2BB2**	

1) For prewired contactor assemblies for reversing starting with communication interface, see pages 3/153 and 3/155. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

2) For complete contactor assemblies for wye-delta starting including function modules see pages 3/168 and 3/170.

3) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

4) Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

For matching contactors with communication interface required (see pages 3/34 and 3/37).

For matching IO-Link masters see Chapter 2 "Industrial Communication".

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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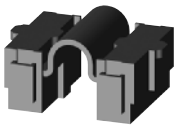
SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
 3RA2711-0EE01	**Module connector set**, comprising: • 2 module connectors, 14-pole, short • 2 interface covers	A	**3RA2711-0EE01**		1	1 unit	41B
	Module connectors						
	• 14-pole, 8 cm For size jump S00-S0 + 1 space	A	**3RA2711-0EE02**		1	1 unit	41B
3RA2711-0EE02	• 14-pole, 21 cm For various space combinations	A	**3RA2711-0EE03**		1	1 unit	41B
	• 10-pole, 8 cm For separate control signal infeed within an IO-Link group	A	**3RA2711-0EE04**		1	1 unit	41B
3RA2910-0	**Sealable covers** For 3RA27, 3RA28, 3RA29	A	**3RA2910-0**		1	5 units	41B
Operator panels[1]							
3RA6935-0A	**Operator panel (set)**, comprising: • 1 x operator panel • 1 x enabling module • 1 x interface cover • 1 x fixing terminal	A	**3RA6935-0A**		1	1 unit	42F
	Connection cable, length 2 m, 10- to 14-pole For connecting the operator panel to the communication module	A	**3RA2711-0EE11**		1	1 unit	41B
	Enabling modules (replacement)	A	**3RA6936-0A**		1	1 unit	42F
	Interface covers (replacement)	A	**3RA6936-0B**		1	5 units	42F

[1] Suitable only for communication through IO-Link.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

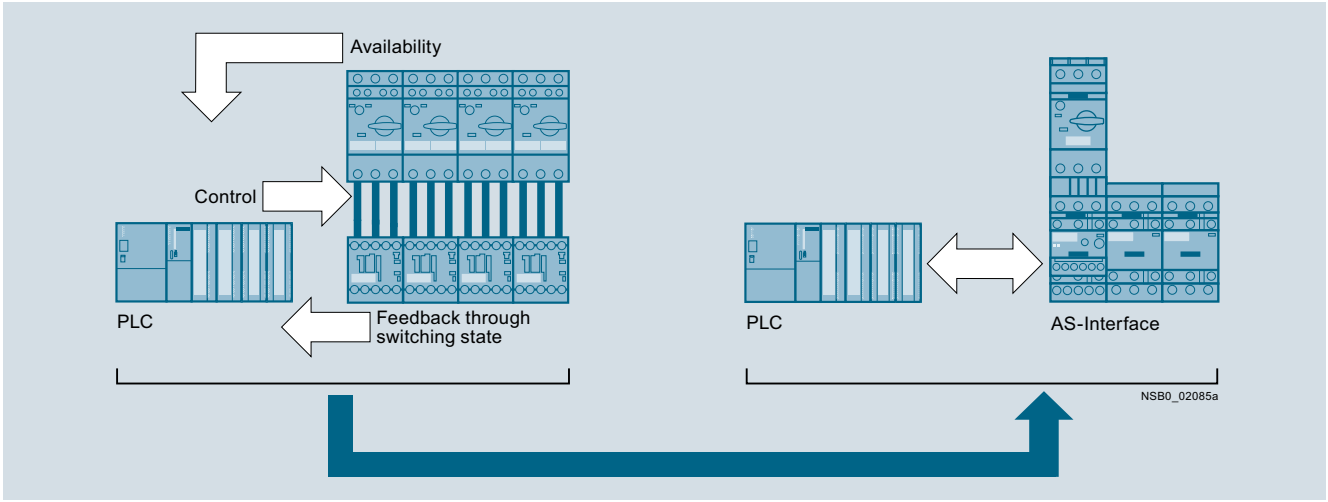
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be connected to one master and the address is entered in normal manner with an addressing unit.

Through this type of connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

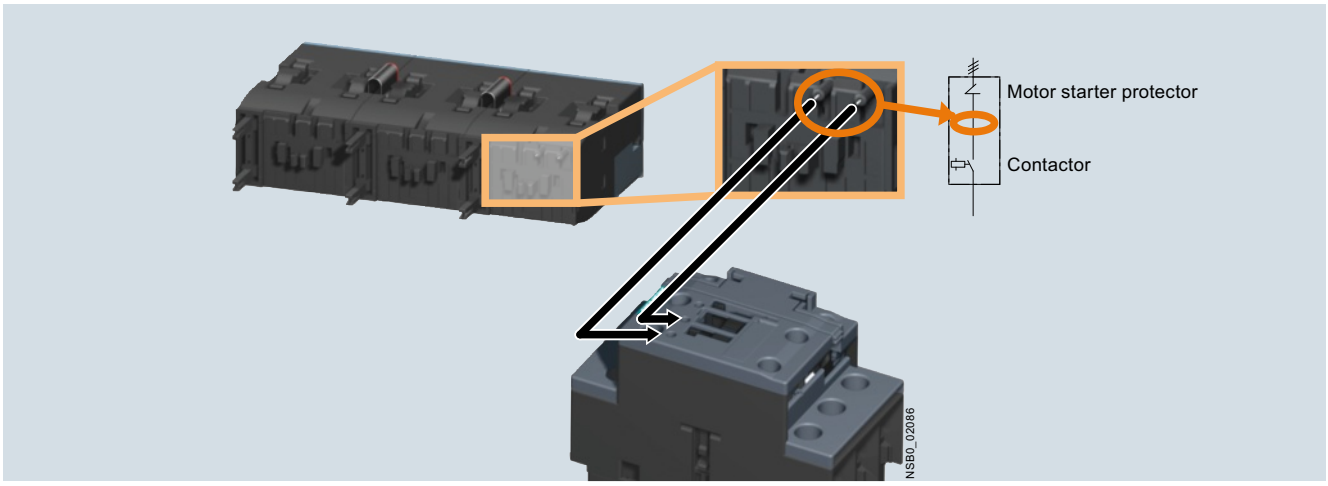
- Availability of the feeder in response to an indirect inquiry from the motor starter protector
- Starter control
- Feedback concerning the switching state of the starter/circuit breaker



Signal transmission through AS-Interface

The inquiry from the motor starter protector/circuit breaker does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with communication interface (see pages 3/34 and 3/37).



Availability signal through voltage pick-off

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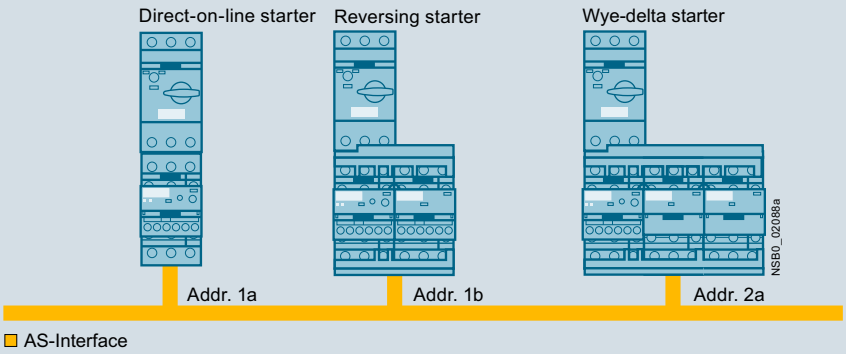
SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

Introduction



Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the PLC is far smaller.

Benefits

- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

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Technical specifications

Type			**3RA2712**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/22.
General data			
Slave type			A/B slave
Suitable for AS-i masters acc. to Spec.			2.1 or higher
AS-i Slave Profile IO.ID.ID2			7.A.E
ID1 Code (factory setting)			7
Permissible ambient temperature			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2		-40 ... +80
Degree of protection			IP20
Operational voltage			
• AS-Interface		V	26.5 ... 31.6
• AUX PWR 24 V DC		V	24 ± 20 %
Power consumption, max.			
• AS-Interface		mA	30
• AUX PWR			
- Maximum pick-up/hold current	Size S00 Size S0	mA mA	200 300
Max. length of the cables for the input Y1–Y2	According to EN 50295	m	30
EMC interference immunity			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	1/2
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type (1 or 2 conductors can be connected)			**Screw terminals**
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables		AWG	2 x (20 ... 14)
• Terminal screws			M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)
• Tightening torque of the terminal screws		Nm	0.8 ... 1.2
Connection type (1 or 2 conductors can be connected)			**Spring-type terminals**
• Operating devices		mm	3.0 x 0.5
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables		AWG	2 x (24 ... 16)

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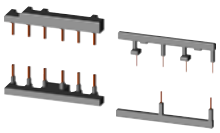
SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Function modules for direct-on-line starting						
3RA2712-1AA00 3RA2712-2AA00 **AS-Interface connection**	A	**3RA2712-1AA00**		A	**3RA2712-2AA00**	
Function modules for reversing starting[1]						
3RA2712-1BA00 **AS-Interface connection**, comprising one basic and one coupling module	A	**3RA2712-1BA00**		A	**3RA2712-2BA00**	
 3RA2923-2AA1 **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock, 2 connecting clips for two contactors, wiring modules on the top and bottom • For size S00	▶	**3RA2913-2AA1**		▶	**3RA2913-2AA2**	
3RA2923-2AA2 • For size S0						
- For main, auxiliary and control current	▶	**3RA2923-2AA1**			**--**	
- Only for main current		**--**		▶	**3RA2923-2AA2**	

[1] For prewired contactor assemblies for reversing starting with communication interface, see pages 3/153 and 3/155. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

Matching contactors with communication interface required (see pages 3/34 and 3/37).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

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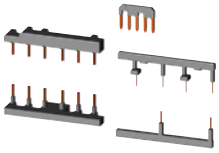
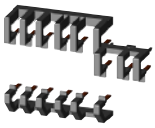
SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Function modules for wye-delta starting[1]						
 3RA2712-1CA00 3RA2712-2CA00 **AS-Interface connection**, comprising one basic module and two coupling modules	A	**3RA2712-1CA00**		A	**3RA2712-2CA00**	
 3RA2923-2BB1 **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom						
• For size S00	▶	**3RA2913-2BB1**		▶	**3RA2913-2BB2**	
• For size S0						
- For main, auxiliary and control current	▶	**3RA2923-2BB1**			**--**	
- Only for main current		**--**		▶	**3RA2923-2BB2**	
 3RA2923-2BB2						

[1] For complete contactor assemblies for wye-delta starting including function modules, see pages 3/168 and 3/170.

Matching contactors with communication interface required (see pages 3/34 and 3/37).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
 3RA2910-0 **Sealable covers** for 3RA27, 3RA28, 3RA29	A	**3RA2910-0**		1	5 units	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Notes

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Price groups
PG 41B, 41H

4/2 **Introduction**

Contactors for special applications

4/4 SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

4/12 SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

4/17 SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

4/21 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

4/25 3TK20 contactors, 4-pole, 4 kW

4/33 SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

4/37 SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

4/40 SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Contactors with extended operating range 0.7 ... 1.25 × U_S for railway applications

4/45 SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

4/49 SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

4/52 3TB5 motor contactors, 55 ... 200 kW

4/54 3TC contactors for switching DC voltage, 2-pole

Ch.5 SIRIUS 3RH21 contactor relays

Ch.5 3TH4 contactor relays

Contactors for switching DC voltage

4/56 3TC contactors,1- and 2-pole, 32 ... 400 A

Coupling contactors

Ch.3 SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Ch.5 SIRIUS 3RH21 coupling contactors for switching auxiliary circuits, 4-pole

Power relays/Miniature contactors

4/66 3TG10 contactors, 4-pole, 4 kW

Notes:

3RT1 contactors in sizes S00/S0 to S12 can be found

- in the catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool
e.g. from 3RT13 to 3RT23 see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

Size			S00					S0			
Type			3RT231, 3RT251					3RT232, 3RT252			
4-pole 3RT23, 3RT25 contactors											
Type			**3RT2316**	**3RT2317**	**3RT2516**	**3RT2517**	**3RT2518**	**3RT2325**	**3RT2326**	**3RT2327**	**3RT2526**
Number of main contacts			4 NO		2 NO + 2 NC			4 NO			2 NO + 2 NC
AC, DC operation			(p. 4/15, 4/16)		(p. 4/35, 4/36)			(p. 4/15, 4/16)			(p. 4/35, 4/36)
AC-1											
I_e at 400 V [40 °C/60 °C]		A	18 / 16	22 / 20	18 / 16	22 / 20	22 / 20	35 / 30	40 / 35	50 / 42	40 / 35
P	**40 °C**	**kW**	**12**	**14.5**	**11**	**13**	**13**	**22**	**26**	**33**	**26**
	60 °C	kW	11	13	6.5	7.5	7.5	20	23	28	15
AC-2 and AC-3											
I_e at 400 V	NO	A	9	12	9	12	16	15.5	15.5	15.5	25
	NC	A	--	--	9	9	9	--	--	--	25 (20)[1]
***P* at 400 V** (NC for DC oper.)	NO / NC	**kW**	**4**	**5.5**	**4**	**5.5 / 4**	**7.5 / 4**	**7.5**	**7.5**	**7.5**	**11 (7.5)**[1]
At 230 V	NO / NC	kW	2.2	3	3	3 / 2.2	4 / 2.2	4	4	4	5.5
Accessories for contactors											
Auxiliary switch blocks			**3RH2911**		(Chap. 3)			**3RH2911, 3RH2921**		(Chap. 3)	
Timing relay blocks			**3RA281.**		(Chap. 3)			**3RA281.**		(Chap. 3)	
Surge suppressors			**3RT2916**		(Chap. 3)			**3RT2926**		(Chap. 3)	

[1] The value in brackets applies to the NC for DC operation.

Size			S2		S3		S6, S10, S12		
Type			3RT1336, 3RT1535		3RT134.		3RT145.		
4-pole 3RT13, 3RT15 contactors • 3-pole 3RT14 contactors									
Type			**3RT1336**	**3RT1535**	**3RT1344**	**3RT1346**	**3RT1446**	**3RT1456**	**3RT1466**	**3RT1476**
Number of main contacts			4 NO	2 NO + 2 NC	4 NO		3 NO	3 NO		
AC, DC operation			(p. 4/19)	(p. 4/39)	(p. 4/19)		(p. 4/10)	(p. 4/10)		
AC-1 (≤ 690 V)										
I_e	**40 °C**	**A**	**60**	**60**	**110**	**140**	**140**	**275**	**400**	**690**
	60 °C	A	55	55	100	120	130	250	380	650
***P* At 400 V**	40 °C	**kW**	**39**	**36**	**72**	**92**	**92**	**180**	**263**	**454**
At 230 V	40 °C	kW	23	20	42	53	53	105	151	261
At 500 V		kW	--	--	--	--	115	225	329	568
At 690 V		kW	--	--	--	--	159	310	454	783
At 1 000 V	60 °C	kW	--	--	--	--	98	165	247	410
AC-2 and AC-3										
I_e/AC-3/400 V		A					44	97	138	170
***P* at 400 V**		**kW**	**11**	**18.5**			**22**	**55**	**75**	**90**
At 230 V		kW	5.5	9.5	--	--	12.7	30	37	55
At 500 V		kW	--	--	--	--	29.9	55	90	110
At 690 V		kW	--	--	--	--	38.2	90	132	160
Accessories for contactors										
Auxiliary switch blocks			**3RH1921**	(Chap. 3)						
Terminal covers			**3RT1936-4EA2**	(Chap. 3)	**3RT1946-4EA1/2**	(Chap. 3)		**3RT1956-4EA1/2/3**		(Chap. 3)
Box terminal blocks			**--**		**--**			**3RT1955/56-4G**		(Chap. 3)
Surge suppressors			**3RT1926/36**	(Chap. 3)	**3RT1926/36**	(Chap. 3)		**3RT1956-1C** (RC element)		(Chap. 3)

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Size		--							**00**	--
Type		3TK1							3TK20	3TG10
3TK, 3TG contactors										
Type		**3TK10**	**3TK11**	**3TK12**	**3TK13**	**3TK14**	**3TK15**	**3TK17**	**3TK20**	**3TG10**
AC, DC operation		(p. 4/23)							(p. 4/31)	(p. 4/68)
AC-1 (40 °C, ≤ 690 V)										
I_e	**A**	**200**	**250**	**300**	**350**	**550**	**800**	**1000**	**18**	**20**
***P* at 400 V**	**kW**	**132**	**165**	**197**	**230**	**362**	**527**	**658**	**10**	**13**
At 230 V	kW	76	95	114	132	308	303	378	6	7.5
At 500 V	kW	165	206	247	288	452	658	828	13	--
At 690 V	kW	227	284	341	397	624	908	1135	17	--
AC-2 and AC-3										
I_e/AC-3/400 V	A	120	145	210	210	400	550	700	8.4	8.4
***P* at 400 V**	**kW**	**55**	**75**	**110**	**110**	**200**	**280**	**370**	**4**	**4**
At 127 V	kW	--	--	--	--	--	--	--	1.4	--
At 230 V	kW	30	45	75	75	110	160	220	2.5	
At 500 V	kW								4	
At 690 V	kW								4	
Accessories for contactors										
Auxiliary switch blocks	On front	--							--	--
	Lateral	**3TK1910**							--	--
Terminal covers		**3TK1940**		**3TK1942**		**3TK1944**		**3TK1946**	--	--
Surge suppressors		**3TK1930**				**3TK1934**			**3TX4490** (Chap. 3)	--

Note:

Safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals".

Connection methods

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TK2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

Screw terminals

Spring-type terminals

Flat connectors

Solder pin connections

Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

The 3RT20 contactors can also be ordered via an online configurator.

Configurator available in the Industry Mall

The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

3RT14 contactors are used for switching resistive loads (AC-1) or as contactors that normally only have to carry the current, for example for variable-speed operating mechanisms.

Size S3: AC or DC operation
Sizes S6 to S12: UC operating mechanism (AC 50/60 Hz and DC)

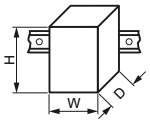
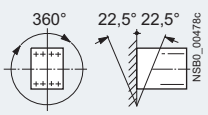
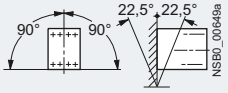
The following applies for sizes S6 to S12:

- Withdrawable coils
- Integrated coil circuit (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: busbar connections

The accessories for the 3RT10 contactors can also be used here.

For a general description of sizes S3 to S12, see Chapter 3, "Power contactors for switching motors" ➞ "SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW".

Technical specifications

Type			**3RT1446**	**3RT1456**	**3RT1466**	**3RT1476**
Size			**S3**	**S6**	**S10**	**S12**
Dimensions (W x H x D)		mm	70 x 146 x 134	120 x 172 x 170	145 x 210 x 202	160 x 214 x 225
• With mounted auxiliary switch block		mm	70 x 146 x 183	120 x 172 x 217	145 x 210 x 251	160 x 214 x 271
General technical specifications						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface. 3RT1446: For DC operation and up to 22.5° inclination in front, the coil operating range is reduced to 0.85 ... 1.1 x U_s.						
Upright mounting position			Special version required.	--		
Mechanical endurance		Operating cycles	10 million			
Electrical endurance for utilization category AC-1 at I_e		Operating cycles	0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	1 000			
Rated impulse withstand voltage U_{imp}		kV	6	8		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690			
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.						
• Removable auxiliary switch block			Yes, acc. to IEC 60947-4-1, Appendix F			
• Permanently fitted auxiliary switch block			Acc. to Swiss regulations (SUVA) on request	--		
Permissible ambient temperature						
• During operation		°C	-25 ... +60	-25 ... +60		
• During operation, with AS-Interface interface		°C	--	-25 ... +55		
• During storage		°C	-55 ... +80	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20	IP00/open		
• Connection range			IP00 (where applicable, use additional terminal covers)			
Touch protection acc. to EN 50274			Finger-safe only for vertical contact from the front			
Shock resistance						
• Rectangular pulse, for AC and DC operation		*g*/ms	6.8/5 and 4/10	8.5/5 and 4.2/10		
• Sine pulse, for AC and DC operation		*g*/ms	10.6/5 and 6.2/10	13.4/5 and 6.5/10		
Conductor cross-sections			[1]	[1]		
Electromagnetic compatibility (EMC)			--	[2]		

[1] Conductor cross-sections see pages 4/8 and 4/9.

[2] Electromagnetic compatibility see "SIRIUS 3RT10 Contactors", Chapter 3.

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Type			3RT1446	3RT1456	3RT1466	3RT1476
Size			S3	S6	S10	S12
Short-circuit protection for contactors without overload relays						
Main circuit						
• Fuse links, operational class gG: LV HRC, type 3NA - Type of coordination "1"		A	250	355	500	800
• Fuse links, gR operational class: SITOR, type 3NE - Type of coordination "2"		A	250	350	500	710
Auxiliary circuit						
Short-circuit test						
• With fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10			
• With miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A		A	10			
Control circuit						
Coil operating range (AC/DC)			0.8 ... 1.1 x U_s [1]	0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)						
Standard version:						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 50/60 Hz	Closing	VA	298/274	--		
	P.f.		0.7/0.62	--		
	Closed	VA	27/20	--		
	P.f.		0.29/0.31	--		
For USA and Canada:						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 60 Hz	Closing	VA	300	--		
	P.f.		0.52	--		
	Closed	VA	21	--		
	P.f.		0.29	--		
• DC operation	Closing = Closed	W	15	--		
Power consumption of the solenoid operation (when coil is cold and rated range $U_{s\,min}$ ... $U_{s\,max}$)						
• Conventional operating mechanism						
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	--	250/0.9	490/0.9	700/0.9
	Closing at $U_{s\,max}$	VA/p.f.	--	300/0.9	590/0.9	830/0.9
	Closed at $U_{s\,min}$	VA/p.f.	--	4.8/0.8	5.6/0.9	7.6/0.9
	Closed at $U_{s\,max}$	VA/p.f.	--	5.8/0.8	6.7/0.9	9.2/0.9
- DC operation	Closing at $U_{s\,min}$	W	--	300	540	770
	Closing at $U_{s\,max}$	W	--	360	650	920
	Closed at $U_{s\,min}$	W	--	4.3	6.1	8.5
	Closed at $U_{s\,max}$	W	--	5.2	7.4	10
• Solid-state operating mechanism						
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	--	190/0.8	400/0.8	560/0.8
	Closing at $U_{s\,max}$	VA/p.f.	--	28/0.8	530/0.8	750/0.8
	Closed at $U_{s\,min}$	VA/p.f.	--	3.5/0.5	4/0.5	5.4/0.8
	Closed at $U_{s\,max}$	VA/p.f.	--	4,/0.4	5/0.4	7/0.8
- DC operation	Closing at $U_{s\,min}$	W	--	250	440	600
	Closing at $U_{s\,max}$	W	--	320	580	800
	Closed at $U_{s\,min}$	W	--	2.3	3.2	4
	Closed at $U_{s\,max}$	W	--	2.8	3.8	5
PLC control input (IEC 61131-2, type 2)		V DC		24, at ≤ 30 mA power consumption		
• Operating range		V DC		17 ... 30		
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time						
• AC operation	- Closing delay	ms	17 ... 90	--		
	- Opening delay	ms	10 ... 25	--		
• DC operation	- Closing delay	ms	90 ... 230	--		
	- Opening delay	ms	14 ... 20	--		
• Arcing time		ms	10 ... 15	--		
Operating times for 1.0 x U_s [1]						
• AC operation	- Closing delay	ms	18 ... 30	--		
	- Opening delay	ms	11 ... 23	--		
• DC operation	- Closing delay	ms	100 ... 120	--		
	- Opening delay	ms	16 ... 20	--		

[1] For DC operation and up to 22.5° inclination in front, the coil operating range is reduced to 0.85 ... 1.1 x U_s (see also permissible mounting position, page 4/4).

[2] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 to 5 ms, diode assembly: 2 to 6 times).

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Type				3RT1446	3RT1456	3RT1466	3RT1476
Size				S3	S6	S10	S12
Control circuit							
Operating times (Total break time = Opening delay + Arcing time)							
• Conventional operating mechanism							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	20 ... 95	30 ... 95	45 ... 100
	Opening delay		ms	--	40 ... 60	40 ... 80	60 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	25 ... 50	35 ... 50	50 ... 70
	Opening delay		ms	--	40 ... 60	50 ... 80	70 ... 100
• Solid-state operating mechanism, actuated via A1/A2							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	95 ... 135	105 ... 145	120 ... 150
	Opening delay		ms	--	80 ... 90	80 ... 200	80 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	100 ... 120	110 ... 130	125 ... 150
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
• Solid-state operating mechanism, actuated via PLC input							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	35 ... 75	45 ... 80	60 ... 90
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	40 ... 60	50 ... 65	65 ... 80
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
• Arcing time			ms	--	10 ... 15	10 ... 15	10 ... 15

Type				3RT1446	3RT1456	3RT1466	3RT1476
Size				S3	S6	S10	S12
Main circuit							
Load rating with AC							
Utilization category AC-1, switching resistive loads							
• Rated operational currents I_e	At 40 °C up to 690 V		A	140	275	400	690
	At 60 °C up to 690 V		A	130	250	380	650[1]
	At 1 000 V		A	60	100	150	250
• Rated power for AC loads[2] with p.f. = 0.95 (at 60 °C)	At 230 V		kW	50	95	145	245
	400 V		kW	86	165	250	430
	500 V		kW	107	205	315	535
	690 V		kW	148	285	430	740
	1 000 V		kW	98	165	247	410
• Minimum conductor cross-section for loads with I_e	At 40 °C		mm^2	50	2 x 70	240	2 x 240
	At 0 °C		mm^2	50	120	240	2 x 240
Utilization categories AC-2 and AC-3 With an electrical endurance of 1.3 million operating cycles							
• Rated operational current I_e	Up to 690 V		A	44	97	138	170
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz (at 60 °C)	At 230 V		kW	12.7	30	37	55
	400 V		kW	22	55	75	90
	500 V		kW	29.9	55	90	110
	690 V		kW	38.2	90	132	160
Power loss per conducting path	At I_e/AC-1		W	12.5	20	27	55

1) 600 A for 3RT1476-N contactor.

2) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Type				3RT1446	3RT1456	3RT1466	3RT1476
Size				S3	S6	S10	S12
Main circuit							
Load rating with DC							
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A		130	250	380	500
	60 V	A		80	250	380	500
	110 V	A		12	18	33	33
	220 V	A		2.5	3.4	3.8	3.8
	440 V	A		0.8	0.8	0.9	0.9
	600 V	A		0.48	0.5	0.6	0.6
- 2 conducting paths in series	Up to 24 V	A		130	250	380	500
	60 V	A		130	250	380	500
	110 V	A		130	250	380	500
	220 V	A		13	20	380	500
	440 V	A		2.4	3.2	4	4
	600 V	A		1.3	1.6	2	2
- 3 conducting paths in series	Up to 24 V	A		130	250	380	500
	60 V	A		130	250	380	500
	110 V	A		130	250	380	500
	220 V	A		130	250	380	500
	440 V	A		6	11.5	11	11
	600 V	A		3.4	4	5.2	5.2
Utilization category DC-3/DC-5, Shunt-wound and series-wound motors (*L/R* ≤15 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A		6	250	380	500
	60 V	A		3	7.5	11	11
	110 V	A		1.25	2.5	3	3
	220 V	A		0.35	0.6	0.6	0.6
	440 V	A		0.15	0.17	0.18	0.18
	600 V	A		0.1	0.12	0.125	0.125
- 2 conducting paths in series	Up to 24 V	A		130	250	380	500
	60 V	A		130	250	380	500
	110 V	A		130	250	380	500
	220 V	A		1.75	2.5	2.5	2.5
	440 V	A		0.42	0.65	0.65	0.65
	600 V	A		0.27	0.37	0.37	0.37
- 3 conducting paths in series	Up to 24 V	A		130	250	380	500
	60 V	A		130	250	380	500
	110 V	A		130	250	380	500
	220 V	A		4	250	380	500
	440 V	A		0.8	1.4	1.4	1.4
	600 V	A		0.45	0.75	0.75	0.75
Switching frequency							
Switching frequency *z* in operating cycles/hour							
• Contactors without overload relays	No-load switching frequency AC		1/h	5 000	2 000		
	No-load switching frequency DC		1/h	1 000	2 000		
• Rated operation	Acc. to AC-1 (AC/DC)		1/h	650	600		
	Acc. to AC-3 (AC/DC)		1/h	1 000	1 000		

Dependence of the switching frequency z' on the operational current I' and operational voltage U':

$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$

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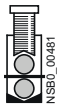
SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Type		3RT1446
Size		S3
Conductor cross-sections		
Main conductors (1 or 2 conductors can be connected)		Screw terminals
Box terminals		
Terminal screws		M6 (hexagon socket, A/F 4)
• Tightening torque	Nm lb.in	4 ... 6 36 ... 53
Front clamping point connected		
NSB0_00479		
• Finely stranded with end sleeve • Finely stranded without end sleeve	mm² mm²	2.5 ... 50 10 ... 50
• Solid • Stranded	mm² mm²	2.5 ... 16 10 ... 70
• AWG cables, solid or stranded	AWG	10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8
Rear clamping point connected		
NSB0_00480		
• Finely stranded with end sleeve • Finely stranded without end sleeve	mm² mm²	2.5 ... 50 10 ... 50
• Solid • Stranded	mm² mm²	2.5 ... 16 10 ... 70
• AWG cables, solid or stranded	AWG	10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8
Both clamping points connected		
 NSB0_00481		
• Finely stranded with end sleeve • Finely stranded without end sleeve	mm² mm²	2 x (2.5 ... 35) 2 x (10 ... 35)
• Solid • Stranded	mm² mm²	2 x (2.5 ... 16) 2 x (10 ... 50)
• AWG cables, solid or stranded	AWG	2 x (10 ... 1/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)
Busbar connection (bored copper bars)		
Connecting bar (max. width)[1]	mm	10
Cable lug connection (without box terminals)[2]		
• Finely stranded with cable lug • Stranded with cable lug	mm² mm²	10 ... 50[3] 10 ... 70[3]
• AWG cables, solid or stranded	AWG	7 ... 1/0
• Terminal screws		M6
Auxiliary conductors		
• Solid	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4] according to IEC 60947; max. 2 x (0.75 ... 4)[4]
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[4]; 2 x (18 ... 14)[4]; 1 x 12
• Terminal screws - Tightening torque	 Nm lb.in	M3 0.8 ... 1.2 7 ... 10.3

1) If bars larger than 12 x 10 mm are connected, a 3RT1946-4EA1 terminal cover is needed to comply with the phase clearance.

2) When connecting conductors which are larger than 25 mm², the 3RT1946-4EA1 terminal cover must be used to keep the phase clearance.

3) Only with crimped cable lugs according to DIN 46234. Cable lug max. 20 mm wide.

4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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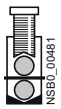
SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Type			3RT1456		3RT1466	3RT1476
Size			S6		S10	S12
Conductor cross-sections						
Main conductors (1 or 2 conductors can be connected)			Screw terminals			
With mounted box terminals		Type	3RT19 55-4G	3RT19 56-4G	3RT19 66-4G	
Terminal screws			M10 (hexagon socket, A/F 4)	M10 (hexagon socket, A/F 4)	M12 (hexagon socket, A/F 5)	
• Tightening torque		Nm lb.in	10 ... 12 90 ... 110	10 ... 12 90 ... 110	20 ... 22 180 ... 195	
Front clamping point connected						
• Finely stranded with end sleeve		mm^2	16 ... 70	16 ... 120	70 ... 240	
• Finely stranded without end sleeve		mm^2	16 ... 70	16 ... 120	70 ... 240	
• Stranded		mm^2	16 ... 70	16 ... 120	95 ... 300	
• AWG cables, solid or stranded		AWG	6 ... 2/0	6 ... 250 kcmil	3/0 ... 600 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Rear clamping point connected						
• Finely stranded with end sleeve		mm^2	16 ... 70	16 ... 120	120 ... 185	
• Finely stranded without end sleeve		mm^2	16 ... 70	16 ... 120	120 ... 185	
• Stranded		mm^2	16 ... 70	16 ... 120	120 ... 240	
• AWG cables, solid or stranded		AWG	6 ... 2/0	6 ... 250 kcmil	250 ... 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Both clamping points connected[1]						
 • Finely stranded with end sleeve		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Finely stranded without end sleeve		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Stranded		mm^2	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 70, max. 2 x 240	
• AWG cables, solid or stranded		AWG	Max. 2 x 1/0	Max. 2 x 3/0	Min. 2 x 2/0, max. 2 x 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)		mm	Max. 2 x (6 x 15.5 x 0.8)	Max. 2 x (10 x 15.5 x 0.8)	Max. 2 x (20 x 24 x 0.5)	
Bus connection						
• Connecting bar (max. width)		mm	17		25	
Cable lug connection			[2]		[3]	
• Finely stranded with cable lug		mm^2	16 ... 95		50 ... 240	
• Stranded with cable lug		mm^2	25 ... 120		70 ... 240	
• AWG cables, solid or stranded		AWG	4 ... 250 kcmil		2/0 ... 500 kcmil	
• Terminal screws			M8 x 25 (A/F 13)		M10 x 30 (A/F 17)	
- Tightening torque		Nm lb.in	10 ... 14 90 ... 124		14 ... 24 124 ... 210	
Auxiliary conductors						
• Solid		mm^2	2 x (0.5 ... 1.5)[4], 2 x (0.75 ... 2.5)[4] according to IEC 60947; max. 2 x (0.75 ... 4)[4]			
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]			
• AWG cables, solid or stranded		AWG	2 x (18 ... 14)			
• Terminal screws			M3 (PZ 2)			
- Tightening torque		Nm lb.in	0.8 ... 1.2 7 ... 10.3			
Auxiliary conductors[5]			Spring-type terminals			
• Operating devices[6]			3.0 x 0.5; 3.5 x 0.5			
• Solid		mm^2	2 x (0.25 ... 2.5)			
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)			
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)			
• AWG cables, solid or stranded		AWG	2 x (24 ... 14)			

1) Minimum cross-section 16 mm^2.

2) 3RT1456: When connecting cable lugs according to EN 46235, use 3RT1956-4EA1 terminal cover for conductor cross-sections from 95 mm^2 to keep the phase clearance.

3) 3RT1466 and 3RT1476: When connecting cable lugs according to EN 46234, the 3RT1966-4EA1 terminal cover must be used for conductor cross-sections of 240 mm^2 and more as well as EN 46235 for conductor cross-sections of 185 mm^2 and more to keep the phase clearance.

4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

5) Max. external diameter of the conductor insulation: 3.6 mm. An "insulation stop" must be used for conductor cross-sections ≤ 1 mm^2 (see Accessories for 3RT10 contactors on page 3/111).

6) Tool for opening the spring-type terminals; see Accessories for 3RT10 contactors on page 3/111.

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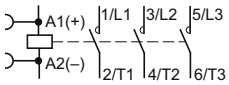
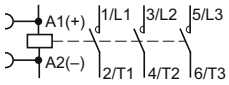
SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Selection and ordering data

Size S3: AC or DC operation

- Coil circuits (varistors, diodes etc.) can be retrofitted
- Auxiliary switches can be retrofitted
- Main and control conductors: screw terminals

3RT1446-1A..0

Size	Rated data AC-1, T_u: 40 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e	Ratings of AC loads (p.f. = 0.95) at				Version				Article No.	Price per PU			
	Up to 690 V	230 V	400 V	500 V	690 V	NO	NC							
	A	kW	kW	kW	kW			V						
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail														
AC operation														
														
S3	**140**	53	92	115	159	--	--	AC 24, 50 Hz	B	**3RT1446-1AB00**		1	1 unit	41B
								AC 110, 50 Hz	B	**3RT1446-1AF00**		1	1 unit	41B
								AC 230, 50 Hz	▶	**3RT1446-1AP00**		1	1 unit	41B
DC operation														
														
S3	**140**	53	92	115	159	--	--	24 DC	▶	**3RT1446-1BB40**		1	1 unit	41B
								220 DC	B	**3RT1446-1BM40**		1	1 unit	41B

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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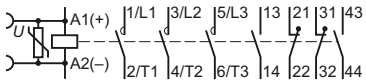
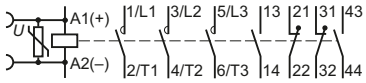
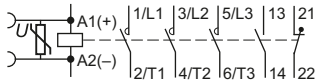
SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Sizes S6 to S12: UC operating mechanism · AC/DC operation (50/60 Hz and DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: screw terminals
- Main conductors: busbar connections

3RT146.

Size	Rated data AC-1, T_u: 40 °C						Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e	Ratings of AC loads (p.f. = 0.95) at					Version				Article No.	Price per PU			
	Up to 690 V	230 V	400 V	500 V	690 V										
	A	kW	kW	kW	kW		NO	NC	V						
Conventional operating mechanism															
															
S6	**275**	105	180	225	310		2	2	110 ... 127	▶	**3RT1456-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1456-6AP36**		1	1 unit	41B
S10	**400**	151	263	329	454		2	2	110 ... 127	▶	**3RT1466-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1466-6AP36**		1	1 unit	41B
S12	**690**	261	454	568	783		2	2	110 ... 127	A	**3RT1476-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT1476-6AP36**		1	1 unit	41B
Solid-state operating mechanism															
For 24 V DC PLC output															
															
S6	**275**	105	180	225	310		2	2	96 ... 127	B	**3RT1456-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1456-6NP36**		1	1 unit	41B
S10	**400**	151	263	329	454		2	2	96 ... 127	B	**3RT1466-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1466-6NP36**		1	1 unit	41B
S12	**690**	261	454	568	783		2	2	96 ... 127	B	**3RT1476-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT1476-6NP36**		1	1 unit	41B
For 24 V DC PLC relay output, with remaining lifetime indicator (RLT)															
															
S6	**275**	105	180	225	310		1	1	96 ... 127	B	**3RT1456-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT1456-6PP35**		1	1 unit	41B
S10	**400**	151	263	329	454		1	1	200 ... 277	B	**3RT1466-6PP35**		1	1 unit	41B
S12	**690**	261	454	568	783		1	1	200 ... 277	B	**3RT1476-6PP35**		1	1 unit	41B

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have two auxiliary contacts 1 NO and 1 NC integrated in the basic version.

Mountable auxiliary contacts

Size S00

4 auxiliary contacts, including no more than 3 NC.

Size S0

4 additional auxiliary contacts.

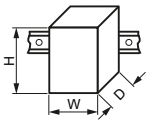
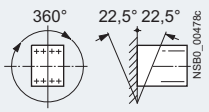
Application

The contactors are suitable for:

- For switching resistive loads
- For isolating systems with ungrounded or poorly grounded neutral conductors
- For system transfers when alternative AC power supplies are used
- For use as contactors which only carry current and do not have to switch in case of inductive loads – e.g.variable-speed operating mechanisms
- For switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

General description of sizes S00 to S0, see Chapter 3, "Power contactors for switching motors" ➞ "SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW".

Technical specifications

Type			**3RT2316**	**3RT2317**	**3RT2325**	**3RT2326** **3RT2327**
Size			**S00**		**S0**	
Dimensions (W x H x D) for AC operation[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73		60 x 85 x 97 / 60 x 101.5 x 97	
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121		60 x 85 x 141 / 60 x 101.5 x 144	
Dimensions (W x H x D) for DC operation[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73		60 x 85 x 107 / 60 x 101.5 x 107	
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121		60 x 85 x 151 / 60 x 101.5 x 154	
General technical specifications						
Permissible mounting position						
The contactors are designed for operation on a vertical mounting surface.						
Upright mounting position			Special version required			
Mechanical endurance		Operating cycles	30 million		10 million	
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Permissible ambient temperature						
• During operation		°C	-25 ... +60			
• During storage		°C	-55 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP20			
Touch protection acc. to EN 50274			Finger-safe			
Short-circuit protection of contactors without overload relays						
Main circuit						
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	35		63	
• Type of coordination "2"		A	20		20	
• Weld-free		A	10		16	

[1] Dimensions for devices with screw terminals/spring-type terminals. For size S0, devices for AC and DC operation differ in depth. The following applies: Depth (DC) = Depth (AC) + 10 mm.

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Type			3RT2316	3RT2317	3RT2325	3RT2326	3RT2327
Size			S00		S0		
Control circuit							
Coil operating range							
• AC operation	At 50 Hz		0.8 ... 1.1 x U_s		--		
	At 60 Hz		0.85 ... 1.1 x U_s		--		
• DC operation	At 50 °C		0.8 ... 1.1 x U_s		--		
	At 60 °C		0.85 ... 1.1 x U_s		--		
• AC/DC operation			--		0.8 ... 1.1 x U_s		
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)							
• AC operation, 50 Hz, standard version							
- Closing		VA	--		77		
- P.f.			--		0.82		
- Closed		VA	--		9.8		
- P.f.			--		0.25		
• AC operation, 50/60 Hz, standard version							
- Closing		VA	27/24.3	37/33	81/79		
- P.f.			0.8/0.75	0.8/0.75	0.72/0.74		
- Closed		VA	4.2/3.3	5.7/4.4	10.5/8.5		
- P.f.			0.25/0.25	0.25/0.25	0.25/0.28		
• AC operation, 60 Hz, USA, Canada							
- Closing		VA	31.7	43	87		
- P.f.			0.77	0.77	0.76		
- Closed		VA	4.8	6.5	9.4		
- P.f.			0.25	0.25	0.28		
• DC operation (closing = closed)		W	4		5.9		
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time							
• AC operation							
- Closing delay		ms	8 ... 35	8 ... 33	9 ... 38	8 ... 40	
- Opening delay		ms	3.5 ... 14	4 ... 15	4 ... 16	4 ... 16	
• DC operation							
- Closing delay		ms	30 ... 100		50 ... 170		
- Opening delay		ms	7 ... 13		15 ... 17.5		
• Arcing time		ms	10 ... 15		10		

[1] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Type			3RT2316	3RT2317	3RT2325	3RT2326	3RT2327
Size			S00		S0		
Main circuit							
Load rating with AC							
Utilization category AC-1, switching resistive loads							
• Rated operational currents I_e	At 40 °C, up to 690 V	A	18	22	35	40	50
	At 60 °C, up to 690 V	A	16	20	30	35	42
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V	kW	6	7.5	11	13	16
	400 V	kW	10.5	13	20	23	28
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	2.5		10		
	At 60 °C	mm^2	2.5		10		
Utilization categories AC-2 and AC-3							
• Rated operational currents I_e	At 60 °C, up to 400 V	A	9	12	15.5		
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	2.2	3	4		
	400 V	kW	4	5.5	7.5		
Load rating with DC							
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	20		
	110 V	A	2.1		4.5		
	220 V	A	0.8		1		
	440 V	A	0.6		0.4		
- 2 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	30	35	42
	110 V	A	12		30	35	42
	220 V	A	1.6		1		
	440 V	A	0.8		1		
- 3 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	30	35	42
	110 V	A	16	20	30	35	42
	220 V	A	16	20	30	35	42
	440 V	A	1.3		2.9		
- 4 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	30	35	42
	110 V	A	16	20	30	35	42
	220 V	A	16	20	30	35	42
	440 V	A	1.3		2.9		
Utilization category DC-3/DC-5, Shunt-wound and series-wound motors (*L/R* ≤15 ms)							
• Rated operational currents I_e (at 60 °C)							
- 1 conducting path	Up to 24 V	A	16	20	20		
	60 V	A	0.5		5		
	110 V	A	0.15		2.5		
	220 V	A	--		1		
	440 V	A	--		0.09		
- 2 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	5		30	35	42
	110 V	A	0.35		15		
	220 V	A	--		3		
	440 V	A	--		0.27		
- 3 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	30	35	42
	110 V	A	16	20	30	35	42
	220 V	A	1.5		10		
	440 V	A	0.2		0.6		
- 4 conducting paths in series	Up to 24 V	A	16	20	30	35	42
	60 V	A	16	20	30	35	42
	110 V	A	16	20	30	35	42
	220 V	A	1.5		30	35	42
	440 V	A	0.2		0.6		

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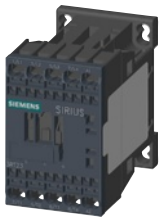
SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

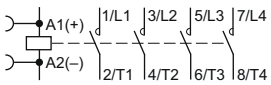
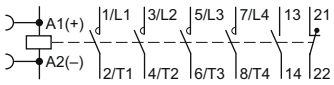
3RT231.-1A.00



3RT231.-2A.00

3RT232.-1A.00

3RT232.-2A.00

Rated data AC-1, T_u: 40/60 °C		Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and 400 V	Ident. No.	Version NO	Version NC			Article No. / Price per PU		Article No. / Price per PU
A	kW		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00[1]									
									
18 / 16	**12 / 11**	**--**	--	--	24, 50/60 Hz	B	**3RT2316-1AB00**	B	**3RT2316-2AB00**
					110, 50/60 Hz	B	**3RT2316-1AF00**	B	**3RT2316-2AF00**
					230, 50/60 Hz	B	**3RT2316-1AP00**	A	**3RT2316-2AP00**
22 / 20	**14.5 / 13**	**--**	--	--	24, 50/60 Hz	B	**3RT2317-1AB00**	B	**3RT2317-2AB00**
					110, 50/60 Hz	B	**3RT2317-1AF00**	B	**3RT2317-2AF00**
					230, 50/60 Hz	▶	**3RT2317-1AP00**	A	**3RT2317-2AP00**
Size S0									
1 NO + 1 NC, Ident. No. **11**									
									
35 / 30[2]	**22 / 20**	**11**	1	1	24, 50 Hz	B	**3RT2325-1AB00**	B	**3RT2325-2AB00**
					110, 50 Hz	B	**3RT2325-1AF00**	B	**3RT2325-2AF00**
					230, 50 Hz	A	**3RT2325-1AP00**	A	**3RT2325-2AP00**
40 / 35[2]	**26 / 23**	**11**	1	1	24, 50 Hz	B	**3RT2326-1AB00**	B	**3RT2326-2AB00**
					110, 50 Hz	B	**3RT2326-1AF00**	B	**3RT2326-2AF00**
					230, 50 Hz	A	**3RT2326-1AP00**	A	**3RT2326-2AP00**
50[2]	**33 / 28**	**11**	1	1	24, 50 Hz	B	**3RT2327-1AB00**	B	**3RT2327-2AB00**
					110, 50 Hz	B	**3RT2327-1AF00**	B	**3RT2327-2AF00**
					230, 50 Hz	A	**3RT2327-1AP00**	A	**3RT2327-2AP00**

[1] For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s,
at 60 Hz: 0.85 ... 1.1 x U_s.

[2] Minimum conductor cross-section 10 mm².

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT20 contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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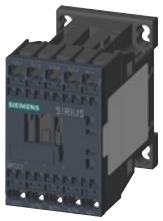
SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

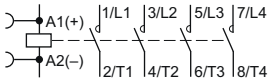
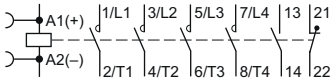
3RT231.-1B.40



3RT231.-2B.40

3RT232.-1B.40

3RT232.-2B.40

Rated data AC-1, T_u: 40/60 °C		Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and 400 V	Ident. No.	Version NO	Version NC			Article No.	Price per PU		Article No.	Price per PU
A	kW		NO	NC	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail											
Size S00											
											
18 / 16	**12 / 11**	**--**	--	--	24	A	**3RT2316-1BB40**		▶	**3RT2316-2BB40**	
					220	B	**3RT2316-1BM40**		B	**3RT2316-2BM40**	
22 / 20	**14.5 / 13**	**--**	--	--	24	▶	**3RT2317-1BB40**		▶	**3RT2317-2BB40**	
					220	B	**3RT2317-1BM40**		B	**3RT2317-2BM40**	
Size S0											
1 NO + 1 NC, Ident. No. **11**											
											
35 / 30[1]	**22 / 20**	**11**	1	1	24	A	**3RT2325-1BB40**		A	**3RT2325-2BB40**	
					220	B	**3RT2325-1BM40**		B	**3RT2325-2BM40**	
40 / 35[1]	**26 / 23**	**11**	1	1	24	A	**3RT2326-1BB40**		A	**3RT2326-2BB40**	
					220	B	**3RT2326-1BM40**		B	**3RT2326-2BM40**	
50[1]	**33 / 28**	**11**	1	1	24	A	**3RT2327-1BB40**		A	**3RT2327-2BB40**	
					220	B	**3RT2327-1BM40**		B	**3RT2327-2BM40**	

[1] Minimum conductor cross-section 10 mm².

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT20 contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

Overview

Standards

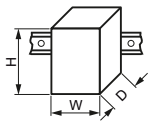
IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT10 contactors can also be used for the 4-pole versions.

The contactors are suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

Technical specifications



Type			**3RT1336**	**3RT1344**	**3RT1346**
Size			**S2**	**S3**	**S3**
Dimensions (W x H x D)					
• AC operation		mm	73 x 111 x 110	92 x 140 x 134	
- With mounted auxiliary switch block		mm	73 x 111 x 159	92 x 140 x 183	
• DC operation		mm	73 x 111 x 125	92 x 140 x 147	
- With mounted auxiliary switch block		mm	73 x 111 x 174	92 x 140 x 196	
General technical specifications					
Permissible mounting position[1]					
Mechanical endurance		Operating cycles	10 million		
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
• Connection range			IP00 (see also additional terminal covers)		
Touch protection acc. to EN 50274			Finger-safe only for vertical contact from the front		
Short-circuit protection of contactors without overload relays					
Main circuit					
Fuse links, operational class gG: LV HRC, 3NA; DIAZED, 5SB; NEOZED, 5SE according to IEC 60947-4-1/EN 60947-4-1					
• Type of coordination "1"[1]		A	160	250	250
• Type of coordination "2"[1]		A	63	125	160
• Weld-free		A	50	63	100
Control circuit					
Coil operating range (AC/DC)			0.8 ... 1.1 x U_s		
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)					
• AC operation, 50 Hz	- Closing	VA	145	270	
	- P.f.	VA	0.79	0.68	
	- Closed	VA	12.5	22	
	- P.f.	VA	0.36	0.27	
• AC operation, 50/60 Hz	- Closing	VA	170/155	298/274	
	- P.f.		0.76/0.72	0.72/0.62	
	- Closed	VA	15/11.8	27/20	
	- P.f.		0.35/0.38	0.29/0.31	
• DC operation	- Closing = Closed	W	13.3	15	
Operating times for 0.8 ... 1.1 x U_s[2] Total break time = Opening delay + Arcing time					
• DC operation	- Closing delay	ms	50 ... 110	110 ... 200	
	- Opening delay	ms	15 ... 30	14 ... 20	
• AC operation	- Closing delay	ms	4 ... 35	20 ... 50	
	- Opening delay	ms	10 ... 30	10 ... 25	
• Arcing time		ms	10 ... 15	10 ... 15	

[1] In accordance with the corresponding 3-pole 3RT1 contactors.
[2] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s

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SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

Type			3RT1336	3RT1344	3RT1346
Size			S2	S3	S3
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
• Rated operational currents I_e	At 40 °C, up to 690 V	A	60	110	140
	At 60 °C, up to 690 V	A	55	100	120
• Rated power for AC loads P.f. = 0.95 (at 40 °C)	At 230 V	kW	23	42	53
	400 V	kW	39	72	92
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	16	50	50
	60 °C	mm^2	16	50	50
Utilization categories AC-2 and AC-3					
• Rated operational currents I_e	At 60 °C, up to 400 V	A	26	--	--
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	5.5	--	--
	400 V	kW	11	--	--
Maximum breaking current AC (e.g. for isolation of load distributions)					
• At 50 and 60 Hz	At 400 V	A	400	520	760
Load rating with DC					
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)					
• Rated operational currents I_e (at 40 °C)					
- 1 conducting path	Up to 24 V	A	50	70	80
	60 V	A	23	23	60
	110 V	A	4.5	4.5	9
	220 V	A	1	1	2
	440 V	A	0.4	0.4	0.6
- 2 conducting paths in series	Up to 24 V	A	50	70	80
	60 V	A	45	70	80
	110 V	A	45	70	80
	220 V	A	5	5	10
	440 V	A	1	1	1.8
- 3 conducting paths in series	Up to 24 V	A	50	70	80
	60 V	A	45	70	80
	110 V	A	45	70	80
	220 V	A	45	70	80
	440 V	A	2.9	2.9	4.5
- 4 conducting paths in series	Up to 24 V	A	50	70	80
	60 V	A	45	70	80
	110 V	A	45	70	80
	220 V	A	45	70	80
	440 V	A	2.9	2.9	4.5
Utilization category DC-3/DC-5, Shunt-wound and series-wound motors (*L/R* ≤15 ms)					
• Rated operational currents I_e (at 40 °C)					
- 1 conducting path	Up to 24 V	A	20	20	20
	60 V	A	6	6	6.5
	110 V	A	2.5	2.5	2.5
	220 V	A	1	1	1
	440 V	A	0.1	0.15	0.15
- 2 conducting paths in series	Up to 24 V	A	45	70	80
	60 V	A	45	70	80
	110 V	A	25	70	80
	220 V	A	5	7	7
	440 V	A	0.27	0.42	0.42
- 3 conducting paths in series	Up to 24 V	A	45	70	80
	60 V	A	45	70	80
	110 V	A	45	70	80
	220 V	A	25	35	35
	440 V	A	0.6	0.8	0.8
- 4 conducting paths in series	Up to 24 V	A	45	70	80
	60 V	A	45	70	80
	110 V	A	45	70	80
	220 V	A	45	70	80
	440 V	A	0.6	0.8	0.8

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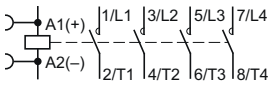
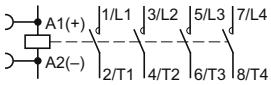
SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

Selection and ordering data

AC operation, 4 NO contacts

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT133.-1A.00

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and **400 V**			Article No.	Price per PU		Article No.	Price per PU
A	**kW**	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail								
Size S2								
								
60 / 55	**39 / 36**	24, 50 Hz	B	**3RT1336-1AB00**			--	
		110, 50 Hz	B	**3RT1336-1AF00**			--	
		230, 50 Hz	▶	**3RT1336-1AP00**			--	
Size S3								
								
110 / 100	**72 / 66**	24, 50 Hz	B	**3RT1344-1AB00**			--	
		110, 50 Hz	B	**3RT1344-1AF00**			--	
		230, 50 Hz	▶	**3RT1344-1AP00**			--	
140 / 120	**92 / 79**	24, 50 Hz	B	**3RT1346-1AB00**			--	
		110, 50 Hz	B	**3RT1346-1AF00**			--	
		230, 50 Hz	▶	**3RT1346-1AP00**			--	

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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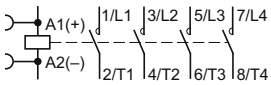
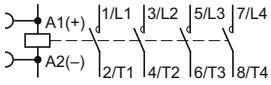
SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

DC operation, 4 NO contacts

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1336-1...0

3RT134.-1...0

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and 400 V			Article No.	Price per PU		Article No.	Price per PU
A	kW	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail								
Size S2								
								
60 / 55	**39 / 36**	24	▶	**3RT1336-1BB40**			--	
		220	B	**3RT1336-1BM40**			--	
Size S3								
								
110 / 100	**72 / 66**	24	B	**3RT1344-1BB40**			--	
		220	B	**3RT1344-1BM40**			--	
140 / 120	**92 / 79**	24	B	**3RT1346-1BB40**			--	
		220	B	**3RT1346-1BM40**			--	

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors also comply with the requirements of the standards NFC 63-110 and NFC 20–040.

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The contactors are used mainly for resistive loads (AC-1 and p.f. > 0.95). They are also suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

Control circuit

The solenoid coils of the 3TK10 to 3TK13 contactors (operating current up to 350 A) are designed as plug-in coils.

Surge suppression

The solenoid coils of the 3TK1 contactors can be connected at a later stage with RC circuits (see "Accessories", page 4/24).

Technical specifications

Type			3TK1
Rated data of the auxiliary contacts			
General data			
Standards			IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10
Load rating with AC			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	24 V	A	6
	110 V	A	6
	125 V	A	6
	220 V	A	6
	230 V	A	6
	380 V	A	4
	400 V	A	4
	500 V	A	1
	660 V	A	1
	690 V	A	1
Load rating with DC			
Rated operational current I_e/DC-12			--
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	6
	60 V	A	6
	110 V	A	1.8
	125 V	A	--
	220 V	A	0.6
	440 V	A	--
	600 V	A	--
CSA and UL rated data of the auxiliary contacts			
Rated voltage		V AC, max.	600
Switching capacity			A 600, P 600

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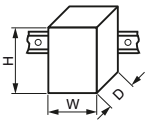
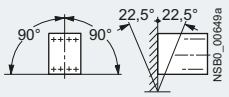
3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Type				**3TK10**	**3TK11**	**3TK12**	**3TK13**	**3TK14**	**3TK15**	**3TK17**
Dimensions (W x H x D)			mm	165 x 156 x 155	165 x 172 x 155	201 x 198 x 172		244 x 273 x 226		
General technical specifications										
Permissible mounting position										
Upright mounting position also permissible										
Mechanical endurance	Operating cycles		Mill.	10				5		
Electrical endurance for I_e/AC-1 at 55 °C	Operating cycles		Mill.	0.8	0.8	0.8	0.4	0.65	0.5	0.4
Rated insulation voltage U_i (pollution degree 3)			V	1000						
Ambient temperature										
• During operation			°C	-25 ... +55						
• During storage			°C	-50 ... +70						
Degree of protection acc. to IEC 60947-1, Appendix C				IP00						
Touch protection acc. to EN 50274				Finger-safe with terminal covers						
Shock resistance, sine pulse			*g*/ms	10/15						
Short-circuit protection										
Main circuit										
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1										
• Type of coordination "1"			A	250		355		630	1000	
• Type of coordination "2"			A	250		315		630	850	
Auxiliary circuit										
Short circuit test with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1			A	10						
Control circuit										
Coil operating range				0.85 ... 1.1 x U_s						
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)										
• 50 Hz										
- Closing			VA	820		1 100		3 500		
- P.f.				0.4		0.35		0.26		
- Closed			VA	44		52		125		
- P.f.				0.34		0.35		0.4		
• 60 Hz										
- Closing			VA	990		1 200		4 000		
- P.f.				0.35		0.31		0.22		
- Closed			VA	52		65		140		
- P.f.				0.35		0.34		0.43		
Operating times for 1.0 x U_s										
• Closing delay			ms	20 ... 40				30 ... 60		
• Opening delay			ms	7 ... 15				10 ... 20		
• Arcing time			ms	10				10		
Main circuit										
Load rating with AC										
Utilization category AC-1, switching resistive loads										
• Rated operational currents I_e	At 40 ° C up to 690 V		A	200	250	300	350	550	800	1 000
	At 50 ° C up to 690 V		A	180	230	270	310	470	650	850
• Rated power for AC loads with p.f. = 0.95 (at 40 °C)	At 230 V		kW	76	95	114	132	208	303	378
	400 V		kW	132	165	197	230	362	527	658
	500 V		kW	165	206	247	288	452	658	828
	690 V		kW	227	284	341	397	624	908	1 135
• Minimum conductor cross-section for load with I_e	At 40° C		mm²	95	150	185	240	185	240	300
Utilization categories AC-2 and AC-3										
• Rated operational currents I_e	Up to 400 V		A	120	145	210	210	400	550	700
• Rated power of squirrel-cage or slipring motors at 50 Hz and 60 Hz	At 230 V		kW	30	45	75	75	110	160	220
	400 V		kW	55	75	110	110	200	280	370
• Short-time current at 40 °C in cold state up to 10 s			A	900	1 200	1 600	1 600	5 300	5 300	6 400
Switching frequency[1]										
Switching frequency z in operating cycles/hour										
• Contactors without overload relays	No-load switching frequency		1/h	3 600						
		AC-1	1/h	300						
		AC-3	1/h	300						

[1] Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$.

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3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Type		3TK10	3TK11	3TK12	3TK13	3TK14	3TK15	3TK17
Conductor cross-sections								
Main conductors:		Screw terminals						
• Stranded with cable lug	mm^2	2 x 70	2 x 120	2 x 120		2 x 300		
• AWG cables, solid or stranded	AWG/MCM	2 x 00	2 x 250	2 x 250		2 x 600		
• Connecting bar (max. width)	mm	30	30	33		55		
• Terminal screw		M6	M10	M10		M10		
- Tightening torque	Nm	5	16	16		16		
	lb.in	42	135	135		135		
Auxiliary conductors:								
• Solid	mm^2	2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 2.5)						
• AWG cables, solid or stranded	AWG	20 ... 14						
- Tightening torque	Nm	1.2 (10 lb.in)						

4

Selection and ordering data

AC operation, 4 NO contacts

3TK13

Rated data AC-1					Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to 690 V (at 40 °C)	Rating of AC loads (p.f. = 0.95) at				Version				Article No.	Price per PU			
	230 V	400 V	690 V	1000 V	NO	NC							
A	kW	kW	kW	kW			V AC						
For screw fixing													
200	75	130	225	205	2	2	220 ... 230, 50 Hz	B	**3TK1042-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1042-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1042-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK1042-0AB0**		1	1 unit	41B
250	90	165	280	200	2	2	220 ... 230, 50 Hz	B	**3TK1142-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1142-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1142-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK1142-0AB0**		1	1 unit	41B
300	110	195	340	325	2	2	220 ... 230, 50 Hz	B	**3TK1242-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1242-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1242-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK1242-0AB0**		1	1 unit	41B
350	130	230	395	370	2	2	220 ... 230, 50 Hz	B	**3TK1342-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1342-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1342-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK1342-0AB0**		1	1 unit	41B
550	205	360	620	510	2	2	220 ... 230, 50 Hz[1)]	B	**3TK1442-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1442-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1442-0AF0**		1	1 unit	41B
800	300	525	905	575	2	2	220 ... 230, 50 Hz[1)]	B	**3TK1542-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1542-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1542-0AF0**		1	1 unit	41B
1000	375	655	1135	--	2	2	220 ... 230, 50 Hz[1)]	B	**3TK1742-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK1742-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK1742-0AF0**		1	1 unit	41B

[1)] At 60 Hz: 240 V.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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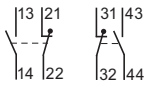
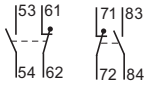
3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Accessories

For contactors	Version	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC						
Surge suppressors								
3TK10 ... 3TK13	RC elements	24 ... 48	D	**3TK1930-0A**		1	1 unit	41B
		110 ... 415	B	**3TK1930-0B**		1	1 unit	41B
3TK14 ... 3TK17		48 ... 110	C	**3TK1934-0C**		1	1 unit	41B
		220 ... 600	B	**3TK1934-0D**		1	1 unit	41B
Terminal covers								
3TK10, 3TK11	For mounting onto contactors	--	B	**3TK1940-0A**		1	2 units	41B
3TK12, 3TK13			B	**3TK1942-0A**		1	2 units	41B
3TK14, 3TK15			B	**3TK1944-0A**		1	2 units	41B
3TK17			B	**3TK1946-0A**		1	2 units	41B
Mechanical interlocking of two identical contactors								
3TK10, 3TK11	Locking devices, auxiliary contacts 2 NC	--	B	**3TK1920-0A**		1	1 unit	41B
3TK12, 3TK13			B	**3TK1922-0A**		1	1 unit	41B
3TK14 ... 3TK17	Mechanical interlock including mounting plate		B	**3TK1924-0A**		1	1 unit	41B

Spare parts

For contactors	Version	Auxiliary contacts Connections	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type								
Auxiliary switch blocks								
3TK1	For mounting on the side	Left Right						
	1st block 1 NO + 1 NC		B	**3TK1910-3A**		1	1 unit	41B
	2nd block 1 NO + 1 NC		B	**3TK1910-3B**		1	1 unit	41B
Contacts with fixing parts								
3TK10	4 moving and 8 fixed contacts	--	D	**3TK1960-0A**		1	1 unit	41B
3TK11			D	**3TK1961-0A**		1	1 unit	41B
3TK12			D	**3TK1962-0A**		1	1 unit	41B
3TK13			D	**3TK1963-0A**		1	1 unit	41B
3TK14			D	**3TK1964-0A**		1	1 unit	41B
3TK15			D	**3TK1965-0A**		1	1 unit	41B
3TK17			D	**3TK1967-0A**		1	1 unit	41B
Arc chutes								
3TK10	1 arc chute, 4-pole	--	D	**3TK1950-0A**		1	1 unit	41B
3TK11			D	**3TK1951-0A**		1	1 unit	41B
3TK12			D	**3TK1952-0A**		1	1 unit	41B
3TK13			D	**3TK1953-0A**		1	1 unit	41B
3TK14			D	**3TK1954-0A**		1	1 unit	41B
3TK15			D	**3TK1955-0A**		1	1 unit	41B
3TK17			D	**3TK1957-0A**		1	1 unit	41B
Solenoid coils								
3TK10, 3TK11	AC operation[1]	--		**3TK1970-0A..**				
3TK12, 3TK13				**3TK1972-0A..**				
3TK14 ... 3TK17				**3TK1974-0A..**				

[1] Rated control supply voltages: The 10th and 11th digit of the Article No. must be supplemented according to the table.

For contactor type	**3TK10/11/12/13**	**3TK14/15/17**
Solenoid coil type	**3TK1970-0A.., 3TK1972-0A..**	**3TK1974-0A..**
Rated control supply voltage U_s		
AC operation		
50 Hz **60 Hz**		
24 V --	B0	--
110 V 120 V	F0	F0
220 ... 230 V 240 V	P0	P0
230 ... 240 V --	U0	U0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are suitable for use in any climate. The contactors with screw terminals are finger-safe according to EN 50274.

Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

The TK2 contactors with 6.3 mm x 0.8 mm flat connectors are coded and can be used in the plug-in base with solder pin connections for printed circuit boards (see "Accessories for 3TF2 contactors", Chapter 3).

Application

Contactors with plug-in terminals

The main area of application for the 3TK2 contactors with flat connectors is in household equipment. These contactors are also suitable for simple electric controllers.

No auxiliary switch blocks can be retrofitted.

Technical specifications

Type	3TK20

Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- C Inching operations as a percentage of total switching operations

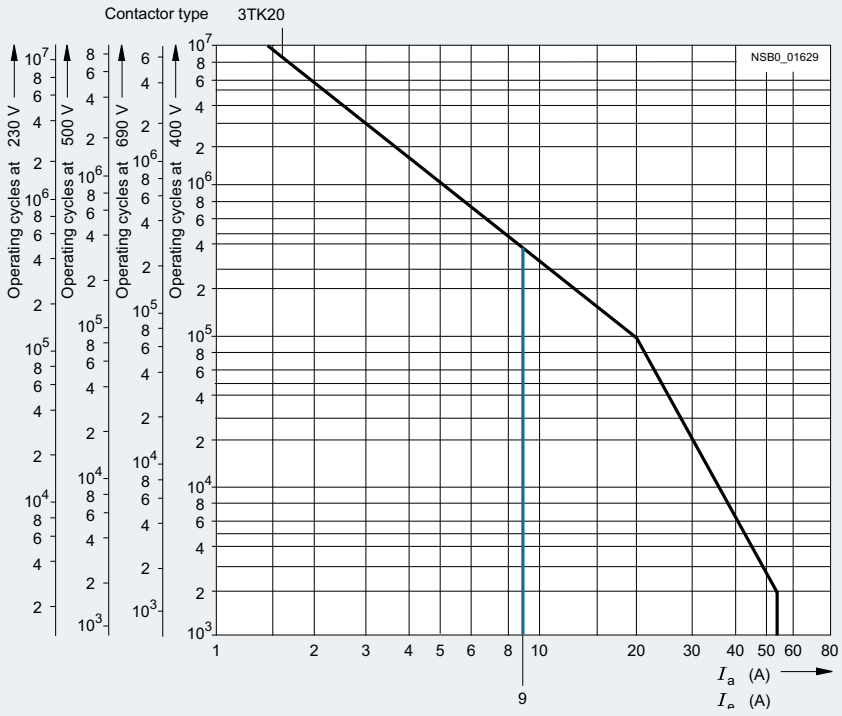

Diagram legend:

P_N= Rated power for squirrel-cage motors at 400 V
I_a= Breaking current
I_e= = Rated operational current

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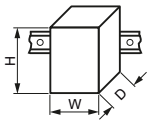
3TK20 contactors, 4-pole, 4 kW

Type			**3TK20**
Size			**00**
Dimensions (W x H x D)		mm	45 x 48 x 63

General technical specifications

Permissible mounting position	AC and DC operation		Any
Mechanical endurance			
• AC operation		Operating cycles	10 million
• DC operation			30 million
• Auxiliary switch block			10 million
Rated insulation voltage U_i (pollution degree 3)			
• Screw terminals		V	690
• Flat connectors 6.3 mm x 0.8 mm		V	500
• Solder pin connections		V	500
Rated impulse withstand voltage U_{imp} (pollution degree 3)			
• Screw terminals		kV	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6
• Solder pin connections		kV	6
Protective separation between coil and main contacts According to IEC 60947-1, Appendix N		V	Up to 300
Permissible ambient temperature[1]			
• During operation		°C	-25 ... +55
• During storage		°C	-55 ... +80
Degree of protection acc. to IEC 60947-1 Appendix C			IP00/open
• Connection range for screw terminals			IP20
Touch protection acc. to EN 50274			Finger-safe for screw terminals
Shock resistance			
• Rectangular pulse			
- AC operation		*g*/ms	8.3/5 and 5.2/10
- DC operation		*g*/ms	11.3/5 and 9.2/10
• Sine pulse			
- AC operation		*g*/ms	13/5 and 8/10
- DC operation		*g*/ms	17.4/5 and 12.9/10
Conductor cross-sections			[2]

Short-circuit protection for contactors without overload relays

Main circuit[3]		
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1		
- Type of coordination "1"	A	25
- Type of coordination "2"[4]	A	10
- Weld-free	A	10
• Miniature circuit breaker with C characteristic	A	10
Auxiliary circuit		
Short-circuit test		
• With fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	6

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, , side-by-side mounting and 100 % ON period, the max. ambient temperature is +40 °C.

2) See page 4/30.

3) According to excerpt from IEC 60947-4-1
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible.
The contactor and/or overload relay can be replaced if necessary.
Type of coordination "2":
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.

4) A short-circuit current of $I_q \leq$ 6 kA applies to type of coordination "2".

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Type		3TK20
Size		00
Control circuit		
Coil operating range[1]		0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)		
Standard version:		
• AC operation, 50 Hz		
- Closing	VA	15
- P.f.		0.41
- Closed	VA	6.8
- P.f.		0.42
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.36
- Closed	VA	6.1
- P.f.		0.46
• AC operation, 50/60 Hz[1]		
- Closing	VA	16.5/13.2
- P.f.		0.43/0.38
- Closed	VA	8.0/5.4
- P.f.		0.48/0.42
For USA and Canada:		
• AC operation, 50 Hz		
- Closing	VA	14.6
- P.f.		0.38
- Closed	VA	6.5
- P.f.		0.40
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.30
- Closed	VA	6.0
- P.f.		0.44
• DC operation (closing = closed)	W	3
Permissible residual current of the electronics[2] (with 0 signal)		
• AC operation	mA	≤ 3 x (230 V/U_s)
• DC operation	mA	≤ 1 x (230 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[3] Total break time = Opening delay + Arcing time Values apply with coil in cold state and at operating temperature for operating range		
• AC operation		
- Closing delay	ms	5 ... 19
- Opening delay	ms	2 ... 22
- Dead interval		To use the 3TK20 AC-operated contactor in reversing duty an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	16 ... 65
- Opening delay	ms	2 ... 5
• Arcing time	ms	10 ... 15
Operating times for 1.0 x U_s[3]		
• AC operation		
- Closing delay	ms	5 ... 18
- Opening delay	ms	3 ... 21
- Dead interval		To use the 3TK20 AC-operated contactor in reversing duty an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	19 ... 31
- Opening delay	ms	3 ... 4
• Arcing time	ms	10 ... 15

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) The 3TX4490-1J additional load module is recommended for higher residual currents (see "Accessories for 3TF2 contactors", Chapter 3).

3) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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3TK20 contactors, 4-pole, 4 kW

Type			3TK20..-0...	3TK20..-3..., 3TK20..-6..., 3TK20..-7...
Size			00	00
Main circuit				
Load rating with AC				
Utilization category AC-1, switching resistive loads				
• Rated operational current I_e (at 40 °C)	Up to 400/380 V	A	18	18
	690/660 V	A	18	--
• Rated operational current I_e (at 55 °C)	400/380 V	A	16	16
	690/660 V	A	16	--
• Rated power for AC loads with p.f. = 1	At 230/220 V	kW	6.0	6.0
	400/380 V	kW	10	10
	500 V	kW	13	13
	690/660 V	kW	17	--
• Minimum conductor cross-section for loads with I_e		mm^2	2.5	2.5
Utilization categories AC-2 and AC-3				
• Rated operational current I_e	Up to 220 V	A	9.0	9.0
	230 V	A	9.0	9.0
	380 V	A	9.0	9.0
	400 V	A	8.4	8.4
	500 V	A	6.5	6.5
	660 V	A	5.2	--
	690 V	A	5.2	--
• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz	At 110 V	kW	1.2	1.2
	115 V	kW	1.2	1.2
	120 V	kW	1.3	1.3
	127 V	kW	1.4	1.4
	200 V	kW	2.2	2.2
	220 V	kW	2.4	2.4
	230 V	kW	2.5	2.5
	240 V	kW	2.6	2.6
	380 V	kW	4.0	4.0
	400 V	kW	4.0	4.0
	415 V	kW	4.0	4.0
	440 V	kW	4.0	4.0
	460 V	kW	4.0	4.0
	500 V	kW	4.0	4.0
	575 V	kW	4.0	--
	660 V	kW	4.0	--
	690 V	kW	4.0	--
• Power loss per conducting path	At I_e/AC-3	W	0.3	0.3
Utilization category AC-4				
(contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)				
• Rated operational current I_e	Up to 400 V	A	2.6	2.6
	690 V	A	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz	At 110 V	kW	0.32	0.32
	115 V	kW	0.33	0.33
	120 V	kW	0.35	0.35
• Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency	127 V	kW	0.37	0.37
	200 V	kW	0.58	0.58
	220 V	kW	0.64	0.64
	230 V	kW	0.67	0.67
	240 V	kW	0.70	0.70
	380 V	kW	1.10	1.10
	400 V	kW	1.15	1.15
	415 V	kW	1.20	1.20
	440 V	kW	1.27	1.27
	460 V	kW	1.33	1.33
	500 V	kW	1.45	1.45
	575 V	kW	1.30	--
	660 V	kW	1.10	--
	690 V	kW	1.15	--

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3TK20 contactors, 4-pole, 4 kW

Type			3TK20..-0...	3TK20..-3..., 3TK20..-6..., 3TK20..-7...
Size			00	00
Main circuit				
Load rating with DC				
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms) (contact endurance 0.1 x 10^6 operating cycles.)				
• Rated operational currents I_e (at 55 °C)				
- 1 conducting path	Up to 24 V	A	16	16
	60 V	A	6	6
	110 V	A	2	2
	220/240 V	A	1	1
- 2 conducting paths in series	Up to 24 V	A	16	16
	60 V	A	16	16
	110 V	A	6	6
	220/240 V	A	2	2
- 2 conducting paths in series	Up to 24 V	A	16	16
	60 V	A	16	16
	110 V	A	16	16
	220/240 V	A	6	6
Utilization category DC-3/DC-5, Shunt-wound and series-wound motors (*L/R* ≤15 ms)				
• Rated operational currents I_e (at 55 °C)				
- 1 conducting path	Up to 24 V	A	6	6
	60 V	A	3	3
	110 V	A	0.5	0.5
	220/240 V	A	0.1	0.1
- 2 conducting paths in series	Up to 24 V	A	10	10
	60 V	A	5	5
	110 V	A	2	2
	220/240 V	A	0.5	0.5
- 2 conducting paths in series	Up to 24 V	A	16	16
	60 V	A	16	16
	110 V	A	16	16
	220/240 V	A	2	2
Switching frequency				
Switching frequency *z* in operating cycles/hour				
• Contactors without overload relays	No-load switching frequency	h^{-1}	10 000	
	AC-1	h^{-1}	1 000	
	AC-2	h^{-1}	500	
	AC-3	h^{-1}	1 000	
• Contactors with overload relays (mean value)		h^{-1}	15	
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$				

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3TK20 contactors, 4-pole, 4 kW

Type				3TK20
Size				00
Conductor cross-sections				
Main and auxiliary conductors				**Screw terminals**
• Solid			mm^2	2 x (0.5 ... 2.5), 1 x 4 2 x (20 ... 14) AWG, 1 x 12 AWG
• Finely stranded with end sleeve			mm^2	2 x (0.5 ... 1.5), 1 x 2.5
• Pin-end connector (DIN 46231)			mm^2	1 x 1 ... 2.5
• Terminal screw				M3
• Prescribed tightening torque for terminal screws			Nm lb.in	0.8 ... 1.3 7 ... 11
				Flat connectors
• When using a plug-in sleeve 6.3 – 1			mm^2	0.5 ... 1
• Finely stranded with 6.3 – 2.5			mm^2	1 ... 2.5
				Solder pin connections (only for printed circuit boards)
• Solder pin cross-section	(does not apply to plug-in bases)		mm^2	0.8 x 1.2

Type				3TK20
Size				00
Auxiliary contacts				
General data				
Standards				IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)			V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12			A	10
Load rating with AC				
Rated operational current I_e/AC-15/AC-14				
• For rated operational voltage U_e	24 ... 230 V		A	4
	380 ... 400 V		A	3
	500 V		A	2
	660 V		A	1
	690 V		A	1
Load rating with DC				
Rated operational current I_e/DC-12				
• For rated operational voltage U_e	24 V		A	4
	48 V		A	2.2
	110 V		A	1.1
	125 V		A	1.1
	220 V		A	0.5
	440 V		A	--
	600 V		A	--
Rated operational current I_e/DC-13				
• For rated operational voltage U_e	24 V		A	2.1
	48 V		A	1.1
	110 V		A	0.52
	125 V		A	0.52
	220 V		A	0.27
	440 V		A	--
	600 V		A	--

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3TK20 contactors, 4-pole, 4 kW

Type			3TK20..-0...	3TK20..-3..., 3TK20..-6..., 3TK20..-7...
Size			00	00
CSA and UL rated data of the 3TK20 contactors				
Rated insulation voltage U_i		V AC	600	300
Uninterrupted current, open and enclosed		A	16	16 (10 for solder pin connection)
Maximum horsepower ratings (CSA and UL approved values)				
• Rated power for three-phase motors at 60 Hz				
- Single-phase	At 115 V	hp	0.5	--
	200 V	hp	1	1
	230 V	hp	1.5	1
	460/575 V	hp	--	--
- Three-phase	At 115 V	hp	--	--
	200 V	hp	3	3 (1 for 3TK20..-6)
	230 V	hp	3	3 (1 for 3TK20..-6)
	460/575 V	hp	5	--
Overload relays	Type		3UA7	
• Setting range		A	8 ... 10	
CSA, UL and GL rated data of the auxiliary contacts				
Rated voltage, max.		V AC	600	
Auxiliary switch blocks, max.		V AC	300	
Switching capacity			A 600, Q 300	
Uninterrupted current at 240 V AC		A	10	

Selection and ordering data

Size 00
AC-1: Operational current I_e = 16 A (at 55 °C)

Rated data Utilization categories AC-2 and AC-3					Main contacts		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings[1] of three-phase motors at 50 Hz and				Version						
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V	NO	NC		Article No. / Price per PU			
A	kW	**kW**	kW	kW							
Terminal designations											
4 NO											
3 NO + 1 NC											
2 NO + 2 NC											
Contactors with screw terminals · for screw fixing and snap-on mounting onto TH 35 standard mounting rail											
AC operation											
9	2.4	**4**	4	4	4	--	C	**3TK2040-0AP0**	1	1 unit	41B
					3	1	C	**3TK2031-0AP0**	1	1 unit	41B
					2	2	D	**3TK2022-0AP0**	1	1 unit	41B
DC operation											
9	2.4	**4**	4	4	4	--	C	**3TK2040-0BB4**	1	1 unit	41B
					3	1	C	**3TK2031-0BB4**	1	1 unit	41B
					2	2	C	**3TK2022-0BB4**	1	1 unit	41B

3TK20..-0...

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

Accessories see "3TF2 contactors", Chapter 3.

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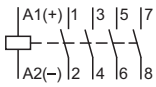
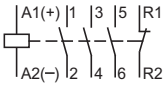
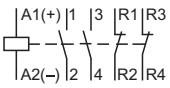
3TK20 contactors, 4-pole, 4 kW

Rated data Utilization categories AC-2 and AC-3					Main contacts		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings[1] of three-phase motors at 50 Hz and				Version							
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V	NO	NC						
A	kW	**kW**	kW	kW								
Terminal designations												
4 NO												
												
3 NO + 1 NC												
												
2 NO + 2 NC												
												
Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing and snap-on mounting onto TH 35 standard mounting rail												
3TK20..-3...	***AC operation***							**Flat connectors**				
	9	2.4	**4**	4	--	4	--	C	**3TK2040-3AP0**	1	1 unit	41B
						3	1	C	**3TK2031-3AP0**	1	1 unit	41B
						2	2	D	**3TK2022-3AP0**	1	1 unit	41B
	DC operation											
	9	2.4	**4**	4	--	4	--	D	**3TK2040-3BB4**	1	1 unit	41B
						3	1	D	**3TK2031-3BB4**	1	1 unit	41B
						2	2	D	**3TK2022-3BB4**	1	1 unit	41B
Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing (diagonal)												
3TK20..-7...	***AC operation***											
	9	2.4	**4**	4	--	4	--	C	**3TK2040-7AP0**	1	1 unit	41B
						3	1	C	**3TK2031-7AP0**	1	1 unit	41B
						2	2	C	**3TK2022-7AP0**	1	1 unit	41B
	DC operation											
	9	2.4	**4**	4	--	4	--	C	**3TK2040-7BB4**	1	1 unit	41B
						3	1	D	**3TK2031-7BB4**	1	1 unit	41B
						2	2	C	**3TK2022-7BB4**	1	1 unit	41B
Contactors with solder pin connections for printed circuit boards[2] for screw fixing (diagonal)												
3TK20..-6...	***AC operation***							**Solder pin connections**				
	9	2.4	**4**	4	--	4	--	C	**3TK2040-6AP0**	1	1 unit	41B
						3	1	D	**3TK2031-6AP0**	1	1 unit	41B
						2	2	C	**3TK2022-6AP0**	1	1 unit	41B
	DC operation											
	9	2.4	**4**	4	--	**4**	--	D	**3TK2040-6BB4**	1	1 unit	41B
						3	1	C	**3TK2031-6BB4**	1	1 unit	41B
						2	2	C	**3TK2022-6BB4**	1	1 unit	41B

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

[2] Operating range at AC-1 and 220 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Accessories see "3TF2 contactors", Chapter 3.

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

	Contactor type	3TK20
Rated control supply voltage U_s	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
110 V AC	132 V AC	F0
230/220 V AC	276 V AC	P0[1]
DC operation		
24 V DC		B4

[1] Operating range at 220 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have two auxiliary contacts 1 NO and 1 NC integrated in the basic version.

Mountable auxiliary contacts

Size S00 and S0

Four additional auxiliary contacts, including no more than 2 NC.

Application

The contactors are suitable for:

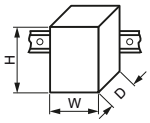
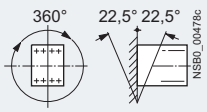
- For changing the polarity of hoisting gear motors
- For switching two separate loads

Note:

Single device for pole reversal; not suitable for reversing duty. 3RT25 contactors are not suitable for switching a load between two current sources.

General description of sizes S00 to S0, see Chapter 3, "Power contactors for switching motors" ➞ "SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW".

Technical specifications

Type			**3RT2516**	**3RT2517**	**3RT2518**	**3RT2526**
Size			**S00**			**S0**
Dimensions (W x H x D) for AC operation[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73			60 x 85 x 97 / 60 x 101.5 x 97
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121			60 x 85 x 141 / 60 x 101.5 x 144
Dimensions (W x H x D) for DC operation[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73			60 x 85 x 107 / 60 x 101.5 x 107
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121			60 x 85 x 151 / 60 x 101.5 x 154
General technical specifications						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.						
Upright mounting position			 Special version required			
Mechanical endurance		Operating cycles	30 million			10 million
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Permissible ambient temperature						
• During operation		°C	-25 ... +60			
• During storage		°C	-55 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP20			
Touch protection acc. to EN 50274			Finger-safe			
Short-circuit protection of contactors without overload relays						
Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	35			63
• Type of coordination "2"		A	20			35
• Weld-free		A	10			16

[1] Dimensions for devices with screw terminals/spring-type terminals. For size S0, devices for AC and DC operation differ in depth. The following applies: Depth (DC) = Depth (AC) + 10 mm.

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

Type				3RT2516	3RT2517	3RT2518	3RT2526	
Size				S00	S00	S00	S0	
Control circuit								
Solenoid coil operating range								
• AC operation	At 50 Hz			0.8 ... 1.1 x U_s			--	
	At 60 Hz			0.85 ... 1.1 x U_s			--	
• DC operation	At 50 Hz			0.8 ... 1.1 x U_s			--	
	At 60 Hz			0.85 ... 1.1 x U_s			--	
• AC/DC operation				--			0.8 ... 1.1 x U_s	
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)				See 3RT23 16	See 3RT23 17		See 3RT23 26	
Operating times for 0.8 to 1.1 x U_s (Total break time = Opening delay + Arcing time)				See 3RT23 16	See 3RT23 17		See 3RT23 26	
Main circuit								
Load rating with AC								
Utilization category AC-1, switching resistive loads								
• Rated operational currents I_e	At 40 °C up to 690 V		A	18	22		40	
	At 60 °C up to 690 V		A	16	20		35	
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V		kW	6	7.5		13.3	
	400 V		kW	10.5	13		23	
• Minimum conductor cross-section for loads with I_e	At 40 °C		mm^2	2.5	2.5		10	
Utilization categories AC-2 and AC-3							AC[1]	DC[1]
• Rated operational currents I_e (at 60 °C)	NO contact up to 400 V		A	9	12	16	25	25
	NC contact up to 400 V		A	9	9	9	25	20
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	NO contacts at 230 V		kW	2.2	3	4	5.5	5.5
	NC contacts at 230 V		kW	2.2	2.2	2.2	5.5	5.5
	NO contacts at 400 V		kW	4	5.5	7.5	11	11
	NC contacts at 400 V		kW	4	4	4	11	7.5
Load rating with DC								
Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)								
• Rated operational currents I_e (at 60 °C)								
- 1 conducting path	Up to 24 V		A	16	20		35	
	60 V		A	16	20		20	
	110 V		A	2.1	2.1		4.5	
	220 V		A	0.8	0.8		1	
	440 V		A	0.6	0.6		0.4	
- 2 conducting paths in series	Up to 24 V		A	16	20		35	
	60 V		A	16	20		35	
	110 V		A	12	12		35	
	220 V		A	1.6	1.6		5	
	440 V		A	0.8	0.8		1	
Utilization category DC-3/DC-5[2], shunt-wound and series-wound motors ($L/R \leq 15$ ms)								
• Rated operational currents I_e (at 60 °C)								
- 1 conducting path	Up to 24 V		A	16	20		20	
	60 V		A	0.5	0.5		5	
	110 V		A	0.15	0.15		2.5	
	220 V		A	0.75	0.75		1	
	440 V		A	--	--		0.09	
- 2 conducting paths in series	Up to 24 V		A	16	20		35	
	60 V		A	5	5		35	
	110 V		A	0.35	0.35		15	
	220 V		A	--	--		3	
	440 V		A	--	--		0.27	

[1] Values for devices with AC and DC operation: For 3RT25 26 with DC operation, different values apply to AC-2 and AC-3 for the NC.

[2] For U_s >24 V, the rated operational currents I_e for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

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Selection and ordering data

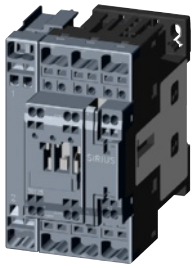
AC operation, 2 NO + 2 NC[1)]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

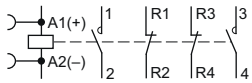
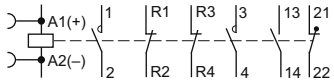
3RT251.-1A.00

3RT251.-2A.00

3RT252.-1A.00



3RT252.-2A.00

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, T_u: Up to 60 °C		AC-1, T_u: 40/60 °C	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
Operational current I_e	Ratings of three-phase motors at 50 Hz and	Operational current I_e										
At 400 V	**400 V**											
A	**kW**	A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S00[2)]												
												
9	**4**	18 / 16	**--**	--	--	24, 50/60 Hz	B	**3RT2516-1AB00**		B	**3RT2516-2AB00**	
						110, 50/60 Hz	B	**3RT2516-1AF00**		B	**3RT2516-2AF00**	
						230, 50/60 Hz	A	**3RT2516-1AP00**		A	**3RT2516-2AP00**	
12/9[3)]	**5.5/4**[3)]	22 / 20	**--**	--	--	24, 50/60 Hz	B	**3RT2517-1AB00**		B	**3RT2517-2AB00**	
						110, 50/60 Hz	B	**3RT2517-1AF00**		A	**3RT2517-2AF00**	
						230, 50/60 Hz	▶	**3RT2517-1AP00**		A	**3RT2517-2AP00**	
16/9[3)]	**7.5/4**[3)]	22 / 20	**--**	--	--	24, 50/60 Hz	B	**3RT2518-1AB00**		B	**3RT2518-2AB00**	
						110, 50/60 Hz	B	**3RT2518-1AF00**		B	**3RT2518-2AF00**	
						230, 50/60 Hz	A	**3RT2518-1AP00**		A	**3RT2518-2AP00**	
Size S0												
1 NO + 1 NC, Ident. No. **11**												
												
25	**11**	40 / 35	**11**	1	1	24, 50 Hz	B	**3RT2526-1AB00**		B	**3RT2526-2AB00**	
						110, 50 Hz	B	**3RT2526-1AF00**		B	**3RT2526-2AF00**	
						230, 50 Hz	A	**3RT2526-1AP00**		A	**3RT2526-2AP00**	

1) Single device for pole reversal; not suitable for reversing duty.

2) For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s;
at 60 Hz: 0.85 ... 1.1 x U_s.

3) Values for NO contact/NC contact. The NC contact can switch no more than 4 kW.

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT20 contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

DC operation, 2 NO + 2 NC[1)]

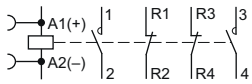
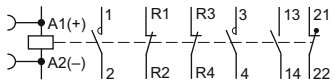
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT251.-1B.40

3RT251.-2B.40

3RT252.-1B.40

3RT252.-2B.40

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, T_u: Up to 60 °C		AC-1, T_u: 40/60 °C	Ident. No.	Version				Article No.	Price per PU		Article No.	Price per PU
Operational current I_e	Ratings of three-phase motors at 50 Hz and 400 V	Operational current I_e		NO	NC							
At 400 V												
A	kW	A				V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S00												
												
9	**4**	18 / 16	**--**	--	--	24	▶	**3RT2516-1BB40**		A	**3RT2516-2BB40**	
						220	B	**3RT2516-1BM40**		B	**3RT2516-2BM40**	
12/9[2)]	**5.5/4**[2)]	22 / 20	**--**	--	--	24	A	**3RT2517-1BB40**		A	**3RT2517-2BB40**	
						220	B	**3RT2517-1BM40**		B	**3RT2517-2BM40**	
16/9[2)]	**7.5/4**[2)]	22 / 20	**--**	--	--	24	A	**3RT2518-1BB40**		A	**3RT2518-2BB40**	
						220	B	**3RT2518-1BM40**		B	**3RT2518-2BM40**	
Size S0												
1 NO + 1 NC, Ident. No. **11**												
												
25 (20)[3)]	**11 (7.5)**[3)]	40 / 35	**11**	1	1	24	A	**3RT2526-1BB40**		A	**3RT2526-2BB40**	
						220	B	**3RT2526-1BM40**		B	**3RT2526-2BM40**	

1) Single device for pole reversal; not suitable for reversing duty.
2) Values for NO contact/NC contact. The NC contact can switch no more than 4 kW.
3) Values in brackets for NC. (The deviating value for the NC only applies to devices with DC operation.)

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT20 contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT10 contactors can also be used for the 4-pole versions.

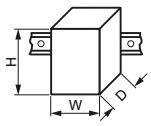
Mountable auxiliary contacts

Maximum 4 auxiliary contacts can be either laterally mounted or snapped onto the top (auxiliary switch blocks according to EN 50012 or EN 50005).

Note:

Single device for pole reversal; not suitable for reversing duty. 3RT15 contactors are not suitable for switching a load between two current sources.

Technical specifications



Type		**3RT1535**
Size		**S2**
Dimensions (W x H x D)		
• AC operation	mm	73 x 111 x 110
- With mounted auxiliary switch block	mm	73 x 111 x 159
• DC operation	mm	73 x 111 x 125
- With mounted auxiliary switch block	mm	73 x 111 x 174
General technical specifications		
Permissible mounting position[1]		
Mechanical endurance	Operating cycles	10 million
Electrical endurance at I_e/AC-1	Operating cycles	Approx. 0.5 million
Rated insulation voltage U_i (pollution degree 3)	V	690
Permissible ambient temperature		
• During operation	°C	-25 ... +60
• During storage	°C	-55 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C		IP20
• Connection range		IP00 (see also additional terminal covers)
Touch protection acc. to EN 50274		Finger-safe only for vertical contact from the front
Short-circuit protection of contactors without overload relays		
Main circuit		
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1		
• Type of coordination "1"	A	160
• Type of coordination "2"	A	80
• Weld-free	A	50
Control circuit		
Solenoid coil operating range (AC/DC)		0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)		
• AC operation, 50 Hz		
- Closing	VA	145
- P.f.	VA	0.79
- Closed	VA	12.5
- P.f.	VA	0.36
• AC operation, 50/60 Hz		
- Closing	VA	170/155
- P.f.	VA	0.76/0.72
- Closed	VA	15/11.8
- P.f.	VA	0.35/0.38
• DC operation (closing = closed)	W	13.3
Operating times for 0.8 ... 1.1 x U_s[2] Total break time = Opening delay + Arcing time		
• AC operation		
- Closing delay	ms	4 ... 35
- Opening delay	ms	10 ... 30
• DC operation		
- Closing delay	ms	50 ... 110
- Opening delay	ms	15 ... 30
• Arcing time	ms	10 ... 15

[1] In accordance with the corresponding 3-pole 3RT1 contactors.

[2] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s

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SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

Type				3RT1535
Size				S2
Main circuit				
Load rating with AC				
Utilization category AC-1, switching resistive loads				
• Rated operational currents I_e	At 40 °C up to 690 V		A	60
	At 60 °C up to 690 V		A	55
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V		kW	20
	400 V		kW	36
• Minimum conductor cross-section for loads with I_e	At 40 °C		mm^2	16
Utilization categories AC-2 and AC-3				
• Rated operational currents I_e (at 60 °C)	Up to 400 V		A	40
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V		kW	9.5
	400 V		kW	18.5
Load rating with DC				
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)				
• Rated operational currents I_e (at 60 °C)				
- 1 conducting path	Up to 24 V		A	50
	60 V		A	23
	110 V		A	4.5
	220 V		A	1
	440 V		A	0.4
- 2 conducting paths in series	Up to 24 V		A	50
	60 V		A	45
	110 V		A	45
	220 V		A	5
	440 V		A	1
Utilization category DC-3/DC-5[1], shunt-wound and series-wound motors (*L/R* ≤ 15 ms)				
• Rated operational currents I_e (at 60 °C)				
- 1 conducting path	Up to 24 V		A	35
	60 V		A	6
	110 V		A	2.5
	220 V		A	1
	440 V		A	0.1
- 2 conducting paths in series	Up to 24 V		A	50
	60 V		A	45
	110 V		A	25
	220 V		A	5
	440 V		A	0.27

[1] For U_s >24 V, the rated operational currents I_e for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

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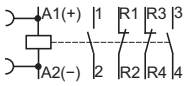
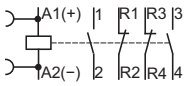
Selection and ordering data

AC and DC operation, 2 NO contacts + 2 NC contacts[1)]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT1535-1....

Rated data			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, T_u: Up to 60 °C		AC-1, T_u: 40/60 °C							
Operational current I_e	Ratings of three-phase motors at 50 Hz and	Operational current I_e			Article No.	Price per PU		Article No.	Price per PU
At 400 V	**400 V**								
A	**kW**	A	V						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
AC operation									
Size S2									
									
40	**18.5**	60 / 55	AC 50 Hz, 24	B	**3RT1535-1AB00**			--	
			AC 50 Hz, 110	B	**3RT1535-1AF00**			--	
			AC 50 Hz, 230	▶	**3RT1535-1AP00**			--	
DC operation									
Size S2									
									
40	**18.5**	60 / 55	24 DC	▶	**3RT1535-1BB40**			--	
			220 DC	B	**3RT1535-1BM40**			--	

1) Single device for pole reversal; not suitable for reversing duty.

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

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SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

Function

The 3RT16 capacitor contactors are special versions of the 3RT10 contactors size S00 to S3. The capacitors are precharged by means of the mounted leading NO contacts and resistors; only then do the main contacts close.

This prevents disturbances in the network and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors.

For the capacitor switching capacity of the basic 3RT10 contactor version.

Auxiliary switches

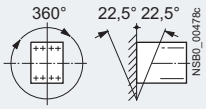
The auxiliary switch block which is snapped onto the capacitor contactor contains the three leading NO contacts and in the case of S00 one standard NC contact and in the case of S0 and S3 one standard NO contact, which is unassigned. Size S00 also contains another unassigned NO contact in the basic unit.

In addition, a 2-pole auxiliary switch block can be mounted laterally on the size S3 capacitor contactors (2 NO, 2 NC or 1 NO + 1 NC versions); type 3RH1921-1EA… The fitting of auxiliary switches for capacitor contactors in sizes S00 and S0 is not expandable.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT10 contactors:
- for size S00 as for the 3RT1017 contactors
- for size S0 as for the 3RT1026 contactors
- for size S3 as for the 3RT1044 contactors

See Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW".

Type		3RT1617-1A..3	3RT1627-1A..1	3RT1647-1A..1
Size		S00	S0	S3
Dimensions (W x H x D) including auxiliary switches and connecting cables	mm	45 x 101 x 105	45 x 100 x 130	70 x 167 x 183
General technical specifications				
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.				
Mechanical endurance				
• Basic units with snap-on auxiliary switch block	Operating cycles	10 million		
Electrical endurance	Operating cycles	> 250 000	> 150 000	> 100 000
Rated insulation voltage U_i (pollution degree 3)	V	690		1 000
Rated impulse withstand voltage U_{imp}	kV	6		6
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	400		690
Permissible ambient temperature	°C	-25 ... +60		
Degree of protection acc. to IEC 60947-1, Appendix C		IP20, coil assembly IP40	IP20, coil assembly IP20	IP20, terminal compartment IP00, coil assembly IP40
Touch protection acc. to EN 50274		Finger-safe		
Shock resistance (AC operation)				
• Rectangular pulse	*g*/ms	7.5/5 and 4.2/10	8.2/5 and 4.9/10	6.8/5 and 4/10
• Sine pulse	*g*/ms	9.8/5 and 5.9/10	12.5/5 and 7.8/10	10.6/5 and 6.2/10
Auxiliary circuit				
Auxiliary contacts mounted (unassigned)		1 NO + 1 NC	1 NO	1 NO
Auxiliary contacts mountable laterally (not for sizes S00 and S0)		--	--	2 NO or 2 NC or 1 NO + 1 NC
Short-circuit test				
• with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	10		
• with miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A	A	10		

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SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Type			3RT1617-1A..3	3RT1627-1A..1	3RT1647-1A..1
Size			S00	S0	S3
Control					
Solenoid coil operating range					
• AC operation	50 Hz		0.8 ... 1.1 x U_s	0.8 ... 1.1 x U_s	
	60 Hz		0.85 ... 1.1 x U_s	0.8 ... 1.1 x U_s	
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)					
• AC operation, 50 Hz, standard version					
- Closing		VA	--	61	270
- P.f.			--	0.82	0.68
- Closed		VA	--	7.8	22
- P.f.			--	0.24	0.27
• AC operation, 50/60 Hz, standard version					
- Closing		VA	27/24.3	64/63	298/274
- P.f.			0.8/0.75	0.72/0.74	0.7/0.62
- Closed		VA	4.4/3.4	8.4/6.8	27/20
- P.f.			0.27/0.27	0.24/0.28	0.29/0.31
• AC operation, 50 Hz, for USA/Canada					
- Closing		VA	26.4	61	270
- P.f.			0.81	0.82	0.68
- Closed		VA	4.7	7.8	22
- P.f.			0.26	0.24	0.27
• AC operation, 60 Hz, for USA/Canada					
- Closing		VA	31.7	69	300
- P.f.			0.77	0.76	0.52
- Closed		VA	5.1	7.5	21
- P.f.			0.27	0.28	0.29
Permissible residual current of the electronics (with 0 signal)					
• AC operation		mA	<3 mA x (230 V/U_s)[1]	<6 mA x (230 V/U_s)	<25 mA x (230 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[2]					
(Total break time = Opening delay + Arcing time)					
• AC operation					
- Closing delay		ms	8 ... 35	8 ... 44	17 ... 90
- Opening delay		ms	4 ... 30	4 ... 20	10 ... 25
Operating times for 1.0 x U_s[2]					
• AC operation					
- Closing delay		ms	10 ... 25	10 ... 17	18 ... 30
- Opening delay		ms	5 ... 30	4 ... 20	11 ... 23
Main circuit					
Load rating with AC					
Utilization category AC-6b, switching low-inductance AC capacitors					
Capacitor rating at rated power	230 V, 50/60 Hz	kvar	3 … 7.5	3.5 … 15	3.5 … 30
	400 V, 50/60 Hz	**kvar**	**5 … 12.5**	**6 … 25**	**5 … 50**
	525 V, 50/60 Hz	kvar	7.5 … 15	7.8 … 30	7.5 … 60
	690 V, 50/60 Hz	kvar	10 … 21	10 … 42	10 … 84
Max. switching frequency z in operating cycles/hour		h^{-1}	180	100	
Short-circuit protection			1.6 ... 2.2 x I_e		

1) The 3RT1916-1GA00 additional load module is recommended for higher residual currents.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms; diode assembly 2 to 6 times, for S00 noise suppression diode 6 to 10 times).

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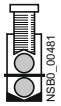
SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Type			3RT1617-1A..3	3RT1627-1A..1	3RT1647-1A..1
Size			S00	S0	S3
Conductor cross-sections					
Main conductors (1 or 2 conductors can be connected)			Screw terminals		
Box terminals					
• Terminal screw			M3	M4 (Pozidriv size 2)	M6 (hexagon socket, A/F 4)
- Tightening torque		Nm	0.8 ... 1.2	2 ... 2.5	4 ... 6
		lb.in	7 ... 10.3	18 ... 22	36 ... 53
• Solid		mm²	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (1 ... 4)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1] according to IEC 60947; max. 1 x 10 [1)2)]	--
• Finely stranded with end sleeve		mm²	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6) [1)2)]	--
• AWG cables					
- Solid		AWG	2 x (20 ... 16)	2 x (16 ... 12)	--
- Solid or stranded		AWG	2 x (18 ... 14)	2 x (14 ... 10)	--
- Stranded		AWG	1 x 12	1 x 8	--
Front clamping point connected					
NSB0_00479					
• Finely stranded with end sleeve		mm²	--		2.5 ... 35
• Finely stranded without end sleeve		mm²	--		10 ... 50
• Solid		mm²	--		2.5 ... 16
• Stranded		mm²	--		10 ... 70
• AWG cables, solid or stranded		AWG	--		10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)		mm	--		6 x 9 x 0.8
Rear clamping point connected					
NSB0_00480					
• Finely stranded with end sleeve		mm²	--		2.5 ... 50
• Finely stranded without end sleeve		mm²	--		10 ... 50
• Solid		mm²	--		2.5 ... 16
• Stranded		mm²	--		10 ... 70
• AWG cables, solid or stranded		AWG	--		10 ... 2/0
• Ribbon cable conductors (Number x Width x Thickness)		mm	--		6 x 9 x 0.8
Both clamping points connected					
 NSB0_00481					
• Finely stranded with end sleeve		mm²	--		2 x (2.5 ... 35)
• Finely stranded without end sleeve		mm²	--		2 x (10 ... 35)
• Solid		mm²	--		2 x (2.5 ... 16)
• Stranded		mm²	--		2 x (10 ... 50)
• AWG cables, solid or stranded		AWG	--		2 x (10 ... 1/0)
• Ribbon cable conductors (Number x Width x Thickness)		mm	--		2 x (6 x 9 x 0.8)
Auxiliary conductors					
• Solid		mm²	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (1 ... 4)	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (0.75 ... 4)	
• Finely stranded with end sleeve		mm²	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• AWG cables, solid or stranded		AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1], 1 x 12		
• Terminal screw			M3		
- Tightening torque		Nm	0.8 ... 1.2		
		lb.in	7 ... 10.3		

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

[2] With 3RV1925-5AB infeed terminal for 16 mm².

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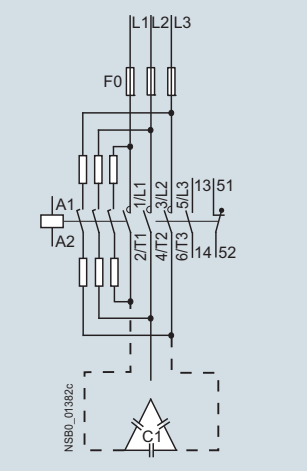
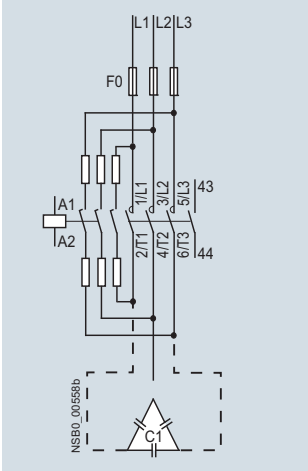
Circuit diagrams

Size S00



Sizes S0 and S3



Selection and ordering data

AC operation

Main, auxiliary and control conductors: Screw terminals

3RT1617-1A.03

3RT1627-1A.01

3RT1647-1A.01

Utilization category AC-6b Switching of AC capacitors for an ambient temperature of 60 °C[1]				Auxiliary contacts, unassigned		Rated control supply voltage U_s[2]		DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
Capacitor rating at operational voltage 50/60 Hz				Version					Article No.	Price per PU			
At 230 V	At 400 V	At 525 V	At 690 V	NO	NC	V AC	Hz						
kvar	kvar	kvar	kvar										
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Size S00													
3 ... 7.5	5 ... 12.5	7.5 ... 15	10 ... 21	1	1	24	50 / 60	B	**3RT1617-1AB03**		1	1 unit	41B
						110		B	**3RT1617-1AF03**		1	1 unit	41B
						230		▶	**3RT1617-1AP03**		1	1 unit	41B
Size S0[3]													
3.5 ... 15	6 ... 25	7.8 ... 30	10 ... 42	1	--	24	50	B	**3RT1627-1AB01**		1	1 unit	41B
						110		B	**3RT1627-1AF01**		1	1 unit	41B
						230		▶	**3RT1627-1AP01**		1	1 unit	41B
Size S3													
3.5 ... 30	5 ... 50	7.5 ... 60	10 ... 84	1	--	24	50	B	**3RT1647-1AB01**		1	1 unit	41B
						110		B	**3RT1647-1AF01**		1	1 unit	41B
						230		▶	**3RT1647-1AP01**		1	1 unit	41B

1) For size S3: 55 °C.
2) Operating range: 0.85 ... 1.1 x U_s.
3) For conductor cross-sections > 6 mm^2 use 3RV1925-5AB terminals (2 units).

Other voltages according to page 4/44 on request.

Accessories and spare parts see "SIRIUS 3RT10 contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Options

Rated control supply voltages, possible on request (change of the 10th and 11th position of the Article No.)

Rated control supply voltage U_s	Contactor type	3RT231, 3RT251	3RT232, 3RT252	3RT133, 3RT134, 3RT153	3RT144	3RT1617, 3RT1627, 3RT1647
	Size	S00	S0	S2, S3	S3	S00, S0, S3
Sizes S00 to S3						
AC operation						
Solenoid coils for 50 Hz (exception: Size S00: 50 and 60 Hz[1])						
24 V AC		B0	B0	B0	B0	B0
42 V AC		D0	D0	--	D0	--
48 V AC		H0	H0	--	H0	--
110 V AC		F0	F0	F0	F0	F0
230 V AC		P0	P0	P0	P0	P0
240 V AC		--	--	U0	U0	U0
400 V AC		V0	V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[1]						
24 V AC		B0	C2	C2	C2	C2
42 V AC		D0	D2	D2	D2	--
48 V AC		H0	H2	H2	H2	--
110 V AC		F0	G2	G2	G2	G2
220 V AC		N2	N2	N2	N2	N2
230 V AC		P0	L2	L2	L2	L2
Solenoid coils (for USA and Canada[2]**)**						
50 Hz	**60 Hz**					
110 V AC	120 V AC	K6	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6	P6
Solenoid coils (for Japan)						
50/60 Hz[3]	**60 Hz**[4]					
100 V AC	110 V AC	G6	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6	R6
DC operation						
12 V DC		A4	--	--	--	--
24 V DC		B4	B4	B4	B4	--
42 V DC		D4	D4	D4	D4	--
48 V DC		W4	W4	W4	W4	--
60 V DC		--	--	--	E4	--
110 V DC		F4	F4	F4	F4	--
125 V DC		G4	G4	G4	G4	--
220 V DC		M4	M4	M4	M4	--
230 V DC		P4	--	--	P4	--

Examples

AC operation	3RT2325-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT2325-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
DC operation	3RT2526-2B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT2526-2B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage	Contactor type	3RT1456-6A..., 3RT1466-6A..., 3RT1476-6A...	Rated control supply voltage	Contactor type	3RT1456-6N..., 3RT1466-6N..., 3RT1476-6N...	3RT1456-6P/Q..., 3RT1466-6P/Q..., 3RT1476-6P/Q...
$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	S6, S10, S12
Sizes S6 to S12						
UC operation (AC 40 to 60 Hz, DC)						
23 ... 26 V AC/DC		B3	21 ... 27.3 V AC/DC		B3	--
42 ... 48 V AC/DC		D3	96 ... 127 V AC/DC		F3	F3
110 ... 127 V AC/DC		F3	200 ... 277 V AC/DC		P3	P3
200 ... 220 V AC/DC		M3				
220 ... 240 V AC/DC		P3				
240 ... 277 V AC/DC		U3				
380 ... 420 V AC/DC		V3				
440 ... 480 V AC/DC		R3				
500 ... 550 V AC/DC		S3				
575 ... 600 V AC/DC		T3				

1) Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

2) Coil operating range
Size S00: at 50 Hz: 0.85.... 1.1 x U_s
at 60 Hz: 0.8 ... 1.1 x U_s
Size S0 to S3: at 50 Hz and 60 Hz: 0.8 ... 1.1 x U_s.

3) Coil operating range
Size S00: at 50/60 Hz: 0.85 ...1.1 x U_s
Sizes S0 to S3: at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

4) Coil operating range
at 60 Hz: 0.8 ...1.1 x U_s.

5) Coil operating range: 0.7 x $U_{s\,min}$ ...1.3 x $U_{s\,max}$.

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Overview

Standards

IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274. They have spring-type connections as well as screw connections. The size S00 and S0 contactors have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with surge suppressors. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

Contactors with conventional coil

Control and auxiliary circuits

These contactors have an extended operating range from 0.7 to 1.25 x U_S; on size S00 the solenoid coils are fitted with suppressor diodes, on size S0 with varistors. An additional series resistor is not required.

Note:

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤ 70 °C.

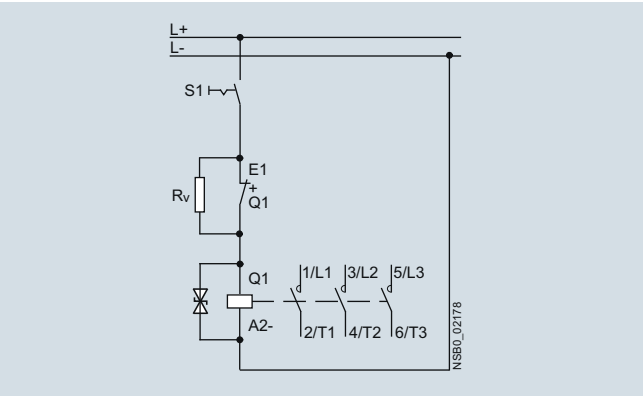
3RT201. contactors with series resistor

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with a surge suppressor (suppressor diode or varistor as preferred).

A surge suppressor (a suppressor diode or varistor as preferred) is integrated.

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.



Circuit diagram (version with suppressor diode)

The size S00 contactors are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated. A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

A circuit diagram showing the terminals is stuck onto each contactor. One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts. With size S00 it is possible to extend the number of auxiliary contacts.

Side-by-side mounting

At ambient temperatures up to 70°C, the size S00 contactors are allowed to be mounted side by side.

3RT202. contactors with solid-state operating mechanism, extended operating range

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with varistors to provide protection against overvoltage.

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.25 x U_S at an ambient temperature of 70 °C. They are supplied as complete units with integrated coil electronics. A varistor is integrated for damping opening surges in the coil.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors for switching motors in the matching size (see exploded drawings of the 3RT20 contactors in Chapter 3, pages 3/6 and 3/7).

Side-by-side mounting

At ambient temperatures up to 70 °C, size S0 of these contactor versions are allowed to be mounted side by side.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

Technical specifications

Type			3RT2017	3RT202.	3RT202.-2XB40-0LA2	3RT202.-2XF40-0LA2
Size			S00	S0	S0	S0
General technical specifications						
Upright mounting position						
• Contactors with series resistor			Special version (on request)			
• Contactors with conventional coil			Special version (on request)			
Ambient temperature						
• During operation		°C	-40 ... +70[1)]		-40 ... +70	
• During storage		°C	-55 ... +80		-55 ... +80	
Control circuit						
Solenoid coil operating range	DC		0.7 ... 1.25 x U_s			
Power consumption of the solenoid coils			For cold coil and 1.0 x U_s			
• Contactors with series resistor	- Closing	W	13	--	--	--
	- Closed	W	4	--	--	--
• Contactors with conventional coil	- Closing	W	2.8	4.5	--	--
	- Closed	W	2.8	4.5	--	--
• Contactors with solid-state operating mechanism	- Closing	W	--	--	6.7	13.2
	- Closed	W	--	--	0.8	1.56

All details and technical specifications not mentioned here are identical to those of the 3RT20 basic versions; see Chapter 3, "Power contactors for switching motors" ➞"SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW".

1) 3RT20..-.K contactors without the Article No. suffix -"0LA0" are coupling contactors, which are certified for the temperature range -25 °C to +60 °C. For railway applications, an additional certification approves these contactors with a minimum distance of 10 mm for the extended temperature range -40 °C to +70 °C.

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Selection and ordering data

DC operation
Spring-type terminals
For screw and snap-on mounting onto standard mounting rails
Solenoid coil with surge suppressor (S00)

3RT201.-2K.4.

3RT201.-2K.42-0LA0

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts			Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Rating[1] of three-phase motors at				Ident. No.	Version				Configurator			
										Article No.	Price per PU		
400 V	230 V	**400 V**	500 V	690 V									
A	kW	**kW**	kW	kW		NO	NC	V DC					
3RT20 contactors for switching motors													
Size S00													
With conventional coil, fitted with suppressor diode													
• 1 NO, Ident. No. **10**					• 1 NC, Ident. No. **01**								
12	3	**5.5**	5.5	5.5	**10**[2]	1	--	24	▶	**3RT2017-2KB41**	1	1 unit	41B
								110	B	**3RT2017-2KF41**	1	1 unit	41B
12	3	**5.5**	5.5	5.5	**01**[2]	--	1	24	▶	**3RT2017-2KB42**	1	1 unit	41B
								110	B	**3RT2017-2KF42**	1	1 unit	41B
With conventional coil, fitted with varistor													
• 1 NO, Ident. No. **10**					• 1 NC, Ident. No. **01**								
12	3	**5.5**	5.5	5.5	**10**[2]	1	--	24	B	**3RT2017-2LB41**	1	1 unit	41B
								110	B	**3RT2017-2LF41**	1	1 unit	41B
12	3	**5.5**	5.5	5.5	**01**[2]	--	1	24	B	**3RT2017-2LB42**	1	1 unit	41B
								110	B	**3RT2017-2LF42**	1	1 unit	41B
With series resistor, fitted with suppressor diode													
12	3	**5.5**	5.5	5.5	**--**[3]	--	1[4]	24	B	**3RT2017-2KB42-0LA0**	1	1 unit	41B
								110	B	**3RT2017-2KF42-0LA0**	1	1 unit	41B
16	4	**7.5**	10	11	**--**[3]	--	1[4]	24	B	**3RT2018-2KB42-0LA0**	1	1 unit	41B
								110	B	**3RT2018-2KF42-0LA0**	1	1 unit	41B
With series resistor, fitted with varistor													
12	3	**5.5**	5.5	5.5	**-**[3]	--	1[4]	24	B	**3RT2017-2LB42-0LA0**	1	1 unit	41B
								110	B	**3RT2017-2LF42-0LA0**	1	1 unit	41B
16	4	**7.5**	10	11	**--**[3]	--	1[4]	24	B	**3RT2018-2LB42-0LA0**	1	1 unit	41B
								110	B	**3RT2018-2LF42-0LA0**	1	1 unit	41B

Online configurator see www.siemens.com/sirius/configurators

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

3) One 4-pole auxiliary switch block according to EN 50005 can be mounted; no distance required for mounting at up to 70 °C.

4) NC contact cannot be used because it is used for switching of the series resistor.

Accessories see "3RT20 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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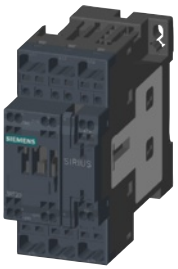
Contactors for Special Applications

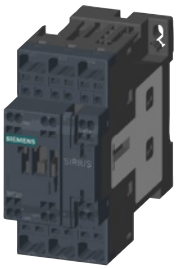
Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

DC operation
Spring-type terminals
For screw and snap-on mounting onto standard mounting rails
Solenoid coil fitted with varistor (S0)



3RT202.-2K.40



3RT202.-2X.40-0LA2

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts			Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Rating[1] of three-phase motors at				Ident. No.	Version				Configurator			
400 V	230 V	**400 V**	500 V	690 V						Article No.	Price per PU		
A	kW	**kW**	kW	kW		NO	NC	V DC					
3RT20 contactors for switching motors													
Size S0													
With conventional operating mechanism[2]													
1 NO + 1 NC, Ident. No. **11**													
17	4	**7.5**	10	11	**11**	1	1	24	B	**3RT2025-2KB40**	1	1 unit	41B
								110	B	**3RT2025-2KF40**	1	1 unit	41B
25	5.5	**11**	11	11	**11**	1	1	24	B	**3RT2026-2KB40**	1	1 unit	41B
								110	B	**3RT2026-2KF40**	1	1 unit	41B
32	7.5	**15**	18.5	18.5	**11**	1	1	24	B	**3RT2027-2KB40**	1	1 unit	41B
								110	B	**3RT2027-2KF40**	1	1 unit	41B
With solid-state operating mechanism													
1 NO + 1 NC, Ident. No. **11**													
17	4	**7.5**	10	11	**11**	1	1	24	B	**3RT2025-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT2025-2XF40-0LA2**	1	1 unit	41B
25	5.5	**11**	11	11	**11**	1	1	24	B	**3RT2026-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT2026-2XF40-0LA2**	1	1 unit	41B
32	7.5	**15**	18.5	18.5	**11**	1	1	24	B	**3RT2027-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT2027-2XF40-0LA2**	1	1 unit	41B
38	7.5	**18.5**	18.5	18.5	**11**	1	1	24	B	**3RT2028-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT2028-2XF40-0LA2**	1	1 unit	41B

Online configurator see www.siemens.com/sirius/configurators

Accessories see "3RT20 contactors", Chapter 3.

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.

2) It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

Standards

IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274 (exception: series resistor S2 and S3). The auxiliary conductor and coil terminals of sizes S2 to S3 are all spring-type terminals.

Control and auxiliary circuits

Contactors are available with:

- Coils with series resistor
- Coils with solid-state control unit

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 °C to +70 °C.

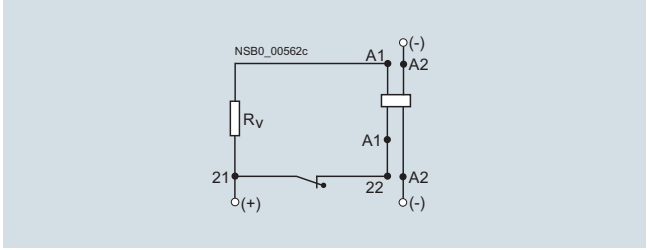
Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

3RT10 contactors with series resistor

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.



Circuit diagram with series resistor

Auxiliary switches

The size S2 to S3 contactors are equipped on the front with an auxiliary switch block with 2 NO + 2 NC contacts. The separate series resistor, which is attached laterally next to the contactor on the 35 mm standard mounting rail, is fitted with connecting cables for mounting onto contactors. A circuit diagram showing the terminals is stuck onto each contactor. The NC contact 21-22 of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts.

Mounting

The resistor module of the size S2 to S3 contactors must be mounted to the left of the contactor owing to the prefabricated connecting cables.

Dimensions

Attaching the series resistor increases the width of contactor sizes S2 and S3.

3RT10 contactors with contactor control unit, extended operating range

They are supplied as complete units with a built-on contactor control unit.

Control and auxiliary circuits

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.25 x U_s at an ambient temperature of 70 °C.

A varistor is integrated for damping opening surges in the coil. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors.

Mounting

At ambient temperatures up to 70 °C, sizes S2 and S3 of these contactor versions are allowed to be mounted side by side.

Dimensions

Because of the built-on contactor control unit, the height of the size S2 and S3 contactors increases by up to 34 mm.

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Contactors for Special Applications

Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

Technical specifications

Type			3RT103.	3RT104.
Size			S2	S3
3RT10 contactors with series resistor				
General technical specifications				
Ambient temperature				
• During operation		°C	-40 ... +70	
Control circuit				
Solenoid coil operating range	AC/DC		0.7 ... 1.25 x U_s	
Power consumption of the solenoid coils			For cold coil and 1.0 x U_s	
• Closing		W	46	78
• Closed		W	14	23
Upright mounting position			--	--
3RT10 contactors with contactor control unit				
Control circuit				
Solenoid coil operating range			0.7 ... 1.25 x U_s	
Power consumption			For cold coil and 1.0 x U_s	
• Closing		W	15	19
• Closed		W	11	12
Upright mounting position			--	--

All details and technical specifications not mentioned here are identical to those of the 3RT10 basic versions; see Chapter 3, "Power contactors for switching motors" →"SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW".

Selection and ordering data

DC operation
Spring-type terminals for auxiliary/control circuits
For screw and snap-on mounting onto standard mounting rails
Solenoid coil fitted with varistor

3RT103.-3K.44-0LA0

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Ratings of three-phase motors at				Version				Article No.	Price per PU			
400 V	230 V	**400 V**	500 V	690 V									
A	kW	**kW**	kW	kW	NO	NC	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Size S2													
With series resistor													
40	11	**18.5**	22	22	2	1 [1]	24	B	**3RT1035-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT1035-3KF44-0LA0**		1	1 unit	41B
50	15	**22**	30	22	2	1 [1]	24	B	**3RT1036-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT1036-3KF44-0LA0**		1	1 unit	41B
Size S3													
With series resistor													
65	18.5	**30**	37	43	2	1 [1]	24	B	**3RT1044-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT1044-3KF44-0LA0**		1	1 unit	41B
80	22	**37**	45	55	2	1 [1]	24	B	**3RT1045-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT1045-3KF44-0LA0**		1	1 unit	41B
95	22	**45**	55	55	2	1 [1]	24	B	**3RT1046-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT1046-3KF44-0LA0**		1	1 unit	41B

[1] The auxiliary contacts are not expandable.

Spare parts see "3RT10 contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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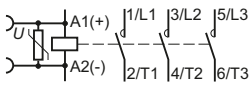
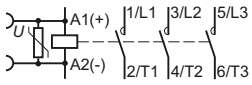
Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

DC operation
For screw and snap-on mounting onto standard mounting rails
Contactor control unit
Solenoid coil fitted with varistor

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

3RT10. .-3X.40-0LA2

Rated data AC-2 and AC-3 T_u: Up to 70 °C		Auxiliary contacts[1]		Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals for coil terminals
Rated operational current I_e up to 400 V	Ratings of three-phase motors at 50 Hz **400 V**	Version				Article No. / Price per PU		Article No. / Price per PU
A	kW	NO	NC	V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail								
Size S2								
								
40	**18.5**	--	--	24	B	**3RT1035-1XB40-0LA2**	B	**3RT1035-3XB40-0LA2**
		--	--	110	B	**3RT1035-1XF40-0LA2**	B	**3RT1035-3XF40-0LA2**
50	**22**	--	--	24	B	**3RT1036-1XB40-0LA2**	B	**3RT1036-3XB40-0LA2**
		--	--	110	B	**3RT1036-1XF40-0LA2**	B	**3RT1036-3XF40-0LA2**
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail								
Size S3								
								
65	**30**	--	--	24	B	**3RT1044-1XB40-0LA2**	B	**3RT1044-3XB40-0LA2**
		--	--	110	B	**3RT1044-1XF40-0LA2**	B	**3RT1044-3XF40-0LA2**
80	**37**	--	--	24	B	**3RT1045-1XB40-0LA2**	B	**3RT1045-3XB40-0LA2**
		--	--	110	B	**3RT1045-1XF40-0LA2**	B	**3RT1045-3XF40-0LA2**
95	**45**	--	--	24	B	**3RT1046-1XB40-0LA2**	B	**3RT1046-3XB40-0LA2**
		--	--	110	B	**3RT1046-1XF40-0LA2**	B	**3RT1046-3XF40-0LA2**

[1] Auxiliary switch blocks mountable as standard contactors.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

3TB5 motor contactors, 55 ... 200 kW

Overview

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All details not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

Series resistor

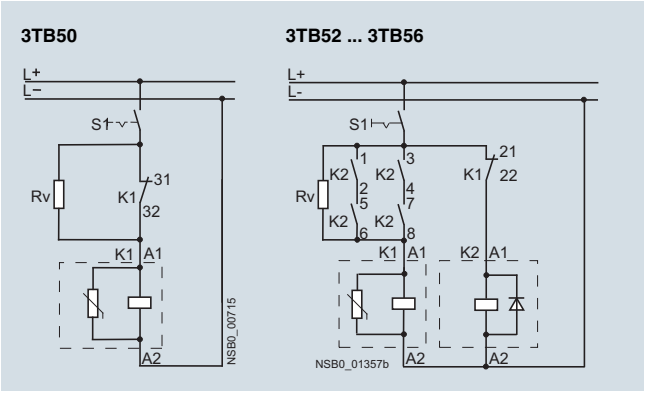
The DC solenoid systems of the 3TB contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

With types 3TB50, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided. With types 3TB52 to 3TB56, the series resistor must be attached separately next to the contactors.

Auxiliary contacts

The contactors are equipped with two lateral auxiliary switch blocks each with 1 NO + 1 NC contact. Further auxiliary switch blocks cannot be fitted to the DC-operated contactors.

One NC contact is required for the series resistor function. Two NO contacts and one NC contact are thus freely available.



Circuit diagrams with series resistor

Reversing contactors

With the 3TB52 to 3TB56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT1317-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

Dimensions

Attaching resistors and varistors increases the width of the contactors.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Type		3TB50	3TB52	3TB54	3TB56
Size		6	8	10	12
General technical specifications					
Ambient temperature					
• During operation	°C	-40 ... +70			
Control circuit					
Solenoid coil operating range		0.7 ... 1.25 x U_s			
Power consumption of the solenoid coils		For cold coil and 1.0 x U_s			
• Closing	W	38	40	190	295
• Closed	W	20	21	43	59

All technical specifications not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

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Selection and ordering data

3TB50 to 3TB56 contactors for screw fixing Solenoid coil fitted with varistor

Size	Rated data AC-2 and AC-3 at 55 °C					Auxiliary contacts[2]		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e at	Ratings[1] of three-phase motors at				Version				Article No.	Price per PU			
	400 V	230 V	**400 V**	500 V	690 V	NO	NC							
	A	kW	**kW**	kW	kW			V DC						
Contactors for switching AC voltage DC operation														
Terminal designations according to EN 50012 or EN 50005.														
6	110	37	**55**	75	90	2	1[3]	24	B	**3TB5017-0LB4**		1	1 unit	41B
								110	▶	**3TB5017-0LF4**		1	1 unit	41B
8	170	55	**90**	110	132	2	1[3]	24	C	**3TB5217-0LB4**		1	1 unit	41B
								110	D	**3TB5217-0LF4**		1	1 unit	41B
10	250	75	**132**	160	200	2	1[3]	24	C	**3TB5417-0LB4**		1	1 unit	41B
								110	A	**3TB5417-0LF4**		1	1 unit	41B
12	400	115	**200**	255	355	2	1[3]	110	▶	**3TB5617-0LF4**		1	1 unit	41B

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be switched must be considered when selecting the units.
2) The number of auxiliary contacts cannot be increased.
3) One NC contact used for series resistor.

Accessories

Spare parts

For contactors		Remarks	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type		V DC						
Solenoid coils									
For contactors with extended operating range									
6	3TB50	With series resistor, without varistor	24	C	**3TY6503-0LB4**		1	1 unit	41B
			110	D	**3TY6503-0LF4**		1	1 unit	41B
8	3TB52 and 3TC52		24	D	**3TY6523-0LB4**		1	1 unit	41B
			110	D	**3TY6523-0LF4**		1	1 unit	41B
10	3TB54		24	C	**3TY6543-0LB4**		1	1 unit	41B
			110	C	**3TY6543-0LF4**		1	1 unit	41B
12	3TB56 and 3TC56		24	C	**3TY6563-0LB4**		1	1 unit	41B
			110	C	**3TY6563-0LF4**		1	1 unit	41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

3TC contactors for switching DC voltage, 2-pole

Overview

Standards

IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274 (exception: series resistor). Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TC contactors.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

At ambient temperatures > 55 °C, a clearance of 10 mm is required for side-by-side mounting of size 2 contactors. There is no need to reduce the technical specifications.

Series resistor

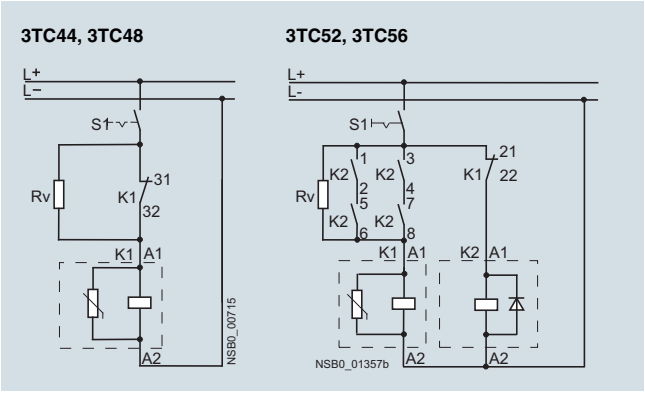
The DC solenoid systems of the 3TC contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

With types 3TC48, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided, while in the case of the 3TC44 it must be mounted and wired between the contactor poles. With types 3TC52 and 3TC56, the series resistor must be attached separately next to the contactors.

Auxiliary contacts

The contactors are equipped with two lateral auxiliary switch blocks each with 1 NO + 1 NC contact. Further auxiliary switch blocks cannot be fitted to the DC-operated contactors.

One NC contact is required for the series resistor function. Two NO contacts and one NC contact are thus freely available.



Circuit diagrams with series resistor

Reversing contactors

With the 3TC52 and 3TC56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT1317-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

Dimensions

Attaching resistors and varistors increases the width of the contactors.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Type		3TC44	3TC48	3TC52	3TC56
Size		2	4	8	12
General technical specifications					
Ambient temperature					
• During operation	°C	-40 ... +70			
Control circuit					
Solenoid coil operating range		0.7 ... 1.25 x U_s			
Power consumption of the solenoid coils		For cold coil and 1.0 x U_s			
• Closing	W	48	26	40	295
• Closed	W	13	14	21	59

All details and technical specifications not mentioned here are identical to those of the basic versions of the 3TC contactors; see page 4/56.

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Selection and ordering data

3TC44: for screw and snap-on mounting onto 35 mm standard mounting rail
3TC48 to 3TC56: screw fixing
Solenoid coil fitted with varistor

3TC48

Size	Utilization category	Rated operational current I_e at	Rated power of loads at				Auxiliary contacts[1]		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
							Version				Article No.	Price per PU			
		750 V	220 V	440 V	600 V	750 V									
		A	kW	kW	kW	kW	NO	NC	V DC						
Contactors for switching DC voltage DC operation															
Terminal designations according to EN 50012 and EN 50005															
2	DC-1	32	7	14	19.2	24	2	1[2]	24	B	**3TC4417-0LB4**		1	1 unit	41B
	DC-3/DC-5	7.5	5	9	9	4			110	C	**3TC4417-0LF4**		1	1 unit	41B
4	DC-1	75	16.5	33	45	56	2	1[2]	24	C	**3TC4817-0LB4**		1	1 unit	41B
	DC-3/DC-5	75	13	27	38	45			110	C	**3TC4817-0LF4**		1	1 unit	41B
8	DC-1	170	48	97	132	165	2	1[2]	24	C	**3TC5217-0LB4**		1	1 unit	41B
	DC-3/DC-5	170	41	82	110	110			110	C	**3TC5217-0LF4**		1	1 unit	41B
12	DC-1	400	88	176	240	300	2	1[2]	24	C	**3TC5617-0LB4**		1	1 unit	41B
	DC-3/DC-5	400	70	140	200	250			110	C	**3TC5617-0LF4**		1	1 unit	41B

1) The number of auxiliary contacts cannot be increased.
2) One NC contact used for series resistor.

Accessories

Spare parts

For contactors		Remarks	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type		V DC						
Arc chutes									
For contactors with extended operating range									
2	3TC4417-0L..	With cutout for resistor mounting		B	**3TY2442-0B**		1	1 unit	41B
Solenoid coils									
For contactors with extended operating range									
2	3TC44	With series resistor, without varistor	24	C	**3TY6443-0LB4**		1	1 unit	41B
			110	C	**3TY6443-0LF4**		1	1 unit	41B
4	3TC48		24	C	**3TY6483-0LB4**		1	1 unit	41B
			110	C	**3TY6483-0LF4**		1	1 unit	41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TC contactors; see Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TC contactors, 1- and 2-pole, 32 ... 400 A

Overview

3TC4 and 3TC5

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The DC motor ratings given in the tables are applicable to the DC-3 and DC-5 utilization categories with two-pole switching of the load or with the two conducting paths of the contactor connected in series.

One contactor conducting path can switch full power up to 220 V. For voltages over 220 V, the two conducting paths are to be switched in series; see "Technical specifications, main circuit", page 4/58.

Auxiliary contacts

The contactors are equipped with two lateral auxiliary switch blocks each with 1 NO + 1 NC contact. On the contactors 3TC48 to 3TC56 with AC operation, a second auxiliary switch block can be mounted on the right and left. On contactors with DC operation, expansion of the auxiliary contacts is not possible.

3TC7

IEC 60947-4-1, EN 60947-4-1.

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC circuits.

The solenoid excitation is configured for a particularly large operating range. It is between 0.7 or 0.8 to 1.2 × U_s.

3TC74 contactors can be used at up to 750 V/400 A and 50 Hz in AC-1 operation.

For voltages over 750 V, the two conducting paths (3TC74: two contactors) are to be switched in series; see "Technical specifications, main circuit", page 4/59.

Application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

A version with an especially large actuating voltage is available for operation in electrically driven vehicles and in switchgear with a particularly large coil operating range (see page 4/55).

Technical specifications

Type			3TC4 and 3TC7	3TC5
Rated data of the auxiliary contacts				
Rated insulation voltage U_i (pollution degree 3)		V	690	
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10	10
AC load **Rated operational current I_e/AC-15/AC-14** • For rated operational voltage U_e				
	24 V	A	10	10
	110 V	A	10	10
	125 V	A	10	10
	220 V	A	6	6
	230 V	A	5.6	5.6
	380 V	A	4	4
	400 V	A	3.6	3.6
	500 V	A	2.5	2.5
	660 V	A	2.5	2.5
	690 V	A	--	--
DC load **Rated operational current I_e/DC-12** • For rated operational voltage U_e				
	24 V	A	10	10
	60 V	A	10	10
	110 V	A	3.2	8
	125 V	A	2.5	6
	220 V	A	0.9	2
	440 V	A	0.33	0.6
	600 V	A	0.22	0.4
Rated operational current I_e/DC-13 • For rated operational voltage U_e				
	24 V	A	10	10
	48 V	A	5	5
	110 V	A	1.14	2.4
	125 V	A	0.98	2.1
	220 V	A	0.48	1.1
	440 V	A	0.13	0.32
	600 V	A	0.07	0.21

Type		3TC44 ... 3TC56
CSA and UL rated data of the auxiliary contacts		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600

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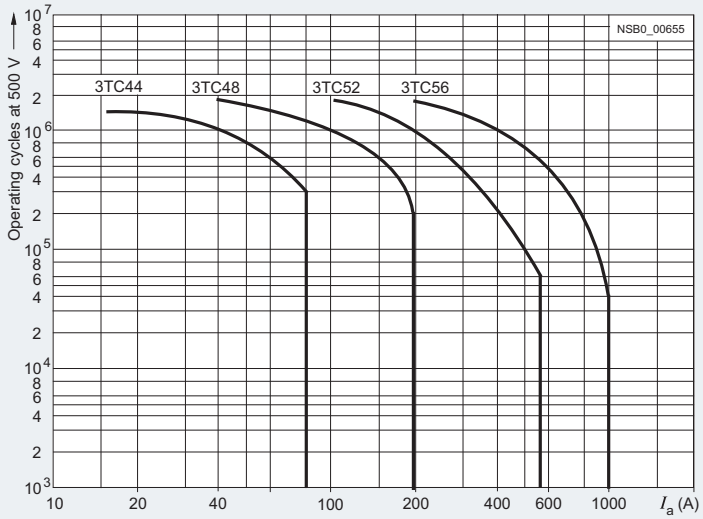
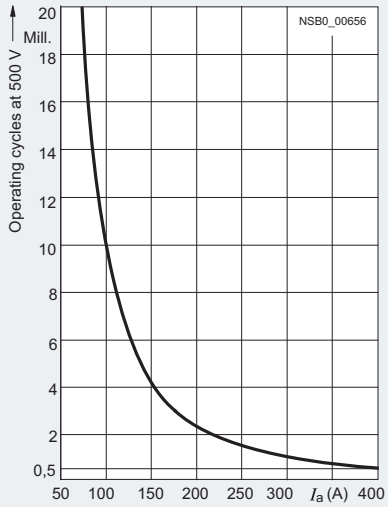
Type	3TC44 ... 3TC78

Contact endurance of the main contacts

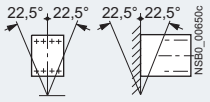


3TC44 to 3TC56 contactors



3TC74 and 3TC78 contactors

Legend for the diagrams:
I_a = Breaking current

Contactors	Type Size		3TC44 2	3TC48 4	3TC52 8	3TC56 12
General technical specifications						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance	Operating cycles		10 million			
Electrical endurance	Operating cycles		[1]			
Rated insulation voltage U_i (pollution degree 3)		V	800		1 000	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	Up to 300		Up to 660	
Mirror contacts[2] A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F			
Permissible ambient temperature						
• During operation		°C	-25 ... +55			
• During storage		°C	-50 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open, for AC operation, coil assembly IP40			
Shock resistance	Rectangular pulse	*g*/ms	7.5/5 and 3.4/10	10/5 and 5/10	12/5 and 5.5/10	12/5 and 5.6/10
Short-circuit protection						
Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE						
• Type of coordination "1"		A	50	160	250	400
• Type of coordination "2"		A	35	63	80	250
Auxiliary circuit (Short-circuit current $I_k \leq 1$ kA)						
• Fuse links, operational class gG: DIAZED, type 5SB; NEOZED, type 5SE		A	16			
• Miniature circuit breaker with C characteristic		A	10			

[1] See the endurance diagram above.

[2] For 3TC44, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.

Rated data of the auxiliary contacts see page 4/56.

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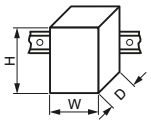
3TC contactors, 1- and 2-pole, 32 ... 400 A

Type			**3TC44**	**3TC48**	**3TC52**	**3TC56**
Size			**2**	**4**	**8**	**12**
Dimensions (W x H x D)						
• DC operation		mm	70 x 85 x 141	100 x 183 x 180	135 x 238 x 232	160 x 279 x 310
• AC operation		mm	70 x 85 x 100	100 x 183 x 154	135 x 238 x 200	160 x 279 x 251
Control circuit						
Solenoid coil operating range			0.8 ... 1.1 x U_s			
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)						
• DC operation	- Closing = Closed	W	10	19	30	86
• AC operation, 50 Hz coil	- Closing	VA/p.f.	68/0.86	300/0.5	640/0.48	1780/0.3
	- Closed	VA/p.f.	10/0.29	26/0.24	46/0.23	121/0.22
• AC operation, 60 Hz coil	- Closing	VA/p.f.	95/0.79	365/0.45	730/0.38	2140/0.3
	- Closed	VA/p.f.	12/0.3	35/0.26	56/0.24	140/0.29
• AC operation, 50/60 Hz coil	- Closing at 50 Hz/60 Hz	VA/p.f.	79/73/0.83/0.78	--	--	--
	- Closed at 50 Hz/60 Hz	VA/p.f.	11/9/0.28/0.27	--	--	--
Operating times (for 0.8 ... 1.1 x U_s) Total break time = Opening delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• DC operation	- Closing delay	ms	35 ... 190	90 ... 380	120 ... 400	110 ... 400
	- Opening delay[1]	ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	- Closing delay	ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	- Opening delay[1]	ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	- DC-1	ms	20			
	- DC-3/DC-5	ms	30			
Main circuit						
Load rating with DC						
Utilization category DC-1, switching resistive loads (L/R ≤ 1 ms)						
• Rated operational currents I_e (at 55 °C)	Up to U_e 750 V	A	32	75	220	400
• Minimum conductor cross-section		mm^2	6	25	95	240
• Rated power at U_e	At 220 V	kW	7	16.5	48	88
(≤ 220 V DC: one conducting path,	440 V	kW	14	33	97	176
> 220 V DC: two conducting paths in series)	600 V	kW	19.2	45	132	240
	750 V	kW	24	56	165	300
Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤ 15 ms)						
• Rated operational currents I_e (at 55 °C)	Up to 220 V	A	32	75	220	400
	440 V	A	29	75	220	400
	600 V	A	21	75	220	400
	750 V	A	7.5	75	170	400
• Rated power at U_e	At 110 V	kW	2.5	6.5	20	35
(≤ 220 V DC: one conducting path,	220 V	kW	5	13	41	70
> 220 V DC: two conducting paths in series)	440 V	kW	9	27	82	140
	600 V	kW	9	38	110	200
	750 V	kW	4	45	110	250
Switching frequency						
Switching frequency *z* in operating cycles/hour						
AC/DC operation						
• With resistive load DC-1		h^{-1}	1 500	1 000		
• For inductive load DC-3/DC-5		h^{-1}	750	600		
Conductor cross-sections (1 or 2 conductors connectable)						
Main conductors:			**Screw terminals**			
• Solid		mm^2	2 x (2.5 ... 10)	2 x (6 ... 16)	--	--
• Finely stranded with end sleeve		mm^2	2 x (1.5 ... 4)	--	--	--
• Stranded with cable lug		mm^2	2 x 16	2 x 35	2 x 120	2 x 150
• Pin-end connector to DIN 46231		mm^2	2 x (1 ... 6)	--	--	--
• Busbars		mm	--	15 x 2.5	25 x 4	2 x (25 x 3)
• Terminal screw			M5	M6	M10	M10
Auxiliary conductors:						
• Solid		mm^2	2 x (1 ... 2.5)			
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 1.5)			

[1] The opening delay times can increase if the contactor coils are damped against voltage peaks. 3TC44 contactors are not allowed to be fitted with diodes.

Rated data of the auxiliary contacts see page 4/56.

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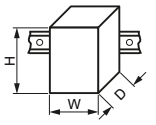
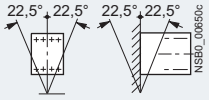
Type				**3TC74**	**3TC78**
Design				**1-pole contactors**	**2-pole contactors**
Dimensions			mm	78 x 352 x 276	160 x 366 x 290
General technical specifications					
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.					
Mechanical endurance		Operating cycles		30 million	
Electrical endurance		Operating cycles		[1]	
Rated insulation voltage U_i (pollution degree 3)			V	1 500	
Rated impulse withstand voltage U_{imp}			kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N			V	630	
Permissible ambient temperature			°C	-25 ... +55	
Degree of protection acc. to IEC 60947-1 Appendix C				IP00/open	
Short-circuit protection					
Main circuit Fuse links, operational class gG: LV HRC, type 3NA					
• Type of coordination "1"			A	630	
• Type of coordination "2"			A	500	
Auxiliary circuit (short-circuit current $I_k \leq 1$ kA)					
• Fuse links, operational class gG: DIAZED, type 5SB; NEOZED, type 5SE			A	16	
• Miniature circuit breaker with C characteristic			A	10	
Control circuit					
Solenoid coil operating range					
• DC operation	At U_c = 24 V At U_c > 24 V			0.8 ... 1.2 x U_s 0.7 ... 1.2 x U_s	
• AC operation	At U_c = 24 V At U_c > 24 V			0.7 ... 1.15 x U_s 0.7 ... 1.14 x U_s	
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)					
• DC operation	Closing = Closed		W	46	92
• AC operation, 50 Hz	Closing = Closed		VA p.f.	80 0.95	160 0.95
Operating times (Total break time = Opening delay + Arcing time)				(The values apply up to and including 15 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)	
• AC and DC operation	- Closing delay - Opening delay		ms ms	60 ... 100 20 ... 35	
• Arcing time at 0.06 ... 4 x I_e			ms	40 ... 70	
Main circuit					
Load rating with DC					
Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)					
• Rated operational current I_e/DC-1 (at 55 °C)			A	500	500
• Minimum conductor cross-section			mm^2	2 x 150	2 x 150
• Rated power (≤ 750 V DC: one conducting path, > 750 V DC: two conducting paths in series)	At 220 V 440 V 600 V		kW kW kW	110 220 300	110 220 300
	750 V 1200 V 1500 V		kW kW kW	375 -- --	375 600 750
• Critical currents, without arc extinction	At 440 V 600 V 750 V		A A A	≤ 7 ≤ 13 ≤ 15	-- -- --
	≤ 800 V 1200 V 1500 V		A A A	-- -- --	≤ 7 ≤ 13 ≤ 15
Utilization categories DC-3 and DC-5, switching DC motors				[2]	
Permissible rated current for regenerative braking at 110 ... 600 V			A	400	
Switching frequency					
Switching frequency z in operating cycles/hour					
AC/DC operation					
• With resistive load DC-1			h^{-1}	750	1 000
• For inductive load DC-3/DC-5			h^{-1}	500	500

[1] Endurance see page 4/57.
[2] See "Selection and Ordering Data", page 4/61.

Rated data of the auxiliary contacts see page 4/56.

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3TC contactors, 1- and 2-pole, 32 ... 400 A

Type		3TC74	3TC78
Design		1-pole contactors	2-pole contactors
Conductor cross-sections			
Main conductors		Screw terminals	
• Stranded with cable lug	mm^2	2 x ... 150	
• Busbars	mm	2 x (30 x 4)	
Auxiliary conductors			
• Solid	mm^2	1 ... 2.5	
• Finely stranded with end sleeve	mm^2	0.75 ... 1.5	

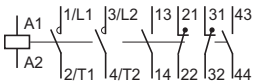
Selection and ordering data

3TC44

3TC48

Size	Utilization category[1]	Operational current I_e[3]	Ratings of DC motors at 110 V	220 V	440 V	600 V	750 V	Auxiliary contacts[2] Version		Rated control supply voltage U_s	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A	kW	kW	kW	kW	kW	NO	NC	V						
3TC44 to 3TC56 two-pole contactors																

Terminal designations according to EN 50012



DC operation

Screw fixing and snap-on mounting onto TH 35 standard mounting rail

2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	24 DC	▶	**3TC4417-0AB4**	1	1 unit		41B
										110 DC	▶	**3TC4417-0AF4**	1	1 unit		41B
										220 DC	▶	**3TC4417-0AM4**	1	1 unit		41B
Screw fixing																
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	24 DC	A	**3TC4817-0AB4**	1	1 unit		41B
										110 DC	A	**3TC4817-0AF4**	1	1 unit		41B
										220 DC	A	**3TC4817-0AM4**	1	1 unit		41B
8	DC-3, DC-5	220[4]	20	41	82	110	110	2	2	24 DC	C	**3TC5217-0AB4**	1	1 unit		41B
										110 DC	C	**3TC5217-0AF4**	1	1 unit		41B
										220 DC	C	**3TC5217-0AM4**	1	1 unit		41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	24 DC	C	**3TC5617-0AB4**	1	1 unit		41B
										110 DC	C	**3TC5617-0AF4**	1	1 unit		41B
										220 DC	C	**3TC5617-0AM4**	1	1 unit		41B

AC operation, 50 Hz

Screw fixing and snap-on mounting onto TH 35 standard mounting rail

2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	220/230 AC[5]	▶	**3TC4417-0BP0**	1	1 unit		41B
										110 / 110 AC	▶	**3TC4417-0BF0**	1	1 unit		41B
Screw fixing																
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	220/230 AC[5]	A	**3TC4817-0BP0**	1	1 unit		41B
										110 AC	C	**3TC4817-0BF0**	1	1 unit		41B
8	DC-3, DC-5	220[4]	20	41	82	110	110	2	2	220/230 AC[5]	A	**3TC5217-0BP0**	1	1 unit		41B
										110 AC	C	**3TC5217-0BF0**	1	1 unit		41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	220/230 AC[5]	C	**3TC5617-0BP0**	1	1 unit		41B
										110 AC	C	**3TC5617-0BF0**	1	1 unit		41B

Other rated control supply voltages according to page 4/62 on request.

1) Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactors and Contactor Assemblies".

2) The fitting of auxiliary switches cannot be altered on DC-operated contactors.

3) The following rated operational currents are permitted for reversing duty with 3TC44 to 3TC56 contactors:

Contactor Type	Rated operational voltage 110 V, 220 V	440 V
3TC44	32 A	7 A
3TC48	75 A	75 A
3TC52	170 A	170 A
3TC56	400 A	400 A

4) At > 600 V: I_e = 170 A.

5) Operating range at 220 V: 0.85 to 1.15 x U_s

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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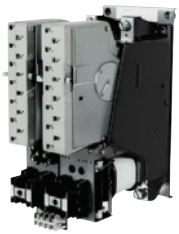
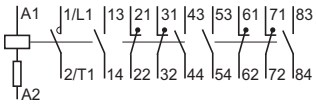
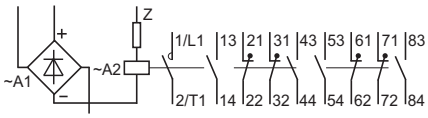
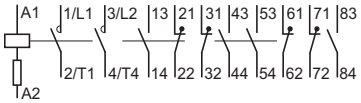
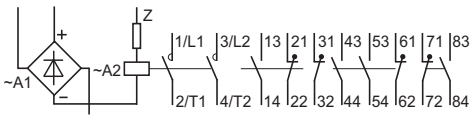
3TC74


3TC78

Size	Utilization category[1]	Operational current I_e	Ratings of DC motors at 110 V	220 V	440 V	600 V	750 V	1200 V	1500 V	Auxiliary contacts[2] Version		Rated control supply voltage U_s	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
										NO	NC							
		A	kW	kW	kW	kW	kW	kW	kW			V						
3TC74 1-pole contactors · Operational voltage up to 750 V																		
DC operation																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	24 DC	C	**3TC7414-0EB**		1	1 unit	41B
												110 DC	C	**3TC7414-0EF**		1	1 unit	41B
AC operation, 50 Hz																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	230/220 AC[3]	C	**3TC7414-1CM**		1	1 unit	41B
3TC78 2-pole contactors · Operational voltage up to 1500 V																		
DC operation																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	24 DC	C	**3TC7814-0EB**		1	1 unit	41B
												110 DC	C	**3TC7814-0EF**		1	1 unit	41B
AC operation, 50 Hz																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	230/220 AC[3]	C	**3TC7814-1CM**		1	1 unit	41B

[1] Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactors and Contactor Assemblies".

[2] The fitting of auxiliary switches cannot be altered on DC-operated contactors.

[3] Upper operating range limit at 230 V: 1.14 x U_s.

Other rated control supply voltages according to page 4/62 on request.

Spare parts see page 4/64.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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4

Options

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Contactor type 3TC44	3TC48	3TC52/56	3TC74/78
AC operation				
Solenoid coils for 50 Hz				
24 V AC	B0	B0	--	--
110 V AC	F0	F0	F0	--
230/220 V AC	P0[1]	P0[1]	P0[1]	M[2]
240 V AC	U0	U0	--	--
AC operation				
Solenoid coils for 50/60 Hz				
24 V AC	C2	--	--	--
110 V AC	G2	--	--	--
120 V AC	K2	--	--	--
220 V AC	N2	--	--	--
230 V AC	L2	--	--	--
DC operation				
24 V DC	B4	B4	B4	B
48 V DC	W4	W4	--	--
60 V DC	E4	E4	--	--
110 V DC	F4	F4	F4	F
125 V DC	G4	G4	--	--
220 V DC	M4	M4	M4	M
230 V DC	P4	P4	--	--

[1] Operating range at 220 V or 380 V: 0.85 to 1.15 × U_s; lower operating range limit according to IEC 60947.

[2] Upper operating range limit at 230 V: 1.14 × U_s.

Accessories

For contactors Size	Type	Version Auxiliary contacts NO	NC	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Second auxiliary switch blocks (only for AC operation)									
4	3TC48	2nd auxiliary switch block, left		►	**3TY6501-1K**		1	1 unit	41B
		1	1		--				
		2nd auxiliary switch block, right		D	**3TY6501-1L**		1	1 unit	41B
		1	1		--				
8 and 12	3TC52, 3TC56	2nd auxiliary switch block, left		C	**3TY6561-1K**		1	1 unit	41B
		1	1		--				
		2nd auxiliary switch block, right		C	**3TY6561-1L**		1	1 unit	41B
		1	1		--				
Solid-state compatible auxiliary switch blocks									
		For operation in dusty atmospheres and in solid-state circuits with rated operational currents I_e AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V							
2 and 4	3TC44, 3TC48	2nd auxiliary switch block, left or right (replacement for 3TY6561-1U, 3TY6561-1V)		►	**3TY7561-1UA00**		1	1 unit	41B
		Mounting:	Left	Right					
		1 CO contact	51 52 54	61 62 64					

5TY7561-1.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	For contactors Size	Type	Version	Rated control supply voltage U_s V AC	V DC	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors · Varistors											
3TX7402-3.	**2**	3TC44[1]	**Varistors**[2] With line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7402-3G**		1	1 unit	41B
				48 ... 127	70 ... 150	A	**3TX7402-3H**		1	1 unit	41B
				127 ... 240	150 ... 250	A	**3TX7402-3J**		1	1 unit	41B
				240 ... 400	--	C	**3TX7402-3K**		1	1 unit	41B
				400 ... 600	--	C	**3TX7402-3L**		1	1 unit	41B
3TX7462-3.	**4**	3TC48	**Varistors**[2] For sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	A	**3TX7462-3G**		1	1 unit	41B
				48 ... 127	70 ... 150	B	**3TX7462-3H**		1	1 unit	41B
				127 ... 240	150 ... 250	A	**3TX7462-3J**		1	1 unit	41B
				240 ... 400	--	B	**3TX7462-3K**		1	1 unit	41B
				400 ... 600	--	B	**3TX7462-3L**		1	1 unit	41B
	8 and 12	3TC52, 3TC56	**Varistors** For sticking onto the contactor base or for mounting separately	24 ... 48	--	A	**3TX7462-3G**		1	1 unit	41B
				48 ... 127	--	B	**3TX7462-3H**		1	1 unit	41B
				127 ... 240	--	A	**3TX7462-3J**		1	1 unit	41B
				240 ... 400	--	B	**3TX7462-3K**		1	1 unit	41B
				400 ... 600	--	B	**3TX7462-3L**		1	1 unit	41B
3TX7522-3.	**8 and 12**	3TC52, 3TC56	**Varistors**[2] For separate screw fixing or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	**3TX7522-3G**		1	1 unit	41B
				--	70 ... 150	B	**3TX7522-3H**		1	1 unit	41B
				--	150 ... 250	B	**3TX7522-3J**		1	1 unit	41B
Surge suppressors · RC elements											
3TX7462-3., 3TX7522-3.	**4**	3TC48	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	C	**3TX7462-3R**		1	1 unit	41B
				--	24 ... 70	B	**3TX7522-3R**		1	1 unit	41B
				48 ... 127	--	A	**3TX7462-3S**		1	1 unit	41B
				--	70 ... 150	B	**3TX7522-3S**		1	1 unit	41B
				127 ... 240	--	A	**3TX7462-3T**		1	1 unit	41B
				--	150 ... 250	B	**3TX7522-3T**		1	1 unit	41B
				240 ... 400	--	A	**3TX7462-3U**		1	1 unit	41B
				400 ... 600	--	B	**3TX7462-3V**		1	1 unit	41B
	8 and 12	3TC52, 3TC56	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	**3TX7522-3R**		1	1 unit	41B
				48 ... 127	--	B	**3TX7522-3S**		1	1 unit	41B
				127 ... 240	--	B	**3TX7522-3T**		1	1 unit	41B
				240 ... 400	--	B	**3TX7522-3U**		1	1 unit	41B
				400 ... 600	--	B	**3TX7522-3V**		1	1 unit	41B
Surge suppressors · Diodes											
3TX7462-3.	**4 to 12**	3TC48, 3TC52, 3TC56	**Diode assemblies**[3] (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	A	**3TX7462-3D**		1	1 unit	41B

[1] The connection piece for mounting the surge suppressor must be bent slightly.

[2] Includes the peak value of the alternating voltage on the DC side.

[3] Not for DC economy circuit.

	For contactors Size	Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers									
3TX6526-3B	**6**	3TC48	For protection against inadvertent contact with exposed busbar connections Can be screwed on free screw end. Covers one busbar connection (1 set = 6 units).	M6 B	**3TX6506-3B**		1	1 unit	41B
	8 and 12	3TC52, 3TC56		M10 B	**3TX6546-3B**		1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Spare parts

For contactors Size	Type	Version Auxiliary contacts NO	NC	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switch blocks									
For mounting on the side		Left	Right						
2 and 4	3TC44, 3TC48	Auxiliary switch block (replacement for 3TY6501-1A/-1B)		►	**3TY6501-1AA00**		1	1 unit	41B
		1	1						
8 and 12	3TC52, 3TC56	Auxiliary switch block, left		►	**3TY6561-1A**		1	1 unit	41B
		1	1	--					
		Auxiliary switch block, right		►	**3TY6561-1B**		1	1 unit	41B
		1	1	--					

3TY6561-1A

For contactors Size	Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contacts with fixing parts								
		In order to ensure reliable operation of the contactors, only **original replacement contacts** should be used.						
2	3TC44	(1 set = 2 moving and 4 fixed switching elements)	B	**3TY2440-0A**		1	1 unit	41B
4	3TC48		B	**3TY2480-0A**		1	1 unit	41B
8	3TC52		B	**3TY2520-0A**		1	1 unit	41B
12	3TC56		C	**3TY2560-0A**		1	1 unit	41B
Arc chutes								
2	3TC44	Arc chutes, 2-pole	C	**3TY2442-0A**		1	1 unit	41B
4	3TC48		C	**3TY2482-0A**		1	1 unit	41B
8	3TC52		C	**3TY2522-0A**		1	1 unit	41B
12	3TC56		C	**3TY2562-0A**		1	1 unit	41B
Solenoid coils								
DC operation[1]								
2	3TC44			**3TY6443-0B..**				
4	3TC48			**3TY6483-0B..**				
8	3TC52			**3TY6523-0B..**				
12	3TC56			**3TY6563-0B..**				
AC operation[1]								
2	3TC44			**3TY7403-0A..**				
4	3TC48			**3TY6483-0A..**				
8	3TC52			**3TY6523-0A..**				
12	3TC56			**3TY6566-0A..**				

3TY2520-0A

3TY2482-0A

[1] Rated control supply voltages see table, page 4/62.
The 10th and 11th digit of the Article No. must be supplemented accordingly.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For contactors	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Type			Article No. Price per PU			
Auxiliary switch blocks						
3TC74	4 NO + 4 NC	B	**3TY2741-2J**	1	1 unit	41B
3TC78	Auxiliary switch block left, with 2 NO + 2 NC	▶	**3TY2781-2C**	1	1 unit	41B
	Auxiliary switch block right, with 2 NO + 2 NC	C	**3TY2781-2D**	1	1 unit	41B

For contactors	Version	Rated control supply voltage U_s	DT	Article No. Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC/DC					
Surge suppressors · Varistors							
3TC7	For sticking onto the contactor base	24	C	**3TX2746-2F**	1	1 unit	41B
		110	C	**3TX2746-2G**	1	1 unit	41B
Contacts with fixing parts							
3TC7	Main contacts (1 set) 2 units required per contactor	--	C	**3TY2740-0E**	1	1 unit	41B
Arc chutes							
3TC7	For 3TC78: 2 units required per contactor	--	C	**3TY2742-0C**	1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TG10 contactors, 4-pole, 4 kW

Overview

Version

The 3TG10 power relays/miniature contactors with 4 main contacts are available with screw terminals or 6.3 mm × 0.8 mm flat connectors. The versions with screw terminals are suitable for use in any climate and finger-safe according to EN 50274.

The 3TG10 miniature contactors are characterized by their width of only 36 mm.

Surge suppression

The 3TG10 power relays/miniature contactors have an integrated protective circuit against opening surges.

Application

Because they are hum-free they are suitable for use in household appliances and distribution boards in office and residential areas. They can also be used for applications where there is little space such as air conditioners, heating systems, pumps and fans, i.e. for simple electrical controls.

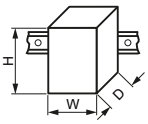
Standards

IEC 60947-1, IEC 60947-4-1, IEC 60947-5-1

Overload and short-circuit protection

The 3UA7 overload relay can be used for overload protection. This applies to mounting onto contactors and to stand-alone installation.

Technical specifications

Type				**3TG10**
Dimensions (W x H x D)			mm	36 x 56 x 56
• With 3UA7 overload relay mounted below			mm	45 x 100 x 62
General technical specifications				
Endurance				
• Mechanical	Operating cycles			3 million
• Electrical				
- AC-1 at I_e	Operating cycles			0.1 million
- AC-3 at I_e	Operating cycles			0.4 million
Rated insulation voltage U_i (pollution degree 3)			V	400
Rated impulse withstand voltage U_{imp}			kV	4
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N			V	Up to 300
Permissible ambient temperature				
• During operation[1]			°C	-25 ... + 55
• During storage			°C	-50 ... + 80
Degree of protection according to IEC 60947-1 and IEC 60529				IP00, drive system IP20
Short-circuit protection				
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1				
• Type of coordination "1"			A	25
• Type of coordination "2"			A	10
Miniature circuit breakers, C characteristic			A	10
Control circuit				
Solenoid coil operating range				0.85 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)				
• AC operation, 45 ... 450 Hz			VA	4.4
- P.f.				0.9 (hum-free)
• DC operation			W	4
Load rating with AC				
Utilization category AC-1, switching resistive loads				
Rated operational current I_e up to 400 V at 55 °C[1]			A	20 for screw terminals, 16 for flat connector
Rated power U_e for AC loads with p.f. = 1, 230/220 V				
• For screw terminals			kW	7.5 (13 at 400 V)
• For flat connector			kW	6 (10 at 400 V)
Minimum conductor cross-section for load with I_e			mm^2	2.5
Utilization categories AC-2 and AC-3 **Operational current for AC-3 at 400 V rated value**			A	8.4
Rated power for slipring or squirrel-cage motors with 50 and 60 Hz and at 400 V			kW	4
Utilization category AC-5a (permissible nominal impedance: ≥ 0.5 Ω) **Switching of gas discharge lamps** Per main current path at 230 V, 50 Hz Rated power/rated operational current per lamp				
• Uncorrected	18 W	0.37 A		43
	36 W	0.43 A		37
	58 W	0.67 A		24
• DUO switching	18 W	2 x 0.11 A		2 x 81
	36 W	2 x 0.21 A		2 x 42
	58 W	2 x 0.32 A		2 x 28

[1] If the three main current paths carry a load of 20 A, the following applies if I > 10 A in the fourth conducting path: Permissible ambient temperature 40 °C.

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3TG10 contactors, 4-pole, 4 kW

Type						3TG10
Load rating with AC						
Switching gas discharge lamps with correction or ECG Per main current path 230 V, 50 Hz						
Connection	Rated power per lamp	Capacitor capacitance	Rated operational current per lamp			
• Shunt compensation	L18 W	4.5 µF	0.11 A		Unit(s)	15
	L36 W	4.5 µF	0.21 A		Unit(s)	15
	L58 W	7 µF	0.32 A		Unit(s)	10
• With ECG (single lamp)	L18 W	6.8 µF	0.10 A		Unit(s)	39
	L36 W	6.8 µF	0.18 A		Unit(s)	39
	L58 W	10 µF	0.27 A		Unit(s)	26
• With ECG (two lamps)	L18 W	10 µF	0.18 A		Unit(s)	2 x 26
	L36 W	10 µF	0.35 A		Unit(s)	2 x 26
	L58 W	22 µF	0.52 A		Unit(s)	2 x 12
Utilization category AC-5b, switching incandescent lamps Per main current path at 230 V, 50 Hz					kW	1.6
Load rating with DC						
Utilization category DC-1, switching resistive loads (*L/R* ≤ 15 ms) • Rated operational currents I_e						
- 1 conducting path				Up to 24 V	A	16
				60 V	A	6
				110 V	A	2
				220/240 V	A	0.8
- 2 conducting paths in series				Up to 24 V	A	16
				60 V	A	16
				110 V	A	6
				220/240 V	A	1.6
- 3 conducting paths in series				Up to 24 V	A	18
				60 V	A	18
				110 V	A	16
				220/240 V	A	6
- 4 conducting paths in series				Up to 24 V	A	20
				60 V	A	20
				110 V	A	20
				220/240 V	A	20
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (*L/R* ≤ 15 ms)** • Rated operational currents I_e						
- 1 conducting path				Up to 24 V	A	10
				60 V	A	0.5
				110 V	A	0.15
				220/240 V	A	0
- 2 conducting paths in series				Up to 24 V	A	16
				60 V	A	5
				110 V	A	0.35
				220/240 V	A	0
- 3 conducting paths in series				Up to 24 V	A	16
				60 V	A	16
				110 V	A	10
				220/240 V	A	1.75
- 4 conducting paths in series				Up to 24 V	A	18
				60 V	A	16
				110 V	A	10
				220/240 V	A	2
Conductor cross-sections						
						Screw terminals
Terminal screws						M3
• Finely stranded with end sleeve (DIN 46228 Form A/D/C)					mm^2	2 x (0.75 ... 2.5)
• Solid					mm^2	2 x (1 ... 2.5), 1 x 4
Permissible opening tool (screwdriver)						3.0 mm x 0.5 mm (3RA2908-1A) or Pozidriv 2
						Flat connectors
• Finely stranded 6.3 mm plug-in sleeve acc. to DIN 46245/46247						
- 6.3 ... 1					mm^2	0.5 ... 1
- 6.3 ... 2.5					mm^2	1 ... 2.5
CSA and UL rating (screw terminals)						
Rated insulation voltage				AC	V	600
Uninterrupted current	Open and enclosed				A	20
Maximum horsepower ratings (from CSA and UL approved values)						Single-phase/Three-phase
Rated power for three-phase motors at 60 Hz				At 115 V	hp	0.5/ --
				200 V	hp	1/ 3
				230 V	hp	1.5/ 3
				460 ... 600 V	hp	0/ 5

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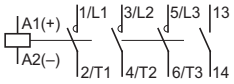
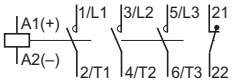
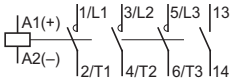
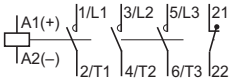
3TG10 contactors, 4-pole, 4 kW

Selection and ordering data

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Rated data Utilization category AC-1 Switching of resistive loads at 55 °C: Operational current I_e up to 400 V	Power of AC loads at 50 Hz and 400 V	AC-2 and AC-3: Operational current I_e up to 400 V[1]	Power of AC loads at 50 Hz and 400 V	Main contacts: Version NO	NC	Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	A	kW			V						
4-pole · Hum-free · With screw terminals												
Auxiliary contacts 1 NO, Ident. No. **10**												
												
Auxiliary contacts 1 NC, Ident. No. **01E**												
												
AC operation, 45 ... 450 Hz								**Screw terminals**				
20	13	8.4	4	4	--	24 AC	B	**3TG1010-0AC2**		1	1 unit	41H
						110 AC	B	**3TG1010-0AG2**		1	1 unit	41H
						230 AC	B	**3TG1010-0AL2**		1	1 unit	41H
				3	1	24 AC	▶	**3TG1001-0AC2**		1	1 unit	41H
						110 AC	▶	**3TG1001-0AG2**		1	1 unit	41H
						230 AC	▶	**3TG1001-0AL2**		1	1 unit	41H
DC operation												
20	13	8.4	4	4	--	24 DC	B	**3TG1010-0BB4**		1	1 unit	41H
				3	1	24 DC	▶	**3TG1001-0BB4**		1	1 unit	41H
4-pole · Hum-free · With flat connectors 6.3 mm x 0.8 mm												
Auxiliary contacts 1 NO, Ident. No. **10**												
												
Auxiliary contacts 1 NC, Ident. No. **01E**												
												
AC operation, 45 ... 450 Hz								**Flat connectors**				
16	10	8.4	4	4	--	24 AC	B	**3TG1010-1AC2**		1	1 unit	41H
						110 AC	D	**3TG1010-1AG2**		1	1 unit	41H
						230 AC	B	**3TG1010-1AL2**		1	1 unit	41H
				3	1	24 AC	D	**3TG1001-1AC2**		1	1 unit	41H
						110 AC	D	**3TG1001-1AG2**		1	1 unit	41H
						230 AC	B	**3TG1001-1AL2**		1	1 unit	41H
DC operation												
16	10	8.4	4	4	--	24 DC	B	**3TG1010-1BB4**		1	1 unit	41H
		8.4	4	3	1	24 DC	B	**3TG1001-1BB4**		1	1 unit	41H

3TG10 ..-0...

3TG10..-1...

[1] The rated operational currents apply to each pole.

Accessories

Max. rated operational currents I_e/AC-1 (at 55 °C) of the contactors: Type	Max. conductor cross-sections mm²	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Links for paralleling (insulated star jumpers)							
3-pole, without connection terminal[1)2)]							
16	--	▶	**3RT1916-4BA31**		1	1 unit	41B
3-pole, with connection terminal[1)3)]							
40	25	▶	**3RT1916-4BB31**		1	1 unit	41B
4-pole, with connection terminal[1)4)]							
40	25	C	**3RT1916-4BB41**		1	1 unit	41B

[1] The links for paralleling can be reduced by one pole. The rated operational currents apply to each pole.

[1] Replacement for 3TX4490-2C.

[2] Replacement for 3TX4490-2A.

[3] Replacement for 3TX4490-2B.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Switching Devices – Contactors and Contactor Assemblies – Contactor Relays and Relays

Price groups
PG 41A, 41B, 41H, 4N1

5/2 **Introduction**

Contactor relays
5/4 SIRIUS 3RH2 contactor relays, 4- and 8-pole
5/15 SIRIUS 3RH24 latched contactor relays, 4-pole
5/16 3TH4 contactor relays, 8- and 10-pole
5/24 3TH2 contactor relays, 4- and 8-pole

Coupling contactors
5/32 SIRIUS 3RH21 coupling contactors for switching auxiliary circuits, 4-pole

Contactors with extended operating range 0.7 ... 1.25 × U_s for railway applications
5/35 SIRIUS 3RH21 contactor relays
5/37 3TH4 contactor relays

Coupling relays

3TX7 coupling relays, narrow design
5/39 Relay couplers
5/44 Relay couplers with plug-in design
5/47 Semiconductor couplers

SIRIUS 3RS18 coupling relays with industrial enclosure
5/51 Relay couplers

Coupling relays with LZS/LZX plug-in relays
5/53 Plug-in relay couplers

Power relays/Miniature contactors
Ch.4 3TG10 contactors, 4-pole, 4 kW

Notes:

3RH1 contactor relays can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool
e.g. from 3RH11 to 3RH21 see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

The advantages at a glance

Size Type	**S00** 3RH21	**S00** 3RH22	3TH42	3TH43	3TH2

		Article No.	Page
3RH2 contactor relays			
4-pole	• Screw terminals, spring-type terminals and ring terminal lug connections	**3RH21**	5/10, 5/11
8-pole		**3RH22**	5/10, 5/11
4-pole, latched		**3RH24**	5/15
Coupling contactors	• Coils for control by PLC	**3RH21**	5/32
Contactor relays for railway applications	• Coils with extended voltage range	**3RH21**	5/35
3TH4 contactor relays			
8-pole	• Screw terminals	**3TH42**	5/20
10-pole		**3TH43**	5/21
Contactor relays for railway applications	• Coils with extended voltage range	**3TH42**	5/37
3TH2 contactor relays			
4-pole	• Screw terminals, flat connectors and solder pin connections	**3TH20**	5/28
8-pole	• Screw terminals	**3TH22**	5/28
4-pole, latched	• Screw terminals	**3TH27**	5/28
Accessories for 3RH2 contactor relays			
Auxiliary switch blocks	• On front	**3RH2911**	5/12
	• Lateral	**3RH2911**	Chapter 3
	• Delayed, on front	**3RA28**	Chapter 3
Timing relay blocks	• On front	**3RA281.**	Chapter 3
Surge suppressors	• On front	**3RT2916**	5/13
Additional load module	• On front	**3RT2916**	5/13

Note:

Safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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The advantages at a glance

Type	3TX7002	3TX7014	3RS18	LZS/LZX	3TG10

		Article No.	Page
Coupling links, narrow design			
Relay couplers	• Width 11.5 mm (1 NO), 17.5 mm (1 CO) or 22.5 mm (2 NO, 2 CO) • Width 6.2 mm (1 NO, 1 CO) or 12.5 mm (1 CO) • Output coupling links • Input coupling links with hard gold-plating	**3TX7002, 3TX7003** **3TX7004, 3TX7005**	5/39
Plug-in base couplers, complete with relay	• Width 6.2 mm (1 NO, 1 CO) • Relays, replaceable	**3TX7014-1..00; 3TX7015-1..00**	5/44
Plug-in base couplers, complete with relay and hard gold-plating	• Width 6.2 mm (1 CO)	**3TX7014-1..02; 3TX7015-1..02**	5/44
Semiconductor couplers	• Output 1 semiconductor, triac or transistor, width 6.2, 11.5 and 12.5 mm	**3TX7002, 3TX7004, 3TX7005**	5/47
Coupling relays in industrial enclosure			
Relay couplers	• Protective separation up to 300 V between contacts and relay circuits • 1, 2 or 3 changeover contacts • Hard gold-plated contacts in combination and wide voltage range versions	**3RS18**	5/51
Coupling relays with plug-in relays			
Plug-in relay couplers with 2, 3 and 4 changeover contacts	• Switching capacity 12 A/10 A/6 A • Width 27 mm • Base with or without logical separation	**LZS/LZX:PT**	5/53
Plug-in relay couplers with 3 changeover contacts and circular base	• Switching capacity 10 A • 11-pole circular base • Width 38 mm	**LZS/LZX:MT**	5/59
Plug-in relay couplers with 1 or 2 changeover contacts	• Switching capacity 16 A/8 A • Width 15.5 mm • Base with or without logical separation	**LZS/LZX:RT**	5/60
Miniature contactors (power relays)			
With screw and flat connectors	• Switching capacity 20 A (AC-1) or 8.4 A (AC-2, AC-3) • 4-pole, hum-free • Width 36 mm	**3TG10**	Ch. 4

Connection methods

The contactor relays and the relays are available with screw terminals (box terminals) or with spring-type terminals.

Devices of the 3TH2 series are also available for connection with flat connectors and solder pin connectors.

The plug-in bases for LZS/LZX coupling relays are also available with plug-in terminals.

As an option the devices of the 3RH2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

- Screw terminals
- Spring-type terminals
- Flat connectors
- Solder pin connections
- Plug-in terminals
- Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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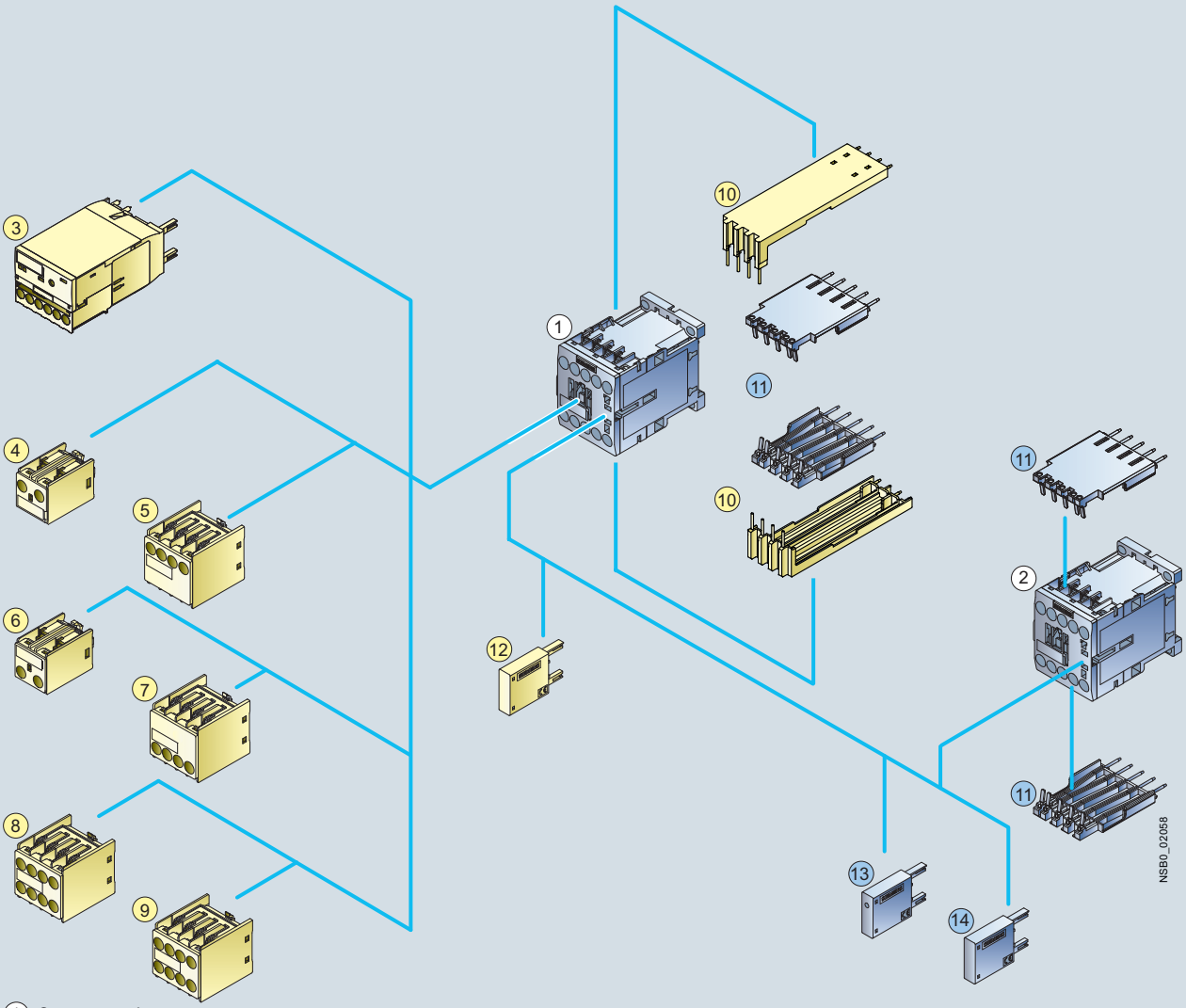
SIRIUS 3RH2 contactor relays, 4- and 8-pole

Overview

Contactor relays and coupling relays
Size S00 with accessories



1 Contactor relay
2 Coupling relay for auxiliary circuits
3 Solid-state timing relay block
4 1-pole auxiliary switch block, cable entry from the top
5 2-pole auxiliary switch block, cable entry from the top
6 1-pole auxiliary switch block, cable entry from the bottom
7 2-pole auxiliary switch block, cable entry from the bottom
8 4-pole auxiliary switch block
(terminal designations according to EN 50011 or EN 50005)
9 2-pole auxiliary switch block, solid-state compatible version
(terminal designations according to EN 50005)
10 Solder pin adapter for contactor relays with 4-pole auxiliary switch block
11 Solder pin adapter for contactor and coupling relays
12 Additional load module for increasing the permissible residual current
13 Surge suppressor with LED
14 Surge suppressor without LED

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1

The 3RH2 contactor relays have screw, ring terminal lug or spring-type terminals. The basic unit contains four contacts with terminal designations according to EN 50011.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

Contact reliability

High contact stability at low voltages and currents, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) can be plugged onto all 3RH2 contactor relays from the front for damping opening surges in the coil. The plug-in direction is determined by a coding device.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Accessories

The accessories for the 3RT2 contactors in size S00 can also be used for the 3RH2 contactor relays (see pages 5/13 and 5/14 and also Chapter 3).

Auxiliary switch blocks

The 3RH21 contactor relays can be expanded by up to four contacts by the addition of snap-on auxiliary switch blocks.

The auxiliary switch block can easily be snapped onto the front of the contactor relays. The auxiliary switch block has a centrally positioned release lever for disassembly.

Auxiliary switches according to EN 50011

The 3RH2911–.GA .. auxiliary switch blocks are available for terminal designations according to EN 50011 or IEC 60947-5-1 (see page 5/12). They are coded, and therefore cannot be combined with contactor relays with identification numbers 31E or 22E.

In addition, fully mounted 3RH22 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block is not removable. These versions are built according to special Swiss regulations SUVA and are distinguished externally by a red labeling plate.

Auxiliary switches according to EN 50005

All contactor relays with the identification numbers 40E, 31E and 22E can be extended with auxiliary switch blocks to obtain contactor relays with 5 to 8 contacts. The permissible combinations and the resulting identification numbers can be found in the selection tables in Chapter 3, pages 3/48 to 3/52.

Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.

Manuals

For more information, see
- System manual "SIRIUS Innovations – System Overview", http://support.automation.siemens.com/WW/view/en/60311318
- Manual "SIRIUS Innovations – SIRIUS 3RT2 Contactors/ Contactor Assemblies", http://support.automation.siemens.com/WW/view/en/60306557

Article No. scheme

Digit of the article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor relays	**3 R H**															
2nd generation		**2**														
Device type (e.g. 1 = 4-pole contactor relay, 2 = 8-pole contactor relay)			□													
Number of NO contacts (e.g. 2 = 2 NO)				□												
Number of NC contacts (e.g. 2 = 2 NC)					□											
Connection type (1 = screw, 2 = spring)							□									
Operating range / solenoid coil circuit (e.g. A = AC standard / without)								□								
Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)									□	□						
No significance											□					
Special version													□	□	□	□
Example	**3 R H**	**2**	**1**	**2**	**2**	**–**	**1**	**A**	**P**	**0**	**0**					

Note:

The article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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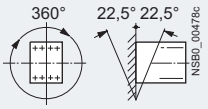
SIRIUS 3RH2 contactor relays, 4- and 8-pole

Technical specifications

Contactor relays	Type	3RH2
	Size	S00

Permissible mounting position

The contactor relays are designed for operation on a vertical mounting surface.



Upright mounting position

Special version required

(3RH2122-2K.40 coupling relays and contactor relays with extended operating range on request)

Positively-driven operation of contacts in contactor relays

3RH2:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the front-mounted auxiliary switch block (removable) according to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

3RH22:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) according to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

Note:

3RH2911-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.

Explanations:
There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457
Safety Rules for Controls on Power-Operated Metalworking Presses.

IEC 60947-5-1, Appendix L
Low-voltage switchgear and controlgear, Special requirements for positively-driven contacts

Contact reliability

Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4

Frequency of contact faults $<10^{-8}$ i.e. < 1 fault per 100 million operating cycles

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and free-wheel diodes.

The characteristic curves apply to:
- 3RH21/3RH22 contactor relays[1)]
- 3RH24 latched contactor relays
- 3RH2911 auxiliary switch blocks[1)]
- Auxiliary switch blocks for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

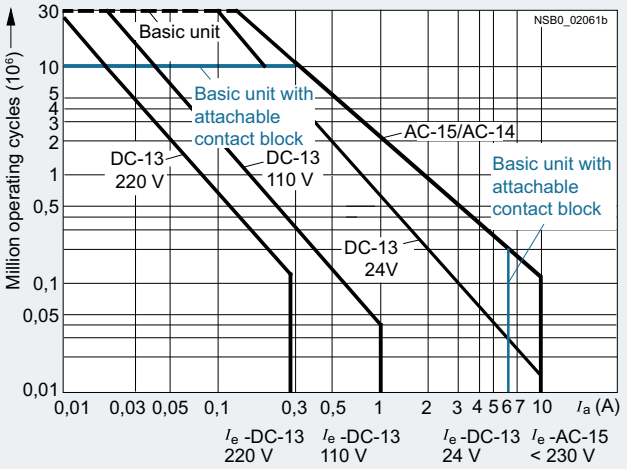


Diagram legend:
I_a = Breaking current
I_e = Rated operational current

[1)] 3RH22, 3RH2911: I_e = 6 A for AC-15/AC-14 and DC-13.

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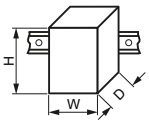
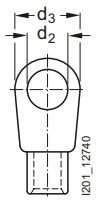
Type			**3RH21**	**3RH22**	**3RH24**
Size			**S00**	**S00**	**S00**
Dimensions (W x H x D) with screw terminals		mm	45 x 57.5 x 73	--	90 x 57.5 x 73
• With mounted auxiliary switch block		mm	45 x 57.5 x 116	45 x 57.5 x 116	--
General technical specifications					
Mechanical endurance					
• Basic units		Operating cycles	30 million		5 million
• Basic unit with snap-on auxiliary switch block		Operating cycles	10 million		5 million
• Solid-state compatible auxiliary switch block		Operating cycles	5 million		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Protective separation between the coil and the contacts in the basic unit acc. to IEC 60947-1, Appendix N		V	400		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
Touch protection acc. to EN 50274			Finger-safe		
Shock resistance					
• Rectangular pulse	- AC operation	*g*/ms	7.3/5 and 4.7/10		
	- DC operation	*g*/ms	10/5 and 5/10		
• Sine pulse	- AC operation	*g*/ms	11.4/5 and 7.3/10		
	- DC operation	*g*/ms	15/5 and 8/10		
Short-circuit protection					
• Short-circuit test with fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10		
• Test with miniature circuit breaker with C characteristic with short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	6		
Conductor cross-sections					
Auxiliary conductors and coil terminals (1 or 2 conductors can be connected)			**Screw terminals**		
• Solid or stranded		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 2 x 4		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• AWG cables, solid or stranded		AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1]		
• Terminal screw			M3 (for Pozidriv size 2, ∅ 5 ... 6 mm)		
- Tightening torque		Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)		
Auxiliary conductor and coil terminals[2] (1 or 2 conductors can be connected)			**Spring-type terminals**		
• Operating devices[3]		mm	3.0 x 0.5; 3.5 x 0.5		
• Solid or stranded		mm^2	2 x (0.5 ... 4)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 12)		
Auxiliary conductors for front and laterally mounted auxiliary switches[2]					
Operating devices[3]		mm	3.0 x 0.5; 3.5 x 0.5		
• Solid or stranded		mm^2	2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		
Auxiliary conductor and coil terminals			**Ring terminal lug connections**		
• Terminal screw		mm	M3, Pozidriv size 2		
• Operating devices		Nm	∅ 5 ... 6		
• Tightening torque		mm	0.8 ... 1.2		
• Usable ring terminal lugs		mm	d_2 = min. 3.2		
- DIN 46234 without insulation sleeve		mm	d_3 = max. 7.5		
- DIN 46225 without insulation sleeve					
- DIN 46237 with insulation sleeve					
- JIS C2805 Type R without insulation sleeve					
- JIS C2805 Type RAV with insulation sleeve					
- JIS C2805 Type RAP with insulation sleeve					

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) Max. external diameter of the conductor insulation: 3.6 mm. An insulation stop must be used for spring-type terminals with conductor cross-sections ≤ 1 mm^2; see "Accessories", page 5/14.

3) Tool for opening the spring-type terminals; see "Accessories", page 5/14.

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Contactor relays		Type		3RH2.
		Size		S00
Control circuit				
Solenoid coil operating range				
• AC operation		At 50 Hz		0.8 ... 1.1 x U_s
		At 60 Hz		0.85 ... 1.1 x U_s
• DC operation		At 50 °C		0.8 ... 1.1 x U_s
		At +60 °C		0.85 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)				
• AC operation, 50 Hz				
- Closing			VA/p.f.	37/0.8
- Closed			VA/p.f.	5.7/0.25
• AC operation, 60 Hz				
- Closing			VA/p.f.	33/0.75
- Closed			VA/p.f.	4.4/0.25
• DC operation closing = closed			W	4.0
Permissible residual current of the electronics (with 0 signal)				
• For AC operation[1]				< 4 mA x (230 V/U_s)
• For DC operation				< 10 mA x (24 V/U_s)
Operating times[2] (Total break time = OFF-delay + Arcing time)				
Values apply with coil in cold state and at operating temperature for operating range				
AC operation				
• Closing				
- ON-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	8 ... 33
	With 1.0 x U_s		ms	9 ... 22
	3RH24 minimum operating time		ms	≥ 35
- OFF-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	6 ... 25
	With 1.0 x U_s		ms	6.5 ... 19
• Opening				
- OFF-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	4 ... 15
	With 1.0 x U_s		ms	4.5 ... 15
	3RH24 minimum operating time		ms	≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	5 ... 15
	With 1.0 x U_s		ms	5 ... 15
DC operation				
• Closing				
- ON-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	30 ... 100
	With 1.0 x U_s		ms	35 ... 50
	3RH24 minimum operating time		ms	≥ 100
- OFF-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	25 ... 90
	With 1.0 x U_s		ms	30 ... 45
• Opening				
- OFF-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	7 ... 13
	With 1.0 x U_s		ms	7 ... 12
	3RH24 minimum operating time		ms	≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	13 ... 19
	With 1.0 x U_s		ms	13 ... 18
• Arcing time			ms	10 ... 15

Dependence of the switching frequency z' on the operational current I' and operational voltage U':

$z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$

1) The 3RT2916-1GA00 additional load module is recommended for higher residual currents; (see page 5/13).

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3RH2.
	Size		S00
Load side			
Load rating with AC			
Rated operational currents I_e			
AC-12		A	10
AC-15/AC-14 for rated operational voltage U_s			
	Up to 230 V	A	10[1]
	400 V	A	3
	500 V	A	2
	690 V	A	1
Load rating with DC			
Rated operational currents I_e			
DC-12 for rated operational voltage U_s			
• 1 conducting path	24 V	A	10
	60 V	A	6
	110 V	A	3
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
• 2 conducting paths in series	24 V	A	10
	60 V	A	10
	110 V	A	4
	220 V	A	2
	440 V	A	1.3
	600 V	A	0.65
• 3 conducting paths in series	24 V	A	10
	60 V	A	10
	110 V	A	10
	220 V	A	3.6
	440 V	A	2.5
	600 V	A	1.8
DC-13 for rated operational voltage U_s			
• 1 conducting path	24 V	A	10[1]
	60 V	A	2
	110 V	A	1
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
• 2 conducting paths in series	24 V	A	10
	60 V	A	3.5
	110 V	A	1.3
	220 V	A	0.9
	440 V	A	0.2
	600 V	A	0.1
• 3 conducting paths in series	24 V	A	10
	60 V	A	4.7
	110 V	A	3
	220 V	A	1.2
	440 V	A	0.5
	600 V	A	0.26
Switching frequency			
Switching frequency *z* in operating cycles/hour			
• For rated operation For utilization category	AC-12/DC-12	h^{-1}	1 000
	AC-15/AC-14	h^{-1}	1 000
	DC-13	h^{-1}	1 000
• No-load switching frequency		h^{-1}	10 000
Dependence of the switching frequency z' on the operational current I' and operational voltage U':			
$z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$			
cULus and CSA rated data			
Basic units and auxiliary switch blocks			
• Rated control supply voltage		V AC	max. 600
• Rated voltage		V AC	600
• Switching capacity			A 600, Q 600
• Uninterrupted current at 240 V AC		A	10

[1] 3RH22, 3RH29: I_e = 6 A for AC-15/AC-14 and DC-13.

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

Size S00

3RH2122-1A..0

3RH2122-2A..0

3RH2244-1A..0

3RH2244-2A..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No.	Version		Rated control supply voltage U_s at 50/60 Hz[2]	DT	**Screw terminals**[1] Article No.	Price per PU	DT	**Spring-type terminals** Article No.	Price per PU
A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Terminal designations according to EN 50011										
4 NO, Ident. No. **40E**										
10	**40E**	4	--	24	▶	**3RH2140-1AB00**		B	**3RH2140-2AB00**	
				110	▶	**3RH2140-1AF00**		B	**3RH2140-2AF00**	
				230	▶	**3RH2140-1AP00**		▶	**3RH2140-2AP00**	
3 NO + 1 NC, Ident. No. **31E**										
	31E	3	1	24	▶	**3RH2131-1AB00**		B	**3RH2131-2AB00**	
				110	▶	**3RH2131-1AF00**		▶	**3RH2131-2AF00**	
				230	▶	**3RH2131-1AP00**		▶	**3RH2131-2AP00**	
2 NO + 2 NC, Ident. No. **22E**										
	22E	2	2	24	▶	**3RH2122-1AB00**		B	**3RH2122-2AB00**	
				110	▶	**3RH2122-1AF00**		▶	**3RH2122-2AF00**	
				230	▶	**3RH2122-1AP00**		▶	**3RH2122-2AP00**	
• With permanently mounted auxiliary switch block										
4 NO + 4 NC, Ident. No. **44E**										
6	**44E**	4	4	230	▶	**3RH2244-1AP00**		A	**3RH2244-2AP00**	
6 NO + 2 NC, Ident. No. **62E**										
	62E	6	2	230	▶	**3RH2262-1AP00**		A	**3RH2262-2AP00**	

1) The 3RH21/3RH22 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.

2) Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s.

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

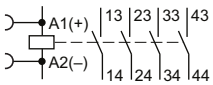
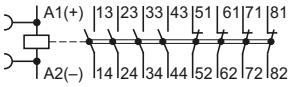
Size S00

3RH2122-1B..0

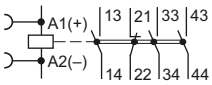
3RH2122-2B..0

3RH2244-1B..0

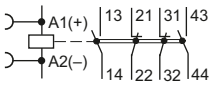
3RH2244-2B..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No.	Version		Rated control supply voltage U_s	DT	**Screw terminals**[1]		DT	**Spring-type terminals**	
						Article No.	Price per PU		Article No.	Price per PU
A		NO	NC	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Terminal designations according to EN 50011										
4 NO, Ident. No. **40E**										
										
10	**40E**	4	--	24	▶	**3RH2140-1BB40**		▶	**3RH2140-2BB40**	
				220	▶	**3RH2140-1BM40**		B	**3RH2140-2BM40**	
	31E	3	1	24	▶	**3RH2131-1BB40**		▶	**3RH2131-2BB40**	
				220	A	**3RH2131-1BM40**		B	**3RH2131-2BM40**	
	22E	2	2	24	▶	**3RH2122-1BB40**		▶	**3RH2122-2BB40**	
				220	▶	**3RH2122-1BM40**		B	**3RH2122-2BM40**	
• With permanently mounted auxiliary switch block										
4 NO + 4 NC, Ident. No. **44E**										
										
6	**44E**	4	4	24	▶	**3RH2244-1BB40**		▶	**3RH2244-2BB40**	
	62E	6	2	24	▶	**3RH2262-1BB40**		▶	**3RH2262-2BB40**	

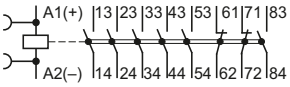
3 NO + 1 NC, Ident. No. **31E**



2 NO + 2 NC, Ident. No. **22E**



6 NO + 2 NC, Ident. No. **62E**



[1] The 3RH21/3RH22 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Options

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Contactor type Control supply voltage at	3RH21, 3RH22
AC operation		
Solenoid coils for 50/60 Hz and 60 Hz		
50/60 Hz[1]	**60 Hz**	
24 V AC	--	B0
42 V AC	--	D0
48 V AC	--	H0
110 V AC	--	F0
220 V AC	--	N2
230 V AC	--	P0
400 V AC	--	V0
Solenoid coils for USA and Canada[2]		
50 Hz	**60 Hz**	
110 V AC	120 V AC	K6
220 V AC	240 V AC	P6
Solenoid coils for Japan[3]		
50/60 Hz	**60 Hz**	
100 V AC	110 V AC	G6
200 V AC	220 V AC	N6
400 V AC	440 V AC	R6

Rated control supply voltage U_s	Contactor type Control supply voltage at	3RH21, 3RH22
DC operation		
12 V DC		A4
24 V DC		B4
42 V DC		D4
48 V DC		W4
60 V DC		E4
110 V DC		F4
125 V DC		G4
220 V DC		M4
230 V DC		P4

1) Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s.

2) Coil operating range
at 50 Hz: 0.85 to 1.1 x U_s
at 60 Hz: 0.8 to 1.1 x U_s.

3) Coil operating range
at 50/60 Hz: 0.85 to 1.1 x U_s
at 60 Hz: 0.8 to 1.1 x U_s.

Accessories

The auxiliary switch blocks according to EN 50011 listed here should preferably be used for 3RH2 contactor relays.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

For auxiliary switch blocks and solid-state compatible auxiliary switch blocks according to EN 50005 see "Accessories for 3RT2 Contactors", Chapter 3.

3RH2911-1GA22

3RH2911-2GA22

For contactor relays	Contactor relays with AS block Ident. No.	Auxiliary contacts Version		DT	Screw terminals		DT	Spring-type terminals	
		NO	NC		Article No.	Price per PU		Article No.	Price per PU
Type									
Auxiliary switch blocks for snapping onto the front acc. to EN 50011									
Blocks for the assembly of contactor relays with 8 contacts[1]									
3RH2140, 3RH2440, Ident. No. 40E	**80E**	4	--	▶	**3RH2911-1GA40**		▶	**3RH2911-2GA40**	
	71E	3	1	▶	**3RH2911-1GA31**		▶	**3RH2911-2GA31**	
	62E	2	2	▶	**3RH2911-1GA22**		▶	**3RH2911-2GA22**	
	53E	1	3	▶	**3RH2911-1GA13**		▶	**3RH2911-2GA13**	
	44E	--	4	▶	**3RH2911-1GA04**		▶	**3RH2911-2GA04**	

1) The 3RH2911-.GA.. auxiliary switches are also available with ring terminal lug connection. The 8th digit of the Article No. must be changed from a **"1"** to a **"4"**, e.g. 3RH2911-**1**GA22 ➞ 3RH2911-**4**GA22.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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The following accessory parts are accessories for 3RT2 contactors in size S00, which are also suitable for 3RH2 contactor relays.

More accessory parts see "Accessories for 3RT2 Contactors in Size S00", Chapter 3.

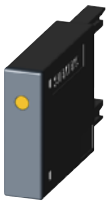
For contactors	Version	Rated control supply voltage U_s [1] AC operation	Rated control supply voltage U_s [1] DC operation	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC						
Surge suppressors without LED (also for spring-type terminals)									
	For plugging onto the front side of the contactors (with and without auxiliary switch block)								
3RH2.	**Varistor**	24 ... 48	24 ... 70	▶	**3RT2916-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2916-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2916-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT2916-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2916-1BF00**		1	1 unit	41B
3RH2.	**RC elements**	24 ... 48	24 ... 70	▶	**3RT2916-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT2916-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT2916-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT2916-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT2916-1CF00**		1	1 unit	41B
3RH2.	**Noise suppression diode**	--	12 ... 250	▶	**3RT2916-1DG00**		1	1 unit	41B
3RH2.	**Diode assemblies** (diode and Zener diode) for DC operation	--	12 ... 250	▶	**3RT2916-1EH00**		1	1 unit	41B

3RT2916-1B.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

For contactors	Version	Rated control supply voltage U_s [1] AC operation	Rated control supply voltage U_s [1] DC operation	Power consumption P of the LED at U_s	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC	mW						
Surge suppressors with LED (also for spring-type terminals)										
	For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RH2.	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT2916-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT2916-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT2916-1JL00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	A	**3RT2916-1JP00**		1	1 unit	41B
3RH2.	**Noise suppression diode**	--	24 ... 70	20 ... 470	▶	**3RT2916-1LM00**		1	1 unit	41B
		--	50 ... 150	50 ... 700	A	**3RT2916-1LN00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	**3RT2916-1LP00**		1	1 unit	41B



3RT2916-1J.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

For contactors	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
Additional load modules							
3RH2.	**For plugging onto the front side of the contactors with or without auxiliary switch blocks** [1] For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs on SIMATIC controllers. It acts simultaneously as a surge suppressor. Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x U_s	▶	**3RT2916-1GA00**		1	1 unit	41B

3RT2916-1GA00

[1] For packs of 10 units, "**-Z**" and order code "**X90**" must be added to the Article No.

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

For contactors Type	Rated control supply voltage U_s V	Time setting range t s	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
OFF-delay devices								
For contactor relays with DC operation								
Non-adjustable delay time								
3RH2...-1BF40	110 AC/DC	S00: > 0.1 S0: > 0.08	B	**3RT2916-2BK01**		1	1 unit	41B
3RH2...-1BM40	220/230 AC/DC	S00: > 0.5 S0: > 0.3	B	**3RT2916-2BL01**		1	1 unit	41B
3RH2...-1BB40	24 DC	S00: > 0.2 S0: > 0.1	A	**3RT2916-2BE01**		1	1 unit	41B

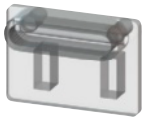
3RT2916-2B.01

For technical specifications, see "Accessories for 3RT20 Contactors", Chapter 3.

For contactors Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Control kit							
3RH2.	For manual operation of the contactor contacts for start-up and service	A	**3RT2916-4MC00**		1	5 units	41B

3RT2916-4MC00

Sealable covers							
3RH2. [1]	Sealable covers for preventing manual operation Not suitable for coupling relays	A	**3RT2916-4MA10**		1	5 units	41B



3RT2916-4MA10

[1] Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

Version	DT	Spring-type terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²						
Insulation stop strip can be inserted in cable entry of the spring-type terminal (2 strips per contactor required) • For basic units S00 (3RT201. or 3RH2.), removable individually	B	**3RT2916-4JA02**		1	20 units	41B

3RT2916-4JA02

Tools for opening spring-type terminals							
Screwdrivers for all SIRIUS devices with spring-type terminals Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B

3RA2908-1A

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RH24 latched contactor relays, 4-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The terminal designations comply with EN 50011.

Auxiliary switches

The number of auxiliary contacts can be extended by means of auxiliary switch blocks on the front (up to four contacts).

Control circuit

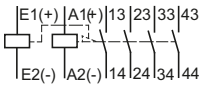
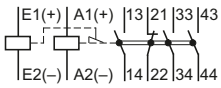
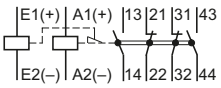
The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

RC elements, varistors, diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually. Minimum actuating times, see "Technical Specifications", page 5/8.

Selection and ordering data

3RH2422-1A..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No. acc. to EN 50011	Version		Rated control supply voltage U_s	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
						Article No. / Price per PU			
A		NO	NC	V					
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Terminal designations according to EN 50011									
4 NO, Ident. No. **40E** 									
3 NO + 1 NC, Ident. No. **31E** 									
2 NO + 2 NC, Ident. No. **22E** 									
AC operation									
				AC 50/60 Hz[1]					
10	**40 E**	4	--	24	B	**3RH2440-1AB00**	1	1 unit	41A
				110	B	**3RH2440-1AF00**	1	1 unit	41A
				230	B	**3RH2440-1AP00**	1	1 unit	41A
	31 E	3	1	24	B	**3RH2431-1AB00**	1	1 unit	41A
				110	B	**3RH2431-1AF00**	1	1 unit	41A
				230	B	**3RH2431-1AP00**	1	1 unit	41A
	22 E	2	2	24	B	**3RH2422-1AB00**	1	1 unit	41A
				110	B	**3RH2422-1AF00**	1	1 unit	41A
				230	B	**3RH2422-1AP00**	1	1 unit	41A
DC operation									
				DC					
10	**40 E**	4	--	24	B	**3RH2440-1BB40**	1	1 unit	41A
				110	B	**3RH2440-1BF40**	1	1 unit	41A
				220	B	**3RH2440-1BM40**	1	1 unit	41A
	31 E	3	1	24	B	**3RH2431-1BB40**	1	1 unit	41A
				110	B	**3RH2431-1BF40**	1	1 unit	41A
				220	B	**3RH2431-1BM40**	1	1 unit	41A
	22 E	2	2	24	B	**3RH2422-1BB40**	1	1 unit	41A
				110	B	**3RH2422-1BF40**	1	1 unit	41A
				220	B	**3RH2422-1BM40**	1	1 unit	41A

[1] Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 × U_s.

Accessories see pages 5/12 and 5/13.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TH4 contactor relays, 8- and 10-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3TH42 and 3TH43 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274.

Terminal designations according to EN 50011

In terms of their terminal designations, identification numbers and identification letters, the 3TH42 and 3TH43 contactor relays conform to the standard EN 50011 for Specific Contactor Relays.

Contact reliability

High contact stability at low voltages and currents thanks to the use of moving double-break contacts, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

The 3TH42 and 3TH43 contactor relays can be equipped with RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) for damping opening surges. The surge suppressors can be mounted directly on the coil (see "Accessories", page 5/22).

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Technical specifications

Contactor relays	Type	3TH42, 3TH43
Contact endurance for AC-15/AC-14 and DC-13 utilization categories		
The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.		
If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary.		
RC elements or freewheel diodes are suitable as protective measures for the circuits.		

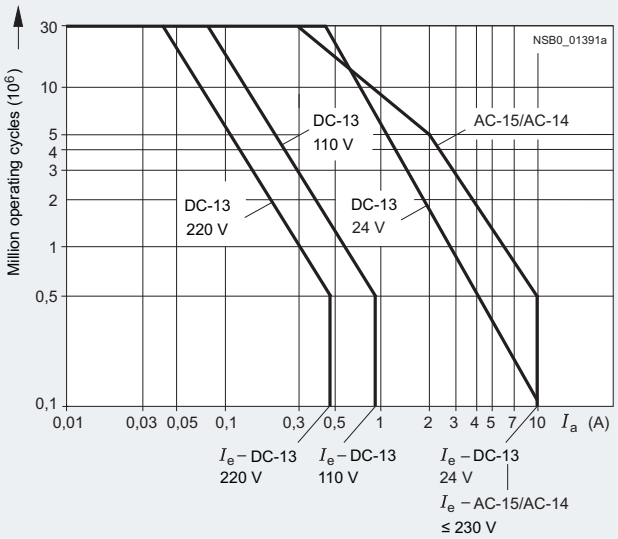

Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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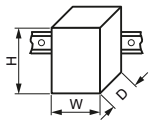
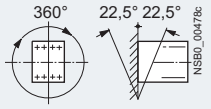
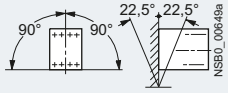
Type			**3TH42**	**3TH43**
Dimensions (W x H x D)				
• AC operation		mm	45 x 78 x 97	55 x 78 x 97
• DC operation		mm	45 x 78 x 130	55 x 78 x 130
General technical specifications				
Permissible mounting position				
The contactor relays are designed for operation on a vertical mounting surface.				
• AC operation				
• DC operation				
Upright mounting position				
AC and DC operation			Special version required	
Mechanical endurance	Basic units	Operating cycles	30 million	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	Up to 500	
Permissible ambient temperature				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C			IP20	
Shock resistance				
• Rectangular pulse				
- AC operation		*g*/ms	7.7/5 and 4.4/10	
- DC operation		*g*/ms	9.3/5 and 5.4/10	
• Sine pulse				
- AC operation		*g*/ms	12/5 and 6.8/10	
- DC operation		*g*/ms	14.7/5 and 8.5/10	
Short-circuit protection				
Short-circuit test				
• with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1				
- LV HRC, type 3NA		A	16	
- DIAZED, type 5SB		A	16	
- NEOZED Type 5SE, quick		A	20	
• with miniature circuit breaker with short-circuit current I_k = 400 A acc. to IEC 60947-5-1				
- C Characteristic		A	16	
- B Characteristic		A	16	
Ⓢ and Ⓤ rated data				
Basic units				
Rated control supply voltage U_s			Max. 600 V AC, 230 V DC (acc. to UL 240 V DC)	
Rated voltage			600 V AC, 600 V DC	
Switching capacity			A 600, P 600	
Conductor cross-sections				
			Screw terminals	
• Solid or stranded		mm^2	2 x (0.5 ... 1)[1]; 2 x (1 ... 2.5)[1]; 1 x 4	
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 2.5)	
• Terminal screw			M3.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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3TH4 contactor relays, 8- and 10-pole

Contactor relays	Type	3TH42, 3TH43
Control circuit		
Solenoid coil operating range		
AC operation		0.8 ... 1.1 x U_s [1]
DC operation (except 24 V)		0.8 ... 1.1 x U_s
• At 24 V DC		0.8 ... 1.2 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)		
• AC operation, 50 Hz, standard version		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 50/60 Hz, standard version		
- Closing, 50 Hz	VA/p.f.	77/0.81
- Closed, 50 Hz	VA/p.f.	11/0.28
- Closing, 60 Hz	VA/p.f.	71/0.75
- Closed, 60 Hz	VA/p.f.	9/0.27
• AC operation, 50 Hz, USA/Canada		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 60 Hz, USA/Canada		
- Closing	VA/p.f.	75/0.76
- Closed	VA/p.f.	9,4/0.29 ... 0.3
• AC operation, 50 Hz, standard version		
- Closing	VA/p.f.	80/0.8
- Closed	VA/p.f.	10,7/0.29
• AC operation, 60 Hz, standard version		
- Closing	VA/p.f.	75 ... 90/0.73
- Closed	VA/p.f.	8,5 ... 10,7/0.29 ... 0.3
• DC operation up to 250 V Closing = Closed	W	6.2
Permissible residual current of the electronics (with 0 signal)		
• For AC operation		≤ 8 mA x (220 V/U_s)
• For DC operation		≤ 1.25 mA x (220 V/U_s)
Operating times [2] Total break time = OFF-delay + arcing time (the values apply up to and including 20 % undervoltage, 10 % overvoltage, and with the coil in the cold state and at operating temperature)		
AC operation		
• Closing		
- ON-delay NO	ms	8 ... 35
- OFF-delay NC	ms	6 ... 20
• Opening		
- OFF-delay NO	ms	4 ... 18
- ON-delay NC	ms	5 ... 30
• Arcing time	ms	10
DC operation		
• Closing		
- ON-delay NO	ms	20 ... 170
- OFF-delay NC	ms	18 ... 110
• Opening		
- OFF-delay NO	ms	10 ... 25
- ON-delay NC	ms	15 ... 30
Arcing time	ms	10
Operating times [2] **at 1.0 x U_s**		
AC operation		
• Closing		
- ON-delay NO	ms	10 ... 25
- OFF-delay NC	ms	7 ... 20
• Opening		
- OFF-delay NO	ms	5 ... 18
- ON-delay NC	ms	7 ... 20
DC operation		
• Closing		
- ON-delay NO	ms	30 ... 70
- OFF-delay NC	ms	28 ... 65
• Opening		
- OFF-delay NO	ms	10 ... 20
- ON-delay NC	ms	15 ... 25

[1] Coils for USA, Canada and Japan: 0.85 ... 1.1 U_s at 60 Hz.

[2] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 9 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3TH42, 3TH43
Load side			
Load rating with AC			
Rated operational currents I_e			
AC-12		A	16
AC-15/AC-14 for rated operational voltage U_e			
	230 V	A	10
	400 V	A	6
	500 V	A	4
	690 V	A	2
Rated power of three-phase motors Acc. to utilization categories AC-2 and AC-3, 50 Hz			
	230/220 V	kW	2.4
	400/380 V	kW	4
	500 V	kW	4
	690/660 V	kW	4
Load rating with DC			
Rated operational currents I_e			
DC-12, for rated operational voltage U_e			
• 1 conducting path			
	Up to 48 V	A	10
	110 V	A	2.1
	220 V	A	0.8
	440 V	A	0.6
• 2 conducting paths in series			
	Up to 48 V	A	10
	110 V	A	10
	220 V	A	1.6
	440 V	A	0.8
• 3 conducting paths in series			
	Up to 48 V	A	10
	110 V	A	10
	220 V	A	10
	440 V	A	1.3
DC-13, for rated operational voltage U_e			
• 1 conducting path			
	Up to 24 V	A	10
	48 V	A	5
	110 V	A	1
	220 V	A	0.45
	440 V	A	0.25
	600 V	A	0.2
• 2 conducting paths in series			
	Up to 24 V	A	10
	48 V	A	10
	110 V	A	2.5
	220 V	A	0.75
	440 V	A	0.5
	600 V	A	0.4
• 3 conducting paths in series			
	Up to 24 V	A	10
	48 V	A	10
	110 V	A	10
	220 V	A	2
	440 V	A	0.9
	600 V	A	0.8
Switching frequency			
Switching frequency z[1] in operating cycles/hour			
For rated operation	AC-12/DC-12	h^{-1}	1 000
For utilization category	AC-2	h^{-1}	500
	AC-3	h^{-1}	1 000
	AC-15/AC-14	h^{-1}	3 600
	DC-13	h^{-1}	3 600
	No-load switching frequency	h^{-1}	10 000

[1] Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$.

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3TH4 contactor relays, 8- and 10-pole

Selection and ordering data

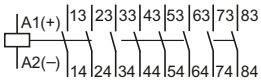
8-pole contactor relays

3TH4244-0B..

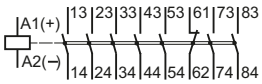
Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts				DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version				Article No. / Price per PU			
						NO	NC	NO	NC				
Number	**A**	A	A	A									
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													

Terminal designations according to EN 50011

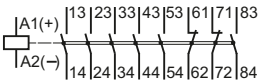
8 NO, Ident. No. **80E**



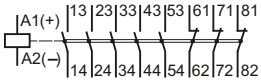
7 NO + 1 NC, Ident. No. **71E**



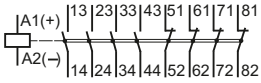
6 NO + 2 NC, Ident. No. **62E**



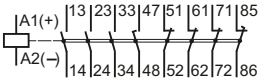
5 NO + 3 NC, Ident. No. **53E**



4 NO + 4 NC, Ident. No. **44E**



3 NO + 3 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, U**



AC operation, rated control supply voltage U_s = 50 Hz 230/220 V AC[1)]

8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH4280-0AP0**	1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH4271-0AP0**	1	1 unit	41A
					62 E	6	2	--	--	▶	**3TH4262-0AP0**	1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH4253-0AP0**	1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH4244-0AP0**	1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH4293-0AP0**	1	1 unit	41A

DC operation, rated control supply voltage U_s = 24 V DC

8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH4280-0BB4**	1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH4271-0BB4**	1	1 unit	41A
					62 E	6	2	--	--	▶	**3TH4262-0BB4**	1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH4253-0BB4**	1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH4244-0BB4**	1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH4293-0BB4**	1	1 unit	41A

[1)] Operating range at 220 V: 0.85 to 1.1 x U_s; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7403-0A..
- DC operation: 3TY4803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TH4 contactor relays, 8- and 10-pole

10-pole contactor relays

3TH4355-0A..

3TH4355-0B..

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts				DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	230 V	400 V	500 V	690 V	Ident. No. acc. to EN 50011	Version				Article No. / Price per PU			
Number	**A**	A	A	A		NO	NC	NO	NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Terminal designations according to EN 50011													
10 NO, Ident. No. **100E**													
9 NO + 1 NC, Ident. No. **91E**													
8 NO + 2 NC, Ident. No. **82E**													
7 NO + 3 NC, Ident. No. **73E**													
6 NO + 4 NC, Ident. No. **64E**													
5 NO + 5 NC, Ident. No. **55E**													
6 NO + 2 NC and 1 NO + 1 NC make-before-break, Ident. No. **63E, 11U**													
4 NO + 4 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, 11U**													
AC operation, rated control supply voltage U_s = 50 Hz 230/220 V AC[1]													
10	**10**	6	4	2	**100 E**	10	--	--	--	▶ **3TH4310-0AP0**	1	1 unit	41A
					91 E	9	1	--	--	▶ **3TH4391-0AP0**	1	1 unit	41A
					82 E	8	2	--	--	▶ **3TH4382-0AP0**	1	1 unit	41A
					73 E	7	3	--	--	▶ **3TH4373-0AP0**	1	1 unit	41A
					73 E, U	6	2	1	1	▶ **3TH4346-0AP0**	1	1 unit	41A
					64 E	6	4	--	--	▶ **3TH4364-0AP0**	1	1 unit	41A
					55 E	5	5	--	--	▶ **3TH4355-0AP0**	1	1 unit	41A
					55 E, U	4	4	1	1	▶ **3TH4394-0AP0**	1	1 unit	41A
DC operation, rated control supply voltage U_s = 24 V DC[1]													
10	**10**	6	4	2	**100 E**	10	--	--	--	▶ **3TH4310-0BB4**	1	1 unit	41A
					91 E	9	1	--	--	▶ **3TH4391-0BB4**	1	1 unit	41A
					82 E	8	2	--	--	▶ **3TH4382-0BB4**	1	1 unit	41A
					73 E	7	3	--	--	▶ **3TH4373-0BB4**	1	1 unit	41A
					73 E, U	6	2	1	1	▶ **3TH4346-0BB4**	1	1 unit	41A
					64 E	6	4	--	--	▶ **3TH4364-0BB4**	1	1 unit	41A
					55 E	5	5	--	--	▶ **3TH4355-0BB4**	1	1 unit	41A
					55 E, U	4	4	1	1	▶ **3TH4394-0BB4**	1	1 unit	41A

[1] Operating range at 220 V: 0.85 to 1.1 x U_s; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH43 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7403-0A..
- DC operation: 3TY4803-0B..

The contacts cannot be replaced on 3TH43 contactor relays.

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3TH4 contactor relays, 8- and 10-pole

Options

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Rated control supply voltage U_s	Control supply voltage at	Contactor type 3TH42/3TH43
AC operation		
Solenoid coils for AC 50 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
36 V AC	42 V AC	G0
42 V AC	50 V AC	D0
48 V AC	58 V AC	H0
60 V AC	72 V AC	E0
110 V AC	132 V AC	F0
125/127 V AC	150/152 V AC	L0
230/220 V AC	276 V AC	P0[1]
240 V AC	288 V AC	U0
400/380 V AC	480/460 V AC	V0[1]
415 V AC	500 V AC	R0
500 V AC	600 V AC	S0
For Japan		
100 V AC	100-110 V AC	G6[2]
200 V AC	200-220 V AC	N6[2]
For USA and Canada		
110 V AC	120 V AC	K6[2]
220 V AC	240 V AC	P6[2]

Rated control supply voltage U_s	Contactor type 3TH42/3TH43
Solenoid coils for AC 50 and 60 Hz	
50/60 Hz	
24 V AC	C2
42 V AC	D2
110 V AC	G2
115 V AC	J2
120 V AC	K2
220 V AC	N2
230 V AC	L2
240 V AC	P2
440 V AC	R2
DC operation	
12 V DC	A4
24 V DC	B4
30 V DC	C4
36 V DC	V4
42 V DC	D4
48 V DC	W4
60 V DC	E4
110 V DC	F4
125 V DC	G4
220 V DC	M4
230 V DC	P4
240 V DC	Q4

[1] Operating range at 220 V or 380 V: 0.85 to 1.1 x U_s.

[2] Operating range at 60 Hz: 0.85 to 1.1 x U_s.

Accessories

Version	Rated control supply voltage U_s AC V	Rated control supply voltage U_s DC V	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors[1] for 3TH4 contactor relays								
Noise suppression diodes with line spacer, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7402-3A**		1	1 unit	41B
Diode assemblies (diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7402-3D**		1	1 unit	41B
Varistors[2] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7402-3G**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7402-3H**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7402-3J**		1	1 unit	41B
	240 ... 400	--	C	**3TX7402-3K**		1	1 unit	41B
	400 ... 600	--	C	**3TX7402-3L**		1	1 unit	41B
RC elements with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7402-3R**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7402-3S**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7402-3T**		1	1 unit	41B
	240 ... 400	--	B	**3TX7402-3U**		1	1 unit	41B
	400 ... 600	--	C	**3TX7402-3V**		1	1 unit	41B
Covers for switch position indicator	--	--	X	**3TX4210-0P**		1	1 unit	41B

3TX7402-3.

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

[2] Includes the peak value of the alternating voltage on the DC side.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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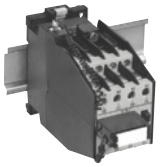
3TH4 contactor relays, 8- and 10-pole

	For contactors	Version	Rated control supply voltage U_s AC 50/60 Hz	Time setting range (minimum times)	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Type		V	s		Article No.	Price per PU			
ON-delay devices										
 3TX4180-0A	3TH42, 3TH43	**NTC thermistors** Time tolerance +100 %, -50 %	220 ... 230	0.1	B	**3TX4180-0A**		1	1 unit	41B
Coupling links for control by PLC for 3TH4 contactor relays										
3TX4090 mounted to contactor	3TH42, 3TH43	Operating range: 17 to 30 V DC Power consumption: 0.5 W at 24 V DC								
		• For mounting directly onto contactor coil **without** surge suppressor			A	**3TX4090-0C**		1	1 unit	41B
		• For mounting directly onto contactor coil **with** surge suppressor			A	**3TX4090-0D**		1	1 unit	41B

	For contactors	Rated control supply voltage U_s		OFF-delay (minimum times)	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
		50/60 Hz AC	DC			Article No.	Price per PU			
	Type	V	V	s						
OFF-delay devices for contactors with DC operation										
	Bridging of voltage interruptions up to 1.2 sec									
3TX4701-0AN1	3TH42..-0BF4 3TH43..-0BF4	110	--	0.15 or 0.3	A	**3TX4701-0AN1**		1	1 unit	41B
	3TH42..-0BM4 3TH43..-0BM4	220	--	0.6 or 1.2	A	**3TX4701-0AN1**		1	1 unit	41B
	3TH42..-0BP4 3TH43..-0BP4	230	--	0.6 or 1.2	A	**3TX4701-0AN1**		1	1 unit	41B
	3TH42..-0BB4 3TH43..-0BB4	--	24	0.4 or 0.8	B	**3TX4701-0BB4**		1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3TH2 contactor relays are suitable for use in any climate. Contactor relays with screw terminal are finger-safe according to EN 50274.

The terminal designations are according to EN 50011.

Connections

The 3TH20 contactor relays with 4 auxiliary contacts are available with SIGUT screw terminals, 6.3 mm x 0.8 mm flat connectors, and solder pin connections.

The contactor relays with 6.3 mm x 0.8 mm flat connectors can be used in the plug-in base with solder pin connections for printed circuit boards. The contactor relays are coded, and the plug-in base is codable in order to ensure non-interchangeability.

The 3TH22 contactor relays with 8 integrated contacts are available with screw terminals. The terminal designations are according to EN 50011.

Contact reliability

High contact stability at low voltages and currents, particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

3TH27 latched contactor relays

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

RC elements, varistors, diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually.

Accessories

Auxiliary switch blocks

The contactor relays with 4 contacts with screw terminals can be expanded by up to 4 contacts by adding snap-on auxiliary switch blocks (see "Accessories", page 5/30).

A cover (with unit labeling plate) must be removed from the front of the contactor relay for this purpose. The auxiliary switch block is then easy to mount. The auxiliary switch blocks can be removed again by unlocking them with a laterally arranged orange slide.

The contactor relays with screw terminals with 4 contacts according to EN 50011 with the identification number 40E can be expanded with 80E, 71E, 62E, 53E or 44E auxiliary switch blocks to a total of 8 contacts according to EN 50011. The identification numbers 80E, 71E, 62E, 53E or 44E on the coded auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactor relays with identification number 31E and 33E.

All contactor relays with screw terminals with 4 contacts according to EN 50011, identification number 40E, 31E or 22E, can be expanded with auxiliary switch blocks with identification number 40, 31, 22, 20, 11 or 02 to a total of 6 or 8 contacts according to EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode for short break times) can be plugged onto all contactors and auxiliary switch blocks with screw terminals from the front in order to dampen opening surges in the coil (see "Accessories", page 5/31).

The unit labeling plate must be removed for this purpose. It can be snapped onto the attached surge suppressor.

Additional load module

The 3TX4490-1J additional load module (see "Accessories", page 5/31) can be used by programmable logic controllers to increase permissible residual current, and to limit residual voltage in semiconductor outputs.

This module ensures the safe shut-down of 3TH2 contactor relays and 3TF2 contactors with direct control via 230 V AC semiconductor outputs. It is accommodated in the same enclosure as the 3TX4490-3. surge suppressors and can be plugged into the contactor.

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Technical specifications

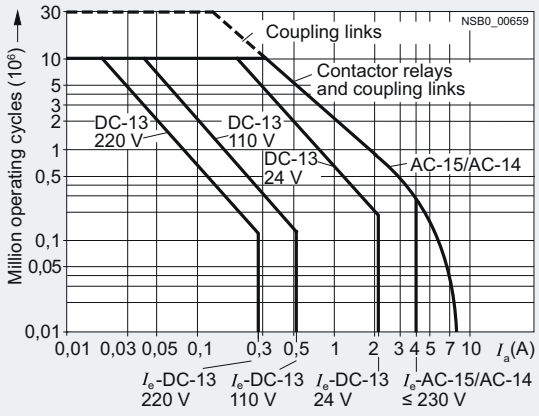
Contactor relays	Type	3TH2

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary. RC elements or freewheel diodes are suitable as protective measures for the circuits.

Legend for the diagram:
I_e = Rated operational current
I_a = Breaking current



Positively-driven operation of contacts in contactor relays

3TH20:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (removable) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

3TH22:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) according to:
- ZH 1/457
- IEC 60947-5-1, Appendix L
- SUVA

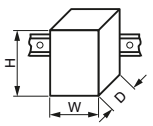
Explanations:

There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457
Safety rules for control units on power-operated presses in the metal-working industry.

IEC 60947-5-1, Appendix L
Low-Voltage Switchgear and Controlgear, Control Circuit Devices and Switching Elements.
Special requirements for positively-driven contacts

SUVA
Accident prevention regulations of the "Schweizer Unfallverhütungsanstalt" (Swiss Institute for Accident Insurance)



Type			Contactor relays 3TH20..-....	3TH22..-....	Auxiliary switch block 3TX4...-..
Dimensions (W x H x D)		mm	45 x 48 x 63	45 x 48 x 91	45 x 33 x 28
• With 3TX4 490 surge suppressor		mm	45 x 48 x 88	45 x 48 x 116	--

General technical specifications

Permissible mounting position	AC and DC operation		Any		
Mechanical endurance	• AC operation • DC operation	Operating cycles	10 million 30 million		
Rated insulation voltage U_i (pollution degree 3)					
• Screw terminals		V	690	500	500
• Flat connectors 6.3 mm x 0.8 mm		V	500	--	--
• Solder pin connections		V	500	--	--
Rated impulse withstand voltage U_{imp} (pollution degree 3)					
• Screw terminals		kV	6	6	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6	--	--
• Solder pin connections		kV	6	--	--
Protective separation between coil and contacts (according to IEC 60947-1, Appendix N)		V	Up to 300		
Permissible ambient temperature[1]	• During operation • During storage	°C °C	-25 ... +55 -55 ... +80		
Degree of protection acc. to IEC 60947-1 Appendix C			IP00/open		
• Connection range for screw terminals			IP20		
Touch protection acc. to EN 50274			Finger-safe for screw terminals		
Shock resistance					
• Rectangular pulse	- AC operation - DC operation	g/ms g/ms	7/5 and 4/10 10/5 and 6/10		
• Sine pulse	- AC operation - DC operation	g/ms g/ms	9/5 and 6/10 13/5 and 8/10		
Conductor cross-sections			[2]		

[1] Applies to 50/60 Hz coil:
Operating range at 60 Hz: 0.85 ... 1.1 x U_s;
at 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON-period, the maximum ambient temperature is +40 °C.

[2] Conductor cross-sections, see page 5/26.

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3TH2 contactor relays, 4- and 8-pole

Contactor relays	Type		3TH2
Short-circuit protection			
Short-circuit test			
with fuse links of operational class gG			
with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1			
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE		A	6
Conductor cross-sections			
Main and auxiliary conductors			**Screw terminals**
• Solid or stranded		mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)
• Terminal screw			M3
			Flat connectors
• Finely stranded			
When using a plug-in sleeve	- 6.3 ... 1	mm^2	0.5 ... 1
	- 6,3 ... 2.5	mm^2	1 ... 2.5
			Solder pin connections (only for printed circuit boards)
• Solder pin cross-section	(does not apply to plug-in bases)	mm^2	0.8 x 1.2
Control circuit			
Solenoid coil operating range[1]			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)			
• AC operation, 50 Hz	Closing	VA	15
	P.f.		0.41
	Closed	VA	6.8
	P.f.		0.42
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.36
	Closed	VA	6.1
	P.f.		0.46
• AC operation, 50/60 Hz[1]	Closing	VA	16.5/13.2
	P.f.		0.43/0.38
	Closed	VA	8.0/5.4
	P.f.		0.48/0.42
• DC operation	Closing = Closed	W	3
Permissible residual current of the electronics (with 0 signal)			
	AC operation	mA	≤ 3 x (220 V/U_s)
	DC operation	mA	≤ 1 x (220 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[2]			
Total break time = Opening delay + Arcing time			
Values apply with coil in cold state and at operating temperature for operating range			
• AC operation			
- Closing	ON-delay NO	ms	5 ... 20
	OFF-delay NC	ms	4 ... 12
- Opening	OFF-delay NO	ms	3 ... 24
	ON-delay NC	ms	3 ... 20
• DC operation			
- Closing	ON-delay NO	ms	16 ... 140
	OFF-delay NC	ms	13 ... 40
- Opening	OFF-delay NO	ms	3 ... 6
	ON-delay NC	ms	4 ... 10
• Arcing time		ms	10
Operating times for 1.0 x U_s[2]			
• AC operation			
- Closing	ON-delay NO	ms	6 ... 17
	OFF-delay NC	ms	5 ... 12
- Opening	OFF-delay NO	ms	3 ... 24
	ON-delay NC	ms	5 ... 20
• DC operation			
- Closing	ON-delay NO	ms	18 ... 42
	OFF-delay NC	ms	15 ... 26
- Opening	OFF-delay NO	ms	3 ... 5
	ON-delay NC	ms	4 ... 10

[1] Applies to 50/60 Hz coil
Operating range at 60 Hz: 0.85 ... 1.1 x U_s;
at 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON-period, the maximum ambient temperature is +40 °C.

[2] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3TH2
Load side			
Load rating with AC			
Utilization category AC-12			
Rated operational current I_e (at 60 °C)		A	10
Utilization categories AC-15 and AC-14			
Rated operational current I_e			
For rated operational voltage U_e			
	230/220 V	A	4
	400/380 V	A	3
	500 V	A	2
	690/660 V	A	1
Rated power of three-phase motors			
Acc. to utilization category	110 V	kW	0.2
AC-2 and AC-3	230/220 V	kW	0.55
	400/380 V	kW	1.1
	500 V	kW	1.5
	690/660 V	kW	1.5
Load rating with DC			
Utilization category DC-12		A	10
Rated operational current I_e			
For rated operational voltage U_e			
• 1 conducting path[1)]	Up to 24 V	A	4
	60 V	A	2
	110 V	A	1.1
	240/220 V	A	0.5
• 2 conducting paths in series	Up to 24 V	A	10
	60 V	A	10
	110 V	A	4
	240/220 V	A	2
• 3 conducting paths in series	Up to 24 V	A	10
	60 V	A	10
	110 V	A	6
	240/220 V	A	2.5
Utilization category DC-13			
Rated operational current I_e			
For rated operational voltage U_e			
• 1 conducting path	Up to 24 V	A	2.1
	60 V	A	0.9
	110 V	A	0.52
	240/220 V	A	0.27
• 2 conducting paths in series	Up to 24 V	A	10
	60 V	A	3.5
	110 V	A	1.3
	240/220 V	A	0.9
• 3 conducting paths in series	Up to 24 V	A	10
	60 V	A	4.7
	110 V	A	3
	240/220 V	A	1.2
Switching frequency			
Switching frequency z in operating cycles/hour			
Rated operation for utilization category	AC-12/DC-12	h^{-1}	1 000
Dependence of the switching frequency z' on the operational current I' and operational voltage U'			
$z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$	AC-2	h^{-1}	500
	AC-3	h^{-1}	1 000
	AC-15/AC-14	h^{-1}	1 200
	DC-13	h^{-1}	1 200
No-load switching frequency		h^{-1}	1 0000

[1)] Contact endurance 0.1 x 10^6 operating cycles.

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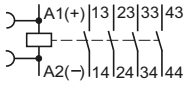
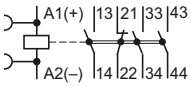
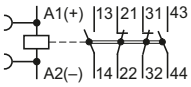
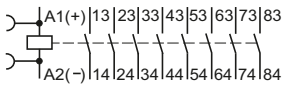
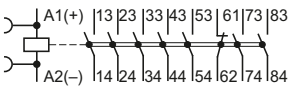
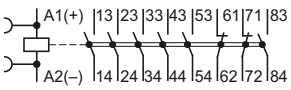
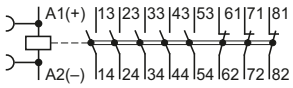
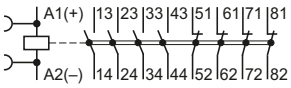
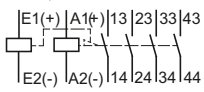
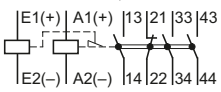
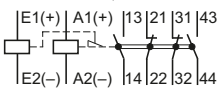
3TH2 contactor relays, 4- and 8-pole

Selection and ordering data

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts			DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version			Article No.	Price per PU			
						NO	NC						
Number	**A**	A	A	A									
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Terminal designations according to EN 50011													
4 NO, Ident. No. **40E**													
													
3 NO + 1 NC, Ident. No. **31E**													
													
2 NO + 2 NC, Ident. No. **22E**													
													
AC operation													
	4	**4**	3	2	1	**40E**	4	--	A	**3TH2040-0AP0**	1	1 unit	41A
						31E	3	1	A	**3TH2031-0AP0**	1	1 unit	41A
						22E	2	2	A	**3TH2022-0AP0**	1	1 unit	41A
DC operation													
	4	**4**	3	2	1	**40E**	4	--	A	**3TH2040-0BB4**	1	1 unit	41A
						31E	3	1	A	**3TH2031-0BB4**	1	1 unit	41A
3TH20..-0A..						**22E**	2	2	A	**3TH2022-0BB4**	1	1 unit	41A
With permanently mounted auxiliary switch blocks · For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Terminal designations according to EN 50011													
8 NO, Ident. No. **80E**													
													
7 NO + 1 NC, Ident. No. **71E**													
													
6 NO + 2 NC, Ident. No. **62E**													
													
5 NO + 3 NC, Ident. No. **53E**													
													
4 NO + 4 NC, Ident. No. **44E**													
													
AC operation													
	8	**4**	3	2	--	**80E**	8	0	C	**3TH2280-0AP0**	1	1 unit	41A
						71E	7	1	C	**3TH2271-0AP0**	1	1 unit	41A
						62E	6	2	C	**3TH2262-0AP0**	1	1 unit	41A
						53E	5	3	C	**3TH2253-0AP0**	1	1 unit	41A
						44E	4	4	C	**3TH2244-0AP0**	1	1 unit	41A
DC operation													
	8	**4**	3	2	--	**80E**	8	0	C	**3TH2280-0BB4**	1	1 unit	41A
						71E	7	1	C	**3TH2271-0BB4**	1	1 unit	41A
						62E	6	2	C	**3TH2262-0BB4**	1	1 unit	41A
						53E	5	3	C	**3TH2253-0BB4**	1	1 unit	41A
3TH22..-0A..						**44E**	4	4	C	**3TH2244-0BB4**	1	1 unit	41A
Latched contactor relays · For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Terminal designations according to EN 50011													
4 NO, Ident. No. **40E**													
													
3 NO + 1 NC, Ident. No. **31E**													
													
2 NO + 2 NC, Ident. No. **22E**													
													
AC operation													
	4	**4**	3	2	1	**40E**	4	--	C	**3TH2740-0AP0**	1	1 unit	41A
						31E	3	1	C	**3TH2731-0AP0**	1	1 unit	41A
						22E	2	2	C	**3TH2722-0AP0**	1	1 unit	41A
DC operation													
	4	**4**	3	2	1	**40E**	4	--	C	**3TH2740-0BB4**	1	1 unit	41A
						31E	3	1	C	**3TH2731-0BB4**	1	1 unit	41A
3TH27..						**22E**	2	2	C	**3TH2722-0BB4**	1	1 unit	41A

Accessories see pages 5/30 and 5/31.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts			DT	Flat connectors		PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version			Article No.	Price per PU			
						NO	NC						
Number	**A**	A	A	A									
Contactor relays with 6.3 mm x 0.8 mm flat connectors													
Terminal designations according to EN 50011													
4 NO, Ident. No. **40E**													
3 NO + 1 NC, Ident. No. **31E**													
2 NO + 2 NC, Ident. No. **22E**													
AC operation													
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
4	**4**	3	2	--	**40E**	4	--	C	**3TH2040-3AP0**		1	1 unit	41A
					31E	3	1	D	**3TH2031-3AP0**		1	1 unit	41A
					22E	2	2	C	**3TH2022-3AP0**		1	1 unit	41A
For screw fixing (diagonal)													
4	**4**	3	2	--	**40E**	4	--	C	**3TH2040-7AP0**		1	1 unit	41A
					31E	3	1	C	**3TH2031-7AP0**		1	1 unit	41A
					22E	2	2	C	**3TH2022-7AP0**		1	1 unit	41A
DC operation													
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
4	**4**	3	2	--	**40E**	4	--	C	**3TH2040-3BB4**		1	1 unit	41A
					31E	3	1	C	**3TH2031-3BB4**		1	1 unit	41A
					22E	2	2	D	**3TH2022-3BB4**		1	1 unit	41A
For screw fixing (diagonal)													
4	**4**	3	2	--	**40E**	4	--	D	**3TH2040-7BB4**		1	1 unit	41A
					31E	3	1	C	**3TH2031-7BB4**		1	1 unit	41A
					22E	2	2	C	**3TH2022-7BB4**		1	1 unit	41A
Contactor relays with solder pin connections for printed circuit boards									**Solder pin connections**				
Terminal designations according to EN 50011													
4 NO, Ident. No. **40E**													
3 NO + 1 NC, Ident. No. **31E**													
2 NO + 2 NC, Ident. No. **22E**													
AC operation													
For screw fixing (diagonal)													
4	**4**	3	2	--	**40E**	4	--	C	**3TH2040-6AP0**		1	1 unit	41A
					31E	3	1	C	**3TH2031-6AP0**		1	1 unit	41A
					22E	2	2	D	**3TH2022-6AP0**		1	1 unit	41A
DC operation													
For screw fixing (diagonal)													
4	**4**	3	2	--	**40E**	4	--	C	**3TH2040-6BB4**		1	1 unit	41A
					31E	3	1	C	**3TH2031-6BB4**		1	1 unit	41A
					22E	2	2	D	**3TH2022-6BB4**		1	1 unit	41A

3TH20..-3...

3TH20..-7...

3TH20..-6...

Accessories see pages 5/30 and 5/31.

Options

Rated control supply voltages (change of 10th and 11th digit of the Article No.)

Contactor type	3TH20..-0...	3TH20..-3..., 3TH20..-6..., 3TH20..-7..., 3TH22, 3TH27
Rated control supply voltage U_s		
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz / **60 Hz**		
24 V AC / 29 V AC	B0	--
110 V AC / 132 V AC	F0	--
230/220 V AC / 276 V AC	P0[1)]	P0[1)]

Contactor type	3TH20..-0...	3TH20..-3..., 3TH20..-6..., 3TH20..-7..., 3TH22, 3TH27
Rated control supply voltage U_s		
DC operation		
24 V DC	B4	B4
110 V DC	F4	--
220 V DC	M4	--

[1)] Operating range at 220 V or 380 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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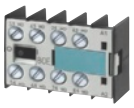
3TH2 contactor relays, 4- and 8-pole

Accessories

Rated operational current I_e/AC-15/AC-14 at			Contacts					DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
230/ 220 V	400/ 380 V	500 V	Ident. No.	Version					Article No. Price per PU			
A	A	A		NO	NC	NO	NC					
Snap-on auxiliary switch blocks for 3TH20 contactor relays												
 3TX4440-0A												
For expansion to 8 contacts according to EN 50011 Only for 3TH2040-0... (with 4 NO, Ident. No. 40E)												
4	3	2	**80E**	4	--	--	--	▶	**3TX4440-0A**	1	1 unit	41A
			71E	3	1	--	--	▶	**3TX4431-0A**	1	1 unit	41A
			62E	2	2	--	--	▶	**3TX4422-0A**	1	1 unit	41A
			53E	1	3	--	--	▶	**3TX4413-0A**	1	1 unit	41A
			44E	--	4	--	--	▶	**3TX4404-0A**	1	1 unit	41A
For expansion to 6 or 8 contacts according to EN 50005												
4	3	2	**40E**	4	--	--	--	▶	**3TX4440-2A**	1	1 unit	41A
			31E	3	1	--	--	▶	**3TX4431-2A**	1	1 unit	41A
			22E	2	2	--	--	▶	**3TX4422-2A**	1	1 unit	41A
			22; 2U	--	--	2	2	B	**3TX4422-2G**	1	1 unit	41A
4	3	2	**20E**	2	--	--	--	▶	**3TX4420-2A**	1	1 unit	41A
			11E	1	1	--	--	▶	**3TX4411-2A**	1	1 unit	41A
			02E	--	2	--	--	▶	**3TX4402-2A**	1	1 unit	41A
			11; U	--	--	1	1	D	**3TX4411-2G**	1	1 unit	41A

For contactors	Rated control supply voltage U_S		OFF-delay (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	50/60 Hz AC	DC			Article No. Price per PU			
Type	V	V	s					
OFF-delay devices for contactors with DC operation								
Bridging of voltage interruptions up to 0.8 sec								
3TX4490-1A								
3TH2...-0BB4	--	24	0.25 or 0.5	A	**3TX4490-1H**	1	1 unit	41B
3TH2...-0BF4	110	--	0.1 or 0.2	A	**3TX4490-1A**	1	1 unit	41B
3TH2...-0BM4, 3TH2...-0BP4	220/230	--	0.4 or 0.8	A	**3TX4490-1A**	1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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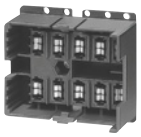
3TH2 contactor relays, 4- and 8-pole

	For contactors	Rated control supply voltage U_s		Power consumption of LED at U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Type	V AC	V DC	mW						
Surge suppressors[1] **for plugging onto contactors with and without auxiliary switch blocks**										
	Version without LED									
	RC elements									
3TX4490-3A	3TH2...-0...	24 ... 48	24 ... 70	--	B	**3TX4490-3R**		1	1 unit	41B
		48 ... 127	70 ... 150	--	B	**3TX4490-3S**		1	1 unit	41B
		127 ... 240	150 ... 250	--	B	**3TX4490-3T**		1	1 unit	41B
		240 ... 400	--	--	B	**3TX4490-3U**		1	1 unit	41B
		400 ... 600	--	--	B	**3TX4490-3V**		1	1 unit	41B
	Varistors									
	3TH2...-0...	≤ 48	24 ... 70	--	►	**3TX4490-3G**		1	1 unit	41B
		48 ... 127	70 ... 150	--	B	**3TX4490-3H**		1	1 unit	41B
		127 ... 240	150 ... 250	--	B	**3TX4490-3J**		1	1 unit	41B
		240 ... 400	--	--	B	**3TX4490-3K**		1	10 units	41B
		400 ... 600	--	--	B	**3TX4490-3L**		1	10 units	41B
	Noise suppression diodes									
	3TH2...-0...	--	12 ... 250	--	►	**3TX4490-3A**		1	1 unit	41B
	Diode assemblies (diode and Zener diode) For DC operation and short break times									
	3TH2...-0...	--	24 ... 250	--	B	**3TX4490-3B**		1	1 unit	41B
	Version with LED									
	Varistors									
3TX4490-4G	3TH2...-0...	24 ... 48	12 ... 24	10 ... 120	B	**3TX4490-4G**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	B	**3TX4490-4H**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	B	**3TX4490-4J**		1	1 unit	41B
		--	150 ... 250	160 ... 950	D	**3TX4490-4K**		1	1 unit	41B
	Noise suppression diodes									
	3TH2...-0...	--	24 ... 70	20 ... 470	B	**3TX4490-4A**		1	1 unit	41B
		--	70 ... 150	50 ... 700	B	**3TX4490-4B**		1	1 unit	41B
		--	150 ... 250	160 ... 950	B	**3TX4490-4C**		1	1 unit	41B
Additional load modules for 3TH2 contactor relays for plugging onto contactors with and without auxiliary switch blocks										
3TX4490-1J	For increasing the permissible residual current and for limiting the residual voltage of SIMATIC semiconductor outputs									
	3TH2...-0A..	230/220, 50 Hz		--	D	**3TX4490-1J**		1	1 unit	41B
		230, 60 Hz		--						
		230, 50/60 Hz		--						
		Operating range 0.8 ... 1.1 × U_s								
Plug-in bases with solder pin connections for printed circuit boards, width 45 mm										
 3TX4491-2A	For 3TH2 contactor relays; with flat connectors 1 x 6.3 mm ... 0.8 mm Rated insulation voltage U_i: 400 V (at pollution degree 3); rated impulse withstand voltage U_{imp}: 6 kV; rated operational current I_e: 6 A; ⓒ and ᵁᴸ rated data: max. 300 V, 6 A									
	3TH20..-3..., 3TH20..-7...				D	**3TX4491-2A**		1	5 units	41A
Release tools										
	3TH20..-7...	For releasing contactors from 3TX4491-2A plug-in bases			D	**3TX4491-2K**		1	1 unit	41A

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RH21 coupling contactors for switching auxiliary circuits, 4-pole

Overview

DC operation

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3RH21 coupling contactors for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

The 3RH21 coupling contactors cannot be extended with auxiliary switch blocks.

Coupling contactors have a low power consumption and an extended solenoid coil operating range.

Depending on the version, solenoid coils are supplied either without overvoltage damping (versions 3RH21 . . -. HB40 or 3RH21 . . -. MB40-0KT0) or with a diode or suppressor diode connected as standard.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH21 contactor contactors (see page 5/6).

Contactor type		**3RH21 . . -. HB40**	**3RH21 . . -. JB40**	**3RH21 . . -. KB40**
Size		**S00**	**S00**	**S00**
Control circuit				
Solenoid coil operating range		0.7 ... 1.25 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed				
• At U_s = 17 V	W	1.4		
• At U_s = 24 V	W	2.8		
• At U_s = 30 V	W	4.4		
Permissible residual current of the electronics for 0 signal		< 10 mA x (24 V/U_s)		
Overvoltage configuration of the solenoid coil		No overvoltage damping	With diode	With suppressor diode
Operating times				
• **Closing** at 17 V				
- ON-delay NO	ms	40 ... 130		
- OFF-delay NC	ms	30 ... 80		
• At 24 V				
- ON-delay NO	ms	35 ... 60		
- OFF-delay NC	ms	25 ... 40		
• At 30 V				
- ON-delay NO	ms	25 ... 50		
- OFF-delay NC	ms	15 ... 30		
• **Closing** at 17 ... 30 V				
- OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20
- ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30
Upright mounting position		On request		

Contactor type		**3RH21 . . -. MB40-0KT0**	**3RH21 . . -. VB40**	**3RH21 . . -. WB40**
Size		**S00**	**S00**	**S00**
Control circuit				
Solenoid coil operating range		0.85 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed at U_s = 24 V	W	1.6		
Permissible residual current of the electronics for 0 signal		< 8 mA x (24 V/U_s)		
Overvoltage configuration of the solenoid coil		Diode, varistor or RC element, attachable	Built-in diode	Built-in suppressor diode

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SIRIUS 3RH21 coupling contactors for switching auxiliary circuits, 4-pole

Contactor type		3RH21..-.MB40-0KT0	3RH21..-.VB40	3RH21..-.WB40
Size		S00	S00	S00
Control circuit				
Operating times				
• Closing at 20.5 V				
- ON-delay NO	ms	30 ... 120		
- OFF-delay NC	ms	20 ... 110		
• At 24 V				
- ON-delay NO	ms	25 ... 90		
- OFF-delay NC	ms	15 ... 80		
• At 44 V				
- ON-delay NO	ms	15 ... 60		
- OFF-delay NC	ms	10 ... 50		
• Closing at 17 ... 30 V				
- OFF-delay NO	ms	5 ... 20	20 ... 80	5 ... 20
- ON-delay NC	ms	10 ... 30	30 ... 90	10 ... 30
Upright mounting position		On request		

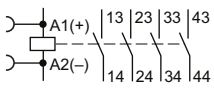
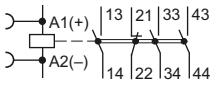
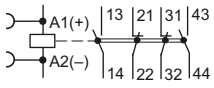
Selection and ordering data

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

3RH21..-1.B40

3RH21..-2.B40

Rated operational current I_e/AC-15/ AC-14 at **230 V**	Auxiliary contacts Ident. No. acc. to EN 50011			DT	**Screw terminals** Article No.	Price per PU	DT	**Spring-type terminals** Article No.	Price per PU
		Version							
A		NO	NC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00									
Diode, varistor or RC element, attachable									
Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)									
4 NO, Ident. No. **40E** 									
3 NO + 1 NC, Ident. No. **31E** 									
2 NO + 2 NC, Ident. No. **22E** 									
Rated control supply voltage U_S = 24 V DC, operating range **0.7 to 1.25 x U_S** Power consumption of the solenoid coils **2.8 W** at 24 V									
10	**40E**	4	--	B	**3RH2140-1HB40**		B	**3RH2140-2HB40**	
	31E	3	1	B	**3RH2131-1HB40**		B	**3RH2131-2HB40**	
	22E	2	2	B	**3RH2122-1HB40**		B	**3RH2122-2HB40**	
Rated control supply voltage U_S = 24 V DC, operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V									
10	**40E**	4	--	B	**3RH2140-1MB40-0KT0**		B	**3RH2140-2MB40-0KT0**	
	31E	3	1	B	**3RH2131-1MB40-0KT0**		B	**3RH2131-2MB40-0KT0**	
	22E	2	2	B	**3RH2122-1MB40-0KT0**		B	**3RH2122-2MB40-0KT0**	

For surge suppressors, see page 5/13.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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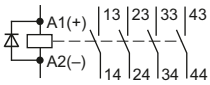
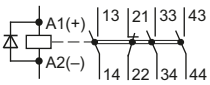
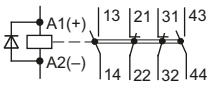
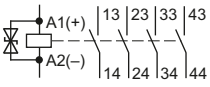
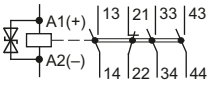
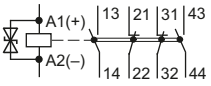
SIRIUS 3RH21 coupling contactors for switching auxiliary circuits, 4-pole

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

3RH21..-1.B40

3RH21..-2.B40

Rated operational current I_e/AC-15/ AC-14 at **230 V**	Auxiliary contacts Ident. No. acc. to EN 50011	Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
		NO NC						
A								
For screw fixing and snap-on mounting onto TH 35 standard mounting rail								
Size S00								
With integrated coil circuit (diode)								
Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)								
4 NO, Ident. No. **40E** 								
3 NO + 1 NC, Ident. No. **31E** 								
2 NO + 2 NC, Ident. No. **22E** 								
Rated control supply voltage U_S = 24 V DC, operating range **0.7 to 1.25 x U_S** Power consumption of the solenoid coils **2.8 W** at 24 V								
10	**40E**	4	--	B	**3RH2140-1JB40**	B	**3RH2140-2JB40**
	31E	3	1	▶	**3RH2131-1JB40**	▶	**3RH2131-2JB40**
	22E	2	2	▶	**3RH2122-1JB40**	B	**3RH2122-2JB40**
Rated control supply voltage U_S = 24 V DC, operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V								
10	**40E**	4	--	B	**3RH2140-1VB40**	B	**3RH2140-2VB40**
	31E	3	1	B	**3RH2131-1VB40**	B	**3RH2131-2VB40**
	22E	2	2	B	**3RH2122-1VB40**	B	**3RH2122-2VB40**
With integrated coil circuit (suppressor diode)								
Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)								
4 NO, Ident. No. **40E** 								
3 NO + 1 NC, Ident. No. **31E** 								
2 NO + 2 NC, Ident. No. **22E** 								
Rated control supply voltage U_S = 24 V DC, operating range **0.7 to 1.25 x U_S** Power consumption of the solenoid coils **2.8 W** at 24 V								
10	**40E**	4	--	B	**3RH2140-1KB40**	B	**3RH2140-2KB40**
	31E	3	1	▶	**3RH2131-1KB40**	▶	**3RH2131-2KB40**
	22E	2	2	▶	**3RH2122-1KB40**	▶	**3RH2122-2KB40**
Rated control supply voltage U_S = 24 V DC, operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V								
10	**40E**	4	--	B	**3RH2140-1SB40**	B	**3RH2140-2SB40**
	31E	3	1	B	**3RH2131-1SB40**	B	**3RH2131-2SB40**
	22E	2	2	B	**3RH2122-1SB40**	B	**3RH2122-2SB40**

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

Overview

DC operation

IEC 60947-4-1, EN 60947-4-1

The contactor relays are finger-safe according to EN 50274. The size S00 contactor relays have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactor relays (across the full solenoid coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with surge suppressors. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

Contactor relays with conventional coil

Control and auxiliary circuits

These contactor relays have an extended operating range from 0.7 to 1.25 x U_s; the solenoid coils are fitted as standard with a suppressor diode. An additional series resistor is not required.

Note:

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

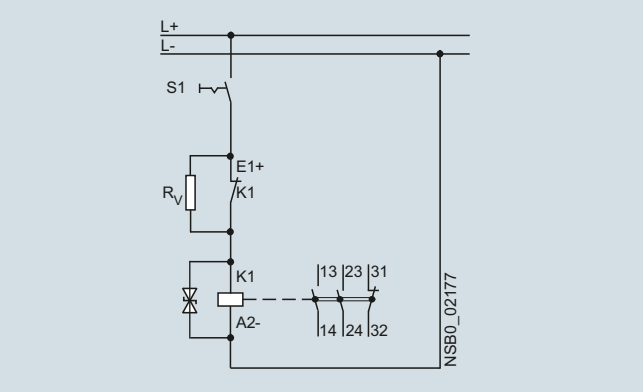
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤ 70 °C.

Contactor relays with series resistor

Control and auxiliary circuits

The DC solenoid systems of the contactor relays are modified (to holding excitation) by means of a series resistor.

The size S00 contactor relays are supplied prewired with a plug-on module containing the series resistor. A surge suppressor (a suppressor diode or varistor as preferred) is integrated.



Circuit diagram (version with suppressor diode)

A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

Side-by-side mounting

Side-by-side-side mounting is permissible at ambient temperatures up to 70 °C.

Technical specifications

Contactor relays	Type			3RH21..
General technical specifications				
Upright mounting position				
• Contactors with series resistor				Special version (on request)
• Contactors with conventional coil				Special version (on request)
Ambient temperature				
• During operation			°C	-40 ... +70[1)]
• During storage			°C	-55 ... +80
Control circuit				
Solenoid coil operating range	DC			0.7 ... 1.25 x U_s
Power consumption of the solenoid coils				For cold coil and 1.0 x U_s
• Contactors with series resistor		- Closing	W	13
		- Closed	W	4
• Contactors with conventional coil		- Closing	W	2.8
		- Closed	W	2.8

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/4.

[1)] 3RH21..-.K contactor relays without the suffix -0LA0 are coupling contactor relays that are certified for the temperature range -25 °C to +60 °C. For railway applications, an additional certification approves these contactors with a minimum distance of 10 mm for the extended temperature range -40 °C to +70 °C.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

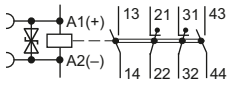
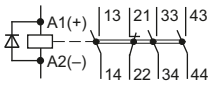
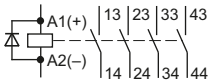
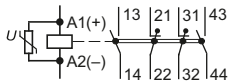
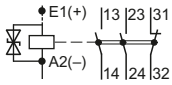
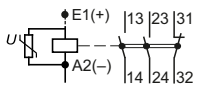
SIRIUS 3RH21 contactor relays

Selection and ordering data

DC operation
Spring-type terminals
For screw and snap-on mounting onto standard mounting rails
Solenoid coil with surge suppression

3RH2122-2K.40

3RH2122-2K.40-0LA0

Rated operational current I_e/AC-15/AC-14 T_u: 70 °C at				Contacts		Rated control supply voltage U_s	DT	**Spring-type terminals**	PU (UNIT, SET, M)	PS*	PG
230 V	400 V	500 V	690 V	Version				Article No. / Price per PU			
A	A	A	A	NO	NC	V DC					
3RH21 contactor relays											
Size S00											
With conventional coil, fitted with suppressor diode											
Terminal designations according to EN 50011											
2 NO + 2 NC, Ident. No. **22E**											
											
10	3	2	1	2	2[1]	24	▶	**3RH2122-2KB40**	1	1 unit	41A
						110	A	**3RH2122-2KF40**	1	1 unit	41A
				3	1[1]	24	▶	**3RH2131-2KB40**	1	1 unit	41A
				4	0[1]	24	B	**3RH2140-2KB40**	1	1 unit	41A
3 NO + 1 NC, Ident. No. **31E**											
											
10	3	2	1	3	1[1]	24	▶	**3RH2131-2KB40**	1	1 unit	41A
				4	0[1]	24	B	**3RH2140-2KB40**	1	1 unit	41A
4 NO, Ident. No. **40E**											
											
10	3	2	1	4	0[1]	24	B	**3RH2140-2KB40**	1	1 unit	41A
With conventional coil, fitted with varistor											
Terminal designations according to EN 50011											
2 NO + 2 NC, Ident. No. **22E**											
											
10	3	2	1	2	2[1]	24	B	**3RH2122-2LB40**	1	1 unit	41A
						110	B	**3RH2122-2LF40**	1	1 unit	41A
With series resistor, fitted with suppressor diode											
Terminal designations according to EN 50011											
2 NO + 1 NC, Ident. No. **21X**											
											
10	3	2	1	2	1[2]	24	B	**3RH2122-2KB40-0LA0**	1	1 unit	41A
						110	B	**3RH2122-2KF40-0LA0**	1	1 unit	41A
With series resistor, fitted with varistor											
Terminal designations according to EN 50011											
2 NO + 1 NC, Ident. No. **21X**											
											
10	3	2	1	2	1[2]	24	B	**3RH2122-2LB40-0LA0**	1	1 unit	41A
						110	B	**3RH2122-2LF40-0LA0**	1	1 unit	41A

[1] It is not possible to mount an auxiliary switch block.
[2] 4-pole auxiliary switch block according to EN 50005 can be mounted.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

Overview

Standards

IEC 60947-4-1, EN 60947-4-1

The contactor relays are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full solenoid coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 55 °C. There is no need to reduce the technical specifications.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Contactor relay	Type			3TH42
General technical specifications				
Permissible ambient temperature				
• During operation			°C	-50 ... +70[1)]
• During storage			°C	-55 ... +80
Control circuit				
Solenoid coil operating range				0.7 ... 1.25 x U_s
Power consumption of the solenoid coils (for cold coil)				
		0.7 x U_s	W	2.6
		1.0 x U_s	W	5.2
		1.25 x U_s	W	8.2
(For cold coil: Closing = Closed)				
Permissible residual current of the electronics (with 0 signal)				
• DC operation				≤ 10 mA x (24 V/U_s)
Operating times (Total break time = OFF-delay + Arcing time)				
• Closing				
- 0,7 x U_s	ON-delay (NO)		ms	70 ... 200
	OFF-delay (NC)		ms	28 ... 33
- 1 x U_s	ON-delay (NO)		ms	45 ... 80
	OFF-delay (NC)		ms	30 ... 34
- 1.25 x U_s	ON-delay (NO)		ms	40 ... 60
	OFF-delay (NC)		ms	31 ... 35
• Opening				
- 0.7 ... 1.25 x U_s	OFF-delay (NO)		ms	20 ... 30
	ON-delay (NC)		ms	22 ... 32
• Arcing time			ms	10

1) Side-by-side mounting with 10 mm distance.

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/16.

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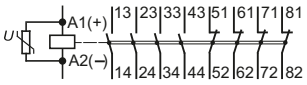
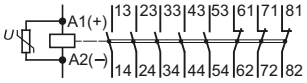
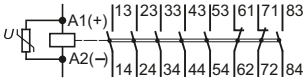
3TH4 contactor relays

Selection and ordering data

Solenoid coil fitted with varistor

3TH4244-0L..

Contacts	Rated operational current I_e/AC-15/AC-14				Contacts[1]			Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
					Ident. No. acc. to EN 50011	Version				Article No. / Price per PU			
	230 V	400 V	500 V	690 V		NO	NC	V DC					
Number	A	A	A	A									
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
DC operation													
													
8	**10**	6	4	2	**44E**	4	4	24	▶	**3TH4244-0LB4**	1	1 unit	41A
								110	▶	**3TH4244-0LF4**	1	1 unit	41A
													
8	**10**	6	4	2	**53E**	5	3	24	▶	**3TH4253-0LB4**	1	1 unit	41A
								110	▶	**3TH4253-0LF4**	1	1 unit	41A
													
8	**10**	6	4	2	**62E**	6	2	24	▶	**3TH4262-0LB4**	1	1 unit	41A
								110	▶	**3TH4262-0LF4**	1	1 unit	41A

[1] Contacts not extendable.

Accessories see page 5/22.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

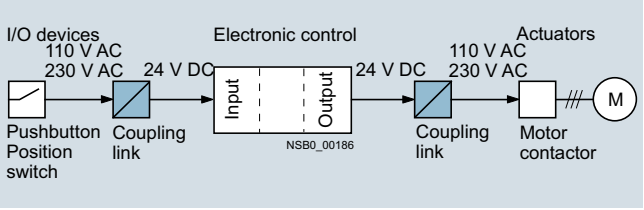
AC and DC operation

IEC 60947-5-1, EN 60947-5-1

In the coupling links in double-decker design, the connections are arranged on two levels; these units are extremely compact. Connection method: Screw terminals or spring-type terminals. For test purposes, versions are available with manual-0-automatic switches.

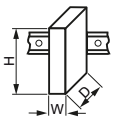
The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.



Application example: Motor control

Technical specifications

Type			3TX7002, 3TX7003	3TX7004, 3TX7005
Dimensions (W x H x D) For width B see "Selection and ordering data"		mm	W x 60 x 62	B x 80 x 85
General technical specifications				
Rated insulation voltage U_i (pollution degree 3)		V	300	
Protective separation[1] between coil and contacts acc. to IEC 60947-1, Appendix N		V	Up to 300 AC	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Degree of protection				
• Connections			IP20	
• Enclosure			IP30	
Short-circuit protection				
• Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	4	
Conductor cross-sections				
For 3TX7002, 3TX7004:			**Screw terminals**	
• Solid		mm^2	1 x (0.25 ... 4)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)	
• Terminal screws			M3	
- Corresponding opening tool			Screwdriver, size 3.5 mm x 0.5 mm	
For 3TX7003, 3TX7005:			**Spring-type terminals**	
• Solid or finely stranded		mm^2	1 x (0.08 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.25 ... 1.5)	
• Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA2908-1A)	

[1] For 3TX700.-1FB02, no protective separation acc. to IEC 60947-1, Appendix N.

Type	3TX7002-, 3TX7003-		1AB00 1AB02	1BB00	1FB02	1CB00	2AB00	2AE00	1BF00 2BF02	2AF00 2AF05
Control side										
Operating range			0.8 ... 1.25 x U_s					0.8 ... 1.1 x U_s		
Power consumption										
• At U_s = 24 V AC/DC		W	0.75		1.2		0.75		--	
• At U_s = 230 V AC/DC		W	--		--		--		1.2	

Type		3TX7004, 3TX7005	Exception: 3TX7005-…05
Control side			
Operating range			
• At U_s = 24 V AC/DC		0.7 ... 1.25 x U_s	
• At U_s = 110 V AC/DC and 230 V		0.8 ... 1.1 x U_s	
- Exception: 3TX7005-1LN00		0.7 ... 1.25 x U_s	
Power consumption			
• At U_s = 24 V AC/DC	VA/W	0.5	--
• At U_s = 230 V AC	VA		6
• At U_s = 230 V DC	W		1

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Relay couplers

Type			3TX7002, 3TX7003	Exception: 3TX7002-1CB00
Load side				
Rated operational currents I_e [1]				
Conventional thermal current I_{th}		A	6	
Rated operational current I_e acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
Switching current for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.2	
	At 230 V	A	0.2	
Switching voltage	AC/DC	V	24 ... 250	
Min. contact load for 3TX700.-...02			1 V AC/DC/0.1 A	
Mechanical endurance	Operating cycles		10×10^6	
Electrical endurance at I_e	Operating cycles		1×10^5	

Type			3TX7004-1B, -1L, 3TX7005-1L	3TX7004-.M, 3TX7005-.M,
Load side				
Rated operational currents I_e [1]				
Conventional thermal current I_{th}		A	6	
Rated operational current I_e acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
Switching current for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.3	
	At 230 V	A	0.2	
Power limit for hard gold-plating				
• Voltage		V	30	
• Current		mA	20	
Switching voltage	AC/DC	V	17 ... 250	
Min. switching voltage (reliability 1 ppm)				
• Standard contacts			17 V DC/5 mA	
• Hard gold-plated contacts			5 V DC/1 mA	
Mechanical endurance	Operating cycles		10×10^6	
Electrical endurance at I_e	Operating cycles		1×10^5	0.5×10^6

[1] Capacitive loads can result in micro-welding on the contacts.

Note:

If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

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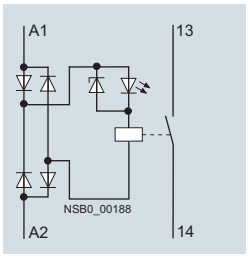
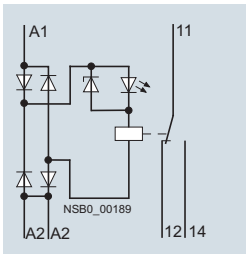
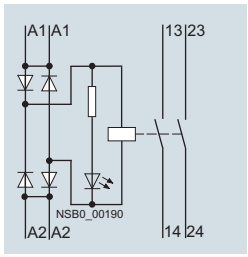
Relay couplers – circuit diagrams for 3TX7002, 3TX7003

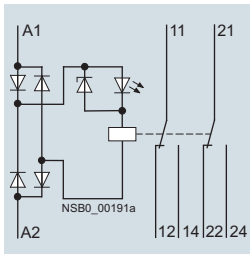
Terminal designations acc. to EN 50005

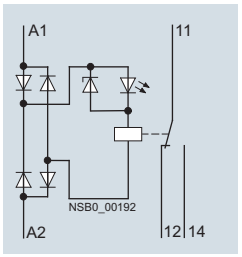
Output/input coupling links	**Output coupling links**			**Input coupling links**
3TX7002-1AB00 3TX7002-1AB02 3TX7002-2A.00 3TX7002-2AF05 3TX7003-1AB00	3TX7002-1BB00 3TX7002-1BF00 3TX7003-1BB00	3TX7002-1CB00 3TX7003-1CB00	3TX7002-1FB02	3TX7002-2BF02





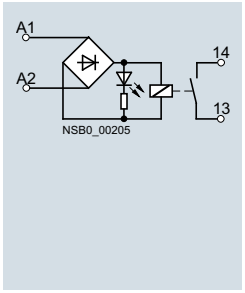


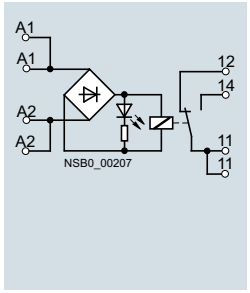


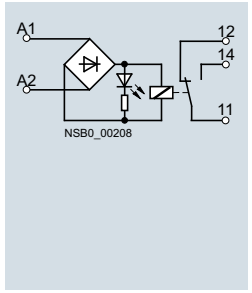


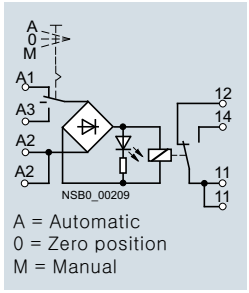
Relay couplers – circuit diagrams for 3TX7004, 3TX7005

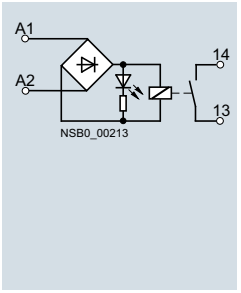
Output coupling links				**Input coupling links**
3TX700.-1M.00	3TX700.-1BB00 3TX700.-1BF05	3TX700.-1L.0.	3TX700.-1BB10	3TX700.-2M.02











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Relay couplers

Selection and ordering data

AC and DC operation · for snap-on mounting onto TH 35 standard mounting rail

Rated control supply voltage U_s (at AC: 50/60 Hz)	Contacts Version		Width W	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V	NO	CO	mm						
Relay coupling links 3TX7002									
3TX7002-1AB00	**Output coupling links**				**Screw terminals**				
24 AC/DC	1	--	11.5	▶	**3TX7002-1AB00**		1	1 unit	41H
24 AC/DC	1[1]	--	11.5	▶	**3TX7002-1AB02**		1	1 unit	41H
24 AC/DC	--	1	17.5	▶	**3TX7002-1BB00**		1	1 unit	41H
230 AC/DC[3]	--	1	17.5	▶	**3TX7002-1BF00**		1	1 unit	41H
24 AC/DC	2[2]	--	22.5	▶	**3TX7002-1CB00**		1	1 unit	41H
24 AC/DC	--	2[1] [2]	22.5	▶	**3TX7002-1FB02**		1	1 unit	41H
	Input coupling links								
24 AC/DC	1	--	11.5	▶	**3TX7002-2AB00**		1	1 unit	41H
110 AC/DC[4]	1	--	11.5	▶	**3TX7002-2AE00**		1	1 unit	41H
230 AC/DC[3]	1[2]	--	11.5	▶	**3TX7002-2AF00**		1	1 unit	41H
230 AC/DC	1[2]	--	11.5	▶	**3TX7002-2AF05**		1	1 unit	41H
230 AC/DC[3]	--	1[1]	17.5	▶	**3TX7002-2BF02**		1	1 unit	41H
Relay coupling links 3TX7003									
3TX7003-1BB00	**Output coupling links**				**Spring-type terminals**				
24 AC/DC	1	--	11.5	▶	**3TX7003-1AB00**		1	1 unit	41H
24 AC/DC	--	1	17.5	▶	**3TX7003-1BB00**		1	1 unit	41H
24 AC/DC	2[2]	--	22.5	▶	**3TX7003-1CB00**		1	1 unit	41H
	Input coupling links								
230 AC/DC	1	--	11.5	A	**3TX7003-2AF00**		1	1 unit	41H

[1] Hard gold-plated contacts.

[2] Different potential up to 300 V permitted; no protective separation.

[3] Observe max. permissible cable length for AC control voltage: 7 m.

[4] Observe max. permissible cable length for AC control voltage: 15 m.

Note:

For coil voltages which are not listed, SITOP DC power supplies can be used, e.g. 6EP1331-5BA00 or 6EP1331-5BA10; see Chapter 15, "Stabilized Power Supplies" ➞ "SITOP Power Supplies".

Note:

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Rated control supply voltage U_S (at AC: 50/60 Hz)	Contacts Version		Manual-0-automatic switch for testing purposes	Width W	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	NO	CO		mm						
3TX7004 relay couplers											
3TX7004-1LB0.	**Output coupling links**						**Screw terminals**				
	24 AC/DC	--	1	Without	6.2	▶	**3TX7004-1LB00**		1	1 unit	41H
	24 AC/DC	--	1[2]	Without	6.2	▶	**3TX7004-1LB02**		1	1 unit	41H
	24 AC/DC	--	1	With	12.5	▶	**3TX7004-1BB10**		1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	**3TX7004-1LF00**		1	1 unit	41H
	230 AC/DC	--	1	Without	12.5[1]	▶	**3TX7004-1BF05**		1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	**3TX7004-1MB00**		1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	**3TX7004-1MF00**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	1[2]	--	Without	6.2	▶	**3TX7004-2MB02**		1	1 unit	41H
	110 AC/DC	1[2]	--	Without	6.2	▶	**3TX7004-2ME02**		1	1 unit	41H
	230 AC/DC	1[2]	--	Without	6.2	▶	**3TX7004-2MF02**		1	1 unit	41H
3TX7005 relay couplers											
3TX7005-2MB02	**Output coupling links**						**Spring-type terminals**				
	24 AC/DC	--	1	Without	6.2	▶	**3TX7005-1LB00**		1	1 unit	41H
	24 AC/DC	--	1[2]	Without	6.2	▶	**3TX7005-1LB02**		1	1 unit	41H
	110 AC/DC[3]	--	1	Without	6.2	B	**3TX7005-1LN00**		1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	**3TX7005-1LF00**		1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	**3TX7005-1MB00**		1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	**3TX7005-1MF00**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	1[2]	--	Without	6.2	C	**3TX7005-2MB02**		1	1 unit	41H
	230 AC/DC	1[2]	--	Without	6.2	B	**3TX7005-2MF02**		1	1 unit	41H

[1] For long cables.
[2] Hard gold-plated contacts.
[3] Extended operating range 0.7 ... 1.25 x U_S.

Note:

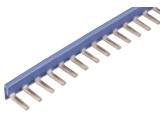
For replacement products see 3RS18 coupling links with industrial enclosure or other 3TX70 products.

For coil voltages which are not listed, SITOP DC power supplies can be used, e.g. 6EP1331-5BA00 or 6EP1331-5BA10; see Chapter 15, "Stabilized Power Supplies" ➞ "SITOP Power Supplies".

Note:

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

Accessories

	For coupling links Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting comb, blue								
 3TX7004-8AA00	3TX7004	For linking the same potentials 24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm	▶	**3TX7004-8AA00**		1	1 unit	41H
Connecting cable, blue								
3TX7004-8BA00	3TX7002 and 3TX7004 with screw terminals 3TX7003 and 3TX7005 with spring-type terminals	With supply cable, blue 24 terminals, current carrying capacity for infeed max. 12 A Length of cable between two terminals approx. 11 cm	A	**3TX7004-8BA00**		1	1 unit	41H

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TX7 Coupling Relays, Narrow Design

Relay couplers with plug-in design

Overview

Coupling links are used to connect signals from and to a PLC. The plug-in relays enable the relay to be replaced at the end of its service life without detaching the wiring.

For easy linking of the signals, each terminal can be jumpered using an external connecting comb.

Note:

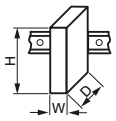
A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

Benefits

- Plug-in base couplers with spring-type terminals in width 6.2 mm
- Fast exchange with existing wiring (plug-in relay)
- Tested complete units → shorter mounting time
- Single relays available as components
- The wire inlet and terminals can be reached from the front. This results in faster wiring time and wiring errors are prevented.
- Linking of control supply voltage and control signals with 16-pole connecting comb
- Galvanic isolation plate for isolating different voltages for neighboring units
- Integrated reverse polarity protection and EMC arc-suppression diode
- Clearly visible functional state of the relay coupler by yellow LED
- Protective separation according to IEC 61140
- Device variants with hard gold-plated contacts, hence high contact reliability
- 230 V AC/DC versions available

Technical specifications

Type		**3TX7014, 3TX7015**
Dimensions (W x H x D)	mm	6.2 x 90 x 92
• Galvanic isolation plate 3TX7014-7CE00	mm	1 x 89.2 x 94.2



General technical specifications		
Rated insulation voltage U_i (pollution degree 2)	V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N	V	Up to 300 AC
Permissible ambient temperature		
• During operation	°C	-25 ... +55
• During storage	°C	-40 ... +80
Degree of protection		
• Enclosure		IP20
• Relays		IP40
Short-circuit protection		
• Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	4
Conductor cross-sections		
For 3TX7014:		**Screw terminals**
• Solid	mm^2	1 x (0.5 ... 2.5)
• Finely stranded with or without end sleeve	mm^2	1 x (0.5 ... 1.5)
• Terminal screws		M2.5
- Corresponding opening tool		Screwdriver, 3.0 mm x 0.5 mm (3RA29 08-1A)
For 3TX7015:		**Spring-type terminals**
• Solid or finely stranded	mm^2	1 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 1.5)
• Corresponding opening tool		Screwdriver, 3.0 mm x 0.5 mm (3RA2908-1A)

Type		**3TX701.-1.M**	**3TX701.-1.B**	**3TX701.-1.E**	**3TX701.-1.F**
Control side					
Operating range		0.85 ... 1.1U_s	0,7 ... 1.25 U_s	0.8 ... 1.1 U_s	0.8 ... 1.1 U_s
Power consumption, max.					
• At U_s = 24 V	W	0.5			
• At U_s = 115 V	W	0.5			
• At U_s = 230 V	W	1			
Protection circuit					
• DC		Freewheel diode + Reverse polarity protection			
• AC		Rectifier bridge			

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Type			3TX7014, 3TX7015
Load side			
Rated currents[1]			
• Conventional thermal current I_{th}		A	5
• Rated operational currents I_e			
- AC-15	At 24 ... 230 V	A	3
- DC-13	At 24 V	A	1
	At 110 V	A	0.2
	At 230 V	A	0.1
Switching voltage	AC/DC	V	24 ... 250
Min. contact load (reliability 1 ppm)			
• Standard contact			17 V DC/5 mA
• Hard gold-plated contacts			5 V DC/1 mA
Mechanical endurance	Operating cycles		10 x 10^6
Electrical endurance at I_e acc. to AC-15	Operating cycles		1 x 10^5

[1] Capacitive loads can result in micro-welding on the contacts.

Note:

If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

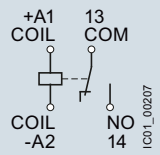
5

Connections

Terminal designations acc. to EN 50005

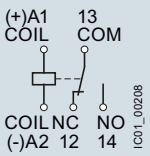
1 NO

3TX7014-1AM00
3TX7015-1AM00



1 CO contact

3TX7014-1B...
3TX7015-1B...



Selection and ordering data

Rated control supply voltage U_s (at AC: 50/60 Hz)	Contacts Version		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
				Article No. / Price per PU			
V	NO	CO					
Plug-in base couplers, width 6.2 mm, complete with relay							
24 DC	1	--	A	**3TX7014-1AM00**	1	5 units	41H
24 DC	--	1	A	**3TX7014-1BM00**	1	5 units	41H
24 AC/DC	--	1	A	**3TX7014-1BB00**	1	5 units	41H
115 AC/DC	--	1	A	**3TX7014-1BE00**	1	5 units	41H
230 AC/DC	--	1	A	**3TX7014-1BF00**	1	5 units	41H

3TX7014-1AM00

With hard gold-plated contacts[1]

24 DC	--	1	A	**3TX7014-1BM02**	1	5 units	41H
24 AC/DC	--	1	A	**3TX7014-1BB02**	1	5 units	41H
115 AC/DC	--	1	A	**3TX7014-1BE02**	1	5 units	41H
230 AC/DC	--	1	A	**3TX7014-1BF02**	1	5 units	41H

[1] The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for solid-state inputs of programmable logic controllers.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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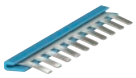
3TX7 Coupling Relays, Narrow Design

Relay couplers with plug-in design

Rated control supply voltage U_s (at AC: 50/60 Hz)	Contacts Version		DT	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU			
V	NO	CO						
Plug-in base couplers, width 6.2 mm, complete with relay								
24 DC	1	--	A	**3TX7015-1AM00**		1	5 units	41H
24 DC	--	1	A	**3TX7015-1BM00**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7015-1BB00**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7015-1BE00**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7015-1BF00**		1	5 units	41H
With hard gold-plated contacts [1]								
24 DC	--	1	A	**3TX7015-1BM02**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7015-1BB02**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7015-1BE02**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7015-1BF02**		1	5 units	41H

[1] The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for electronic inputs of programmable logic controllers.

Accessories

For coupling links	Rated control supply voltage U_s	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Replacement relay modules, width 6.2 mm, 1 changeover contact								
		For complete unit						
3TX7014 and 3TX7015	12 DC	• 24 V AC/DC	A	**3TX7014-7BQ00**		1	20 units	41H
		• 24 V DC, hard gold-plated	A	**3TX7014-7BQ02**		1	20 units	41H
3TX7014 and 3TX7015	24 DC	• 24 V DC	A	**3TX7014-7BM00**		1	20 units	41H
		• 24 V DC, hard gold-plating	A	**3TX7014-7BM02**		1	20 units	41H
3TX7014 and 3TX7015	60 DC	• 115 V or 230 V AC/DC	A	**3TX7014-7BP00**		1	20 units	41H
		• 115 V or 230 V AC/DC, hard gold-plated	A	**3TX7014-7BP02**		1	20 units	41H
Connecting comb, blue								
 3TX7014-7AA00	3TX7014 and 3TX7015	--	For linking the same potentials 16 terminals, current carrying capacity for infeed max. 6 A	A	**3TX7014-7AA00**		1	5 units	41H
Galvanic isolation plates								
3TX7014-7CE00	3TX7014 and 3TX7015	--	--	A	**3TX7014-7CE00**		1	10 units	41H

Assignment of replacement relay modules

Plug-in base couplers				Replacement modules	
Standard contacts	Hard gold-plated contacts	U_s	Contact	Standard contacts	Hard gold-plated contacts
3TX701.-1AM00	**--**	24 V DC	1 NO	**3TX7014-7BM00**	**--**
3TX701.-1BM00	**3TX701.-1BM02**	24 V DC	1 CO contact	**3TX7014-7BM00**	**3TX7014-7BM02**
3TX701.-1BB00	**3TX701.-1BB02**	24 V AC/DC		**3TX7014-7BQ00**	**3TX7014-7BQ02**
3TX701.-1BE00	**3TX701.-1BE02**	115 V AC/DC		**3TX7014-7BP00**	**3TX7014-7BP02**
3TX701.-1BF00	**3TX701.-1BF02**	230 V AC/DC		**3TX7014-7BP00**	**3TX7014-7BP02**

More information about replacement relay modules
see Product Support:
http://support.automation.siemens.com/WW/view/en/34803536

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

AC and DC operation

IEC 60947, EN 60947,
IEC 60664-1, EN 60664-1 and EN 50005;
optocouplers: IEC 60747-5, EN 60747-5;
programmable controllers: IEC 61131-2

The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.

In the coupling links in double-decker design, the connections are arranged on two levels; these units are extremely compact. For test purposes, versions are available with manual-0-automatic switches. This design can also be supplied with spring-type terminals.

Surge suppression

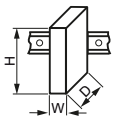
In the case of optocouplers, the contact element is a semiconductor. These are not subject to wear; so welding is not possible.

Note:

With semiconductors, the switching current is not dependent on the inductance of the load, i.e. the switching current for a DC-13 load is the same as that for an inductive DC-12 load.

This means that coupling links with a semiconductor output are particularly suitable for inductive loads such as solenoid valves. It is not relevant to specify any number of operating cycles because this does not affect the endurance of the semiconductor provided it is not overheated.

Technical specifications

Type			**3TX7002**	**3TX7004, 3TX7005**
Dimensions (W x H x D) For width W see "Selection and ordering data"		mm	W x 60 x 62	W x 80 x 85
General technical specifications				
Rated insulation voltage U_i (pollution degree 3)		V	300	
Optoelectronic coupling elements: **Protective separation** acc. to IEC 60947-1, Appendix N		V	Up to 300	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Conductor cross-sections				
For 3TX7002, 3TX7004:			**Screw terminals**	
• Solid		mm^2	1 x (0.25 ... 4)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)	
• Terminal screws - Corresponding opening tool			M3 Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)	
For 3TX7005:			**Spring-type terminals**	
• Solid or finely stranded		mm^2	--	1 x (0.08 ... 2.5)
• Finely stranded with end sleeve		mm^2	--	1 x (0.25 ... 1.5)
• Corresponding opening tool			--	Screwdriver, size 3.0 mm x 0.5 mm (3RA2908-1A)

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Semiconductor couplers

Type		3TX7002-3AB00	3TX7002-3AB01	3TX7002-4AB00	3TX7002-4AG00
Control side					
Operating range	V	17 ... 30 DC	11 ... 30 DC	17 ... 30 AC/DC	88 ... 264 AC
Power consumption, max.					
• At 17 V DC	mA	18	5	--	--
• At 24 V DC	mA	20	7	--	--
• At 30 V DC	mA	22	8.5	--	--
• At 17 V AC/DC	mA	--	--	10	--
• At 24 V AC/DC	mA	--	--	14	--
• At 30 V AC/DC	mA	--	--	18	--
• At 88 V AC/DC	mA	--	--	--	9
• At 230 V AC/DC	mA	--	--	--	24
• At 264 V AC/DC	mA	--	--	--	28
Load side					
Switching current	A	1.8	1.5 [2]	0.1	0.1
Short-time loading capacity	A	20	4	1	1
	ms	20	200	20	20
Switching voltage (operating range)[1]					
• Effective AC 50/60 Hz	V	48 ... 264	--	--	--
• DC		--	≤ 60	≤ 30	≤ 30
Minimum load current	mA	60	--	--	--
Voltage drop conducting	V	≤ 1.5	≤ 1.1	≤ 1.7	≤ 0.3

[1] Comply with minimum switching voltage for 3TX7002-3AB00.

[2] See derating diagram.

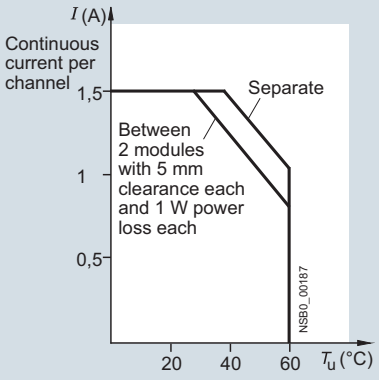
Type	3TX7004- 3TX7005-	3AB04	3AC.4	3AC03	3PB54	3PB74	4PG24	3PG74
Control side								
Operating range	V	11 ... 30 DC					110 ... 230 AC/DC	88 ... 253 AC/DC
Power consumption, max.								
• At 24 V DC	W	0.5		0.25	0.2		--	--
• At 110 V DC	W	--		--	--		--	0.2
• At 230 V AC	VA	--		--	--		1.5	1.5
Load side								
Switching voltage	V	10 ... 48 DC	10 ... 30 DC	24 ... 250 AC	10 ... 30 DC	11 ... 30 DC	10 ... 30 DC	11 ... 30 DC
Switching current	A	0.5	5	2	1.5	3	0.1	3
Short-time loading capacity								
• Current	A	1.5	Short-circuit proof[1]	100	Short-circuit proof[2]		0.2	Short-circuit proof[2]
• Duration	ms	20	--	20	--	--	3	--
Minimum load current	mA	--	500[3]	50	--	--	--	--

[1] In the event of a short circuit or overload, the semiconductor output switches off. In order to operate the device again, it must be temporarily disconnected from the power supply.

[2] In the event of a short circuit or overload, the current is limited by the semiconductor output.

[3] If the current falls below the minimum load current, the built-in semiconductor detects an open circuit in the load circuit. The control must be temporarily switched off for resetting.

Derating diagram for 3TX7002-3AB01



Load current as a function of ambient temperature T_u

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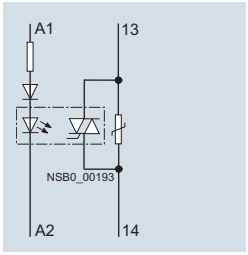
Semiconductor couplers – circuit diagrams

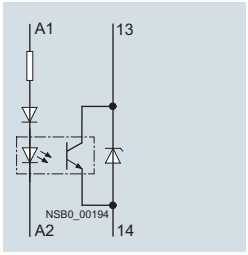
Terminal designations acc. to EN 50005

Output coupling links

3TX7002-3AB00

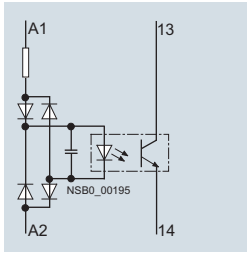


3TX7002-3AB01

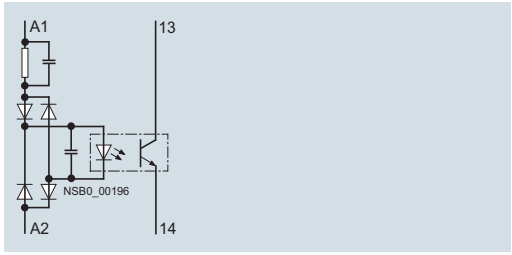


Input coupling links

3TX7002-4AB00

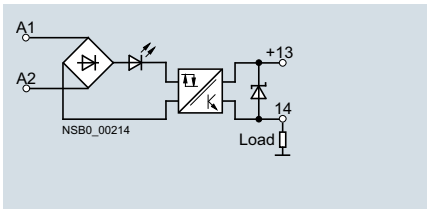


3TX7002-4AG00

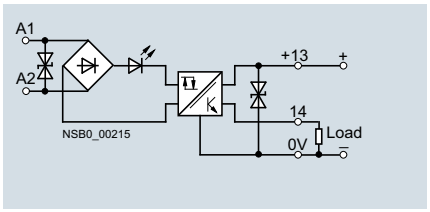


Output coupling links

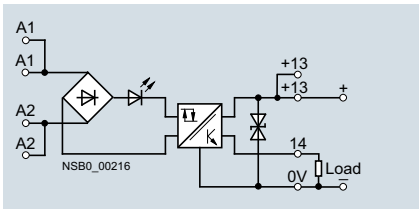
3TX700.-3AB04
3TX700.-3PB41



3TX700.-3PB54
3TX700.-3PG74
3TX700.-3PB74

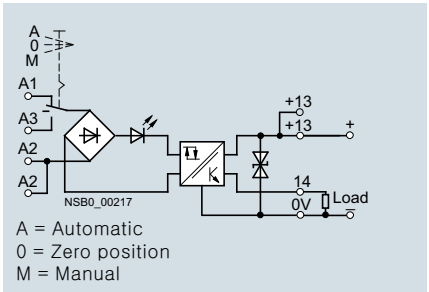


3TX700.-3AC04



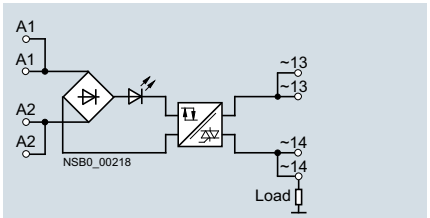
Output coupling links

3TX700.-3AC14



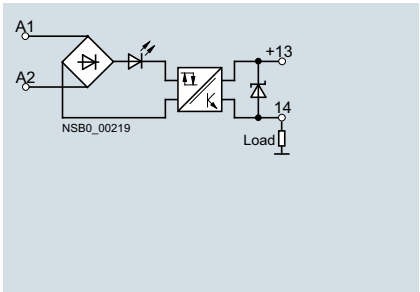
A = Automatic
0 = Zero position
M = Manual

3TX700.-3AC03



Input coupling links

3TX700.-4AB04



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Semiconductor couplers

Selection and ordering data

AC and DC operation · For snap-on mounting onto TH 35 standard mounting rail

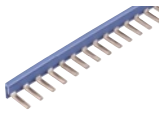
	Rated control supply voltage U_S (at AC: 50/60 Hz)	Switching voltage	Switching current	Manual-0-automatic switch for testing purposes	Width W	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	V	A		mm						
3TX7002 semiconductor couplers, 1 transistor											
3TX7002-3AB00	**Output coupling links**						**Screw terminals**				
	24 DC	48 ... 264 AC	1.8	--	11.5	▶	**3TX7002-3AB00**		1	1 unit	41H
		60 < DC	1.5	--	11.5	▶	**3TX7002-3AB01**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	30 < DC	0.1	--	11.5	▶	**3TX7002-4AB00**		1	1 unit	41H
	110 ... 240 AC	30 < DC	0.1	--	11.5	▶	**3TX7002-4AG00**		1	1 unit	41H
3TX7004 semiconductor couplers											
3TX7004-3AB04	**Output coupling links**										
	24 DC	≤ 48 DC	0.5	--	6.2	▶	**3TX7004-3AB04**		1	1 unit	41H
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	**3TX7004-3PB54**		1	1 unit	41H
	24 DC	≤ 30 DC	3	--	6.2	▶	**3TX7004-3PB74**		1	1 unit	41H
	110 ... 230 AC/DC	≤ 30 DC	3	--	6.2	A	**3TX7004-3PG74**		1	1 unit	41H
	24 DC	≤ 30 DC	5	--	12.5	▶	**3TX7004-3AC04**		1	1 unit	41H
	24 DC	≤ 30 DC	5	Yes	12.5	B	**3TX7004-3AC14**		1	1 unit	41H
	24 DC	24 ... 250 AC	2	--	12.5	▶	**3TX7004-3AC03**		1	1 unit	41H
	Input coupling links										
	110 ... 230 AC/DC	≤ 30 DC	0.1	--	6.2	▶	**3TX7004-4PG24**		1	1 unit	41H
3TX7005 semiconductor couplers											
3TX7005-3AB04	**Output coupling links**						**Spring-type terminals**				
	24 DC	≤ 48 DC	0.5	--	6.2	▶	**3TX7005-3AB04**		1	1 unit	41H
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	**3TX7005-3PB54**		1	1 unit	41H
	24 DC	≤ 30 DC	3	--	6.2	A	**3TX7005-3PB74**		1	1 unit	41H
	110 ... 230 AC/DC	≤ 30 DC		--	6.2	A	**3TX7005-3PG74**		1	1 unit	41H
	24 DC	≤ 30 DC	5	--	12.5	▶	**3TX7005-3AC04**		1	1 unit	41H
	24 DC	≤ 30 DC		Yes	12.5	C	**3TX7005-3AC14**		1	1 unit	41H
	24 DC	24 ... 250 AC	2	--	12.5	C	**3TX7005-3AC03**		1	1 unit	41H
	Input coupling links										
	110 ... 230 AC/DC	≤ 30 DC	0.1	--	6.2	▶	**3TX7005-4PG24**		1	1 unit	41H

Note:

For replacement products, see 3RS18 coupling links with industrial enclosure or other 3TX70 products.

For coil voltages which are not listed, SITOP DC power supplies can be used, e.g. 6EP1331-5BA00 or 6EP1331-5BA10; see Chapter 15, "Stabilized Power Supplies" → "SITOP Power Supplies".

Accessories

	For coupling links Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting comb, blue								
 3TX7004-8AA00	3TX7004	For linking the same potentials 24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm	▶	**3TX7004-8AA00**		1	1 unit	41H
Connecting cable, blue								
3TX7004-8BA00	3TX7002 and 3TX7004 with screw terminals 3TX7003 and 3TX7005 with spring-type terminals	With supply cable, blue 24 terminals, current carrying capacity for infeed max. 12 A Length of cable between two terminals approx. 11 cm	A	**3TX7004-8BA00**		1	1 unit	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3RS18 coupling relays are couplers in the proven 22.5 mm industrial enclosure. This enclosure supports the same connection methods as for the 3RP15 timing relays, including spring-type connection; 2 wires can be clamped.

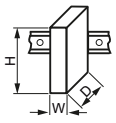
The series comprises devices with up to 3 changeover contacts with screw terminals or spring-type terminals as combination voltage or wide voltage range versions.

The relay coils are protected internally with noise suppression diodes.

Versions:

- Wide voltage range: One connection for a wide voltage range
- Combination voltage: Two connections for different voltage ranges
- Versions with solid-state compatible outputs (hard gold-plating)
- 1, 2 or 3 changeover contacts

Technical specifications

Type			3RS1800-.A...	3RS1800-.B...	3RS1800-.H...
Dimensions (W x H x D)		mm	22.5 x 86 x 84	22.5 x 86 x 94	22.5 x 86 x 103
General technical specifications					
Rated insulation voltage U_i pollution degree 3		V	500		
Protective separation acc. to IEC 60947-1, Appendix N between the coil and the contacts and between the individual contacts.		V	300		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60529					
• Enclosure			IP20		
• Cover			IP40		
Short-circuit protection					
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	4		
Conductor cross-sections					
For 3RS1800-1:			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4); 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		mm^2	2 x (20 ... 14)		
• Terminal screw			M3.5		
- Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)		
• Tightening torque		Nm	0.8 ... 1.2		
For 3RS1800-2:			**Spring-type terminals**		
• Solid		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1)		
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		
• Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA2908-1A)		
Control side					
Operating range			0.85 ... 1.1 x U_s		
Power consumption, max.	AC or DC	VA/W	8 / 1		
Load side					
Conventional thermal current I_{th}		A	6		
Rated operational currents I_e					
• AC-15	At 24 ... 400 V		3		
• DC-13	At 24 V	A	1		
	At 110 V	A	0.2		
	At 230 V	A	0.1		
Switching current for resistive load					
• AC-12	At 24 ... 400 V	A	5		
• DC-12	At 24 V	A	5		
	At 115 V	A	0.2		
	At 230 V	A	0.2		
Switching voltage					
• Max. AC		V	400		
• Max. DC		V	250		
Min. contact load					
• Standard contacts			17 V DC, 5 mA at 1 ppm fault		
• Hard gold-plated contacts			5 V DC, 1 mA at 1 ppm fault		
Mechanical endurance	Operating cycles		10×10^6		
Electrical endurance at I_e	Operating cycles		1×10^5		

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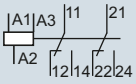
Relay couplers

Circuit diagrams

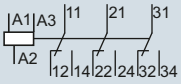
Terminal designations acc. to EN 50005

3RS1800-.AP00,
3RS1800-.AQ00

3RS1800-.BP00,
3RS1800-.BQ00,
3RS1800-.BW00

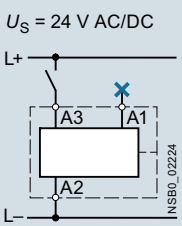


3RS1800-.HP0.,
3RS1800-.HQ0.,
3RS1800-.HW0.

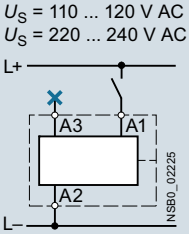


Connection of the control supply voltage U_S

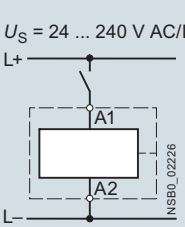
3RS1800-..P0.,
3RS1800-..Q0.



3RS1800-..P0.,
3RS1800-..Q0.



3RS1800-..W0.



Note:

The position of the connection points on the device is based on the principle of logical separation, i.e. the coil terminals A1, A2, A3 are above and the terminals for the changeover contacts 11, 12, 14 etc. are below.

Selection and ordering data

Rated control supply voltage U_S (at AC: 50/60 Hz)	Connection U_S	Contacts Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V		CO						
Coupling relays in industrial enclosure, 22.5 mm								
3RS1800-1H...	**Wide voltage range**			**Screw terminals**				
24 ... 240 AC/DC	A1 - A2	2	A	**3RS1800-1BW00**		1	1 unit	41H
		3	A	**3RS1800-1HW00**		1	1 unit	41H
		3 [1]	A	**3RS1800-1HW01**		1	1 unit	41H
	Combination voltage							
24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	A	**3RS1800-1AQ00**		1	1 unit	41H
		2	A	**3RS1800-1BQ00**		1	1 unit	41H
		3	A	**3RS1800-1HQ00**		1	1 unit	41H
		3 [1]	C	**3RS1800-1HQ01**		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	**3RS1800-1AP00**		1	1 unit	41H
		2	A	**3RS1800-1BP00**		1	1 unit	41H
		3	A	**3RS1800-1HP00**		1	1 unit	41H
		3 [1]	A	**3RS1800-1HP01**		1	1 unit	41H
Coupling relays in industrial enclosure, 22.5 mm								
3RS1800-2B...	**Wide voltage range**			**Spring-type terminals**				
24 ... 240 AC/DC	A1 - A2	2	A	**3RS1800-2BW00**		1	1 unit	41H
		3	A	**3RS1800-2HW00**		1	1 unit	41H
		3 [1]	A	**3RS1800-2HW01**		1	1 unit	41H
	Combination voltage							
24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	C	**3RS1800-2AQ00**		1	1 unit	41H
		2	A	**3RS1800-2BQ00**		1	1 unit	41H
		3	C	**3RS1800-2HQ00**		1	1 unit	41H
		3 [1]	C	**3RS1800-2HQ01**		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	**3RS1800-2AP00**		1	1 unit	41H
		2	A	**3RS1800-2BP00**		1	1 unit	41H
		3	A	**3RS1800-2HP00**		1	1 unit	41H
		3 [1]	A	**3RS1800-2HP01**		1	1 unit	41H

[1] Hard gold-plated contacts.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Plug-in relay coupling links can be ordered as complete units or as individual modules for customer assembly.

Function

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems. In the versions equipped with LEDs, these indicate the switching state. The LZS:PT/MT plug-in relay couplers have a test button. This can be used to force the plug-in relay coupler into the switching state and to lock it. This is indicated by a raised petrol-colored lever.

Control with solid-state output

In the case of solid-state outputs (e.g. proximity switches) with overload and short-circuit protection, you must make allowance during configuration for the temporarily flowing capacitor charging currents! This is possible, for example, by using a suitable LZS plug-in relay coupler.

Surge suppression

The 24 V DC relays LZX:RT and LZX: PT with LEDs can be supplied with, all others without integral surge suppression (freewheel diode connected in parallel with A1/A2). The positive control supply voltage must be connected to coil terminal A1.

Mounting

The relays are plugged into the base and this is snapped onto a TH 35 standard mounting rail according to IEC 60715.

A retaining bracket can be ordered for the MT series that additionally fixes the relay into a plug-in base (under conditions of increased mechanical stress). For the RT and PT series, a combined retaining and ejection bracket is available which can be used to disassemble the relay where access is difficult, for example, when relays are mounted side-by-side.

They can be mounted as required.

Logical separation

The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for coil. Logical separation is not necessarily protective separation.

Protective separation

For safe isolation, transfer of the voltage of one circuit to another circuit is prevented to a suitable degree of safety (requirements and tests are described in IEC 60947-1 in Appendix N).

Notes on the previous LZX series

The complete units and accessory parts of the LZX series are no longer listed in this catalog. The complete units of the LZS series are fully compatible with the corresponding units of the LZX series. Prices for the LZS series are lower than for the previous LZX series.

The LZX plug-in relays are available unchanged and are used accordingly in both the LZS and the LZX series.

Note:

Due to differences in geometry the LED modules, plug-in bases, retaining brackets and labels can be combined and/or used in only the respective series, LZS or LZX.

The LZS series offers not only service-proven screw connections but also versions with plug-in terminals (push-in).

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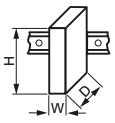
Plug-in relay couplers

Technical specifications

Relay type			**LZX:RT print relay, 8-pole, (12.7 mm) 1 CO/2 CO**				**LZX:PT industrial relay, 8-, 11- and 14-pole, (22.5 mm) 2 CO/3 CO/4 CO**			
Dimensions (W x H x D)										
• LZX:RT.A4 / LZX:PT.A5		mm	15.5 x 78 x 71				28 x 74 x 72			
• LZX:RT.B4 / LZX:PT.B5		mm	15.5 x 77 x 71				28 x 77 x 79			
• LZX:RT.D4 / LZX:PT.D5		mm	15.5 x 98 x 71				28 x 98 x 79			
General technical specifications										
Rated control supply voltage U_s [1]		V	24 DC	24 AC	115 AC	230 AC	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (pollution degree 3)		V	250				250			
Overvoltage category acc. to IEC 60664-1			III				III			
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N			Up to 250 V (with plug-in base LZS:RT78726) No (for complete units with standard socket)				No			
Degree of protection										
• Relays			IP67				IP50			
• Bases			IP20				IP20			
Permissible ambient temperature										
• During operation		°C	-40 ... +70				-40 ... +70			
• During storage		°C	-40 ... +80				-40 ... +80			
Conductor cross-sections										
Connection type			**Screw terminals**				**Screw terminals**			
• Solid		mm^2	2 x 2.5				2 x 2.5			
• Finely stranded with end sleeve		mm^2	2 x 1.5				2 x 1.5			
• Corresponding opening tool			Screwdriver, size 3.0 ... 3.5 mm x 0.5 mm (3RA29 08-1A)							
Connection type			**Plug-in terminals (push-in)**				**Plug-in terminals (push-in)**			
• Solid		mm^2	1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5				1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5			
• Finely stranded without end sleeve		mm^2	1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5				1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5			
• Finely stranded with end sleeve		mm^2	1 x (0.75 ... 1.0), 2 x 0.75, 1 x 1.5				1 x (0.75 ... 1.0), 2 x 0.75, 1 x 1.5			
Control side										
Operating range at 20 °C		V	16.8 ... 52	18 ... 52	86.3 ... 127	172 ... 264	18 ... 40.8	19.2 ... 39.6	92 ... 190	184 ... 380
Power consumption at U_s										
• AC		VA	--	0.75			--	1		
• DC		W	0.4	--			0.75	--		
Release voltage		V	2.4	7.2	34.5	69	3.6	7.2	34.5	69
Protection circuit			Freewheel diode for complete unit	--			Freewheel diode in LED module	--		
Load side										
Switching voltage AC/DC		V	24 ... 250				24 ... 250			
Rated currents [2]										
• Conventional thermal current I_{th}		A								
- 1 CO contact		A	16				--			
- 2 CO contacts		A	6				12			
- 3 CO contacts		A	--				10			
- 4 CO contacts		A	--				6			
• Rated operational current I_e AC-15 acc. to utilization categories (IEC 60947-5-1)		A	RT3 (1 changeover contact): 6 RT4 (2 changeover contacts): 2.5				PT2 (2 changeover contacts): 5 PT3 (3 changeover contacts): 5 PT5 (4 changeover contacts): 4 (DC coils), 2 (AC coils)			
• Rated operational current I_e DC-13 with suppressor diode acc. to utilization categories (IEC 60947-5-1)		A	2 at 24 V 0.27 at 230 V				PT2, PT3: 5 at 24 V PT5: 4 at 24 V 0.5 at 230 V			
Short-circuit protection										
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1										
• DIAZED, type 5SB		A	10				6			
Min. contact load (reliability: 1 ppm)			Standard 17 V, 10 mA; hard gold-plated 17 V/0.1 mA				Standard 17 V, 10 mA; hard gold-plated 20 mV/1 mA			
Mechanical endurance	Operating cycles		30 x 10^6	10 x 10^6			10 x 10^6			
Electrical endurance (resistive load at 250 V AC)	Operating cycles		1 x 10^5				1 x 10^5			

[1] AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10 %; the power loss will reduce slightly.

[2] Capacitive loads can result in micro-welding on the contacts.

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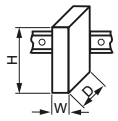
Relay type			**MT industrial relay, 11-pole (35.5 mm) 3 CO**			
Dimensions (W x H x D)		mm	36 x 69 x 36			
AC and DC operation						
Rated control supply voltage U_s [1]		V	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (pollution degree 3)		V	250			
Overvoltage category acc. to IEC 60664-1			III			
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N			No			
Degree of protection of relay/base						
• Relays			IP50			
• Bases			IP20			
Permissible ambient temperature						
• During operation		°C	-40 ... +60	-45 ... +50	-45 ... +50	-45 ... +50
• During storage		°C	-45 ... +80	-45 ... +80	-45 ... +80	-45 ... +80
Conductor cross-sections						
Connection type			**Screw terminals**			
• Solid		mm^2	2 x 2.5			
• Finely stranded with or without end sleeve		mm^2	2 x 1.5			
• Corresponding opening tool			Screwdriver, size 1 or Pozidriv 1			
Control side						
Operating range at 20 °C		V	18 ... 38	19.2 ... 38	92 ... 137	184 ... 264
Power consumption						
• AC		VA	--	2.3		
• DC		W	1.2	--		
Release voltage		V	2.4	9.6	46	92
Protection circuit			--			
Load side						
Switching voltage						
• AC/DC		V	24 ... 250			
Rated currents [2]						
• Conventional thermal current I_{th}		A	10			
• Rated operational current I_e /DC-13 acc. to utilization categories (IEC 60947-5-1)		A	2 at 24 V, 0.27 at 230 V			
• Rated operational current I_e /AC-15 acc. to utilization categories (IEC 60947-5-1)		A	5 at 24 V and 230 V			
Short-circuit protection						
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1						
• DIAZED, type 5SB		A	10			
Min. contact load (reliability: 1 ppm)			12 V DC/10 mA			
Mechanical endurance		Operating cycles	20×10^6			
Electrical endurance (resistive load at 250 V AC)		Operating cycles	4×10^5			

[1] AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10 %; the power loss will reduce slightly.

[2] Capacitive loads can result in micro-welding on the contacts.

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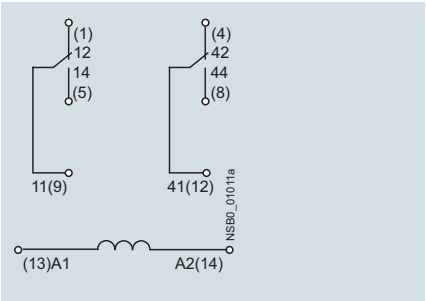
Coupling Relays with LZS/LZX Plug-In Relays

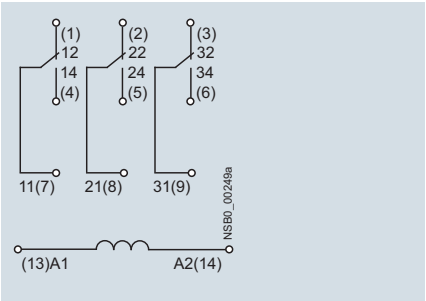
Plug-in relay couplers

Circuit diagrams

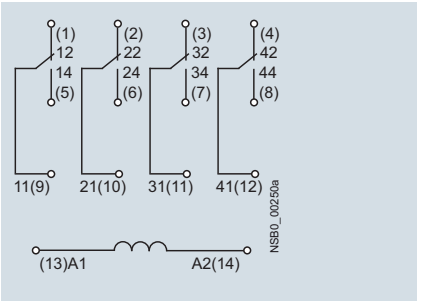
LZX:PT270
2-pole



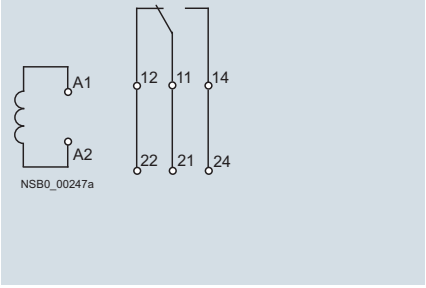
LZX:PT370
3-pole



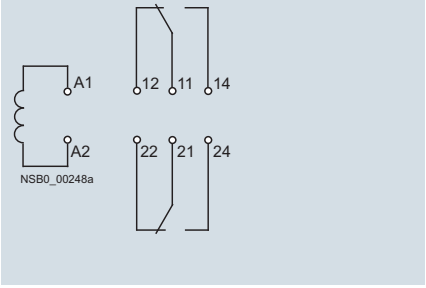
LZX:PT520, LZX:PT570, LZX:PT580
4-pole



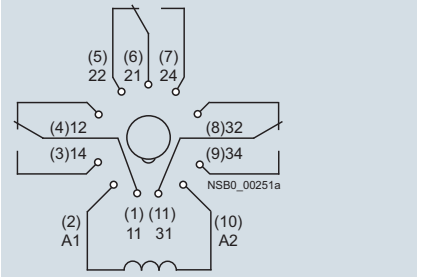
LZX:RT3
1-pole



LZX:RT4
2-pole



LZX:MT32
3-pole



Note:

Values in brackets: Plug-in base designations
Without brackets: Contact/coil designations

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Selection and ordering data

Version	Rated control supply voltage U_s (at AC: 50/60 Hz)	Contacts, number of CO contacts	Width	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
Complete units, 11- and 14-pole, PT series									
LZS:PT3A5L24									
Complete units with plug-in base for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Standard plug-in base with screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Screw terminals**				
3 CO contacts	24 DC	3	28	A	**LZS:PT3A5L24**		1	5 units	41H
	24 AC			A	**LZS:PT3A5R24**		1	5 units	41H
	115 AC			A	**LZS:PT3A5S15**		1	5 units	41H
	230 AC			A	**LZS:PT3A5T30**		1	5 units	41H
4 CO contacts	24 DC	4	28	A	**LZS:PT5A5L24**		1	5 units	41H
	24 AC			A	**LZS:PT5A5R24**		1	5 units	41H
	115 AC			A	**LZS:PT5A5S15**		1	5 units	41H
	230 AC			A	**LZS:PT5A5T30**		1	5 units	41H
Complete units with plug-in base with logical separation for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels									
4 CO contacts	24 DC	4	28	A	**LZS:PT5B5L24**		1	5 units	41H
	24 AC			A	**LZS:PT5B5R24**		1	5 units	41H
	115 AC			A	**LZS:PT5B5S15**		1	5 units	41H
	230 AC			A	**LZS:PT5B5T30**		1	5 units	41H
Complete units, 8- and 14-pole, PT series									
LZS:PT5D5L24									
Complete units with plug-in base with logical separation for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and plug-in terminals (push-in) • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Plug-in terminals (push-in)**				
2 CO contacts	24 DC	2	28	A	**LZS:PT2D5L24**		1	5 units	41H
	230 AC			A	**LZS:PT2D5T30**		1	5 units	41H
4 CO contacts	24 DC	4	28	A	**LZS:PT5D5L24**		1	5 units	41H
	24 AC			A	**LZS:PT5D5R24**		1	5 units	41H
	115 AC			A	**LZS:PT5D5S15**		1	5 units	41H
	230 AC			A	**LZS:PT5D5T30**		1	5 units	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

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Coupling Relays with LZS/LZX Plug-In Relays

Plug-in relay couplers

Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
Individual modules for customer assembly, PT series									
Industrial relays, 8-, 11-, and 14-pole									
Mini industrial relays									
• With test bracket and mechanical switch position indicator, without LED[1)]									
	24 DC	2	22.5	▶	**LZX:PT270024**		1	1 unit	41H
		3		▶	**LZX:PT370024**		1	1 unit	41H
		4		▶	**LZX:PT570024**		1	1 unit	41H
	24 AC	2	22.5	▶	**LZX:PT270524**		1	1 unit	41H
		3		A	**LZX:PT370524**		1	1 unit	41H
		4		▶	**LZX:PT570524**		1	1 unit	41H
	115 AC	2	22.5	C	**LZX:PT270615**		1	1 unit	41H
		3		A	**LZX:PT370615**		1	1 unit	41H
		4		▶	**LZX:PT570615**		1	1 unit	41H
	230 AC	2	22.5	▶	**LZX:PT270730**		1	1 unit	41H
		3		▶	**LZX:PT370730**		1	1 unit	41H
		4		▶	**LZX:PT570730**		1	1 unit	41H
• With hard gold-plating									
	24 DC	4	22.5	▶	**LZX:PT580024**		1	1 unit	41H
	230 AC			▶	**LZX:PT580730**		1	1 unit	41H
• Without test bracket									
	24 DC	4	22.5	▶	**LZX:PT520024**		1	1 unit	41H
	230 AC			C	**LZX:PT520730**		1	1 unit	41H

LZX:PT370024

Plug-in bases for PT relays									
Standard plug-in bases for mounting onto TH 35 standard mounting rail					**Screw terminals**				
	--	2	28	▶	**LZS:PT78720**		1	1 unit	41H
		3		▶	**LZS:PT78730**		1	1 unit	41H
		4		▶	**LZS:PT78740**		1	1 unit	41H
Plug-in bases with logical separation for mounting onto TH 35 standard mounting rail									
	--	2	28	▶	**LZS:PT78722**		1	1 unit	41H
		4		▶	**LZS:PT78742**		1	1 unit	41H
Plug-in bases with logical separation for mounting onto TH 35 standard mounting rail					**Plug-in terminals (push-in)**				
	--	2	28	▶	**LZS:PT7872P**		1	1 unit	41H
		4		▶	**LZS:PT7874P**		1	1 unit	41H

LZS:PT78740

LZS:PT78722

LZS:PT7874P

1) The test bracket is designed to be non-latching. If the test bracket is pressed further until 90° has been reached, two small lugs break off and the test bracket can be latched in position.

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
Individual modules for customer assembly, PT series									
More individual modules									
LED modules									
• Red									
With freewheel diode	24 DC	--	12.5	►	**LZS:PTML0024**		1	1 unit	41H
Without freewheel diode	24 AC/DC			►	**LZS:PTML0524**		1	1 unit	41H
	110 … 230 AC/DC			►	**LZS:PTML0730**		1	1 unit	41H
• Green									
With freewheel diode	24 DC	--	12.5	►	**LZS:PTMG0024**		1	1 unit	41H
Without freewheel diode	24 AC			►	**LZS:PTMG0524**		1	1 unit	41H
	110 … 230 AC/DC			►	**LZS:PTMG0730**		1	1 unit	41H
Fixing/ejection brackets for PT base with logical separation									
Screw terminals and plug-in terminals (push-in)		--	26	►	**LZS:PT17021**		100	10 units	41H
Fixing/ejection brackets for standard plug-in base without logical separation									
Screw terminals		--	26	►	**LZS:PT17024**		100	10 units	41H
Labels									
	--	--	26	►	**LZS:PT17040**		100	10 units	41H
RC elements									
	6 ... 60 AC	--	26	►	**LZS:PTMU0524**		1	1 unit	41H
	110 … 230 AC			►	**LZS:PTMU0730**		1	1 unit	41H
Freewheel diodes with connection to A1									
	6 … 230 DC	--	26	►	**LZS:PTMT00A0**		1	1 unit	41H
Connecting cables, 24-pole									
Current carrying capacity 12 A, with supply cable, blue				A	**3TX7004-8BA00**		1	1 unit	41H
Connecting combs for PT screw base									
6-pole, 10 A current carrying capacity, natural-colored				►	**LZS:PT170R6**		1	10 units	41H
Connecting brackets for PT push-in base									
2-pole, 10 A current carrying capacity, natural-colored				►	**LZS:PT170P1**		1	10 units	41H
Individual modules for customer assembly, MT series									
Industrial relays, 11-pole									
Industrial relays with test bracket									
Without LED	24 DC	3	35.5	A	**LZX:MT321024**		1	1 unit	41H
With LED				►	**LZX:MT323024**		1	1 unit	41H
Without LED	24 AC	3	35.5	A	**LZX:MT326024**		1	1 unit	41H
With LED				C	**LZX:MT328024**		1	1 unit	41H
Without LED	115 AC	3	35.5	C	**LZX:MT326115**		1	1 unit	41H
With LED				C	**LZX:MT328115**		1	1 unit	41H
Without LED	230 AC	3	35.5	A	**LZX:MT326230**		1	1 unit	41H
With LED				A	**LZX:MT328230**		1	1 unit	41H
Plug-in bases for mounting onto TH 35 standard mounting rail					**Screw terminals**				
		--	38	►	**LZS:MT78750**		1	1 unit	41H
Retaining brackets									
	--	--	38	►	**LZS:MT28800**		1	1 unit	41H

LZS:PTML0024

LZS:PT17021

LZS:PT17024

LZS:PT17040

LZS:PTMU0730

3TX7004-8BA00

LZX:MT326024

LZS:MT78750

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

Note:

For coil voltages which are not listed, SITOP DC power supplies can be used, e.g. 6EP1331-5BA00 or 6EP1331-5BA10;
see Chapter 15, "Stabilized Power Supplies" → "SITOP Power Supplies".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Coupling Relays with LZS/LZX Plug-In Relays

Plug-in relay couplers

Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
Complete units, 8-pole, 5 mm pinning, RT series									
LZS:RT4A4T30	**Complete units with standard plug-in base** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Standard plug-in base with screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels				**Screw terminals**				
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3A4L24**	1	5 units	41H
		24 AC			A	**LZS:RT3A4R24**	1	5 units	41H
		115 AC			A	**LZS:RT3A4S15**	1	5 units	41H
		230 AC			A	**LZS:RT3A4T30**	1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4A4L24**	1	5 units	41H
		24 AC			A	**LZS:RT4A4R24**	1	5 units	41H
		115 AC			A	**LZS:RT4A4S15**	1	5 units	41H
		230 AC			A	**LZS:RT4A4T30**	1	5 units	41H
LZS:RT4B4T30	**Complete units with plug-in base with logical separation** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels								
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3B4L24**	1	5 units	41H
		24 AC			A	**LZS:RT3B4R24**	1	5 units	41H
		115 AC			A	**LZS:RT3B4S15**	1	5 units	41H
		230 AC			A	**LZS:RT3B4T30**	1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4B4L24**	1	5 units	41H
		24 AC			A	**LZS:RT4B4R24**	1	5 units	41H
		115 AC			A	**LZS:RT4B4S15**	1	5 units	41H
		230 AC			A	**LZS:RT4B4T30**	1	5 units	41H
LZS:RT3D4L24	**Complete units with plug-in base with logical separation** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and plug-in terminals (push-in) • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels				**Plug-in terminals (push-in)**				
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3D4L24**	1	5 units	41H
		24 AC			A	**LZS:RT3D4R24**	1	5 units	41H
		115 AC			A	**LZS:RT3D4S15**	1	5 units	41H
		230 AC			A	**LZS:RT3D4T30**	1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4D4L24**	1	5 units	41H
		24 AC			A	**LZS:RT4D4R24**	1	5 units	41H
		115 AC			A	**LZS:RT4D4S15**	1	5 units	41H
		230 AC			A	**LZS:RT4D4T30**	1	5 units	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Individual modules for customer assembly, RT series										
	Print relays, 8-pole, 5 mm pinning									
LZX:RT314024	**Print relays** with hard gold-plating									
	Version with 1 CO contact									
		24 DC	1	12.7	►	**LZX:RT315024**		1	1 unit	41H
		230 AC			C	**LZX:RT315730**		1	1 unit	41H
LZS:RT78725	**Print relays**									
	Version with 1 CO contact									
		24 DC	1	12.7	►	**LZX:RT314024**		1	1 unit	41H
		24 AC			C	**LZX:RT314524**		1	1 unit	41H
		115 AC			C	**LZX:RT314615**		1	1 unit	41H
		230 AC			►	**LZX:RT314730**		1	1 unit	41H
	Version with 2 CO contacts									
		12 DC	2	12.7	C	**LZX:RT424012**		1	1 unit	41H
		24 DC			►	**LZX:RT424024**		1	1 unit	41H
		24 AC			►	**LZX:RT424524**		1	1 unit	41H
		115 AC			►	**LZX:RT424615**		1	1 unit	41H
		230 AC			►	**LZX:RT424730**		1	1 unit	41H
LZS:RT78726	**Standard plug-in bases** for mounting onto TH 35 standard mounting rail					**Screw terminals**				
		--	--	15.5	►	**LZS:RT78725**		1	1 unit	41H
	Plug-in bases with logical separation for mounting onto TH 35 standard mounting rail									
		--	--	15.5	►	**LZS:RT78726**		1	1 unit	41H
LZS:RT7872P	**Plug-in bases with logical separation** for mounting onto TH 35 standard mounting rail					**Plug-in terminals (push-in)**				
		--	--	15.5	►	**LZS:RT7872P**		1	1 unit	41H
	LED modules									
	• Red									
	With freewheel diode	24 DC	--	15.5	►	**LZS:PTML0024**		1	1 unit	41H
	Without freewheel diode	24 AC/DC	--		►	**LZS:PTML0524**		1	1 unit	41H
		110 ... 230 AC/DC	--		►	**LZS:PTML0730**		1	1 unit	41H
	• Green									
	With freewheel diode	24 DC	--	15.5	►	**LZS:PTMG0024**		1	1 unit	41H
	Without freewheel diode	24 AC/DC	--		►	**LZS:PTMG0524**		1	1 unit	41H
LZS:PTML0024		110 ... 230 AC/DC	--		►	**LZS:PTMG0730**		1	1 unit	41H
LZS:RT17016	**Fixing/ejection brackets** for RT base									
		--	--	15.5	►	**LZS:RT17016**		100	10 units	41H
	Labels									
		--	--	15.5	►	**LZS:RT17040**		100	10 units	41H
LZS:RT17040	**RC elements**									
		6 ... 60 AC	--	15.5	►	**LZS:PTMU0524**		1	1 unit	41H
		110 ... 230 AC			►	**LZS:PTMU0730**		1	1 unit	41H
LZS:PTMT0730	**Freewheel diodes with connection to A1**									
		6 ... 230 DC	--	15.5	►	**LZS:PTMT00A0**		1	1 unit	41H
	Connecting cables, 24-pole									
	Current carrying capacity 12 A, with supply cable, blue				A	**3TX7004-8BA00**		1	1 unit	41H
	Connecting combs for RT screw base									
	8-pole, 10 A current carrying capacity, natural-colored				►	**LZS:RT170R8**		1	10 units	41H
	Connecting brackets for PT push-in base									
	2-pole, 10 A current carrying capacity, natural-colored				►	**LZS:RT170P1**		100	10 units	41H
3TX7004-8BA00										

Note:

For coil voltages which are not listed, SITOP DC power supplies can be used, e.g. 6EP1331-5BA00 or 6EP1331-5BA10; see Chapter 15, "Stabilized Power Supplies" → "SITOP Power Supplies".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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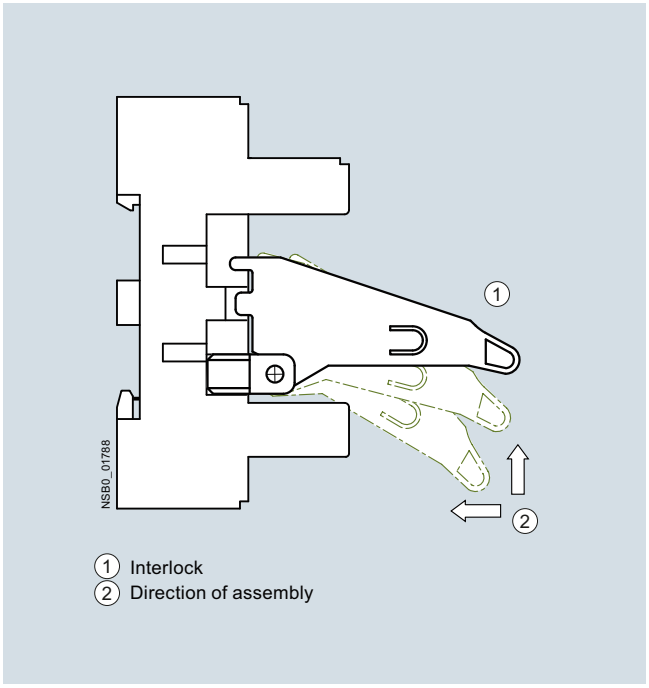
More information

Notes on configuration

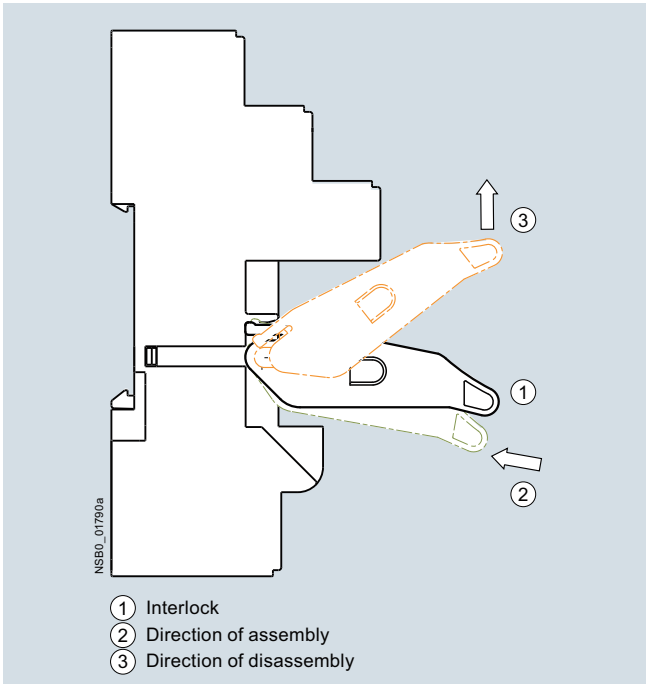
PT series

Mounting the LZS:PT17024 fixing/ejection bracket on the standard plug-in base with LZS:PT787.0 screw terminal

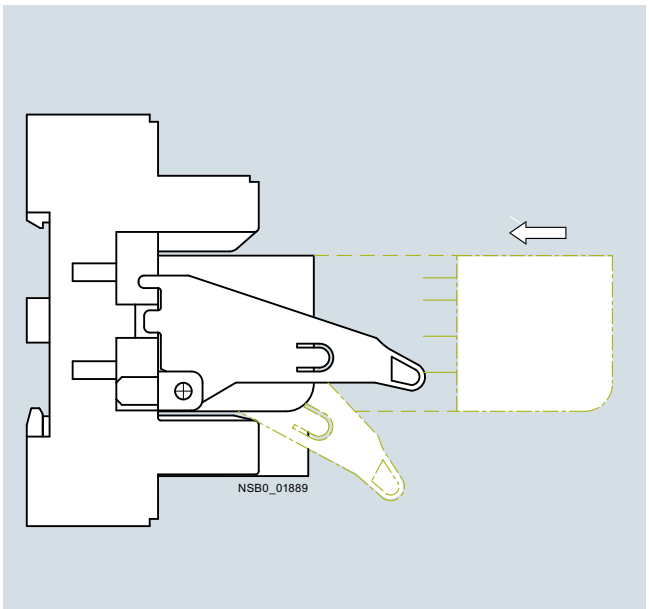


RT series

Mounting the LZS:RT17016 fixing/ejection bracket on the LZS:RT7872 plug-in base



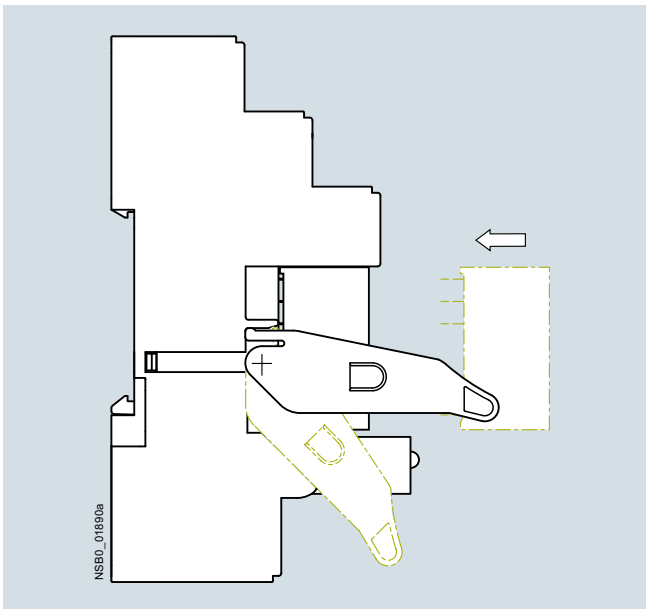
Mounting the coupling relay with plug-in relay



Note:

The LZS:PT17021 and LZS:PT17024 ejection brackets of the coupling relays with plug-in relay are not status displays!

Mounting the coupling relay with plug-in relay



Note:

The LZS:RT17016 ejection brackets of the coupling relays with plug-in relay are not status displays!

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Switching Devices – Soft Starters and Solid-State Switching Devices

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6/106 SIRIUS load monitoring for 3RF2
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Solid-state switching devices for switching motors
Solid-state contactors
6/110 General data
6/113 SIRIUS 3RF34 solid-state contactors, three-phase
6/117 SIRIUS 3RF34 solid-state reversing contactors, three-phase

Note:
Conversion tool
e.g. from 3RF24 to 3RF34 see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

3RW30

3RW40

3RW44

		Article No.	Page
3RW soft starters			
3RW soft starters for standard applications			
3RW30 soft starters	• SIRIUS 3RW30 soft starters for soft starting of three-phase asynchronous motors • Current range of up to 106 A • Performance range of up to 55 kW (at 400 V), up to 75 hp (at 460 V)	**3RW30**	6/8
3RW40 soft starters	• SIRIUS 3RW40 soft starters with the integral functions - solid-state motor overload and intrinsic device protection and - adjustable current limiting for the soft starting and stopping of three-phase asynchronous motors • Current range of up to 432 A • Performance range of up to 250 kW (at 400 V), up to 300 hp (at 460 V)	**3RW40**	6/19
3RW soft starters for High-Feature applications			
3RW44 soft starters	• In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements • Current range of up to 1 214 A • Performance range - In inline circuit: up to 710 kW (at 400 V), up to 950 hp (at 460 V) - In inside-delta circuit: up to 1 200 kW (at 400 V), up to 1 700 hp (at 460 V)	**3RW44**	6/37

SIRIUS 3RW soft starters

SIRIUS 3RW soft starters permit soft starting and soft ramp-down of three-phase asynchronous motors. Depending on the scope of functions required it is possible to choose between:

- Soft starters for standard applications
- Soft starters for High-Feature applications

SIRIUS 3RW – Service-proven in many applications

Functions of the SIRIUS soft starters include:

- Soft starting and ramp-down
- Stepless starting
- Torque control and limitation

Cost-efficient operation

The advantages of SIRIUS soft starters at a glance:

- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network
- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system (3RW30 and 3RW40)

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3RF21

3RF20

3RF22

3RF23

3RF24

3RF29

3RF34 (motor)

		Article No.	Page
SIRIUS solid-state switching devices for switching resistive loads			
Solid-state relays			
Solid-state relays	• Widths of 22.5 mm and 45 mm • Compact and space-saving design • "Zero-point switching" version • Mounting onto existing heat sinks	**3RF21** **3RF20** **3RF22**	6/72 6/77 6/81
Solid-state contactors			
Solid-state contactors	• Complete units comprising a solid-state relay and an optimized heat sink, "ready to use" • Compact and space-saving design • Versions for resistive loads "zero-point switching" and inductive loads "instantaneous switching" • Special versions "Low Noise" and "Short-Circuit Proof"	**3RF23** **3RF24**	6/85 6/94
Function modules	For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications:		
Converters	• For converting an analog input signal into an on/off ratio; can also be used on 3RF22 and 3RF24 three-phase switching devices	**3RF2900-0EA18**	6/105
Load monitoring	• For load monitoring of one or more loads (partial loads)	**3RF29..-0FA08, 3RF29.0-0GA..**	6/106
Heating current monitoring	• For load monitoring of one or more loads (partial loads); remote teach	**3RF29..-0JA..**	6/107
Power controllers	• For supplying the current by means of a solid-state switching device depending on a setpoint value. There is a choice of full-wave control and generalized phase control.	**3RF29..-0KA.**	6/108
Power regulators	• For supplying the current by means of a solid-state switching device depending on a setpoint value. Closed-loop control: full-wave control or generalized phase control	**3RF29.0-0HA..**	6/109
SIRIUS solid-state switching devices for switching motors			
Solid-state contactors			
Solid-state contactors, solid-state reversing contactors	• Complete units in the insulated enclosure with integrated heat sink, "ready to use" • Compact and space-saving design • Version for motors, "instantaneous switching"	**3RF34** **3RF34**	6/113 6/117

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Introduction

SIRIUS 3RF solid-state switching devices

Three-phase solid-state contactor and single-phase solid-state relay

The SIRIUS 3RF2 solid-state switching devices reliably switch a wide range of different loads with alternating voltages in 50 and 60 Hz systems.

SIRIUS 3RF2 solid-state switching devices for resistive loads:

- Solid-state relays
- Solid-state contactors
- Function modules

SIRIUS 3RF3 solid-state switching devices for switching motors:

- Solid-state contactors
- Solid-state reversing contactors

SIRIUS 3RF2 – for almost unending activity

Conventional electromechanical controlgear is often overtaxed by the rise in the number of switching operations. A high switching frequency results in frequent failure and short replacement cycles. However, this does not have to be the case, because with the latest generation of our SIRIUS 3RF2 solid-state switching devices we provide you with solid-state relays and contactors with a particularly long endurance – for almost unending activity even under the toughest conditions and under high mechanical load, but also in noise-sensitive areas.

Proved time and again in service

SIRIUS 3RF2 solid-state switching devices have firmly established in industrial applications. They are used above all in applications where loads are switched frequently – mainly with resistive load controllers, with the control of electrical heat or the control of valves and motors in conveyor systems. In addition to its use in areas with high switching frequencies, their silent switching means that SIRIUS is also ideally suited for use in noise-sensitive areas, such as offices or hospitals.

The most reliable solution for any application

Compared to mechanical controlgear, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, insusceptible to faults. With its variable connection methods and a wide spread of control voltages, the SIRIUS 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular controlgear can also be quite easily expanded by the addition of standardized function modules.

Ideal for operation with heating control systems

The 3RF2 solid-state switching devices can be used for example in the SIPLUS HCS300I heating control system. They are optimally connected to the digital output module of the HCS300I by means of preassembled cables. This saves considerable wiring outlay in the control circuit and shortens mounting time.

The HCS300I is a modular heating control system for the optimization of plastic processing machines. It enables individual solutions for many different heating control applications. With each basic unit it is possible to use up to four 6-channel digital outputs to control solid-state switching devices and four 4-channel temperature measuring modules. Current or current-and-voltage measuring modules can be used to monitor the loads. Communication with the higher-level control system is performed via PROFIBUS DP.

See also chapter 15, "SIPLUS HCS Heating Control Systems" → "SIPLUS HCS300I heating controller".

SIPLUS heating control system

Also for switching motors

In order to achieve higher productivity, the switching frequency is continuously increased. It is no problem for our SIRIUS solid-state contactors to switch motors. With three-phase motors up to 7.5 kW, they can reliably withstand even the highest switching frequencies. Even a continuous change in the direction of rotation is possible with the solid-state reversing contactors. Both versions can be perfectly combined with components from the SIRIUS modular system. Connecting with SIRIUS motor starter protectors or SIRIUS overload relay can be implemented without any further steps.

Always on the sunny side with SIRIUS

Because SIRIUS 3RF2 offers even more:

- The space-saving and compact side-by-side mounting ensure reliable operation up to an ambient temperature of +60 °C.
- Thanks to fast configuration and the ease of mounting and start-up, you save not only time but also expenses.

Connection methods

The solid-state switching devices are available with screw terminals (box terminals), spring-type terminals or ring terminal lugs.

	Screw terminals
	Spring-type terminals
	Ring terminal lug connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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Overview

		SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Rated current at 40 °C	***A***	***3 ... 106***	***12.5 ... 432***	***29 ... 1 214***
Rated operational voltage	V	200 ... 480	200 ... 600	200 ... 690[8]
Motor rating at 400 V				
• Inline circuit	kW hp	1.5 ... 55 1.5 ... 75	5.5 ... 250 7.5 ... 300	15 ... 710 15 ... 950
• Inside-delta circuit	kW hp	-- --	-- --	22 ... 1 200 30 ... 1 700
Ambient temperature	°C	-25 ... +60	-25 ... +60	0 ... +60
Soft starting/ramp-down		✓[1]	✓	✓
Voltage ramp		✓	✓	✓
Starting/stopping voltage	%	40 ... 100	40 ... 100	20 ... 100
Starting and ramp-down time	s	0 ... 20[1]	0 ... 20	0 ... 360
Torque control		--	--	✓
Starting/stopping torque	%	--	--	20 ... 100
Torque limit	%	--	--	20 ... 200
Integral bypass contact system		✓	✓	✓
Intrinsic device protection		--	✓	✓
Motor overload protection		--	✓[7]	✓
Thermistor motor protection		--	✓[2]	✓
Integrated remote RESET		--	✓[3]	✓
Adjustable current limiting		--	✓	✓
Inside-delta circuit		--	--	✓
Breakaway pulse		--	--	✓
Creep speed in both directions of rotation		--	--	✓
Pump ramp-down (torque control)		--	--	✓[4]
DC braking		--	--	✓[4] [5]
Combined braking		--	--	✓[4] [5]
Motor heating		--	--	✓
Communications		--	--	PROFIBUS/PROFINET (optional)
External display and operator module		--	--	(optional)
Operating measured value display		--	--	✓
Error logbook		--	--	✓
Event list		--	--	✓
Slave pointer function		--	--	✓
Trace function		--	--	✓[6]
Programmable control inputs and outputs		--	--	✓
Number of parameter sets		1	1	3
Parameterization software (Soft Starter ES)		--	--	✓
Power semiconductors (thyristors)		2 controlled phases	2 controlled phases	3 controlled phases
Screw terminals		✓	✓	✓
Spring-type terminals		✓	✓	✓
UL/CSA		✓	✓	✓
CE marking		✓	✓	✓
Soft starting under heavy starting conditions		--	--	✓[4]
Configuring support		Electronic selection slider ruler, Technical Assistance +49 (911) 895-5900		

✓ Function available, -- Function not available

1) Only soft starting available for 3RW30.
2) Optional up to size S3 (device version).
3) For 3RW402. to 3RW404.; for 3RW405. and 3RW407. optional.
4) Calculate soft starter and motor with size allowance where required.
5) Not possible in inside-delta circuit.
6) Trace function with Soft Starter ES software.
7) When using the motor overload protection according to ATEX, an upstream contactor is required.
8) In inside-delta circuit up to 600 V.

More information can be found on the Internet under: www.siemens.com/softstarter

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General data

Selection aid for soft starters

Application	SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Normal starting (CLASS 10)			
Pumps	●	●	●
Pumps with special pump ramp-down (to prevent water hammer)			●
Heat pumps	●	●	●
Hydraulic pumps	❍	●	●
Presses	❍	●	●
Conveyor belts	❍	●	●
Roller conveyors	❍	●	●
Screw conveyors	❍	●	●
Escalators		●	●
Piston compressors		●	●
Screw compressors		●	●
Small fans[1]		●	●
Centrifugal blowers		●	●
Bow thrusters		●	●
Heavy starting (CLASS 20)			
Stirrers		❍	●
Extruders		❍	●
Lathes		❍	●
Milling machines		❍	●
Very heavy starting (CLASS 30)			
Large fans[2]			●
Circular saws/bandsaws			●
Centrifuges			●
Mills			●
Breakers			●

● Recommended soft starter
❍ Possible soft starter

[1] The mass inertia of the fan is <10 times the mass inertia of the motor.
[2] The mass inertia of the fan is ≥10 times the mass inertia of the motor.

Boundary conditions

Type	Maximum starting time	Current loading	Starts per hour
	s	%	1/h
Normal starting (CLASS 10)			
• **3RW30**	3	300	20
• **3RW40/44**	10	300	5
Heavy starting (CLASS 20)			
• **3RW402., 3RW403., 3RW404.**	20	300	5
• **3RW405., 3RW407., 3RW44**	40	350	1
Very heavy starting (CLASS 30)			
• **3RW44**	60	350	1

The motor ratings listed in the Selection and Ordering Data are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor. 3RW soft starters are designed for easy starting conditions. In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see "Manuals":
http://support.automation.siemens.com/WW/view/en/38752095
http://support.automation.siemens.com/WW/view/en/21772518

For the configuration of soft starters for motors with high starting current conditions (typically $I/I_e \geq 8$), we recommend consulting our Siemens Technical Assistance
Tel.: +49 911 895-5900
E-mail: technical-assistance@siemens.com

Motor rating data in kW and hp are based on IEC 60947-4-1.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Soft starters	**3 R W**															
SIRIUS soft starter generation		□	□													
Size				□												
Rated operational current I_e					□											
Connection type (screw terminals/spring-type terminals)							□									
Soft starter functionality (bypass, thermistor, etc.)								□	□							
Rated control supply voltage U_s										□						
Rated operational voltage U_e											□					
Special versions													□	□	□	□
Example	**3 R W**	**4**	**0**	**2**	**4**	**–**	**1**	**B**	**B**	**1**	**4**					

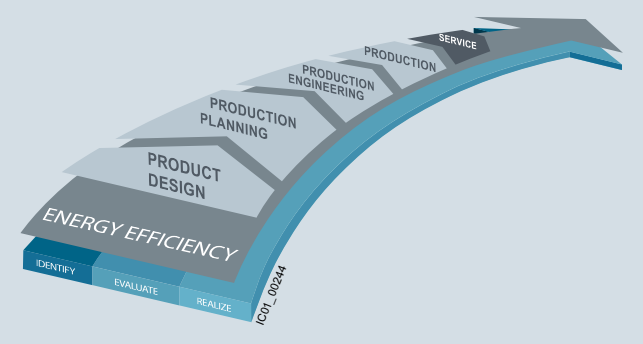
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

The soft starters contribute to energy efficiency throughout the plant as follows:

- Energy management
  Provision of energy data such as current, voltage and power (3RW44) by bus to higher-level systems
- Current management
  Avoidance of current peaks, thus reducing the load on the grid and the mechanical system
- Reduced heating of the control cabinet
  Technology-reduced inherent power loss as speed-controlled drive systems, resulting in lower cooling costs and a more compact design All sizes are equipped with bypass contactor, resulting in lower power losses after start-up

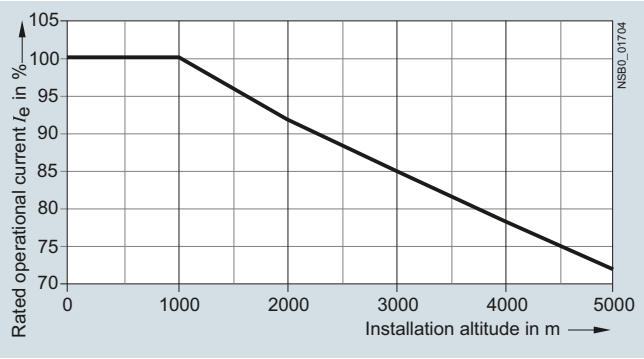
Product advantages

The advantages of the SIRIUS soft starters at a glance:

- Soft starting and ramp-down
  (only soft starting available for 3RW30)
- Stepless starting
- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network
- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system

Technical specifications

Permissible installation altitude



At an installation altitude above 2000 m, max. permissible operational voltage is reduced to 460 V.

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3RW30

Overview

The SIRIUS 3RW30 soft starters reduce the motor voltage through variable phase control and increase it in ramp-like mode from a selectable starting voltage up to mains voltage. During starting, these devices limit the torque as well as the current and prevent the shocks which arise during direct starts or wye-delta starts. In this way, mechanical loads and mains voltage dips can be reliably reduced.

Soft starting reduces the stress on the connected equipment and results in lower wear and therefore longer periods of trouble-free production. The selectable start value means that the soft starters can be adjusted individually to the requirements of the application in question and unlike wye-delta starters are not restricted to two-stage starting with fixed voltage ratios.

The SIRIUS 3RW30 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

Various versions of the SIRIUS 3RW30 soft starters are available:

- Standard version for fixed-speed three-phase motors, sizes S00, S0, S2 and S3, with integrated bypass contact system
- Version for fixed-speed three-phase motors in a 22.5 mm enclosure without bypass

Soft starters rated up to 55 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple commissioning are just three of the many advantages of this soft starter.

Functionality

The space required by the compact SIRIUS 3RW30 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %. The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause.

It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

- Soft starting with voltage ramp; the starting voltage setting range U_s ranges from 40 to 100 %, and the ramp time t_R can be set from 0 to 20 s.
- Integrated bypass contact system to minimize power loss
- Setting with two potentiometers
- Simple mounting and commissioning
- Mains voltages 50/60 Hz, 200 to 480 V
- Two control voltage versions 24 V AC/DC and 110 to 230 V AC/DC
- Wide temperature range from -25 to +60 °C
- The built-in auxiliary contact ensures user-friendly control and possible further processing within the system (for status graphs see page 6/18).

Application

The 3RW30 soft starters are suitable for soft starting of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time. Due to continuous voltage influencing, the current and torque peaks which are unavoidable in the case of wye-delta starters for instance do not occur.

Application areas

See "Selection aid for soft starters", page 6/6.

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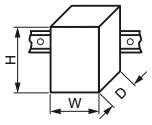
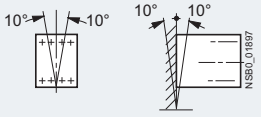
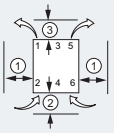
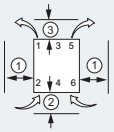
Technical specifications

Type			3RW301.	3RW302.	3RW303.	3RW304.
Mechanics and environment						
Mounting dimensions (W x H x D)						
• Screw terminals		mm	45 x 95 x 151	45 x 125 x 151	55 x 144 x 168	70 x 160 x 186
• Spring-type terminals		mm	45 x 117 x 151	45 x 150 x 151	55 x 144 x 168	70 x 160 x 186
Permissible ambient temperature						
Operation		°C	-25 ... +60; (derating from +40)			
Storage		°C	-40 ... +80			
Weight		kg	0.58	0.69	1.20	1.71
Permissible mounting position[1] (auxiliary fan not available)						
Installation type[1]	Stand-alone installation		 ① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)		 ① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)	
Permissible installation altitude		m	5 000 (derating from 1000, see "Characteristic Curves" page 6/7); higher on request			
Degree of protection			IP20 for 3RW301. and 3RW302.; IP00 for 3RW303. and 3RW304.			

[1] Please note derating information in case of deviations.
See the Manual in Chapter "Configuration":
http://support.automation.siemens.com/WW/view/en/38752095

Type			3RW301., 3RW302.		3RW303., 3RW304.	
Control electronics						
Rated values	Terminal					
Rated control supply voltage	A1/A2	V	24	110 ... 230	24	110 ... 230
• Tolerance		%	±20	-15/+10	±20	-15/+10
Rated frequency		Hz	50/60			
• Tolerance		%	±10			

Type		3RW301.	3RW302.	3RW303.	3RW304.
Power electronics					
Rated operational voltage	V AC	200 ... 480			
Tolerance	%	-15/+10			
Rated frequency	Hz	50/60			
Tolerance	%	±10			
Uninterrupted duty at 40 °C (% of I_e)	%	115			
Minimum load (% of I_e)	%	10 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			

Type		3RW3013	3RW3014	3RW3016	3RW3017	3RW3018
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	3.6	6.5	9	12.5	17.6
- At 50 °C	A	3.3	6	8	12	17
- At 60 °C	A	3	5.5	7	11	14
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	0.25	0.5	1	2	4
• During starting with 300 % I_M (40 °C)	W	24	52	80	80	116
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C/50 °C						
- Rated motor current I_M[2], starting time 3 s	A	3.6 / 3.3	6.5 / 6.0	9 / 8	12.5 / 12.0	17.6 / 17.0
- Starts per hour[3]	1/h	200 / 150	87 / 60	50 / 50	85 / 70	62 / 46
- Rated motor current I_M[2], starting time 4 s	A	3.6 / 3.3	6.5 / 6.0	9 / 8	12.5 / 12.0	17.6 / 17.0
- Starts per hour[3]	1/h	150 / 100	64 / 46	35 /35	62 / 47	45 / 32

[1] Measurement at 60 °C according to UL/CSA not required.

[2] With 300 % I_M, T_u = 40 °C/50 °C.

[3] For intermittent duty S4 with ON period = 30 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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3RW30

Type		3RW3026	3RW3027	3RW3028
Power electronics				
Load rating with rated operational current I_e				
• According to IEC and UL/CSA[1], for individual mounting, AC-53a				
- At 40 °C	A	25.3	32.2	38
- At 50 °C	A	23	29	34
- At 60 °C	A	21	26	31
Power loss				
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	8	13	19
• During starting with 300 % I_M (40 °C)	W	188	220	256
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C/50 °C				
- Rated motor current I_M[2], starting time 3 s	A	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	23 / 23	23 / 23	19 / 19
- Rated motor current I_M[2], starting time 4 s	A	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	15 / 15	16 / 16	12 / 12

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 % I_M, T_u = 40 °C/50 °C.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting.
See the Manual in Chapter "Configuration":
http://support.automation.siemens.com/WW/view/en/38752095

Type		3RW3036	3RW3037	3RW3038	3RW3046	3RW3047
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	45	65	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21
• During starting with 300 % I_M (40 °C)	W	316	444	500	576	768
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C/50 °C						
- Rated motor current I_M[2], starting time 3 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 108
- Starts per hour[3]	1/h	38 / 38	23 / 23	22 / 22	22 / 22	15 / 15
- Rated motor current I_M[2], starting time 4 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	26 / 26	15 / 15	15 /15	15 / 15	10 / 10

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 % I_M, T_u = 40 °C/50 °C.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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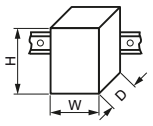
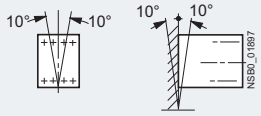
Type			3RW3003-1CB54	3RW3003-2CB54
Mechanics and environment				
Mounting dimensions (W x H x D)				
• Screw terminals		mm	22.5 x 100 x 120	--
• Spring-type terminals		mm	--	22.5 x 101.6 x 120
Permissible ambient temperature				
Operation		°C	-25 ... +60; (derating from +40)	
Storage		°C	-40 ... +80	
Weight		kg	0.207	0.188
Permissible mounting position				
Permissible installation altitude		m	5 000 (derating from 1 000, see "Characteristic Curves", page 6/7); higher on request	
Degree of protection acc. to IEC 60529			IP20 (IP00 terminal compartment)	
Control electronics				
Rated values				
Rated control supply voltage		V	24 ... 230 AC/DC	
• Tolerance		%	± 10	
Rated frequency at AC		Hz	50/60	
• Tolerance		%	± 10	
Power electronics				
Rated operational voltage		V AC	200 ... 400	
Tolerance		%	± 10	
Rated frequency		Hz	50/60	
Tolerance		%	±10	
Uninterrupted duty (% of I_e)		%	100	
Minimum load[1] (% of I_e); at 40 °C		%	9	
Maximum conductor length between soft starter and motor		m	100[2]	
Load rating with rated operational current I_e				
• According to IEC and UL/CSA for individual mounting at 40/50/60 °C, AC-53a		A	3 / 2.6 / 2.2	
• According to IEC and UL/CSA for side-by-side-mounting at 40/50/60 °C, AC-53a		A	2.6 / 2.2 / 1.8	
Power loss				
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.		W	6.5	
• At utilization of maximum switching frequency		W	3	
Permissible starts per hour (cannot be increased by using a fan)				
• For intermittent duty S4 T_u = 40 °C, stand-alone installation vertical.		1/h	1 500	
• ON period = 70 % for 300 % I_e		1/s	0.2	
Dead time after uninterrupted duty				
With I_e before restart		s	0	

1) The rated motor current (specified on the motor's name plate) should at least amount to the specified percentage of the SIRIUS soft starter unit's rated operational current I_e.

2) If this value is exceeded, problems with line capacities may arise, which can result in false firing.

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3RW30

Motor feeders with soft starters

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, then semiconductor fuses must be fitted in the motor feeder.

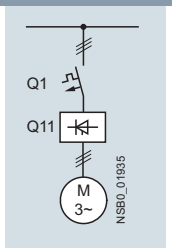
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version



Soft starters		Motor starter protectors[1]		
ToC 1	Nominal current	400 V + 10 %		Rated current
Q11		Q1	$I_{q\ max}$	
Type	A	Type	kA	A
Type of coordination "1"				
3RW3003	3	3RV2011-1EA	50	4
3RW3013	3.6	3RV2011-1FA	5	5
3RW3014	6.5	3RV2011-1HA	5	8
3RW3016	9	3RV2011-1JA	5	10
3RW3017	12.5	3RV2011-1KA	5	12.5
3RW3018	17.6	3RV2021-4BA	5	20
3RW3026	25	3RV2021-4DA	55	25
3RW3027	32	3RV2021-4EA	55	32
3RW3028	38	3RV2021-4FA	55	40
3RW3036	45	3RV1031-4GA10	20	45
3RW3037	63	3RV1041-4JA10	20	63
3RW3038	72	3RV1041-4KA10	20	75
3RW3046	80	3RV1041-4LA10	11	90
3RW3047	106	3RV1041-4MA10	11	100

[1] The rated motor current must be considered when selecting the devices.

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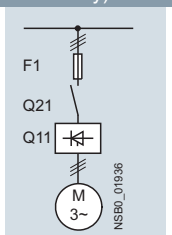
Fused version (line protection only)



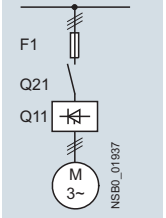
Soft starters ToC 1		Line protection, maximum			Line contactors
	Nominal current		Rated current	Size	(optional)
Q11 Type	A	F1 Type	A		Q21 Type
Type of coordination "1"[1]: I_q = 65 kA at 480 V + 10 %					
3RW3003[2]	3	3NA3805[3]	20	000	3RT2015
3RW3013	3.6	3NA3803-6	10	000	3RT2015
3RW3014	6.5	3NA3805-6	16	000	3RT2015
3RW3016	9	3NA3807-6	20	000	3RT2016
3RW3017	12.5	3NA3810-6	25	000	3RT2018
3RW3018	17.6	3NA3814-6	35	000	3RT2026
3RW3026	25	3NA3822-6	63	00	3RT2026
3RW3027	32	3NA3824-6	80	00	3RT2027
3RW3028	38	3NA3824-6	80	00	3RT2028
3RW3036	45	3NA3130-6	100	1	3RT1036
3RW3037	63	3NA3132-6	125	1	3RT1044
3RW3038	72	3NA3132-6	125	1	3RT1045
3RW3046	80	3NA3136-6	160	1	3RT1045
3RW3047	106	3NA3136-6	160	1	3RT1046

1) The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

2) I_q = 50 kA at 400 V.

3) 3NA3805-1 (NH00), 5SB261 (DIAZED), 5SE2201-6 (NEOZED).

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



Matching fuse bases see
Catalog LV 10 → "Switch Disconnectors" and
Catalog LV 10 → "Fuse Systems"
→ "SITOR Semiconductor Fuses"
or visit www.siemens.com/sitor

Soft starters ToC 2		All-range fuses			Line contactors
	Nominal current		Rated current	Size	(optional)
Q11 Type	A	F'1 Type	A		Q21 Type
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %					
3RW3003[2]	3	3NE1813-0[3]	16	000	3RT2015
3RW3013	3.6	3NE1813-0	16	000	3RT2015
3RW3014	6.5	3NE1813-0	16	000	3RT2015
3RW3016	9	3NE1813-0	16	000	3RT2016
3RW3017	12.5	3NE1813-0	16	000	3RT2018
3RW3018	17.6	3NE1814-0	20	000	3RT2026
3RW3026	25	3NE1803-0	35	000	3RT2026
3RW3027	32	3NE1020-2	80	00	3RT2027
3RW3028	38	3NE1020-2	80	00	3RT2028
3RW3036	45	3NE1020-2	80	00	3RT1036
3RW3037	63	3NE1820-0	80	000	3RT1044
3RW3038	72	3NE1820-0	80	000	3RT1045
3RW3046	80	3NE1021-0	100	00	3RT1045
3RW3047	106	3NE1022-0	125	00	3RT1046

1) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

2) I_q = 50 kA at 400 V.

3) No SITOR fuse required!
Alternatively: 3NA3803 (NH00), 5SB221 (DIAZED), 5SE2206 (NEOZED).

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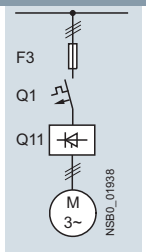
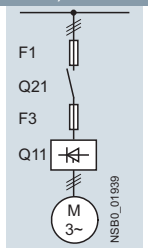
3RW30

Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





Matching fuse bases see Catalog LV 10 → "Switch Disconnectors" and Catalog LV 10 → "Fuse Systems" → "SITOR Semiconductor Fuses" or visit www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
ToC 2	Nom. curr.		Rated current	Size		Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %										
3RW3003[2]	3	--	--	--	--	--	--			
3RW3013	3.6	--	--	--	--	--	--	3NE4101	32	0
3RW3014	6.5	--	--	--	--	--	--	3NE4101	32	0
3RW3016	9	--	--	--	--	--	--	3NE4101	32	0
3RW3017	12.5	--	--	--	--	--	--	3NE4101	32	0
3RW3018	17.6	--	--	--	3NE3221	100	1	3NE4101	32	0
3RW3026	25	--	--	--	3NE3221	100	1	3NE4102	40	0
3RW3027	32	--	--	--	3NE3222	125	1	3NE4118	63	0
3RW3028	38	--	--	--	3NE3222	125	1	3NE4118	63	0
3RW3036	45	--	--	--	3NE3224	160	1	3NE4120	80	0
3RW3037	63	--	--	--	3NE3225	200	1	3NE4121	100	0
3RW3038	72	3NE3221	100	1	3NE3227	250	1	--	--	--
3RW3046	80	3NE3222	125	1	3NE3225	200	1	--	--	--
3RW3047	106	3NE3224	160	1	3NE3231	350	1	--	--	--

Soft starters		Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
ToC 2	Nom. curr.		Rated current	Size		Rated current	Size		Rated current	Size		Rated current
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A		F3 Type	A
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %												
3RW3003[2]	3	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC1010	10
3RW3013	3.6	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3014	6.5	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3016	9	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3017	12.5	--	--	--	3NE8015-1	25	00	3NE8018-1	63	00	3NC2250	50
3RW3018	17.6	--	--	--	3NE8003-1	35	00	3NE8021-1	100	00	3NC2263	63
3RW3026	25	3NE4117	50	0	3NE8017-1	50	00	3NE8021-1	100	00	3NC2263	63
3RW3027	32	3NE4118	63	0	3NE8018-1	63	00	3NE8022-1	125	00	3NC2280	80
3RW3028	38	3NE4118	63	0	3NE8020-1	80	00	3NE8022-1	125	00	3NC2280	80
3RW3036	45	3NE4120	80	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW3037	63	3NE4121	100	0	3NE8021-1	100	00	3NE8024-1	160	00	--	--
3RW3038	72	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW3046	80	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW3047	106	--	--	--	3NE8024-1	160	00	3NE8024-1	160	00	--	--

Soft starters		Line contactors	Motor starter protectors		Line protection, maximum		
ToC 2	Nom. curr.	(optional)	400 V + 10 %	Rated current		Rated current	Size
Q11 Type	A	Q21	Q1 Type	A	F1 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %							
3RW3003[2]	3	3RT2015	3RV2011-1EA	4	3NA3805[3]	20	000
3RW3013	3.6	3RT2015	3RV2011-1FA	5	3NA3803-6	10	000
3RW3014	6.5	3RT2015	3RV2011-1HA	8	3NA3805-6	16	000
3RW3016	9	3RT2016	3RV2011-1JA	10	3NA3807-6	20	000
3RW3017	12.5	3RT2018	3RV2011-1KA	12.5	3NA3810-6	25	000
3RW3018	17.6	3RT2026	3RV2021-4BA	20	3NA3814-6	35	000
3RW3026	25	3RT2026	3RV2021-4DA	25	3NA3822-6	63	00
3RW3027	32	3RT2027	3RV2021-4EA	32	3NA3824-6	80	00
3RW3028	38	3RT2028	3RV2021-4FA	40	3NA3824-6	80	00
3RW3036	45	3RT1036	3RV1031-4GA10	45	3NA3130-6	100	1
3RW3037	63	3RT1044	3RV1041-4JA10	63	3NA3132-6	125	1
3RW3038	72	3RT1045	3RV1041-4KA10	75	3NA3132-6	125	1
3RW3046	80	3RT1045	3RV1041-4LA10	90	3NA3136-6	160	1
3RW3047	106	3RT1046	3RV1041-4MA10	100	3NA3136-6	160	1

[1] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

[2] I_q = 50 kA at 400 V.

[3] 3NA3805-1 (NH00), 5SB261 (DIAZED).

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Selection and ordering data

3RW301.

3RW302.

3RW303.

3RW304.

3RW3003-2CB54

3RW ambient temperature 40 °C Rated values of three-phase motors				3RW ambient temperature 50 °C Rated values of three-phase motors					Size	DT[1]		PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V			Configurator / Article No.	Price per PU		
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V														
3.6	0.75	**1.5**	--	3	0.5	0.5	**1.5**	--	**S00**	A	**3RW3013-□BB□4**	1	1 unit	42G
6.5	1.5	**3**	--	4.8	1	1	**3**	--	**S00**	A	**3RW3014-□BB□4**	1	1 unit	42G
9	2.2	**4**	--	7.8	2	2	**5**	--	**S00**	A	**3RW3016-□BB□4**	1	1 unit	42G
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S00**	A	**3RW3017-□BB□4**	1	1 unit	42G
17.6	4	**7.5**	--	17	3	3	**10**	--	**S00**	A	**3RW3018-□BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	A	**3RW3026-□BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	A	**3RW3027-□BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	A	**3RW3028-□BB□4**	1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	A	**3RW3036-□BB□4**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	A	**3RW3037-□BB□4**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	A	**3RW3038-□BB□4**	1	1 unit	42G
80	22	**45**	--	73	20	25	**50**	--	**S3**	A	**3RW3046-□BB□4**	1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	A	**3RW3047-□BB□4**	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[2] **2**

Article No. supplement for rated control supply voltage U_s

- 24 V AC/DC **0**
- 110 ... 230 V AC/DC **1**

Soft starters for easy starting conditions and high switching frequency, rated operational voltage U_e 200 ... 400 V, rated control supply voltage U_s 24 ... 230 V AC/DC														
3	0.55	**1.1**	--	2.6	0.5	**0.5**	--	--	22.5 mm					
• With screw terminals										▶	**3RW3003-1CB54**	1	1 unit	42G
• With spring-type terminals										▶	**3RW3003-2CB54**	1	1 unit	42G

Online configurator see www.siemens.com/sirius/configurators

[1] Soft starter with screw terminals: delivery time class ▶ (preferred type).
[2] Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW30 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in *s*: 3
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 20
- Stand-alone installation (side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095)

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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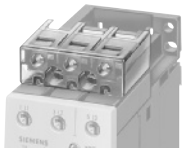
Accessories

	Conductor cross-section			Tighten-ing torque	For soft starters size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
	mm²	mm²	AWG	Nm							
Three-phase infeed terminals											
3RV2925-5AB	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00 (3RW301.) S0 (3RW302.)	►	**3RV2925-5AB**		1	1 unit	41E

	For soft starters Type	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary terminals								
	Auxiliary terminals, 3-pole							
	3RW304.	**S3**	B	**3RT1946-4F**		1	1 unit	41B
Covers for soft starters								
	**Terminal covers for box terminals** Additional touch protection to be fitted at the box terminals (2 units required per device)							
	3RW303.	**S2**	B	**3RT1936-4EA2**		1	1 unit	41B
	3RW304.	**S3**	►	**3RT1946-4EA2**		1	1 unit	41B
3RT1946-4EA1	**Terminal cover for cable lugs and busbar connections** For complying with the voltage clearances and as touch protection if box terminal is removed (2 units required per device)							
	3RW304.	**S3**	B	**3RT1946-4EA1**		1	1 unit	41B
Manual 3RW30/3RW40[1)]								

[1)] The operating instructions for 3RW30 (3ZX1012-0RW30-2DA1) are included in the scope of supply of the soft starter or are available – like the manual – as a PDF download from the Service&Support portal at www.siemens.com/industrial-controls/support. Search the section "Switching Devices" → "Soft Starters and Solid-State Switching Devices" → "SIRIUS 3RW Soft Starters".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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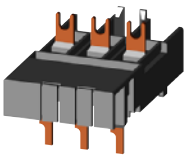
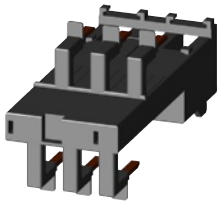
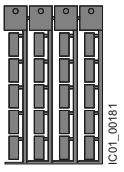
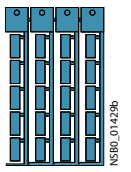
For soft starters Type	Size	Motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules to motor starter protectors[1]								
 3RA2921-1BA00								
• With screw terminals								
3RW301.	**S00**	**S00**	A	**3RA2921-1BA00**		1	1 unit	41B
3RW302.	**S0**	**S00/S0**	A	**3RA2921-1BA00**		1	1 unit	41B
3RW3036.	**S2**	**S2**	►	**3RA1931-1AA00**		1	1 unit	41B
3RW3046., 3RW3047.	**S3**	**S3**	►	**3RA1941-1AA00**		1	1 unit	41B
 3RA2921-2GA00								
• With spring-type terminals								
3RW301.	**S00**	**S00**	►	**3RA2911-2GA00**		1	1 unit	41B
3RW302.	**S0**	**S0**	►	**3RA2921-2GA00**		1	1 unit	41B

[1] Can be used in size S0 up to maximum 32 A.
Can be used in size S00/S0 only for 3RV2 motor starter protectors.

Version	Functionality Functions	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers and push-in lugs (only for 3RW30 03)								
3RP1902	**Sealable covers**	For securing against unauthorized adjustment of setting knobs	For devices with 1 or 2 CO contacts	B	**3RP1902**		1	5 units	41H
3RP1903	**Push-in lugs** For screw fixings		For devices with 1 or 2 CO contacts	B	**3RP1903**		1	10 units	41H

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tool for opening spring-type terminals in sizes S00 and S0						
		Spring-type terminals				
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Blank labels						
 3RT2900-1SB20	**Unit labeling plates**[1] For SIRIUS devices					
	• 20 mm x 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
 3RT1900-1SB20	• 20 mm x 7 mm, pastel turquoise	D	**3RT1900-1SB20**		100	340 units	41B

[1] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 300% $I_{n\ motor}$ one start per hour)
The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belts	Roller conveyors	Compressors	Small fans[1)]	Pumps	Hydraulic pumps
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	40	40	40
- Starting time	s	10	10	20	20	10	10

1) The mass inertia of the fan is <10 times the mass inertia of the motor.

Note:
These tables present sample set values and device dimensions. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.
The soft starter dimensions should be checked where necessary with the help of Technical Assistance.

Configuration

The 3RW solid-state motor controllers are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

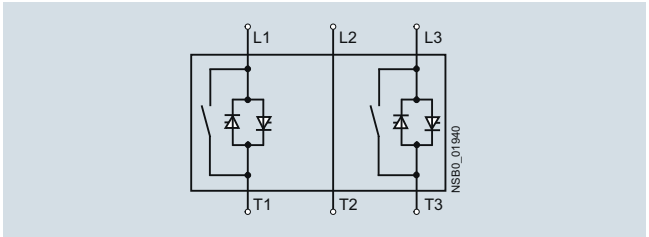
If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses, controls and overload relays) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

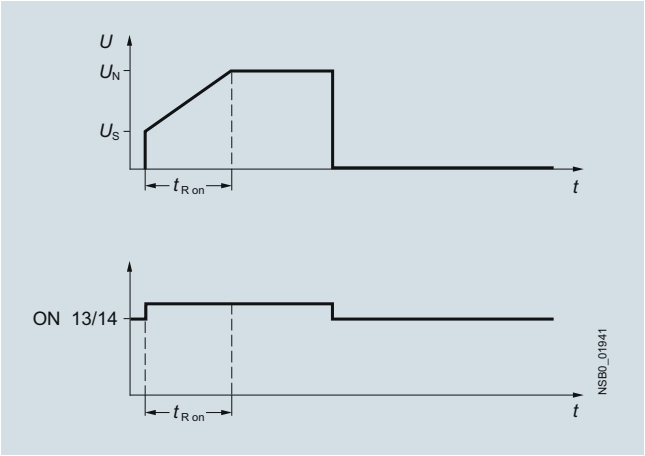
Note:
When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

In addition to relevant configuration, commissioning, and service information, the manual also contains example circuits and technical specifications for all devices:
http://support.automation.siemens.com/WW/view/en/38752095

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Overview

SIRIUS 3RW40 soft starters have all the same advantages as the 3RW30 soft starters.

The SIRIUS 3RW40 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

At the same time this soft starter comes with additional integrated functions such as adjustable current limiting, motor overload and intrinsic device protection, and optional thermistor motor protection. The higher the motor rating, the more important these functions because they make it unnecessary to purchase and install protection equipment such as overload relays.

Internal intrinsic device protection prevents the thermal overloading of the thyristors and the power section defects this can cause. As an option the thyristors can also be protected by semiconductor fuses from short-circuiting.

Thanks to integrated status monitoring and fault monitoring, this compact soft starter offers many different diagnostics options. Up to four LEDs and relay outputs permit differentiated monitoring and diagnostics of the operating mechanism by indicating the operating state as well as for example mains or phase failure, missing load, non-permissible tripping time/CLASS setting, thermal overloading or device faults.

Soft starters rated up to 250 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple start-up are just three of the many advantages of the SIRIUS 3RW40 soft starters.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RW40 soft starter sizes S0 to S12 are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e.

Functionality

The space required by the compact SIRIUS 3RW40 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The starting current of particularly powerful operating mechanisms can place an unjustifiable load on the local supply system. Soft starters reduce this starting current by means of their voltage ramp. Thanks to the adjustable current limiting, the SIRIUS 3RW40 soft starter takes even more pressure off the supply system. It leaves the set start ramp during the ramp-up – the ramp gradient is fixed by the starting voltage and the ramp time – as soon as the selected current limit is reached. From this moment the voltage of the soft starter is controlled so that the current supplied to the motor remains constant. This process is ended either by completion of the motor ramp-up or by tripping by the intrinsic device protection or the motor overload protection. As the result of this function the actual motor ramp-up can well take longer than the ramp time selected on the soft starter.

Thanks to the integrated motor overload protection according to IEC 60947-4-2, there is no need for an additional overload relay on the new soft starters. The rated motor current, the setting of the overload tripping time (CLASS times) and the reset of the motor overload protection function can be adjusted easily and quickly. Using a 4-step rotary potentiometer it is possible to set different overload tripping times on the soft starter. In addition to CLASS 10, 15 and 20 it is also possible to switch off the motor overload protection if a different motor management control device is to be used for this function, e.g. with connection to PROFIBUS.

Device versions with thermistor motor protection evaluation are available up to a rating of 55 kW (at 400 V). A "Thermoclick" measuring probe can be connected directly, as can a PTC of type A. Thermal overloading of the motor, open circuits and short circuits in the sensor circuit all result in the direct disconnection of the soft starter. And if ever the soft starter trips, various reset options are available the same as with intrinsic device protection and motor load protection: manually with the reset button, automatically or remotely through brief disconnection of the control voltage.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %.

The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause. It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

Application

The SIRIUS 3RW40 solid-state soft starters are used for the soft starting and stopping of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time and disturbing direct current components are eliminated in addition. This not only enables the two-phase starting of motors up to 250 kW (at 400 V) but also avoids the current and torque peaks which occur e.g. with wye-delta starters.

Application areas

See "Selection aid for soft starters" on page 6/6.

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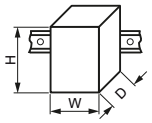
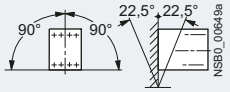
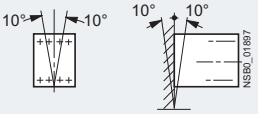
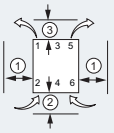
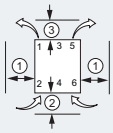
3RW40

Technical specifications

Type			3RW402.	3RW403.	3RW404.	3RW405.	3RW407.
Mechanics and environment							
Mounting dimensions (W x H x D)							
• Screw terminals		mm	45 x 125 x 154	55 x 144 x 170	70 x 160 x 188	120 x 198 x 250	160 x 230 x 278
• Spring-type terminals		mm	45 x 150 x 154	55 x 144 x 170	70 x 160 x 188	120 x 198 x 250	160 x 230 x 278
Permissible ambient temperature							
Operation		°C	-25 ... +60; (derating from +40)				
Storage		°C	-40 ... +80				
Weight		kg	0.77	1.35	1.9	4.9 (.55.) 6.9 (.56.)	8.9
Permissible mounting position[1]							
• With auxiliary fan (for 3RW402. ... 3RW404.)							
• Without auxiliary fan (for 3RW402. ... 3RW404.)						-- (fan integrated in the soft starter)	
Installation type[1]	Stand-alone installation		3RW402.			3RW405., 3RW407.	
			① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)			① ≥ 5 mm (≥ 0.2 in) ② ≥ 75 mm (≥ 3 in) ③ ≥ 100 mm (≥ 4 in)	
	3RW403., 3RW404.						
			① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)				
Permissible installation altitude		m	5 000 (derating from 1000, see "Characteristic Curves" page 6/7); higher on request				
Degree of protection			IP20 for 3RW402.; all others IP00				

[1] Please note derating information in case of deviations.
See the Manual in Chapter "Configuration":
http://support.automation.siemens.com/WW/view/en/38752095

Type			3RW402., 3RW403., 3RW404.		3RW405., 3RW407.	
Control electronics						
Rated values	Terminal					
Rated control supply voltage	A1/A2	V	24 DC/AC	110 ... 230 AC/DC	115 AC	230 AC
• Tolerance		%	±20	-15/+10	-15/+10	
Rated frequency		Hz	50/60			
• Tolerance		%	±10			

Type		3RW402.-..B.4, 3RW403.-..B.4, 3RW404.-..B.4	3RW402.-..B.5, 3RW403.-..B.5, 3RW404.-..B.5	3RW405.-.BB.4, 3RW407.-.BB.4	3RW405.-.BB.5, 3RW407.-.BB.5
Power electronics					
Rated operational voltage	V AC	200 ... 480	400 ... 600	200 ... 460	400 ... 600
Tolerance	%	-15/+10	-15/+10	-15/+10	-15/+10
Maximum blocking voltage (thyristor)	V AC	1 600		1 400	1 800
Rated frequency	Hz	50/60			
Tolerance	%	±10			
Uninterrupted duty at 40 °C (% of I_e)	%	115			
Minimum load (% of minimum selectable rated motor current I_M)	%	20 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			

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Type		3RW4024	3RW4026	3RW4027	3RW4028
Power electronics					
Load rating with rated operational current I_e					
• According to IEC and UL/CSA[1], for individual mounting, AC-53a					
- At 40 °C	A	12.5	25.3	32.2	38
- At 50 °C	A	11	23	29	34
- At 60 °C	A	10	21	26	31
Smallest adjustable rated motor current I_M					
For the motor overload protection	A	5	10	17	23
Power loss					
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	2	8	13	19
• During starting with current limit set to 300 % I_M (40 °C)	W	68	188	220	256
Permissible rated motor current and starts per hour at 40 °C / 50 °C					
• **For normal starting (CLASS 10)**					
- Rated motor current I_M[2], starting time 3 s	A	12.5 / 11	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	50 / 50	23 / 23	23 / 23	19 / 19
- Rated motor current I_M[2], starting time 4 s	A	12.5 / 11	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	36 / 36	15 / 15	16 / 16	12 / 12
• **For heavy starting (CLASS 15)**					
- Rated motor current I_M[2], starting time 4.5 s	A	11 / 10	23 / 21	30 / 27	34 / 31
- Starts per hour[3]	1/h	49 / 49	21 / 21	18 / 18	18 / 18
- Rated motor current I_M[2], starting time 6 s	A	11 / 10	23 / 21	30 / 27	34 / 31
- Starts per hour[3]	1/h	36 / 36	14 / 14	13 / 13	13 / 13
• **For heavy starting (CLASS 20)**					
- Rated motor current I_M[2], starting time 6 s	A	10 / 9	21 / 19	27 / 24	31 / 28
- Starts per hour[3]	1/h	47 / 47	21 / 21	20 / 20	18 / 18
- Rated motor current I_M[2], starting time 8 s	A	10 / 9	21 / 19	27 / 24	31 / 28
- Starts per hour[3]	1/h	34 / 34	15 / 15	14 / 14	13 / 13

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 300 % I_M, T_u = 40 °C/50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency in other mounting position, direct mounting, side-by-side mounting, and implementation of optional auxiliary fan. See the Manual in Chapter "Configuration": http://support.automation.siemens.com/WW/view/en/38752095

Type		3RW4036	3RW4037	3RW4038	3RW4046	3RW4047
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	45	63	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Smallest adjustable rated motor current I_M						
For the motor overload protection	A	23	26	35	43	46
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21
• During starting with current limit set to 300 % I_M (40 °C)	W	316	444	500	576	768
Permissible rated motor current and starts per hour at 40 °C / 50 °C						
• **For normal starting (CLASS 10)**						
- Rated motor current I_M[2], starting time 3 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	38 / 38	23 / 23	22 / 22	22 / 22	15 / 15
- Rated motor current I_M[2], starting time 4 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	26 / 26	15 / 15	15 / 15	15 / 15	10 / 10
• **For heavy starting (CLASS 15)**						
- Rated motor current I_M[2], starting time 4.5 s	A	42 / 38	50 / 46	56 / 52	70 / 64	84 / 77
- Starts per hour[3]	1/h	30 / 30	34 / 34	34 / 34	24 / 24	23 / 23
- Rated motor current I_M[2], starting time 6 s	A	42 / 38	50 / 46	56 / 52	70 / 64	84 / 77
- Starts per hour[3]	1/h	21 / 21	24 / 24	24 / 24	16 / 16	17 / 17
• **For heavy starting (CLASS 20)**						
- Rated motor current I_M[2], starting time 6 s	A	38 / 34	46 / 42	50 / 46	64 / 58	77 / 70
- Starts per hour[3]	1/h	30 / 30	31 / 31	34 / 34	23 / 23	23 / 23
- Rated motor current I_M[2], starting time 8 s	A	38 / 34	46 / 42	50 / 46	64 / 58	77 / 70
- Starts per hour[3]	1/h	21 / 21	22 / 22	24 / 24	16 / 16	16 / 16

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 300 % I_M, T_u = 40 °C/50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency in other mounting position, direct mounting, side-by-side mounting, and implementation of optional auxiliary fan. See the Manual in Chapter "Configuration": http://support.automation.siemens.com/WW/view/en/38752095

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3RW40

Type		3RW4055	3RW4056	3RW4073	3RW4074	3RW4075	3RW4076
Power electronics							
Load rating with rated operational current I_e							
• According to IEC and UL/CSA[1], for individual mounting, AC-53a							
- At 40 °C	A	134	162	230	280	356	432
- At 50 °C	A	117	145	205	248	315	385
- At 60 °C	A	100	125	180	215	280	335
Smallest adjustable rated motor current I_M							
For the motor overload protection	A	59	87	80	130	131	207
Power loss							
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	60	75	75	90	125	165
• During starting with current limit set to 350 %[2] I_M (40 °C)	W	1043	1355	2448	3257	3277	3600
Permissible rated motor current and starts per hour at 40 °C / 50 °C							
• **For normal starting (CLASS 10)**							
- Rated motor current I_M[2], starting time 10 s	A	134 / 117	162 / 145	230 / 205	280 / 248	356 / 315	432 / 385
- Starts per hour[3]	1/h	20 / 20	8 / 8	14 / 14	20 / 20	16 / 16	17 / 17
- Rated motor current I_M[2], starting time 20 s	A	134 / 117	162 / 145	230 / 205	280 / 248	356 / 315	432 / 385
- Starts per hour[3]	1/h	7 / 7	1.4 / 1.4	3 / 3	8 / 8	5 / 5	5 / 5
• **For heavy starting (CLASS 15)**							
- Rated motor current I_M[2], starting time 15 s	A	134 / 117	152 / 140	210 / 200	250 / 220	341 / 315	402 / 385
- Starts per hour[3]	1/h	11 / 11	8 / 8	11 / 11	13 / 13	11 / 11	12 / 12
- Rated motor current I_M[2], starting time 30 s	A	134 / 117	152 / 140	210 / 200	250 / 220	341 / 315	402 / 385
- Starts per hour[3]	1/h	1.2 / 1.2	1.7 / 1.7	1 / 1	6 / 6	2 / 2	2 / 2
• **For heavy starting (CLASS 20)**							
- Rated motor current I_M[2], starting time 20 s	A	124 / 112	142 / 132	200 / 185	230 / 205	311 / 280	372 / 340
- Starts per hour[3]	1/h	12 /12	9 / 9	10 / 10	10 / 10	10 / 10	10 / 10
- Rated motor current I_M[2], starting time 40 s	A	124 / 112	142 / 132	200 / 185	230 / 205	311 / 280	372 /340
- Starts per hour[3]	1/h	2 / 2	2 / 2	1 / 1	5 / 5	1 / 1	1 / 1

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, T_u = 40 °C/50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 °C/50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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Motor feeders with soft starters

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, then semiconductor fuses must be fitted in the motor feeder.

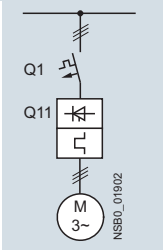
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version



Soft starters		Motor starter protectors[1]						
ToC 1	Nominal current	400 V + 10 %	400 V + 10 %		Rated current	575 V + 10 %		Rated current
Q11		Q1	Q1	$I_{q\ max}$		Q1	$I_{q\ max}$	
Type	A	Type	Type	kA	A	Type	kA	A
Type of coordination "1"								
3RW4024	12.5	3RV2021-4AA/ 3RV2011-4AA (in size S00)	3RV2321-4AC/ 3RV2311-4AC (in size S00)	55	16	--	--	--
3RW4026	25	3RV2021-4DA	3RV2321-4DC	55	25	--	--	--
3RW4027	32	3RV2021-4EA	3RV2321-4EC	55	32	--	--	--
3RW4028	38	3RV2021-4FA	3RV2321-4FC	55	40	--	--	--
3RW4036	45	3RV1031-4GA10	3RV1331-4GC10	20	45	--	--	--
3RW4037	63	3RV1041-4JA10	3RV1341-4JC10	20	63	--	--	--
3RW4038	72	3RV1041-4KA10	3RV1341-4KC10	20	75	--	--	--
3RW4046	80	3RV1041-4LA10	3RV1341-4LC10	11	90	--	--	--
3RW4047	106	3RV1041-4MA10	3RV1341-4MC10	11	100	--	--	--
3RW4055	134	3VL3720-2DC36	--	35	200	3VL3720-1DC36	12	200
3RW4056	162	3VL3720-2DC36	--	35	200	3VL3720-1DC36	12	200
3RW4073	230	3VL4731-2DC36	--	65	315	3VL5731-3DC36	35	315
3RW4074	280	3VL4731-2DC36	--	65	315	3VL5731-3DC36	35	315
3RW4075	356	3VL4740-2DC36	--	65	400	3VL5740-3DC36	35	400
3RW4076	432	3VL5750-2DC36	--	65	500	3VL5750-3DC36	35	500

[1] The rated motor current must be considered when selecting the devices. 3RV13/3RV23 motor starter protectors are designed for starter combinations (without motor protection). Motor protection is provided in this case by the 3RW40 soft starter.

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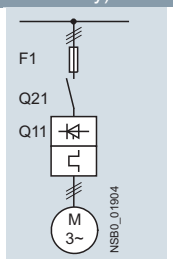
3RW40

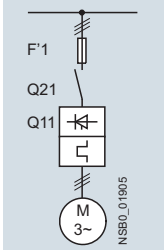
Fused version (line protection only)



Soft starters ToC 1 Q11 Type	Nominal current A	Line protection, maximum F1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "1"[1]: I_q = 65 kA at 600 V + 5 %					
3RW4024	12.5	3NA3 820-6	50	00	3RT2025/ 3RT2018 (in size S00)
3RW4026	25	3NA3822-6	63	00	3RT20 26
3RW4027	32	3NA3824-6	80	00	3RT20 27
3RW4028	38	3NA3824-6	80	00	3RT2028
3RW4036	45	3NA3130-6	100	1	3RT1036
3RW4037	63	3NA3132-6	125	1	3RT1044
3RW4038	72	3NA3132-6	125	1	3RT1045
3RW4046	80	3NA3136-6	160	1	3RT1045
3RW4047	106	3NA3136-6	160	1	3RT1046
3RW4055	134	3NA3244-6	250	2	3RT1055-6A.36
3RW4056	162	3NA3244-6	250	2	3RT1056-6A.36
3RW4073	230	2 x 3NA3354-6	2 x 355	3	3RT1065-6A.36
3RW4074	280	2 x 3NA3354-6	2 x 355	3	3RT1066-6A.36
3RW4075	356	2 x 3NA3365-6	2 x 500	3	3RT1075-6A.36
3RW4076	432	2 x 3NA3365-6	2 x 500	3	3RT1076-6A.36

[1] The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



Matching fuse bases see
Catalog LV 10 → "Switch Disconnectors" and
Catalog LV 10 → "Fuse Systems"
→ "SITOR Semiconductor Fuses"
or visit www.siemens.com/sitor

Soft starters ToC 2 Q11 Type	Nominal current A	All-range fuses F'1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 %					
3RW4024	12.5	3NE1814-0	20	000	3RT2025/ 3RT2018 (in size S00)
3RW4026	25	3NE1803-0	35	000	3RT2026
3RW4027	32	3NE1020-2	80	00	3RT2027
3RW4028	38	3NE1020-2	80	00	3RT2028
3RW4036	45	3NE1020-2	80	00	3RT1036
3RW4037	63	3NE1820-0	80	000	3RT1044
3RW4038	72	3NE1820-0	80	000	3RT1045
3RW4046	80	3NE1021-0	100	00	3RT1045
3RW4047	106	3NE1022-0	125	00	3RT1046
3RW4055	134	3NE1227-2	250	1	3RT1055-6A.36
3RW4056	162	3NE1227-2	250	1	3RT1056-6A.36
3RW4073	230	3NE1331-2	350	2	3RT1065-6A.36
3RW4074	280	3NE1333-2	450	2	3RT1066-6A.36
3RW4075	356	3NE1334-2	500	2	3RT1075-6A.36
3RW4076	432	3NE1435-2	560	3	3RT1076-6A.36

[1] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

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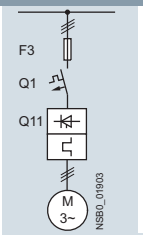
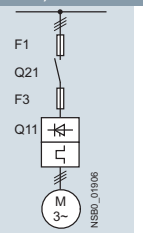
Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





Matching fuse bases see Catalog LV 10 → "Switch Disconnectors" and Catalog LV 10 → "Fuse Systems" → "SITOR Semiconductor Fuses" or visit www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
ToC 2	Nom. curr.		Rated current	Size		Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)										
3RW4024	12.5	--	--	--	--	--	--	3NE4101	32	0
3RW4026	25	--	--	--	3NE3221	100	1	3NE4102	40	0
3RW4027	32	--	--	--	3NE3224	160	1	3NE4118	63	0
3RW4028	38	--	--	--	3NE3224	160	1	3NE4118	63	0
3RW4036	45	--	--	--	3NE3224	160	1	3NE4120	80	0
3RW4037	63	--	--	--	3NE3225	200	1	3NE4121	100	0
3RW4038	72	3NE3221	100	1	3NE3227	250	1	--	--	--
3RW4046	80	3NE3222	125	1	3NE3225	200	1	--	--	--
3RW4047	106	3NE3224	160	1	3NE3231	350	1	--	--	--
3RW4055	134	3NE3227	250	1	3NE3335	560	2	--	--	--
3RW4056	162	3NE3227	250	1	3NE3335	560	2	--	--	--
3RW4073	230	3NE3232-0B	400	1	3NE3333	450	2	--	--	--
3RW4074	280	3NE3233	450	1	3NE3336	630	2	--	--	--
3RW4075	356	3NE3335	560	2	3NE3336	630	2	--	--	--
3RW4076	432	3NE3337-8	710	2	3NE3340-8	900	2	--	--	--

Soft starters		Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
ToC 2	Nom. curr.		Rated current	Size		Rated current	Size		Rated current	Size		Rated current
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A		F3 Type	A
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)												
3RW4024	12.5	3NE4117	50	0	3NE8015-1	25	00	3NE8017-1	50	00	3NC2240	40
3RW4026	25	3NE4117	50	0	3NE8017-1	50	00	3NE8021-1	100	00	3NC2263	63
3RW4027	32	3NE4118	63	0	3NE8018-1	63	00	3NE8022-1	125	00	3NC2280	80
3RW4028	38	3NE4118	63	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW4036	45	3NE4120	80	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW4037	63	3NE4121	100	0	3NE8021-1	100	00	3NE8024-1	160	00	--	--
3RW4038	72	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW4046	80	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW4047	106	--	--	--	3NE8024-1	160	00	3NE8024-1	160	00	--	--
3RW4055	134	--	--	--	--	--	--	--	--	--	--	--
3RW4056	162	--	--	--	--	--	--	--	--	--	--	--
3RW4073	230	--	--	--	--	--	--	--	--	--	--	--
3RW4074	280	--	--	--	--	--	--	--	--	--	--	--
3RW4075	356	--	--	--	--	--	--	--	--	--	--	--
3RW4076	432	--	--	--	--	--	--	--	--	--	--	--

Soft starters		Line contactors	Motor starter protectors					Line protection, maximum		
ToC 2	Nom. curr.	(optional)	400 V + 10 %	Rated current	575 V + 10 %	Rated current			Rated current	Size
Q11 Type	A	Q21 Type	Q1 Type	A	Q1 Type	A		F1 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)										
3RW4024	12.5	3RT2025/ 3RT2018 (in size S00)	3RV2021-4AA/ 3RV2011-4AA (in size S00)	16	--	--		3NA3820-6	50	00
3RW4026	25	3RT2026	3RV2021-4DA	25	--	--		3NA3822-6	63	00
3RW4027	32	3RT2027	3RV2021-4EA	32	--	--		3NA3824-6	80	00
3RW4028	38	3RT2028	3RV2021-4FA	40	--	--		3NA3824-6	80	00
3RW4036	45	3RT1036	3RV1031-4GA10	45	--	--		3NA3130-6	100	1
3RW4037	63	3RT1044	3RV1041-4JA10	63	--	--		3NA3132-6	125	1
3RW4038	72	3RT1045	3RV1041-4KA10	75	--	--		3NA3132-6	125	1
3RW4046	80	3RT1045	3RV1041-4LA10	90	--	--		3NA3136-6	160	1
3RW4047	106	3RT1046	3RV1041-4MA10	100	--	--		3NA3136-6	160	1
3RW4055	134	3RT1055-6A.36	3VL3720	200	3VL3720	200		3NA3244-6	250	2
3RW4056	162	3RT1056-6A.36	3VL3720	200	3VL3720	200		3NA3244-6	250	2
3RW4073	230	3RT1065-6A.36	3VL4731	315	3VL5731	315		2 x 3NA3354-6	2 x 355	3
3RW4074	280	3RT1066-6A.36	3VL4731	315	3VL5731	315		2 x 3NA3354-6	2 x 355	3
3RW4075	356	3RT1075-6A.36	3VL4740	400	3VL5740	400		2 x 3NA3365-6	2 x 500	3
3RW4076	432	3RT1076-6A.36	3VL5750	500	3VL5750	500		2 x 3NA3365-6	2 x 500	3

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Selection and ordering data

SIRIUS 3RW40 for normal starting (CLASS 10)

3RW402.

3RW403.

3RW404.

3RW ambient temperature 40 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	3RW ambient temperature 50 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V	Size	DT[1]	Normal starting (CLASS 10) Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	kW	kW	A	hp	hp	hp	hp							
Rated operational voltage U_e 200 ... 480 V															
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	A	**3RW4024-□BB□4**		1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	A	**3RW4026-□BB□4**		1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	A	**3RW4027-□BB□4**		1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	A	**3RW4028-□BB□4**		1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	A	**3RW4036-□BB□4**		1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	A	**3RW4037-□BB□4**		1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	A	**3RW4038-□BB□4**		1	1 unit	42G
80	22	**45**	--	73	20	25	**50**	--	**S3**	A	**3RW4046-□BB□4**		1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	A	**3RW4047-□BB□4**		1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V															
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW4024-□BB□5**		1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW4026-□BB□5**		1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW4027-□BB□5**		1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW4028-□BB□5**		1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW4036-□BB□5**		1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW4037-□BB□5**		1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW4038-□BB□5**		1	1 unit	42G
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW4046-□BB□5**		1	1 unit	42G
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW4047-□BB□5**		1	1 unit	42G

Article No. supplement for connection types

- With screw terminals **1 2**
- With spring-type terminals[2] **1 2**

Article No. supplement for rated control supply voltage U_s

- 24 V AC/DC **0 1**
- 110 ... 230 V AC/DC **0 1**

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter U_e 200 ... 480 V with screw terminals: delivery time class ▶ (preferred type).

2) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (Side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095, Increase of switching frequency possible with an auxiliary fan)

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW402.

3RW403.

3RW404.

3RW ambient temperature 40 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	3RW ambient temperature 50 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V	Size	DT[1]	Normal starting (CLASS 10) Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	kW	kW	A	hp	hp	hp	hp							
Rated operational voltage U_e 200 ... 480 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC															
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW4024-□TB04**		1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW4026-□TB04**		1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW4027-□TB04**		1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW4028-□TB04**		1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	B	**3RW4036-□TB04**		1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	B	**3RW4037-□TB04**		1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	B	**3RW4038-□TB04**		1	1 unit	42G
80	22	**45**	--	73	20	25	**50**	--	**S3**	B	**3RW4046-□TB04**		1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	B	**3RW4047-□TB04**		1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC															
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW4024-□TB05**		1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW4026-□TB05**		1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW4027-□TB05**		1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW4028-□TB05**		1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW4036-□TB05**		1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW4037-□TB05**		1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW4038-□TB05**		1	1 unit	42G
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW4046-□TB05**		1	1 unit	42G
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW4047-□TB05**		1	1 unit	42G

Article No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[2] **2**

Online configurator see www.siemens.com/sirius/configurators

[1] Soft starter U_e 200 ... 480 V with screw terminals: delivery time class ▶ (preferred type).

[2] Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (Side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095, Increase of switching frequency possible with an auxiliary fan)

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW40

3RW405.

3RW407.

3RW ambient temperature 40 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 230 V	 400 V	 500 V	3RW ambient temperature 50 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 200 V	 230 V	 460 V	 575 V	Size	DT[1]	**Normal starting (CLASS 10)** **Configurator** Article No.	 Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	kW	kW	A	hp	hp	hp	hp							
Rated operational voltage U_e 200 ... 460 V															
134	37	**75**	--	117	30	40	**75**	--	**S6**	B	**3RW4055-□BB□4**		1	1 unit	42G
162	45	**90**	--	145	40	50	**100**	--		B	**3RW4056-□BB□4**		1	1 unit	42G
230	75	**132**	--	205	60	75	**150**	--	**S12**	B	**3RW4073-□BB□4**		1	1 unit	42G
280	90	**160**	--	248	75	100	**200**	--		B	**3RW4074-□BB□4**		1	1 unit	42G
356	110	**200**	--	315	100	125	**250**	--		B	**3RW4075-□BB□4**		1	1 unit	42G
432	132	**250**	--	385	125	150	**300**	--		B	**3RW4076-□BB□4**		1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V															
134	--	75	**90**	117	--	--	75	**100**	**S6**	B	**3RW4055-□BB□5**		1	1 unit	42G
162	--	90	**110**	145	--	--	100	**150**		B	**3RW4056-□BB□5**		1	1 unit	42G
230	--	132	**160**	205	--	--	150	**200**	**S12**	B	**3RW4073-□BB□5**		1	1 unit	42G
280	--	160	**200**	248	--	--	200	**250**		B	**3RW4074-□BB□5**		1	1 unit	42G
356	--	200	**250**	315	--	--	250	**300**		B	**3RW4075-□BB□5**		1	1 unit	42G
432	--	250	**315**	385	--	--	300	**400**		B	**3RW4076-□BB□5**		1	1 unit	42G

Article No. supplement for connection type[2]

- With spring-type terminals **2 6**
- With screw terminals

Article No. supplement for rated control supply voltage U_s[3]

- 115 V AC **3 4**
- 230 V AC

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter U_e 200 ... 460 V with screw terminals: delivery time class ▶ (preferred type).
Soft starter U_e 400 ... 600 V with screw terminals: delivery time class A.

2) Main circuit connection: busbar connection.

3) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation (side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see manual.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RW40 for heavy starting (CLASS 20)

3RW402.

3RW403.

3RW404.

3RW ambient temperature 40 °C Rated values of three-phase motors				3RW ambient temperature 50 °C Rated values of three-phase motors					Size	DT[1]	**Heavy starting (CLASS 20)** **Configurator**	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	Operational current I_e	200 V	230 V	460 V	575 V			Article No. / Price per PU			
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	A	**3RW4026-□BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	A	**3RW4027-□BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S2**	A	**3RW4036-□BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S2**	A	**3RW4037-□BB□4**	1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	A	**3RW4037-□BB□4**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S3**	A	**3RW4047-□BB□4**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S3**	A	**3RW4047-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW4026-□BB□5**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW4027-□BB□5**	1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S2**	B	**3RW4036-□BB□5**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S2**	B	**3RW4037-□BB□5**	1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW4037-□BB□5**	1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S3**	B	**3RW4047-□BB□5**	1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S3**	B	**3RW4047-□BB□5**	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[2] **2**

Article No. supplement for rated control supply voltage U_s

- 24 V AC/DC **0**
- 110 ... 230 V AC/DC **1**

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter U_e 200 ... 480 V with screw terminals: delivery time class ▶ (preferred type).

2) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (Side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095, Increase of switching frequency possible with an auxiliary fan)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see manual.

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3RW40

3RW402.

3RW403.

3RW404.

3RW ambient temperature 40 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	3RW ambient temperature 50 °C Rated values of three-phase motors Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V	Size	DT[1]	Heavy starting (CLASS 20) Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	kW	kW	A	hp	hp	hp	hp							
Rated operational voltage U_e 200 ... 480 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC															
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW4026-□TB04**		1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW4027-□TB04**		1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S2**	B	**3RW4036-□TB04**		1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S2**	B	**3RW4037-□TB04**		1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	B	**3RW4037-□TB04**		1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S3**	B	**3RW4047-□TB04**		1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S3**	B	**3RW4047-□TB04**		1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC															
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW4026-□TB05**		1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW4027-□TB05**		1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S2**	B	**3RW4036-□TB05**		1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S2**	B	**3RW4037-□TB05**		1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW4037-□TB05**		1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S3**	B	**3RW4047-□TB05**		1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S3**	B	**3RW4047-□TB05**		1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals[2)]

1
2

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter U_e 200 ... 480 V with screw terminals: delivery time class ▶ (preferred type).

2) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (Side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095, Increase of switching frequency possible with an auxiliary fan)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see manual.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW405.

3RW407.

3RW ambient temperature 40 °C Rated values of three-phase motors				3RW ambient temperature 50 °C Rated values of three-phase motors					Size	DT[1]	Heavy starting (CLASS 20) Configurator	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V			Article No. / Price per PU			
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 460 V														
80	22	**45**	--	73	20	25	**50**	--	**S6**	B	**3RW4055-□BB□4**	1	1 unit	42G
106	30	**55**	--	98	25	30	**60**	--	**S6**	B	**3RW4055-□BB□4**	1	1 unit	42G
134	37	**75**	--	117	30	40	**75**	--	**S6**	B	**3RW4056-□BB□4**	1	1 unit	42G
162	45	**90**	--	145	40	50	**100**	--	**S12**	B	**3RW4073-□BB□4**	1	1 unit	42G
230	75	**132**	--	205	60	75	**150**	--	**S12**	B	**3RW4074-□BB□4**	1	1 unit	42G
280	90	**160**	--	248	75	100	**200**	--	**S12**	B	**3RW4075-□BB□4**	1	1 unit	42G
356	110	**200**	--	315	100	125	**250**	--	**S12**	B	**3RW4076-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
80	--	45	**55**	73	--	--	50	**60**	**S6**	B	**3RW4055-□BB□5**	1	1 unit	42G
106	--	55	**75**	98	--	--	60	**75**	**S6**	B	**3RW4055-□BB□5**	1	1 unit	42G
134	--	75	**90**	117	--	--	75	**100**	**S6**	B	**3RW4056-□BB□5**	1	1 unit	42G
162	--	90	**110**	145	--	--	100	**150**	**S12**	B	**3RW4073-□BB□5**	1	1 unit	42G
230	--	132	**160**	205	--	--	150	**200**	**S12**	B	**3RW4074-□BB□5**	1	1 unit	42G
280	--	160	**200**	248	--	--	200	**250**	**S12**	B	**3RW4075-□BB□5**	1	1 unit	42G
356	--	200	**250**	315	--	--	250	**300**	**S12**	B	**3RW4076-□BB□5**	1	1 unit	42G

Article No. supplement for connection type[2]

- With spring-type terminals **2 6**
- With screw terminals **3 4**

Article No. supplement for rated control supply voltage U_s[3]

- 115 V AC
- 230 V AC

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter U_e 200 ... 460 V with screw terminals: delivery time class ► (preferred type).
Soft starter U_e 400 ... 600 V with screw terminals: delivery time class A.
2) Main circuit connection: busbar connection.
3) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1
- Stand-alone installation (side-by-side see manual, http://support.automation.siemens.com/WW/view/en/38752095)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see manual.

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Accessories

Conductor cross-section: Solid or stranded	Conductor cross-section: Finely stranded with end sleeve	Conductor cross-section: AWG cables, solid or stranded	Tightening torque	For soft starters size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm²	mm²	AWG	Nm							
Three-phase infeed terminals										
2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S0 (3RW402.)	►	**3RV2925-5AB**		1	1 unit	41E

3RV2925-5AB

For soft starters: Type	Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Box terminal blocks for soft starters								
For round and ribbon cables (2 units required for each device)								
3RW405.	**S6**	• Up to 70 mm²	►	**3RT1955-4G**		1	1 unit	41B
		• Up to 120 mm²	►	**3RT1956-4G**		1	1 unit	41B
		Auxiliary conductor connection for box terminals	B	**3TX7500-0A**		1	1 unit	41B
3RW407.	**S12**	• Up to 240 mm² (with auxiliary conductor connection)	►	**3RT1966-4G**		1	1 unit	41B
Auxiliary terminals								
Auxiliary terminals, 3-pole								
3RW404.	**S3**		B	**3RT1946-4F**		1	1 unit	41B
Covers for soft starters								
Terminal covers for box terminals								
Additional touch protection to be fitted at the box terminals (2 units required per device)								
3RW403.	**S2**		B	**3RT1936-4EA2**		1	1 unit	41B
3RW404.	**S3**		►	**3RT1946-4EA2**		1	1 unit	41B
3RW405.	**S6**		►	**3RT1956-4EA2**		1	1 unit	41B
3RW407.	**S12**		►	**3RT1966-4EA2**		1	1 unit	41B
Terminal cover for cable lugs and busbar connections								
3RW404.	**S3**	For complying with the voltage clearances and as touch protection if box terminal is removed (2 units required per device)	B	**3RT1946-4EA1**		1	1 unit	41B
3RW405.	**S6**		►	**3RT1956-4EA1**		1	1 unit	41B
3RW407.	**S12**		►	**3RT1966-4EA1**		1	1 unit	41B
Also fits in case of S6 and S12 on mounted box terminals								
Sealing covers								
3RW402. to 3RW404.	**S0, S2, S3**		►	**3RW4900-0PB10**		1	1 unit	42G
3RW405. and 3RW407.	**S6, S12**		►	**3RW4900-0PB00**		1	1 unit	42G

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For soft starters Type	Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modules for RESET[1)]								
Modules for remote RESET, electrical Operating range 0.85 ... 1.1 x U_s, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h								
3RW405. and 3RW407.	**S6, S12**	• 24 ... 30 V AC/DC	A	**3RU1900-2AB71**		1	1 unit	41F
		• 110 ... 127 V AC/DC	A	**3RU1900-2AF71**		1	1 unit	41F
		• 220 ... 250 V AC/DC	A	**3RU1900-2AM71**		1	1 unit	41F
Mechanical RESET comprising								
3RW405. and 3RW407.	**S6, S12**	• Resetting plungers, holders and formers	►	**3RU1900-1A**		1	1 unit	41F
		• Matching pushbutton IP65, Ø 22 mm, 12 mm stroke	B	**3SB3000-0EA11**		1	1 unit	41J
		• Extension plungers	A	**3SX1335**		1	1 unit	41J
Cable releases with holder for RESET For Ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm								
3RW405. and 3RW407.	**S6, S12**	• Length 400 mm	►	**3RU1900-1B**		1	1 unit	41F
		• Length 600 mm	►	**3RU1900-1C**		1	1 unit	41F

[1)] Remote RESET already integrated in the 3RW402. to 3RW404. soft starters.

For soft starters Type	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans (to increase switching frequency and for device mounting in positions other than the standard position)							
3RW402.	**S0**	►	**3RW4928-8VB00**		1	1 unit	42G
3RW403., 3RW404.	**S2, S3**	►	**3RW4947-8VB00**		1	1 unit	42G
Manual 3RW30/3RW40[1)]							

[1)] The relevant operating instructions for 3RW402./3./4. (3ZX1012-0RW40-2DA1) or 3RW405./7. (3ZX1012-0RW40-1AA1) are included in the scope of supply of the soft starter or are available – like the Manual – for download from the Service&Support portal in PDF format:
www.siemens.com/industrial-controls/support → "Switching Devices" → "Soft Starters and Solid-State Switching Devices" → "SIRIUS 3RW Soft Starters".

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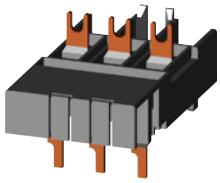
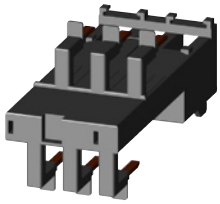
3RW40

Link modules to motor starter protectors[1)]


3RA2921-1BA00


3RA2921-2GA00

For soft starters Type	Size	Motor starter protector Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
• With screw terminals								
3RW402.	**S0**	**S00/S0**	A	**3RA2921-1BA00**		1	1 unit	41B
3RW4036.	**S2**	**S2**	▶	**3RA1931-1AA00**		1	1 unit	41B
3RW4046., 3RW4047.	**S3**	**S3**	▶	**3RA1941-1AA00**		1	1 unit	41B
• With spring-type terminals								
3RW402.	**S0**	**S0**	▶	**3RA2921-2GA00**		1	1 unit	41B

1) Can be used in size S0 up to maximum 32 A.
Can be used in size S0 only for 3RV2 motor starter protectors.

Tool for opening spring-type terminals in sizes S00 and S0

3RA2908-1A

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Spring-type terminals				
Screwdrivers For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B

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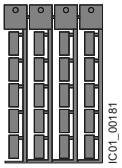
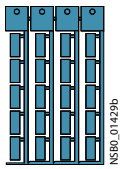


3RT2900-1SB20



3RT1900-1SB20

Unit labeling plates[1)] For SIRIUS devices	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
• 20 mm x 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
• 20 mm x 7 mm, pastel turquoise	D	**3RT1900-1SB20**		100	340 units	41B

1) PC labeling systems for individual inscription of unit labeling plates are available from:
murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" ➞ "External Partners").

Spare parts

Fans

For soft starters Type	Size	Version Rated control supply voltage U_s	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans								
3RW405.-.BB3.	**S6**	115 V AC	▶	**3RW4936-8VX30**		1	1 unit	42G
3RW405.-.BB4.	**S6**	230 V AC	▶	**3RW4936-8VX40**		1	1 unit	42G
3RW407.-.BB3.	**S12**	115 V AC	▶	**3RW4947-8VX30**		1	1 unit	42G
3RW407.-.BB4.	**S12**	230 V AC	▶	**3RW4947-8VX40**		1	1 unit	42G

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 350% $I_{n\ motor}$, one start per hour)
The soft starter rating can be selected to be as high as the rating of the motor used.

Application		Conveyor belts	Roller conveyors	Compressors	Small fans[1)]	Pumps	Hydraulic pumps
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	40	40	40
- Starting time	s	10	10	10	10	10	10
- Current limit value		5 x I_M	5 x I_M	4 x I_M	4 x I_M	4 x I_M	4 x I_M
Ramp-down time	s	5	5	0	0	10	0

1) The mass inertia of the fan is <10 times the mass inertia of the motor.

Application examples for heavy starting (CLASS 20)

Heavy starting CLASS 20 (up to 40 s with 350% $I_{n\ motor}$, one start per hour)
The soft starter has to be selected at least one performance class higher than the motor used.

Application		Stirrers	Centrifuges
Starting parameters			
• Voltage ramp and current limiting			
- Starting voltage	%	40	40
- Starting time	s	20	20
- Current limit value		4 x I_M	4 x I_M
Stopping time		0	0

Note:

These tables present sample set values and device dimensions. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the help of Technical Assistance.

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3RW40

Configuration

The 3RW solid-state soft starters are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

Where long starting times are involved, the integrated solid-state overload relay for heavy starting should not be disconnected. PTC sensors are recommended. This also applies for the soft ramp-down because during the ramp-down time an additional current loading applies in contrast to free ramp-down.

In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For relevant device versions with integrated thermistor motor protection or separate thermistor evaluation devices, see Chapter 10 "Monitoring and Control Devices".

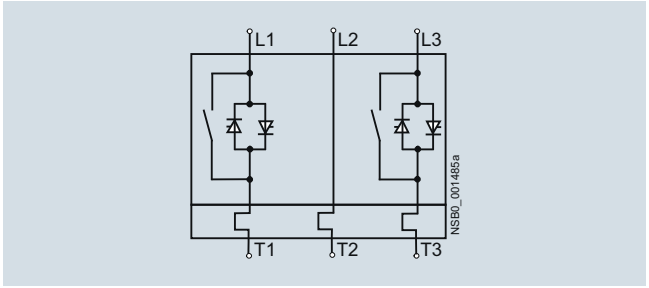
No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note:

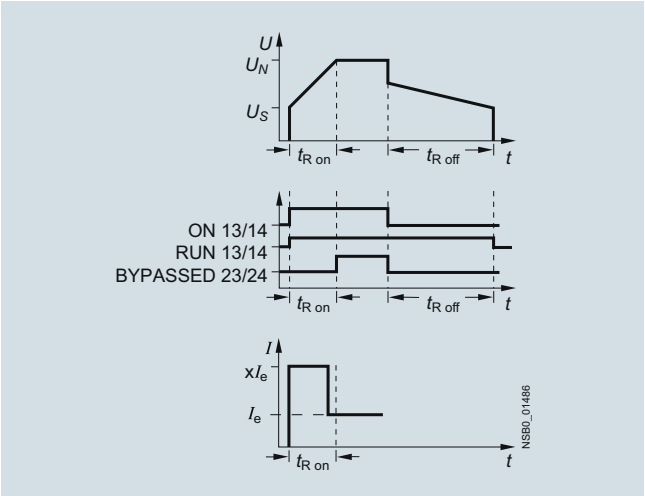
When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system and solid-state overload relay are already integrated in the 3RW40 soft starter and therefore do not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.
http://support.automation.siemens.com/WW/view/en/38752095

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Overview

3RW44 soft starter with PROFINET communication module

In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements. They cover a performance range up to 710 kW (at 400 V) in the inline circuit and up to 1200 kW (at 400 V) in the inside-delta circuit.

The 3RW44 soft starters are characterized by a compact design for space-saving and clearly arranged control cabinet layouts. For optimized motor starting and stopping the innovative SIRIUS 3RW44 soft starters are an attractive alternative with considerable savings potential compared to applications with a frequency converter. The new torque control and adjustable current limiting enable the High-Feature soft starters to be used in nearly every conceivable task. They guarantee the reliable avoidance of sudden torque applications and current peaks during motor starting and stopping. This creates savings potential when calculating the size of the switchgear and when servicing the machinery installed. Be it for inline circuits or inside-delta circuits – the SIRIUS 3RW44 soft starter offers savings especially in terms of size and equipment costs.

The bypass contacts already integrated in the soft starter bypass the thyristors after a motor ramp-up is detected. This results in a further great reduction in the heat loss occurring during operation of the soft starter at rated value.

Combinations of various starting, operating and ramp-down possibilities ensure an optimum adaptation to the application-specific requirements. Operation and commissioning can be performed with the menu-controlled keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a previously selected language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation.

Applicable standards

- IEC 60947-4-2
- UL/CSA

Functionality

Equipped with modern, ergonomic user prompting the 3RW44 soft starters can be commissioned quickly and easily using a keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a selectable language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation. During operation and when control voltage is applied, the display field continuously presents measured values and operating values as well as warnings and fault messages. An external display and operator module can be connected by means of a connection cable to the soft starter, thus enabling active indications and the like to be read directly from the control cabinet door.

The SIRIUS 3RW44 soft starters are equipped with optimum functionality. An integral bypass contact system reduces the power loss of the soft starter during operation.
This reliably prevents heating of the switchgear environment.
The SIRIUS 3RW44 soft starters have internal intrinsic device protection. This prevents thermal overloading of the power section's thyristors, e.g. due to unacceptably high closing operations.

Wiring outlay for installing an additional motor overload relay is no longer needed as the SIRIUS 3RW44 soft starters perform this function too. In addition they offer adjustable trip classes and a thermistor motor protection function. As an option the thyristors can also be protected by SITOR semiconductor fuses from short-circuiting so that the soft starter is still functional after a short circuit (type of coordination "2"). And even inrush current peaks are reliably avoided thanks to adjustable current limiting.

Optionally, SIRIUS 3RW44 soft starters can be upgraded with a PROFIBUS DP or PROFINET module. Thanks to their communication capability and their programmable control inputs and relay outputs the SIRIUS 3RW44 soft starters can be very easily and quickly integrated in higher-level controllers.

In addition a creep speed function is available for positioning and setting jobs. With this function the motor can be controlled in both directions of rotation with reduced torque and an adjustable, low speed.

On the other hand the SIRIUS 3RW44 soft starters offer a new, combined DC braking function for the fast stopping of driving loads.

Highlights

- Soft starting with breakaway pulse, torque control or voltage ramp, adjustable torque or current limiting as well as any combination of these, depending on load type
- Integrated bypass contact system to minimize power loss
- Various setting options for the starting parameters such as starting torque, starting voltage, ramp-up and ramp-down time, and much more in three separate parameter sets
- Start-up detection
- Inside-delta circuit for savings in terms of size and equipment costs
- Various ramp-down modes selectable: free ramp-down, torque-controlled pump ramp-down, combined DC braking
- Solid-state motor overload and intrinsic device protection
- Thermistor motor protection
- Keypad with a menu-prompted, multi-line graphic display with background lighting
- Interface for communication with the PC for more accurate setting of the parameters as well as for control and monitoring
- Simple integration to the motor feeder
- Simple mounting and commissioning
- Display of operating states and fault messages
- Connection to PROFIBUS and PROFINET with optional PROFIBUS DP or PROFINET module
- External display and operator module
- Mains voltages from 200 to 690 V, 50 to 60 Hz
- Can be used up to 60 °C (derating from 40 °C)

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3RW44

Soft Starter ES parameterization software[1)]

Soft Starter ES software is used for the parameterization, monitoring and service diagnostics of SIRIUS 3RW44 High-Feature soft starters.

SIRIUS 3RW44 Soft Starter block library for SIMATIC PCS 7[1)]

The SIRIUS 3RW44 Soft Starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system.

1) See Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

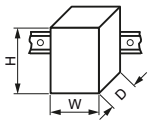
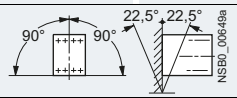
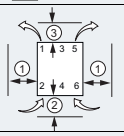
Application

The solid-state SIRIUS 3RW44 soft starters are suitable for the torque-controlled soft starting and ramp-down as well as braking of three-phase asynchronous motors.

Application areas

See "Selection aid for soft starters" on page 6/6.

Technical specifications

Type			3RW442.	3RW443.	3RW444.	3RW445.	3RW446.
Mechanics and environment							
Mounting dimensions (WxHxD)							
• Screw terminals		mm	170 x 184 x 270	170 x 198 x 270	210 x 230 x 298	510 x 638.5 x 290	576 x 667 x 290
• Spring-type terminals		mm	170 x 184 x 270	170 x 198 x 270	210 x 230 x 298	510 x 638.5 x 290	576 x 667 x 290
Permissible ambient temperature							
Operation		°C	0 ... +60; (derating from +40)				
Storage		°C	-25 ... +80				
Weight		kg	6.5	7.9	11.5	50	78
Permissible mounting position							
Installation type			Stand-alone installation				
			① ≥ 5 mm (≥ 0.2 in)				
			② ≥ 75 mm (≥ 3 in)				
			③ ≥ 100 mm (≥ 4 in)				
Permissible installation altitude		m	5 000 (derating from 1000, see Characteristic Curves page 6/7); higher on request				
Degree of protection			IP00				

Type	Terminal		3RW44..-.BC3.	3RW44..-.BC4.
Control electronics				
Rated values				
Rated control supply voltage	A1/A2/PE	V	115 AC	230 AC
• Tolerance		%	-15/+10	-15/+10
Rated frequency		Hz	50 ... 60	50 ... 60
• Tolerance		%	±10	±10

Type		3RW44..-.BC.4	3RW44..-.BC.5	3RW44..-.BC.6
Power electronics				
Rated operational voltage for inline circuit	V AC	200 ... 460	400 ... 600	400 ... 690
Tolerance	%	-15/+10	-15/+10	-15/+10
Maximum blocking voltage (thyristor)	V AC	1 400	1 800	1 800
Rated operational voltage for inside-delta circuit	V AC	200 ... 460	400 ... 600	400 ... 600
Tolerance	%	-15/+10	-15/+10	-15/+10
Rated frequency	Hz	50 ... 60		
Tolerance	%	±10		
Uninterrupted duty at 40 °C (% of I_e)	%	115		
Minimum load (% of set motor current I_M)	%	8		
Maximum cable length between soft starter and motor	m	500[1)]		

1) At the project configuration stage, it is important to make allowance for the voltage drop on the motor cable up to the motor connection. If necessary, higher values for the rated operational voltage or current must be calculated accordingly for the soft starter.

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Type		3RW4422	3RW4423	3RW4424	3RW4425	3RW4426	3RW4427
Power electronics							
Rated operational current I_e		29	36	47	57	77	93
Load rating with rated operational current I_e							
• According to IEC and UL/CSA[1], for individual mounting, AC-53a							
- At 40 / 50 / 60 °C	A	29 / 26 / 23	36 / 32 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
Smallest adjustable rated motor current I_M For the motor overload protection	A	5	7	9	11	15	18
Power loss							
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60°C) approx.	W	8 / 7.5 / 7	10 / 9 / 8.5	32 / 31 / 29	36 / 34 / 31	45 / 41 / 37	55 / 51 / 47
• During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W	400/345/290	470/410/355	600/515/440	725/630/525	940/790/660	1160/980/830
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C							
• For normal starting (CLASS 5)							
- Rated motor current I_M[2], starting time 5 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	41	34	41	41	41	41
- Rated motor current I_M[2], starting time 10 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	20	15	20	20	20	20
• For normal starting (CLASS 10)							
- Rated motor current I_M[2], starting time 10 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	20	15	20	20	20	20
- Rated motor current I_M[2], starting time 20 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	10	6	10	10	8	8
• For normal starting (CLASS 15)							
- Rated motor current I_M[2], starting time 15 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	13	9	13	13	13	13
- Rated motor current I_M[2], starting time 30 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	6	4	6	6	6	6
• For heavy starting (CLASS 20)							
- Rated motor current I_M[2], starting time 20 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	88 / 80 / 72
- Starts per hour[3]	1/h	10	6	10	10	10	10
- Rated motor current I_M[2], starting time 40 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	88 / 80 / 72
- Starts per hour[3]	1/h	4	2	4	5	1.8	0.8
• For very heavy starting (CLASS 30)							
- Rated motor current I_M[2], starting time 30 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	65 / 60 / 54	77 / 70 / 63
- Starts per hour[3]	1/h	6	4	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	65 / 60 / 54	77 / 70 / 63
- Starts per hour[3]	1/h	1.8	0.8	3.3	1.5	2	1

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical The quoted switching frequencies do not apply for automatic mode.

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3RW44

Type		3RW4434	3RW4435	3RW4436
Power electronics				
Rated operational current I_e		113	134	162
Load rating with rated operational current I_e				
• According to IEC and UL/CSA[1], for individual mounting, AC-53a				
- At 40 / 50 / 60 °C	A	113 / 100 / 88	134 / 117 / 100	162 /145 / 125
Smallest adjustable rated motor current I_M For the motor overload protection	A	22	26	32
Power loss				
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60°C) approx.	W	64 / 58 / 53	76 / 67 / 58	95 / 83 / 71
• During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W	1350 / 1140 / 970	1700 / 1400 / 1140	2460 / 1980 / 1620
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C				
• For normal starting (CLASS 5)				
- Rated motor current I_M[2], starting time 5 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	41	39	41
- Rated motor current I_M[2], starting time 10 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	20	15	20
• For normal starting (CLASS 10)				
- Rated motor current I_M[2], starting time 10 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	20	15	20
- Rated motor current I_M[2], starting time 20 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	9	6	7
• For normal starting (CLASS 15)				
- Rated motor current I_M[2], starting time 15 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	13	9	12
- Rated motor current I_M[2], starting time 30 s	A	113 / 100 / 883	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	6	6	1
• For heavy starting (CLASS 20)				
- Rated motor current I_M[2], starting time 20 s	A	106 / 97 / 88	125 / 113 / 100	147 / 134 / 122
- Starts per hour[3]	1/h	9	9	10
- Rated motor current I_M[2], starting time 40 s	A	106 / 97 / 88	125 / 113 / 100	147 / 134 / 122
- Starts per hour[3]	1/h	1.5	2	1
• For very heavy starting (CLASS 30)				
- Rated motor current I_M[2], starting time 30 s	A	91 / 84 / 76	110 / 100 / 90	120 / 110 / 100
- Starts per hour[3]	1/h	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	91 / 84 / 76	110 / 100 / 90	120 / 110 / 100
- Starts per hour[3]	1/h	2	2	2

[1] Measurement at 60 °C according to UL/CSA not required.

[2] Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

[3] For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical The quoted switching frequencies do not apply for automatic mode.

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Type		3RW4443	3RW4444	3RW4445	3RW4446	3RW4447
Power electronics						
Rated operational current I_e		203	250	313	356	432
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 / 50 / 60 °C	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
Smallest adjustable rated motor current I_M For the motor overload protection	A	40	50	62	71	86
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60°C) approx.	W	89 / 81 / 73	110 / 94 / 83	145 / 126 / 110	174 /147 / 126	232 / 194 / 159
• During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W	3350/2600/2150	4000/2900/2350	4470/4000/3400	5350/4050/3500	5860/5020/4200
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C						
• For normal starting (CLASS 5)						
- Rated motor current I_M[2], starting time 5 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	41	41	41	41	39
- Rated motor current I_M[2], starting time 10 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	20	20	19	17	16
• For normal starting (CLASS 10)						
- Rated motor current I_M[2], starting time 10 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	20	20	19	17	16
- Rated motor current I_M[2], starting time 20 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	9	10	6	4	5
• For normal starting (CLASS 15)						
- Rated motor current I_M[2], starting time 15 s	A	203 / 180 / 156	240 / 215 / 185	313 / 280 / 250	325 / 295 / 265	402 / 385 / 335
- Starts per hour[3]	1/h	13	13	10	13	11
- Rated motor current I_M[2], starting time 30 s	A	203 / 180 / 156	240 / 215 / 185	313 / 280 / 250	325 / 295 / 265	402 / 385 / 335
- Starts per hour[3]	1/h	3	6	1	2	1
• For heavy starting (CLASS 20)						
- Rated motor current I_M[2], starting time 20 s	A	195 / 175 / 155	215 / 195 / 180	275 / 243 / 221	285 / 263 / 240	356 / 326 / 295
- Starts per hour[3]	1/h	10	10	10	10	10
- Rated motor current I_M[2], starting time 40 s	A	195 / 175 / 155	215 / 195 / 180	275 / 243 / 221	285 / 263 / 240	356 / 326 / 295
- Starts per hour[3]	1/h	1	5	1	3	1
• For very heavy starting (CLASS 30)						
- Rated motor current I_M[2], starting time 30 s	A	162 / 148 / 134	180 / 165 / 150	220 / 201 / 182	240 / 223 / 202	285 / 260 /235
- Starts per hour[3]	1/h	6	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	162 / 148 / 134	180 / 165 / 150	220 / 201 / 182	240 / 223 / 202	285 / 260 /235
- Starts per hour[3]	1/h	3	3	3	2	1

[1] Measurement at 60 °C according to UL/CSA not required.

[2] Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

[3] For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical The quoted switching frequencies do not apply for automatic mode.

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3RW44

Type		3RW4453	3RW4454	3RW4455	3RW4456	3RW4457	3RW4458	3RW4465	3RW4466
Power electronics									
Rated operational current I_e		551	615	693	780	880	970	1076	1214
Load rating with rated operational current I_e									
• According to IEC and UL/CSA[1], for individual mounting, AC-53a									
- At 40 / 50 / 60 °C	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
Smallest adjustable rated motor current I_M For the motor overload protection	A	110	123	138	156	176	194	215	242
Power loss									
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60°C) approx.	W	159/135/113	186/156/130	220/181/152	214/176/146	250/204/168	270/215/179	510/420/360	630/510/420
• During starting with current limit set to 350 % I_M									
- At 40 °C	W	7 020	8 100	9 500	11 100	13 100	15 000	15 000	17 500
- At 50 °C	W	6 111	7 020	8 100	9 500	11 000	12 500	13 000	15 000
- At 60 °C	W	5 263	5 996	7 020	8 100	8 100	10 700	11 500	13 000
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C									
• For normal starting (CLASS 5)									
- Rated motor current I_M[2], starting time 5 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	41	41	37	33	22	17	30	20
- Rated motor current I_M[2], starting time 10 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	20	20	16	13	8	5	10	6
• For normal starting (CLASS 10)									
- Rated motor current I_M[2], starting time 10 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	20	20	16	13	8	5	11	6
- Rated motor current I_M[2], starting time 20 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	10	9	6	4	0.3	0.3	3	0.5
• For normal starting (CLASS 15)									
- Rated motor current I_M[2], starting time 15 s	A	551/494/438	615/551/489	666/615/551	723/693/615	780/710/650	821/755/693	1020/950/850	1090/1000/920
- Starts per hour[3]	1/h	13	13	11	9	8	8	7	5
- Rated motor current I_M[2], starting time 30 s	A	551/494/438	615/551/489	666/615/551	723/693/615	780/710/650	821/755/693	1020/950/850	1090/1000/920
- Starts per hour[3]	1/h	6	4	3	1	0.4	0.5	1	1
• For heavy starting (CLASS 20)									
- Rated motor current I_M[2], starting time 20 s	A	551/494/438	591/551/489	633/615/551	670/634/576	710/650/590	740/685/630	970/880/810	1030/940/860
- Starts per hour[3]	1/h	10	10	7	8	8	9	7	5
- Rated motor current I_M[2], starting time 40 s	A	551/494/438	591/551/489	633/615/551	670/634/576	710/650/590	740/685/630	970/880/810	1030/940/860
- Starts per hour[3]	1/h	4	2	1	1	0.4	1	1	1
• For very heavy starting (CLASS 30)									
- Rated motor current I_M[2], starting time 30 s	A	500/480/438	525/489/455	551/520/480	575/540/490	600/550/500	630/580/530	880/810/740	920/850/780
- Starts per hour[3]	1/h	6	6	6	6	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	500/480/438	525/489/455	551/520/480	575/540/490	600/550/500	630/580/530	880/810/740	920/850/780
- Starts per hour[3]	1/h	2	1	1	1	1.5	1	1	1

[1] Measurement at 60 °C according to UL/CSA not required.

[2] Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

[3] For intermittent duty S4 with ON period = 70 %, T_U = 40 / 50 / 60 °C, stand-alone installation vertical The quoted switching frequencies do not apply for automatic mode.

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Motor feeders with soft starters

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, semiconductor fuses must be fitted in the motor feeder.

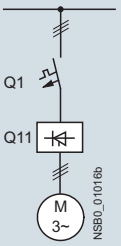
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Inline circuit fuseless version



Soft starters		Motor starter protectors[1]	
ToC 1	Nominal current	440 V +10 %	Rated current
Q11 Type	A	Q1 Type	A
Type of coordination "1": 3RW4422 ... 3RW4427: I_q = 32 kA; 3RW4434 and 3RW4435: I_q = 16 kA; 3RW4436 ... 3RW4466: I_q = 65 kA			
3RW4422	29	3RV1042-4HA10	50
3RW4423	36	3RV1042-4JA10	63
3RW4424	47	3RV1042-4KA10	75
3RW4425	57	3RV1042-4LA10	90
3RW4426	77	3RV1042-4MA10	100
3RW4427	93	3RV1042-4MA10	100
3RW4434	113	3VL1716-2DD36	160
3RW4435	134	3VL1716-2DD36	160
3RW4436	162	3VL3725-2DC36	250
3RW4443	203	3VL4731-3DC36	315
3RW4444	250	3VL4731-3DC36	315
3RW4445	313	3VL4740-3DC36	400
3RW4446	356	3VL4740-3DC36	400
3RW4447	432	3VL5750-3DC36	500
3RW4453	551	3VL6780-3SB36	800
3RW4454	615	3VL6780-3SB36	800
3RW4455	693	3VL6780-3SB36	800
3RW4456	780	3VL7710-3SB36	1 000
3RW4457	880	3VL7710-3SB36	1 000
3RW4458	970	3VL7712-3SB36	1 250
3RW4465	1 076	3VL7712-3SB36	1 250
3RW4466	1 214	3VL7712-3SB36	1 250

[1] The rated motor current must be considered when selecting the devices.

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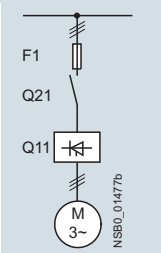
3RW44

Inline circuit fused version (line protection only)



Soft starters		Line protection, maximum			Line contactor up to 400 V	Braking contactors[1)2)]	
ToC 1	Nominal current	690 V +5 %	Rated current	Size	(optional)	(example circuit see manual 3RW44[4)])	
Q11 Type	A	F1 Type	A		Q21 Type	Q91 Type	Q92 Type
Type of coordination 1[3)]: I_q = 65 kA							
3RW4422	29	3NA3820-6	50	00	3RT1034	3RT2526	--
3RW4423	36	3NA3822-6	63	00	3RT1035	3RT2526	--
3RW4424	47	3NA3824-6	80	00	3RT1036	3RT1535	--
3RW4425	57	3NA3830-6	100	00	3RT1044	3RT1535	--
3RW4426	77	3NA3132-6	125	1	3RT1045	3RT2024	3RT1035
3RW4427	93	3NA3136-6	160	1	3RT1046	3RT2025	3RT1036
3RW4434	113	3NA3244-6	250	2	3RT1054	3RT1034	3RT1044
3RW4435	134	3NA3244-6	250	2	3RT1055	3RT1036	3RT1045
3RW4436	162	3NA3365-6	500	3	3RT1056	3RT1044	3RT1045
3RW4443	203	2 x 3NA3354-6	2 x 355	3	3RT1064	3RT1044	3RT1054
3RW4444	250	2 x 3NA3354-6	2 x 355	3	3RT1065	3RT1044	3RT1055
3RW4445	313	2 x 3NA3365-6	2 x 500	3	3RT1075	3RT1054	3RT1056
3RW4446	356	2 x 3NA3365-6	2 x 500	3	3RT1075	3RT1054	3RT1056
3RW4447	432	2 x 3NA3365-6	2 x 500	3	3RT1076	3RT1055	3RT1064
3RW4453	551	2 x 3NA3365-6	2 x 500	3	3TF68	3RT1064	3RT1066
3RW4454	615	2 x 3NA3365-6	2 x 500	3	3TF68	3RT1064	3RT1075
3RW4455	693	2 x 3NA3365-6	2 x 500	3	3TF69	3RT1065	3RT1075
3RW4456	780	2 x 3NA3365-6	2 x 500	3	3TF69	3RT1065	3RT1075
3RW4457	880	2 x 3NA3365-6	2 x 500	3		3RT1075	3RT1076
3RW4458	970	3 x 3NA3365-6	3 x 500	3		3RT1075	3RT1076
3RW4465	1 076	3 x 3NA3365-6	3 x 500	3		3RT1075	3TF68
3RW4466	1 214	3 x 3NA3365-6	3 x 500	3		3RT1076	3TF68

1) If the ramp-down function "Combined braking" is selected, no braking contactor is required.
If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).
For applications with large centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

2) Additional auxiliary relay K4:
LZS:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZS:RT4A4S15
(3RW44 soft starter with rated control supply voltage 115 V AC).

3) The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

4) http://support.automation.siemens.com/WW/view/en/21772518

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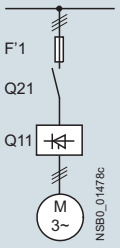
Inline circuit fused version with 3NE1 SITOR all-range fuse (semiconductor and line protection)



Matching fuse bases see
Catalog LV 10 → "Switch Disconnectors" and
Catalog LV 10 → "Fuse Systems"
→ "SITOR Semiconductor Fuses"
or visit www.siemens.com/sitor

Soft starters		All-range fuses				Line contactor up to 400 V	Braking contactors[1)2)]	
ToC 2	Nominal current		Rated current	Voltage	Size	(optional)	(example circuit see manual 3RW44[4)])	
Q11 Type	A	F'1 Type	A	V		Q21 Type	Q91 Type	Q92 Type
Type of coordination 2[3)]: I_q = 65 kA								
3RW4422	29	3NE1020-2	80	690 +5 %	00	3RT1034	3RT2526	--
3RW4423	36	3NE1020-2	80	690 +5 %	00	3RT1035	3RT2526	--
3RW4424	47	3NE1021-2	100	690 +5 %	00	3RT1036	3RT1535	--
3RW4425	57	3NE1022-2	125	690 +5 %	00	3RT1044	3RT1535	--
3RW4426	77	3NE1022-2	125	690 +5 %	00	3RT1045	3RT2024	3RT1035
3RW4427	93	3NE1224-2	160	690 +5 %	1	3RT1046	3RT2025	3RT1036
3RW4434	113	3NE1225-2	200	690 +5 %	1	3RT1054	3RT1034	3RT1044
3RW4435	134	3NE1227-2	250	690 +5 %	1	3RT1055	3RT1036	3RT1045
3RW4436	162	3NE1227-2	250	690 +5 %	1	3RT1056	3RT1044	3RT1045
3RW4443	203	3NE1230-2	315	600 +10 %	1	3RT1064	3RT1044	3RT1054
3RW4444	250	3NE1331-2	350	460 +10 %	2	3RT1065	3RT1044	3RT1055
3RW4445	313	3NE1333-2	450	690 +5 %	2	3RT1075	3RT1054	3RT1056
3RW4446	356	3NE1334-2	500	690 +5 %	2	3RT1075	3RT1054	3RT1056
3RW4447	432	3NE1435-2	560	690 +5 %	3	3RT1076	3RT1055	3RT1064
3RW4453	551	2 x 3NE1334-2	500	690 +10 %	2	3TF68	3RT1064	3RT1066
3RW4454	615	2 x 3NE1334-2	500	690 +10 %	2	3TF68	3RT1064	3RT1075
3RW4455	693	2 x 3NE1334-2	500	690 +10 %	2	3TF69	3RT1065	3RT1075
3RW4456	780	2 x 3NE1435-2	560	690 +10 %	3	3TF69	3RT1065	3RT1075
3RW4457	880	2 x 3NE1435-2	560	690 +10 %	3		3RT1075	3RT1076
3RW4458	970	2 x 3NE1435-2	560	690 +10 %	3		3RT1075	3RT1076
3RW4465	1 076	3 x 3NE1334-2	500	690 +10 %	2		3RT1075	3TF68
3RW4466	1 214	3 x 3NE1435-2	560	690 +10 %	3		3RT1076	3TF68

1) If the ramp-down function "Combined braking" is selected, no braking contactor is required.
If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).
For applications with large centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

2) Additional auxiliary relay K4:
LZS:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZS:RT4A4S15
(3RW44 soft starter with rated control supply voltage 115 V AC).

3) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

4) http://support.automation.siemens.com/WW/view/en/21772518

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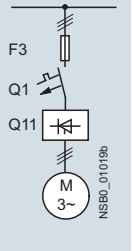
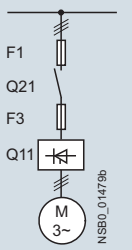
Inline circuit fused version with 3NE or 3NC SITOR semiconductor fuse
(semiconductor protection by fuse, line and overload protection by motor starter protecto)





Matching fuse bases see Catalog LV 10 → "Switch Disconnectors" and Catalog LV 10 → "Fuse Systems" → "SITOR Semiconductor Fuses" or visit www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses (cylinder)		
ToC 2	Nom. curr.	690 V +10 %	Rated current	Size	690 V +10 %	Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination 2[3]: I_q = 65 kA										
3RW4422	29	3NE4120	80	0	3NE4121	100	0	3NC2280	80	22 x 58
3RW4423	36	3NE4121	100	0	3NE4121	100	0	3NC2200	100	22 x 58
3RW4424	47	3NE4121	100	0	3NE4122	125	0	3NC2200	100	22 x 58
3RW4425	57	3NE4122	125	0	3NE4124	160	0			
3RW4426	77	3NE4124	160	0	3NE4124	160	0			
3RW4427	93	3NE3224	160	1	3NE3332-0B	400	2			
3RW4434	113	3NE3225	200	1	3NE3335	560	2			
3RW4435	134	3NE3225	200	1	3NE3335	560	2			
3RW4436	162	3NE3227	250	1	3NE3333	450	2			
3RW4443	203	3NE3230-0B	315	1	3NE3333	450	2			
3RW4444	250	3NE3230-0B	315	1	3NE3333	450	2			
3RW4445	313	3NE3233	450	1	3NE3336	630	2			
3RW4446	356	3NE3333	450	2	3NE3336	630	2			
3RW4447	432	3NE3335	560	2	3NE3338-8	800	2			
3RW4453	551	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4454	615	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4455	693	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4456	780	2 x 3NE3336	630	2	2 x 3NE3340-8	900	2			
3RW4457	880	2 x 3NE3336	630	2	2 x 3NE3340-8	900	2			
3RW4458	970	2 x 3NE3336	630	2	2 x 3NE3340-8	900	2			
3RW4465	1 076	2 x 3NE3340-8	900	2	3 x 3NE3338-8	800	2			
3RW4466	1 214	2 x 3NE3340-8	900	2	3 x 3NE3338-8	800	2			

Soft starters		Line contactor up to 400 V (optional)	Braking contactors[1][2] (example circuit see manual 3RW44[4])		Motor starter protectors		Line protection, maximum		
ToC 2	Nom. curr.				440 V +10 %	Rated current	690 V +5 %	Rated current	Size
Q11 Type	A	Q21 Type	Q91 Type	Q92 Type	Q1 Type	A	F1 Type	A	
Type of coordination 2[3]: I_q = 65 kA									
3RW4422	29	3RT1034	3RT2526	--	3RV1041-4HA10	50	3NA3820-6	50	00
3RW4423	36	3RT1035	3RT2526	--	3RV1041-4JA10	63	3NA3822-6	63	00
3RW4424	47	3RT1036	3RT1535	--	3RV1041-4KA10	75	3NA3824-6	80	00
3RW4425	57	3RT1044	3RT1535	--	3RV1041-4LA10	90	3NA3830-6	100	00
3RW4426	77	3RT1045	3RT2024	3RT1035	3RV1041-4MA10	100	3NA3132-6	125	1
3RW4427	93	3RT1046	3RT2025	3RT1036	3RV1041-4MA10	100	3NA3136-6	160	1
3RW4434	113	3RT1054	3RT1034	3RT1044	3VL1716	160	3NA3244-6	250	2
3RW4435	134	3RT1055	3RT1036	3RT1045	3VL1716	160	3NA3244-6	250	2
3RW4436	162	3RT1056	3RT1044	3RT1045	3VL3725	250	3NA3365-6	500	3
3RW4443	203	3RT1064	3RT1044	3RT1054	3VL4731	315	2 x 3NA3354-6	2 x 355	3
3RW4444	250	3RT1065	3RT1044	3RT1055	3VL4731	315	2 x 3NA3354-6	2 x 355	3
3RW4445	313	3RT1075	3RT1054	3RT1056	3VL4740	400	2 x 3NA3365-6	2 x 500	3
3RW4446	356	3RT1075	3RT1054	3RT1056	3VL4740	400	2 x 3NA3365-6	2 x 500	3
3RW4447	432	3RT1076	3RT1055	3RT1064	3VL5750	500	2 x 3NA3365-6	2 x 500	3
3RW4453	551	3TF68	3RT1064	3RT1066	3VL6780	800	2 x 3NA3365-6	2 x 500	3
3RW4454	615	3TF68	3RT1064	3RT1075	3VL6780	800	2 x 3NA3365-6	2 x 500	3
3RW4455	693	3TF69	3RT1065	3RT1075	3VL6780	800	2 x 3NA3365-6	2 x 500	3
3RW4456	780	3TF69	3RT1065	3RT1075	3VL7710	1 000	2 x 3NA3365-6	2 x 500	3
3RW4457	880		3RT1075	3RT1076	3VL7710	1 000	2 x 3NA3365-6	2 x 500	3
3RW4458	970		3RT1075	3RT1076	3VL7712	1 250	3 x 3NA3365-6	3 x 500	3
3RW4465	1 076		3RT1075	3TF68	3VL7712	1 250	3 x 3NA3365-6	3 x 500	3
3RW4466	1 214		3RT1076	3TF68	3VL7712	1 250	3 x 3NA3365-6	3 x 500	3

1) If the ramp-down function "Combined braking" is selected, no braking contactor is required. If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type). For applications with large centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

2) Additional auxiliary relay K4: LZS:RT4A4T30 (3RW44 soft starter with rated control supply voltage 230 V AC), LZS:RT4A4S15 (3RW44 soft starter with rated control supply voltage 115 V AC).

3) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

4) http://support.automation.siemens.com/WW/view/en/21772518

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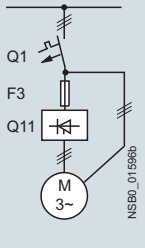
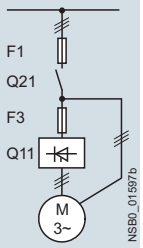
Inside-delta circuit fused version with 3NE or 3NC SITOR fuses
(semiconductor protection by fuse, line and overload protection by motor starter protector)





Matching fuse bases see
Catalog LV 10 → "Switch Disconnectors"
and Catalog LV 10 → "Fuse Systems"
→ "SITOR Semiconductor Fuses"
or visit www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses (cylinder)		
ToC 2	Nominal current	690 V +10 %	Rated current	Size	690 V +10 %	Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination 2[1]										
3RW4422	50	3NE4120	80	0	3NE4121	100	0	3NC2280	80	22 x 58
3RW4423	62	3NE4121	100	0	3NE4121	100	0	3NC2200	100	22 x 58
3RW4424	81	3NE4121	100	0	3NE4122	125	0	3NC2200	100	22 x 58
3RW4425	99	3NE4122	125	0	3NE4124	160	0			
3RW4426	133	3NE4124	160	0	3NE4124	160	0			
3RW4427	161	3NE3224	160	1	3NE3332-0B	400	2			
3RW4434	196	3NE3225	200	1	3NE3335	560	2			
3RW4435	232	3NE3225	200	1	3NE3335	560	2			
3RW4436	281	3NE3227	250	1	3NE3333	450	2			
3RW4443	352	3NE3230-0B	315	1	3NE3333	450	2			
3RW4444	433	3NE3230-0B	315	1	3NE3333	450	2			
3RW4445	542	3NE3233	450	1	3NE3336	630	2			
3RW4446	617	3NE3333	450	2	3NE3336	630	2			
3RW4447	748	3NE3335	560	2	3NE3338-8	800	2			
3RW4453	954	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4454	1 065	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4455	1 200	2 x 3NE3335	560	2	3 x 3NE3334-0B	500	2			
3RW4456	1 351	2 x 3NE3336	630	2	2 x 3NE3340-8	900	2			
3RW4457	1 524	2 x 3NE3336	630	2	3 x 3NE3340-8	900	2			
3RW4458	1 680	2 x 3NE3336	630	2	3 x 3NE3340-8	900	2			
3RW4465	1 864	2 x 3NE3340-8	900	2	3 x 3NE3338-8	800	2			
3RW4466	2 103	2 x 3NE3340-8	900	2	3 x 3NE3338-8	800	2			

Soft starters		Line contactor up to 400 V	Motor starter protectors		Line protection, maximum		
ToC 2	Nominal current	(optional)	440 V +10 %	Rated current	690 V +5 %	Rated current	Size
Q11 Type	A	Q21 Type	Q1 Type	A	F1 Type	A	
Type of coordination 2[1]							
3RW4422	50	3RT1036-1AP04	3RV1042-4KA10	75	3NA3824-6	80	00
3RW4423	62	3RT1044-1AP04	3RV1042-4LA10	90	3NA3830-6	100	00
3RW4424	81	3RT1046-1AP04	3RV1042-4MA10	100	3NA3132-6	125	1
3RW4425	99	3RT1054-1AP36	3VL2716	160	3NA3136-6	160	1
3RW4426	133	3RT1055-6AP36	3VL2716	160	3NA3240-6	200	2
3RW4427	161	3RT1056-6AP36	3VL3720	200	3NA3244-6	250	2
3RW4434	196	3RT1064-6AP36	3VL3725	250	3NA3360-6	400	3
3RW4435	232	3RT1065-6AP36	3VL4731	315	3NA3360-6	400	3
3RW4436	281	3RT1066-6AP36	3VL4740	400	2 x 3NA3360-6	2 x 400	3
3RW4443	352	3RT1075-6AP36	3VL4740	400	2 x 3NA3365-6	2 x 500	3
3RW4444	433	3RT1076-6AP36	3VL5750	500	2 x 3NA3365-6	2 x 500	3
3RW4445	542	3TF6844-0CM7	3VL5763	630	3 x 3NA3365-6	3 x 500	3
3RW4446	617	3TF6844-0CM7	3VL6780	800	3 x 3NA3365-6	3 x 500	3
3RW4447	748	3TF69	3VL6780	800	3 x 3NA3365-6	3 x 500	3
3RW4453	954		3VL7710	1 000	3 x 3NA3365-6	3 x 500	3
3RW4454	1 065		3VL7712	1 250	3 x 3NA3365-6	3 x 500	3
3RW4455	1 200		3VL8716	1 600	3 x 3NA3365-6	3 x 500	3
3RW4456	1 351		3VL8716	1 600	3 x 3NA3372	3 x 630	3
3RW4457	1 524		3VL8716	1 600	3 x 3NA3372	3 x 630	3
3RW4458	1 680		3WL1220	2 000	2 x 3NA3480	2 x 1000	4
3RW4465	1 864		3WL1225	2 500	2 x 3NA3482	2 x 1250	4
3RW4466	2 103		3WL1225	2 500	2 x 3NA3482	2 x 1250	4

[1] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.
If the F3 semiconductor fuse is not used, the type of coordination "2" is reduced to type of coordination "1" for soft starters in combination with the stipulated protective device.

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Selection and ordering data

SIRIUS 3RW44 for normal starting (CLASS 10) in inline circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW446.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operat. current I_e	Rating at operational voltage U_e					Operat. current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	B	**3RW4422-□BC□4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	B	**3RW4423-□BC□4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	B	**3RW4424-□BC□4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
77	18.5	**37**	--	--	--	68	20	20	**50**	--	B	**3RW4426-□BC□4**	1	1 unit	42H
93	22	**45**	--	--	--	82	25	25	**60**	--	B	**3RW4427-□BC□4**	1	1 unit	42H
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW4434-□BC□4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW4435-□BC□4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW4436-□BC□4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW4444-□BC□4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW4445-□BC□4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW4446-□BC□4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW4454-□BC□4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW4455-□BC□4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW4456-□BC□4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW4457-□BC□4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW4458-□BC□4**	1	1 unit	42H
1 076	355	**630**	--	--	--	970	350	400	**850**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
1 214	400	**710**	--	--	--	1 076	350	450	**950**	--	C	**3RW4466-□BC□4**	1	1 unit	42H

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals

1
3

Article No. supplement for connection types

- With spring-type terminals
- With screw terminals

2
6

Article No. supplement for rated control supply voltage U_s[2)]

- 115 V AC
- 230 V AC

3
4

Online configurator see www.siemens.com/sirius/configurators

1) 3RW442. to ... 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	B	**3RW4422-☐BC☐5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	B	**3RW4423-☐BC☐5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	B	**3RW4424-☐BC☐5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	B	**3RW4425-☐BC☐5**	1	1 unit	42H
77	--	37	**45**	--	--	68	--	--	50	**50**	B	**3RW4426-☐BC☐5**	1	1 unit	42H
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW4427-☐BC☐5**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW4434-☐BC☐5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW4435-☐BC☐5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW4436-☐BC☐5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW4443-☐BC☐5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW4444-☐BC☐5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW4445-☐BC☐5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW4446-☐BC☐5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	B	**3RW4447-☐BC☐5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW4453-☐BC☐5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW4454-☐BC☐5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW4455-☐BC☐5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW4456-☐BC☐5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW4457-☐BC☐5**	1	1 unit	42H
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW4458-☐BC☐5**	1	1 unit	42H
1076	--	630	**800**	--	--	970	--	--	850	**1 100**	C	**3RW4465-☐BC☐5**	1	1 unit	42H
1 214	--	710	**900**	--	--	1 076	--	--	950	**1 200**	C	**3RW4466-☐BC☐5**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. ... 3RW444. Delivery time class A,
3RW445. ... 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 690 V															
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW4422-□BC□6**	1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW4423-□BC□6**	1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW4424-□BC□6**	1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW4425-□BC□6**	1	1 unit	42H
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW4426-□BC□6**	1	1 unit	42H
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW4427-□BC□6**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW4434-□BC□6**	1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW4435-□BC□6**	1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW4436-□BC□6**	1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW4443-□BC□6**	1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW4444-□BC□6**	1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW4445-□BC□6**	1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW4446-□BC□6**	1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	B	**3RW4447-□BC□6**	1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW4453-□BC□6**	1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW4454-□BC□6**	1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW4455-□BC□6**	1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW4456-□BC□6**	1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW4457-□BC□6**	1	1 unit	42H
970	--	560	710	**1 000**	--	850	--	--	750	**900**	C	**3RW4458-□BC□6**	1	1 unit	42H
1 076	--	630	800	**1 100**	--	970	--	--	850	**1 100**	C	**3RW4465-□BC□6**	1	1 unit	42H
1 214	--	710	900	**1 200**	--	1 076	--	--	950	**1 200**	C	**3RW4466-□BC□6**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s [1)]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for heavy starting (CLASS 20) in inline circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW4466.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	**Heavy starting (CLASS 20) in inline circuit**	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						**Configurator**			
Operat. current I_e	Rating at operational voltage U_e					Operat. current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	B	**3RW4422-☐BC☐4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	B	**3RW4423-☐BC☐4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	B	**3RW4424-☐BC☐4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	B	**3RW4425-☐BC☐4**	1	1 unit	42H
77	18.5	**37**	--	--	--	68	20	20	**50**	--	B	**3RW4427-☐BC☐4**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
93	22	**45**	--	--		82	25	25	**60**	--	B	**3RW4434-☐BC☐4**	1	1 unit	42H
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW4435-☐BC☐4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW4436-☐BC☐4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW4443-☐BC☐4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW4445-☐BC☐4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW4446-☐BC☐4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW4447-☐BC☐4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW4447-☐BC☐4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW4453-☐BC☐4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW4453-☐BC☐4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW4455-☐BC☐4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW4457-☐BC☐4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW4465-☐BC☐4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW4465-☐BC☐4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW4465-☐BC☐4**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) 3RW442. to 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Heavy starting (CLASS 20) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	B	**3RW4422-□BC□5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	B	**3RW4423-□BC□5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	B	**3RW4424-□BC□5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	B	**3RW4425-□BC□5**	1	1 unit	42H
77	--	37	**45**	--	--	68	--	--	50	**50**	B	**3RW4427-□BC□5**	1	1 unit	42H
Article No. supplement for connection types • With screw terminals • With spring-type terminals												**1 3**			
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW4434-□BC□5**	1	1 unit	42H
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW4435-□BC□5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW4436-□BC□5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW4443-□BC□5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW4445-□BC□5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW4446-□BC□5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW4447-□BC□5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW4447-□BC□5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW4453-□BC□5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW4453-□BC□5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW4454-□BC□5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW4457-□BC□5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW4465-□BC□5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW4465-□BC□5**	1	1 unit	42H
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW4465-□BC□5**	1	1 unit	42H
Article No. supplement for connection types • With spring-type terminals • With screw terminals												**2 6**			
Article No. supplement for rated control supply voltage U_s[2] • 115 V AC • 230 V AC												**3 4**			

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. to 3RW444. Delivery time class A,
3RW445. to 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 690 V															
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW4422-☐BC☐6**	1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW4423-☐BC☐6**	1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW4424-☐BC☐6**	1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW4425-☐BC☐6**	1	1 unit	42H
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW4427-☐BC☐6**	1	1 unit	42H
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW4434-☐BC☐6**	1	1 unit	42H
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW4435-☐BC☐6**	1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW4436-☐BC☐6**	1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW4443-☐BC☐6**	1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW4445-☐BC☐6**	1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW4446-☐BC☐6**	1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW4447-☐BC☐6**	1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW4447-☐BC☐6**	1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW4453-☐BC☐6**	1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW4453-☐BC☐6**	1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW4455-☐BC☐6**	1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW4457-☐BC☐6**	1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW4465-☐BC☐6**	1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW4465-☐BC☐6**	1	1 unit	42H
970	--	560	710	**1 000**	--	850	--	--	750	**900**	C	**3RW4465-☐BC☐6**	1	1 unit	42H

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals

1 3

Article No. supplement for connection types

- With spring-type terminals
- With screw terminals

2 6

Article No. supplement for rated control supply voltage U_s [1)]

- 115 V AC
- 230 V AC

3 4

Online configurator see www.siemens.com/sirius/configurators

1) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

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3RW44

SIRIUS 3RW44 for very heavy starting (CLASS 30) in inline circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW446.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Very heavy starting (CLASS 30) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operat. current I_e	Rating at operational voltage U_e					Operat. current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	B	**3RW4422-□BC□4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	B	**3RW4424-□BC□4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
77	18.5	**37**	--	--	--	68	20	20	**50**	--	B	**3RW4434-□BC□4**	1	1 unit	42H
93	22	**45**	--	--	--	82	25	25	**60**	--	B	**3RW4435-□BC□4**	1	1 unit	42H
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW4446-□BC□4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW4455-□BC□4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW4458-□BC□4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW4466-□BC□4**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) 3RW442. to 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Very heavy starting (CLASS 30) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	B	**3RW4422-□BC□5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	B	**3RW4424-□BC□5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	B	**3RW4425-□BC□5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	B	**3RW4425-□BC□5**	1	1 unit	42H
Article No. supplement for connection types • With screw terminals • With spring-type terminals												**1 3**			
77	--	37	**45**	--	--	68	--	--	50	**50**	B	**3RW4434-□BC□5**	1	1 unit	42H
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW4435-□BC□5**	1	1 unit	42H
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW4443-□BC□5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW4443-□BC□5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW4443-□BC□5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW4446-□BC□5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW4447-□BC□5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	C	**3RW4453-□BC□5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	C	**3RW4453-□BC□5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW4453-□BC□5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW4455-□BC□5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW4458-□BC□5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW4465-□BC□5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW4465-□BC□5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW4465-□BC□5**	1	1 unit	42H
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW4466-□BC□5**	1	1 unit	42H
Article No. supplement for connection types • With spring-type terminals • With screw terminals												**2 6**			
Article No. supplement for rated control supply voltage U_s[2] • 115 V AC • 230 V AC												**3 4**			

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. to 3RW444. Delivery time class A,
3RW445. to 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 690 V															
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW4422-□BC□6**	1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW4424-□BC□6**	1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW4425-□BC□6**	1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW4425-□BC□6**	1	1 unit	42H
Article No. supplement for connection types • With screw terminals **1** • With spring-type terminals **3**															
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW4434-□BC□6**	1	1 unit	42H
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW4435-□BC□6**	1	1 unit	42H
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW4443-□BC□6**	1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW4443-□BC□6**	1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW4443-□BC□6**	1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW4446-□BC□6**	1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW4447-□BC□6**	1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	C	**3RW4453-□BC□6**	1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	C	**3RW4453-□BC□6**	1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW4453-□BC□6**	1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW4455-□BC□6**	1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW4458-□BC□6**	1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW4465-□BC□6**	1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW4465-□BC□6**	1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW4465-□BC□6**	1	1 unit	42H
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW4466-□BC□6**	1	1 unit	42H

Article No. supplement for connection types
- With spring-type terminals **2**
- With screw terminals **6**

Article No. supplement for rated control supply voltage U_s [1)]
- 115 V AC **3**
- 230 V AC **4**

Online configurator see www.siemens.com/sirius/configurators

1) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):
- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for normal starting (CLASS 10) in inside-delta circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW446.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	**Normal starting (CLASS 10) in inside-delta circuit**	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						**Configurator**			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V															
50	15	**22**	--	--	--	45	10	15	**30**	--	B	**3RW4422-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	B	**3RW4423-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	B	**3RW4424-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	B	**3RW4426-□BC□4**	1	1 unit	42H
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW4427-□BC□4**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1 3**			
• With spring-type terminals															
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW4434-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW4435-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW4436-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW4444-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW4445-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW4446-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW4454-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW4455-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW4456-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW4457-□BC□4**	1	1 unit	42H
1 680	560	**1 000**	--	--	--	1 472	550	650	**1 300**	--	C	**3RW4458-□BC□4**	1	1 unit	42H
1 864	630	**1 100**	--	--	--	1 680	650	750	**1 500**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
2 103	710	**1 200**	--	--	--	1 864	700	850	**1 700**	--	C	**3RW4466-□BC□4**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2 6**			
• With screw terminals															
Article No. supplement for rated control supply voltage U_s[2)]															
• 115 V AC												**3 4**			
• 230 V AC															

Online configurator see www.siemens.com/sirius/configurators

[1] 3RW442. to 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

[2] Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Normal starting (CLASS 10) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. / Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V															
50	--	22	**30**	--	--	45	--	--	30	**40**	B	**3RW4422-□BC□5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	B	**3RW4423-□BC□5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	B	**3RW4424-□BC□5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	B	**3RW4425-□BC□5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	B	**3RW4426-□BC□5**	1	1 unit	42H
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW4427-□BC□5**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW4434-□BC□5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW4435-□BC□5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW4436-□BC□5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW4443-□BC□5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW4444-□BC□5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW4445-□BC□5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW4446-□BC□5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	B	**3RW4447-□BC□5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW4453-□BC□5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW4454-□BC□5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW4455-□BC□5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW4456-□BC□5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW4457-□BC□5**	1	1 unit	42H
1 680	--	1 000	**1 200**	--	--	1 472	--	--	1 300	**1 650**	C	**3RW4458-□BC□5**	1	1 unit	42H
1 864	--	1 100	**1 350**	--	--	1 680	--	--	1 500	**1 900**	C	**3RW4465-□BC□5**	1	1 unit	42H
2 103	--	1 200	**1 500**	--	--	1 864	--	--	1 700	**2 100**	C	**3RW4466-□BC□5**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. to 3RW444. Delivery time class A,
3RW445. to 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for heavy starting (CLASS 20) in inside-delta circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW446.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Heavy starting (CLASS 20) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operat. current I_e	Rating at operational voltage U_e					Operat. current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. / Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V															
50	15	**22**	--	--	--	45	10	15	**30**	--	B	**3RW4423-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	B	**3RW4424-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	B	**3RW4427-□BC□4**	1	1 unit	42H
Article No. supplement for connection types • With screw terminals • With spring-type terminals												**1** **3**			
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW4434-□BC□4**	1	1 unit	42H
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW4435-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW4436-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW4444-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW4445-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW4455-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW4457-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
1 680	560	**1 000**	--	--	--	1 472	550	650	**1 300**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
--	--	--	--	--	--	1 680	650	750	**1 500**	--	C	**3RW4466-□BC□4**	1	1 unit	42H
Article No. supplement for connection types • With spring-type terminals • With screw terminals												**2** **6**			
Article No. supplement for rated control supply voltage U_s[2)] • 115 V AC • 230 V AC												**3** **4**			

Online configurator see www.siemens.com/sirius/configurators

1) 3RW442. to 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application see manual.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Heavy starting (CLASS 20) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Article No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V															
50	--	22	**30**	--	--	45	--	--	30	**40**	B	**3RW4423-□BC□5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	B	**3RW4424-□BC□5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	B	**3RW4425-□BC□5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	B	**3RW4425-□BC□5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	B	**3RW4427-□BC□5**	1	1 unit	42H
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW4434-□BC□5**	1	1 unit	42H
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW4435-□BC□5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW4436-□BC□5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW4443-□BC□5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW4444-□BC□5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW4445-□BC□5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW4447-□BC□5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW4447-□BC□5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW4453-□BC□5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW4453-□BC□5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW4455-□BC□5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW4457-□BC□5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW4465-□BC□5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW4465-□BC□5**	1	1 unit	42H
1 680	--	1 000	**1 200**	--	--	1 472	--	--	1 300	**1 650**	C	**3RW4465-□BC□5**	1	1 unit	42H
--	--	--	--	--	--	1 680	--	--	1 500	**1 900**	C	**3RW4466-□BC□5**	1	1 unit	42H

Article No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals **3**

Article No. supplement for connection types

- With spring-type terminals **2**
- With screw terminals **6**

Article No. supplement for rated control supply voltage U_s[2)]

- 115 V AC **3**
- 230 V AC **4**

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. to 3RW444. Delivery time class A,
3RW445. to 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for very heavy starting (CLASS 30) in inside-delta circuit

3RW442.

3RW443.

3RW444.

3RW445.

3RW446.

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Very heavy starting (CLASS 30) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V															
50	15	**22**	--	--	--	45	10	15	**30**	--	B	**3RW4423-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	B	**3RW4424-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	B	**3RW4425-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	B	**3RW4427-□BC□4**	1	1 unit	42H
Article No. supplement for connection types • With screw terminals • With spring-type terminals												**1** **3**			
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW4435-□BC□4**	1	1 unit	42H
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW4436-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW4443-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW4445-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW4447-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW4453-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW4455-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW4458-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW4465-□BC□4**	1	1 unit	42H
--	--	--	--	--	--	1 472	550	650	**1 300**	--	C	**3RW4466-□BC□4**	1	1 unit	42H
Article No. supplement for connection types • With spring-type terminals • With screw terminals												**2** **6**			
Article No. supplement for rated control supply voltage U_s[2)] • 115 V AC • 230 V AC												**3** **4**			

Online configurator see www.siemens.com/sirius/configurators

1) 3RW442. to 3RW444. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW44

3RW ambient temperature 40 °C						3RW ambient temperature 50 °C					DT[1]	Very heavy starting (CLASS 30) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors						Rated values of three-phase motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Article No. / Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V															
50	--	22	**30**	--	--	45	--	--	30	**40**	B	**3RW4423-□BC□5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	B	**3RW4424-□BC□5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	B	**3RW4425-□BC□5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	B	**3RW4425-□BC□5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	B	**3RW4427-□BC□5**	1	1 unit	42H
Article No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW4435-□BC□5**	1	1 unit	42H
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW4436-□BC□5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW4443-□BC□5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW4443-□BC□5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW4445-□BC□5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW4447-□BC□5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	C	**3RW4453-□BC□5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	C	**3RW4453-□BC□5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW4453-□BC□5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW4455-□BC□5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW4458-□BC□5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW4465-□BC□5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW4465-□BC□5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW4465-□BC□5**	1	1 unit	42H
--	--	--	--	--	--	1 472	--	--	1 300	**1 650**	C	**3RW4466-□BC□5**	1	1 unit	42H
Article No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Article No. supplement for rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

Online configurator see www.siemens.com/sirius/configurators

1) Soft starter with screw terminals:
3RW442. to 3RW444. Delivery time class A,
3RW445. to 3RW446. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The solid-state SIRIUS 3RW44 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the selection table, the unit rated current I_e refers to the three-phase motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual http://support.automation.siemens.com/WW/view/en/21772518

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Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 PC communication program[1]						
Soft Starter ES 2007 Basic Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1313-4CC10-0YA5**		1	1 unit	42H
Soft Starter ES 2007 Standard **Floating license for one user** E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1313-5CC10-0YA5**		1	1 unit	42H
Soft Starter ES 2007 Premium Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS/PROFINET						
• License key on USB stick, Class A, including CD	B	**3ZS1313-6CC10-0YA5**		1	1 unit	42H
SIRIUS 3RW44 Soft Starter block library for SIMATIC PCS 7[1]						
3ZS1633-1XX00-0YA0						
Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, for PCS 7, version V 6.1/V 7.0						
Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English/French, Type of delivery: on CD incl. electronic documentation in German/English/Portuguese	►	**3ZS1633-1XX00-0YA0**		1	1 unit	42H
Runtime software for execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation	►	**3ZS1633-2XX00-0YB0**		1	1 unit	42H

[1] Detailed information about the Soft Starter ES software program and the SIRIUS 3RW44 Soft Starter block Library for SIMATIC PCS 7 see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

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3RW44

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PC cables							
3UF7940-0AA00-0	**For PC/PG communication with SIRIUS 3RW44 soft starters** Through the system interface, for connecting to the serial interface of the PC/PG	►	**3UF7940-0AA00-0**		1	1 unit	42J
USB PC cables							
3UF7941-0AA00-0	**For PC/PG communication with SIRIUS 3RW44 soft starters** Through the system interface, for connecting to the USB interface of the PC/PG	►	**3UF7941-0AA00-0**		1	1 unit	42J
USB/serial adapters							
	For connecting the PC cable to the USB interface of a PC We recommend, in conjunction with 3RW44 soft starter, using SIMOCODE pro 3UF7, 3RK3 Modular Safety System, ET 200S/ECOFAST/ET 200pro motor starters, AS-i safety monitor, AS-i analyzer	B	**3UF7946-0AA00-0**		1	1 unit	42J
Communication modules							
3RW4900-0KC00	**Optional PROFIBUS communication modules** For 3RW44 soft starter integration in the PROFIBUS network with DPV1 slave functionality. With firmware version E04 and higher (or date of manufacture 01.05.2009 and later) of the module, DPV1 operation of the soft starter on a Y-link is also possible (< only DPV0 operation possible with E04).	►	**3RW4900-0KC00**		1	1 unit	42H
3RW4900-0NC00	**Optional PROFINET communication modules** For 3RW44 soft starter integration in the PROFINET network, suitable for devices with firmware version E12 or higher	►	**3RW4900-0NC00**		1	1 unit	42H
External display and operator module							
3RW4900-0AC00	For indicating and operating the functions provided by the soft starter using an externally mounted display and operator module in degree of protection IP54 (e.g. in the control cabinet door)	►	**3RW4900-0AC00**		1	1 unit	42H
	Connection cable From the device interface (serial) of the 3RW44 soft starter to the external display and operator module						
	• Length 0.5 m, flat	►	**3UF7932-0AA00-0**		1	1 unit	42J
	• Length 0.5 m, round	►	**3UF7932-0BA00-0**		1	1 unit	42J
	• Length 1.0 m, round	►	**3UF7937-0BA00-0**		1	1 unit	42J
	• Length 2.5 m, round	►	**3UF7933-0BA00-0**		1	1 unit	42J

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Illustrations are approximate

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For soft starters Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Box terminal blocks for soft starters							
 3RT19	**Box terminal block** (2 units are required for each device)						
3RW442.	Included in the scope of supply						
3RW443.	• Up to 70 mm²	▶	**3RT1955-4G**		1	1 unit	41B
	• Up to 120 mm²	▶	**3RT1956-4G**		1	1 unit	41B
	Auxiliary conductor connection for box terminals	B	**3TX7500-0A**		1	1 unit	41B
3RW444.	• Up to 240 mm² (with auxiliary conductor connection)	▶	**3RT1966-4G**		1	1 unit	41B
Covers for soft starters							
	Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)						
3RW442. and 3RW443.		▶	**3RT1956-4EA2**		1	1 unit	41B
3RW444.		▶	**3RT1966-4EA2**		1	1 unit	41B
 3RT19.6-4EA1	**Terminal covers for cable lugs and busbar connections**						
3RW442. and 3RW443.	For complying with the voltage clearances and as touch protection (2 units required per contactor)	▶	**3RT1956-4EA1**		1	1 unit	41B
3RW444.	Also fits on mounted box terminals.	▶	**3RT1966-4EA1**		1	1 unit	41B
Manual 3RW44[1]							

[1] The operating instructions for 3RW44 (3ZX1012-0RW44-0AA0) are included in the scope of supply of the soft starter, or are available – like the manual – as PDF downloads from the Service&Support portal at www.siemens.com/industrial-controls/support ➞ "Switching Devices" ➞ "Soft Starters and Solid-State Switching Devices" ➞ "SIRIUS 3RW Soft Starters".

Spare parts

For soft starters Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans							
 3RW49	**Fans**						
3RW442. and 3RW443.	115 V AC	▶	**3RW49 36-8VX30**		1	1 unit	42G
	230 V AC	▶	**3RW49 36-8VX40**		1	1 unit	42G
3RW444.	115 V AC	▶	**3RW49 47-8VX30**		1	1 unit	42G
	230 V AC	▶	**3RW49 47-8VX40**		1	1 unit	42G
3RW445. and 3RW446.[1]	115 V AC	▶	**3RW49 57-8VX30**		1	1 unit	42H
	230 V AC	▶	**3RW49 57-8VX40**		1	1 unit	42H
3RW446.[2]	115 V AC	▶	**3RW49 66-8VX30**		1	1 unit	42H
	230 V AC	▶	**3RW49 66-8VX40**		1	1 unit	42H

[1] 3RW446. mounting on output side.
[2] For mounting on front side.

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 350% $I_{n\ motor}$, one start per hour)
The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belts	Roller conveyors	Compressors	Small fans[1]	Pumps	Hydraulic pumps
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	30	30	30
- Starting time	s	10	10	10	10	10	10
- Current limit value		deactivated	deactivated	4 x I_M	4 x I_M	deactivated	deactivated
• Torque ramp							
- Start torque		60	50	40	20	10	10
- Final torque		150	150	150	150	150	150
- Starting time		10	10	10	10	10	10
• Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Smooth ramp-down	Smooth ramp-down	Free ramp-down	Free ramp-down	Pump ramp-down	Free ramp-down

Application examples for heavy starting (CLASS 20)

Heavy starting CLASS 20 (up to 40 s with 350% $I_{n\ motor}$, one start per hour)
The soft starter has to be selected one performance class higher than the motor used

Application		Stirrers	Centrifuges	Milling machines
Starting parameters				
• Voltage ramp and current limiting				
- Starting voltage	%	30	30	30
- Starting time	s	30	30	30
- Current limit value		4 x I_M	4 x I_M	4 x I_M
• Torque ramp				
- Start torque		30	30	30
- Final torque		150	150	150
- Starting time		30	30	30
• Breakaway pulse		deactivated (0 ms)	deactivated (0 ms)	deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down or DC braking

Application examples for very heavy starting (CLASS 30)

Very heavy starting CLASS 30 (up to 60 s with 350 % $I_{n\ motor}$, one start per hour)
The soft starter has to be selected two performance classes higher than the motor used

Application		Large fans[2]	Mills	Breakers	Circular saws/bandsaws
Starting parameters					
• Voltage ramp and current limiting					
- Starting voltage	%	30	50	50	30
- Starting time	s	60	60	60	60
- Current limit value		4 x I_M	4 x I_M	4 x I_M	4 x I_M
• Torque ramp					
- Start torque		20	50	50	20
- Final torque		150	150	150	150
- Starting time		60	60	60	60
• Breakaway pulse		deactivated (0 ms)	80 %, 300 ms	80 %, 300 ms	deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down	Free ramp-down

[1] The mass inertia of the fan is <10 times the mass inertia of the motor.
[2] The mass inertia of the fan is ≥10 times the mass inertia of the motor.

Note:

These tables present sample set values and device dimensions. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the help of Technical Assistance.

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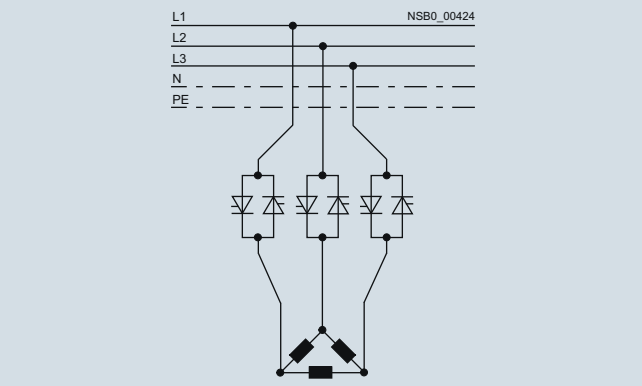
Circuit concept

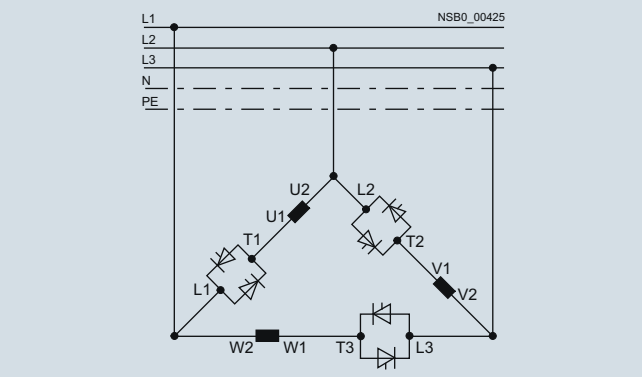
The SIRIUS 3RW44 soft starters can be operated in two different types of circuit:

- Inline circuit
  The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three cables.
- Inside-delta circuit
  The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58 % of the rated motor current (conductor current).

Comparison of the types of circuit:



Inline circuit:
Rated current I_e corresponds to the rated motor current I_n,
3 cables to the motor



Inside-delta circuit:
Rated current I_e corresponds to approx. 58 % of the rated motor current I_n, 6 cables to the motor (as with wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable.

The wiring complexity is twice as high when using the inside-delta circuit, but a smaller device can be used with the same rating.

Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.

Configuration

The solid-state 3RW44 soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger device must be selected.

For long starting times it is recommended to have a PTC sensor in the motor. This also applies for the stopping modes smooth ramp-down, pump ramp-down and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately.

A bypass contact system and solid-state overload relay are already integrated in the 3RW44 soft starter and therefore do not have to be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release).

Note:

When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Device interface, PROFIBUS DP/PROFINET communication module, Soft Starter ES parameterizing and operating software

The solid-state 3RW44 soft starters have a PC interface for communicating with the Soft Starter ES software or for connecting the external display and operator module.
If the optional PROFIBUS/PROFINET communication module is used, the 3RW44 soft starter can be integrated in the PROFIBUS/PROFINET network and communicate using the GSD file or Soft Starter ES Premium software.

SIRIUS 3RW44 Soft Starter block library for SIMATIC PCS 7

The SIRIUS 3RW44 Soft Starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The SIRIUS 3RW44 Soft Starter PCS 7 block library contains the diagnostics and driver blocks corresponding with the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Manual for SIRIUS 3RW44

In addition to relevant configuration, commissioning, and service information, the manual also contains example circuits and technical specifications for all devices:
http://support.automation.siemens.com/WW/view/en/21772518

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General data

Overview

Type	Solid-state relays			Solid-state contactors		Function modules					
	Single-phase		Three-phase	Single-phase	Three-phase	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
	22.5 mm	45 mm	45 mm				Basic	Extended			
Usage											
Simple use of existing solid-state relays	❑	✓	❑	❑	❑	--	--	--	--	--	--
Complete unit "Ready to use"	❑	❑	❑	✓	✓	--	--	--	--	--	--
Space-saving	✓	--	✓	✓	✓	✓	✓	--	--	--	--
Can be extended with modular function modules	✓	--	[1]	✓	[1]	--	--	--	--	--	--
Frequent switching and monitoring of loads and solid-state relays/solid-state contactors	--	--	--	--	--	--	✓	✓	✓	✓	✓
Monitoring of up to 6 partial loads	--	--	--	--	--	--	✓	--	✓	✓	--
Monitoring of more than 6 partial loads	--	--	--	--	--	--	--	✓	--	--	--
Control of the heating power through an analog input	--	--	--	--	--	✓	--	--	--	✓	✓
Power control	--	--	--	--	--	--	--	--	--	--	✓
Startup											
Easy setting of setpoint values with "Teach" button	--	--	--	--	--	--	✓	✓	--	✓	✓
"Remote Teach" input for setting setpoints	--	--	--	--	--	--	--	--	✓	--	--
Mounting											
Mounting onto mounting rails or mounting plates	--	--	--	✓	✓	--	--	--	--	--	--
Can be snapped directly onto a solid-state relay or contactor	--	--	--	--	--	✓	✓	✓	✓	✓	✓
For use with "Coolplate" heat sink	✓	✓	✓	--	--	--	--	--	--	--	--
Cable routing											
Connection of load circuit as for control-gear	✓	--	✓	✓	✓	--	✓	✓	✓	✓	✓
Connection of load circuit from above	--	✓	--	--	--	--	--	--	--	--	--

✓ Function available

❑ Function possible

-- Function not possible

[1] The converter can also be used with three-phase devices.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Solid-state switching devices	**3 R F**										
SIRIUS solid-state switching device generation		□									
Design			□								
Type current				□	□						
Connection type							□				
Switching function								□			
Single-phase or number of controlled phases									□		
Rated control supply voltage										□	
Rated operational voltage											□
Example	**3 R F**	**2**	**1**	**2**	**0**	**–**	**1**	**A**	**A**	**0**	**4**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Characteristics

- Considerable space savings thanks to a width of only 22.5 mm
- Variety of connection methods: Screw terminal, spring-type connection or ring terminal lug, there is no problem – they are all finger-safe
- Flexible for all applications with function modules for retrofitting
- Possibility of fuseless short-circuit proof design

Benefits

- Saves time and costs with fast mounting and commissioning, short start-up times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: Standardized function modules and heat sinks can be used in conjunction with solid-state relays to satisfy individual requirements
- Safety due to lifelong, vibration-resistant and shock-resistant spring-type terminal connection method even under tough conditions

Application

Applications

Example: Plastics processing industry

Thanks to their high switching endurance SIRIUS 3SF2 solid-state switching devices are ideal for controlling electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects

The powerful SIRIUS 3SF2 solid-state relays and contactors can be used for the simultaneous control of several heating loads. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated to be sent to the controller.

See also Chapter 15, "Products for Specific Requirements" → "Heating Control Systems" → "SIPLUS HCS300I heating controller".

Use in fuseless load feeders

Compared with the fused configuration of load feeders, short circuit and line protection using miniature circuit breakers is easy to achieve with SIRIUS 3SF2 solid-state relays and contactors.

A special version of the solid-state contactors can be protected against damage in the case of a short circuit with a miniature circuit breaker with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switchgear.

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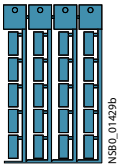
General data

Selection and ordering data

Inscription labels for 3RF2 series

	Designation	Labeling area (W x H)	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm x mm							
Blank labels									
 3RT19 00-1SB20 (1 frame = 20 units)	**Unit labeling plates for "SIRIUS"**[1]	10 x 7	Pastel turquoise	C	**3RT19 00-1SB10**		100	816 units	41B
		20 x 7	Pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
	Labels for sticking for SIRIUS	19 x 6	Pastel turquoise	C	**3RT19 00-1SB60**		100	3060 units	41B
		19 x 6	Zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	41B

[1] PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

More information

Notes on integration in the load feeders

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information in relation to solid-state contactors, e.g. on minimum spacing, and in relation to solid-state relays on the choice of heat sink can be found in the technical specifications and the product data sheets (see Service & Support).

Short-circuit and overload protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical specifications and the product data sheets contain details both about the solid-state fuse protection itself and about use of the devices with conventional protection equipment.

Electromagnetic compatibility (EMC)

The solid-state switching devices are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for conducted interference to be reduced by means of filters.

This does not include the solid-state contactors for resistive loads of the special type 3RF23 ..-.CA.. "Low Noise". These comply with the class B limit values up to a rated current of 16 A. If other versions are used, and at currents of over 16 A, standard filters can be used in order to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be ordered from EPCOS AG.
For more information see www.epcos.com.

Product information and technical specifications

For product data sheets with detailed technical specifications, dimensional drawings and characteristic curves, see www.siemens.com/sirius/support/

For additional information, please enter the article number of the required device under the tab "Product List".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Solid-state relays (without heat sink)

SIRIUS solid-state relays are suitable for surface mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads.

The solid-state relays are available in three different versions:

- 3RF21 single-phase solid-state relay with a width of 22.5 mm
- 3RF20 single-phase solid-state relay with a width of 45 mm
- 3RF22 three-phase solid-state relay with a width of 45 mm

The 3RF21 and 3RF22 solid-state relays can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Version for inductive loads, "instantaneous switching"

In this version the solid-state relay is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to IEC 60947-4-3.

Single-phase solid-state relays with a width of 22.5 mm

With its compact design and a width of just 22.5 mm, which stays the same even at currents of up to 88 A, the 3RF21 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Single-phase solid-state relays with a width of 45 mm

The solid-state relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to replace existing solid-state relays in existing arrangements. The connection of the control cable is as space-saving as the 22.5 mm design, as it is simply plugged on.

Three-phase solid-state relays with a width of 45 mm

With its compact design and a width of just 45 m, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

The three-phase solid-state relays are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

Selection notes

When selecting solid-state relays, in addition to information about the network, the load and the ambient conditions it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagrams

For more information see
www.siemens.com/solid-state-switching-devices

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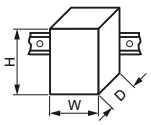
SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Overview

With its compact design and a width of just 22.5 mm, which stays the same even at currents of up to 88 A, the 3RF21 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Technical specifications

Type			3RF21..-1....	3RF21..-2....	3RF21..-3....
Dimensions (W x H x D)		mm	22.5 x 85 x 48	22.5 x 85 x 48	22.5 x 85 x 48
General data					
Ambient temperature					
• During operation, derating from 40 °C		°C	-25 ... + 60		
• During storage		°C	-55 ... + 80		
Installation altitude		m	0 ... 1000; derating from 1000		
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6		*g*	2		
Degree of protection			IP20		
Electromagnetic compatibility (EMC)					
• Emitted interference					
- Conducted interference voltage according to IEC 60947-4-3			Class A for industrial applications		
- Emitted, high-frequency interference voltage according to IEC 60947-4-3			Class B for residential, business and commercial applications		
• Interference immunity					
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4		kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5		kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Mounting					
• Screws[1]			2 x M4		
• Tightening torque		Nm	1.5		
Connection type			Screw terminals	Spring-type terminals	Ring terminal lug connections
Connection, main contacts					
• Conductor cross-sections					
- Solid		mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6)[2], 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve		mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables			2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Terminal screws			M4	--	M5
• Tightening torque		Nm lb.in	2 ... 2.5 7 ... 10.3	-- --	2.5 ... 2 10.3 ... 7
• Cable lugs			--	--	
- According to DIN 46234					5-2.5, 5-6, 5-10, 5-16, 5-25
- According to JIS C 2805					R 2-5, R 5.5-5, R 8-5, R 14-5
- Width, maximum		mm			12
Connection, auxiliary/control contacts					
• Conductor cross-sections		mm AWG	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12	0.5 ... 2.5 20 ... 12	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12
• Stripped length		mm	7	10	7
• Terminal screw			M3	--	M3
• Tightening torque		Nm lb.in	0.5 ... 0.6 4.5 ... 5.3	-- --	0.5 ... 0.6 4.5 ... 5.3

[1] Not included in the scope of supply.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF2120-.....	20	2.0	20	1.7	20	1.3	28.6	0.1	10
3RF2130-1....	30	1.1	30	0.79	30	0.56	44.2	0.5	10
3RF2150-1....	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF2150-2....	50	0.68	20	2.6	20	2.9	66	0.5	10
3RF2150-3....	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF2170-1....	70	0.40	50	0.77	50	0.6	94	0.5	10
3RF2190-1....	88	0.33	50	0.94	50	0.85	118	0.5	10
3RF2190-2....	88	0.33	20	2.8	20	3.5	118	0.5	10
3RF2190-3....	88	0.33	88	0.22	83	0.19	118	0.5	10

[1] The current I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see page 6/70, "More Information"). The minimum thickness values for the mounting surface must be observed.

Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF2120-.....	200	200
3RF2130-..A.2	300	450
3RF2130-..A.4	300	450
3RF2130-..A.5	300	450
3RF2130-..A.6	400	800
3RF2150-.....	600	1800
3RF2170-..A.2	1200	7200
3RF2170-..A.4	1200	7200
3RF2170-..A.5	1200	7200
3RF2170-..A.6	1150	6600
3RF2190-.....	1150	6600

Type		3RF21..-....2	3RF21..-....4	3RF21..-....5	3RF21..-....6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	1200		1600
Rate of voltage rise	V/µs	1000			

Type		3RF21..-...0.	3RF21..-...1.		3RF21..-...2.	3RF21..-...4.
Control circuit						
Method of operation		DC operation	AC/DC operation		AC operation	DC operation
Rated control supply voltage U_s	V	24	24 AC	24 DC	110 ... 230	4 ... 30
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %	--	50/60 ± 10 %	--
Control supply voltage, max.	V	30	26.5 AC	30 DC	253	30
Typical actuating current	mA	20/Low Power: 6.5[1]	20	20	15	20
Response voltage	V	15	14 AC	15 DC	90	4
Drop-out voltage	V	5	5 AC	5 DC	40	1
Operating times						
• ON-delay	ms	1 + max. one half-wave[2]	10 + max. one half-wave[2]		40 + max. one half-wave[2]	1 + max. one half-wave[2]
• OFF-delay	ms	1 + max. one half-wave	15 + max. one half-wave		40 + max. one half-wave	1 + max. one half-wave

[1] Applies to the version "Low Power" 3RF21 ..-.AA..-**0KN0**

[2] Only for zero-point switching devices.

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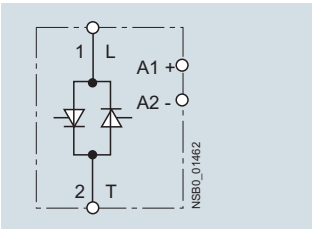
Solid-State Relays

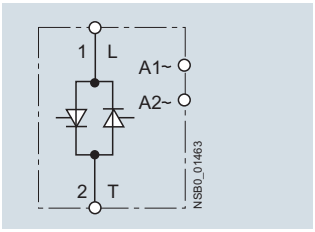
SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Circuit diagrams

DC control supply voltage



AC control supply voltage



Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC	A	**3RF2120-1AA02**		1	1 unit	41C
30		A	**3RF2130-1AA02**		1	1 unit	41C
50		A	**3RF2150-1AA02**		1	1 unit	41C
70		A	**3RF2170-1AA02**		1	1 unit	41C
90		B	**3RF2190-1AA02**		1	1 unit	41C
20	110 ... 230 AC	A	**3RF2120-1AA22**		1	1 unit	41C
30		A	**3RF2130-1AA22**		1	1 unit	41C
50		B	**3RF2150-1AA22**		1	1 unit	41C
70		B	**3RF2170-1AA22**		1	1 unit	41C
90		B	**3RF2190-1AA22**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF2120-1AA42**		1	1 unit	41C
30		A	**3RF2130-1AA42**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	A	**3RF2120-1AA04**		1	1 unit	41C
30		A	**3RF2130-1AA04**		1	1 unit	41C
50		A	**3RF2150-1AA04**		1	1 unit	41C
70		A	**3RF2170-1AA04**		1	1 unit	41C
90		A	**3RF2190-1AA04**		1	1 unit	41C
20	24 AC/DC	B	**3RF2150-1AA14**		1	1 unit	41C
20	110 ... 230 AC	A	**3RF2120-1AA24**		1	1 unit	41C
30		A	**3RF2130-1AA24**		1	1 unit	41C
50		B	**3RF2150-1AA24**		1	1 unit	41C
70		A	**3RF2170-1AA24**		1	1 unit	41C
90		B	**3RF2190-1AA24**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
70	24 DC Low Power	B	**3RF2170-1AA05-0KN0**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF2120-1AA45**		1	1 unit	41C
30		B	**3RF2130-1AA45**		1	1 unit	41C
50		B	**3RF2150-1AA45**		1	1 unit	41C
70		A	**3RF2170-1AA45**		1	1 unit	41C
90		B	**3RF2190-1AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, Rated operational voltage U_e 48 ... 600 V AC							
30	24 DC	A	**3RF2130-1AA06**		1	1 unit	41C
50		A	**3RF2150-1AA06**		1	1 unit	41C
70		B	**3RF2170-1AA06**		1	1 unit	41C
90		B	**3RF2190-1AA06**		1	1 unit	41C
30	110 ... 230 AC	B	**3RF2130-1AA26**		1	1 unit	41C
50		B	**3RF2150-1AA26**		1	1 unit	41C
70		B	**3RF2170-1AA26**		1	1 unit	41C
90		B	**3RF2190-1AA26**		1	1 unit	41C

3RF2120-1AA02

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm².

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Instantaneous switching · Rated operational voltage U_e 24 ... 230 V AC							
50	110 ... 230 AC	B	**3RF2150-1BA22**		1	1 unit	41C
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	B	**3RF2120-1BA04**		1	1 unit	41C
30		B	**3RF2130-1BA04**		1	1 unit	41C
50		B	**3RF2150-1BA04**		1	1 unit	41C
70		B	**3RF2170-1BA04**		1	1 unit	41C
90		B	**3RF2190-1BA04**		1	1 unit	41C
Instantaneous switching · Blocking voltage 1 600 V, Rated operational voltage U_e 48 ... 600 V AC							
50	24 DC	B	**3RF2150-1BA06**		1	1 unit	41C
Low noise[3] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
70	24 DC	B	**3RF2170-1CA04**		1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

3) See page 6/71.

Other rated control supply voltages on request.

Type current[1]	Rated control supply voltage U_s	DT	Spring-type terminals[2] / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC	A	**3RF2120-2AA02**		1	1 unit	41C
50		B	**3RF2150-2AA02**		1	1 unit	41C
90		B	**3RF2190-2AA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF2120-2AA22**		1	1 unit	41C
50		B	**3RF2150-2AA22**		1	1 unit	41C
90		B	**3RF2190-2AA22**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF2120-2AA42**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	A	**3RF2120-2AA04**		1	1 unit	41C
50		B	**3RF2150-2AA04**		1	1 unit	41C
90		B	**3RF2190-2AA04**		1	1 unit	41C
50	24 AC/DC	B	**3RF2150-2AA14**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF2120-2AA24**		1	1 unit	41C
50		B	**3RF2150-2AA24**		1	1 unit	41C
90		B	**3RF2190-2AA24**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 600 V AC							
20	4 ... 30 DC	B	**3RF2120-2AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, Rated operational voltage U_e 48 ... 600 V AC							
50	24 DC	B	**3RF2150-2AA06**		1	1 unit	41C
90		B	**3RF2190-2AA06**		1	1 unit	41C
50	110 ... 230 AC	B	**3RF2150-2AA26**		1	1 unit	41C
90		B	**3RF2190-2AA26**		1	1 unit	41C

3RF2120-2AA02

Online configurator see www.siemens.com/sirius/configurators

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm^2. Higher currents can be achieved by connecting two conductors per terminal.

Other rated control supply voltages on request.

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SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1]	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC	B	**3RF2120-3AA02**		1	1 unit	41C
50		B	**3RF2150-3AA02**		1	1 unit	41C
90		B	**3RF2190-3AA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF2120-3AA22**		1	1 unit	41C
50		B	**3RF2150-3AA22**		1	1 unit	41C
90		B	**3RF2190-3AA22**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	B	**3RF2120-3AA04**		1	1 unit	41C
50		B	**3RF2150-3AA04**		1	1 unit	41C
90		B	**3RF2190-3AA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF2120-3AA24**		1	1 unit	41C
50		B	**3RF2150-3AA24**		1	1 unit	41C
90		B	**3RF2190-3AA24**		1	1 unit	41C
90	4 ... 30 DC	B	**3RF2190-3AA44**		1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, Rated operational voltage U_e 48 ... 600 V AC							
50	24 DC	B	**3RF2150-3AA06**		1	1 unit	41C
90		B	**3RF2190-3AA06**		1	1 unit	41C
50	110 ... 230 AC	B	**3RF2150-3AA26**		1	1 unit	41C
90		B	**3RF2190-3AA26**		1	1 unit	41C

3RF2120-3AA02

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Version	DT	Spring-type terminals — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Screwdrivers for all SIRIUS devices with spring-type terminals Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
		Ring terminal lug connection				
Terminal covers for 3RF21 solid-state relays and 3RF23 solid-state contactors with ring terminal lug connection (After simple adaptation, this terminal cover can also be used for screw terminals).	A	**3RF2900-3PA88**		1	10 units	41C

3RA2908-1A

3RF2900-3PA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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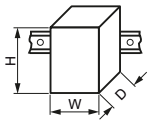
SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Overview

The solid-state relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to replace existing solid-state relays in existing arrangements. The connection of the control cable also saves space in much the same way as the 22.5 mm design, as it is simply plugged on.

Technical specifications

Type			3RF20..-1....	3RF20..-4....
Dimensions (W x H x D)		mm	45 x 58 x 48	45 x 58 x 48
General data				
Ambient temperature				
• During operation, derating from 40 °C		°C	-25 ... +60	
• During storage		°C	-55 ... +80	
Installation altitude		m	0 ... 1 000; derating from 1 000	
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15 /11	
Vibration resistance acc. to IEC 60068-2-6		*g*	2	
Degree of protection			IP20	
Electromagnetic compatibility (EMC)				
• Emitted interference				
- Conducted interference voltage according to IEC 60947-4-3			Class A for industrial applications	
- Emitted, high-frequency interference voltage according to IEC 60947-4-3			Class B for residential, business and commercial applications	
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2	
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1	
- Burst acc. to IEC 61000-4-4		kV	2/5.0 kHz; behavior criterion 2	
- Surge acc. to IEC 61000-4-5		kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2	
Mounting				
• Screws[1]			2 x M4	
• Tightening torque		Nm	1.5	
Connection type			Screw terminals	Spring-type terminals
Connection, main contacts				
• Conductor cross-sections				
- Solid		mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	--
- Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6)[2], 1 x 10	--
- Solid or stranded, AWG cables			2 x (AWG 14 ... 10)	--
• Terminal screw			M4	--
• Tightening torque		Nm lb.in	2 ... 2.5 7 ... 10.3	-- --
Connection, auxiliary/control contacts				
• Conductor cross-sections		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0), AWG 20 ... 12	0.5 ... 2.5, AWG 20 ... 12
• Stripped length		mm	7	10
• Terminal screw			M3	--
• Tightening torque		Nm lb.in	0.5 ... 0.6 4.5 ... 5.3	-- --

1) Not included in the scope of supply.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF2020-1.A..	20	2.0	20	1.7	20	1.3	28.6	0.1	10
3RF2030-1.A..	30	1.1	30	0.79	30	0.56	44.2	0.5	10
3RF2050-1.A..	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF2070-1.A..	70	0.40	50	0.77	50	0.6	94	0.5	10
3RF2090-1.A..	88	0.33	50	0.94	50	0.85	118	0.5	10

[1] The current I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see page 6/70, "More Information"). The minimum thickness values for the mounting surface must be observed.

Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF2020-1.A..	200	200
3RF2030-1.A.2	300	450
3RF2030-1.A.4	300	450
3RF2030-1.A.6	400	800
3RF2050-1.A..	600	1 800
3RF2070-1.A.2	1 200	7 200
3RF2070-1.A.4	1 200	7 200
3RF2070-1.A.5	1 200	7 200
3RF2070-1.A.6	1 150	6 600
3RF2090-1.A..	1 150	6 600

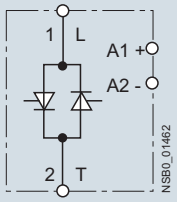
Type		3RF20.0-1.A.2	3RF20.0-1.A.4	3RF20.0-1.A.5	3RF20.0-1.A.6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	1 200		1 600
Rate of voltage rise	V/µs	1 000			

Type		3RF20.0-1.A0.	3RF20.0-1.A2.	3RF20.0-1.A4.
Control circuit				
Method of operation		DC operation	AC operation	DC operation
Rated control supply voltage U_S	V	24	110 … 230	4 … 30
Rated frequ. of the control supply voltage	Hz	--	50/60 ± 10 %	--
Control supply voltage, max.	V	30	253	30
Typical actuating current	mA	20	15	20
Response voltage	V	15	90	4
Drop-out voltage	V	5	40	1
Operating times				
• ON-delay	ms	1 + max. one half-wave[1]	40 + max. one half-wave[1]	1 + max. one half-wave[1]
• OFF-delay	ms	1 + max. one half-wave	40 + max. one half-wave	1 + max. one half-wave

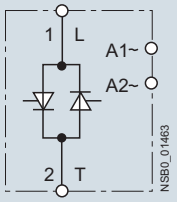
[1] Only for zero-point switching devices.

Circuit diagrams

DC control supply voltage



AC control supply voltage



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Selection and ordering data

	Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	V							
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC									
	20	24 DC	A		**3RF2020-1AA02**		1	1 unit	41C
	30		A		**3RF2030-1AA02**		1	1 unit	41C
	50		A		**3RF2050-1AA02**		1	1 unit	41C
	70		A		**3RF2070-1AA02**		1	1 unit	41C
	90		A		**3RF2090-1AA02**		1	1 unit	41C
	20	110 ... 230 AC	A		**3RF2020-1AA22**		1	1 unit	41C
	30		A		**3RF2030-1AA22**		1	1 unit	41C
	50		B		**3RF2050-1AA22**		1	1 unit	41C
	70		B		**3RF2070-1AA22**		1	1 unit	41C
	90		B		**3RF2090-1AA22**		1	1 unit	41C
3RF2020-1AA02	20	4 ... 30 DC	B		**3RF2020-1AA42**		1	1 unit	41C
	30		B		**3RF2030-1AA42**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC									
	20	24 DC	A		**3RF2020-1AA04**		1	1 unit	41C
	30		A		**3RF2030-1AA04**		1	1 unit	41C
	50		A		**3RF2050-1AA04**		1	1 unit	41C
	70		A		**3RF2070-1AA04**		1	1 unit	41C
	90		A		**3RF2090-1AA04**		1	1 unit	41C
	20	110 ... 230 AC	B		**3RF2020-1AA24**		1	1 unit	41C
	30		B		**3RF2030-1AA24**		1	1 unit	41C
	50		B		**3RF2050-1AA24**		1	1 unit	41C
	70		B		**3RF2070-1AA24**		1	1 unit	41C
	90		B		**3RF2090-1AA24**		1	1 unit	41C
	50	4 ... 30 DC	A		**3RF2050-1AA44**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC									
	20	4 ... 30 DC	B		**3RF2020-1AA45**		1	1 unit	41C
	50		B		**3RF2050-1AA45**		1	1 unit	41C
	70		A		**3RF2070-1AA45**		1	1 unit	41C
	90		B		**3RF2090-1AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC									
	30	24 DC	B		**3RF2030-1AA06**		1	1 unit	41C
	50		B		**3RF2050-1AA06**		1	1 unit	41C
	70		B		**3RF2070-1AA06**		1	1 unit	41C
	90		B		**3RF2090-1AA06**		1	1 unit	41C
	30	110 ... 230 AC	B		**3RF2030-1AA26**		1	1 unit	41C
	50		B		**3RF2050-1AA26**		1	1 unit	41C
	70		B		**3RF2070-1AA26**		1	1 unit	41C
	90		B		**3RF2090-1AA26**		1	1 unit	41C
Instantaneous switching Rated operational voltage U_e 48 ... 460 V AC									
	30	24 DC	B		**3RF2030-1BA04**		1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

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Solid-State Relays

SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

	Type current[1]	Rated control supply voltage U_s	DT	Screw terminals + spring-type terminals (control current side)	PU (UNIT, SET, M)	PS*	PG
				Configurator			
	A	V		Article No. / Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
	50	24 DC	B	**3RF2050-4AA02**	1	1 unit	41C

3RF2050-4AA02

Online configurator see www.siemens.com/sirius/configurators

[1] The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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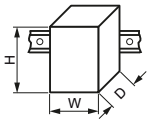
SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

Overview

With its compact design and a width of just 45 m, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Important features:
- LED display
- Variety of connection methods
- Plug-in control connection
- Degree of protection IP20
- Zero-point switching
- Two- or three-phase controlled

Technical specifications

Type			3RF22..-1....	3RF22..-2....	3RF22..-3....
Dimensions (W x H x D)		mm	45 x 95 x 47	45 x 95 x 47	45 x 95 x 47
General data					
Ambient temperature					
• During operation, derating from 40 °C		°C	-25 ... + 60		
• During storage		°C	-55 ... + 80		
Installation altitude		m	0 ... 1 000; > 1 000 ask Technical Assistance		
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6		*g*	2		
Degree of protection			IP20		
Insulation strength at 50/60 Hz (main/control circuit to floor)		V rms	4000		
Electromagnetic compatibility (EMC)					
• Emitted interference - Conducted interference voltage according to IEC 60947-4-3			Class A for industrial applications[1]		
• Interference immunity - Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4		kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5		kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Mounting					
• Screws[2]			2 x M4		
• Tightening torque		Nm	1.5		
Connection type			Screw terminals	Spring-type terminals	Ring terminal lug connections
Connection, main contacts					
• Conductor cross-sections					
- Solid		mm^2	2 x (1.5 ... 2.5)[3], 2 x (2.5 ... 6)[3]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[3], 2 x (2.5 ... 6)[3], 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve		mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables			2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Stripped length		mm	10	10	
• Terminal screws			M4	--	M5
- Tightening torque, ∅ 5 ... 6 mm, PZ 2		Nm lb.in	2 ... 2.5 18 ... 22		2.5 ... 2 18 ... 22
• Cable lugs			--	--	
- According to DIN 46234					5-2.5 ... 5-25
- According to JIS C 2805					R 2-5 ... R 14-5
- Width, maximum		mm			12
Connection, auxiliary/control contacts					
• Conductor cross-sections, with or without end sleeve		mm AWG	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12	0.5 ... 2.5 20 ... 12	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12
• Stripped length		mm	7	10	7
• Terminal screw			M3	--	M3
- Tightening torque, ∅ 3.5, PZ 1		Nm lb.in	0.5 ... 0.6 4.5 ... 5.3		0.5 ... 0.6 4.5 ... 5.3

1) These products were built as Class A devices. The use of these devices in residential areas could result in lead in radio interference. In this case these may be required to introduce additional interference suppression measures.

2) Not included in the scope of supply.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Max. off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF2230-. AB..	30	0.57	30	0.57	30	0.44	81	0.5	10
3RF2255-1AB..	55	0.18	50	0.27	50	0.19	151	0.5	10
3RF2255-2AB..			20	1.83	20	1.58			
3RF2255-3AB..			50	0.27	50	0.19			
3RF2230-. AC..	30	0.33	30	0.33	30	0.25	122	0.5	10
3RF2255-1AC..	55	0.09	50	0.15	50	0.1	226	0.5	10
3RF2255-2AC..			20	1.19	20	1.02			
3RF2255-3AC..			50	0.15	50	0.1			

[1] The current I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see page 6/70, "More Information"). The minimum thickness values for the mounting surface must be observed.

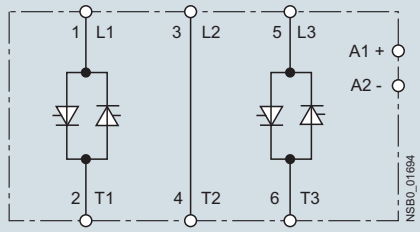
Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF2230-....5	300	450
3RF2255-....5	600	1800

Type		3RF22..-.AB.5	3RF22..-.AC.5
Main circuit			
Controlled phases		2-phase	3-phase
Rated operational voltage U_e	V AC	48 ... 600	48 ... 600
• Operating range	V AC	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1 200	1 200
Rate of voltage rise	V/µs	1 000	1 000

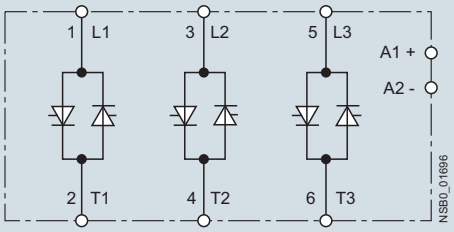
Type		3RF22..-.A.3.	3RF22..-.A.4.
Control circuit			
Method of operation		AC operation	DC operation
Rated control supply voltage U_s	V	110	4 ... 30
Rated frequency of the control supply voltage	Hz	50/60 ± 10 %	--
Control supply voltage, max.	V	121	30
Typical actuating current	mA	15	30
Response voltage	V	90	4
Drop-out voltage	V	< 40	1
Operating times			
• ON-delay	ms	40 + max. one half-wave	1 + max. one half-wave
• OFF-delay	ms	40 + max. one half-wave	1 + max. one half-wave

Circuit diagrams

Two-phase controlled, DC control supply voltage



Three-phase controlled, DC control supply voltage



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Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching, Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	110 AC	B	**3RF2230-1AB35**		1	1 unit	41C
55		B	**3RF2255-1AB35**		1	1 unit	41C
30	4 ... 30 DC	B	**3RF2230-1AB45**		1	1 unit	41C
55		B	**3RF2255-1AB45**		1	1 unit	41C
Three-phase controlled							
30	110 AC	B	**3RF2230-1AC35**		1	1 unit	41C
55		B	**3RF2255-1AC35**		1	1 unit	41C
30	4 ... 30 DC	A	**3RF2230-1AC45**		1	1 unit	41C
55		B	**3RF2255-1AC45**		1	1 unit	41C

3RF2230-1AB45

Type current[1]	Rated control supply voltage U_s	DT	Spring-type terminals[3] / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching, Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	4 ... 30 DC	B	**3RF2230-2AB45**		1	1 unit	41C
55		B	**3RF2255-2AB45**		1	1 unit	41C
Three-phase controlled							
30	4 ... 30 DC	B	**3RF2230-2AC45**		1	1 unit	41C
55		B	**3RF2255-2AC45**		1	1 unit	41C

3RF2230-2AB45

Type current[1]	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching, Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	4 ... 30 DC	B	**3RF2230-3AB45**		1	1 unit	41C
55		B	**3RF2255-3AB45**		1	1 unit	41C
Three-phase controlled							
30	4 ... 30 DC	B	**3RF2230-3AC45**		1	1 unit	41C
55		B	**3RF2255-3AC45**		1	1 unit	41C

3RF2230-3AB45

Online configurator see www.siemens.com/sirius/configurators

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that the version with an M4 screw connection can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

3) Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm^2. Higher currents can be achieved by connecting two conductors per terminal.

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General data

Overview

Solid-state contactors (with heat sink)

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on support plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building management systems. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in 2 different versions:

- 3RF23 single-phase solid-state contactors
- 3RF24 three-phase solid-state contactors

Single-phase versions

The 3RF23 solid-state contactors can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Version for inductive loads, "instantaneous switching"

In this version the solid-state contactor is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to IEC 60947-4-3.

Special "Short-circuit proof" version

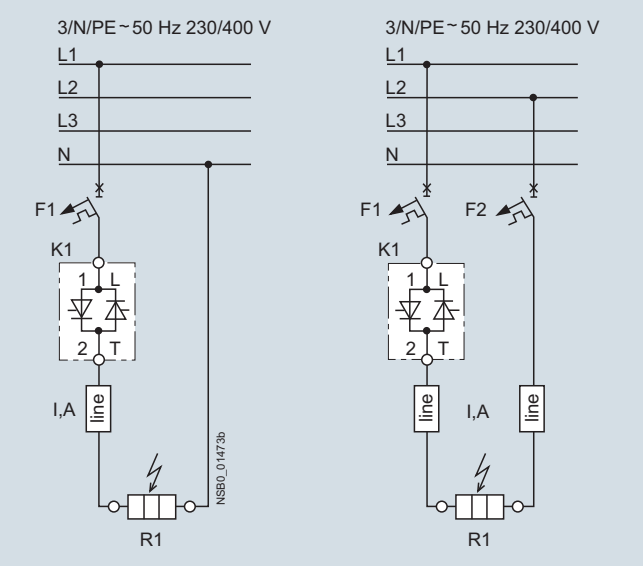
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit proof feeder.

In order to achieve problem-free short-circuit protection by means of miniature circuit breakers, however, certain boundary conditions must be observed. As the magnitude and duration of the short-circuit current are determined not only by the short-circuit breaking response of the miniature circuit breaker but also the properties of the wiring system, such as the internal resistance of the input to the network and damping by controls and cables, particular attention must also be paid to these parameters. The necessary cable lengths are therefore shown for the main factor, the line resistance, in the table below.

The following miniature circuit breakers with a B characteristic and 10 kA or 6 kA breaking capacity protect the 3RF23 ..-.DA.. solid-state contactors in the event of short circuits on the load and the specified conductor cross-sections and lengths:

Rated current of the miniature circuit breaker	Example of type[1)]	Max. conductor cross-section	Minimum cable length from contactor to load
6 A	5SY4 106-6	1 mm^2	5 m
10 A	5SY4 110-6	1.5 mm^2	8 m
16 A	5SY4 116-6	1.5 mm^2	12 m
16 A	5SY4 116-6	2.5 mm^2	20 m
20 A	5SY4 120-6	2.5 mm^2	20 m
25 A	5SY4 125-6	2.5 mm^2	26 m

1) The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!



Solid-state contactor protection

The setup and installation above can also be used for the solid-state relays with a I^2t value of at least 6 600 A^{2}s.

Three-phase versions

The three-phase solid-state contactors for resistive loads up to 50 A are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

The converter function module can be snapped onto both versions for the simple power control of AC loads by means of analog signals.

- Check the correct contactor size with the aid of the rated current diagram, taking account of the installation conditions

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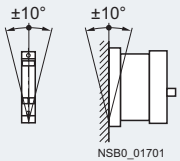
Technical specifications

Type		3RF23..-.A...	3RF23..-.B...	3RF23..-.C...	3RF23..-.D...
Dimensions (W x H x D)		See page 6/86			
General data					
Ambient temperature					
• During operation, derating from 40 °C	°C	-25 ... +60			
• During storage	°C	-55 ... +80			
Installation altitude	m	0 ... 1000; derating from 1 000			
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11			
Vibration resistance acc. to IEC 60068-2-6	*g*	2			
Degree of protection		IP20			
Electromagnetic compatibility (EMC)					
• Emitted interference according to IEC 60947-4-3					
- Conducted interference voltage		Class A for industrial applications		Class A for industrial applications; Class B for residential, business and commercial applications up to 16 A, AC-51 Low Noise	Class A for industrial applications
- Emitted, high-frequency interference voltage		Class B for residential, business and commercial applications			
• Interference immunity					
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2			
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1			
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2			
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2			

Type		3RF23..-1....	3RF23..-2....	3RF23..-3....
General data				
Connection type		Screw terminals	Spring-type terminals	Ring terminal lug connections
Connection, main contacts				
• Conductor cross-section				
- Solid	mm^2	2 x (1.5 ... 2.5)[1], 2 x (2.5 ... 6)[1]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Terminal screws		M4	--	M5
• Tightening torque	Nm	2 ... 2.5	--	2 ... 2.5
	lb.in	7 ... 10.3	--	7 ... 10.3
• Cable lugs		--	--	
- According to DIN 46234				5-2.5, 5-6, 5-10, 5-16, 5-25
- According to JIS C 2805				R 2-5, R 5.5-5, R 8-5, R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-section	mm	1 x (0.5 ... 2.5)[1], 2 x (0.5 ... 1.0)	0.5 ... 2.5	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)
	AWG	AWG 20 ... 12	AWG 20 ... 12	AWG 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
• Tightening torque	Nm	0.5 ... 0.6	--	0.5 ... 0.6
	lb.in	4.5 ... 5.3	--	4.5 ... 5.3
Grounding screw[2]				
• Size (standard screw)		M4		
Permissible mounting position				

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) The screw is not included in the scope of supply.

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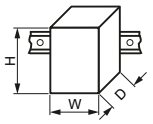
SIRIUS 3RF23 solid-state contactors, single-phase

Type		3RF23..-....2	3RF23..-....4	3RF23..-....5	3RF23..-....6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	1200		1600
Rate of voltage rise	V/µs	1000			

Type		3RF23..-...0.	3RF23..-...1.		3RF23..-...2	3RF23..-...4.
Control circuit						
Method of operation		DC operation	AC/DC operation		AC operation	DC operation
Rated control supply voltage U_s	V	24 DC	24 AC	24 DC	110 ... 230 AC	4 ... 30 DC
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %	--	50/60 ± 10 %	--
Actuating voltage, max.	V	30	26.5 AC	30 DC	253	30
Typical actuating current	mA	20/Low Power: <10[1]	20	20	15	20
Response voltage	V	15	14 AC	15 DC	90	4
Drop-out voltage	V	5	5 AC	55 DC	40	1
Operating times						
• ON-delay	ms	1 + max. one half-wave[2]	10 + max. one half-wave[2]		40 + max. one half-wave[2]	1 + max. one half-wave[2]
• OFF-delay	ms	1 + max. one half-wave	15 + max. one half-wave		40 + max. one half-wave	1 + max. one half-wave

[1] Applies to the version "Low Power" 3RF23 ..-.AA..-**0KN0**
[2] Only for zero-point switching devices.

Type	**Type current[1]** I_{AC-51}	**Dimensions (W x H x D)** (including heat sink)
	A	mm
Main circuit		
3RF2310-.AA..	10.5	22.5 x 100 x 89
3RF2320-.AA.. **3RF2320-.CA..** **3RF2320-.DA..**	20	22.5 x 100 x 135.5
3RF2330-.AA.. **3RF2330-.CA..**	30	30 x 100 x 151
3RF2330-.DA..	30	22.5 x 100 x 135.5
3RF2340-.AA..	40	67 x 100 x 151
3RF2350-.AA..	50	67 x 100 x 151
3RF2370-.AA..	70	135 x 100 x 157.5
3RF2390-.AA..	88	180 x 200 x 157.5



[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

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Type	Type current AC-51[1] For I_{max} at 40 °C	Acc. to IEC 60947-4-3 at 40 °C	Acc. to UL/CSA at 50 °C	Power loss at I_{max}	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	A	A	A	W	A	mA	A	A^2s
Main circuit								
3RF2310-.AA.2	10.5	7.5	9.6	11	0.1	10	200	200
3RF2310-.AA.4							200	200
3RF2310-.AA.5							200	200
3RF2310-.AA.6							400	800
3RF2320-.AA.2	20	13.2	17.6	20	0.5	10	600	1800
3RF2320-.AA.4						10	600	1800
3RF2320-.AA.5						10	600	1800
3RF2320-.AA.6						10	600	1800
3RF2320-.CA.2						25	600	1800
3RF2320-.CA.4						25	600	1800
3RF2320-.DA.2						10	1150	6600
3RF2320-.DA.4						10	1150	6600
3RF2330-.AA.2	30	22	27	33	0.5	10	600	1800
3RF2330-.AA.4						10	600	1800
3RF2330-.AA.5						10	600	1800
3RF2330-.AA.6						10	600	1800
3RF2330-.CA.2						25	600	1800
3RF2330-.DA.4						10	1150	6600
3RF2340-.AA.2	40	33	36	44	0.5	10	1200	7200
3RF2340-.AA.4							1200	7200
3RF2340-.AA.5							1200	7200
3RF2340-.AA.6							1150	6600
3RF2350-.AA.2	50	36	45	54	0.5	10	1150	6600
3RF2350-.AA.4								
3RF2350-.AA.5								
3RF2350-.AA.6								
3RF2370-.AA.2	70	70	62	83	0.5	10	1150	6600
3RF2370-.AA.4								
3RF2370-.AA.5								
3RF2370-.AA.6								
3RF2390-.AA.2	88	88	80	117	0.5	10	1150	6600
3RF2390-.AA.4								
3RF2390-.AA.5								
3RF2390-.AA.6								

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

Type	Type current AC-51[1] For I_{max} at 40 °C	Acc. to IEC 60947-4-3 for 40 °C	Acc. to. UL/CSA at 50 °C	Type current AC-15 10 x I_e for 60 ms	Parameters	Power loss at I_{max}	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	A	A	A	A		W	A	mA	A	A^2s
Main circuit										
3RF2310-.BA.2	10.5	7.5	9.6	6	1200 1/h 50 % ON period	11	0.1	10	200	200
3RF2310-.BA.4									200	200
3RF2310-.BA.6									400	800
3RF2320-.BA.2	20	13.2	17.6	12	1200 1/h 50 % ON period	20	0.5	10	600	1800
3RF2320-.BA.4										
3RF2320-.BA.6										
3RF2330-.BA.2	30	22	27	15	1200 1/h 50 % ON period	33	0.5	10	600	1800
3RF2330-.BA.4										
3RF2330-.BA.6										
3RF2340-.BA.2	40	33	36	20	1200 1/h 50 % ON period	44	0.5	10	1200	7200
3RF2340-.BA.4									1200	7200
3RF2340-.BA.6									1150	6600
3RF2350-.BA.2	50	36	45	25	1200 1/h 50 % ON period	54	0.5	10	1150	6600
3RF2350-.BA.4										
3RF2350-.BA.6										
3RF2370-.BA.2	70	70	62	27.5	1200 1/h 50 % ON period	83	0.5	10	1150	6600
3RF2370-.BA.4										
3RF2370-.BA.6										
3RF2390-.BA.2	88	88	80	30	1200 1/h 50 % ON period	117	0.5	10	1150	6600
3RF2390-.BA.4										
3RF2390-.BA.6										

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

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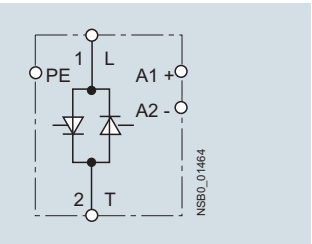
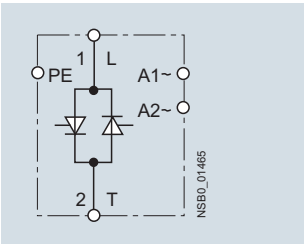
SIRIUS 3RF23 solid-state contactors, single-phase

Circuit diagrams

DC control supply voltage



AC control supply voltage



Selection and ordering data

Selection notes

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions. As the solid-state contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for solid-state relays.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load

	Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	V		Article No. / Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
3RF2310-1	10.5	24 DC	A	**3RF2310-1AA02**	1	1 unit	41C
	20		A	**3RF2320-1AA02**	1	1 unit	41C
	30		A	**3RF2330-1AA02**	1	1 unit	41C
	40		A	**3RF2340-1AA02**	1	1 unit	41C
	50		A	**3RF2350-1AA02**	1	1 unit	41C
	20	24 DC Low Power	A	**3RF2320-1AA02-0KN0**	1	1 unit	41C
	10.5	24 AC/DC	A	**3RF2310-1AA12**	1	1 unit	41C
	10.5	110 ... 230 AC	A	**3RF2310-1AA22**	1	1 unit	41C
	20		A	**3RF2320-1AA22**	1	1 unit	41C
	30		A	**3RF2330-1AA22**	1	1 unit	41C
	40		B	**3RF2340-1AA22**	1	1 unit	41C
	50		A	**3RF2350-1AA22**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
3RF2320-1	10.5	24 DC	A	**3RF2310-1AA04**	1	1 unit	41C
	20		A	**3RF2320-1AA04**	1	1 unit	41C
	30		A	**3RF2330-1AA04**	1	1 unit	41C
	40		A	**3RF2340-1AA04**	1	1 unit	41C
	50		A	**3RF2350-1AA04**	1	1 unit	41C
	10.5	24 DC Low Power	A	**3RF2310-1AA04-0KN0**	1	1 unit	41C
	10.5	24 AC/DC	A	**3RF2310-1AA14**	1	1 unit	41C
	20		B	**3RF2320-1AA14**	1	1 unit	41C
	30		A	**3RF2330-1AA14**	1	1 unit	41C
	40		B	**3RF2340-1AA14**	1	1 unit	41C
	50		B	**3RF2350-1AA14**	1	1 unit	41C
	10.5	110 ... 230 AC	A	**3RF2310-1AA24**	1	1 unit	41C
	20		A	**3RF2320-1AA24**	1	1 unit	41C
	30		A	**3RF2330-1AA24**	1	1 unit	41C
	40		A	**3RF2340-1AA24**	1	1 unit	41C
	50		A	**3RF2350-1AA24**	1	1 unit	41C
	10.5	4 ... 30 DC	A	**3RF2310-1AA44**	1	1 unit	41C
	20		A	**3RF2320-1AA44**	1	1 unit	41C
	30		A	**3RF2330-1AA44**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

Other rated control supply voltages on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.			
Zero-point switching · Rated operational voltage U_e 48 ... 600 V AC						
30	110 ... 230 AC	B	**3RF2330-1AA25**	1	1 unit	41C
10.5	4 ... 30 DC	B	**3RF2310-1AA45**	1	1 unit	41C
20		A	**3RF2320-1AA45**	1	1 unit	41C
30		A	**3RF2330-1AA45**	1	1 unit	41C
40		A	**3RF2340-1AA45**	1	1 unit	41C
50		A	**3RF2350-1AA45**	1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC						
10.5	24 DC	B	**3RF2310-1AA06**	1	1 unit	41C
20		A	**3RF2320-1AA06**	1	1 unit	41C
30		A	**3RF2330-1AA06**	1	1 unit	41C
40		B	**3RF2340-1AA06**	1	1 unit	41C
50		B	**3RF2350-1AA06**	1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF2310-1AA26**	1	1 unit	41C
20		B	**3RF2320-1AA26**	1	1 unit	41C
30		B	**3RF2330-1AA26**	1	1 unit	41C
40		B	**3RF2340-1AA26**	1	1 unit	41C
50		B	**3RF2350-1AA26**	1	1 unit	41C

3RF2340-1

Low noise[2] · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC						
20	24 DC	B	**3RF2320-1CA02**	1	1 unit	41C
30		B	**3RF2330-1CA02**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF2320-1CA22**	1	1 unit	41C

3RF2320-1

Low noise[2] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC						
20	24 DC	B	**3RF2320-1CA04**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF2320-1CA24**	1	1 unit	41C
20	4 ... 30 DC	A	**3RF2320-1CA44**	1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC						
20	24 DC	A	**3RF2320-1DA02**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF2320-1DA22**	1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC						
20	24 DC	A	**3RF2320-1DA04**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF2320-1DA24**	1	1 unit	41C
20	4 ... 30 DC	A	**3RF2320-1DA44**	1	1 unit	41C
30		A	**3RF2330-1DA44**	1	1 unit	41C

3RF2320-1

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

2) See page 6/84.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Solid-State Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	A	V		Article No. — Price per PU			
Instantaneous switching Rated operational voltage U_e 24 ... 230 V AC								
3RF2310-1	10.5	6	24 DC	A	**3RF2310-1BA02**	1	1 unit	41C
	20	12		A	**3RF2320-1BA02**	1	1 unit	41C
	30	15		B	**3RF2330-1BA02**	1	1 unit	41C
	40	20		B	**3RF2340-1BA02**	1	1 unit	41C
	50	25		B	**3RF2350-1BA02**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA02**	1	1 unit	41C
	50	30		B	**3RF2390-1BA02**	1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF2310-1BA22**	1	1 unit	41C
	20	12		B	**3RF2320-1BA22**	1	1 unit	41C
	30	15		B	**3RF2330-1BA22**	1	1 unit	41C
	40	20		B	**3RF2340-1BA22**	1	1 unit	41C
	50	25		B	**3RF2350-1BA22**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA22**	1	1 unit	41C
	50	30		B	**3RF2390-1BA22**	1	1 unit	41C
Instantaneous switching Rated operational voltage U_e 48 ... 460 V AC								
3RF2320-1	10.5	6	24 DC	A	**3RF2310-1BA04**	1	1 unit	41C
	20	12		A	**3RF2320-1BA04**	1	1 unit	41C
	30	15		A	**3RF2330-1BA04**	1	1 unit	41C
	40	20		B	**3RF2340-1BA04**	1	1 unit	41C
	50	25		B	**3RF2350-1BA04**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA04**	1	1 unit	41C
	50	30		B	**3RF2390-1BA04**	1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF2310-1BA24**	1	1 unit	41C
	20	12		B	**3RF2320-1BA24**	1	1 unit	41C
	30	15		B	**3RF2330-1BA24**	1	1 unit	41C
	40	20		B	**3RF2340-1BA24**	1	1 unit	41C
	50	25		B	**3RF2350-1BA24**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA24**	1	1 unit	41C
	50	30		B	**3RF2390-1BA24**	1	1 unit	41C
	20	12	4 ... 30 DC	B	**3RF2320-1BA44**	1	1 unit	41C
	30	15		B	**3RF2330-1BA44**	1	1 unit	41C
	50	25		B	**3RF2350-1BA44**	1	1 unit	41C
Instantaneous switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC								
3RF2340-1	10.5	6	24 DC	B	**3RF2310-1BA06**	1	1 unit	41C
	20	12		A	**3RF2320-1BA06**	1	1 unit	41C
	30	15		B	**3RF2330-1BA06**	1	1 unit	41C
	40	20		B	**3RF2340-1BA06**	1	1 unit	41C
	50	25		B	**3RF2350-1BA06**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA06**	1	1 unit	41C
	50	30		B	**3RF2390-1BA06**	1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF2310-1BA26**	1	1 unit	41C
	20	12		B	**3RF2320-1BA26**	1	1 unit	41C
	30	15		B	**3RF2330-1BA26**	1	1 unit	41C
	40	20		B	**3RF2340-1BA26**	1	1 unit	41C
	50	25		B	**3RF2350-1BA26**	1	1 unit	41C
	50	27.5		B	**3RF2370-1BA26**	1	1 unit	41C
	50	30		B	**3RF2390-1BA26**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

2) Utilization category AC-15: Electromagnetic loads, e.g. valves according to IEC 60947-5-1. Parameters: max. 1200 1/h, 50 % ON period, 10-times inrush current for 60 ms.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	V		Article No.			
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
3RF2320-2	10.5	24 DC	B	**3RF2310-2AA02**	1	1 unit	41C
	20		A	**3RF2320-2AA02**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF2310-2AA22**	1	1 unit	41C
	20		B	**3RF2320-2AA22**	1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
	10.5	24 DC	A	**3RF2310-2AA04**	1	1 unit	41C
	20		A	**3RF2320-2AA04**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF2310-2AA24**	1	1 unit	41C
	20		B	**3RF2320-2AA24**	1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC							
	10.5	24 DC	B	**3RF2310-2AA06**	1	1 unit	41C
	20		A	**3RF2320-2AA06**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF2310-2AA26**	1	1 unit	41C
	20		B	**3RF2320-2AA26**	1	1 unit	41C
Low noise[2] · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
	20	24 DC	B	**3RF2320-2CA02**	1	1 unit	41C
	20	110 ... 230 AC	B	**3RF2320-2CA22**	1	1 unit	41C
Low Noise[2] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
	20	24 DC	B	**3RF2320-2CA04**	1	1 unit	41C
	20	110 ... 230 AC	B	**3RF2320-2CA24**	1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
	20	110 ... 230 AC	B	**3RF2320-2DA22**	1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
	20	24 DC	B	**3RF2320-2DA04**	1	1 unit	41C
	20	110 ... 230 AC	B	**3RF2320-2DA24**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

2) See page 6/84.

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
3RF2350-3							
10.5	24 DC	B	**3RF2310-3AA02**		1	1 unit	41C
20		B	**3RF2320-3AA02**		1	1 unit	41C
30		B	**3RF2330-3AA02**		1	1 unit	41C
40		B	**3RF2340-3AA02**		1	1 unit	41C
50		B	**3RF2350-3AA02**		1	1 unit	41C
70		A	**3RF2370-3AA02**		1	1 unit	41C
88		B	**3RF2390-3AA02**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF2310-3AA22**		1	1 unit	41C
20		B	**3RF2320-3AA22**		1	1 unit	41C
30		B	**3RF2330-3AA22**		1	1 unit	41C
40		B	**3RF2340-3AA22**		1	1 unit	41C
50		B	**3RF2350-3AA22**		1	1 unit	41C
70		B	**3RF2370-3AA22**		1	1 unit	41C
88		B	**3RF2390-3AA22**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
3RF2330-3, covers optional							
10.5	24 DC	B	**3RF2310-3AA04**		1	1 unit	41C
20		B	**3RF2320-3AA04**		1	1 unit	41C
30		A	**3RF2330-3AA04**		1	1 unit	41C
40		B	**3RF2340-3AA04**		1	1 unit	41C
50		A	**3RF2350-3AA04**		1	1 unit	41C
70		A	**3RF2370-3AA04**		1	1 unit	41C
88		A	**3RF2390-3AA04**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF2310-3AA24**		1	1 unit	41C
20		B	**3RF2320-3AA24**		1	1 unit	41C
30		B	**3RF2330-3AA24**		1	1 unit	41C
40		B	**3RF2340-3AA24**		1	1 unit	41C
50		B	**3RF2350-3AA24**		1	1 unit	41C
70		B	**3RF2370-3AA24**		1	1 unit	41C
88		B	**3RF2390-3AA24**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF2320-3AA44**		1	1 unit	41C
30		B	**3RF2330-3AA44**		1	1 unit	41C
50		B	**3RF2350-3AA44**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 600 V AC							
40	4 ... 30 DC	B	**3RF2340-3AA45**		1	1 unit	41C
70		A	**3RF2370-3AA45**		1	1 unit	41C
88		B	**3RF2390-3AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC							
10.5	24 DC	B	**3RF2310-3AA06**		1	1 unit	41C
20		B	**3RF2320-3AA06**		1	1 unit	41C
30		B	**3RF2330-3AA06**		1	1 unit	41C
40		B	**3RF2340-3AA06**		1	1 unit	41C
50		B	**3RF2350-3AA06**		1	1 unit	41C
70		B	**3RF2370-3AA06**		1	1 unit	41C
88		B	**3RF2390-3AA06**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF2310-3AA26**		1	1 unit	41C
20		B	**3RF2320-3AA26**		1	1 unit	41C
30		B	**3RF2330-3AA26**		1	1 unit	41C
40		B	**3RF2340-3AA26**		1	1 unit	41C
50		B	**3RF2350-3AA26**		1	1 unit	41C
70		B	**3RF2370-3AA26**		1	1 unit	41C
88		B	**3RF2390-3AA26**		1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

Other rated control supply voltages on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	A	V						
Instantaneous switching · Rated operational voltage U_e 24 ... 230 V AC								
70	27.5	24 DC	B	**3RF2370-3BA02**		1	1 unit	41C
88	30		B	**3RF2390-3BA02**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF2370-3BA22**		1	1 unit	41C
88	30		B	**3RF2390-3BA22**		1	1 unit	41C
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V AC								
70	27.5	24 DC	B	**3RF2370-3BA04**		1	1 unit	41C
88	30		B	**3RF2390-3BA04**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF2370-3BA24**		1	1 unit	41C
88	30		B	**3RF2390-3BA24**		1	1 unit	41C
Instantaneous switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC								
70	27.5	24 DC	B	**3RF2370-3BA06**		1	1 unit	41C
88	30		B	**3RF2390-3BA06**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF2370-3BA26**		1	1 unit	41C
88	30		B	**3RF2390-3BA26**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC								
20	--	24 DC	B	**3RF2320-3DA02**		1	1 unit	41C
20	--	110 ... 230 AC	B	**3RF2320-3DA22**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC								
20	--	24 DC	B	**3RF2320-3DA04**		1	1 unit	41C
20	--	110 ... 230 AC	B	**3RF2320-3DA24**		1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

2) Utilization category AC-15:
Electromagnetic loads, e.g. valves according to IEC 60947-5-1.
Parameters: max. 1 200 1/h, 50 % ON period, 10-times inrush current for 60 ms.

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
		Spring-type terminals				
3RA2908-1A **Screwdrivers** for all SIRIUS devices with spring-type terminals. Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
		Ring terminal lug connection				
3RF2900-3PA88 **Terminal covers** for 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection. (After simple adaptation, this terminal cover can also be used for screw terminals).	A	**3RF2900-3PA88**		1	10 units	41C

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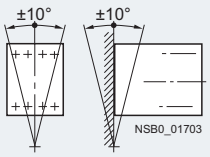
SIRIUS 3RF24 solid-state contactors, three-phase

Technical specifications

Type		3RF24..-1....	3RF24..-2....	3RF24..-3....
Dimensions (W x H x D)		See page 6/95		
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
Installation altitude	m	0 ... 1000; derating from 1 000		
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6	*g*	2		
Degree of protection		IP20		
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000		
Electromagnetic compatibility (EMC)				
• Emitted interference according to IEC 60947-4-3 - Conducted interference voltage		Class A for industrial applications[1]		
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Connection type		**Screw terminals**	**Spring-type terminals**	**Ring terminal lug connection**
Connection, main contacts				
• Conductor cross-section				
- Solid	mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6)[2], 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Stripped length	mm	10	10	--
• Terminal screws		M4	--	M5
- Tightening torque	Nm	2 ... 2.5		2 ... 2.5
	lb.in	18 ... 22		18 ... 22
• Cable lugs		--	--	
- According to DIN 46234				5-2.5 ... 5-25
- According to JIS C 2805				R 2-5 ... R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-section	mm	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)	0.5 ... 2.5	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)
	AWG	AWG 20 ... 12	AWG 20 ... 12	AWG 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
- Tightening torque, ∅ 3.5, PZ 1	Nm	0.5 ... 0.6		0.5 ... 0.6
	lb.in	4.5 ... 5.3		4.5 ... 5.3
Grounding screws[3]				
• Size (standard screw)		M4		
Permissible mounting position				

1) These products were built as Class A devices. The use of these devices in residential areas could result in lead in radio interference. In this case these may be required to introduce additional interference suppression measures. The versions 3RF24 ..-1AC55 comply with Class B for residential, business and commercial applications.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

3) The screw is not included in the scope of supply.

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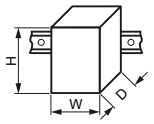
SIRIUS 3RF24 solid-state contactors, three-phase

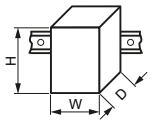
Type	Type current I_{AC-51} at 40 °C	Rated operational current I_e Acc. to IEC 60947-4-3 at 40 °C	Rated operational current I_e Acc. to UL/CSA at 50 °C	Power loss at I_{AC-51}	Minimum load current	Max. off-state current	Rated peak withstand current I_{tsm}	I^2t value
	A	A	A	W	A	mA	A	A^2s
Main circuit								
3RF2410-.AB.5	10.5	7	7	23	0.1	10	200	200
3RF2420-.AB.5	22	15	15	44	0.5	10	600	1800
3RF2430-.AB.5	30	22	22	61	0.5	10	1200	7200
3RF2440-.AB.5	40	30	30	80	0.5	10	1150	6600
3RF2450-.AB.5	50	38	38	107	0.5	10	1150	6600
3RF2410-.AC.5	10.5	7	7	31	0.5	10	300	450
3RF2420-.AC.5	22	15	15	66	0.5	10	600	1800
3RF2430-.AC.5	30	22	22	91	0.5	10	1200	7200
3RF2440-.AC.5	40	30	30	121	0.5	10	1150	6600
3RF2450-.AC.5	50	38	38	160	0.5	10	1150	6600

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
Main circuit		
3RF2410-.AB..	10.5	45 x 100 x 105
3RF2410-.AC..		
3RF2420-.AB..	22	67 x 100 x 112.5
3RF2420-.AC..	22	89.5 x 100 x 112.5
3RF2430-.AB..	30	



Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
Main circuit		
3RF2430-.AC..	30	113.5 x 100 x 121
3RF2440-.AB..	40	
3RF2440-.AC..	40	157.5 x 100 x 121
3RF2450-.AB..	50	
3RF2450-.AC..	50	157.5 x 180 x 121



Type		3RF24..-.AB.5	3RF24..-.AC.5
Main circuit			
Controlled phases		2-phase	3-phase
Rated operational voltage U_e	V AC	48 ... 600	48 ... 600
• Operating range	V AC	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1200	1200
Rate of voltage rise	V/µs	1000	1000

Type		3RF24..-...3.	3RF24..-...4.	3RF24..-...5.
Control circuit				
Method of operation		AC operation	DC operation	AC operation
Rated control supply voltage U_s	V	110	4 ... 30	190 ... 230
Rated frequency of the control supply voltage	Hz	50/60 ± 10 %	--	50/60 ± 10 %
Actuating voltage, max.	V	121	30	253
Typical actuating current	mA	15	30	15
Response voltage	V	90	4	180
Drop-out voltage	V	< 40	< 1	< 40
Operating times				
• ON-delay	ms	40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave
• OFF-delay	ms	40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave

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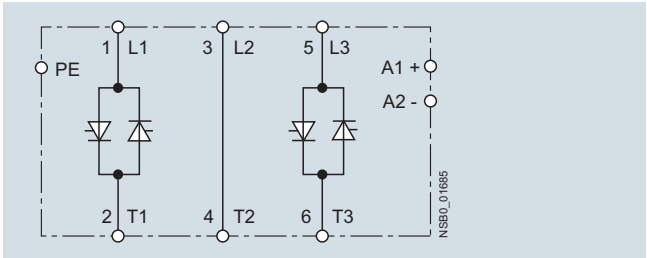
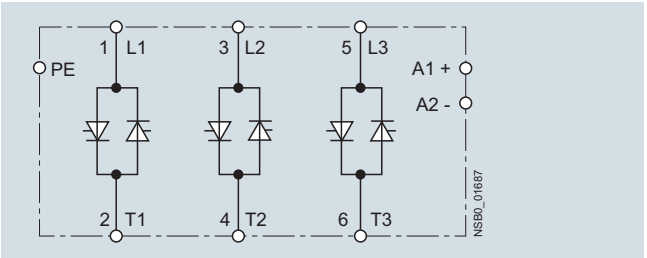
SIRIUS 3RF24 solid-state contactors, three-phase

Circuit diagrams

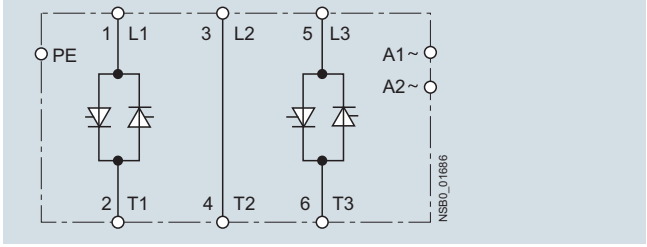
Two-phase controlled,
DC control supply voltage



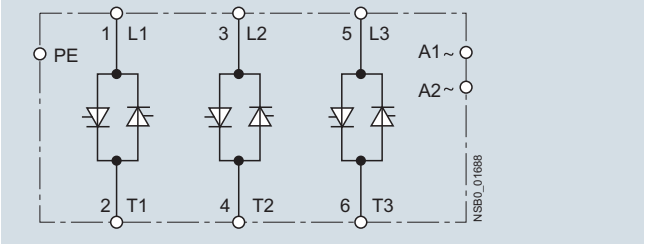
Three-phase controlled,
DC control supply voltage



Two-phase controlled,
AC control supply voltage



Three-phase controlled,
AC control supply voltage



6

Selection and ordering data

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
10.5	4 ... 30 DC	A	**3RF2410-1AB45**		1	1 unit	41C
20		A	**3RF2420-1AB45**		1	1 unit	41C
30		A	**3RF2430-1AB45**		1	1 unit	41C
40		B	**3RF2440-1AB45**		1	1 unit	41C
50		A	**3RF2450-1AB45**		1	1 unit	41C
10.5	110 AC	B	**3RF2410-1AB35**		1	1 unit	41C
20		B	**3RF2420-1AB35**		1	1 unit	41C
30		B	**3RF2430-1AB35**		1	1 unit	41C
40		B	**3RF2440-1AB35**		1	1 unit	41C
50		B	**3RF2450-1AB35**		1	1 unit	41C
10.5	230 AC	B	**3RF2410-1AB55**		1	1 unit	41C
20		B	**3RF2420-1AB55**		1	1 unit	41C
30		A	**3RF2430-1AB55**		1	1 unit	41C
40		B	**3RF2440-1AB55**		1	1 unit	41C
50		B	**3RF2450-1AB55**		1	1 unit	41C
Three-phase controlled							
10.5	4 ... 30 DC	A	**3RF2410-1AC45**		1	1 unit	41C
20		A	**3RF2420-1AC45**		1	1 unit	41C
30		A	**3RF2430-1AC45**		1	1 unit	41C
40		A	**3RF2440-1AC45**		1	1 unit	41C
50		A	**3RF2450-1AC45**		1	1 unit	41C
10.5	110 AC	B	**3RF2410-1AC35**		1	1 unit	41C
20		B	**3RF2420-1AC35**		1	1 unit	41C
30		B	**3RF2430-1AC35**		1	1 unit	41C
40		B	**3RF2440-1AC35**		1	1 unit	41C
50		B	**3RF2450-1AC35**		1	1 unit	41C
10.5	230 AC	B	**3RF2410-1AC55**		1	1 unit	41C
20		B	**3RF2420-1AC55**		1	1 unit	41C
30		B	**3RF2430-1AC55**		1	1 unit	41C
40		B	**3RF2440-1AC55**		1	1 unit	41C
50		B	**3RF2450-1AC55**		1	1 unit	41C

3RF2420-1AB45

3RF2410-1AC45

Online configurator see www.siemens.com/sirius/configurators

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF24 solid-state contactors, three-phase

3RF2410-2AB45

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.	Price per PU		
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC						
Two-phase controlled						
10	4 ... 30 DC	B	**3RF2410-2AB45**	1	1 unit	41C
20		B	**3RF2420-2AB45**	1	1 unit	41C
10	230 AC	B	**3RF2410-2AB55**	1	1 unit	41C
20		B	**3RF2420-2AB55**	1	1 unit	41C
Three-phase controlled						
10	4 ... 30 DC	B	**3RF2410-2AC45**	1	1 unit	41C
20		B	**3RF2420-2AC45**	1	1 unit	41C
10	230 AC	B	**3RF2410-2AC55**	1	1 unit	41C
20		B	**3RF2420-2AC55**	1	1 unit	41C

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.	Price per PU		
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC						
Two-phase controlled						
50	4 ... 30 DC	B	**3RF2450-3AB45**	1	1 unit	41C
50	230 AC	B	**3RF2450-3AB55**	1	1 unit	41C
Three-phase controlled						
50	4 ... 30 DC	B	**3RF2450-3AC45**	1	1 unit	41C
50	230 AC	B	**3RF2450-3AC55**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating characteristic curves see page 6/70, "More Information".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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General data

Overview

Function modules for SIRIUS 3RF2 solid-state switching devices

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor.

The plug-in connection to control the solid-state switching devices can simply remain in use. The external connections have screw terminals.

The following function modules are available:

- Converters
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

With the exception of the converter, the function modules can be used only with single-phase solid-state switching devices.

Recommended assignment of the function modules to the 3RF21 single-phase solid-state relays

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1]	Power regulators[1]
		Basic	Extended[1]			
Type current = 20 A						
3RF2120-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2120-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2120-1A.22	--	--	3RF2920-0GA33	--	--	--
3RF2120-1A.24	--	--	3RF2920-0GA36	--	--	--
3RF2120-1A.42	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2120-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2120-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2120-2A.02	3RF2900-0EA18	--	--	--	--	--
3RF2120-2A.04	3RF2900-0EA18	--	--	--	--	--
3RF2120-2A.22	--	--	--	--	--	--
3RF2120-2A.24	--	--	--	--	--	--
3RF2120-2A.42	3RF2900-0EA18	--	--	--	--	--
3RF2120-2A.45	3RF2900-0EA18	--	--	--	--	--
3RF2120-3A.02	3RF2900-0EA18	--	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2120-3A.04	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2120-3A.22	--	--	3RF2920-0GA33	--	3RF2920-0KA13	3RF2920-0HA13
3RF2120-3A.24	--	--	3RF2920-0GA36	--	3RF2920-0KA16	3RF2920-0HA16
Type current = 30 A						
3RF2130-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2130-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2130-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2130-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2130-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2130-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2130-1A.42	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2130-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2130-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
Type current = 50 A						
3RF2150-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2150-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2150-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2150-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2150-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-1B.06	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2150-2A.02	3RF2900-0EA18	--	--	--	--	--
3RF2150-2A.04	3RF2900-0EA18	--	--	--	--	--
3RF2150-2A.06	3RF2900-0EA18	--	--	--	--	--
3RF2150-2A.14	3RF2900-0EA18	--	--	--	--	--
3RF2150-2A.22	--	--	--	--	--	--
3RF2150-2A.24	--	--	--	--	--	--
3RF2150-2A.26	--	--	--	--	--	--
3RF2150-3A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2150-3A.04	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-3A.06	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2150-3A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2150-3A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2150-3A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36

[1] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state relays (3RF21 ..-....4 , -....5 or -....6).

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Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1]	Power regulators[1]
		Basic	Extended[1]			
Type current = 70 A						
3RF2170-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2170-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2170-1A.05	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2170-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2170-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2170-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2170-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2170-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2170-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2170-1C.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
Type current = 90 A						
3RF2190-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2190-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2190-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2190-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2190-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2190-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2190-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2190-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2190-2A.02	3RF2900-0EA18	--	--	--	--	--
3RF2190-2A.04	3RF2900-0EA18	--	--	--	--	--
3RF2190-2A.06	3RF2900-0EA18	--	--	--	--	--
3RF2190-2A.22	--	--	--	--	--	--
3RF2190-2A.24	--	--	--	--	--	--
3RF2190-2A.26	--	--	--	--	--	--
3RF2190-3A.02	3RF2900-0EA18	--	3RF2990-0GA13	--	3RF2990-0KA13	3RF2990-0HA13
3RF2190-3A.04	3RF2900-0EA18	--	3RF2990-0GA16	3RF2932-0JA16	3RF2990-0KA16	3RF2990-0HA16
3RF2190-3A.06	3RF2900-0EA18	--	3RF2990-0GA16	3RF2932-0JA16	3RF2990-0KA16	3RF2990-0HA16
3RF2190-3A.22	--	--	3RF2990-0GA33	--	--	3RF2990-0HA33
3RF2190-3A.24	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2190-3A.26	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2190-3A.44	3RF2900-0EA18	--	3RF2990-0GA16	3RF2932-0JA16	3RF2990-0KA16	3RF2990-0HA16

[1] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state relays (3RF21 ..-....4 , -....5 or -....6).

Recommended assignment of the function modules to the 3RF22 three-phase solid-state relays

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 55 A						
3RF22..-1AA..	3RF2900-0EA18	--	--	--	--	--
3RF22..-2AA..	3RF2900-0EA18	--	--	--	--	--
3RF22..-3AA..	3RF2900-0EA18	--	--	--	--	--

Recommended assignment of the function modules to the 3RF23 single-phase solid-state contactors

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1]	Power regulators[1]
		Basic	Extended[1]			
Type current I_e = 10.5 A						
3RF2310-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	3RF2916-0JA13	3RF2920-0KA13	3RF2920-0HA13
3RF2310-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1A.12	3RF2900-0EA18	--	3RF2920-0GA13	3RF2916-0JA13	3RF2920-0KA13	3RF2920-0HA13
3RF2310-1A.14	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1A.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2310-1A.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2310-1A.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2310-1A.44	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16

[1] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23 ..-....4 , -....5 or -....6).

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General data

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1]	Power regulators[1]
		Basic	Extended[1]			
Type current I_e = 10.5 A						
3RF2310-1B.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	3RF2916-0JA13	3RF2920-0KA13	3RF2920-0HA13
3RF2310-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1B.06	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-1B.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2310-1B.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2310-1B.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2310-2A.02	3RF2900-0EA18	--	--	--	--	--
3RF2310-2A.04	3RF2900-0EA18	--	--	--	--	--
3RF2310-2A.06	3RF2900-0EA18	--	--	--	--	--
3RF2310-2A.22	--	--	--	--	--	--
3RF2310-2A.24	--	--	--	--	--	--
3RF2310-2A.26	--	--	--	--	--	--
3RF2310-3A.02	3RF2900-0EA18	--	3RF2920-0GA13	3RF2916-0JA13	3RF2920-0KA13	3RF2920-0HA13
3RF2310-3A.04	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-3A.06	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2310-3A.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2310-3A.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2310-3A.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
Type current I_e = 20 A						
3RF2320-1A.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-1A.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1A.06	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1A.14	3RF2900-0EA18	--	3RF2920-0GA16	--	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1A.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-1A.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1A.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1A.44	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1A.45	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1B.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-1B.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1B.06	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1B.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-1B.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1B.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1B.44	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1C.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-1C.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1C.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-1C.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1C.44	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1D.02	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-1D.04	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-1D.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-1D.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-1D.44	3RF2900-0EA18	3RF2920-0FA08	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-2A.02	3RF2900-0EA18	--	--	--	--	--
3RF2320-2A.04	3RF2900-0EA18	--	--	--	--	--
3RF2320-2A.06	3RF2900-0EA18	--	--	--	--	--
3RF2320-2A.22	--	--	--	--	--	--
3RF2320-2A.24	--	--	--	--	--	--
3RF2320-2A.26	--	--	--	--	--	--
3RF2320-2C.02	3RF2900-0EA18	--	--	--	--	--
3RF2320-2C.04	3RF2900-0EA18	--	--	--	--	--
3RF2320-2C.22	--	--	--	--	--	--
3RF2320-2C.24	--	--	--	--	--	--
3RF2320-2D.22	--	--	--	--	--	--
3RF2320-2D.24	--	--	--	--	--	--
3RF2320-3A.02	3RF2900-0EA18	--	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-3A.04	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-3A.06	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-3A.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-3A.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-3A.26	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
3RF2320-3A.44	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16

[1] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23 ..-....4 , -....5 or -....6).

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Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[2]	Power controllers[2]	Power regulators[2]
		Basic[1]	Extended[2]			
Type current I_e = 20 A						
3RF2320-3D.02	3RF2900-0EA18	--	3RF2920-0GA13	--	3RF2920-0KA13	3RF2920-0HA13
3RF2320-3D.04	3RF2900-0EA18	--	3RF2920-0GA16	3RF2932-0JA16	3RF2920-0KA16	3RF2920-0HA16
3RF2320-3D.22	--	--	3RF2920-0GA33	--	--	3RF2920-0HA33
3RF2320-3D.24	--	--	3RF2920-0GA36	--	--	3RF2920-0HA36
Type current I_e = 30 A						
3RF2330-1A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2330-1A.04	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1A.06	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1A.14	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2330-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-1A.25	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-1A.44	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1A.45	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1B.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2330-1B.04	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1B.06	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2330-1B.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-1B.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-1B.44	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-1C.02	3RF2900-0EA18	--	3RF2950-0GA13	--	--	3RF2950-0HA13
3RF2330-1D.44	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-3A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2330-3A.04	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-3A.06	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
3RF2330-3A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2330-3A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-3A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2330-3A.44	3RF2900-0EA18	--	3RF2950-0GA16	3RF2932-0JA16	3RF2950-0KA16	3RF2950-0HA16
Type current I_e = 40 A						
3RF2340-1A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2340-1A.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1A.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1A.14	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2340-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-1A.45	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1B.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2340-1B.04	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1B.06	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2340-1B.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-1B.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-3A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2340-3A.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-3A.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2340-3A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2340-3A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-3A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2340-3A.45	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
Type current I_e = 50 A						
3RF2350-1A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2350-1A.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-1A.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-1A.14	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-1A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2350-1A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-1A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-1A.45	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16

[1] The technical specifications must be taken into account when selecting the function modules. More combinations may be possible if the solid-state relays and contactors are not fully loaded, e.g. a load monitor for 20 A can also be operated with a solid-state contactor for 30 A if the load current during operation does not exceed 20 A.

[2] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23 ..-....4 , -....5 or -....6).

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3RF29 Function Modules

General data

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1]	Power regulators[1]
		Basic	Extended[1]			
Type current I_e = 50 A						
3RF2350-1B.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2350-1B.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-1B.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2350-1B.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-1B.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-1B.44	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-3A.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2350-3A.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-3A.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2350-3A.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2350-3A.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-3A.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2350-3A.44	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
Type current I_e = 70 A						
3RF2370-1B.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2370-1B.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2370-1B.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2370-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2370-1B.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2370-1B.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2370-3A.02	3RF2900-0EA18	--	3RF2990-0GA13	--	3RF2990-0KA13	3RF2990-0HA13
3RF2370-3A.04	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2370-3A.06	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2370-3A.22	--	--	3RF2990-0GA33	--	--	3RF2990-0HA33
3RF2370-3A.24	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2370-3A.26	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2370-3A.45	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2370-3B.02	3RF2900-0EA18	--	3RF2990-0GA13	--	3RF2990-0KA13	3RF2990-0HA13
3RF2370-3B.04	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2370-3B.06	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2370-3B.22	--	--	3RF2990-0GA33	--	--	3RF2990-0HA33
3RF2370-3B.24	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2370-3B.26	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
Type current I_e = 90 A						
3RF2390-1B.02	3RF2900-0EA18	--	3RF2950-0GA13	--	3RF2950-0KA13	3RF2950-0HA13
3RF2390-1B.04	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2390-1B.06	3RF2900-0EA18	--	3RF2950-0GA16	--	3RF2950-0KA16	3RF2950-0HA16
3RF2390-1B.22	--	--	3RF2950-0GA33	--	--	3RF2950-0HA33
3RF2390-1B.24	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2390-1B.26	--	--	3RF2950-0GA36	--	--	3RF2950-0HA36
3RF2390-3A.02	3RF2900-0EA18	--	3RF2990-0GA13	--	3RF2990-0KA13	3RF2990-0HA13
3RF2390-3A.04	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2390-3A.06	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2390-3A.22	--	--	3RF2990-0GA33	--	--	3RF2990-0HA33
3RF2390-3A.24	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2390-3A.26	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2390-3A.45	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2390-3B.02	3RF2900-0EA18	--	3RF2990-0GA13	--	3RF2990-0KA13	3RF2990-0HA13
3RF2390-3B.04	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2390-3B.06	3RF2900-0EA18	--	3RF2990-0GA16	--	3RF2990-0KA16	3RF2990-0HA16
3RF2390-3B.22	--	--	3RF2990-0GA33	--	--	3RF2990-0HA33
3RF2390-3B.24	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36
3RF2390-3B.26	--	--	3RF2990-0GA36	--	--	3RF2990-0HA36

[1] For line voltages in the range from 110 to 230 V, the versions of the 3RF29 ..-0.A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23 ..-....4 , -....5 or -....6).

Recommended assignment of the function modules to the 3RF24 three-phase solid-state contactors

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 50 A						
3RF24..-1..4.	3RF2900-0EA18	--	--	--	--	--
3RF24..-2..4.	--	--	--	--	--	--
3RF24..-3..4.	3RF2900-0EA18	--	--	--	--	--
3RF24..- ...5.	--	--	--	--	--	--

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Technical specifications

Type		3RF29..-0EA..	3RF29..-0FA..	3RF29..-0GA..	3RF29..-0HA..	3RF29..-0JA..	3RF29..-0KA..
Dimensions (W x H x D)	mm	22.5 x 84 x 38	22.5 x 102 x 39	45 x 112 x 44	45 x 112 x 44	45 x 112 x 44	45 x 112 x 44
General data							
Ambient temperature							
• During operation, derating from 40 °C	°C	-25 ... +60					
• During storage	°C	-55 ... +80					
Installation altitude	m	0 ... 1000; derating from 1000					
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11					
Vibration resistance acc. to IEC 60068-2-6	*g*	2					
Degree of protection		IP20					
Electromagnetic compatibility (EMC)							
• Emitted interference							
- Conducted interference voltage according to IEC 60947-4-3		Class A for industrial applications[1]					
- Emitted, high-frequency interference voltage according to IEC 60947-4-3		Class B for residential, business and commercial applications					
• Interference immunity							
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2					
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1					
- Burst acc. to IEC 61000-4-4		2 kV/5.0 kHz; behavior criterion 2					
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2					
Connection type Auxiliary/control contacts		**Screw terminals**					
• Conductor cross-section	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0), 1 x (AWG 20 ... 12)					
• Stripped length	mm	7					
• Terminal screw		M3					
• Tightening torque	Nm lb.in	0.5 ... 0.6 4.5 ... 5.3					
Connection type Converters		**Straight-through transformers**					
• Diameter	mm	--	7	17			

[1] Note limitations for power controller function modules. These modules were built as Class A devices. The use of these devices in residential areas could result in lead in radio interference. In this case these may be required to introduce additional interference suppression measures.

Type		3RF29..-0EA18	3RF29..-0FA08	3RF29..-0GA.3	3RF29..-0GA.6
Main circuit					
Rated operational voltage U_e	V AC	-- [1]		110 ... 230	400 ... 600
• Operating range	V AC	--		93.5 ... 253	340 ... 660
• Rated frequency	Hz	--		50/60	
Rated insulation voltage U_i	V	--		600	
Voltage measuring					
• Measuring range	V	--		93.5 ... 253	340 ... 660
Mains voltage, fluctuation compensation	%	--		20	

[1] Versions are independent of the main circuit.

Type		3RF29..-0HA.3 3RF29..-0KA.3	3RF29..-0HA.6 3RF29..-0KA.6	3RF29..-0JA.3	3RF29..-0JA.6
Main circuit					
Rated operational voltage U_e	V AC	110 ... 230	400 ... 600	110 ... 230	400 ... 600
• Operating range	V AC	93.5 ... 253	340 ... 660	93.5 ... 253	340 ... 660
• Rated frequency	Hz	50/60			
Rated insulation voltage U_i	V	600			
Voltage measuring					
• Measuring range	V	93.5 ... 253	340 ... 660	93.5 ... 253	340 ... 660
Mains voltage, fluctuation compensation	%	20			

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General data

Type		3RF29..-...0.	3RF29..-...1.	3RF29..-...3.
Control circuit				
Method of operation		DC operation	AC/DC operation	AC operation
Rated control supply voltage U_s	V	24	24	110
Rated control current	mA	15	15	15
Rated frequency of the control supply voltage	Hz	--	50/60	50/60
Actuating voltage, max.	V	30	30	121
Rated control current	mA	15	15	15
At maximum voltage				
Response voltage	V	15	15	90
• For operating current	mA	2	2	2
Drop-out voltage	V	5	5	15

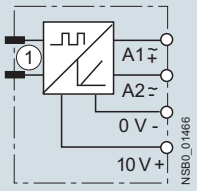
Type		3RF2906-0FA08	3RF2920-0FA08	3RF2920-0GA..	3RF2950-0GA..	3RF2990-0GA..
Current measurement						
Rated operational current I_e	A	6	20	20	50	90
Current measurement						
• Teach range	A	0.25 ... 6	0.65 ... 20	0.56 ... 20	1.62 ... 50	2.93 ... 90
• Measuring range	A	0 ... 6.6	0 ... 22	0 ... 22	0 ... 55	0 ... 99
• Minimum partial load current	A	0.25	0.65	0.65	1.6	2.9
Number of partial loads		1 ... 6	1 ... 6	1 ... 12		

Type		3RF2920-0HA..	3RF2950-0HA..	3RF2990-0HA..	3RF2916-0JA..	3RF2932-0JA..
Current measurement						
Rated operational current I_e	A	20	50	90	16	32
Current measurement						
• Teach range	A	4 ... 20	10 ... 50	18 ... 90	0.42 ... 16	0.8 ... 32
• Measuring range	A	0 ... 22	0 ... 55	4 ... 99	0 ... 16	0 ... 32
• Minimum partial load current	A	--			0.42	0.8
Number of partial loads		--			1 ... 6	

Type		3RF2904-0KA..	3RF2920-0KA..	3RF2950-0KA..	3RF2990-0KA..
Current measurement					
Rated operational current I_e	A	4	20	50	90
Current measurement					
• Teach range	A	0.15 ... 4	0.65 ... 20	1.6 ... 50	2.9 ... 90
• Measuring range	A	0 ... 4	0 ... 22	0 ... 55	0 ... 99
• Minimum partial load current	A	--	0.65	1.6	2.9
Number of partial loads		--	1 ... 6		

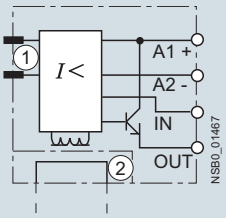
Circuit diagrams

Converters



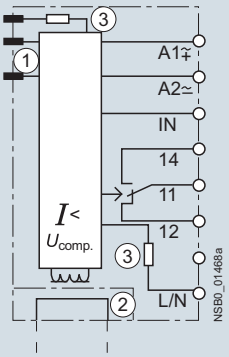
1 Internal connection

Basic load monitoring



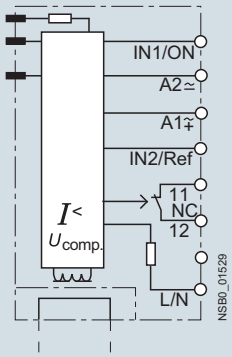
1 Internal connection
2 Straight-through transformer

Extended load monitoring



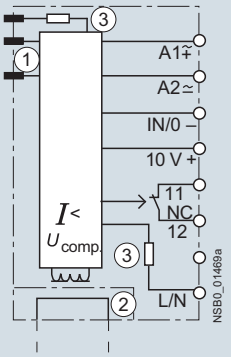
1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

Heating current monitoring



1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

Power controller and regulator



1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

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Overview

Converters for 3RF2 solid-state switching devices

These modules are used to convert analog control signals, such as those output from many temperature controllers for example, into a pulse-width-modulated digital signal. The connected solid-state contactors and relays can therefore regulate the output of a load as a percentage.

Application

This function module is used for conversions from an analog input signal to an on/off ratio with time basis 1 s. The module can only be used in conjunction with 3RF21 and 3RF23 single-phase solid-state switching devices or 3RF22 and 3RF24 three-phase devices. It can be used on versions with 24 V DC and 24 V AC/DC control supply voltage.

Note:

The use of single-pole solid-state switching devices with converters, power controllers or power regulators on AC loads in full-wave control mode is not recommended. As mutual synchronization of the function modules is not possible, fluctuations in the heating power are possible; there is no optimum settling in particular with setpoint values < 50 %.

Selection and ordering data

	Rated operational current I_e	Rated operational voltage U_e	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
				Configurator			
	A	V		Article No. / Price per PU			
Converters							
	Rated control supply voltage 24 V AC/DC						
	--	--	A	**3RF2900-0EA18**	1	1 unit	41C

3RF2900-0EA18

Online configurator see www.siemens.com/sirius/configurators

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SIRIUS load monitoring for 3RF2

Overview

Load monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of load elements (up to 6 in the basic version or up to 12 in the extended version), alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by one or more LEDs and reported to the controller by way of a PLC-compatible output.

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during start-up by the simple press of a button. In order to detect the failure of one of several loads, the current difference must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, an output is actuated and one or more LEDs indicate the fault.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Basic load monitoring							
3RF29	Rated control supply voltage 24 V DC						
6	--	A	**3RF2906-0FA08**		1	1 unit	41C
20	--	A	**3RF2920-0FA08**		1	1 unit	41C
• With mounted 3RF2900-0RA88 cover							
6	--	A	**3RF2906-0FA08-0KH0**		1	1 unit	41C
20	--	A	**3RF2920-0FA08-0KH0**		1	1 unit	41C
Extended load monitoring							
3RF29	Rated control supply voltage 24 V AC/DC						
20	110 … 230	A	**3RF2920-0GA13**		1	1 unit	41C
20	400 … 600	A	**3RF2920-0GA16**		1	1 unit	41C
50	110 … 230	A	**3RF2950-0GA13**		1	1 unit	41C
50	400 … 600	A	**3RF2950-0GA16**		1	1 unit	41C
90	110 … 230	A	**3RF2990-0GA13**		1	1 unit	41C
90	400 … 600	A	**3RF2990-0GA16**		1	1 unit	41C
	Rated control supply voltage 110 V AC						
20	110 … 230	A	**3RF2920-0GA33**		1	1 unit	41C
20	400 … 600	A	**3RF2920-0GA36**		1	1 unit	41C
50	110 … 230	A	**3RF2950-0GA33**		1	1 unit	41C
50	400 … 600	A	**3RF2950-0GA36**		1	1 unit	41C
90	110 … 230	A	**3RF2990-0GA33**		1	1 unit	41C
90	400 … 600	A	**3RF2990-0GA36**		1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
3RF2900-0RA88						
Sealable covers for function modules (not for converters)	B	**3RF2900-0RA88**		1	10 units	41C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS heating current monitoring for 3RF2

Overview

Heating current monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to six load elements, alloyed power semiconductors, a lack of voltage, or a break in the load circuit. A fault is indicated by LEDs and reported to the controller via relay output (NC).

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during start-up. In order to detect the failure of one of several loads, the current difference must be 1/6 of the reference value. In the event of a fault, an output is actuated and the LEDs indicate the fault.

The heating current monitoring has a teach input and therefore differs from the load monitoring. This remote teaching function enables simple adjustment to changing loads without manual intervention.

Special versions:
deviations from the standard version

3RF29..-0JA1.-1KK0

If the current is below 50 % of the lower teach current during the teach routine, the device will go into "Standby" mode; the LOAD LED will flicker. The device thus detects a non-connected load, e.g. channels not required for tool heaters, and does not signal a fault. This mode can be reset by re-teaching.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Heating current monitoring[1]							
Rated control supply voltage 24 V AC/DC							
16	110 … 230	A	**3RF2916-0JA13**		1	1 unit	41C
16	110 … 230	A	**3RF2916-0JA13-1KK0**		1	1 unit	41C
16	400 … 600	A	**3RF2916-0JA16-1KK0**		1	1 unit	41C
32	110 … 230	A	**3RF2932-0JA13-1KK0**		1	1 unit	41C
32	400 … 600	A	**3RF2932-0JA16**		1	1 unit	41C
32	400 … 600	A	**3RF2932-0JA16-1KK0**		1	1 unit	41C

3RF29

Online configurator see www.siemens.com/sirius/configurators

1) Supplied without control connector. The control connector can be purchased from Phoenix Contact by quoting Article No. 1982 790 (2.5 HC/6-ST-5.08).

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF2900-0RA88**		1	10 units	41C

3RF2900-0RA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS power controllers for 3RF2

Overview

Power controllers for 3RF2 single-phase solid-state switching devices

The power controller is a function module for the autonomous power control of complex heating systems and inductive loads.

The following functions have been integrated:

- Power controller for adjusting the power of the connected load. The setpoint value is selected via a rotary knob on the module as a percentage of the 100% power value stored.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps or infrared lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, partial load faults, alloyed power semiconductors, lack of voltage or a break in the load circuit.

Note:

With the phase control operating mode, a partial load fault is detected by cyclic "scanning" of the load; the exact mode of operation is described in the data sheets!

Special versions: deviations from the standard version

3RF29 04-0KA13-0KC0

During the teach routine, the connected solid-state relay or contactor is not activated; i.e. no current will flow. No current reference value is stored. No part-load monitoring!

3RF29 ..-0KA1.-0KT0

No part-load monitoring!

Application

The power controller can be used for:

- Complex heating systems
- Inductive loads
- Loads with temperature-dependent resistor
- Loads with ageing after long-time service
- Simple indirect control of temperature

Power control

The power controller adjusts the power in the connected load by means of a solid-state switching device depending on the setpoint selection. It does not compensate for changes in the mains voltage or load resistance. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer (t_R), the control is carried out according to the principle of full-wave control or generalized phase control.

Note:

In the case of ohmic loads, the power is set linear to the setpoint value. During operation of inductive loads, the power control is no longer proportional and linear due to the phase shift between current and voltage.

Full-wave control

In this operating mode the output is adjusted to the required setpoint value by changing the on-to-off period. The period duration is predefined at one second.

See note about AC loads on page 6/105.

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Power controllers							
Rated control supply voltage 24 V AC/DC							
4	110 … 230	A	**3RF2904-0KA13-0KC0**		1	1 unit	41C
4		A	**3RF2904-0KA13-0KT0**		1	1 unit	41C
20		A	**3RF2920-0KA13**		1	1 unit	41C
50		A	**3RF2950-0KA13**		1	1 unit	41C
90		A	**3RF2990-0KA13**		1	1 unit	41C
20	400 … 600	A	**3RF2920-0KA16**		1	1 unit	41C
50		A	**3RF2950-0KA16**		1	1 unit	41C
50		A	**3RF2950-0KA16-0KT0**		1	1 unit	41C
90		A	**3RF2990-0KA16**		1	1 unit	41C

3RF29

Online configurator see www.siemens.com/sirius/configurators

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF2900-0RA88**		1	10 units	41C

3RF2900-0RA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Power regulators for 3RF2 single-phase solid-state switching devices

The power regulator is a function module for the autonomous power control of complex heating systems.

The following functions have been integrated:

- Power controller with proportional-action control for adjusting the power of the connected load. The setpoint value is selected via a rotary knob on the module as a percentage of the 100% power value stored. Changes in the mains voltage or in the load resistance are compensated in this case.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, alloyed power semiconductors, lack of voltage or a break in the load circuit. Part-load monitoring is not possible. Load fluctuations are compensated.

Application

The power regulator can be used for:

- Complex heating systems
- Heating elements with temperature-dependent resistor
- Heating elements with ageing after long-time service
- Simple indirect control of temperature

Power control

The power regulator adjusts the power in the connected load by means of a solid-state switching device depending on the taught power and the selected setpoint. Changes in the mains voltage or in the load resistance are thus compensated by the power regulator. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer (t_R), the adjustment is carried out according to the principle of full-wave control or generalized phase control.

Note:

In the case of ohmic loads, the power is set linear to the setpoint value. During operation of inductive loads, the power control is no longer proportional and linear due to the phase shift between current and voltage.

Full-wave control

In this operating mode the output is adjusted to the required setpoint value by changing the on-to-off period. The period duration is predefined at one second.

See note about AC loads on page 6/105.

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Power regulators							
	Rated control supply voltage 24 V AC/DC						
20	110 … 230	A	**3RF2920-0HA13**		1	1 unit	41C
20	400 … 600	A	**3RF2920-0HA16**		1	1 unit	41C
50	110 … 230	A	**3RF2950-0HA13**		1	1 unit	41C
50	400 … 600	A	**3RF2950-0HA16**		1	1 unit	41C
90	110 … 230	A	**3RF2990-0HA13**		1	1 unit	41C
90	400 … 600	A	**3RF2990-0HA16**		1	1 unit	41C
	Rated control supply voltage 110 V AC						
20	110 … 230	A	**3RF2920-0HA33**		1	1 unit	41C
20	400 … 600	A	**3RF2920-0HA36**		1	1 unit	41C
50	110 … 230	A	**3RF2950-0HA33**		1	1 unit	41C
50	400 … 600	A	**3RF2950-0HA36**		1	1 unit	41C
90	110 … 230	A	**3RF2990-0HA33**		1	1 unit	41C
90	400 … 600	A	**3RF2990-0HA36**		1	1 unit	41C

3RF29

Online configurator see www.siemens.com/sirius/configurators

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF2900-0RA88**		1	10 units	41C

3RF2900-0RA88

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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General data

Overview

Solid-state contactors for switching motors

Solid-state contactor for direct-on-line starting

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3.0 kW.
The devices are constructed with complete insulation and can be mounted directly on SIRIUS motor starter protectors, overload relays and current monitoring relays, resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:

- Insulated enclosure with integrated heat sink
- Degree of protection IP20
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs
- Wide voltage range for AC control supply voltage

Switching functions

The solid-state contactors for switching motors are "instantaneous switching" because this method is particularly suited for inductive loads. By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum.

Connection methods

You can choose between the following connection methods for the solid-state contactors for switching motors:

Screw connection

The screw connection system is the standard among industrial controls. Open terminals and a plus-minus screw are just two features of this technology. Two conductors of up to 6 mm^2 can be connected in just one terminal.

Spring-type terminals

This innovative technology manages without any screw connection. This means that very high vibration resistance is achieved. Two conductors of up to 2.5 mm^2 can be connected to each terminal.

Motor feeders

The devices can use a link module to directly connect to a circuit breaker. Also possible is the mounting of a 3RB30/3RB31 solid-state overload relay (see Chapter 7 "Protection Equipment") or a 3RR2 current monitoring relay (see Chapter 10 "Monitoring and Control Devices") using a link adapter. The simultaneous mounting of a motor starter protector and an overload or current monitoring relay is not recommend for space and heat development reasons.

Rapid-switching fuseless and fuse motor feeders can thereby be implemented in a time-saving manner.

Selecting solid-state contactors

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing of the maximum permissible switching frequency based on the characteristic curves (see "More Information" → "Product Information"). To do this, the starting current, the starting time and the motor loaded in in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

Alternatively, the tool for "Selection of solid-state contactors for switching motors" can be used. The correct device size can be determined by entering the network and motor data along with the application and ambient conditions.
See www.siemens.com/solid-state-switching-devices.

Short-circuit protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly.

More information

For additional information, see system manual "SIRIUS Innovations - System Overview" and manual "SIRIUS Innovations - 3RF34 Solid-State Switching Devices":

http://support.automation.siemens.com/WW/view/en/60311318
http://support.automation.siemens.com/WW/view/en/60298187

Product information and technical specifications

For product data sheets with detailed technical specifications, dimensional drawings and characteristic curves, see www.siemens.com/sirius/support/

For additional information, please enter the article number of the required device under the tab "Product List".

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Solid-state switching devices	**3 R F**										
SIRIUS solid-state switching device generation		□									
Design			□								
Rated operational current				□	□						
Connection type							□				
Switching function								□			
Number of controlled phases									□		
Rated control supply voltage										□	
Rated operational voltage											□
Example	**3 R F**	**3**	**4**	**1**	**0**	**–**	**1**	**B**	**B**	**0**	**4**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

- Units with integrated heat sink, "ready to use"
- Compact and space-saving design
- Reversing contactors with integrated interlocking

Application

Use in load feeders

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities. SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required.

See the Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/39714188

Standards and approvals

- IEC 60947-4-2
- UL 508, CSA for North America[1)]
- CE marking for Europe
- C-Tick approval for Australia
- CCC approval for China

[1)] Please note: Use overvoltage protection device; max. cut-off-voltage 6000 V; min. energy handling capability 100 J.

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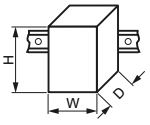
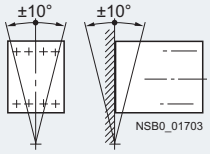
General data

Technical specifications

Type		3RF3405-1BB.. 3RF3403-1BD.., 3RF3405-1BD..	3RF3410-1BB.., 3RF3412-1BB.., 3RF3416-1BB.. 3RF3410-1BD..	3RF3405-2BB..	3RF3410-2BB.., 3RF3412-2BB.., 3RF3416-2BB..
Dimensions (W x H x D)					
• 3RF34..-1BB..	mm	45 x 95 x 96.5	90 x 95 x 96.5	45 x 95 x 96.5	90 x 95 x 96.5
• 3RF34..-1BD..	mm	45 x 95 x 108.5	90 x 95 x 108.5	--	--
General technical specifications					
Ambient temperature					
• During operation, derating from 40 °C	°C	-25 ... +60			
• During storage	°C	-55 ... +80			
Installation altitude	m	0 ... 1 000; derating over 1 000 m on request			
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11			
Vibration resistance acc. to IEC 60068-2-6	*g*	2			
Degree of protection		IP20			
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000			
Electromagnetic compatibility (EMC)					
• Emitted interference according to IEC 60947-4-2					
- Conducted interference voltage		Class A for industrial applications[1]			
- Emitted, high-frequency interference voltage		Class A for industrial applications			
• Interference immunity					
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge: 4; Air discharge: 8; Behavior criterion 2			
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1			
- Burst acc. to IEC 61000-4-4	kV	2; at 5 kHz; behavior criterion 2			
- Surge according to IEC 61000-4-5[2]	kV	Conductor - Ground: 2; Conductor - Conductor: 1; Behavior criterion 2			
Connection type		**Screw terminals**		**Spring-type terminals**	
Operating devices		Standard screwdriver size 2 and Pozidriv 2		3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections, main contacts					
• Solid	mm^2	2 x (1.5 ... 2.5)[3], 2 x (2.5 ... 6)[3]		2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[3], 2 x (2.5 ... 6)[3], 1 x 10		2 x (0.5 ... 1.5)	
• Finely stranded without end sleeve	mm^2	--		2 x (0.5 ... 2.5)	
• AWG cables, solid or stranded		2 x (AWG 14 ... 10)		2 x (AWG 18 ... 14)	
Conductor cross-sections, auxiliary/control contacts					
• With/without end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)		0.5 ... 2.5	
• AWG cables, solid or stranded		AWG 20 ... 12		AWG 20 ... 12	
Permissible mounting position					

1) These products were built as Class A devices. The use of these devices in residential areas could result in lead in radio interference. In this case these may be required to introduce additional interference suppression measures.

2) The following applies for reversing contactors: To maintain the values, a 3TX7462-3L surge suppressor (see "3TB Contactors", Chapter 3) should be used between phases L1 and L3 as close as possible to the reversing contactor.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF34 solid-state contactors, three-phase

Overview

These two-phase controlled, instantaneous switching solid-state contactors in the insulating enclosure are offered in width 45 mm up to 5.2 A – and in width 90 mm up to 16 A. They allow the operation of motors up to 7.5 kW.

Technical specifications

Type		3RF3405-.BB..	3RF3410-.BB..	3RF3412-.BB..	3RF3416-.BB..
Fuseless design with 3RV2 motor starter protector, CLASS 10					
Rated operational current I_{AC-53} [1] according to IEC 60947-4-2					
• At 40 °C	A	5.2 (4.5)	9.2	12.5	16
• UL/CSA, at 50 °C	A	4.6 (4.0)	8.4	11.5	14
• At 60 °C	A	4.2 (3.5)	7.6	10.5	12.5
Power loss at I_{AC-53}					
• At 40 °C	W	10 (8)	16	22	28
Short-circuit protection with type of coordination "1" at an operational voltage of U_e to 440 V					
• Motor starter protector, type		3RV2011-1GA10	3RV2011-1JA10	3RV2011-1KA10	3RV2011-4AA10
• Current I_q	kA	50	5	5	3

[1] The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous side-by-side mounting.

Type		3RF3405-.BB.4	3RF3405-.BB.6	3RF3410-.BB..	3RF3412-.BB.4	3RF3412-.BB.6	3RF3416-.BB..
Fused design with directly connected 3RB3 overload relay							
Rated operational current I_{AC-53} according to IEC 60947-4-2							
• At 40 °C	A	4		7.8	9.5		11
• UL/CSA, at 50 °C	A	3.6		7	8.5		10
• At 60 °C	A	3.2		6.2	7.6		9
Power loss at I_{AC-53}							
• At 40 °C	W	7		13	16		18
Minimum load current	A	0.1	0.5				
Max. off-state current	mA	10					
Rated peak withstand current I_{tsm}	A	200	600	600	1 200	1 150	1 150
I^2t value	A^2s	200	1 800	1 800	7 200	6 600	6 600

Type		3RF34..-.BB.4	3RF34..-.BB.6
Main circuit			
Controlled phases		2-phase	2-phase
Rated operational voltage U_e	V AC	48 ... 480	48 ... 600
• Operating range	V AC	40 ... 506	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1 200	1 600
Rate of voltage rise	V/µs	1 000	1 000

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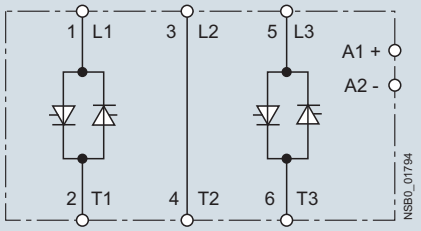
SIRIUS 3RF34 solid-state contactors, three-phase

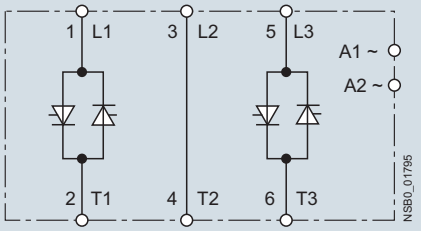
Type		3RF34..-.BB0.	3RF34..-.BB2.
Control circuit			
Method of operation		DC operation	AC operation
Rated control supply voltage U_s	V	24	110 ... 230
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %
Control supply voltage, max.	V	30	253
Typical actuating current	mA	20	15
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times			
• ON-delay	ms	1	5
• OFF-delay	ms	1 + max. one half-wave	30 + max. one half-wave

Circuit diagrams

DC control supply voltage



AC control supply voltage



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SIRIUS 3RF34 solid-state contactors, three-phase

Selection and ordering data

Motor contactors · Instantaneous switching · Two-phase controlled

	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Article No.			
Rated operational voltage U_e 48 ... 480 V AC								
3RF3405-1BB	5.2	**2.2**	24 DC	A	**3RF3405-1BB04**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-1BB04**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-1BB04**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-1BB04**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF3405-1BB24**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-1BB24**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-1BB24**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-1BB24**	1	1 unit	41C
Rated operational voltage U_e 48 ... 600 V AC, blocking voltage 1600 V								
3RF3410-1BB	5.2	**2.2**	24 DC	B	**3RF3405-1BB06**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-1BB06**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-1BB06**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-1BB06**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF3405-1BB26**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-1BB26**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-1BB26**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-1BB26**	1	1 unit	41C

	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Spring-type terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Article No.			
Rated operational voltage U_e 48 ... 480 V AC								
3RF3405-2BB	5.2	**2.2**	242 DC	B	**3RF3405-2BB04**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-2BB04**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-2BB04**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-2BB04**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF3405-2BB24**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-2BB24**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-2BB24**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-2BB24**	1	1 unit	41C
Rated operational voltage U_e 48 ... 600 V AC, blocking voltage 1600 V								
3RF3410-2BB	5.2	**2.2**	24 DC	B	**3RF3405-2BB06**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-2BB06**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-2BB06**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-2BB06**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF3405-2BB26**	1	1 unit	41C
	9.2	**4.0**		B	**3RF3410-2BB26**	1	1 unit	41C
	12.5	**5.5**		B	**3RF3412-2BB26**	1	1 unit	41C
	16	**7.5**		B	**3RF3416-2BB26**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

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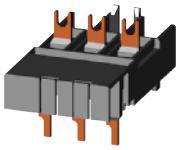
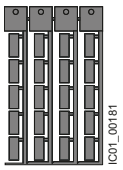
SIRIUS 3RF34 solid-state contactors, three-phase

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules between solid-state contactor and motor starter protector							
 3RA2921-1BA00	**Link module** between solid-state contactor and motor starter protector with screw terminals		**Screw terminals**				
	For 3RV2 motor starter protectors size S00/S0	A	**3RA2921-1BA00**		1	1 unit	41B
Link adapters between solid-state contactor and overload relay							
3RF3900-0QA88	**Link adapters** for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw terminals						
	The adapter is snapped onto the enclosure of the 3RF34 contactor and accommodates the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	A	**3RF3900-0QA88**		1	1 unit	41C
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
3RT2916-4JA02	**Insulation stop strip** for all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Can be inserted in cable entry of the spring-type terminal (no more than 2 strips per contactor required; removable in pairs) for terminals with a conductor cross-section up to 2.5 mm²	B	**3RT2916-4JA02**		1	20 units	41B
Tools for opening spring-type terminals							
3RA2908-1A	**Screwdrivers** for all SIRIUS devices with spring-type terminals						
	Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Blank labels							
 3SB2900-1SB20	**Unit labeling plates** for SIRIUS devices[1]						
	• 10 mm × 7 mm, titanium gray	D	**3RT2900-1SB10**		100	816 units	41B
	• 20 mm × 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
	Adhesive labels for SIRIUS devices						
	• 19 mm × 6 mm, titanium gray	D	**3RT2900-1SB60**		100	3060 units	41B

[1] PC labeling system for the individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The integration of four conducting paths to a reverse switch, combined in one enclosure makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50% width with the three-phase reversing contactors. Devices with 45 mm width cover motors up to 2.2 kW – and those with 90 mm width up to 3 kW.

Technical specifications

Type		3RF3403-.BD.4	3RF3405-.BD.4	3RF3410-.BD.4
Fuseless design with 3RV2 motor starter protector, CLASS 10				
Rated operational current I_{AC-53} [1] according to IEC 60947-4-2				
• At 40 °C	A	3.8 (3.4)	5.4 (4.8)	7.4
• UL/CSA, at 50 °C	A	3.5 (3.1)	5 (4.3)	6.8
• At 60 °C	A	3.2 (2.8)	4.6 (3.8)	6.2
Power loss at I_{AC-53}				
• At 40 °C	W	7 (6)	9 (8)	13
Short-circuit protection with type of coordination "1" at an operational voltage of U_e to 440 V				
• Motor starter protector, type		3RV2011-1FA10	3RV2011-1GA10	3RV2011-1JA10
• Current I_q	kA	50	50	10

[1] The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous side-by-side mounting.

Type		3RF3403-.BD.4	3RF3405-.BD.4	3RF3410-.BD.4
Fused design with directly connected 3RB3 overload relay				
Rated operational current I_{AC-53} according to IEC 60947-4-2				
• At 40 °C	A	3.8	5.4	7.4
• UL/CSA, at 50 °C	A	3.5	5	6.8
• At 60 °C	A	3.2	4.6	6.2
Power loss at I_{AC-53}				
• At 40 °C	W	6	8	16
Minimum load current	A	0.5		
Max. off-state current	mA	10		
Rated peak withstand current I_{tsm}	A	200	600	
I^2t value	A^2s	200	1 800	

Type		3RF34..-.BD.4
Main circuit		
Controlled phases		2-phase
Rated operational voltage U_e [1]	V AC	48 ... 480
• Operating range	V AC	40 ... 506
• Rated frequency	Hz	50/60 ± 10 %
Rated insulation voltage U_i	V	600
Rated impulse withstand voltage U_{imp}	kV	6
Blocking voltage	V	1 200
Rate of voltage rise	V/µs	1 000

[1] To reduce the risk of a phase short circuit due to overvoltage, we recommend implementing a varistor type 3TX7462-3L between the phases L1 and L3 as close as possible to the switchgear.

We recommend a design with semiconductor protection as short-circuit protection.

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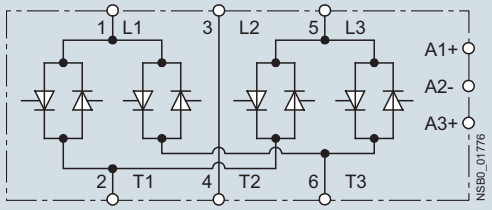
SIRIUS 3RF34 solid-state reversing contactors, three-phase

Type		3RF34..-.BD0.	3RF34..-.BD2.
Control circuit			
Method of operation		DC operation	AC operation
Rated control supply voltage U_s	V	24	110 ... 230
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %
Control supply voltage, maximum	V	30	253
Typical actuating current	mA	15	10
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times[1]			
• ON-delay	ms	5	20
• OFF-delay	ms	5 + max. one half-wave	10 + max. one half-wave
• Interlocking time	ms	60 ... 100	50 ... 100

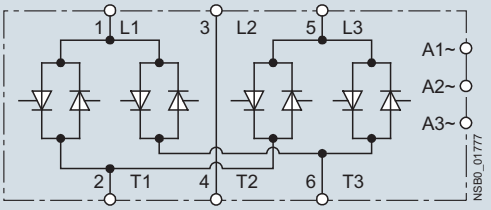
[1] Caution! Risk of phase short circuit in automatic mode.
The control inputs must not be actuated until after a delay time of 40 ms after the main voltage is applied.

Circuit diagrams

DC control supply voltage



AC control supply voltage



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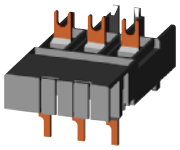
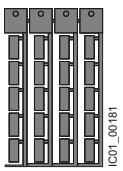
Selection and ordering data

Reversing contactors · Instantaneous switching · Two-phase controlled

	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Article No. / Price per PU			
Rated operational voltage U_e 48 ... 480 V AC								
3RF3403-1BD	3.8	**1.5**	24 DC	A	**3RF3403-1BD04**	1	1 unit	41C
	5.4	**2.2**		B	**3RF3405-1BD04**	1	1 unit	41C
	7.4	**3.0**		B	**3RF3410-1BD04**	1	1 unit	41C
3RF3410-1BD	3.8	**1.5**	110 ... 230 AC	B	**3RF3403-1BD24**	1	1 unit	41C
	5.4	**2.2**		B	**3RF3405-1BD24**	1	1 unit	41C
	7.4	**3.0**		B	**3RF3410-1BD24**	1	1 unit	41C

Online configurator see www.siemens.com/sirius/configurators

Accessories

	Version	DT	Article No. / Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules between solid-state contactor and motor starter protector						
 3RA2921-1BA00	**Link module** between solid-state reversing contactor and motor starter protector with screw terminals		**Screw terminals**			
	For 3RV2 motor starter protectors, size S00/S0	A	**3RA2921-1BA00**	1	1 unit	41B
Link adapters between solid-state contactor and overload relay						
3RF3900-0QA88	**Link adapters** for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw terminals					
	The adapter is snapped onto the enclosure of the 3RF34 contactor and accommodates the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	A	**3RF3900-0QA88**	1	1 unit	41C
Blank labels						
 3SB2900-1SB20	**Unit labeling plates** for SIRIUS devices[1]					
	• 10 mm × 7 mm, titanium gray	D	**3RT2900-1SB10**	100	816 units	41B
	• 20 mm × 7 mm, titanium gray	D	**3RT2900-1SB20**	100	340 units	41B
	Adhesive labels for SIRIUS devices					
	• 19 mm × 6 mm, titanium gray	D	**3RT2900-1SB60**	100	3060 units	41B

1) PC labeling system for the individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

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Notes

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Protection Equipment

Price groups
PG 14O, 41B, 41E, 41F, 41G, 41H, 41J, 42F, 42J, 4N1

7/2 **Introduction**

Motor starter protectors/ circuit breakers

SIRIUS 3RV2 motor starter protectors/ circuit breakers up to 40 A

7/7 General data
7/19 For motor protection NEW
7/21 For motor protection with overload relay function
7/22 For starter combinations
7/23 For transformer protection NEW
7/24 For system protection according to UL 489/CSA C22.2 No. 5 NEW
7/25 For transformer protection according to UL 489/CSA C22.2 No.5 NEW

Accessories
7/26 - Mountable accessories
7/29 - Busbar accessories
7/32 - Rotary operating mechanisms
7/33 - Mounting accessories
7/37 - Enclosures and front plates
7/40 3RV29 infeed system

SIRIUS 3RV1 motor starter protectors/ circuit breakers up to 100 A

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7/56 For motor protection with overload relay function
7/57 For starter combinations
7/58 For transformer protection
7/59 For fuse monitoring
7/60 For system protection according to UL 489/CSA C22.2 No. 5
7/61 For distance protection

Accessories
7/62 - Mountable accessories
7/65 - Busbar accessories
7/67 - Rotary operating mechanisms
7/69 - Mounting accessories
7/71 - Enclosures and front plates

SIRIUS 3RV1 molded case motor starter protectors up to 800 A

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7/78 For motor protection
7/79 For starter combinations

Accessories
7/80 - Mountable accessories
7/81 - Rotary operating mechanisms, mounting accessories

Overload relays

7/82 General data

SIRIUS 3RU2 thermal overload relays

7/89 3RU2 up to 40 A for standard applications
7/97 Accessories

SIRIUS 3RU1 thermal overload relays

7/100 3RU11 up to 100 A for standard applications
7/108 Accessories

SIRIUS 3RB3 solid-state overload relays

7/110 3RB30, 3RB31 up to 40 A for standard applications
7/118 Accessories

SIRIUS 3RB2 solid-state overload relays

7/120 3RB20, 3RB21 up to 630 A for standard applications
7/129 Accessories for 3RB20, 3RB21
7/131 3RB22, 3RB23 up to 630 A for High-Feature applications
7/139 3RB24 for IO-Link, up to 630 A for High-Feature applications
7/145 Current measuring modules for 3RB22, 3RB23, 3RB24
7/149 Accessories for 3RB22, 3RB23, 3RB24

Notes:

The 3RV1, 3RU1 and 3RB2 devices (sizes S00/S0 to S12) can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool, e.g. from

- 3RV1 to 3RV2
- 3RU11 to 3RU21
- 3RB20/3RB21 to 3RB30/3RB31

see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

Type		3RV20	3RV21	3RV23	3RV24	3RV27	3RV28
SIRIUS 3RV2 motor starter protectors/circuit breakers up to 40 A							
Applications							
• System protection		✓[1]	✓[1]	--	--	✓	✓
• Motor protection		✓	--	--	--	--	--
• Motor protection with overload relay function		--	✓	--	--	--	--
• Starter combinations		--	--	✓	--	--	--
• Transformer protection		--	--	--	✓	✓	✓
Size		S00, S0	S00, S0	S00, S0	S00, S0	S00, S0	S00, S0
Rated current I_n							
• Size S00	A	Up to 16	Up to 16	Up to 16	Up to 16	Up to 15	Up to 15
• Size S0	A	Up to 40	Up to 32	Up to 40	Up to 25	Up to 22	Up to 22
Rated operational voltage U_e according to IEC	V	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	690 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Trip class		CLASS 10	CLASS 10	--	CLASS 10	--	--
Thermal overload releases	A A	0.11 ... 0.16 up to 34 ... 40	0.11 ... 0.16 up to 27 ... 32	Without[3]	0.11 ... 0.16 up to 20 ... 25	0.16 ... 22 non-adjustable	0.16 ... 22 non-adjustable
Electronic release A multiple of the rated current		13 times	13 times	13 times	20 times	13 times	20 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	20/55/100	55/100	20/55/100	55/100	[4]	[4]
Pages		7/19, 7/20	7/21	7/22	7/23	7/24	7/25

Accessories												
For sizes	S00	S0	S00	S0	S00	S0	S00	S0	S00	S0	S00	S0
Auxiliary switches	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Signaling switches	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Undervoltage releases	✓	✓	--	--	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases	✓	✓	--	--	✓	✓	✓	✓	✓	✓	✓	✓
Isolator modules	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Insulated three-phase busbar system	✓	✓	--	--	✓	✓	✓	✓	--	--	--	--
Busbar adapters	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Door-coupling rotary operating mechanisms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Link modules	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Enclosures for surface mounting	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Enclosures for flush mounting	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Front plates	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--
Infeed system	✓	✓	--	--	✓	✓	✓	✓	--	--	--	--
Terminal covers for ring terminal lug connections	✓[5]	✓[5]	--	--	--	--	--	--	--	--	--	--
Sealable scale covers for setting knobs	✓	✓	✓	✓	--	--	✓	✓	--	--	--	--
Pages	7/26 ... 7/43											

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) For symmetrical loading of the three phases.

2) With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity", page 7/15.

3) For overload protection of the motors, appropriate overload relays must be used.

4) According to UL 489 at 480 Y/277 V AC: 65 kA or 50 kA.

5) Terminal covers are available for 3RV20 motor starter protectors with ring terminal lug connection to ensure finger-safety.

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Type		3RV10	3RV11	3RV13	3RV14	3RV16	3RV16	3RV17
SIRIUS 3RV1 motor starter protectors/circuit breakers up to 100 A								
Applications								
• System protection		✓[1]	✓[1]	--	--	--	--	✓
• Motor protection		✓	--	--	--	--	--	--
• Motor protection with overload relay function		--	✓	--	--	--	--	--
• Starter combinations		--	--	✓	--	--	--	--
• Transformer protection		--	--	--	✓	--	--	✓
• Fuse monitoring		--	--	--	--	✓	--	--
• Voltage transformer circuit breakers for distance protection		--	--	--	--	--	✓	--
Size		S2, S3	S2, S3	S2, S3	S2	S00	S00	S3
Rated current I_n								
• Size S00	A	--	--	--	--	0.2	Up to 3	--
• Size S2	A	Up to 50	Up to 50	Up to 50	Up to 40	--	--	--
• Size S3	A	Up to 100	Up to 100	Up to 100	--		--	Up to 70
Rated operational voltage U_e according to IEC	V	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	400 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	$16^2/_3$ ... 60	50/60
Trip class		CLASS 10, 20	CLASS 10	--	CLASS 10	--	--	--
Thermal overload releases	A A	11 ... 16 up to 80 ... 100	11 ... 16 up to 80 ... 100	Without[3]	11 ... 16 up to 28 ... 40	0.2	1.4 ... 3	10 ... 70 non-adjustable
Electronic release A multiple of the rated current		13 times	13 times	13 times	20 times	6 times	4 ... 7 times	13 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	50/100	50/100	50/100	50/100	100	50	[4]
Pages		7/55	7/56	7/57	7/58	7/59	7/61	7/60

Accessories								
For sizes	S2 S3	S2 S3	S2 S3	S2	S00	S00	S3
Auxiliary switches	✓ ✓	✓ ✓	✓ ✓	✓	✓	✓	✓[5]
Signaling switches	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Undervoltage releases	✓ ✓	-- --	✓ ✓	✓	--	--	✓
Shunt releases	✓ ✓	-- --	✓ ✓	✓	--	--	✓
Isolator modules	✓ --	✓ --	✓ --	✓	--	--	--
Insulated three-phase busbar system	✓ --	✓ --	✓ --	✓	--	--	--
Busbar adapters	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Door-coupling rotary operating mechanisms	✓ ✓	✓ ✓	✓ ✓	✓	--	--	✓
Remote motorized operating mechanisms	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Link modules	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Enclosures for surface mounting	✓ --	✓ --	✓ --	✓	--	--	--
Front plates	✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Pages	7/62 ... 7/72						

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) For symmetrical loading of the three phases.

2) With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity", page 7/50.

3) For overload protection of the motors, appropriate overload relays must be used.

4) Acc. to UL 489
- At 480 Y/277 V AC: 65 kA;
- At 480 V AC: 65 kA (10 A to 30 A).

5) Only lateral auxiliary switches can be fitted.

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Introduction

Type		3RV10			3RV13					
SIRIUS 3RV1 molded case motor starter protectors up to 800 A										
Applications										
• Motor protection		✓			--					
• Starter combinations		--			✓					
Switching capacity		Standard switching capacity			Standard switching capacity				Increased switching capacity	
Size		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
Rated current I_n	A	100 ... 200	400	630	1 ... 32	100 ... 250	400, 630	630, 800	100 ... 250	400
Rated operational voltage U_e according to IEC	V	690 AC			690 AC					
Rated frequency	Hz	50/60			50/60					
Trip class		CLASS 10A, 10, 20, 30			--[1]					
Thermal overload releases	A A	40 ... 100 up to 252 ... 630			Without[1]					
Electronic release A multiple of the rated current		Adjustable, 6 ... 13 times			Non-adjustable 1 ... 12.5 A: 13 times; Adjustable 20 A, 32 A: 6 ... 12 times	1 ... 10 times				
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	120	120	100	85	120	120	100	200	200
Trip unit (release)		TU 4			TU 1: 1 ... 12.5 A; TU 2: 20 A, 32 A	TU 3				
Pages		7/78			7/79					
Accessories										
For molded case motor starter protectors		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
Auxiliary switches		✓	✓	✓	✓	✓	✓	✓	✓	✓
Undervoltage releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotary operating mechanisms		✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection methods • Extended terminals on the front • Cable terminals on the front • Rear terminals		 ✓ ✓ ✓	 ✓ ✓ ✓	 -- ✓ ✓	 ✓ ✓ ✓	 ✓ ✓ ✓	 ✓ ✓ ✓	 -- ✓ ✓	 ✓ ✓ ✓	 ✓ ✓ ✓
Pages		7/80, 7/81								

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1] For overload protection of the motors, appropriate overload relays must be used.

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Type		3RU21	3RB30	3RB31
SIRIUS overload relays up to 40 A				
Applications				
• System protection		✓[1)]	✓[1)]	✓[1)]
• Motor protection		✓	✓	✓
• Alternating current, three-phase		✓	✓	✓
• Alternating current, single-phase		✓	--	--
• Direct current		✓	--	--
Size contactor		S00, S0	S00, S0	S00, S0
Rated operational current I_e				
• Size S00	A	Up to 16	Up to 16	Up to 16
• Size S0	A	Up to 40	Up to 40	Up to 40
Rated operational voltage U_e	V	690 AC	690 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60
Trip class		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable
Thermal overload releases	A A	0.11 ... 0.16 up to 34 ... 40	--	--
Electronic overload releases	A A	--	0.1 ... 0.4 up to 10 ... 40	0.1 ... 0.4 up to 10 ... 40
Rating for three-phase motor at 400 V AC	kW	0.04 ... 18.5	0.04 ... 18.5	0.04 ... 18.5
Pages		7/95, 7/96	7/115, 7/116	7/117

Accessories						
For sizes	S00	S0	S00	S0	S00	S0
Terminal supports for stand-alone installation	✓	✓	✓	✓	✓	✓
Mechanical RESET	✓	✓	✓	✓	✓	✓
Cable releases for RESET	✓	✓	✓	✓	✓	✓
Electrical remote RESET	✓	✓	--	--	Integrated in the unit	
Terminal covers for ring terminal lug connections	✓[2)]	✓[2)]	--	--	--	--
Sealable covers for setting knobs	✓	✓	✓	✓	✓	✓
Pages	7/97 ... 7/99		7/118, 7/119		7/118, 7/119	

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1)] The units are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable, and other switching and protection devices in the respective load feeder.

[2)] Terminal covers for ensuring finger-safe touch protection are available for 3RU21 overload relays with ring terminal lug connections for mounting onto contactors.

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Introduction

Type		3RU11	3RB20	3RB21	3RB22, 3RB23	3RB24
SIRIUS overload relays up to 630 A						
Applications						
• System protection		✓[1]	✓[1]	✓[1]	✓[1]	
• Motor protection		✓	✓	✓	✓	
• Alternating current, three-phase		✓	✓	✓	✓	
• Alternating current, single-phase		✓	--	--	✓	
• Direct current		✓	--	--	--	
Size contactor		S2, S3	S2 ... S12	S2 ... S12	S00 ... S12	
Rated operational current I_e						
• Sizes S00 and S0	A	--	--	--	Up to 25 and 45 mm width with current measuring modules 3RB2906-2BG1/3RB2906-2DG1	
• Size S2	A	Up to 50	Up to 50	Up to 50	Up to 100 and 55 mm width with current measuring module 3RB2906-2JG1	
• Size S3	A	Up to 100	Up to 100	Up to 100		
• Size S6	A	--	Up to 200	Up to 200	Up to 200 and 120 mm width with current measuring modules 3RB2956-2TH2/3RB2956-2TG2	
• Size S10/S12	A	--	Up to 630	Up to 630	Up to 630 and 145 mm width with current measuring module 3RB2966-2WH2	
• Size 14 (3TF68/3TF69)	A	--	--	--	Up to 820 with current measuring module 3RB2906-2BG1 and transformer 3UF1868-3GA00	
Rated operational voltage U_e	V	690/1 000 AC[2]	690/1 000 AC[3]	690/1 000 AC[3]	690/1 000 AC[4]	
Rated frequency	Hz	50/60	50/60	50/60	50/60	
Trip class		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable	CLASS 5, 10, 20, 30 adjustable	
Thermal overload releases	A A	5.5 ... 8 up to 80 ... 100	--	--	--	
Electronic overload releases	A A	--	6 ... 25 up to 160 ... 630	6 ... 25 up to 160 ... 630	0.3 ... 3 up to 63 ... 630	
Rating for three-phase motor at 400 V AC	kW kW	3 to 45	3 ... 11 up to 90 ... 450	3 ... 11 up to 90 ... 450	0.09 ... 1.1 up to 37 ... 450	
Pages		7/105 ... 7/107	7/126, 7/127	7/128	7/137, 7/138, 7/147	7/144, 7/147

Accessories																	
For sizes	S2	S3	S2	S3	S6	S10/S12	S2	S3	S6	S10/S12	S00	S0	S2	S3	S6	S10/S12
Terminal supports for stand-alone installation	✓	✓	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
Mechanical RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Cable releases for RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Electrical remote RESET	✓	✓	--	--	--	--	Integrated in the unit				Integrated in the unit					
Terminal covers	✓	✓	--	✓	✓	✓	--	✓	✓	✓	--	--	--	✓	✓	✓
Sealable covers for setting knobs	Integrated in the unit		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operator panel for 3RB24 evaluation module	--	--	--	--	--	--	--	--	--	--	✓	✓	✓	✓	✓	✓
Pages	7/108, 7/109		7/129, 7/130				7/129, 7/130				7/148 ... 7/150					

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1] The units are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable, and other switching and protection devices in the respective load feeder.

[2] Size S3 up to 1 000 V AC.

[3] Size S2 (only with straight-through transformer), S3, S6, S10, S12 up to 1 000 V AC.

[4] With reference to the 3RB29.6 current measuring modules.

[5] Stand-alone installation without accessories is possible.

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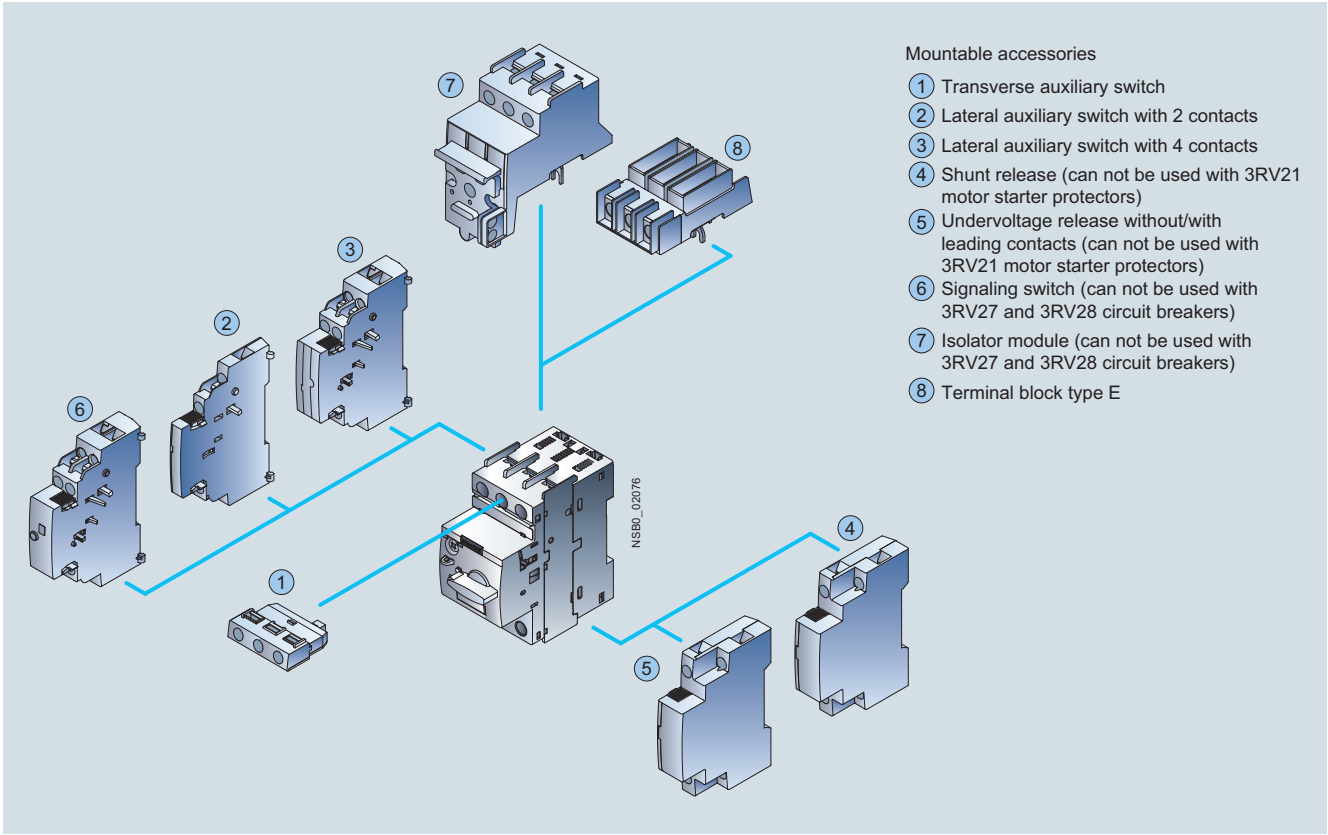
Overview

The following illustration shows our 3RV2 motor starter protector/ circuit breaker with the accessories which can be mounted for the sizes S00 and S0, see also "Introduction" → "Overview", page 7/2.

Accessories see page 7/26 onwards.



Mountable accessories for SIRIUS 3RV2 motor starter protectors/circuit breakers

SIRIUS motor starter protector with spring-type terminals, size S0 (left) and SIRIUS motor starter protector with screw terminals, size S00 (right)

The new SIRIUS 3RV2 motor starter protectors/circuit breakers are compact, current limiting motor starter protectors/circuit breakers which are optimized for load feeders. The motor starter protectors/circuit breakers are used for switching and protecting three-phase motors of up to 18.5 kW at 400 V AC and for other loads with rated currents of up to 40 A.

For 3RV1 motor starter protectors/circuit breakers in sizes S2 and S3 up to 100 A see page 7/55 onwards.

The new 3RV2 motor starter protectors are usually approved according to IEC and UL/CSA. 3RV2 motor starter protectors/ circuit breakers in sizes S00 and S0 are approved according to UL 508 as:

- "Manual Motor Controllers"
- "Manual Motor Controllers" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)" Please note that for this approval the 3RV20 motor starter protectors must be equipped with additional infeed terminals. For more information see "Accessories", page 7/33.

Corresponding short-circuit values see pages 7/10 to 7/14.

The 3RV27 and 3RV28 motor circuit breakers are approved as circuit breakers according to UL 489; they are a special version of the 3RV2 motor starter protectors.

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General data

Type of construction

The 3RV2 motor starter protectors are available in two sizes:

- Size S00 - width 45 mm,
  max. rated current 16 A,
  at 400 V AC suitable for three-phase motors up to 7.5 kW
- Size S0 - width 45 mm,
  max. rated current 40 A,
  at 400 V AC suitable for three-phase motors up to 18.5 kW

For sizes S2 and S3 of the 3RV1 motor starter protectors up to 100 A see page 7/55 onwards.

Circuit breakers acc. to UL 489

The 3RV27 and 3RV28 circuit breakers are available in two sizes:

- Size S00 – width 45 mm,
  max. rated current 15 A, for 480 Y/277 V AC
- For size S0 – width 45 mm,
  max. rated current 22 A, at 480 Y/277 V AC

For size S3 of the 3RV1742 circuit breakers up to 70 A see page 7/60.

Connection methods

The 3RV2 motor starter protectors/circuit breakers can be supplied with screw terminals, spring-type terminals and ring cable lug connections.

Screw terminals

Spring-type terminals

Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV20 motor starter protectors are suitable for overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

EC type test certificate for Category (2) G/D has been submitted. More details on request.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Motor starter protectors/circuit breakers	**3 R V**															
SIRIUS 2nd generation		**2**														
Type of motor starter protector/circuit breaker			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**2**	**0**	**1**	**1**	**–**	**1**	**A**	**A**	**1**	**0**					

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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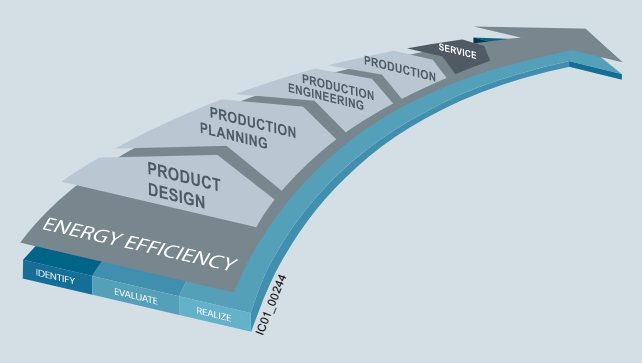
Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RV2 motor starter protectors/circuit breakers contribute to energy efficiency throughout the plant as follows:

- Minimization of energy losses through optimization of the bimetal trip units
- Reduction of inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Operating conditions

3RV2 motor starter protectors/circuit breakers are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV2 motor starter protectors/circuit breakers can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see the manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", http://support.automation.siemens.com/WW/view/en/60279172.

3RV2 motor starter protectors/circuit breakers are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account, see page 7/11.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector/circuit breaker. This also applies to motor starter protectors for transformer protection.

Possible uses

The 3RV2 motor starter protectors can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For operation in IT systems (IT networks)
- For switching of DC currents
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV27 and 3RV28)

For more information, see

- System manual "SIRIUS Innovations – System Overview", http://support.automation.siemens.com/WW/view/en/60317357
- Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", http://support.automation.siemens.com/WW/view/en/60279172

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General data

Technical specifications

Short-circuit breaking capacity I_{cu}, I_{cs} according to IEC 60947-2

This table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} of the 3RV2 motor starter protectors/circuit breakers with different operating voltages dependent on the rated current I_n of the motor starter protectors/circuit breakers.

Power can be supplied to the motor starter protectors/circuit breakers via the terminals at the top or at the bottom without restricting the rated data. If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector/circuit breaker as specified in the table, a back-up fuse is required. It is also possible to install an upstream motor starter protector/circuit breaker with a limiter function.

The maximum rated current of this back-up fuse is indicated in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

Fuseless design

Motor starter protector/contactor assemblies for short-circuit currents up to 150 kA can be ordered as fuseless load feeders, see Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet".

Motor starter protectors/ circuit breakers	Rated current I_n	Up to 240 V AC[1]			Up to 400 V AC[1]/ 415 V AC[2]			Up to 440 V AC[1]/ 460 V AC[2]			Up to 500 V AC[1]/ 525 V AC[2]			Up to 690 V AC[1]		
		I_{cu}	I_{cs}	Max. fuse (gG)	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3][4]
Type	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
Size S00																
3RV2.11	0.16 ... 1.6	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
	2; 2.5	100	100	°	100	100	°	100	100	°	100	100	°	10	10	25
	3.2	100	100	°	100	100	°	100	100	°	100	100	°	10	10	32
	4; 5	100	100	°	100	100	°	100	100	°	100	100	°	6	4	32
	6.3	100	100	°	100	100	°	100	100	°	100	100	°	6	4	50
	8	100	100	°	100	100	°	50	50	63	42	42	63	6	4	50
	10	100	100	°	100	100	°	50	50	80	42	42	63	6	4	50
	12.5	100	100	°	100	100	°	50	50	80	42	42	80	6	4	63
	16	100	100	°	55	30	100	50	10	80	10	5	80	4	4	63
Size S0																
3RV2.21	0.16 ... 1.6	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
	2; 2.5	100	100	°	100	100	°	100	100	°	100	100	°	10	10	25
	3.2	100	100	°	100	100	°	100	100	°	100	100	°	10	10	32
	4; 5	100	100	°	100	100	°	100	100	°	100	100	°	6	4	32
	6.3	100	100	°	100	100	°	100	100	°	100	100	°	6	4	50
	8	100	100	°	100	100	°	50	50	63	42	42	63	6	4	50
	10	100	100	°	100	100	°	50	50	80	42	42	63	6	4	50
	12.5	100	100	°	100	100	°	50	50	80	42	42	80	6	4	63
	16	100	100	°	55	25	100	50	10	80	10	5	80	4	2	63
	20	100	100	°	55	25	125	50	10	80	10	5	80	4	2	63
	22; 25	100	100	°	55	25	125	50	10	100	10	5	80	4	2	63
	28; 32	100	100	°	55	25	125	30	10	125	10	5	100	4	2	100
	36; 40	100	100	°	20	10	125	12	8	125	6	3	100	3	2	100

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required if the short-circuit current at the place of installation > I_{cu}.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

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Short-circuit breaking capacity I_{cuIT} in the IT system (IT network) according to IEC 60947-2

3RV2 motor starter protectors/circuit breakers are suitable for use in IT systems. The values of I_{cu} and I_{cs} apply for the three-pole short circuit. In case of a double ground fault in different phases at the input and output side of a motor starter protector, the special short-circuit breaking capacity I_{cuIT} applies. The specifications in the table below apply to 3RV2 motor starter protectors/circuit breakers.

If the short-circuit current at the place of installation exceeds the motor starter protector/circuit breaker's specified rated short-circuit breaking capacity, you will need to use a back-up fuse. The maximum rated current of this back-up fuse is indicated in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

Motor starter protectors/ circuit breakers	Rated current I_n	Up to 240 V AC[1]		Up to 400 V AC[1]/415 V AC[2]		Up to 500 V AC[1]/525 V AC[2]		Up to 690 V AC[1][5]	
		I_{cuIT}	Max. fuse (gG)[3]	I_{cuIT}	Max. fuse (gG)[3][4]	I_{cuIT}	Max. fuse (gG)[3]	I_{cuIT}	Max. fuse (gG)[3]
Type	A	kA	A	kA	A	kA	A	kA	A
Size S00									
3RV2.11	0.16 ... 0.4	100	°	100	°	100	°	100	°
	0.5	100	°	100	°	100	°	0.5	4
	0.63; 0.8	100	°	100	°	100	°	0.5	6
	1	100	°	100	°	8	10	2	10
	1.25	100	°	100	°	8	16	2	16
	1.6	100	°	100	°	8	20	2	16
	2; 2.5	100	°	8	25	8	25	2	20
	3.2	100	°	8	32	8	32	2	25
	4; 5	100	°	4	32	2	32	2	25
	6.3; 8	100	°	4	50	2	40	1.5	35
	10	100	°	4	50	2	40	1.5	40
	12.5	100	°	4	63	2	50	1.5	40
	16	55	80	4	63	2	50	1.5	40
Size S0									
3RV2.21	0.16 ... 0.4	100	°	100	°	100	°	100	°
	0.5	100	°	100	°	100	°	0.5	4
	0.63; 0.8	100	°	100	°	100	°	0.5	6
	1	100	°	100	°	8	10	2	10
	1.25	100	°	100	°	8	16	2	16
	1.6	100	°	100	°	8	20	2	16
	2; 2.5	100	°	8	25	8	25	2	20
	3.2	100	°	8	32	8	32	2	25
	4; 5	100	°	4	32	2	32	2	25
	6.3; 8	100	°	4	50	2	40	1.5	35
	10	100	°	4	50	2	40	1.5	40
	12.5	100	°	4	63	2	50	1.5	40
	16	55	80	4	63	2	50	1.5	40
	20 ... 25	55	80	4	63	2	50	1.5	50
	28; 32	55	80	2	63	2	63	1.5	63
	36; 40	20	80	2	63	2	63	1.5	63

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required if short-circuit current at the place of installation > I_{cuIT}.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

5) Overvoltage category II applies for applications in IT systems > 600 V.

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General data

Limiter function with standard devices for 500 V AC and 690 V AC according to IEC 60947-2

The table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} with an upstream standard motor starter protector/circuit breaker that fulfills the limiter function at voltages 500 V AC and 690 V AC.

The short-circuit breaking capacity can be increased significantly with an upstream standard motor starter protector/circuit breaker with limiter function. The motor starter protector/circuit breaker which is connected downstream must be set to the rated current of the load.

With motor starter protector/circuit breaker assemblies, note the clearance to grounded parts and between the motor starter protectors/circuit breakers. Short-circuit proof wiring between the motor starter protectors/circuit breakers must be ensured. The motor starter protectors/circuit breakers can be mounted side by side in a modular arrangement.

Standard motor starter protectors/circuit breakers		**Rated current I_n**	**Up to 500 V AC[1]/525 V AC[2]**		**Up to 690 V AC[1]**	
	With limiter rated current I_n		I_{cu}	I_{cs}	I_{cu}	I_{cs}
Type	Type	A	kA	kA	kA	kA
Size S00						
3RV2.11	**Size S0:** I_n = 32 A	2 ... 6.3	--	--	50	25
		8	100	50	20	10
		10 ... 16	100	50	20[3]	10[3]
	Size S2: 3RV1331-4HC10 I_n = 50 A	10 ... 16	--	--	50	25
Size S0						
3RV2.21	**Size S0:** I_n = 32 A	16 ... 32	100	50	20[3]	10[3]
	Size S2: 3RV1331-4HC10 I_n = 50 A	16 ... 32	--	--	50	20

-- No limiter required

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Infeed to the limiter is always on the side 1L1/3L2/5L3.

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Permissible rated data of devices approved for North America (UL/CSA)

Motor starter protectors of the 3RV2 series are approved for UL/CSA, and according to UL508 and CSA C22.2 No. 14, they can be used on their own or as load feeders in combination with a contactor.

These motor starter protectors can be used as "Manual Motor Controllers" for "Group Installations", as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" and as "Self-Protected Combination Motor Controllers" (Type E).

3RV2 motor starter protectors as "Manual Motor Controllers"

If used as a "Manual Motor Controller", the motor starter protector is always operated in combination with an upstream short-circuit protection device. Approved fuses or circuit breakers according to UL 489/CSA C22.2 No. 5 can be used. These devices must be dimensioned according to the National Electrical Code (UL) or Canadian Electrical Code (CSA).

The file numbers for the approval of the 3RV2 as a Manual Motor Controller are as follows:

- UL File No. 47705, CCN: NLRV
- CSA Master Contract 165071, Product Class: 3211 05

Motor starter protectors		hp rating[1] for FLA[2] max.		Rated current I_n	240 V AC		480 V AC		600 V AC	
					UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]
Type	V	Single-phase	3-phase	A	kA	kA	kA	kA	kA	kA
Size S00										
3RV2011, 3RV2111, 3RV2311, 3RV2411				0.16 ... 12.5 16	65 65	65 65	65 65	65 65	30 --	30 --
FLA[2] max. 16 A, 480 V; 12.5 A, 600 V	115 200 230 460 575/600	1 2 2 -- --	2 3 5 10 10							
Size S0										
3RV2021, 3RV2121, 3RV2321, 3RV2421				0.16 ... 12.5 16 ... 25 28, 32 36, 40	65 65 65 65	65 65 65 65	65 65 50 12	65 65 50 12	30 --/(30)[4] -- --	30 --/(30)[4] -- --
FLA[2] max. 40 A, 480 V	115 200 230 460 575/600	3 5 7 1/2 -- --	5 10 10 30 --							

-- No approval

[1] hp rating = Power rating in horse power (maximum motor rating).

[2] FLA = Full Load Amps/motor full load current.

[3] Corresponds to "short-circuit breaking capacity" according to UL/CSA.

[4] The values in brackets only apply to 3RV2.23 motor starter protectors.

3RV20 motor starter protectors (up to 32 A) as "Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations"

The application as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" is only available for UL.
CSA does not recognize this approval! When the motor starter protector is used as a "Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations", it must always be combined with upstream short-circuit protection. Approved fuses or a circuit breaker according to UL 489 can be used.

These devices must be dimensioned according to the National Electrical Code.

The 3RV20 motor starter protectors are approved as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" under the following file number:

- UL File No. 47705, CCN: NLRV

Motor starter protectors		hp rating[1] for FLA[2] max.		Rated current I_n	240 V AC	Up to 480 Y/277 V AC	Up to 600 Y/347 V AC
					UL I_{bc}[3]	UL I_{bc}[3]	UL I_{bc}[3]
Type	V	Single-phase	3-phase	A	kA	kA	kA
Size S00							
3RV2011				0.16 ... 12.5 16	65 65	65 65	30 --
FLA[2] max. 16 A, 480 V; 12.5 A, 600 V	115 200 230 460 575/600	1 2 2 -- --	2 3 5 10 10				
Size S0							
3RV2021				0.16 ... 12.5 16 ... 25 28; 32	65 65 50	65 65 50	30 -- --
FLA[2] max. 32 A, 480 V	115 200 230 460 575/600	2 3 5 -- --	5 7 1/2 10 20 --				

-- No approval

[1] hp rating = Power rating in horse power (maximum motor rating).

[2] FLA = Full Load Amps/motor full load current.

[3] Corresponds to "short-circuit breaking capacity" according to UL.

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General data

3RV20 motor starter protectors (up to 32 A) as "Self-Protected Combination Motor Controller (Type E)"

UL 508 approval demands 1-inch clearance and 2-inch creepage distance at line side for "Self-Protected Combination Motor Controller Type E".

Therefore, 3RV20 motor starter protectors of size S00 and S0 are approved according to UL 508 in combination with the terminal blocks listed below.

CSA does not require these extended clearances and creepage distances. According to CSA, these terminal blocks can be omitted when the device is used as a "Self-Protected Combination Motor Controller".

The 3RV20 motor starter protectors are approved as "Self-Protected Combination Motor Controllers" under the following file numbers:

- UL File No. E156943, CCN: NKJH
- CSA Master Contract 165071, Product Class: 3211 08

Motor starter protectors		hp rating[1] for FLA[2] max.		Rated current I_n	Up to 240 V AC		Up to 480 Y/277 V AC		Up to 600 Y/347 V AC	
					UL I_{cc}[3]	CSA I_{cc}[3]	UL I_{cc}[3]	CSA I_{cc}[3]	UL I_{cc}[3]	CSA I_{cc}[3]
Type	V	Single-phase	3-phase	A	kA	kA	kA	kA	kA	kA
Size S00										
3RV2011 + 3RV2928-1H[4][5]				0.16 ... 12.5	65	65	65	65	30	30
				16	65	65	65	65	--	--
FLA[2] max.	115	1	2							
16 A, 480 V;	200	2	3							
12.5 A, 600 V	230	2	5							
	460	--	10							
	575/600	--	10							
Size S0										
3RV2021 + 3RV2928-1H[4][5]				0.16 ... 12.5	65	65	65	65	30	30
				16 ... 25	65	65	65	65	--	--
				28; 32	50	50	50	50	--	--
FLA[2] max.	115	2	5							
32 A, 480 V	200	3	7 1/2							
	230	5	10							
	460	--	20							
	575/600	--	--							

-- No approval

1) hp rating = Power rating in horse power (maximum motor rating).

2) FLA = Full Load Amps/motor full load current.

3) Corresponds to "short-circuit breaking capacity" according to UL/CSA.

4) Not required for CSA.

5) Alternatively, the 3RV2928-1K can also be used.

3RV27 and 3RV28 motor starter protectors as "circuit breakers"

These motor starter protectors are approved as circuit breakers according to UL 489 and CSA 22.2 No. 5. They can be used therefore as upstream short-circuit protective devices for "Manual Motor Controllers" and "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations".

3RV27 and 3RV28 motor starter protectors are approved as "circuit breakers" under the following file numbers:

- UL File No. E235044, CCN: DIVQ
- CSA Master Contract 165071, Product Class: 1432 01

Circuit breakers	Rated current I_n	240 V AC		480 Y/277 V AC		600 Y/347 V AC	
		UL I_{cc}[1]	CSA I_{cc}[1]	UL I_{cc}[1]	CSA I_{cc}[1]	UL I_{cc}[1]	CSA I_{cc}[1]
Type	A	kA	kA	kA	kA	kA	kA
Size S00							
3RV2711	0.16 ... 12.5	65	65	65	65	10	10
	15	65	65	65	65	--	--
3RV2811	0.16 ... 12.5	65	65	65	65	10	10
	15	65	65	65	65	--	--
Size S0							
3RV2721	20; 22	50	50	50	50	--	--
3RV2821	20; 22	50	50	50	50	--	--

-- No approval

1) Corresponds to "short-circuit breaking capacity" according to UL.

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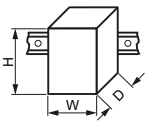
General data

Type			**3RV2.1.**	**3RV27, 3RV28**	**3RV2.2.**
Size			S00	S00, S0	S0
Dimensions (W x H x D)					
• Screw terminals		mm	45 x 97 x 91	45 x 144 x 92	45 x 97 x 91
• Spring-type terminals		mm	45 x 109 x 91	--	45 x 119 x 91
Standards					
• IEC 60947-1, EN 60947-1 (VDE 0660 Part 100)			Yes		
• IEC 60947-2, EN 60947-2 (VDE 0660 Part 101)			Yes		
• IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)			Yes	--	Yes
• UL 508, CSA C22.2 No.14			Yes	--	Yes
• UL 489, CSA C22.2 No. 5			--	Yes	--
Number of poles			3		
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	16	22	40
Permissible ambient temperature					
• Storage/transport		°C	–50 ... +80		
• Operation	I_n: 0.16 ... 32 A	°C	–20 ... +70 (current reduction above +60 °C)		
	I_n: 36 ... 40 A	°C	–20 ... +40 (the devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required)		
Permissible rated current at inside temperature of control cabinet					
• +60 °C		%	100		
• +70 °C		%	87		
Permissible rated current at ambient temperature of enclosure (applies for motor starter protector/circuit breaker inside enclosure ≤ 32 A)					
• +35 °C		%	100		
• +60 °C		%	87		
Rated operational voltage U_e					
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)		
• Acc. to UL/CSA		V AC	600		
Rated frequency		Hz	50/60		
Rated insulation voltage U_i		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Utilization category					
• IEC 60947-2 (motor starter protector/circuit breaker)			A		
• IEC 60947-4-1 (motor starter)			AC-3		
Trip class CLASS	Acc. to IEC 60947-4-1		10	--	10
DC short-circuit breaking capacity (time constant t = 5 ms)					
• 1 conducting path 150 V DC		kA	10		
• 2 conducting paths in series 300 V DC		kA	10		
• 3 conducting paths in series 450 V DC		kA	10		
Power loss P_v for each motor starter protector/circuit breaker Dependent on the rated current I_n (upper setting range)	I_n: 0.16 ... 0.63 A	W	5		
	I_n: 0.8 ... 6.3 A	W	6		
	I_n: 8 ... 16 A	W	7		
	I_n: 16 A	W	--		7
	I_n: 20 ... 25 A	W	--		8
	I_n: 28 ... 32 A	W	--		11
	I_n: 36 ... 40 A	W	--		14
$R_{per\ conducting\ path} = \frac{P}{I^2 \times 3}$					
Shock resistance	Acc. to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)		
Degree of protection	Acc. to IEC 60529		IP20		
Touch protection	Acc. to EN 50274		Finger-safe for vertical contact from the front		
Temperature compensation	Acc. to IEC 60947-4-1	°C	–20 ... +60		
Phase failure sensitivity	Acc. to IEC 60947-4-1		Yes	No	Yes
Explosion protection – Safe operation of motors with "increased safety" type of protection			Yes, only for 3RV20 motor starter protectors		
EC type test certificate number according to directive 94/9/EC (ATEX)			On request		
Isolating function	Acc. to IEC 60947-2		Yes		
Main and EMERGENCY-STOP switch characteristics (with corresponding accessories)	Acc. to EN 60204-1		Yes		
Protective separation between main and auxiliary circuits, required for PELV applications	Acc. to IEC 60947-1				
• Up to 400 V + 10 %			Yes		
• Up to 415 V + 5 % (higher voltages on request)			Yes		
Permissible mounting position			Any, acc. to IEC 60447 start command "I" right-hand side or top		
Mechanical endurance		Operating cycles	100 000		
Electrical endurance		Operating cycles	100 000		
Max. switching frequency per hour (motor starts)		1/h	15		

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General data

Rated data of the auxiliary switches and signaling switches

		Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC	Signaling switches	Transverse auxiliary switch with 1 CO	Transverse auxiliary switch with 1 NO + 1 NC, 2 NO
Max. rated voltage					
• Acc. to NEMA (UL)	V AC	600			250
• Acc. to NEMA (CSA)	V AC	600			250
Uninterrupted current	A	10	10	5	2.5
Switching capacity		1 NO + 1 NC, 2 NO, 2 NC: A600, Q300; 2 NO + 2 NC: A300, Q300	A600, Q300	B600, R300	C300, R300

Front transverse auxiliary switches

		Switching capacity for different voltages: 1 CO	Switching capacity for different voltages: 1 NO + 1 NC, 2 NO
Rated operational current I_e			
• At AC-15, alternating voltage			
- 24 V	A	4	2
- 230 V	A	3	0.5
• At AC-12 = I_{th}, alternating voltage			
- 24 V	A	10	2.5
- 230 V	A	10	2.5
• At DC-13, direct voltage *L/R* 200 ms			
- 24 V	A	1	1
- 48 V	A	--	0.3
- 60 V	A	--	0.15
- 110 V	A	0.22	--
- 220 V	A	0.1	--
Minimum load capacity	V	17	
	mA	1	

Front transverse electronic compatible auxiliary switches

			Switching capacity for different voltages: 1 CO
Rated operational voltage U_e	Alternating voltage	V	125
Rated operational current I_e/AC-14	at U_e = 125 V	A	0.1
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	60
Rated operational current I_e/DC-13	at U_e = 60 V	A	0.3
Minimum load capacity		V	5
		mA	1

Lateral auxiliary switches with signaling switch

		Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC Signaling switch
Rated operational current I_e		
• At AC-15, alternating voltage		
- 24 V	A	6
- 230 V	A	4
- 400 V	A	3
- 690 V	A	1
• At AC-12 = I_{th}, alternating voltage		
- 24 V	A	10
- 230 V	A	10
- 400 V	A	10
- 690 V	A	10
• At DC-13, direct voltage *L/R* 200 ms		
- 24 V	A	2
- 110 V	A	0.5
- 220 V	A	0.25
- 440 V	A	0.1
Minimum load capacity	V	17
	mA	1

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Auxiliary releases

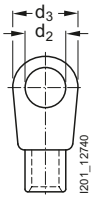
		Undervoltage releases	Shunt releases
Power consumption			
• During pick-up			
- AC voltages	VA/W	20.2/13	20.2/13
- DC voltages	W	20	13 ... 80
• During uninterrupted duty			
- AC voltages	VA/W	7.2/2.4	--
- DC voltages	W	2.1	--
Response voltage			
• Tripping	V	0.35 ... 0.7 x U_s	0.7 ... 1.1 x U_s
• Pick-up	V	0.85 ... 1.1 x U_s	--
Opening time maximum	ms	20	

Short-circuit protection for auxiliary and control circuits

Melting fuses operational class gG	A	10
Miniature circuit breakers C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

Conductor cross-sections of main circuit

Type		**3RV2.11**	**3RV2.21**	**3RV27, 3RV28**
Size		S00	S0	S00, S0
Connection type		**Screw terminals**		
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5	2.5 ... 3
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.75 ... 2.5)[1], 2 x 4	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]	1 ... 10, max. 2 x 10
• Stranded	mm^2	2 x (0.75 ... 2.5)[1], 2 x 4	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]	1.5 ... 25, max. 10 + 25
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], 1 x 10	1 ... 16, max. 6 + 16
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1], 2 x (18 ... 12)[1]	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]	2 x (14 ... 10)
Connection type		**Spring-type terminals**		
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.5 ... 4)	2 x (1 ... 10)	--
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 2.5)	2 x (1 ... 6)	--
• Finely stranded with end sleeves (DIN 46228-11)	mm^2	2 x (0.5 ... 2.5)	2 x (1 ... 6)	--
• AWG cables, solid or stranded	AWG	2 x (20 ... 12)	2 x (18 ... 8)	--
Max. external diameter of the conductor insulation	mm	3.6	3.6	--
Connection type		**Ring terminal lug connections**		
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2	--
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6	--
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5	--
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	d_2 = min. 4.3, d_3 = max. 12.2	--
• DIN 46234 without insulation sleeve				
• DIN 46225 without insulation sleeve				
• DIN 46237 with insulation sleeve				
• JIS C2805 Type R without insulation sleeve				
• JIS C2805 Type RAV with insulation sleeve				
• JIS C2805 Type RAP with insulation sleeve				



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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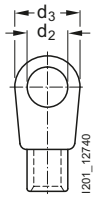
General data

Conductor cross-sections for auxiliary and control circuits

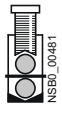
Type		3RV2.11	3RV2.21	3RV27, 3RV28
Size		S00	S0	S00, S0
Connection type		**Screw terminals**		
Terminal screw		M3, Pozidriv size 2		
Operating devices	mm	⌀ 5 ... 6		
Prescribed tightening torque	Nm	0.8 ... 1.2		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid or stranded	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)[1], 2 x (20 ... 16)[1]		
Connection type		**Spring-type terminals**		
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 1.5)		
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)		
Max. external diameter of the conductor insulation	mm	3.6		
Connection type		**Ring terminal lug connections**		
Terminal screw		M3, Pozidriv size 2		
Operating devices	mm	⌀ 5 ... 6		
Tightening torque	Nm	0.8 ... 1.2		
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5		
• DIN 46234 without insulation sleeve				
• DIN 46225 without insulation sleeve				
• DIN 46237 with insulation sleeve				
• JIS C2805 Type R without insulation sleeve				
• JIS C2805 Type RAV with insulation sleeve				
• JIS C2805 Type RAP with insulation sleeve				



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

Terminals for "Self-Protected Combination Motor Controllers (Type E) according to UL 508"

Type		3RV2928-1H
Prescribed tightening torque	Nm	2.5 ... 3
Conductor cross-sections		
• Front clamping point connected		
- Solid	mm^2	1 ... 10
- Finely stranded with end sleeve	mm^2	1 ... 16
- Stranded	mm^2	2.5 ... 25
- AWG cables, solid or stranded	AWG	14 ... 3
- Terminal screw		M4
• Rear clamping point connected		
- Solid	mm^2	1 ... 10
- Finely stranded with end sleeve	mm^2	1 ... 16
- Stranded	mm^2	1.5 ... 25
- AWG cables, solid or stranded	AWG	14 ... 6
- Terminal screw		M4
• Both clamping points connected		
- Front clamping point:		
Solid	mm^2	1 ... 10
Finely stranded with end sleeve	mm^2	1 ... 10[1], 1 ... 6[1]
Stranded	mm^2	2.5 ... 10
AWG cables, solid or stranded	AWG	14 ... 6
Terminal screw		M4
- Rear clamping point:		
Solid	mm^2	1 ... 10
Finely stranded with end sleeve	mm^2	1 ... 10[1], 1 ... 16[1]
Stranded	mm^2	2.5 ... 10
AWG cables, solid or stranded	AWG	16 ... 3
Terminal screw		M4



[1] The following can be connected when both clamping points are connected:
- Front 1 ... 10 mm^2 and rear 1 ... 10 mm^2
- Front 1 ... 6 mm^2 and rear 1 ... 16 mm^2

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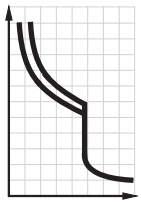
Selection and ordering data

CLASS 10, without auxiliary switches[1)]

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E



3RV2011-0AA10

3RV2011-0EA20

3RV2021-4AA10

3RV2021-4AA20

Rated current	Suitable for three-phase motors[2)] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals
I_n			$I >$	I_{cu}		Article No. / Price per PU		Article No. / Price per PU
A	kW	A	A	kA				
Size S00								
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV2011-0AA10**	▶	**3RV2011-0AA20**
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV2011-0BA10**	▶	**3RV2011-0BA20**
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV2011-0CA10**	▶	**3RV2011-0CA20**
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV2011-0DA10**	▶	**3RV2011-0DA20**
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV2011-0EA10**	▶	**3RV2011-0EA20**
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV2011-0FA10**	▶	**3RV2011-0FA20**
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV2011-0GA10**	▶	**3RV2011-0GA20**
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV2011-0HA10**	▶	**3RV2011-0HA20**
1	0.25	0.7 ... 1	13	100	▶	**3RV2011-0JA10**	▶	**3RV2011-0JA20**
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV2011-0KA10**	▶	**3RV2011-0KA20**
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV2011-1AA10**	▶	**3RV2011-1AA20**
2	0.75	1.4 ... 2	26	100	▶	**3RV2011-1BA10**	▶	**3RV2011-1BA20**
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV2011-1CA10**	▶	**3RV2011-1CA20**
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV2011-1DA10**	▶	**3RV2011-1DA20**
4	1.5	2.8 ... 4	52	100	▶	**3RV2011-1EA10**	▶	**3RV2011-1EA20**
5	1.5	3.5 ... 5	65	100	▶	**3RV2011-1FA10**	▶	**3RV2011-1FA20**
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV2011-1GA10**	▶	**3RV2011-1GA20**
8	3	5.5 ... 8	104	100	▶	**3RV2011-1HA10**	▶	**3RV2011-1HA20**
10	4	7 ... 10	130	100	▶	**3RV2011-1JA10**	▶	**3RV2011-1JA20**
12.5	5.5	9 ... 12.5	163	100	▶	**3RV2011-1KA10**	▶	**3RV2011-1KA20**
16	7.5	11 ... 16	208	55	▶	**3RV2011-4AA10**	▶	**3RV2011-4AA20**
Size S0						NEW		NEW
0.63	0.18	0.45 ... 0.63	8.2	100	B	**3RV2021-0GA10**	B	**3RV2021-0GA20**
0.8	0.18	0.55 ... 0.8	10	100	B	**3RV2021-0HA10**	B	**3RV2021-0HA20**
1	0.25	0.7 ... 1	13	100	B	**3RV2021-0JA10**	B	**3RV2021-0JA20**
1.25	0.37	0.9 ... 1.25	16	100	B	**3RV2021-0KA10**	B	**3RV2021-0KA20**
1.6	0.55	1.1 ... 1.6	21	100	B	**3RV2021-1AA10**	B	**3RV2021-1AA20**
2	0.75	1.4 ... 2	26	100	B	**3RV2021-1BA10**	B	**3RV2021-1BA20**
2.5	0.75	1.8 ... 2.5	33	100	B	**3RV2021-1CA10**	B	**3RV2021-1CA20**
3.2	1.1	2.2 ... 3.2	42	100	B	**3RV2021-1DA10**	B	**3RV2021-1DA20**
4	1.5	2.8 ... 4	52	100	B	**3RV2021-1EA10**	B	**3RV2021-1EA20**
5	1.5	3.5 ... 5	65	100	B	**3RV2021-1FA10**	B	**3RV2021-1FA20**
6.3	2.2	4.5 ... 6.3	82	100	B	**3RV2021-1GA10**	B	**3RV2021-1GA20**
8	3	5.5 ... 8	104	100	B	**3RV2021-1HA10**	B	**3RV2021-1HA20**
10	4	7 ... 10	130	100	B	**3RV2021-1JA10**	B	**3RV2021-1JA20**
12.5	5.5	9 ... 12.5	163	100	B	**3RV2021-1KA10**	B	**3RV2021-1KA20**
16	7.5	11 ... 16	208	55	▶	**3RV2021-4AA10**	▶	**3RV2021-4AA20**
20	7.5	14 ... 20	260	55	▶	**3RV2021-4BA10**	▶	**3RV2021-4BA20**
22	11	17 ... 22	286	55	▶	**3RV2021-4CA10**	▶	**3RV2021-4CA20**
25	11	20 ... 25	325	55	▶	**3RV2021-4DA10**	▶	**3RV2021-4DA20**
28	15	23 ... 28	364	55	▶	**3RV2021-4NA10**	▶	**3RV2021-4NA20**
32	15	27 ... 32	400	55	▶	**3RV2021-4EA10**	▶	**3RV2021-4EA20**
36[3)]	18.5	30 ... 36	432	20	▶	**3RV2021-4PA10**		--
40[3)]	18.5	34 ... 40	480	20	▶	**3RV2021-4FA10**		--

1) The 3RV20.1-..A.0 motor starter protectors up to 32 A are also available with ring terminal lug connection. The Article No. must be changed in the 11th digit to **"4"**: e.g. 3RV2011-0AA**4**0.

2) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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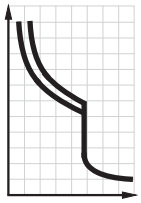
SIRIUS 3RV2 Motor Starter Protectors up to 40 A

For motor protection

CLASS 10, with transverse auxiliary switch (1 NO + 1 NC)

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E



3RV2011-4AA15
with integrated transverse auxiliary switch

3RV2011-0EA25
with integrated transverse auxiliary switch

3RV2021-4AA15
with integrated transverse auxiliary switch

3RV2021-4AA25
with integrated transverse auxiliary switch

Rated current	Suitable for three-phase motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals
						Article No. / Price per PU		Article No. / Price per PU
I_n			$I >$	I_{cu}				
A	kW	A	A	kA				
Size S00								
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV2011-0AA15**	▶	**3RV2011-0AA25**
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV2011-0BA15**	▶	**3RV2011-0BA25**
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV2011-0CA15**	▶	**3RV2011-0CA25**
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV2011-0DA15**	▶	**3RV2011-0DA25**
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV2011-0EA15**	▶	**3RV2011-0EA25**
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV2011-0FA15**	▶	**3RV2011-0FA25**
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV2011-0GA15**	▶	**3RV2011-0GA25**
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV2011-0HA15**	▶	**3RV2011-0HA25**
1	0.25	0.7 ... 1	13	100	▶	**3RV2011-0JA15**	▶	**3RV2011-0JA25**
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV2011-0KA15**	▶	**3RV2011-0KA25**
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV2011-1AA15**	▶	**3RV2011-1AA25**
2	0.75	1.4 ... 2	26	100	▶	**3RV2011-1BA15**	▶	**3RV2011-1BA25**
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV2011-1CA15**	▶	**3RV2011-1CA25**
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV2011-1DA15**	▶	**3RV2011-1DA25**
4	1.5	2.8 ... 4	52	100	▶	**3RV2011-1EA15**	▶	**3RV2011-1EA25**
5	1.5	3.5 ... 5	65	100	▶	**3RV2011-1FA15**	▶	**3RV2011-1FA25**
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV2011-1GA15**	▶	**3RV2011-1GA25**
8	3	5.5 ... 8	104	100	▶	**3RV2011-1HA15**	▶	**3RV2011-1HA25**
10	4	7 ... 10	130	100	▶	**3RV2011-1JA15**	▶	**3RV2011-1JA25**
12.5	5.5	9 ... 12.5	163	100	▶	**3RV2011-1KA15**	▶	**3RV2011-1KA25**
16	7.5	11 ... 16	208	55	▶	**3RV2011-4AA15**	▶	**3RV2011-4AA25**
Size S0								
16	7.5	11 ... 16	208	55	▶	**3RV2021-4AA15**	▶	**3RV2021-4AA25**
20	7.5	14 ... 20	260	55	▶	**3RV2021-4BA15**	▶	**3RV2021-4BA25**
22	11	17 ... 22	286	55	▶	**3RV2021-4CA15**	▶	**3RV2021-4CA25**
25	11	20 ... 25	325	55	▶	**3RV2021-4DA15**	▶	**3RV2021-4DA25**
28	15	23 ... 28	364	55	▶	**3RV2021-4NA15**	▶	**3RV2021-4NA25**
32	15	27 ... 32	400	55	▶	**3RV2021-4EA15**	▶	**3RV2021-4EA25**
36[2]	18.5	30 ... 36	432	20	▶	**3RV2021-4PA15**		--
40[2]	18.5	34 ... 40	480	20	▶	**3RV2021-4FA15**		--

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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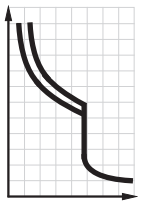
Selection and ordering data

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches



3RV2111-0FA10

3RV2121-4BA10

Rated current	Suitable for three-phase motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}		Article No.	Price per PU			
A	kW	A	A	kA						
Size S00[2]										
0.16	0.04	0.11 ... 0.16	2.1	100	A	**3RV2111-0AA10**		1	1 unit	41E
0.2	0.06	0.14 ... 0.2	2.6	100	A	**3RV2111-0BA10**		1	1 unit	41E
0.25	0.06	0.18 ... 0.25	3.3	100	A	**3RV2111-0CA10**		1	1 unit	41E
0.32	0.09	0.22 ... 0.32	4.2	100	A	**3RV2111-0DA10**		1	1 unit	41E
0.4	0.09	0.28 ... 0.4	5.2	100	A	**3RV2111-0EA10**		1	1 unit	41E
0.5	0.12	0.35 ... 0.5	6.5	100	A	**3RV2111-0FA10**		1	1 unit	41E
0.63	0.18	0.45 ... 0.63	8.2	100	A	**3RV2111-0GA10**		1	1 unit	41E
0.8	0.18	0.55 ... 0.8	10	100	A	**3RV2111-0HA10**		1	1 unit	41E
1	0.25	0.7 ... 1	13	100	A	**3RV2111-0JA10**		1	1 unit	41E
1.25	0.37	0.9 ... 1.25	16	100	A	**3RV2111-0KA10**		1	1 unit	41E
1.6	0.55	1.1 ... 1.6	21	100	A	**3RV2111-1AA10**		1	1 unit	41E
2	0.75	1.4 ... 2	26	100	A	**3RV2111-1BA10**		1	1 unit	41E
2.5	0.75	1.8 ... 2.5	33	100	A	**3RV2111-1CA10**		1	1 unit	41E
3.2	1.1	2.2 ... 3.2	42	100	A	**3RV2111-1DA10**		1	1 unit	41E
4	1.5	2.8 ... 4	52	100	A	**3RV2111-1EA10**		1	1 unit	41E
5	1.5	3.5 ... 5	65	100	A	**3RV2111-1FA10**		1	1 unit	41E
6.3	2.2	4.5 ... 6.3	82	100	A	**3RV2111-1GA10**		1	1 unit	41E
8	3	5.5 ... 8	104	100	A	**3RV2111-1HA10**		1	1 unit	41E
10	4	7 ... 10	130	100	A	**3RV2111-1JA10**		1	1 unit	41E
12.5	5.5	9 ... 12.5	163	100	A	**3RV2111-1KA10**		1	1 unit	41E
16	7.5	11 ... 16	208	55	A	**3RV2111-4AA10**		1	1 unit	41E
Size S0[2]										
16	7.5	11 ... 16	208	55	A	**3RV2121-4AA10**		1	1 unit	41E
20	7.5	14 ... 20	260	55	A	**3RV2121-4BA10**		1	1 unit	41E
22	11	17 ... 22	286	55	A	**3RV2121-4CA10**		1	1 unit	41E
25	11	20 ... 25	325	55	A	**3RV2121-4DA10**		1	1 unit	41E
28	15	23 ... 28	364	55	A	**3RV2121-4NA10**		1	1 unit	41E
32	15	27 ... 32	400	55	A	**3RV2121-4EA10**		1	1 unit	41E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] Accessories for mounting on the right and 3RV2915 three-phase busbars cannot be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

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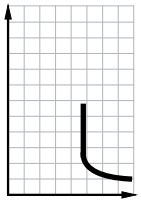
For starter combinations

Selection and ordering data

Without auxiliary switches

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E



3RV2311-4AC10

3RV2311-0JC20

3RV2321-4AC10

3RV2321-4AC20

Rated current	Suitable for three-phase motors[1] with P	Thermal overload release[2]	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	DT	Spring-type terminals
I_n			$I >$	I_{cu}		Article No. Price per PU		Article No. Price per PU
A	kW	A	A	kA				
Size S00								
0.16	0.04	Without	2.1	100	B	**3RV23 11-0AC10**	B	**3RV2311-0AC20**
0.2	0.06	Without	2.6	100	B	**3RV2311-0BC10**	B	**3RV2311-0BC20**
0.25	0.06	Without	3.3	100	B	**3RV2311-0CC10**	B	**3RV2311-0CC20**
0.32	0.09	Without	4.2	100	B	**3RV2311-0DC10**	B	**3RV2311-0DC20**
0.4	0.09	Without	5.2	100	B	**3RV2311-0EC10**	B	**3RV2311-0EC20**
0.5	0.12	Without	6.5	100	B	**3RV2311-0FC10**	B	**3RV2311-0FC20**
0.63	0.18	Without	8.2	100	B	**3RV2311-0GC10**	B	**3RV2311-0GC20**
0.8	0.18	Without	10	100	B	**3RV2311-0HC10**	B	**3RV2311-0HC20**
1	0.25	Without	13	100	B	**3RV2311-0JC10**	B	**3RV2311-0JC20**
1.25	0.37	Without	16	100	B	**3RV2311-0KC10**	B	**3RV2311-0KC20**
1.6	0.55	Without	21	100	B	**3RV2311-1AC10**	B	**3RV2311-1AC20**
2	0.75	Without	26	100	B	**3RV2311-1BC10**	B	**3RV2311-1BC20**
2.5	0.75	Without	33	100	B	**3RV2311-1CC10**	B	**3RV2311-1CC20**
3.2	1.1	Without	42	100	B	**3RV2311-1DC10**	B	**3RV2311-1DC20**
4	1.5	Without	52	100	B	**3RV2311-1EC10**	B	**3RV2311-1EC20**
5	1.5	Without	65	100	B	**3RV2311-1FC10**	B	**3RV2311-1FC20**
6.3	2.2	Without	82	100	B	**3RV2311-1GC10**	B	**3RV2311-1GC20**
8	3	Without	104	100	B	**3RV2311-1HC10**	B	**3RV2311-1HC20**
10	4	Without	130	100	B	**3RV2311-1JC10**	B	**3RV2311-1JC20**
12.5	5.5	Without	163	100	B	**3RV2311-1KC10**	B	**3RV2311-1KC20**
16	7.5	Without	208	55	B	**3RV2311-4AC10**	B	**3RV2311-4AC20**
Size S0						NEW		NEW
1.6	0.55	Without	21	100	B	**3RV2321-1AC10**	B	**3RV2321-1AC20**
2	0.75	Without	26	100	B	**3RV2321-1BC10**	B	**3RV2321-1BC20**
2.5	0.75	Without	33	100	B	**3RV2321-1CC10**	B	**3RV2321-1CC20**
3.2	1.1	Without	42	100	B	**3RV2321-1DC10**	B	**3RV2321-1DC20**
4	1.5	Without	52	100	B	**3RV2321-1EC10**	B	**3RV2321-1EC20**
5	1.5	Without	65	100	B	**3RV2321-1FC10**	B	**3RV2321-1FC20**
6.3	2.2	Without	82	100	B	**3RV2321-1GC10**	B	**3RV2321-1GC20**
8	3	Without	104	100	B	**3RV2321-1HC10**	B	**3RV2321-1HC20**
10	4	Without	130	100	B	**3RV2321-1JC10**	B	**3RV2321-1JC20**
12.5	5.5	Without	163	100	B	**3RV2321-1KC10**	B	**3RV2321-1KC20**
16	7.5	Without	208	55	B	**3RV2321-4AC10**	B	**3RV2321-4AC20**
20	7.5	Without	260	55	B	**3RV2321-4BC10**	B	**3RV2321-4BC20**
22	11	Without	286	55	B	**3RV2321-4CC10**	B	**3RV2321-4CC20**
25	11	Without	325	55	B	**3RV2321-4DC10**	B	**3RV2321-4DC20**
28	15	Without	364	55	B	**3RV2321-4NC10**	B	**3RV2321-4NC20**
32	15	Without	400	55	B	**3RV2321-4EC10**	B	**3RV2321-4EC20**
36[3]	18.5	Without	432	20	B	**3RV2321-4PC10**		--
40[3]	18.5	Without	480	20	B	**3RV2321-4FC10**		--

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] For overload protection of the motors, appropriate overload relays must be used.

[3] The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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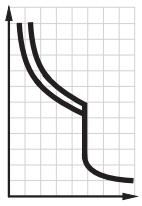
Selection and ordering data

CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E



3RV2411-0AA10

3RV2411-0AA20

3RV2421-4AA10

3RV2421-4AA20

Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals		DT	Spring-type terminals	
I_n		$I >$	I_{cu}		Article No.	Price per PU		Article No.	Price per PU
A	A	A	kA						
Size S00									
0.16	0.11 ... 0.16	3.3	100	▶	**3RV2411-0AA10**		A	**3RV2411-0AA20**	
0.2	0.14 ... 0.2	4.2	100	▶	**3RV2411-0BA10**		A	**3RV2411-0BA20**	
0.25	0.18 ... 0.25	5.2	100	▶	**3RV2411-0CA10**		A	**3RV2411-0CA20**	
0.32	0.22 ... 0.32	6.5	100	▶	**3RV2411-0DA10**		A	**3RV2411-0DA20**	
0.4	0.28 ... 0.4	8.2	100	▶	**3RV2411-0EA10**		A	**3RV2411-0EA20**	
0.5	0.35 ... 0.5	10	100	▶	**3RV2411-0FA10**		A	**3RV2411-0FA20**	
0.63	0.45 ... 0.63	13	100	▶	**3RV2411-0GA10**		A	**3RV2411-0GA20**	
0.8	0.55 ... 0.8	16	100	▶	**3RV2411-0HA10**		A	**3RV2411-0HA20**	
1	0.7 ... 1	21	100	▶	**3RV2411-0JA10**		A	**3RV2411-0JA20**	
1.25	0.9 ... 1.25	26	100	▶	**3RV2411-0KA10**		A	**3RV2411-0KA20**	
1.6	1.1 ... 1.6	33	100	▶	**3RV2411-1AA10**		A	**3RV2411-1AA20**	
2	1.4 ... 2	42	100	▶	**3RV2411-1BA10**		A	**3RV2411-1BA20**	
2.5	1.8 ... 2.5	52	100	▶	**3RV2411-1CA10**		A	**3RV2411-1CA20**	
3.2	2.2 ... 3.2	65	100	▶	**3RV2411-1DA10**		A	**3RV2411-1DA20**	
4	2.8 ... 4	82	100	▶	**3RV2411-1EA10**		A	**3RV2411-1EA20**	
5	3.5 ... 5	104	100	▶	**3RV2411-1FA10**		A	**3RV2411-1FA20**	
6.3	4.5 ... 6.3	130	100	▶	**3RV2411-1GA10**		A	**3RV2411-1GA20**	
8	5.5 ... 8	163	100	▶	**3RV2411-1HA10**		A	**3RV2411-1HA20**	
10	7 ... 10	208	100	▶	**3RV2411-1JA10**		A	**3RV2411-1JA20**	
12.5	9 ... 12.5	260	100	▶	**3RV2411-1KA10**		A	**3RV2411-1KA20**	
16	11 ... 16	286	55	▶	**3RV2411-4AA10**		A	**3RV2411-4AA20**	
Size S0									
16	11 ... 16	286	55	▶	**3RV2421-4AA10**		A	**3RV2421-4AA20**	
20	14 ... 20	325	55	▶	**3RV2421-4BA10**		A	**3RV2421-4BA20**	
22	17 ... 22	364	55	▶	**3RV2421-4CA10**		A	**3RV2421-4CA20**	
25	20 ... 25	400	55	▶	**3RV2421-4DA10**		A	**3RV2421-4DA20**	

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/27 onwards).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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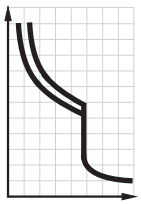
For system protection according to UL 489/CSA C22.2 No. 5

Selection and ordering data

Without auxiliary switches

for system protection and non-motor loads according to UL/CSA



3RV2711-0AD10

Rated current[1]	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC[2]	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n[1]		I >	I_{bc}		Article No. Price per PU			
A	A	A	kA					
Size S00								
0.16	0.16	2.1	65	C	**3RV2711-0AD10**	1	1 unit	41E
0.2	0.2	2.6	65	C	**3RV2711-0BD10**	1	1 unit	41E
0.25	0.25	3.3	65	C	**3RV2711-0CD10**	1	1 unit	41E
0.32	0.32	4.2	65	C	**3RV2711-0DD10**	1	1 unit	41E
0.4	0.4	5.2	65	C	**3RV2711-0ED10**	1	1 unit	41E
0.5	0.5	6.5	65	C	**3RV2711-0FD10**	1	1 unit	41E
0.63	0.63	8.2	65	C	**3RV2711-0GD10**	1	1 unit	41E
0.8	0.8	10	65	C	**3RV2711-0HD10**	1	1 unit	41E
1	1	13	65	C	**3RV2711-0JD10**	1	1 unit	41E
1.25	1.25	16	65	C	**3RV2711-0KD10**	1	1 unit	41E
1.6	1.6	21	65	C	**3RV2711-1AD10**	1	1 unit	41E
2	2	26	65	C	**3RV2711-1BD10**	1	1 unit	41E
2.5	2.5	33	65	C	**3RV2711-1CD10**	1	1 unit	41E
3.2	3.2	42	65	C	**3RV2711-1DD10**	1	1 unit	41E
4	4	52	65	C	**3RV2711-1ED10**	1	1 unit	41E
5	5	65	65	C	**3RV2711-1FD10**	1	1 unit	41E
6.3	6.3	82	65	C	**3RV2711-1GD10**	1	1 unit	41E
8	8	104	65	C	**3RV2711-1HD10**	1	1 unit	41E
10	10	130	65	C	**3RV2711-1JD10**	1	1 unit	41E
12.5	12.5	163	65	C	**3RV2711-1KD10**	1	1 unit	41E
15	15	208	65	C	**3RV2711-4AD10**	1	1 unit	41E
Size S0					NEW			
20	20	260	50	C	**3RV2721-4BD10**	1	1 unit	41E
22	22	286	50	C	**3RV2721-4CD10**	1	1 unit	41E

[1] Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

[2] For values for 600 Y/347 V AC see page 7/14.

Lateral and transverse auxiliary switches can be ordered separately (see "Accessories" on page 7/27 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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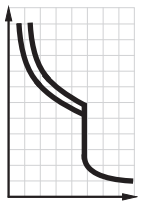
Selection and ordering data

Without auxiliary switches

Circuit breakers for system and transformer protection according to UL/CSA, specially designed for transformers with high inrush current



3RV2811-0AD10

Rated current[1]	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC[2]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
I_n[1]		$I >$	I_{bc}		Article No.	Price per PU			
A	A	A	kA						
Size S00									
0.16	0.16	3.3	65	C	**3RV2811-0AD10**		1	1 unit	41E
0.2	0.2	4.2	65	C	**3RV2811-0BD10**		1	1 unit	41E
0.25	0.25	5.2	65	C	**3RV2811-0CD10**		1	1 unit	41E
0.32	0.32	6.5	65	C	**3RV2811-0DD10**		1	1 unit	41E
0.4	0.4	8.2	65	C	**3RV2811-0ED10**		1	1 unit	41E
0.5	0.5	10	65	C	**3RV2811-0FD10**		1	1 unit	41E
0.63	0.63	13	65	C	**3RV2811-0GD10**		1	1 unit	41E
0.8	0.8	16	65	C	**3RV2811-0HD10**		1	1 unit	41E
1	1	21	65	C	**3RV2811-0JD10**		1	1 unit	41E
1.25	1.25	26	65	C	**3RV2811-0KD10**		1	1 unit	41E
1.6	1.6	33	65	C	**3RV2811-1AD10**		1	1 unit	41E
2	2	42	65	C	**3RV2811-1BD10**		1	1 unit	41E
2.5	2.5	52	65	C	**3RV2811-1CD10**		1	1 unit	41E
3.2	3.2	65	65	C	**3RV2811-1DD10**		1	1 unit	41E
4	4	82	65	C	**3RV2811-1ED10**		1	1 unit	41E
5	5	104	65	C	**3RV2811-1FD10**		1	1 unit	41E
6.3	6.3	130	65	C	**3RV2811-1GD10**		1	1 unit	41E
8	8	163	65	C	**3RV2811-1HD10**		1	1 unit	41E
10	10	208	65	C	**3RV2811-1JD10**		1	1 unit	41E
12.5	12.5	260	65	C	**3RV2811-1KD10**		1	1 unit	41E
15	15	286	65	C	**3RV2811-4AD10**		1	1 unit	41E
Size S0					NEW				
20	20	325	50	C	**3RV2821-4BD10**		1	1 unit	41E
22	22	364	50	C	**3RV2821-4CD10**		1	1 unit	41E

[1] Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

[2] For values for 600 Y/347 V AC see page 7/14.

Lateral and transverse auxiliary switches can be ordered separately (see "Accessories" on page 7/27 onwards).

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Accessories
Mountable accessories

Overview

Mounting location and function

The 3RV2 motor starter protectors/circuit breakers have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signaling switches, auxiliary releases and isolator modules can be supplied separately.

These components are easily fitted to the switches without the use of any tools according to requirements.

Overview graphic see page 7/7.

Front side Note: • A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker.	**Transverse auxiliary switches, electronic compatible transverse auxiliary switches** 1 NO + 1 NC or 2 NO or 1 CO	An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors/circuit breakers remains unchanged.
Left-hand side Notes: • A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker. • Lateral auxiliary switches (two contacts) and signaling switches can be mounted separately or together. • The signaling switch cannot be used for the 3RV27 and 3RV28 circuit breakers.	**Lateral auxiliary switches (2 contacts)** 1 NO + 1 NC or 2 NO or 2 NC	One of the three lateral auxiliary switches can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker. The width of the lateral auxiliary switch with two contacts is 9 mm.
	Lateral auxiliary switches (4 contacts) 2 NO + 2 NC	One lateral auxiliary switch with four contacts can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker. The width of the lateral auxiliary switch with four contacts is 18 mm.
	Signaling switches Tripping 1 NO + 1 NC Short circuit 1 NO + 1 NC	One signaling switch can be mounted on the left side of each motor starter protector. The signaling switch has two contact systems. One contact system always signals tripping irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signaling as a result of switching off with the handle. In order to be able to switch on the motor starter protector again after a short circuit, the signaling switch must be reset manually after the error cause has been eliminated. The overall width of the signaling switch is 18 mm.
Right-hand side Notes: • One auxiliary release can be mounted per motor starter protector/circuit breaker. • Accessories cannot be mounted at the right-hand side of the 3RV21 motor starter protectors for motor protection with overload relay function.	**Auxiliary releases**	
	Shunt releases	For remote-controlled tripping of the motor starter protector/circuit breaker. The release coil should only be energized for short periods (see circuit diagrams).
	or	
	Undervoltage releases	Trips the motor starter protector/circuit breaker when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the motor starter protector/circuit breaker. Particularly suitable for EMERGENCY-STOP disconnection by way of corresponding EMERGENCY-STOP pushbuttons according to DIN EN 60204-1.
	or	
	Undervoltage releases with leading auxiliary contacts 2 NO	Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting energy consumption. In the "tripped" position, these auxiliary contacts are not guaranteed to open. The leading contacts permit the motor starter protector/circuit breaker to reclose. The overall width of the auxiliary release is 18 mm.
Top Notes: • The isolator module cannot be used for the 3RV27 and 3RV28 circuit breakers. • The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired.	**Isolator modules**	Isolator modules can be mounted to the upper connection side of the motor starter protectors. The supply cable is connected to the motor starter protector through the isolator module. The plug can only be unplugged when the motor starter protector is open and isolates all 3 poles of the motor starter protector from the network. The shock-protected isolation point is clearly visible and secured with a padlock to prevent reinsertion of the plug.

For a complete overview of which accessories can be used for the various motor starter protectors/circuit breakers, see page 7/2.

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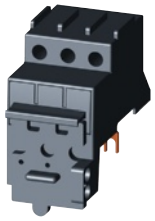
Selection and ordering data

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E

	Version	For motor starter protectors/ circuit breakers Size	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Auxiliary switches[1]								
3RV2901-1E	**Transverse auxiliary switches** for front mounting							
	1 CO	S00, S0	▶	**3RV2901-1D**			**--**	
	1 NO + 1 NC[2]		▶	**3RV2901-1E**		▶	**3RV2901-2E**	
	2 NO		▶	**3RV2901-1F**		▶	**3RV2901-2F**	
3RV2901-2E	**Electronic compatible transverse auxiliary switches** mountable on the front, for operation in dusty atmosphere and in electronic circuits with low operating currents							
3RV2901-1G	1 CO	S00, S0	A	**3RV2901-1G**			**--**	
3RV2901-0H	**Covers for transverse auxiliary switches**	S00, S0	▶	**3RV2901-0H**			**--**	
3RV2901-1A 3RV2901-2A	**Lateral auxiliary switches** mountable on the left							
	1 NO + 1 NC[2]	S00, S0	▶	**3RV2901-1A**		▶	**3RV2901-2A**	
	2 NO		▶	**3RV2901-1B**		▶	**3RV2901-2B**	
	2 NC		▶	**3RV2901-1C**		▶	**3RV2901-2C**	
	2 NO + 2 NC		A	**3RV2901-1J**			**--**	
Signaling switches[3]								
3RV2921-1M 3RV2921-2M	**Signaling switches**[2] One signaling switch can be mounted on the left per motor starter protector. Separate tripped and short-circuit alarms, 1 NO + 1 NC each	S00, S0	▶	**3RV2921-1M**		▶	**3RV2921-2M**	
Isolator modules[3]								
 3RV2928-1A with padlock	**Isolator modules** Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position	S00, S0	▶	**3RV2928-1A**			**--**	

1) Each motor starter protector/circuit breaker can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch.

2) The 3RV29 auxiliary and signaling switches with 1 NO + 1 NC are also available with ring terminal lug connection. The Article No. must be changed in the 8th digit to **"4"**: e.g. 3RV2901-**4**E**.**

3) This accessory cannot be used for the 3RV27 and 3RV28 circuit breakers.

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Accessories
Mountable accessories

PU (UNIT, SET, M) =1
PS* =1 unit
PG =41E

3RV2902-1AV0

3RV2902-2AV0

3RV2922-1CP0

3RV2902-2DB0

Rated control supply voltage U_s					For motor starter protectors/ circuit breakers	DT	**Screw terminals**	DT	**Spring-type terminals**
AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]	DC			Article No. / Price per PU		Article No. / Price per PU
V	V	V	V	V	Size				
Auxiliary releases[3]									
Undervoltage releases									
--	--	--	--	24	S00, S0	A	**3RV2902-1AB4**		**--**
24	--	--	--	--	S00, S0	A	**3RV2902-1AB0**		**--**
110	120	--	--	--	S00, S0	A	**3RV2902-1AF0**		**--**
--	208	--	--	--	S00, S0	A	**3RV2902-1AM1**		**--**
230	240	--	--	--	S00, S0	4) ▶	**3RV2902-1AP0**	▶	**3RV2902-2AP0**
400	440	--	--	--	S00, S0	4) ▶	**3RV2902-1AV0**	▶	**3RV2902-2AV0**
415	480	--	--	--	S00, S0	A	**3RV2902-1AV1**		**--**
500	600	--	--	--	S00, S0	A	**3RV2902-1AS0**		**--**
Undervoltage releases with leading auxiliary contacts 2 NO									
230	240	--	--	--	S00, S0	A	**3RV2922-1CP0**	A	**3RV2922-2CP0**
400	440	--	--	--	S00, S0	A	**3RV2922-1CV0**	A	**3RV2922-2CV0**
415	480	--	--	--	S00, S0	4) A	**3RV2922-1CV1**	A	**3RV2922-2CV1**
Shunt releases									
--	--	20 ... 24	20 ... 70	--	S00, S0	▶	**3RV2902-1DB0**	▶	**3RV2902-2DB0**
--	--	90 ... 110	70 ... 190	--	S00, S0	4) A	**3RV2902-1DF0**	A	**3RV2902-2DF0**
--	--	210 ... 240	190 ... 330	--	S00, S0	4) ▶	**3RV2902-1DP0**	▶	**3RV2902-2DP0**
--	--	350 ... 415	330 ... 500	--	S00, S0	A	**3RV2902-1DV0**		**--**
--	--	500	500	--	S00, S0	A	**3RV2902-1DS0**		**--**

1) The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

2) The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

3) One auxiliary release can be mounted on the right per motor starter protector/circuit breaker (does not apply to 3RV21 motor starter protectors with overload relay function).

4) The 3RV29 auxiliary releases are also available with ring terminal lug connection. The Article No. must be changed in the 8th digit to **"4"**: e.g. 3RV2902-**4**AP0.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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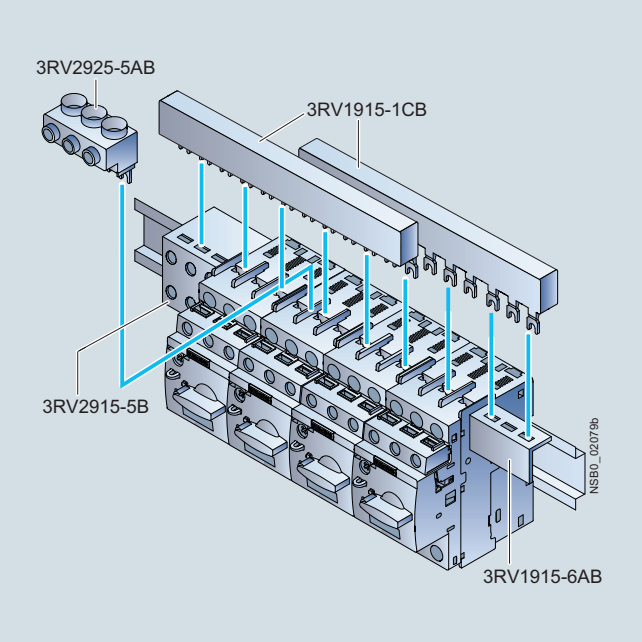
Overview

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV2 motor starter protectors/circuit breakers with screw terminals. They can be used for the different types of motor starter protector up to 32 A. The 3RV1915 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function and 3RV27 and 3RV28 circuit breakers according to UL 489/CSA C22.2 No. 5.

The busbars are suitable for between two and five motor starter protectors/circuit breakers. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector/circuit breaker.

A combination of motor starter protectors/circuit breakers of different sizes is possible. The motor starter protectors/circuit breakers are supplied by appropriate infeed terminals.



SIRIUS three-phase busbar system size S00/S0

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors/circuit breakers.

The three-phase busbar systems can also be used to construct "Type E Starters" according to UL/CSA. Special infeed terminals must be used for this purpose, however (see "Selection and Ordering Data", page 7/30).

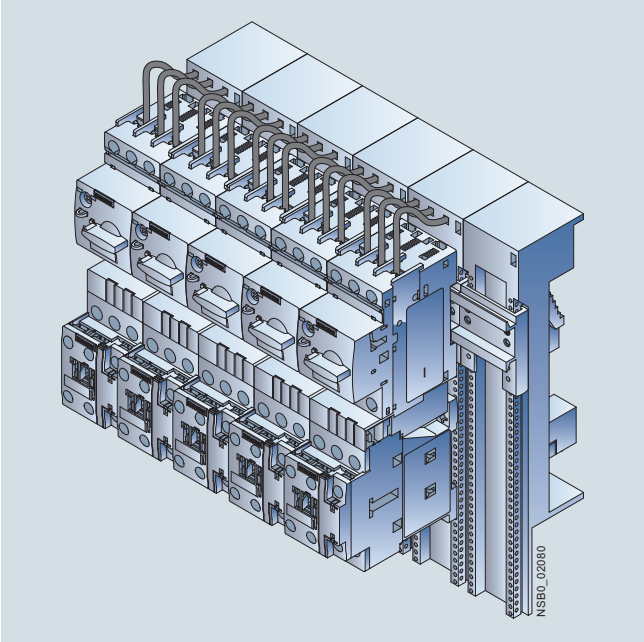
8US busbar adapters for 60 mm systems

The motor starter protectors/circuit breakers are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 5 mm or 10 mm thick.

The motor starter protectors/circuit breakers are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc., see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".



SIRIUS load feeders with busbar adapters snapped onto busbars

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Selection and ordering data

Three-phase busbars[1)2)]

3RV1915-1AB

3RV1915-1BB

3RV1915-1CB

3RV1915-1DB

For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection

Modular spacing	Number of motor starter protectors that can be connected: Without lateral accessories	With lateral auxiliary switch	With auxiliary release	Rated current I_n at 690 V	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm				A	Size						
45[3)]	2	--	--	63	S00, S0	▶	**3RV1915-1AB**		1	1 unit	41E
	3				S00, S0	▶	**3RV1915-1BB**		1	1 unit	41E
	4				S00, S0	▶	**3RV1915-1CB**		1	1 unit	41E
	5				S00, S0	▶	**3RV1915-1DB**		1	1 unit	41E
55[4)]	--	2	--	63	S00, S0	▶	**3RV1915-2AB**		1	1 unit	41E
		3			S00, S0	▶	**3RV1915-2BB**		1	1 unit	41E
		4			S00, S0	▶	**3RV1915-2CB**		1	1 unit	41E
		5			S00, S0	▶	**3RV1915-2DB**		1	1 unit	41E
63[5)]	--	--	2	63	S00, S0	▶	**3RV1915-3AB**		1	1 unit	41E
			4		S00, S0	▶	**3RV1915-3CB**		1	1 unit	41E

1) Not suitable for 3RV21 motor starter protectors for motor protection with overload relay function and for 3RV27 and 3RV28 circuit breakers according to UL 489/CSA C22.2 No. 5.

2) Approved for motor starter protectors with $I_n \leq 32$ A.

3) For 3RV2 motor starter protectors without accessories mounted on the side.

4) For 3RV2 motor starter protectors with auxiliary switches with 1 NO + 1 NC, 2 NO and 2 NC mounted on the left (9 mm wide).

5) For 3RV2 motor starter protectors with mounted accessories (18 mm wide). Auxiliary switches with 2 NO + 2 NC or signaling switch (mounted on the left) or with auxiliary release (mounted on the right).

Three-phase infeed terminals

3RV2925-5AB

3RV2915-5B

Conductor cross-section: Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded	Tightening torque	For motor starter protectors/ circuit breakers	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm²	mm²	AWG	Nm	Size						
Connection from top										
2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	▶	**3RV2925-5AB**		1	1 unit	41E
Connection from below This terminal is connected in place of a switch, please take the space requirement into account.										
2.5 ... 25	2.5 ... 16	10 ... 4	Input: 4, Output: 2 ... 2.5	S00, S0	▶	**3RV2915-5B**		1	1 unit	41E

Three-phase infeed terminals for constructing "Type E Starters"

3RV2925-5EB

Connection from top										
2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	A	**3RV2925-5EB**		1	1 unit	41E

Version	For motor starter protectors/ circuit breakers	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size						
Covers for connection tags							
Touch protection for empty positions	S00, S0	▶	**3RV1915-6AB**		1	10 units	41E

3RV1915-6AB

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Busbar adapters

8US1251-5DS10

8US1251-5DT11

8US1250-5AS10

8US1250-5AT10

For motor starter protectors/ circuit breakers	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
• For motor starter protectors/circuit breakers with screw terminals							**Screw terminals**				
S00/S0	25	12	200	45	690	▶	**8US1251-5DS10**		1	1 unit	14O
S0	32	10	260	45	690	▶	**8US1251-5NT10**		1	1 unit	14O
• For motor starter protectors/circuit breakers with spring-type terminals							**Spring-type terminals**				
S00/S0	25	12	200	45	690	▶	**8US1251-5DS11**		1	1 unit	14O
S00/S0	25	12	260	45	690	▶	**8US1251-5DT11**		1	1 unit	14O
S0	32	10	260	45	690	▶	**8US1251-5NT11**		1	1 unit	14O
Accessories											
Device holders For lateral mounting to busbar adapters	-- --	-- --	200 260	45 45	-- --	▶ ▶	**8US1250-5AS10** **8US1250-5AT10**		1 1	1 unit 1 unit	14O 14O
Side modules For widening of busbar adapters	--	--	200	9	--	A	**8US1998-2BJ10**		1	10 units	14O
Spacers For fixing the load feeder onto the busbar adapter	--	--	--	--	--	▶	**8US1998-1BA10**		1	10 units	14O
Vibration and shock kits For high vibration and shock loads	--	--	--	--	--	▶	**8US1998-1CA10**		1	2 units	14O

For additional busbar adapters see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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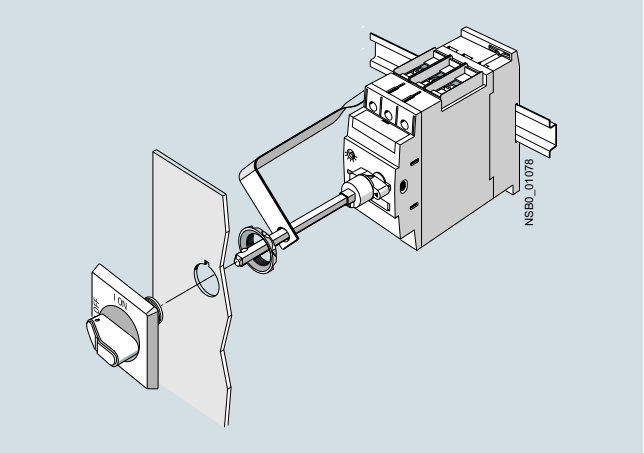
Accessories
Rotary operating mechanisms

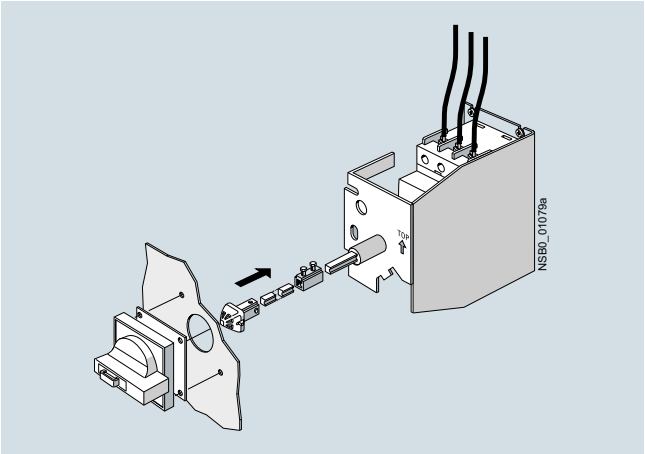
Overview

Door-coupling rotary operating mechanisms

Motor starter protectors/circuit breakers with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector/circuit breaker is closed, the operating mechanism is coupled. When the motor starter protector/circuit breaker closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to three padlocks. Inadvertent opening of the door is not possible in this case either.

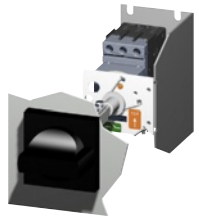


SIRIUS 3RV2926-0K door-coupling rotary operating mechanism



SIRIUS 3RV2926-2B door-coupling rotary operating mechanisms for arduous conditions

Selection and ordering data

Version	Color of handle	Version of extension shaft	For MSPs/ circuit breakers	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm	Size						
Door-coupling rotary operating mechanisms									
3RV2926-0B	The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental opening of the control cabinet door in the ON position of the motor starter protector/circuit breaker. The OFF position can be locked with up to three padlocks.								
Door-coupling rotary operating mechanisms	Black	130 330	S00, S0 S00, S0	▶ ▶	**3RV2926-0B** **3RV2926-0K**	1 1	1 unit 1 unit		41E 41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	130 330	S00, S0 S00, S0	▶ ▶	**3RV2926-0C** **3RV2926-0L**	1 1	1 unit 1 unit		41E 41E
Door-coupling rotary operating mechanisms for arduous conditions									
 3RV2926-2B	The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, an extension shaft of 300 mm in length (8 mmx8 mm), a spacer and two metal brackets, into which the motor starter protector/circuit breaker is inserted. The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking reliably prevents opening of the control cabinet door in the ON position of the motor starter protector/circuit breaker. The OFF position can be locked with up to three padlocks. Laterally mountable auxiliary releases and two-pole auxiliary switches can be used. The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.								
Door-coupling rotary operating mechanisms	Gray	300	S00, S0	▶	**3RV2926-2B**	1	1 unit		41E
EMERGENCY STOP door-coupling rotary operating mechanisms	Red/yellow	300	S00, S0	▶	**3RV2926-2C**	1	1 unit		41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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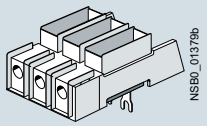
Overview

Accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508

The 3RV20 motor starter protectors with screw terminals are approved according to UL 508 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting terminal blocks.
The 3RV2928-1H terminal block is simply screwed onto the basic unit.



SIRIUS 3RV2928-1H terminal block

Another way to obtain the increased clearance and creepage distances for Type E is to mount the 3RV2928-1K phase barriers.

Special three-phase infeed terminals are required for constructing "Type E Starters" with an insulated three-phase busbar system (see "Busbar Accessories", page 7/30).

The 3RV29 infeed system also enables the assembly of "Type E Starters", see page 7/40 onwards.

Note:

According to CSA, these terminal blocks and the phase barriers can be omitted when the device is used as a "Self-Protected Combination Motor Controller" (Type E).

Link modules

Feeders can be easily assembled from single devices with the help of the link modules. The following table shows the different combination options for devices with screw or spring-type terminals.

Combination devices	3RV2 motor starter protectors/ circuit breakers Size	3RT2 contactors; 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors Size	Link modules Screw terminals	 Spring-type terminals
Link modules for connecting switching devices to 3RV2 motor starter protectors/circuit breakers[1)]				
3RT2 contactors with AC or DC coil	S00	S00	3RA1921-1DA00	3RA2911-2AA00
	S0	S00		--
3RT2 contactors with AC coil	S0	S0	3RA2921-1AA00	3RA2921-2AA00
	S00	S0		--
3RT2 contactors with DC coil	S0	S0	3RA2921-1BA00	3RA2921-2AA00
	S00	S0		--
3RW30 soft starters	S00	S00	3RA2921-1BA00	3RA2911-2GA00
	S0	S00		--
3RW30/3RW40 soft starters	S0	S0	3RA2921-1BA00	3RA2921-2GA00
	S00	S0		--
3RF34 solid-state contactors	S00/S0	S00	3RA2921-1BA00	--
Hybrid link modules for connecting contactors with spring-type terminals to 3RV2 motor starter protectors/circuit breakers with screw terminals[1)2)]				
3RT2 contactors with AC or DC coil	S00	S00	3RA2911-2FA00	--
	S0	S0	3RA2921-2FA00	--

Note:

Link modules and hybrid link modules up to max. 32 A can be used.

1) The link modules and the hybrid link modules cannot be used for 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

2) The motor starter protector/circuit breaker to contactor hybrid link modules are only suitable for constructing direct-on-line starters.

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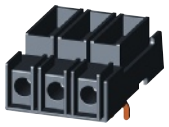
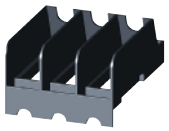
Selection and ordering data

Accessories

	Version	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers								
3RV2908-0P	**Scale covers** Sealable, for covering the set current scale	3RV20, 3RV21, 3RV24: S00, S0	▶	**3RV2908-0P**		100	10 units	41E
	Covers for devices with ring terminal lug connection (ensure finger-safety)			**Ring terminal lug connections**				
3RV2928-4AA00	• Main current level	3RV20: S00, S0	B	**3RV2928-4AA00**		1	1 unit	41E
	• For transverse auxiliary switches		B	**3RV2908-4AA10**		1	1 unit	41E
3RV2908-4AA10								
Fixing accessories								
3RV2928-0B	**Push-in lugs** For screwing the motor starter protector/ circuit breaker onto mounting plates For each motor starter protector/circuit breaker, two units are required.	S00, S0	A	**3RV2928-0B**		100	10 units	41E
Tools for opening spring-type terminals								
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals			**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	S00, S0	A	**3RA2908-1A**		1	1 unit	41B
Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508								
 3RV2928-1H	Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". The following terminal blocks or phase barriers must be used in 3RV20 motor starter protectors. The terminal block or phase barriers cannot be used in combination with the 3RV19.5 three-phase busbars. For construction with three-phase busbars see "Busbar Accessories" page 7/29 onwards.							
	Terminal blocks type E For extended clearance and creepage distances (1 and 2 inch)	S00, S0	▶	**3RV2928-1H**		1	1 unit	41E
 3RV2928-1K	**Phase barriers** For extended clearance and creepage distances (1 and 2 inch)	S00, S0	▶	**3RV2928-1K**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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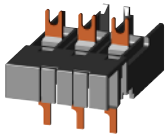
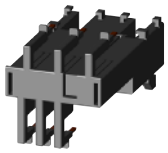
Link modules

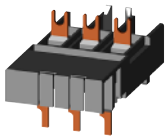
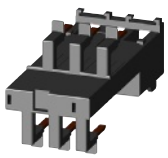
Actuating voltage of contactor	Size: 3RT2 contactors	Size: 3RV2 motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for motor starter protector to contactor[1]								
 3RA2921-1AA00	For mechanical and electrical connection between motor starter protector and contactor with screw terminals			**Screw terminals**				
	Single-unit packaging							
AC/DC	S00	S00/S0	▶	**3RA1921-1DA00**		1	1 unit	41B
AC	S0	S00/S0	A	**3RA2921-1AA00**		1	1 unit	41B
DC	S0	S00/S0	A	**3RA2921-1BA00**		1	1 unit	41B
	Multi-unit packaging							
AC/DC	S00	S00/S0	▶	**3RA1921-1D**		1	10 units	41B
AC	S0	S00/S0	A	**3RA2921-1A**		1	10 units	41B
DC	S0	S00/S0	A	**3RA2921-1B**		1	10 units	41B
 3RA2911-2AA00	For mechanical and electrical connection between motor starter protector and contactor with spring-type terminals			**Spring-type terminals**				
	Single-unit packaging							
AC/DC	S00	S00	▶	**3RA2911-2AA00**		1	1 unit	41B
AC[2]	S0	S0	▶	**3RA2921-2AA00**		1	1 unit	41B
DC	S0	S0	▶	**3RA2921-2AA00**		1	1 unit	41B
	Multi-unit packaging							
AC/DC	S00	S00	▶	**3RA2911-2A**		1	10 units	41B
AC[2]	S0	S0	▶	**3RA2921-2A**		1	10 units	41B
DC	S0	S0	▶	**3RA2921-2A**		1	10 units	41B
3RA2911-1CA00	**Spacers[2]** For compensating the height on AC contactors							
Single-unit packaging	S0	S0	A	**3RA2911-1CA00**		1	1 unit	41B
Multi-unit packaging	S0	S0	A	**3RA2911-1C**		1	5 units	41B

Note:

Link modules up to max. 32 A can be used.

[1] The link modules for motor starter protector to contactor cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

[2] A spacer for height compensation on AC contactors size S0 is optionally available.

Size: 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors	Size: 3RV2 motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for motor starter protector to soft starter[1] and motor starter protector to solid-state contactor							
 3RA2921-1BA00	Connection between motor starter protector and soft starter / solid-state contactor with screw terminals			**Screw terminals**			
	Single-unit packaging						
S00	S00/S0	A	**3RA2921-1BA00**		1	1 unit	41B
S0	S00/S0	A	**3RA2921-1BA00**		1	1 unit	41B
	Multi-unit packaging						
S00	S00/S0	A	**3RA2921-1B**		1	10 units	41B
S0	S00/S0	A	**3RA2921-1B**		1	10 units	41B
 3RA2921-2GA00	Connection between motor starter protector and soft starter spring-type terminals			**Spring-type terminals**			
	Single-unit packaging						
S00	S00	▶	**3RA2911-2GA00**		1	1 unit	41B
S0	S0	▶	**3RA2921-2GA00**		1	1 unit	41B
	Multi-unit packaging						
S00	S00	▶	**3RA2911-2G**		1	10 units	41B
S0	S0	▶	**3RA2921-2G**		1	10 units	41B

Note:

Link modules up to max. 32 A can be used.

[1] The link modules for motor starter protector to soft starter and motor starter protector to solid-state contactor cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

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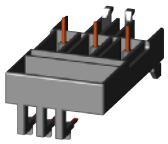
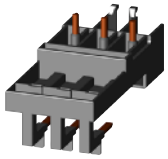
Accessories
Mounting accessories

	Actuating voltage of contactor	Size 3RT2 contactors	Size 3RV2 motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Hybrid link modules from motor starter protector to contactor[1)2)]									
 3RA2911-2FA00	Mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals								
	Single-unit packaging								
	AC/DC	S00	S00	▶	**3RA2911-2FA00**		1	1 unit	41B
	AC[2)]/DC	S0	S0	▶	**3RA2921-2FA00**		1	1 unit	41B
	Multi-unit packaging								
 3RA2921-2FA00	AC/DC	S00	S00	▶	**3RA2911-2F**		1	10 units	41B
	AC[2)]/DC	S0	S0	▶	**3RA2921-2F**		1	10 units	41B
3RA2911-1CA00	**Spacers[3)]** For compensating the height on AC contactors								
	Single-unit packaging	S0	S0	A	**3RA2911-1CA00**		1	1 unit	41B
	Multi-unit packaging	S0	S0	A	**3RA2911-1C**		1	5 units	41B

Note:

Link modules up to max. 32 A can be used.

1) The hybrid link modules for motor starter protector to contactor cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

2) The motor starter protector to contactor hybrid link modules are only suitable for constructing direct-on-line starters.

3) A spacer for height compensation on AC contactors size S0 is optionally available.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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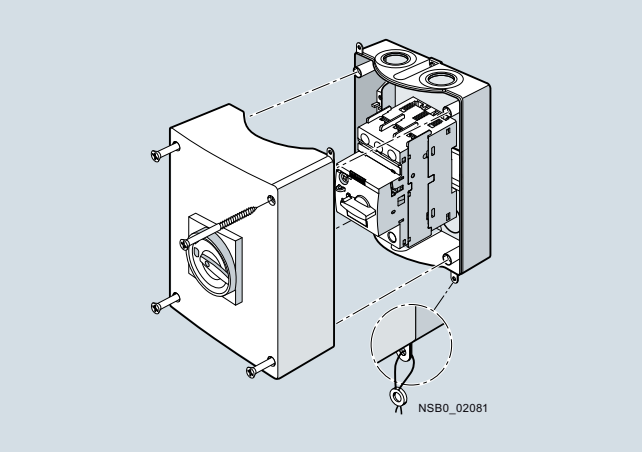
Overview

Enclosures

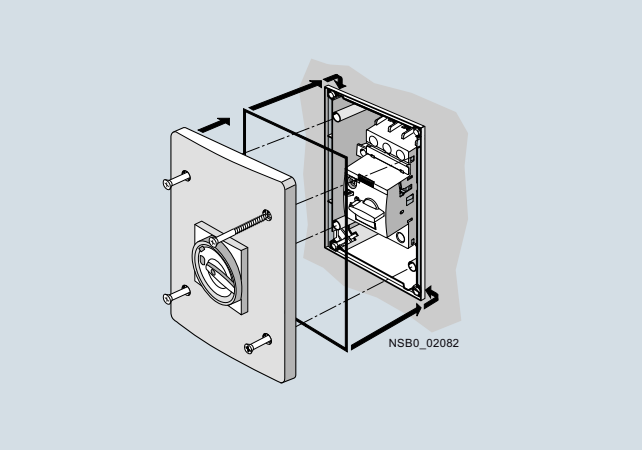
For stand-alone installation of 3RV20 to 3RV24 motor starter protectors size S00 ($I_{n\,max}$ = 16 A) and S0 ($I_{n\,max}$ = 32 A), cast aluminum enclosures for surface mounting and molded-plastic enclosures for flush mounting are available in various dimensions.

When installed in a molded-plastic enclosure the motor starter protectors have a rated operational voltage U_e of 500 V.

The enclosures for surface mounting have the degree of protection IP55; the enclosures for flush mounting also comply with the degree of protection IP55 at the front (the flush-mounted section complies with IP20).



Enclosures for surface mounting



Enclosures for flush mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

The narrow enclosure can accommodate a motor starter protector without accessories, with transverse auxiliary switch and with lateral auxiliary switch. There is no provision for installing a motor starter protector with a signaling switch.

With the motor starter protectors size S00 and S0, the molded-plastic enclosures are equipped with a rotary operating mechanism.

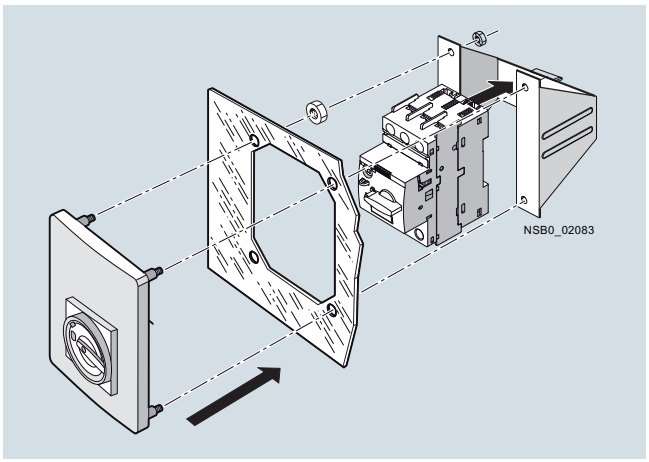
The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

In the OFF setting, all rotary operating mechanisms can be locked with up to three padlocks.

Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for 3RV20 to 3RV24 motor starter protectors size S00 and S0 are available for this purpose.

A holder for the motor starter protectors size S00 and S0, into which the motor starter protectors can be snapped, is available for the front plates.



Front plate (including holder) for sizes S00 and S0

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Accessories
Enclosures and front plates

Selection and ordering data

	Version	Degree of protection	Integrated terminals	Width	For 3RV20 to 3RV24 motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
				mm	Size						
Molded-plastic enclosures for surface mounting[1]											
3RV1923-1FA00	**With rotary operating mechanism,** lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	►	**3RV1923-1CA00**		1	1 unit	41E
				72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	►	**3RV1923-1DA00**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	►	**3RV1923-1FA00**		1	1 unit	41E
				72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	►	**3RV1923-1GA00**		1	1 unit	41E
Cast aluminum enclosures for surface mounting[1]											
3RV1923-1DA01	**With rotary operating mechanism,** lockable in 0 position	IP65	PE[3]	72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	►	**3RV1923-1DA01**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP65	PE[3]	72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	►	**3RV1923-1GA01**		1	1 unit	41E
Molded-plastic enclosures for flush mounting[4]											
3RV1923-2DA00	**With rotary operating mechanism,** lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	A	**3RV1923-2DA00**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch[2] + auxiliary release)	S00, S0	A	**3RV1923-2GA00**		1	1 unit	41E

1) The rear cable glands cannot be used on 3RV2.11-...2. and 3RV2.21-...2. devices with spring-type terminals.

2) Only valid for lateral auxiliary switches with two auxiliary contacts.

3) If required, an additional N terminal can be mounted (e.g. 8WA1011-1BG11).

4) Not suitable for 3RV2.11-...2. and 3RV2.21-...2. devices with spring-type terminals.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Front plates

3RV1923-4B + 3RV1923-4G

Version	Degree of protection	For 3RV20 to 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Molded-plastic front plates with rotary operating mechanism, lockable in 0 position For actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	▶	**3RV1923-4B**		1	1 unit	41E
Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism, red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	A	**3RV1923-4E**		1	1 unit	41E
Holders for front plates Holder is mounted on front plate, motor starter protector with and without accessories is snapped in.	--	S00, S0	▶	**3RV1923-4G**		1	1 unit	41E

Indicator lights

3RV1903-5B

Version	Rated control supply voltage U_s V	For 3RV20 to 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Indicator lights For all enclosures and front plates • With LED lamp for versions 110 ... 120 V, with glow lamp for versions 220 ... 500 V • With colored lenses red, green, yellow, orange and clear	110 ... 120 220 ... 240 380 ... 415 480 ... 500	S00, S0	C C C C	**3RV1903-5B** **3RV1903-5C** **3RV1903-5E** **3RV1903-5G**		1 1 1 1	1 unit 1 unit 1 unit 1 unit	41E 41E 41E 41E

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RV29 infeed system

Overview

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete load feeders with a screw or spring-type connection in sizes S00 and S0 (exception: this system cannot be used for the 3RV21, 3RV27 and 3RV28 motor starter protectors/circuit breakers).

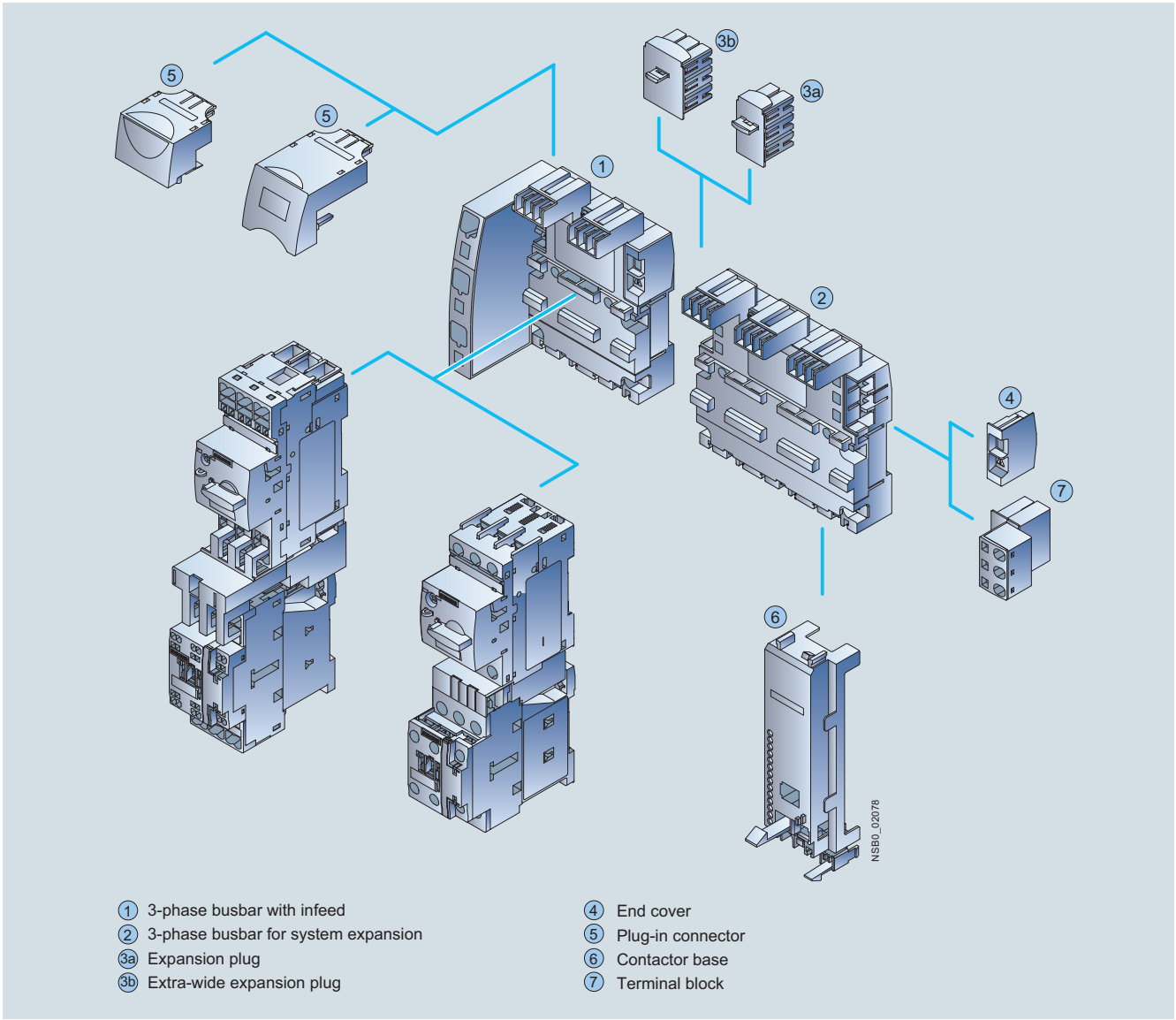
The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left depending on the version and can be supplied with a maximum conductor cross-section of 25 mm^2 (with end sleeve). A basic module has two sockets onto each of which a motor starter protector can be snapped.

Expansion modules are available for extending the system (three-phase busbars for system expansion). The individual modules are connected through an expansion plug.

The electrical connection between the three-phase busbars and the motor starter protectors is implemented through plug-in connectors. The complete system can be mounted on a TH 35 standard mounting rail to IEC 60715 and can be expanded as required up to a maximum current carrying capacity of 63 A.

The system is mounted extremely quickly and easily thanks to the simple plug-in technique. Thanks to the lateral infeed, the system also saves space in the control cabinet. The additional overall height required for the infeed unit is only 30 mm. The alternative infeed possibilities on each side offer a high degree of flexibility for configuring the control cabinet: Infeed on left-hand or right-hand side as well as infeed on one side and outfeed on the other side to supply further loads are all possible. A terminal block with spring-type connections in combination with a standard mounting rail enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components such as 5SY miniature circuit breakers or SIRIUS relay components.

The 3RV29 infeed system is approved in accordance with IEC to 500 V. It is also UL-approved and authorized for "Self-Protected Combination Motor Controller" (Type E starter) as well as for Type F starter (Type E starter + contactor).



SIRIUS 3RV29 infeed systems

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① *Three-phase busbars with infeed*

A three-phase busbar with infeed unit is required for connecting the incoming supply. These modules comprise one infeed module and two sockets which each accept one motor starter protector. A choice of two versions with infeed on the left or right is available. The infeed is connected to spring-type terminals. They permit an infeed with conductor cross-sections of up to 25 mm^2 with end sleeves. An end cover is supplied with each module.

② *Three-phase busbars for system expansion*

The three-phase busbars for system expansion support expansion of the system. There is a choice of modules with two or three sockets. The system can be expanded as required up to a maximum current carrying capacity of 63 A. An expansion plug is supplied with each module.

③a *Expansion plug*

The expansion plug is used for electrical connection of adjacent three-phase busbars. The current carrying capacity of this plug equals 63 A. One expansion plug is supplied with each three-phase busbar for system expansion. Additional expansion plugs are therefore only required as spare parts.

③b *Extra-wide expansion plug*

The wide expansion plug makes the electrical connection between two three-phase busbars, thus performing the same function as the 3RV2917-5BA00 expansion plug; the electrical characteristics (e.g. a current carrying capacity of 63 A) are identical.

The 3RV2917-5E expansion plug is 10 mm wider than the 3RV2917-5BA00 expansion plug, hence in the plugged state there is a distance of 10 mm between the connected three-phase busbars. This distance can be used to lay the auxiliary current and control current wiring ("wiring duct"). The motor starter protector and contactor can be wired from underneath, which means that the complete cable duct above the system can be omitted.

④ *End cover*

The end cover is used to cover the three-phase busbar at the open end of the system. This cover is therefore only required once for each system. An end cover is supplied with each three-phase busbar system with infeed. Further end covers are therefore only required as spare parts.

⑤ *Plug-in connector*

The plug-in connector is used for the electrical connection between the three-phase busbar and the 3RV2 motor starter protector. These plug-in connectors are available for screw or spring-type terminals.

⑥ *Contactor base*

Load feeders can be assembled in the system using the S00 and S0 contactor base. The contactor bases are suitable for contactors sizes S00 and S0 with spring-type and screw terminals and are simply snapped onto the three-phase busbars. Direct-on-line starters and reversing starters are possible. One contactor base is required for direct-on-line starters and two are required for reversing starters.

To assemble load feeders for reversing starters, the contactor bases can be arranged alongside each other (90 mm overall width). In this case the mechanical interlocking of the contactors is possible. The S0 contactor bases are also suitable for soft starters size S00 and S0 with screw terminal.

The infeed system is designed for mounting onto a TH 35 standard mounting rail with 7.5 mm overall depth. This standard mounting rail gives the contactor base a stable mounting surface to sit on. If standard mounting rails with a depth of 15 mm are used, the spacer connected to the bottom of the contactor base must be knocked out and plugged into the mating piece that is also on the underside. Then the contactor base also has a stable mounting surface. When standard mounting rails with a depth of 7.5 mm are used, the spacer has no function and can be removed.

The link modules are used for direct start load feeders, in which case the use of a contactor base is not absolutely necessary. Motor starter protector and contactor assemblies can then be directly snapped onto the sockets of the three-phase busbars. For feeders of sizes S00 and S0, the corresponding 3RA1921-1...., 3RA2911-2...., 3RA2921-1.... or 3RA2921-2.... link modules should generally be used.

⑦ *Terminal block*

The 3RV2917-5D terminal block enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components. The three phases can be fed out of the system using the terminal block; which means that single-phase loads can also be integrated in the system. The terminal block is plugged into the slot of the expansion plug and thus enables outfeeding from the middle or end of the infeed system. The terminal block can be rotated through 180° and be locked to the support modules of the infeed system. In addition, the 45 mm wide TH 35 3RV1917-7B standard mounting rail option for screwing onto the support plate facilitates plugging the single-phase, two-phase and three-phase components onto the infeed system.

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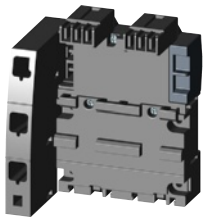
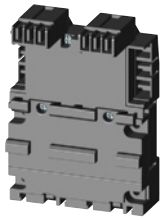
3RV29 infeed system

Selection and ordering data

Type	Version	For 3RV20, 3RV23, 3RV24 motor starter protectors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Three-phase busbars with infeed								
 3RV2917-1A								
Three-phase busbars with infeed incl. 3RV2917-6A end cover	For 2 motor starter protectors with screw or spring-type terminals							
	• With infeed on the left	S00, S0	A	**3RV2917-1A**		1	1 unit	41E
	• With infeed on the right	S00, S0	A	**3RV2917-1E**		1	1 unit	41E
Three-phase busbars for system expansion								
 3RV2917-4A								
Three-phase busbars incl. 3RV2917-5BA00 expansion plug	For motor starter protectors with screw or spring-type terminals							
	• For 2 motor starter protectors	S00, S0	A	**3RV2917-4A**		1	1 unit	41E
	• For 3 motor starter protectors	S00, S0	A	**3RV2917-4B**		1	1 unit	41E
Plug-in connectors								
 3RV2917-5AA00								
Plug-in connectors to make contact with the motor starter protectors	• For spring-type terminals			**Spring-type terminals**				
	- Single-unit packaging	S00[1] S0[2]	A A	**3RV2917-5AA00** **3RV2927-5AA00**		1 1	1 unit 1 unit	41E 41E
	- Multi-unit packaging	S00[1] S0[2]	A A	**3RV2917-5A** **3RV2927-5A**		1 1	10 units 10 units	41E 41E
 3RV2917-5CA00								
	• For screw terminals			**Screw terminals**				
	- Single-unit packaging	S00[1] S0[2]	A A	**3RV2917-5CA00** **3RV1927-5AA00**		1 1	1 unit 1 unit	41E 41E
	- Multi-unit packaging	S00[1] S0[2]	A A	**3RV2917-5C** **3RV1927-5A**		1 1	10 units 10 units	41E 41E

[1] I > 14 A, please note derating; see Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", http://support.automation.siemens.com/WW/view/en/60279172.

[2] I > 16 A, please note derating; see Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", http://support.automation.siemens.com/WW/view/en/60279172.

Type	Version	For contactors Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contactor bases								
 3RV2927-7AA00								
Contactor bases for mounting direct-on-line or reversing starters	Single-unit packaging	S00	A	**3RV2917-7AA00**		1	1 unit	41E
		S0	A	**3RV2927-7AA00**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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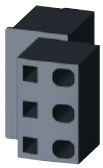
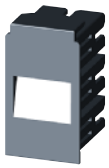
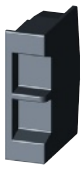
	Type	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal blocks								
 3RV2917-5D	**Terminal blocks** For integration of single-phase, two-phase and three-phase components	Single-unit packaging	A	**3RV2917-5D**		1	1 unit	41E
TH 35 standard mounting rails, width 45 mm								
3RV1917-7B	**TH 35 standard mounting rails** acc. to IEC 60715, width 45 mm For mounting onto three-phase busbars	Single-unit packaging	A	**3RV1917-7B**		1	1 unit	41E
Extra-wide expansion plugs								
3RV2917-5E	**Extra-wide expansion plugs** As accessory	Single-unit packaging	A	**3RV2917-5E**		1	1 unit	41E
Expansion plugs								
 3RV2917-5BA00	**Expansion plugs**[1] As spare part	Single-unit packaging	A	**3RV2917-5BA00**		1	1 unit	41E
End covers								
 3RV2917-6A	**End covers**[2] As spare part	Multi-unit packaging	A	**3RV2917-6A**		100	10 units	41E

[1] The expansion plug is included in the scope of supply of the 3RV2917-4. three-phase busbars for system expansion.

[2] The end cover is included in the scope of supply of the 3RV2917-1. three-phase busbars with infeed system.

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General data

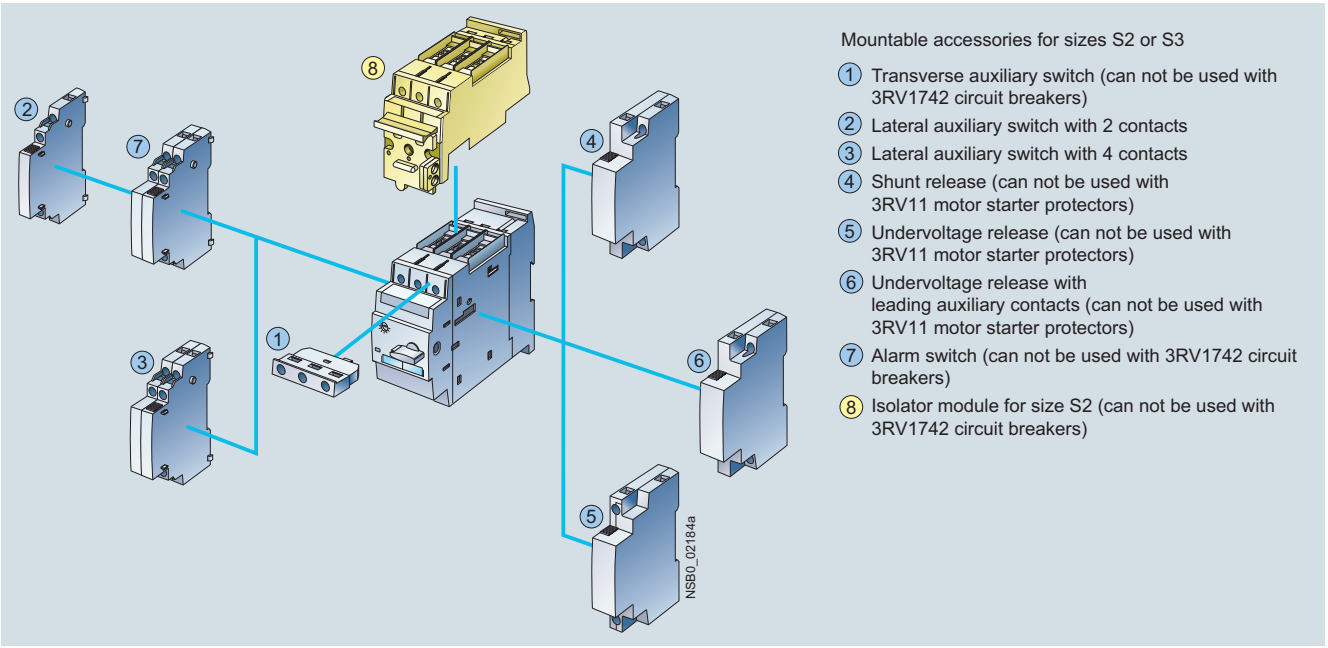
Overview

The following illustration shows our 3RV1 motor starter protector/ circuit breaker with the accessories which can be mounted for the sizes S2 and S3, see also "Introduction" → "Overview", page 7/3.

"Accessories" see page 7/62 onwards.

Note:

The 3RV1 devices (sizes S00/S0 to S3) can be found
- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



Mountable accessories for sizes S2 or S3

1. Transverse auxiliary switch (can not be used with 3RV1742 circuit breakers)
2. Lateral auxiliary switch with 2 contacts
3. Lateral auxiliary switch with 4 contacts
4. Shunt release (can not be used with 3RV11 motor starter protectors)
5. Undervoltage release (can not be used with 3RV11 motor starter protectors)
6. Undervoltage release with leading auxiliary contacts (can not be used with 3RV11 motor starter protectors)
7. Alarm switch (can not be used with 3RV1742 circuit breakers)
8. Isolator module for size S2 (can not be used with 3RV1742 circuit breakers)

SIRIUS 3RV1 motor starter protector/circuit breaker sizes S2 and S3 with mountable accessories

SIRIUS motor starter protector size S2

3RV1 motor starter protectors/circuit breakers are compact, current limiting motor starter protectors/circuit breakers which are optimized for load feeders. The motor starter protectors/circuit breakers are used according to IEC 60947-2 for switching and protecting three-phase motors of up to 45 kW at 400 V AC and for other loads with rated currents of up to 100 A.

3RV2 motor starter protectors/circuit breakers sizes S00 and S0 up to 40 A see page 7/19 onwards.

3RV1 motor starter protectors/circuit breakers are generally approved according to IEC and UL/CSA.

3RV1 motor starter protectors in sizes S2 and S3 are approved according to UL 508 as:
- "Manual Motor Controllers"
- "Manual Motor Controllers" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)" Please note that for this approval the 3RV10 motor starter protectors in size S3 must be equipped with additional infeed terminals.

The 3RV1742 are approved as circuit breakers according to UL 489; they are a special variant of the 3RV1 motor starter protectors.

Corresponding short-circuit values see pages 7/46 to 7/49.

Type of construction

The 3RV1 motor starter protectors/circuit breakers are available in four sizes:
- Size S00 - width 45 mm, max. rated current 12 A, at 400 V AC suitable for three-phase motors up to 5.5 kW
- Size S0 - width 45 mm, max. rated current 25 A, at 400 V AC suitable for three-phase motors up to 11 kW
- Size S2 - width 55 mm, max. rated current 50 A, at 400 V AC suitable for three-phase motors up to 22 kW
- Size S3 - width 70 mm, max. rated current 100 A, at 400 V AC suitable for three-phase motors up to 45 kW

Sizes S00 and S0 of the 3RV2 motor starter protectors/circuit breakers up to 40 A see page 7/19 onwards.

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Circuit breakers acc. to UL 489

The 3RV1742 circuit breakers are available in size S3 (width 70 mm):

- Maximum rated current 70 A at 480 Y/277 V AC
- Maximum rated current 10 A to 30 A at 480 V AC

For sizes S00 and S0 of the 3RV27 and 3RV28 circuit breakers up to 22 A see pages 7/24 and 7/25.

Connection methods

The SIRIUS 3RV1 motor starter protectors/circuit breakers can be supplied with screw terminals and spring-type terminals.

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV10 motor starter protectors are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Motor starter protectors/circuit breakers	**3 R V**															
SIRIUS 1st generation		**1**														
Type of motor starter protector/circuit breaker			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**1**	**0**	**3**	**1**	**–**	**4**	**A**	**A**	**1**	**0**					

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Application

Operating conditions

3RV1 motor starter protectors/circuit breakers are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV1 motor starter protectors/circuit breakers can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", http://support.automation.siemens.com/WW/view/en/65032586.

3RV1 motor starter protectors/circuit breakers are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account, see page 7/47.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector/circuit breaker. This also applies to motor starter protectors for transformer protection.

Possible uses

The 3RV1 motor starter protectors/circuit breakers can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For fuse monitoring
- For operation in IT systems (IT networks)
- For switching of DC currents
- As voltage transformer circuit breakers
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV1742)

For more details see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers" http://support.automation.siemens.com/WW/view/en/65032586.

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General data

Technical specifications

Short-circuit breaking capacity I_{cu}, I_{cs} according to IEC 60947-2

This table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} of the 3RV1 motor starter protectors/circuit breakers with different operating voltages dependent of the rated current I_n of the motor starter protectors/circuit breakers.

Power can be supplied to the motor starter protectors/circuit breakers via the terminals at the top or at the bottom without restricting the rated data. If the short-circuit current at the place of installation exceeds the rated short-circuit breaking capacity of the motor starter protector/circuit breaker as specified in the table, a back-up fuse is required. It is also possible to install an upstream motor starter protector/circuit breaker with a limiter function.

The maximum rated current of this back-up fuse is indicated in the tables. The rated ultimate short-circuit breaking capacity then applies as specified on the fuse.

Fuseless design

Motor starter protector/contactor assemblies for short-circuit currents up to 100 kA can be ordered as fuseless load feeders, see Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet".

Motor starter protectors/ circuit breakers	Rated current I_n	Up to 240 V AC[1]			Up to 400 V AC[1]/ 415 V AC[2]			Up to 440 V AC[1]/ 460 V AC[2] (these values do not apply 3RV1742 circuit breakers)			Up to 500 V AC[1]/ 525 V AC[2]			Up to 690 V AC[1]		
		I_{cu}	I_{cs}	Max. fuse (gG)	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3]	I_{cu}	I_{cs}	Max. fuse (gG)[3][4]
Type	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
Size S00																
3RV1611-0BD10	0.2	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
Size S2																
3RV1.31	16	100	100	°	50	25	100	50	25	100	12	6	63	5	3	63
	20	100	100	°	50	25	100	50	25	100	12	6	80	5	3	63
	25	100	100	°	50	25	100	50	15	100	12	6	80	5	3	63
	32	100	100	°	50	25	125	50	15	125	10	5	100	4	2	63
	40; 45	100	100	°	50	25	160	50	15	125	10	5	100	4	2	63
	50	100	100	°	50	25	160	50	15	125	10	5	100	4	2	80
Size S3																
3RV1.41	40	100	100	°	50	25	125	50	20	125	12	6	100	6	3	63
	50	100	100	°	50	25	125	50	20	125	12	6	100	6	3	80
	63	100	100	°	50	25	160	50	20	160	12	6	100	6	3	80
	75	100	100	°	50	25	160	50	20	160	8	4	125	5	3	100
	90; 100	100	100	°	50	25	160	50	20	160	8	4	125	5	3	125
Size S3, with increased switching capacity																
3RV1.42/ 3RV1742[5]	16 / 10	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	20 / 15	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	25 / 20	100	100	°	100	50	°	100	50	°	30	15	80	12	7	63
	32 / 25	100	100	°	100	50	°	100	50	°	22	11	100	12	7	63
	40 / 30	100	100	°	100	50	°	100	50	°	18	9	160	12	6	80
	50 / 35 ... 40	100	100	°	100	50	°	100	50	°	15	7.5	160	10	5	100
	63 / 45 ... 50	100	100	°	100	50	°	70	50	200	15	7.5	160	7.5	4	100
	75 / 60	100	100	°	100	50	°	70	50	200	10	5	160	6	3	125
	90 / 70	100	100	°	100	50	°	70	50	200	10	5	160	6	3	160
	100 / --	100	100	°	100	50	°	70	50	200	10	5	160	6	3	160

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required if the short-circuit current at the place of installation > I_{cu}.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

5) The values for the 3RV1742 circuit breakers have been tested only up to 400 V/415 V AC; values > 440 V AC on request.

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Short-circuit breaking capacity I_{cuIT} in the IT system (IT network) according to IEC 60947-2

3RV1 motor starter protectors/circuit breakers are suitable for operation in IT systems. The values of I_{cu} and I_{cs} apply for the three-pole short circuit. In case of a double ground fault in different phases at the input and output side of a motor starter protector/circuit breaker, the special short-circuit breaking capacity I_{cuIT} applies. The specifications in the table apply to 3RV1 motor starter protectors/circuit breakers.

If the short-circuit current at the place of installation exceeds the motor starter protector/circuit breaker's specified rated short-circuit breaking capacity, you will need to use a back-up fuse. The maximum rated current of this back-up fuse is indicated in the tables. The rated short-circuit breaking capacity then applies as specified on the fuse.

Motor starter protectors/ circuit breakers	Rated current I_n	Up to 240 V AC[1]		Up to 400 V AC[1]/415 V AC[2]		Up to 500 V AC[1]/525 V AC[2]		Up to 690 V AC[1][5]	
		I_{cuIT}	Max. fuse (gG)[3]	I_{cuIT}	Max. fuse (gG)[3][4]	I_{cuIT}	Max. fuse (gG)[3]	I_{cuIT}	Max. fuse (gG)[3]
Type	A	kA	A	kA	A	kA	A	kA	A
Size S00									
3RV1611-0BD10	0.2	100	°	100	°	100	°	100	°
Size S2									
3RV1.31	16	50	100	8	100	6	80	5	63
	20; 25	50	125	8	100	6	80	5	63
	32	50	125	6	125	4	100	3	80
	40 ... 50	50	160	6	125	4	100	3	80
Size S3									
3RV1.41	40	50	125	10	63	5	50	5	50
	50	50	125	8	80	3	63	3	63
	63	50	160	6	80	3	63	3	63
	75	50	160	5	100	2	80	2	80
	90; 100	50	160	5	125	2	100	2	100
Size S3, with increased switching capacity									
3RV1.42	16 ... 32	100	°	12	63	6	50	6	50
	40	100	°	12	80	6	63	6	63
	50	100	°	10	100	4	80	4	80
	63	100	°	7.5	100	4	80	4	80
	75	100	°	6	125	3	100	3	100
	90; 100	100	°	6	160	3	125	3	125

° No back-up fuse required, since short-circuit resistant up to 100 kA

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Back-up fuse only required if short-circuit current at the place of installation > I_{cuIT}.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

5) Overvoltage category II applies for applications in IT systems > 600 V.

Limiter function with standard devices for 500 V AC and 690 V AC according to IEC 60947-2

The table shows the rated ultimate short-circuit breaking capacity I_{cu} and the rated service short-circuit breaking capacity I_{cs} with an upstream standard motor starter protector that fulfills the limiter function at voltages 500 V AC and 690 V AC.

The short-circuit breaking capacity can be increased significantly with an upstream standard motor starter protector with limiter function. The motor starter protector which is connected downstream must be set to the rated current of the load.

With motor starter protector assemblies, note the clearance to grounded parts and between the motor starter protectors. Short-circuit proof wiring between the motor starter protectors must be ensured. The motor starter protectors can be mounted side by side in a modular arrangement.

Standard motor starter protectors		Rated current I_n	Up to 500 V AC[1]/525 V AC[2]		Up to 690 V AC[1]	
With limiter rated current I_n			I_{cu}	I_{cs}	I_{cu}	I_{cs}
Type	Type	A	kA	kA	kA	kA
Size S2						
3RV1031	**3RV1331-4HC10** I_n = 50 A	16 ... 50	100	50	50	25
Size S3						
3RV1041/3RV10 42	**3RV1341-4HC10** I_n = 50 A	32 ... 50	100	50	50	25
	3RV1341-4MC10 I_n = 100 A	50 ... 100	100	50	50	25

1) 10 % overvoltage.

2) 5 % overvoltage.

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General data

Permissible rated data of approved devices for North America (UL/CSA)

Motor starter protectors/circuit breakers of the 3RV1 series are approved for UL/CSA, and according to UL 508 and CSAC 22.2 No. 14, they can be used on their own or as load feeders in combination with a contactor.

These motor starter protectors/circuit breakers can be used as "Manual Motor Controllers" for "Group Installations", as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" and as "Self-Protected Combination Motor Controllers" (Type E).

3RV1 motor starter protectors/circuit breakers as "Manual Motor Controllers"

If used as a "Manual Motor Controller", the motor starter protector/circuit breaker is always operated in combination with an upstream short-circuit protection device. Approved fuses or a circuit breaker according to UL 489/CSA C22.2 No. 5 can be used. These devices must be dimensioned according to the National Electrical Code (UL) or Canadian Electrical Code (CSA).

The file numbers for the approval of the 3RV1 as a Manual Motor Controller are as follows:

- UL File No. 47705, CCN: NLRV
- CSA Master Contract 165071, Product Class: 3211 05

Motor starter protectors		hp rating[1] for FLA[2] max.		Rated current I_n	240 V AC		480 V AC		600 V AC	
					UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]
Type	V	Single-phase	Three-phase	A	kA	kA	kA	kA	kA	kA
Size S00										
3RV1611-0BD10				0.2	65	65	65	65	10	10
Size S2										
3RV1031, 3RV1131, 3RV1331				16 ... 50	65	65	65	65	25	25
FLA[2] max.	115	3	--							
50 A, 600 V	200	7 1/2	15							
NEMA size 2	230	10	20							
	460	--	40							
	575/600	--	50							
Size S3										
3RV1041/3RV1042, 3RV1142, 3RV1341/3RV1342				16 ... 75 90; 100	65 65	65 65	65 65	65 65	30 10	30 10
FLA[2] max.	115	7 1/2	--							
99 A, 600 V	200	20	30							
NEMA size 3	230	20	40							
	460	--	75							
	575/600	--	100							

[1] hp rating = Power rating in horse power (maximum motor rating).

[2] FLA = Full Load Amps/motor full load current.

[3] Corresponds to "short-circuit breaking capacity" according to UL/CSA.

3RV10 motor starter protectors as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations"

The application as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" is only available for UL. CSA does not recognize this approval! When the motor starter protector is used as a "Manual Motor Controller Suitable for Tap Conductor Protection in Group Installations", it must always be combined with upstream short-circuit protection. Approved fuses or a circuit breaker according to UL 489 can be used.

These devices must be dimensioned according to the National Electrical Code.

The 3RV10 motor starter protectors are approved as "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations" under the following file number:

- UL File No. 47705, CCN: NLRV

Motor starter protectors		hp rating[1] for FLA[2] max.		Rated current I_n	240 V AC	Up to 480 Y/277 V AC	Up to 600 Y/347 V AC
					UL I_{bc}[3]	UL I_{bc}[3]	UL I_{bc}[3]
Type	V	Single-phase	Three-phase	A	kA	kA	kA
Size S2							
3RV1031				16 ... 50	65	65	25
FLA[2] max.	115	3	--				
50 A, 600 V	200	7 1/2	15				
NEMA size 2	230	10	20				
	460	--	40				
	575/600	--	50				
Size S3							
3RV104.				16 ... 75 90; 100	65 65	65 65	30 --
FLA[2] max.	115	7 1/2	--				
100 A, 480 V 75 A, 600 V	200	20	30				
	230	20	40				
NEMA size 3	460	--	75				
	575/600	--	75				

-- No approval

[1] hp rating = Power rating in horse power (maximum motor rating).

[2] FLA = Full Load Amps/motor full load current.

[3] Corresponds to "short-circuit breaking capacity" according to UL.

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3RV10 motor starter protectors as "Self-Protected Combination Motor Controllers (Type E)"

UL 508 approval demands 1-inch clearance and 2-inch creepage distance at line side for "Self-Protected Combination Motor Controller Type E".

Therefore, 3RV10 motor starter protectors of size S3 are approved according to UL 508 in combination with the 3RT1946-4GA07 terminal block listed below.

The basic units of the 3RV10 motor starter protectors size S2 comply with the required clearance and creepage distances.

CSA does not require these extended clearances and creepage distances. According to CSA, these terminal blocks can be omitted when the device is used as a "Self-Protected Combination Motor Controller".

The 3RV10 motor starter protectors are approved as "Self-Protected Combination Motor Controllers" under the following file numbers:

- UL File No. E156943, CCN: NKJH
- CSA Master Contract 165071, Product Class: 3211 08

Motor starter protectors		**hp rating[1] for FLA[2] max.**		**Rated current I_n**	**Up to 240 V AC**		**Up to 480 Y/277 V AC**		**Up to 600 Y/347 V AC**	
					UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]	UL I_{bc}[3]	CSA I_{bc}[3]
Type	V	Single-phase	Three-phase	A	kA	kA	kA	kA	kA	kA
Size S2										
3RV1031				16 ... 50	65	65	65	65	25	25
FLA[2] max.	115	3	--							
50 A, 600 V	200	7 1/2	15							
NEMA size 2	230	10	20							
	460	--	40							
	575/600	--	50							
Size S3										
3RV1041 + 3RT1946-4GA07[4]				16 ... 75 90; 100	65 65	65 65	65 65	65 65	30 --	30 --
FLA[2] max.	115	10	--							
100 A, 480 V	200	20	30							
75 A, 600 V	230	20	40							
NEMA size 3	460	--	75							
	575/600	--	75							

-- No approval

1) hp rating = Power rating in horse power (maximum motor rating).

2) FLA = Full Load Amps/motor full load current.

3) Corresponds to "short-circuit breaking capacity" according to UL/CSA.

4) Not required for CSA.

3RV1742 motor starter protectors as "Circuit Breakers"

These motor starter protectors are approved as circuit breakers according to UL 489 and CSA 22.2 No. 5. They can be used therefore as upstream short-circuit protective devices for "Manual Motor Controllers" and "Manual Motor Controllers Suitable for Tap Conductor Protection in Group Installations".

The 3RV1742 motor starter protectors are approved as "Circuit Breakers" under the following file numbers:

- UL File No. E235044, CCN: DIVQ
- CSA Master Contract 165071, Product Class: 1432 01

Circuit breakers	**Rated current I_n**	**240 V AC**		**480 Y/277 V AC**		**480 V AC**		**600 Y/347 V AC**	
		UL I_{bc}[1]	CSA I_{bc}[1]	UL I_{bc}[1]	CSA I_{bc}[1]	UL I_{bc}[1]	CSA I_{bc}[1]	UL I_{bc}[1]	CSA I_{bc}[1]
Type	A	kA	kA	kA	kA	kA	kA	kA	kA
Size S3									
3RV1742	10 ... 30	65	65	65	65	65	65	20	20
	35 ... 60	65	65	65	65	--	--	20	20
	70	65	65	65	65	--	--	10	10

-- No approval

1) Corresponds to "short-circuit breaking capacity" according to UL.

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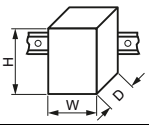
General data

General data

Type			**3RV161.**[1]	**3RV1.3.**	**3RV1.4.**	**3RV1742**
Size			S00	S2	S3	S3
Dimensions (W x H x D)		mm	45 x 90 x 70	55 x 140 x 144	70 x 165 x 169	70 x 168 x 169
Standards						
• IEC 60947-1, EN 60947-1 (VDE 0660 Part 100)			Yes			
• IEC 60947-2, EN 60947-2 (VDE 0660 Part 101)			Yes			
• IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)			Yes			No
• UL 508, CSA C22.2 No.14			Yes			No
• UL 489, CSA C22.2 No. 5			No			Yes
Number of poles			3			
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	12	50	100	70
Permissible ambient temperature						
• Storage/transport		°C	–50 ... +80			
• Operation		°C	–20 ... +70 (current reduction above +60 °C)			
Permissible rated current at inside temperature of control cabinet						
• +60 °C		%	100			
• +70 °C		%	87			
Permissible rated current at ambient temperature of enclosure (applies for motor starter protector inside enclosure)						
• +35 °C		%	100			
• +60 °C		%	87			
Rated operational voltage U_e						
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)			
• Acc. to UL/CSA		V AC	600			
Rated frequency		Hz	50/60			
Rated insulation voltage U_i		V	690			
Rated impulse withstand voltage U_{imp}		kV	6			
Utilization category						
• IEC 60947-2 (motor starter protector/circuit breaker)			A			
• IEC 60947-4-1 (motor starter)			AC-3			--
Trip class CLASS	Acc. to IEC 60947-4-1		10	10/20		--
DC short-circuit breaking capacity (time constant t = 5 ms)						
• 1 conducting path 150 V DC		kA	10			
• 2 conducting paths in series 300 V DC		kA	10			
• 3 conducting paths in series 450 V DC		kA	10			
Power loss P_v for each motor starter protector/circuit breaker Dependent on the rated current I_n (upper setting range) $R_{\text{per conducting path}} = \frac{P}{I^2 \times 3}$	I_n: 16 ... 25 A	W	--	12	--	
	I_n: 32 A	W	--	15	--	
	I_n: 40 ... 50 A	W	--	20	--	
	I_n: 16 ... 63 A	W	--		20	
	I_n: 75 and 90 A	W	--		30	
	I_n: 100 A	W	--		38	
	I_n: 10 A	W	--			8
	I_n: 15 ... 35 A	W	--			12
	I_n: 40 ... 70 A	W	--			21
Shock resistance	Acc. to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)			
Degree of protection	Acc. to IEC 60529		IP20 (IP00 terminal compartment)			
Touch protection	Acc. to EN 50274		Finger-safe for vertical contact from the front			
Temperature compensation	Acc. to IEC 60947-4-1	°C	–20 ... +60			
Phase failure sensitivity	Acc. to IEC 60947-4-1		Yes			No
Explosion protection – Safe operation of motors with "increased safety" type of protection EC type test certificate number according to directive 94/9/EC (ATEX)			Yes, for 3RV10 (CLASS 10) DMT 02 ATEX F 001 Ex II (2) GD, DMT 02 ATEX F 001 N1 Ex II (2) GD			No
Isolating function	Acc. to IEC 60947-2		Yes			
Main and EMERGENCY-STOP switch characteristics (with corresponding accessories)	Acc. to EN 60204-1		Yes			
Protective separation between main and auxiliary circuits, required for PELV applications	Acc. to IEC 60947-1					
• Up to 400 V + 10 %			Yes			
• Up to 415 V + 5 % (higher voltages on request)			Yes			
Permissible mounting position			Any, acc. to IEC 60447 start command "I" right-hand side or top			
Mechanical endurance		Operating cycles	100 000	50 000		
Electrical endurance		Operating cycles	100 000	25 000		
Max. switching frequency per hour (motor starts)		1/h	15			

[1] "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/52.

For short-circuit breaking capacity I_{cu}, I_{cs} see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers" http://support.automation.siemens.com/WW/view/en/65032586.

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Conductor cross-sections of main circuit

Type		3RV1611[4]	3RV1.3.	3RV1.4./ 3RV1742
Connection type		Screw terminals	Screw terminals with box terminal	
Terminal screw		Pozidriv size 2		4 mm Allen screw
Prescribed tightening torque	Nm	0.8 ... 1.2	3 ... 4.5	4 ... 6
Conductor cross-sections (1 or 2 conductors can be connected)				
• Solid	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	2 x (18 ... 2), 1 x (18 ... 2)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
Ribbon cable conductors (Number x Width x Thickness)	mm	--	2 x (6 x 9 x 0.8)	
Removable box terminals[1]				
• With copper bars[2]		--		18 x 10
• With cable lugs[3]		--		up to 2 x 70

1) Cable lug and busbar connection possible after removing the box terminals.

2) If bars larger than 12 mm x 10 mm are connected, a 3RT1946-4EA1 cover is needed to comply with the phase clearance.

3) When connecting conductors which are larger than 25 mm^2, the 3RT1946-4EA1 cover must be used to keep the phase clearance.

4) "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/52.

5) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

Rated data of the auxiliary switches and signaling switches

Type 3RV19		Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC; Signaling switches	Transverse auxiliary switches with 1 CO	1 NO + 1 NC, 2 NO
Max. Rated voltage				
• Acc. to NEMA (UL)	V AC	600		250
• Acc. to NEMA (CSA)	V AC	600		250
Uninterrupted current	A	10	5	2.5
Switching capacity		A600 Q300	B600 R300	C300 R300

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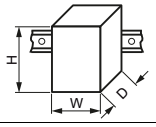
General data

Voltage transformer circuit breakers

General data					
Type			**3RV1611-1AG14**	**3RV1611-1CG14**	**3RV1611-1DG14**
Size			S00	S00	S00
Dimensions (W x H x D)		mm	45 x 90 x 70	45 x 90 x 70	45 x 90 x 70
Rated current I_n		A	1.4	2.5	3
Ambient temperature					
• During storage/transport		°C	–50 ... +80		
• During operation		°C	–20 ... +60 (up to +70°C is possible with current reduction)		
Rated operational voltage U_e		V	400		
Rated frequency		Hz	16.66 ... 60		
Rated insulation voltage U_i		V	690		
Short-circuit breaking capacity I_{cu} at 400 V AC		kA	50		
Set value of the thermal overload release		A	1.4	2.5	3
Response value of the instantaneous overcurrent release		A	6 ± 20 %	10.5 ± 20 %	20 ± 20 %
Tripping time of the instantaneous overcurrent release		ms	Approx. 6 at 12 A	Approx. 6 at 20 A	Approx. 6 at 40 A
Internal resistance					
• In cold state		Ω	> 0.25 ± 6.5 %		
• In heated state		Ω	> 0.30 ± 6.5 %		
Shock resistance acc. to IEC 68 Part 2-27		*g*	15		
Degree of protection acc. to IEC 60529			IP20		
Touch protection acc. to EN 50274			Finger-safe for vertical contact from the front		
Endurance					
• Mechanical		Operating cycles	10 000		
• Electrical		Operating cycles	10 000		
Permissible mounting position			Any		

Type			**3RV1611-1AG14**	**3RV1611-1CG14**	**3RV1611-1DG14**
Conductor cross-sections, main circuit, 1 or 2 conductors					
Connection type			**Screw terminals**		
Terminal screw			Pozidriv size 2		
Conductor cross-sections					
• Solid		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 4		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• Stranded		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 4		
Auxiliary switches for blocking the distance protection					
With defined lateral assignment for blocking distance protection			1 CO (for use as 1 NO or 1 NC)		
Rated operational voltage U_e	Alternating voltage	V	250		
Rated operational current I_e/AC-14	At U_e = 250 V	A	0.5		
	At U_e = 125 V	A	1		
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	250		
Rated operational current I_e/DC-13	At U_e = 250 V	A	0.27		
	At U_e = 125 V	A	0.44		
Short-circuit protection for auxiliary circuit					
Melting fuses operational class gG		A	10		
Miniature circuit breakers C characteristic		A	6 (prospective short-circuit current < 0.4 kA)		
Auxiliary switches for other signaling purposes					

For technical specifications see the next page.

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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Mountable accessories

Front transverse auxiliary switches

		Switching capacity for different voltages	
		1 CO	**1 NO + 1 NC, 2 NO**
Rated operational current I_e			
• At AC-15, alternating voltage			
- 24 V	A	4	2
- 230 V	A	3	0.5
• At AC-12 = I_{th}, alternating voltage			
- 24 V	A	10	2.5
- 230 V	A	10	2.5
• At DC-13, direct voltage *L/R* 200 ms			
- 24 V	A	1	1
- 48 V	A	--	0.3
- 60 V	A	--	0.15
- 110 V	A	0.22	--
- 220 V	A	0.1	--
Minimum load capacity	V	17	
	mA	1	

Front transverse electronic compatible auxiliary switches

			Switching capacity for different voltages
			1 CO
Rated operational voltage U_e	Alternating voltage	V	125
Rated operational current I_e/AC-14	At U_e = 125 V	A	0.1
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	60
Rated operational current I_e/DC-13	At U_e = 60 V	A	0.3
Minimum load capacity		V	5
		mA	1

Lateral auxiliary switches with signaling switch

		Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC Signaling switch
Rated operational current I_e		
• At AC-15, alternating voltage		
- 24 V	A	6
- 230 V	A	4
- 400 V	A	3
- 690 V	A	1
• At AC-12 = I_{th}, alternating voltage		
- 24 V	A	10
- 230 V	A	10
- 400 V	A	10
- 690 V	A	10
• At DC, direct voltage *L/R* 200 ms		
- 24 V	A	2
- 110 V	A	0.5
- 220 V	A	0.25
- 440 V	A	0.1
Minimum load capacity	V	17
	mA	1

Auxiliary releases

		Undervoltage releases	Shunt releases
Power consumption			
• During pick-up			
- AC voltages	VA/W	20.2/13	20.2/13
- DC voltages	W	20	13 ... 80
• During uninterrupted duty			
- AC voltages	VA/W	7.2/2.4	--
- DC voltages	W	2.1	--
Response voltage			
• Tripping	V	0.35 ... 0.7 x U_s	0.7 ... 1.1 x U_s
• Pick-up	V	0.85 ... 1.1 x U_s	--
Opening time maximum	ms	20	

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General data

Short-circuit protection for auxiliary and control circuits		
Melting fuses operational class gG	A	10
Miniature circuit breakers C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

Conductor cross-sections for auxiliary and control circuits		
Connection type		**Screw terminals**
Terminal screw		Pozidriv size 2
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (1 or 2 conductors can be connected)		
• Solid	mm^2	2 x (0.5 ... 1.5)[1]/ 2 x (0.75 ... 2.5)[1]
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[1]/ 2 x (0.75 ... 2.5)[1]
• Stranded	mm^2	2 x (0.5 ... 1.5)[1]/ 2 x (0.75 ... 2.5)[1]
• AWG cables	AWG	2 x (18 ... 14)
Connection type		**Spring-type terminals**[2)3)]
Conductor cross-sections (1 or 2 conductors can be connected)		
• Solid	mm^2	2 x (0.25 ... 2.5)
• Finely stranded with end sleeve	mm^2	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	2 x (0.25 ... 2.5)
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)
Max. external diameter of the conductor insulation	mm	3.6

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

2) With conductor cross-sections ≤ 1 mm^2, an "insulation stop" must be used; see Chapter 3 "Controls – Contactors and Contactor Assemblies". → "Accessories".

3) Corresponding opening tool 3RA2908-1A see "Accessories", page 7/70.

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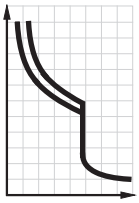
Selection and ordering data

CLASS 10, without auxiliary switches



Rated current	Suitable for three-phase motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}		Article No. Price per PU			
A	kW	A	A	kA					
Size S2									
16	7.5	11 ... 16	208	50	▶	**3RV1031-4AA10**	1	1 unit	41E
20	7.5	14 ... 20	260	50	▶	**3RV1031-4BA10**	1	1 unit	41E
25	11	18 ... 25	325	50	▶	**3RV1031-4DA10**	1	1 unit	41E
32	15	22 ... 32	416	50	▶	**3RV1031-4EA10**	1	1 unit	41E
40	18.5	28 ... 40	520	50	▶	**3RV1031-4FA10**	1	1 unit	41E
45	22	36 ... 45	585	50	▶	**3RV1031-4GA10**	1	1 unit	41E
50	22	40 ... 50	650	50	▶	**3RV1031-4HA10**	1	1 unit	41E
Size S3									
40	18.5	28 ... 40	520	50	▶	**3RV1041-4FA10**	1	1 unit	41E
50	22	36 ... 50	650	50	▶	**3RV1041-4HA10**	1	1 unit	41E
63	30	45 ... 63	819	50	▶	**3RV1041-4JA10**	1	1 unit	41E
75	37	57 ... 75	975	50	▶	**3RV1041-4KA10**	1	1 unit	41E
90	45	70 ... 90	1 170	50	▶	**3RV1041-4LA10**	1	1 unit	41E
100	45	80 ... 100	1 235	50	▶	**3RV1041-4MA10**	1	1 unit	41E
Size S3, with increased switching capacity									
16	7.5	11 ... 16	208	100	▶	**3RV1042-4AA10**	1	1 unit	41E
20	7.5	14 ... 20	260	100	▶	**3RV1042-4BA10**	1	1 unit	41E
25	11	18 ... 25	325	100	▶	**3RV1042-4DA10**	1	1 unit	41E
32	15	22 ... 32	416	100	▶	**3RV1042-4EA10**	1	1 unit	41E
40	18.5	28 ... 40	520	100	▶	**3RV1042-4FA10**	1	1 unit	41E
50	22	36 ... 50	650	100	▶	**3RV1042-4HA10**	1	1 unit	41E
63	30	45 ... 63	819	100	▶	**3RV1042-4JA10**	1	1 unit	41E
75	37	57 ... 75	975	100	▶	**3RV1042-4KA10**	1	1 unit	41E
90	45	70 ... 90	1 170	100	▶	**3RV1042-4LA10**	1	1 unit	41E
100	45	80 ... 100	1 235	100	▶	**3RV1042-4MA10**	1	1 unit	41E

3RV1031-4HA10

3RV1041-4LA10

3RV1042-4JA10

CLASS 20, without auxiliary switches

Size S2									
16	7.5	11 ... 16	208	50	A	**3RV1031-4AB10**	1	1 unit	41E
20	7.5	14 ... 20	260	50	A	**3RV1031-4BB10**	1	1 unit	41E
25	11	18 ... 25	325	50	A	**3RV1031-4DB10**	1	1 unit	41E
32	15	22 ... 32	416	50	A	**3RV1031-4EB10**	1	1 unit	41E
40	18.5	28 ... 40	520	50	A	**3RV1031-4FB10**	1	1 unit	41E
45	22	36 ... 45	585	50	A	**3RV1031-4GB10**	1	1 unit	41E
50	22	40 ... 50	650	50	A	**3RV1031-4HB10**	1	1 unit	41E
Size S3, with increased switching capacity									
40	18.5	28 ... 40	520	100	A	**3RV1042-4FB10**	1	1 unit	41E
50	22	36 ... 50	650	100	A	**3RV1042-4HB10**	1	1 unit	41E
63	30	45 ... 63	819	100	A	**3RV1042-4JB10**	1	1 unit	41E
75	37	57 ... 75	975	100	A	**3RV1042-4KB10**	1	1 unit	41E
90	45	70 ... 90	1 170	100	A	**3RV1042-4LB10**	1	1 unit	41E
100	45	80 ... 100	1 235	100	A	**3RV1042-4MB10**	1	1 unit	41E

3RV1031-4AB10

3RV1042-4KB10

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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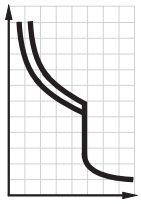
For motor protection with overload relay function

Selection and ordering data

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches



Rated current	Suitable for three-phase motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}		Article No.			
A	kW	A	A	kA		Price per PU			
Size S2[2]									
16	7.5	11 ... 16	208	50	A	**3RV1131-4AA10**	1	1 unit	41E
20	7.5	14 ... 20	260	50	A	**3RV1131-4BA10**	1	1 unit	41E
25	11	18 ... 25	325	50	A	**3RV1131-4DA10**	1	1 unit	41E
32	15	22 ... 32	416	50	A	**3RV1131-4EA10**	1	1 unit	41E
40	18.5	28 ... 40	520	50	A	**3RV1131-4FA10**	1	1 unit	41E
45	22	36 ... 45	585	50	A	**3RV1131-4GA10**	1	1 unit	41E
50	22	40 ... 50	650	50	A	**3RV1131-4HA10**	1	1 unit	41E
Size S3, with increased switching capacity[2]									
16	7.5	11 ... 16	208	100	A	**3RV1142-4AA10**	1	1 unit	41E
20	7.5	14 ... 20	260	100	A	**3RV1142-4BA10**	1	1 unit	41E
25	11	18 ... 25	325	100	A	**3RV1142-4DA10**	1	1 unit	41E
32	15	22 ... 32	416	100	A	**3RV1142-4EA10**	1	1 unit	41E
40	18.5	28 ... 40	520	100	A	**3RV1142-4FA10**	1	1 unit	41E
50	22	36 ... 50	650	100	A	**3RV1142-4HA10**	1	1 unit	41E
63	30	45 ... 63	819	100	A	**3RV1142-4JA10**	1	1 unit	41E
75	37	57 ... 75	975	100	A	**3RV1142-4KA10**	1	1 unit	41E
90	45	70 ... 90	1 170	100	A	**3RV1142-4LA10**	1	1 unit	41E
100	45	80 ... 100	1 235	100	A	**3RV1142-4MA10**	1	1 unit	41E

3RV1131-4EA10

3RV1142-4AA10

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] Accessories (auxiliary releases) for mounting on the right cannot be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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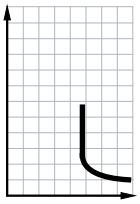
Selection and ordering data

Without auxiliary switches



Rated current	Suitable for three-phase motors[1] with *P*	Thermal overload release[2]	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}		Article No. / Price per PU			
A	kW	A	A	kA					
Size S2									
16	7.5	Without	208	50	A	**3RV1331-4AC10**	1	1 unit	41E
20	7.5	Without	260	50	A	**3RV1331-4BC10**	1	1 unit	41E
25	11	Without	325	50	A	**3RV1331-4DC10**	1	1 unit	41E
32	15	Without	416	50	A	**3RV1331-4EC10**	1	1 unit	41E
40	18.5	Without	520	50	A	**3RV1331-4FC10**	1	1 unit	41E
45	22	Without	585	50	A	**3RV1331-4GC10**	1	1 unit	41E
50	22	Without	650	50	A	**3RV1331-4HC10**	1	1 unit	41E

3RV1331-4AC10

Size S3									
40	18.5	Without	520	50	A	**3RV1341-4FC10**	1	1 unit	41E
50	22	Without	650	50	A	**3RV1341-4HC10**	1	1 unit	41E
63	30	Without	819	50	A	**3RV1341-4JC10**	1	1 unit	41E
75	37	Without	975	50	A	**3RV1341-4KC10**	1	1 unit	41E
90	45	Without	1 170	50	A	**3RV1341-4LC10**	1	1 unit	41E
100	45	Without	1 235	50	A	**3RV1341-4MC10**	1	1 unit	41E

3RV1341-4JC10

Size S3, with increased switching capacity									
16	7.5	Without	208	100	A	**3RV1342-4AC10**	1	1 unit	41E
20	7.5	Without	260	100	A	**3RV1342-4BC10**	1	1 unit	41E
25	11	Without	325	100	A	**3RV1342-4DC10**	1	1 unit	41E
32	15	Without	416	100	A	**3RV1342-4EC10**	1	1 unit	41E
40	18.5	Without	520	100	A	**3RV1342-4FC10**	1	1 unit	41E
50	22	Without	650	100	A	**3RV1342-4HC10**	1	1 unit	41E
63	30	Without	819	100	A	**3RV1342-4JC10**	1	1 unit	41E
75	37	Without	975	100	A	**3RV1342-4KC10**	1	1 unit	41E
90	45	Without	1 170	100	A	**3RV1342-4LC10**	1	1 unit	41E
100	45	Without	1 235	100	A	**3RV1342-4MC10**	1	1 unit	41E

3RV1342-4JC10

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

2) For overload protection of the motors, appropriate overload relays must be used.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

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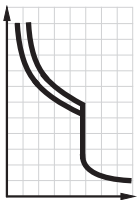
For transformer protection

Selection and ordering data

CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current



Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
I_n		$I >$	I_{cu}		Article No. / Price per PU			
A	A	A	kA					
Size S2								
16	11 ... 16	325	50	▶	**3RV1431-4AA10**	1	1 unit	41E
20	14 ... 20	416	50	▶	**3RV1431-4BA10**	1	1 unit	41E
25	18 ... 25	520	50	▶	**3RV1431-4DA10**	1	1 unit	41E
32	22 ... 32	660	50	▶	**3RV1431-4EA10**	1	1 unit	41E
40	28 ... 40	836	50	▶	**3RV1431-4FA10**	1	1 unit	41E

3RV1431-4DA10

Auxiliary switches and other accessories can be ordered separately (see "Accessories" on page 7/63 onwards).

Multi-unit/reusable packaging available on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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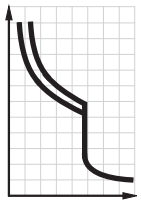
Selection and ordering data

Without auxiliary switches



Rated current	Thermal overload releases	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
					Article No. / Price per PU			
I_n		$I >$	I_{cu}					
A	A	A	kA					
Size S00								
0.2	0.2	1.2	100	▶	**3RV1611-0BD10**	1	1 unit	41E

3RV1611-0BD10

Note:

The auxiliary switch required for signaling must be ordered separately.

Multi-unit/reusable packaging available on request.

Accessories

Version	Contacts	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
Mountable auxiliary switches (essential accessories)						
Transverse auxiliary switches With screw terminals, mountable on front	1 NO + 1 NC	▶	**3RV1901-1E**	1	1 unit	41E
Lateral auxiliary switches With screw terminals, mountable on the left	1 NO + 1 NC	▶	**3RV1901-1A**	1	1 unit	41E

3RV1901-1E

3RV1901-1A

Additional auxiliary switches and other accessories
see "Accessories" on page 7/63 onwards.

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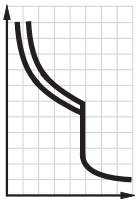
For system protection according to UL 489/CSA C22.2 No. 5

Selection and ordering data

Without auxiliary switches

Circuit breakers for system protection and non-motor loads according to UL/CSA



Rated current[1]	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at		DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
			480 Y/277 V AC[2]	480 V AC		Article No.	Price per PU			
I_n[1]		$I >$	I_{bc}	I_{bc}						
A	A	A	kA	kA						
Size S3										
10	10	150	65	65	B	**3RV1742-5AD10**		1	1 unit	41E
15	15	225	65	65	B	**3RV1742-5BD10**		1	1 unit	41E
20	20	260	65	65	B	**3RV1742-5CD10**		1	1 unit	41E
25	25	325	65	65	B	**3RV1742-5DD10**		1	1 unit	41E
30	30	390	65	65	B	**3RV1742-5ED10**		1	1 unit	41E
35	35	455	65	--	B	**3RV1742-5FD10**		1	1 unit	41E
40	40	520	65	--	B	**3RV1742-5GD10**		1	1 unit	41E
45	45	585	65	--	B	**3RV1742-5HD10**		1	1 unit	41E
50	50	650	65	--	B	**3RV1742-5JD10**		1	1 unit	41E
60	60	780	65	--	B	**3RV1742-5LD10**		1	1 unit	41E
70	70	910	65	--	B	**3RV1742-5QD10**		1	1 unit	41E

3RV1742-5FD10

1) Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

2) For values for 600 Y/347 V AC see page 7/49.

Transverse auxiliary switches must not be mounted, lateral auxiliary switches can be ordered separately (see "Accessories" on page 7/63 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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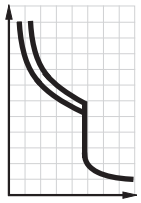
Selection and ordering data

Voltage transformer motor starter protectors with transverse auxiliary switches (1 CO)



Rated current	Thermal overload releases	Instantaneous overcurrent release	Auxiliary switch integrated in the motor starter protector, transverse	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
I_n		$I >$		I_{cu}		Article No.	Price per PU			
A	A	A		kA						
Size S00										
1.4	1.4	6	1 CO	50	B	**3RV1611-1AG14**		1	1 unit	41E
2.5	2.5	10.5	1 CO	50	▶	**3RV1611-1CG14**		1	1 unit	41E
3	3	20	1 CO	50	▶	**3RV1611-1DG14**		1	1 unit	41E

3RV1611-1.G14

Accessories

Version	Contacts	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
			Article No.	Price per PU			
Mountable auxiliary switches for other signaling purposes							
Lateral auxiliary switches With screw terminals, mountable on the left	1 NO + 1 NC	▶	**3RV1901-1A**		1	1 unit	41E

3RV1901-1A

Additional auxiliary switches and other accessories
see "Accessories" on page 7/63 onwards.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories
Mountable accessories

Overview

Mounting location and function

The 3RV1 motor starter protectors/circuit breakers have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signaling switches, auxiliary releases and isolator modules can be supplied separately.

These components are easily fitted to the switches without the use of any tools according to requirements.

Overview graphic see page 7/44.

Front side Notes: • A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector. • Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.	**Transverse auxiliary switches, electronic compatible transverse auxiliary switches** 1 NO + 1 NC or 2 NO or 1 CO	An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors remains unchanged.
Left-hand side Notes: • A maximum of four auxiliary contacts with auxiliary switches can be mounted on each motor starter protector/circuit breaker. • Lateral auxiliary switches (two contacts) and signaling switches can be mounted separately or together. • The signaling switch cannot be used for the 3RV1742 circuit breakers.	**Lateral auxiliary switches (2 contacts)** 1 NO + 1 NC or 2 NO or 2 NC	One of the three lateral auxiliary switches can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker. The width of the lateral auxiliary switch with two contacts is 9 mm.
	Lateral auxiliary switches (4 contacts) 2 NO + 2 NC	One lateral auxiliary switch with four contacts can be mounted on the left side per motor starter protector/circuit breaker. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector/circuit breaker. The width of the lateral auxiliary switch with four contacts is 18 mm.
	Signaling switches for sizes S2 and S3 Tripping 1 NO + 1 NC Short circuit 1 NO + 1 NC	One signaling switch can be mounted on the left side of each motor starter protector. The signaling switch has two contact systems. One contact system always signals tripping irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signaling as a result of switching off with the handle. In order to be able to switch on the motor starter protector again after a short circuit, the signaling switch must be reset manually after the error cause has been eliminated. The overall width of the signaling switch is 18 mm.
Right-hand side Notes: • One auxiliary release can be mounted per motor starter protector/circuit breaker. • Accessories cannot be mounted at the right-hand side of the 3RV11 motor starter protectors for motor protection with overload relay function.	**Auxiliary releases**	
	Shunt releases	For remote-controlled tripping of the motor starter protector/circuit breaker. The release coil should only be energized for short periods (see circuit diagrams).
	or	
	Undervoltage releases	Trips the motor starter protector/circuit breaker when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the motor starter protector/circuit breaker. Particularly suitable for EMERGENCY-STOP disconnection by way of corresponding EMERGENCY-STOP pushbuttons according to DIN EN 60204-1.
	or	
	Undervoltage releases with leading auxiliary contacts 2 NO	Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting energy consumption. In the "tripped" position, these auxiliary contacts are not guaranteed to open. The leading contacts permit the motor starter protector/circuit breaker to reclose. The overall width of the auxiliary release is 18 mm.
Top Notes: • The isolator module cannot be used for the 3RV1742 circuit breakers. • The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired.	**Isolator modules for size S2**	Isolator modules can be mounted to the upper terminal end of the size S2 motor starter protectors. The supply cable is connected to the motor starter protector through the isolator module. The plug can only be unplugged when the motor starter protector is open and isolates all 3 poles of the motor starter protector from the network. The shock-protected isolation point is clearly visible and secured with a padlock to prevent reinsertion of the plug.

For a complete overview of which accessories can be used for the various motor starter protectors, see page 7/3.

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Selection and ordering data

Version	Contacts	For motor starter protectors/ circuit breakers Size	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches[1]								
3RV1901-1E **Transverse auxiliary switches** With screw terminals, mountable on front	1 CO	S00, S0, S2, S3	▶	**3RV1901-1D**		1	1 unit	41E
	1 NO + 1 NC		▶	**3RV1901-1E**		1	1 unit	41E
	2 NO		▶	**3RV1901-1F**		1	1 unit	41E
3RV1901-1G **Electronic compatible transverse auxiliary switches** With screw terminals, front mountable, for operation in dusty atmosphere and in solid-state circuits with low operating currents	1 CO	S00, S0, S2, S3	A	**3RV1901-1G**		1	1 unit	41E
3RV1901-0H **Covers for transverse auxiliary switches**	--	S00, S0, S2, S3	▶	**3RV1901-0H**		1	10 units	41E
3RV1901-1A **Lateral auxiliary switches** With screw terminals, mountable on the left	1 NO + 1 NC	S00, S0, S2, S3	▶	**3RV1901-1A**		1	1 unit	41E
	2 NO		▶	**3RV1901-1B**		1	1 unit	41E
	2 NC		▶	**3RV1901-1C**		1	1 unit	41E
	2 NO + 2 NC		A	**3RV1901-1J**		1	1 unit	41E
3RV1901-1J								

1) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch. Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.

Version	Contacts	For motor starter protectors/ circuit breakers Size	DT	Spring-type terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches[1]								
3RV1901-2E **Transverse auxiliary switches** With spring-type terminals, mountable on the front	1 NO + 1 NC	S00, S0, S2, S3	▶	**3RV1901-2E**		1	1 unit	41E
	2 NO		▶	**3RV1901-2F**		1	1 unit	41E
3RV1901-2A **Lateral auxiliary switches** With spring-type terminals, mountable on the left	1 NO + 1 NC	S00, S0, S2, S3	▶	**3RV1901-2A**		1	1 unit	41E
	2 NO		▶	**3RV1901-2B**		1	1 unit	41E
	2 NC		▶	**3RV1901-2C**		1	1 unit	41E

1) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. Transverse auxiliary switches must not be used for the 3RV1742 circuit breakers.

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Accessories
Mountable accessories

Version			For motor starter protectors	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
			Size		Article No.	Price per PU			
Signaling switches[1]									
3RV1921-1M	**Signaling switches** One signaling switch can be mounted on the left per motor starter protector.	Separate tripped and short-circuit alarms, 1 NO + 1 NC each	S2, S3	▶	**3RV1921-1M**		1	1 unit	41E
Isolator modules[1]									
3RV1938-1A with padlock	**Isolator module**	Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position	S2	▶	**3RV1938-1A**		1	1 unit	41E

[1] This accessory cannot be used for the 3RV1742 circuit breakers.

Rated control supply voltage U_s					For motor starter protectors/ circuit breakers	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]	DC			Article No.	Price per PU			
V	V	V	V	V	Size						
Auxiliary releases[3]											
3RV1902-1DP0	**Undervoltage releases**										
--	--	--	--	24	S2, S3	A	**3RV1902-1AB4**		1	1 unit	41E
24	--	--	--	--	S2, S3	A	**3RV1902-1AB0**		1	1 unit	41E
110	120	--	--	--	S2, S3	A	**3RV1902-1AF0**		1	1 unit	41E
--	208	--	--	--	S2, S3	A	**3RV1902-1AM1**		1	1 unit	41E
230	240	--	--	--	S2, S3	▶	**3RV1902-1AP0**		1	1 unit	41E
400	440	--	--	--	S2, S3	▶	**3RV1902-1AV0**		1	1 unit	41E
415	480	--	--	--	S2, S3	A	**3RV1902-1AV1**		1	1 unit	41E
500	600	--	--	--	S2, S3	A	**3RV1902-1AS0**		1	1 unit	41E
		Undervoltage releases with leading auxiliary contacts 2 NO									
230	240	--	--	--	S2, S3	A	**3RV1922-1CP0**		1	1 unit	41E
400	440	--	--	--	S2, S3	A	**3RV1922-1CV0**		1	1 unit	41E
415	480	--	--	--	S2, S3	A	**3RV1922-1CV1**		1	1 unit	41E
		Shunt releases									
--	--	20 ... 24	20 ... 70	--	S2, S3	▶	**3RV1902-1DB0**		1	1 unit	41E
--	--	90 ... 110	70 ... 190	--	S2, S3	A	**3RV1902-1DF0**		1	1 unit	41E
--	--	210 ... 240	190 ... 330	--	S2, S3	▶	**3RV1902-1DP0**		1	1 unit	41E
--	--	350 ... 415	330 ... 500	--	S2, S3	A	**3RV1902-1DV0**		1	1 unit	41E
--	--	500	500	--	S2, S3	A	**3RV1902-1DS0**		1	1 unit	41E

[1] The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

[2] The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

[3] One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV11 motor starter protectors with overload relay function).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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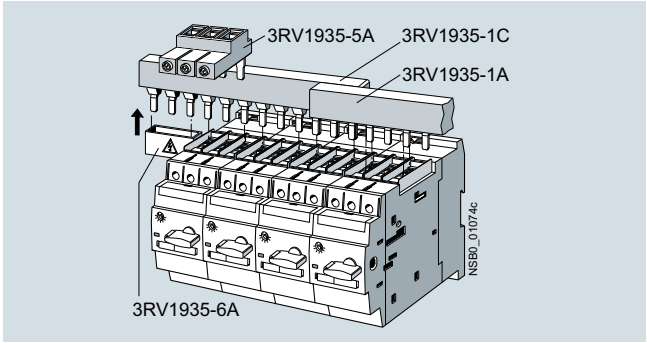
Overview

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV1 motor starter protectors/circuit breakers with screw terminals. Different versions are available for size S2 and can be used for the various different types of motor starter protectors/circuit breakers. The 3RV1915 three-phase busbars are not suitable for 3RV11 motor starter protectors for motor protection with overload relay function.

The busbars are suitable for between two and four circuit breakers/motor starter protectors. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector/circuit breaker.



SIRIUS three-phase busbar system size S2

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors/circuit breakers.

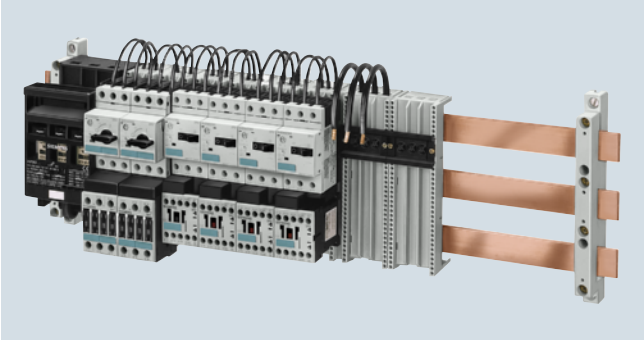
The three-phase busbar systems can also be used to construct "Type E Starters" size S2 according to UL/CSA. Special infeed terminals must be used for this purpose however (see page 7/66).

8US busbar adapters for 40 mm and 60 mm systems

The motor starter protectors/circuit breakers are mounted directly with the aid of busbar adapters on busbar systems with 40 mm and 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. Busbar adapters for busbar systems with 40 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The motor starter protectors/circuit breakers are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc., see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".



SIRIUS load feeders with busbar adapters snapped onto busbars

Selection and ordering data

Modular spacing	Number of motor starter protectors that can be connected: Without lateral accessories	With lateral auxiliary switch	With auxiliary release	Rated current I_n at 690 V	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm				A	Size						
Three-phase busbars											
For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection											
55[1]	2	--	--	108	S2	▶	**3RV1935-1A**		1	1 unit	41E
	3				S2	▶	**3RV1935-1B**		1	1 unit	41E
	4				S2	▶	**3RV1935-1C**		1	1 unit	41E
75[2]	--	2	2	108	S2	▶	**3RV1935-3A**		1	1 unit	41E
		3	3		S2	▶	**3RV1935-3B**		1	1 unit	41E
		4	4		S2	▶	**3RV1935-3C**		1	1 unit	41E

1) Not suitable for 3RV11 motor starter protectors for motor protection with overload relay function.

2) For 3RV1 motor starter protectors with accessories mounted on the side. Auxiliary releases and lateral auxiliary/signaling switches cannot be used in combination.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories
Busbar accessories

Conductor cross-section			Tightening torque	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
mm²	mm²	AWG	Nm	Size						
Three-phase infeed terminals										
Connection from top										
2.5 ... 50	1.5 ... 35	14 ... 0	4	S2	►	**3RV1935-5A**		1	1 unit	41E
Three-phase infeed terminals for constructing "Type E Starters"										
Connection from top										
10 ... 50	--	8 ... 0	4.5 ... 6	S2	►	**3RV1935-5E**		1	1 unit	41E

Version	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size						
Covers for connection tags							
Touch protection for empty positions	S2	►	**3RV1935-6A**		1	5 units	41E

8US busbar adapters

8US1061-5FK08

8US1111-4SM00

8US1261-5FM08

8US1211-4TR00

For motor starter protectors/ circuit breakers	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 40 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 15 mm Thickness: 5 mm and 10 mm											
S2	56	8	139	55	690	►	**8US1061-5FK08**		1	1 unit	14O
S3	100	4	182	70	400[1]	►	**8US1111-4SM00**		1	1 unit	14O
S3	100	4	182	72	415 ... 690[2]	►	**8US1011-4TM00**		1	1 unit	14O
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
S2	56	8	182	55	690	►	**8US1261-5FM08**		1	1 unit	14O
S3	100	4	182	70	400[1]	►	**8US1111-4SM00**		1	1 unit	14O
S3	100	4	182	72	415 ... 690[2]	A	**8US1211-4TM00**		1	1 unit	14O
S3[3]	70[4]	4	215	72	600[4]	A	**8US1211-4TR00**		1	1 unit	14O

For additional busbar adapters see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

1) At rated voltage
≤ 400 V: short-circuit breaking capacity 50 kA,
> 400 to 460 V: short-circuit breaking capacity 25 kA.

2) Short-circuit breaking capacity 415/500/525 V AC:
- up to I_n = 25 A: max. 30 kA
- up to I_n = 90 A: max. 16 kA
- up to I_n = 100 A: max. 6 kA
Short-circuit breaking capacity 690 V AC:
- max. 12 kA.

3) This busbar adapter is approved specially for 3RV1742 circuit breakers for applications according to UL/CSA.

4) Values according to UL/CSA
- Rated current: 70 A at 600 V AC;
- Short-circuit breaking capacity:
480 V AC: 65 kA, up to I_n = 30 A;
480 Y/277 V AC: 65 kA,
600 Y/347 V AC: 20 kA.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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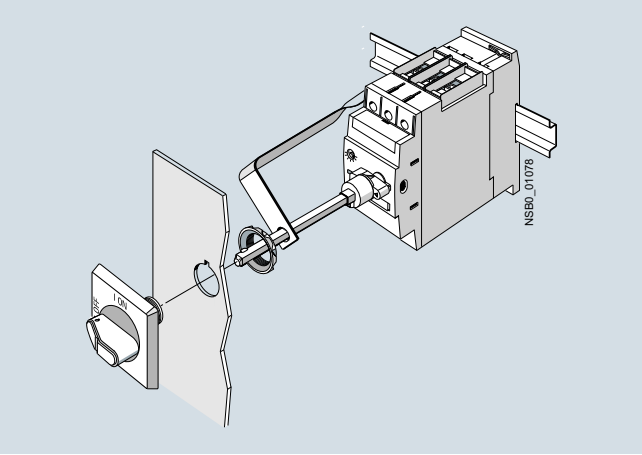
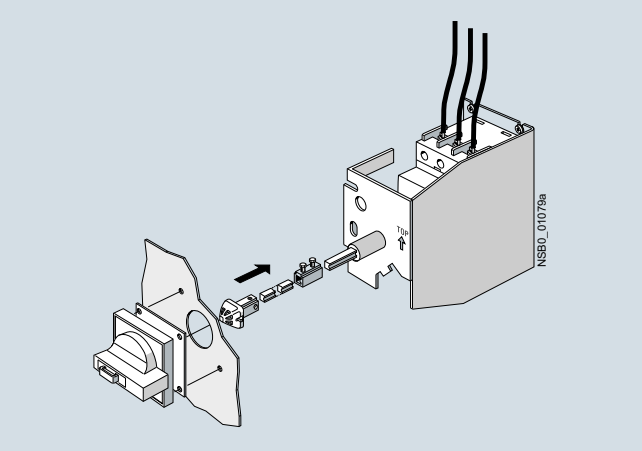
Overview

Door-coupling rotary operating mechanisms

Motor starter protectors/circuit breakers with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector/circuit breaker is closed, the operating mechanism is coupled. When the motor starter protector/circuit breaker closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to three padlocks. Inadvertent opening of the door is not possible in this case either.



SIRIUS 3RV1926-0K door-coupling rotary operating mechanism



SIRIUS 3RV2936-2B door-coupling rotary operating mechanism for arduous conditions

Remote motorized operating mechanisms

3RV1 motor starter protectors/circuit breakers are manually operated controls. They automatically trip in case of an overload or short circuit. Intentional remote-controlled tripping is possible by means of a shunt release or an undervoltage release. Reclosing is only possible directly at the motor starter protector/circuit breaker.

The remote motorized operating mechanism allows the motor starter protectors/circuit breakers to be opened and closed by electrical commands. This enables a load or an installation to be isolated from the network or reconnected to it from an operator panel.

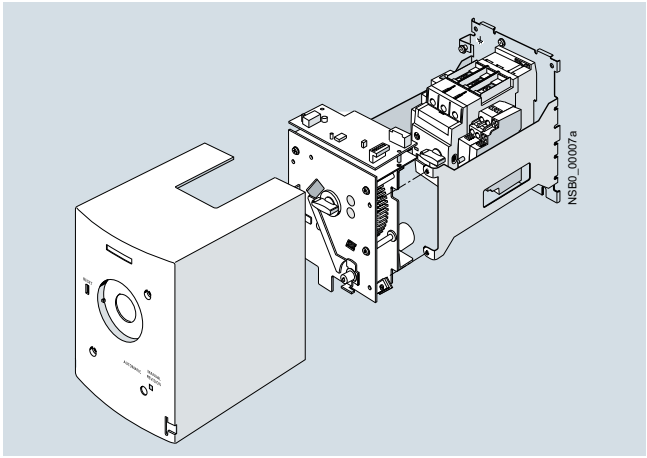
If the motor starter protector/circuit breaker is tripped as a result of overload or short circuit, it will be in tripped position. For reclosing, the remote motorized operating mechanism must first be set manually or electrically to the 0 position (electrically by means of the Open command). Then it can be reclosed.

The remote motorized operating mechanism is available for motor starter protectors/circuit breakers of size S2 ($I_{n\,max}$ = 50 A) and S3 ($I_{n\,max}$ = 100 A) that are designed for control voltages of 230 V AC and 24 V DC. The motor starter protector/circuit breaker is fitted into the remote motorized operating mechanism as shown in the drawing.

In the "MANUAL" position, the motor starter protector/circuit breaker in the remote motorized operating mechanism can continue to be switched manually on site. In the "AUTOMATIC" position, the motor starter protector/circuit breaker is switched by means of electrical commands. The switching command must be applied for a minimum of 100 ms. The remote motorized operating mechanism closes the motor starter protector/circuit breaker after a maximum of 1 s. On voltage failure during the switching operation it is ensured that the motor starter protector/circuit breaker remains in the "OPEN" or "CLOSED" position. In the "MANUAL" and "OFF" position, the remote motorized operating mechanism can be locked with a padlock.

RESET function

The RESET button on the motorized operating mechanism serves to reset any 3RV1921-1M signaling switch that might be installed.



SIRIUS 3RV19.6-3A.. remote motorized operating mechanism

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Accessories
Rotary operating mechanisms

Technical specifications

Remote motorized operating mechanisms

Type		3RV1936, 3RV1946
Max. power consumption		
• At U_s = 24 V DC	W	48
• At U_s = 230 V AC	VA	170
Operating range		0.85 ... 1.1 x U_s
Minimum command duration at U_s	s	0.1
Max. command duration		Unlimited (uninterrupted operation)
Max. total break time, remote-controlled	s	2
Ready to reclose after approx.	s	2.5
Switching frequency	1/h	25
Internal back-up fuse		
• 230 V AC	A	0.8
• 24 V DC	A	1.6
Connection type of control cables		Plug-in connectors with screw terminals
Shock resistance acc. to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)

Selection and ordering data

Door-coupling rotary operating mechanisms

3RV2926-0B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm).

The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental opening of the control cabinet door in the ON position of the motor starter protector/circuit breaker. The OFF position can be locked with up to 3 padlocks.

Version	Color of handle	Version of extension shaft mm	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Door-coupling rotary operating mechanisms	Black	130	S2, S3	▶	**3RV2926-0B**	1	1 unit		41E
		330	S2, S3	▶	**3RV2926-0K**	1	1 unit		41E
EMERGENCY STOP door-coupling rotary operating mechanisms	Red/yellow	130	S2, S3	▶	**3RV2926-0C**	1	1 unit		41E
		330	S2, S3	▶	**3RV2926-0L**	1	1 unit		41E

Door-coupling rotary operating mechanisms for arduous conditions

3RV2936-2B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, an extension shaft of 300 mm in length (8 mm x 8 mm), a spacer and two metal brackets, into which the motor starter protector/circuit breaker is inserted.

The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking reliably prevents opening of the control cabinet door in the ON position of the motor starter protector/circuit breaker. The OFF position can be locked with up to three padlocks.

Laterally mountable auxiliary releases and two-pole auxiliary switches can be used.
The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.

Version	Color of handle	Version of extension shaft mm	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Door-coupling rotary operating mechanisms	Gray	300	S2	▶	**3RV2936-2B**	1	1 unit		41E
			S3	▶	**3RV2946-2B**	1	1 unit		41E
EMERGENCY STOP door-coupling rotary operating mechanisms	Red/yellow	300	S2	▶	**3RV2936-2C**	1	1 unit		41E
			S3	▶	**3RV2946-2C**	1	1 unit		41E

Remote motorized operating mechanisms

3RV19.6-3A..

Version	Rated control supply voltage U_s	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Remote motorized operating mechanisms	AC 50/60 Hz, 230 V	S2	X	**3RV1936-3AP0**	1	1 unit		41E
	24 V DC	S2	X	**3RV1936-3AB4**	1	1 unit		41E
	AC 50/60 Hz, 230 V	S3	X	**3RV1946-3AP0**	1	1 unit		41E
	24 V DC	S3	X	**3RV1946-3AB4**	1	1 unit		41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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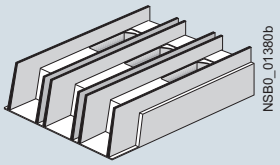
Overview

Terminal blocks for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508

The 3RV10 motor starter protector/circuit breaker sizes S2 and S3 are approved according to UL 508 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting terminal blocks.

- Size S2: The basic unit is already compliant with the increased clearance and creepage distance requirements.
- Size S3: The standard box terminal must be replaced by the 3RT1946-4GA07 terminal block.



Terminal block (Type E) SIRIUS 3RT1946-4GA07

According to CSA, the terminal blocks can be omitted when the device is used as a "Self-Protected Combination Motor Controller" (Type E).

Three-phase infeed terminals are required for constructing "Type E Starters" with an insulated busbar system (see "Busbar Accessories", page 7/66).

Selection and ordering data

Accessories

	Version	For motor starter protectors/ circuit breakers Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers								
3RV1 (size S3) with 3RT1946-4EA1 (left) 3RV1908-0P (right)	**Terminal covers for box terminals** Additional touch protection to be fitted at the box terminals (2 units mountable per device)	S2 S3 ▶	B	**3RT1936-4EA2** **3RT1946-4EA2**		1 1	1 unit 1 unit	41B 41B
	Terminal covers For cable lug and busbar connection for maintaining the required voltage clearances and as touch protection if box terminal is removed (2 units can be mounted per motor starter protector/circuit breaker)	S3	B	**3RT1946-4EA1**		1	1 unit	41B
	Scale covers Sealable, for covering the set current scale	S2, S3 ▶		**3RV1908-0P**		100	10 units	41E
Fixing accessories								
3RB1900-0B	**Push-in lugs** For screwing the motor starter protector onto mounting plates For each motor starter protector, two units are required.	S00	A	**3RB1900-0B**		100	10 units	41F
Terminal blocks for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508								
3RT1946-4GA07	Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". The following terminal blocks must be used therefore in 3RV10 motor starter protector size S3. The 3RV10 motor starter protector in size S2 conforms with the required clearance and creepage distances without a terminal block. The terminal blocks are not required for use according to CSA. With size S3, these terminal blocks cannot be used in combination with a transverse auxiliary switch. For construction with three-phase busbars see "Busbar Accessories" page 7/65 onwards.							
	Terminal block type E for extended clearance and creepage distances (1 and 2 inch)	S3	B	**3RT1946-4GA07**		1	1 unit	41B
Auxiliary terminals, 3-pole								
3RT1946-4F	For connection of auxiliary and control cables to the main conductor connections (for one side)	S3	B	**3RT1946-4F**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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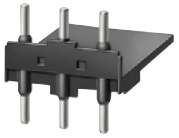
Accessories
Mounting accessories

Link modules

Actuating voltage of contactor	Size: Contactors	Size: Motor starter protectors/ circuit breakers	DT	Screw terminals: Article No.	Screw terminals: Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules from motor starter protector/circuit breaker to contactor								
For mechanical and electrical connection between motor starter protector/circuit breaker and contactor with screw terminals								
Single-unit packaging								
AC	S2	S2	▶	**3RA1931-1AA00**		1	1 unit	41B
	S3	S3	▶	**3RA1941-1AA00**		1	1 unit	41B
DC	S2	S2	▶	**3RA1931-1BA00**		1	1 unit	41B
	S3	S3	▶	**3RA1941-1BA00**		1	1 unit	41B
Multi-unit packaging								
AC	S2	S2	▶	**3RA1931-1A**		1	5 units	41B
	S3	S3	▶	**3RA1941-1A**		1	5 units	41B
DC	S2	S2	▶	**3RA1931-1B**		1	5 units	41B
	S3	S3	▶	**3RA1941-1B**		1	5 units	41B


3RA1931-1AA00

3RA1941-1AA00

Version	Size	Color	For motor starter protectors/ circuit breakers: Size	DT	Spring-type terminals: Article No.	Spring-type terminals: Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals									
Screwdrivers For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	S2, S3	A	**3RA2908-1A**		1	1 unit	41B

3RA2908-1A

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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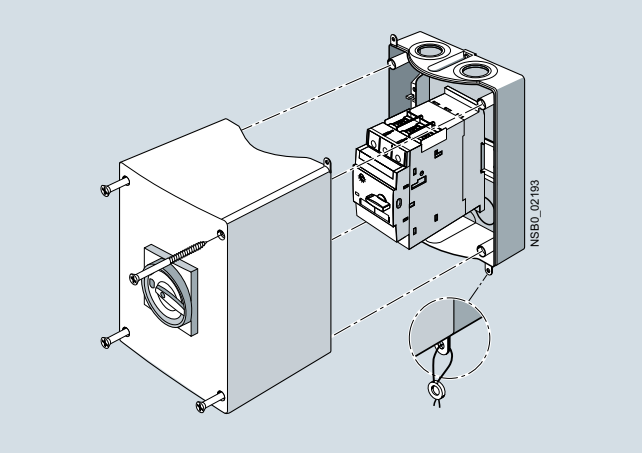
Overview

Enclosures

For stand-alone installation of motor starter protector size S2 ($I_{n\,max}$ = 50 A), molded-plastic enclosures for surface mounting are available.

When installed in a molded-plastic enclosure the motor starter protectors have a rated operational voltage U_e of 500 V.

The molded-plastic enclosures are designed to degree of protection IP55.



Enclosures for surface mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

In the enclosure for motor starter protector size S2 there is also room for the laterally mounted auxiliary release. There is no provision for installing a motor starter protector with a signaling switch.

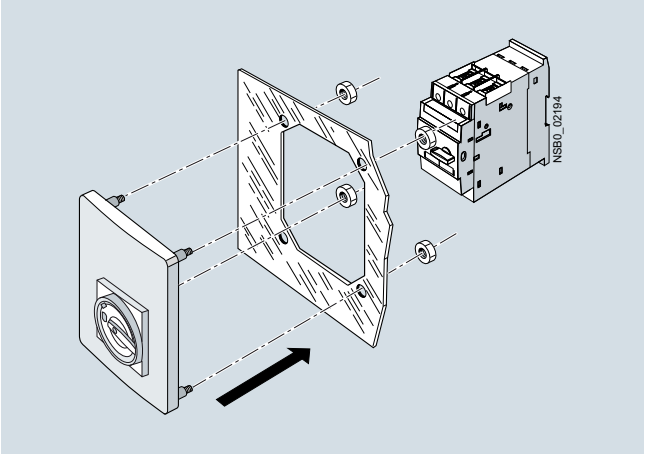
The molded-plastic enclosures of the size S2 motor starter protectors are fitted with a rotary operating mechanism.

The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

The rotary operating mechanisms can be locked in the Open position with up to 3 padlocks.

Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for motor starter protector/circuit breaker sizes S2 and S3 are available for this purpose.



Front plate for size S2

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Accessories
Enclosures and front plates

Selection and ordering data

	Version	Degree of protection	Integrated terminals	Width	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
				mm	Size						
Molded-plastic enclosures for surface mounting											
3RV1933-1DA00	**With rotary operating mechanism,** lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	**3RV1933-1DA00**		1	1 unit	41E
3RV1933-1GA00	**With EMERGENCY-STOP rotary operating mechanism,** lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	**3RV1933-1GA00**		1	1 unit	41E

	Version	Degree of protection	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Size						
Front plates									
3RV1923-4B	**Molded-plastic front plates with rotary operating mechanism,** lockable in 0 position For actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	►	**3RV1923-4B**		1	1 unit	41E
	Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism, red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	A	**3RV1923-4E**		1	1 unit	41E

	Version	Rated control supply voltage U_s	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V	Size						
Indicator lights									
3RV1903-5B	**Indicator lights** For all enclosures and front plates • With LED lamp for versions 110 ... 120 V, with glow lamp for versions 220 ... 500 V • With colored lenses red, green, yellow, orange and clear	110 ... 120 220 ... 240 380 ... 415 480 ... 500	S2	C C C C	**3RV1903-5B** **3RV1903-5C** **3RV1903-5E** **3RV1903-5G**		1 1 1 1	1 unit 1 unit 1 unit 1 unit	41E 41E 41E 41E

7

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3RV1063-7AL10 molded case motor starter protector

The 3RV10 and 3RV13 molded case motor starter protectors for up to 800 A are compact, current-limiting motor starter protectors which can be used above all in motor feeders for special voltages of 440 V, 480 V, 550 V and 690 V. They are used for switching and protecting three-phase motors and other loads with rated currents up to 800 A.

Note:

For motor feeders above 100 A and at 400 V and 500 V, the 3VL molded case circuit breakers must be used, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

Type of construction

The molded case motor starter protectors are available in 4 widths:

- 3RV1353 – width 90 mm, max. rated current 32 A, at 550 V AC suitable for three-phase motors up to 22 kW
- 3RV1.6. – width 105 mm, max. rated current 250 A, at 690 V AC suitable for three-phase motors up to 160 kW
- 3RV1.7. – width 140 mm, max. rated current 630 A, at 690 V AC suitable for three-phase motors up to 315 kW
- 3RV1.83 – width 210 mm, max. rated current 800 A, at 690 V AC suitable for three-phase motors up to 500 kW

The 3RV1 molded case motor starter protectors for up to 800 A can be mounted in horizontal, vertical or lying arrangement directly on a mounting plate or mounting rail. Their rated data are not affected as the result.

The phase barriers for better insulation between the phases are included in the scope of supply, and it is essential to use them.

The motor starter protectors can be supplied through top and bottom terminals without impairing their function, enabling them to be installed in any type of switchgear without any further steps.

Connection methods

SIRIUS 3RV1 motor starter protectors are available with screw terminals.

The 3RV1 molded case motor starter protectors for up to 800 A are suitable solely for screw connection. This is indicated indicated in the corresponding tables by the symbols shown on orange backgrounds.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Molded case motor starter protectors	**3 R V**															
SIRIUS 1st generation		**1**														
Type of motor starter protector			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**1**	**0**	**6**	**3**	**–**	**7**	**A**	**L**	**1**	**0**					

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

- High short-circuit breaking capacity in the feeder
- Optimum usability in motor feeders for the special voltages 440 V, 480 V, 550 V and 690 V
- Compact design
- The releases are available both in purely magnetic (up to 32 A) and in solid-state versions (100 A to 800 A).
- Available for motor or starter protection (short-circuit protection alone)

Application

Operating conditions

The 3RV1 molded case motor starter protectors for up to 800 A can be operated at ambient temperatures between -25 °C and +70 °C. They can be used according to IEC 60721-2-1 in the most difficult environmental conditions with a hot and damp climate.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable molded case motor starter protectors.

The 3RV1 molded case motor starter protectors up to 800 A have not been tested for use with frequency converters. The possibility of premature tripping in such applications cannot therefore be ruled out.

Possible uses

The 3RV1 molded case motor starter protectors for up to 800 A are suitable as switching and protection devices for motors. The following versions are available:

- For motor protection;
  the overload and short-circuit releases are designed for optimized protection and direct-on-line starting of induction squirrel-cage motors. The motor starter protectors have an electronic release which not only provides short-circuit and overload protection but is also sensitive to phase failure and phase unbalance and offers protection in the event of rotor blockage.
- For starter combinations;
  these molded case motor starter protectors are used for short-circuit protection in combinations of circuit breaker, motor contactor and overload relay. They are equipped with a purely magnetic release (up to 32 A) or a solid-state release (100 A to 800 A).

Standards and specifications

The electronic releases for motor protection comply with IEC 60947-4-1. Isolating features are also compliant with IEC 60947-2.

The 3RV1 molded case motor starter protectors comply in addition with IEC 60068-2-6 (shock and vibration strength) and are certified for the specifications of the most important marine classification societies:

- RINA
- Det Norske Veritas
- Bureau Veritas
- Lloyds Register of Shipping
- Germanischer Lloyd
- American Bureau of Shipping

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Technical specifications

General data

Type		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1364	3RV1373	3RV1374	3RV1383
Dimensions										
• W	mm	105	140	210	90	105	105	140	140	210
• H	mm	205	205	268	130	205	205	205	205	268
• D	mm	139	139	159	102	139	139	139	139	159
Standard		IEC 60947-2, EN 60947-2								
Motor protection		✓			--					
Starter combinations		--			✓					
Rated current I_n	A	160	400	630	160	250		400, 630		630, 800
Number of poles		3								
Rated operational voltage U_e 50 ... 60 Hz AC	V	690								
Rated impulse withstand voltage U_{imp}	V	8								
Rated insulation voltage U_i	V	1 000			800	1 000				
Test voltage at industrial frequency for 1 min	V	3 500			3 000	3 500				
Rated ultimate short-circuit breaking capacity I_{cu}										
• At 220/230 V AC, 50 ... 60 Hz	kA	200			120	200				
• At 380/415 V AC, 50 ... 60 Hz	kA	120		100	85	120	200	120	200	100
• At 440 V AC, 50 ... 60 Hz	kA	100		80	75	100	180	100	180	80
• At 500 V AC, 50 ... 60 Hz	kA	85		65	50	85	150	85	150	65
• At 550 V AC, 50 ... 60 Hz	kA	--			35	--				
• At 690 V AC, 50 ... 60 Hz	kA	70		30	10	70	80	70	80	30
Rated service short-circuit breaking capacity I_{cs} (% of I_{cu})										
• At 220/230 V AC, 50 ... 60 Hz	%	100		75	100					75
• At 380/415 V AC, 50 ... 60 Hz	%	100		75		100				75
• At 440 V AC, 50 ... 60 Hz	%	100		75		100				75
• At 500 V AC, 50 ... 60 Hz	%	100		75		100		100[1]/ 75[2]	100	75
• At 690 V AC, 50 ... 60 Hz	%	100		75		100		100[1]/ 50[2]	100	75
Rated short-circuit making capacity (415 V)	kA	264		220	187	264	440	264	440	220
Break time (415 V at I_{cu})	ms	5	6	7	3	5		6		7
Category (IEC 60947-2)		A	B (400 A), A (630 A)	B	A			B (400 A), A (630 A)		B
Isolating features		✓								
Trip class CLASS		10A, 10, 20, 30			--					
Releases										
• Magnetic type		--			✓	--				
• Electronic (motor protection)		✓			--[3]					
• Electronic (starter combinations)		--				✓				
Permissible ambient temperature										
• Operation	°C	-25 ... +70[4]								
• Storage	°C	-40 ... +70								
Mechanical endurance										
• Operating cycles		20 000			25 000	20 000				
• Operating cycles per hour		240	120		240			120		
Electrical endurance										
• Operating cycles		8 000	7 000	5 000	8 000			7 000		5 000
• Operating cycles per hour (415 V AC)		120	60		120			60		

✓ Has this function
-- Does not have this function

[1] Value applies for 3RV1373-7JN10 molded case motor starter protectors.
[2] Value applies for 3RV1373-7JN10 molded case motor starter protectors.
[3] For overload protection of the motors, appropriate overload relays must be used.
[4] From 50 °C, please note derating, see "Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", http://support.automation.siemens.com/WW/view/en/35681600.

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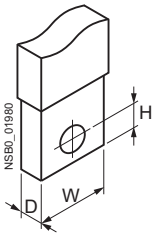
General data

Main circuit terminals						
Type		**3RV1353**	**3RV1.6.**	**3RV1.7.**	**3RV1083-7JL10, 3RV1383-7JN10**	**3RV1383-7KN10**
Terminal dimensions						
Front-accessible standard terminals						
Busbars/cable lug						
Number	Unit(s)	11			2	
Dimensions						
• W	mm	20	25	35	40	50
• D	mm	5	8	10	5	
• H	mm	7.5	9.5	11	12	
• Lock hasp diameter	mm	6.5	8.5	10.5	7	
Front-extended terminals						
Busbars						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	5
• Lock hasp diameter	mm	8.5	10	11		14
Cable lug						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• Lock hasp diameter	mm	8.5	10	11		14
Front-extended cable terminals for copper cable						
Busbars, flexible						
Number	Unit(s)	1			--	
Dimensions W x D x N						
• W	mm	13	15.5	24	--	
• D	mm	0.5	0.8	1	--	
• N (= number of laminations)	mm	10			--	
Cable lug, flexible						
Number	Unit(s)	1 or 2			--	
Dimensions						
• For 1 unit	mm^2	1 ... 70	2.5 ... 120	16 ... 240	--	
• For 2 units	mm^2	1 ... 50	2.5 ... 95	16 ... 150	--	
Cable lug, rigid						
Number	Unit(s)	1		1 or 2	--	
Dimensions						
• For 1 unit	mm^2	1 ... 95	2.5 ... 185	16 ... 300	--	
• For 2 units (for outside mounting)	mm^2	--		120 ... 240	--	
Rear terminals						
Busbars						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	
• Lock hasp diameter	mm	8.5		11	14	

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Auxiliary switches

Type		3RV1991-1.A0
Rated operational current I_e		
• At 250 V AC/DC		
- At AC-14 (utilization category according to IEC 60947-5-1)		
Control supply voltage 125 V	A	6
Control supply voltage 250 V	A	5
- At DC-13 (utilization category according to IEC 60947-5-1)		
Control supply voltage 125 V	A	0.3
Control supply voltage 250 V	A	0.15
• At 24 V DC		
- Control supply voltage 24 V	mA	≥ 0.75
- Control supply voltage 5 V	mA	≥ 1

Auxiliary releases

		Power consumption during pick-up			
Molded case motor starter protectors		**3RV1353**		**3RV1.6., 3RV1.7., 3RV1.83**	
Version		AC	DC	AC	DC
Undervoltage releases		**3RV1952-1A.0**		**3RV1982-1A.0**	
• 24 ... 30 V AC/DC		1.5 VA	1.5 W	6 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC		2 VA	2 W	6 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC		2.5 VA	2.5 W	6 VA	150 W
Opening times	ms	15	15	≤ 25	≤ 15
Shunt releases		**3RV1952-1E.0**		**3RV1982-1E.0**	
• 24 ... 30 V AC/DC		50 VA	50 W	150 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC		50 VA	50 W	150 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC		50 VA	50 W	150 VA	150 W
Opening times	ms	15	15	15	15

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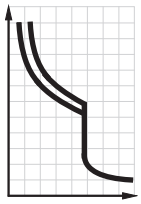
For motor protection

Selection and ordering data

CLASS 10A, 10, 20, 30; without auxiliary switch



Rated current	Current setting of the inverse-time delayed overload releases "L"	Operating current of the instantaneous short-circuit releases "I"	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
I_n	I_R	I_i	I_{cu}		Article No.	Price per PU			
A	A	A	kA						
With electronic releases									
Standard switching capacity, adjustable short-circuit and overload release, TU 4									
100	40 ... 100	600 ... 1 300	120	D	**3RV1063-7AL10**		1	1 unit	41E
160	64 ... 160	960 ... 2 080	120	D	**3RV1063-7CL10**		1	1 unit	41E
200	80 ... 200	1 200 ... 2 600	120	D	**3RV1063-7DL10**		1	1 unit	41E
400	160 ... 400	2 400 ... 5 200	120	D	**3RV1073-7GL10**		1	1 unit	41E
630	252 ... 630	3 780 ... 8 190	100	D	**3RV1083-7JL10**		1	1 unit	41E

3RV10.3-7.L10

TU= trip unit (release)

Further accessories can be ordered separately
(see "Accessories" on page 7/80 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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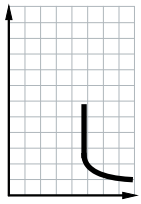
Selection and ordering data

Without auxiliary switches



Rated current	Inverse-time delayed overload release "L" I_R	Operating current of the instantaneous short-circuit releases "I" I_i	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals ⊕ Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
I_n	⊏	$I >$	I_{cu}						
A	A	A	kA						
With magnetic releases									
Standard switching capacity, non-adjustable short-circuit release, TU 1									
1	Without	13	85	D	**3RV1353-6AP10**		1	1 unit	41E
1.6	Without	21	85	D	**3RV1353-6BP10**		1	1 unit	41E
2	Without	26	85	D	**3RV1353-6CP10**		1	1 unit	41E
3.2	Without	42	85	D	**3RV1353-6DP10**		1	1 unit	41E
4	Without	52	85	D	**3RV1353-6EP10**		1	1 unit	41E
5	Without	65	85	D	**3RV1353-6FP10**		1	1 unit	41E
6.5	Without	85	85	D	**3RV1353-6GP10**		1	1 unit	41E
8.5	Without	111	85	D	**3RV1353-6HP10**		1	1 unit	41E
12.5	Without	163	85	D	**3RV1353-6JP10**		1	1 unit	41E
Standard switching capacity, adjustable short-circuit release, TU 2									
20	Without	120 ... 240	85	D	**3RV1353-6LM10**		1	1 unit	41E
32	Without	192 ... 384	85	D	**3RV1353-6MM10**		1	1 unit	41E

3RV1353-6.P10

With electronic releases									
Standard switching capacity, adjustable short-circuit release, TU 3									
100	Without	100 ... 1 000	120	D	**3RV1363-7AN10**		1	1 unit	41E
160	Without	160 ... 1 600	120	D	**3RV1363-7CN10**		1	1 unit	41E
250	Without	250 ... 2 500	120	D	**3RV1363-7EN10**		1	1 unit	41E
400	Without	400 ... 4 000	120	D	**3RV1373-7GN10**		1	1 unit	41E
630	Without	630 ... 6 300	120	D	**3RV1373-7JN10**		1	1 unit	41E
630	Without	630 ... 6 300	100	D	**3RV1383-7JN10**		1	1 unit	41E
800	Without	800 ... 8 000	100	D	**3RV1383-7KN10**		1	1 unit	41E
Increased switching capacity, adjustable short-circuit release, TU 3									
100	Without	100 ... 1 000	200	D	**3RV1364-7AN10**		1	1 unit	41E
160	Without	160 ... 1 600	200	D	**3RV1364-7CN10**		1	1 unit	41E
250	Without	250 ... 2 500	200	D	**3RV1364-7EN10**		1	1 unit	41E
400	Without	400 ... 4 000	200	D	**3RV1374-7GN10**		1	1 unit	41E

3RV13..-7.N10

TU= trip unit (release)

Further accessories can be ordered separately
(see "Accessories" on page 7/80 onwards).

More information

Configuration manual "Configuring SIRIUS"

For more information see "Configuration Manual "Configuring SIRIUS – Selection Data for Fuseless Load Feeders", http://support.automation.siemens.com/WW/view/en/68108592.

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Selection and ordering data

Type	Version	For molded case motor starter protectors	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches								
3RV1991-1AA0								
Auxiliary switches for front mounting	1 signaling switch Off-On + 1 tripped signal (250 V AC/DC)	3RV1353, 3RV1.6. ... 3RV1.83	D	**3RV1991-1AA0**		1	1 unit	41E
	3 signaling switches Off-On + 1 tripped signal (250 V AC/DC)		D	**3RV1991-1BA0**		1	1 unit	41E
	3 signaling switches Off-On + 1 tripped signal (24 V DC)		D	**3RV1991-1CA0**		1	1 unit	41E
Connection cables for auxiliary switches	Length 2 m, 6-pole	3RV1353, 3RV1.6. ... 3RV1.83	D	**3RV1991-1FA0**		1	1 unit	41E

Type	Rated control supply voltage U_s AC 50/60 Hz V	DC V	For molded case motor starter protectors	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary releases									
3RV1952-1AA0									
Undervoltage releases for front mounting	24 ... 30	24 ... 30	3RV1353	D	**3RV1952-1AA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV1952-1AD0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV1952-1AE0**		1	1 unit	41E
	24 ... 30	24 ... 30	3RV1.6. ... 3RV1.83	D	**3RV1982-1AA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV1982-1AD0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV1982-1AF0**		1	1 unit	41E
3RV1952-1EA0									
Shunt releases for front mounting	24 ... 30	24 ... 30	3RV1353	D	**3RV1952-1EA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV1952-1ED0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV1952-1EF0**		1	1 unit	41E
	24 ... 30	24 ... 30	3RV1.6. ... 3RV1.83	D	**3RV1982-1EA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV1982-1ED0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV1982-1EF0**		1	1 unit	41E
Connection cables for undervoltage and shunt releases	Length 2 m, 6-pole		3RV1353, 3RV1.6. ... 3RV1.83	D	**3RV1992-1FA0**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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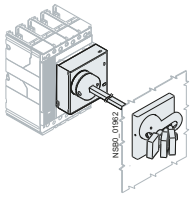
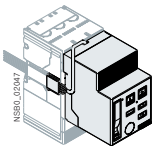
Selection and ordering data

	Version		For molded case motor starter protectors	DT	Screw terminals ⊕ Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rotary operating mechanisms									
 3RV19.6-0BA0	**Lever-type rotary operating mechanisms**	With adjustable distance, with lock/door interlocking (padlocks are not included in scope of supply)	3RV1353	D	**3RV1956-0BA0**		1	1 unit	41E
			3RV1.6., 3RV1.7.	D	**3RV1976-0BA0**		1	1 unit	41E
			3RV1.83	D	**3RV1986-0BA0**		1	1 unit	41E
 3RV19.6-3AP3	**Motorized operating mechanisms**	With stored energy mechanism, 220 ... 250 V AC/DC	3RV1.6., 3RV1.7.	D	**3RV1976-3AP3**		1	1 unit	41E
			3RV1.83	D	**3RV1986-3AP3**		1	1 unit	41E
Connections									
3RV1975-1CA0	**Connections**	Front-extended (1 set = 6 units)	3RV1353	D	**3RV1955-1AA0**		1	1 unit	41E
			3RV1.6.	D	**3RV1965-1BA0**		1	1 unit	41E
			3RV1.7.	D	**3RV1975-1CA0**		1	1 unit	41E
			3RV1.83-7J.10	D	**3RV1985-1DA0**		1	1 unit	41E
			3RV1.83-7KN10	D	**3RV1985-1EA0**		1	1 unit	41E
3RV1955-3AA0		Rear (1 set = 3 units)	3RV1353	D	**3RV1955-3AA0**		1	1 unit	41E
			3RV1.6.	D	**3RV1965-3AA0**		1	1 unit	41E
			3RV1.7.	D	**3RV1975-3AA0**		1	1 unit	41E
			3RV1.83	D	**3RV1985-3AA0**		1	1 unit	41E
3RV1975-2AA0	**Cable terminals**	Front-extended (1 set = 6 units)	3RV1353	D	**3RV1955-2AA0**		1	1 unit	41E
			3RV1.6.	D	**3RV1965-2BA0**		1	1 unit	41E
			3RV1.7.-7G.10	D	**3RV1975-2CA0**		1	1 unit	41E
			3RV1.73-7JN10	D	**3RV1975-2DA0**		1	1 unit	41E

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
General data							
Sizes	S00, S0	S2, S3	S00, S0	S2 ... S12	S00 ... S12	S00 ... S12	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc., ...) • Permit the mounting of slim and compact load feeders in widths of 45 mm (S00), 45 mm (S0), 55 mm (S2), 70 mm (S3), 120 mm (S6) and 145 mm (S10/S12); this does not include the current measuring modules for the 3RB22 to 3RB24 evaluation modules sizes S00 to S3 • Simplify configuration
Seamless current range	0.11 ... 40 A	5.5 ... 100 A	0.1 ... 40 A	6 ... 630 A	0.3 ... 630 A (up to 820 A)[1]	0.3 ... 630 A (up to 820 A)[1]	• Allows easy and consistent configuration with one series of overload relays (for small to large loads)
Protection functions							
Tripping due to overload	✓	✓	✓	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload
Tripping due to phase unbalance	✓	✓	✓	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to phase unbalance
Tripping due to phase failure	✓	✓	✓	✓	✓	✓	• Minimizes heating of three-phase motors during phase failure
Protection of single-phase loads	✓	✓	--	--	✓	✓	• Enables the protection of single-phase loads
Tripping in the event of overheating by **integrated thermistor motor protection function**	--[2]	--[2]	--[2]	--[2]	✓	✓	• Provides optimum temperature-dependent protection of loads against excessive temperature rises e.g. for stator-critical motors or in the event of insufficient coolant flow, contamination of the motor surface or for long starting or braking operations • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs
Tripping in the event of a ground fault by **internal ground-fault detection (activatable)**	--	--	✓ (only 3RB31)	✓ (only 3RB21)	✓	✓	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs

✓ Available
-- Not available

[1] Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e.g. 3RB2906-2BG1 (0.3 to 3 A) , in combination with a 3UF1868-3GA00 (820 A/1 A) series transformer.
3UF18 transformers see Chapter 10, "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices".

[2] The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.

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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Features							
RESET function	✓	✓	✓	✓	✓	✓	• Allows manual or automatic resetting of the device
Remote RESET function	✓ (by means of separate module)	✓ (by means of separate module)	✓ (only with 3RB31 and external auxiliary voltage 24 V DC)	✓ (only with 3RB21 and external auxiliary voltage 24 V DC)	✓ (electrically via external button)	✓ (electrically with button or via IO-Link)	• Allows the remote resetting of the device
TEST function for auxiliary contacts	✓	✓	✓	✓	✓	✓	• Allows easy checking of the function and wiring
TEST function for electronics	--	--	✓	✓	✓	✓	• Allows checking of the electronics
Status display	✓	✓	✓	✓	✓	✓	• Displays the current operating state
Large current adjustment button	✓	✓	✓	✓	✓	✓	• Makes it easier to set the relay exactly to the correct current value
Integrated auxiliary contacts (1 NO + 1 NC)	✓	✓	✓	✓	✓ (2 ×)	--	• Allows the load to be switched off if necessary • Can be used to output signals
Integrated auxiliary contacts (1 CO and 1 NO in series)	--	--	--	--	--	✓	• Enables the controlling of contactors directly from the higher-level control system through IO-Link
IO-Link connection	--	--	--	--	--	✓	• Reduction of wiring in the control cabinet • Enables communication
Connection of optional hand-held device	--	--	--	--	--	✓	• Enables local operation
Communication capability through IO-Link							
Full starter functionality through IO-Link	--	--	--	--	--	✓	• Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Reading out of diagnostics functions	--	--	--	--	--	✓	• Enables the reading out of diagnostics information such as overload, open circuit, ground fault, etc.
Reading out of current values	--	--	--	--	--	✓	• Enables the reading out of current values and their direct processing in the higher-level control system
Reading out all set parameters	--	--	--	--	--	✓	• Enables the reading out of all set parameters, e.g. for plant documentation

✓ Available

-- Not available

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General data

Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Design of load feeders							
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	✓	✓	✓	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT contactors	✓	✓	✓	✓	✓[1]	✓[1]	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Straight-through transformers for main circuit[2] (in this case the cables are routed through the feed-through openings of the overload relay and connected directly to the box terminals of the contactor)	--	--	--	✓ (S2 ... S6)	✓ (S00 ... S6)	✓ (S00 ... S6)	• Reduces the contact resistance (only one point of contact) • Saves wiring costs (easy, no need for tools, and fast) • Saves material costs • Reduces installation costs
Spring-type connection system for main circuit[2]	✓	--	✓	--	--	--	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Spring-type connection system for auxiliary circuits[2]	✓	✓	✓	✓	✓	✓	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Ring terminal lug connection method for main and auxiliary circuits[2]	✓	--	--	--	--	--	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Full starter functionality through IO-Link	--	--	--	--	--	✓	• Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Starter function	--	--	--	--	--	✓	• Integration of feeders via IO-Link in the control system up to 630 A or 820 A

✓ Available
-- Not available

[1] Exception: up to size S3, only stand-alone installation is possible.
[2] Alternatively available for screw terminals.

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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Other features							
Temperature compensation	✓	✓	✓	✓	✓	✓	• Allows the use of the relays at high temperatures without derating • Prevents premature tripping • Allows compact installation of the control cabinet without distance between the devices/load feeders • Simplifies configuration • Enables space to be saved in the control cabinet
Very high long-term stability	✓	✓	✓	✓	✓	✓	• Provides safe protection for the loads even after years of use in severe operating conditions
Wide setting ranges	--	--	✓ (1:4)	✓ (1:4)	✓ (1:10)	✓ (1:10)	• Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Fixed trip class	CLASS 10	CLASS 10	3RB30: CLASS 10 or CLASS 20	3RB20: CLASS 10 or CLASS 20	--	--	• Optimum motor protection for standard starts
Trip classes adjustable on the device CLASS 5, 10, 20, 30	--	--	3RB31: ✓	3RB21: ✓	✓	✓	• Enables solutions for very fast starting motors requiring special protection (e.g. Ex motors) • Enables heavy starting solutions • Reduces the number of variants • Minimizes the configuring outlay and costs • Minimizes storage overhead, storage costs, and tied-up capital
Low power loss	--	--	✓	✓	✓	✓	• Reduces energy consumption and energy costs (up 98 % less energy is used than for thermal overload relays). • Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for controlgear cabinet cooling. • Direct mounting to contactor saves space, even for high motor currents (i.e. no heat decoupling is required).
Internal power supply	--[1)]	--[1)]	✓	✓	--	--	• Eliminates the need for configuration and connecting an additional control circuit
Supplied from an external voltage through IO-Link	--	--	--	--	--	✓	• Eliminates the need for configuration and connecting an additional control circuit

✓ Available

-- Not available

[1)] SIRIUS 3RU11 and 3RU21 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

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General data

Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Further characteristics (continued)							
Overload warning	--	--	--	--	✓	✓	• Indicates imminent tripping of the relay directly on the device due to overload, phase unbalance or phase failure through flickering of the LEDs or in the case of the 3RB24 as a signal through IO-Link • Allows the imminent tripping of the relay to be signaled • Allows measures to be taken in time in the event of inverse-time delayed overloading of the load for an extended period over the current limit • Eliminates the need for an additional device • Saves space in the control cabinet • Reduces wiring outlay and costs
Analog output	--	--	--	--	✓	✓	• Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems • Eliminates the need for an additional measuring transducer and signal converter • Saves space in the control cabinet • Reduces wiring outlay and costs

✓ Available
-- Not available

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Overview of overload relays – matching contactors

	Overload relays	Current measure-ment	Current range	**Contactors** (type, size, rating in kW)							
				3RT201.	**3RT202.**	**3RT103.**	**3RT104.**	**3RT105.**	**3RT106.**	**3RT107.**	**3TF68/3TF69**
				S00	S0	S2	S3	S6	S10	S12	Size 14
	Type		A	3/4/5.5/7.5	5.5/7.5/11/15/18.5	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450
SIRIUS 3RU21 thermal overload relays											
3RU21	3RU211	Integrated	0.11 … 16	✓	--	--	--	--	--	--	--
	3RU212	Integrated	1.8 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RU11 thermal overload relays											
3RU11	3RU113	Integrated	5.5 … 50	--	--	✓	--	--	--	--	--
	3RU114	Integrated	18 … 100	--	--	--	✓	--	--	--	--
SIRIUS 3RB30 solid-state overload relays[1]											
3RB30	3RB301	Integrated	0.1 … 16	✓	--	--	--	--	--	--	--
	3RB302	Integrated	0.1 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RB31 solid-state overload relays[1]											
3RB31	3RB311	Integrated	0.1 … 16	✓	--	--	--	--	--	--	--
	3RB312	Integrated	0.1 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RB20 solid-state overload relays[1]											
3RB20	3RB203	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB204	Integrated	12.5 … 100	--	--	--	✓	--	--	--	--
	3RB205	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB206	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB201 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓
SIRIUS 3RB21 solid-state overload relays[1]											
3RB21	3RB213	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB214	Integrated	12.5 … 100	--	--	--	✓	--	--	--	--
	3RB215	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB216	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB211 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓

✓ Can be used

-- Cannot be used

[1] "Technical specifications" for the use of overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders", see Configuration Manuals

- "SIRIUS Configuration – Selection data for Fuseless Load Feeders", http://support.automation.siemens.com/WW/view/en/68115040
- "Configuring SIRIUS Innovations – Selection data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250599.

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General data

Overview of overload relays – matching contactors (continued)

Overload relays	Current measure-ment	Current range	**Contactors** (type, size, rating in kW) **3RT201.**	**3RT202.**	**3RT103.**	**3RT104.**	**3RT105.**	**3RT106.**	**3RT107.**	**3TF68/3TF69**
			S00	S0	S2	S3	S6	S10	S12	Size 14
Type	Type	A	3/4/5.5/7.5	5.5/7.5/11	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450
SIRIUS 3RB22 to 3RB24 solid-state overload relays[1]										
3RB2283/ 3RB2383/ 3RB2483+	3RB290	0.3 … 25	✓	✓	--	--	--	--	--	--
	3RB290	10 … 100	✓	✓	✓	✓	--	--	--	--
	3RB295	20 … 200	--	✓	✓	✓	✓	--	--	--
	3RB296	63 … 630	--	--	--	--	--	✓	✓	✓
	3RB290 + 3UF18	630 … 820	--	--	--	--	--	--	--	✓

3RB22, 3RB23

3RB24

✓ Can be used

-- Cannot be used

[1] "Technical Specifications" for the use of overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders", see Configuration Manuals
- "SIRIUS Configuration – Selection data for Fuseless Load Feeders", http://support.automation.siemens.com/WW/view/en/68115040
- "Configuring SIRIUS Innovations – Selection data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250599.

Connection methods

Depending on the device version of the 3RU2 and 3RB3 overload relays, the terminals for screw terminals, spring-type terminals or ring terminal lug connection are configured for both the main and auxiliary circuit.

The 3RU11 thermal overload relays come with screw terminals.

The solid-state overload relays 3RB20 and 3RB21 are available with screw terminals (box terminals) or spring-type terminals on the auxiliary current side; the same applies for the evaluation modules of the 3RB22 to 3RB24 solid-state overload relays for High-Feature applications.

The 3RB29 current measuring modules are designed as straight-through modules. From size S6 upwards they are also available with an optional busbar connection.

- Screw terminals
- Spring-type terminals
- Ring terminal lug connections
- Busbar connections
- Straight-through transformers

The various terminals and straight-through transformers are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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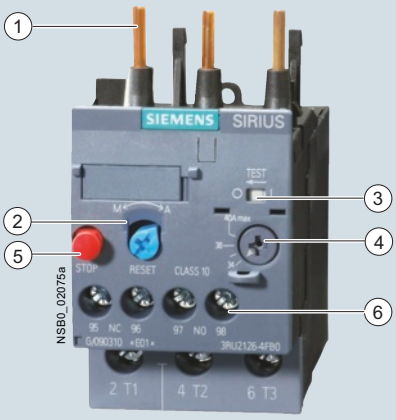
Overview



1. Connection for mounting onto contactors:
   Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to the contactor using these pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation).
2. Selector switch for manual/automatic RESET and RESET button:
   With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.
3. Switch position indicator and TEST function of the wiring:
   Indicates a trip and enables the wiring test.
4. Motor current setting:
   Setting the device to the rated motor current is easy with the large rotary knob.
5. STOP button:
   If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.
6. Connecting terminals:
   Depending on the device version, the connecting terminals for screw, spring-type or ring terminal lug connection are configured for the main and auxiliary circuit.

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

SIRIUS 3RU2126-4FB0 thermal overload relay

The 3RU21 thermal overload relays up to 40 A have been designed for inverse-time delayed protection of loads with normal starting (for "Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60298164) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/34291410/134300).

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed (for "Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60298164).

The 3RU2 thermal overload relays are suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS Innovations – 3RU2/3RB3 Overload Relays", see http://support.automation.siemens.com/WW/view/en/60298164.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

3RU11 overload relays in sizes S2 and S3 see page 7/105 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU21 thermal overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

The relays meet the requirements of IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G001.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Thermal overload relays	**3 R U**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□	□					
Setting range of the overload release							□	□		
Connection methods									□	
Installation type										□
Example	**3 R U**	**2**	**1**	**1**	**6**	**–**	**0**	**A**	**B**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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3RU2 up to 40 A for standard applications

Benefits

The most important features and benefits of the 3RU21 thermal overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

Application

Industries

The 3RU21 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

Application

The 3RU21 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

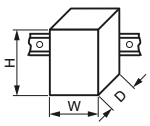
If single-phase AC or DC loads are to be protected by the 3RU21 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

Ambient conditions

The 3RU21 thermal overload relays have temperature compensation according to IEC 60947-4-1 for the temperature range of -40 to +60 °C. For temperatures from +60 to +70 °C, the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature	Derating factor for the upper set value Current ranges	
°C	0.11 ... 20 A	17 ... 40 A
+60	1.0	1.0
+65	0.94	0.97
+70	0.87	0.94

Technical specifications



Type		3RU2116	3RU2126
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 95
• Spring-type terminals	mm	45 x 102 x 79	45 x 114 x 95
General data			
Trips in the event of		Overload and phase failure	
Trip class acc. to IEC 60947-4-1	CLASS	10	
Phase failure sensitivity		Yes	
Overload warning		No	
Reset and recovery			
• Reset options after tripping		Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Recovery time			
- For automatic RESET	min	Depends on the strength of the tripping current and characteristic	
- For manual RESET	min	Depends on the strength of the tripping current and characteristic	
- For remote RESET	min	Depends on the strength of the tripping current and characteristic	
Features			
• Display of operating state on device		Yes, by means of TEST function/switch position indicator slide	
• TEST function		Yes	
• RESET button		Yes	
• STOP button		Yes	
Safe operation of motors with "increased safety" type of protection EC type test certificate number according to directive 94/9/EC (ATEX)		DMT 98 ATEX G 001 Ⓔx II (2) GD, DMT 98 ATEX G 001 N1	
Ambient temperature			
• Storage/transport	°C	-55 ... +80	
• Operation	°C	-40 ... +70	
• Temperature compensation	°C	Up to 60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C	%	87	
Repeat terminals			
• Coil repeat terminals		Yes	Not required
• Auxiliary contact repeat terminal		Yes	Not required
Degree of protection acc. to IEC 60529		IP20	
Touch protection acc. to IEC 61140		Screw terminals and spring-type terminals: Finger-safe for vertical contact from the front; ring terminal lug connection: Finger-safe only with optional terminal covers	
Shock resistance with sine acc. to IEC 60068-2-27	*g*/ms	15/11 (auxiliary contacts 95/96 and 97/98: 8 *g*/11 ms)	

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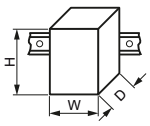
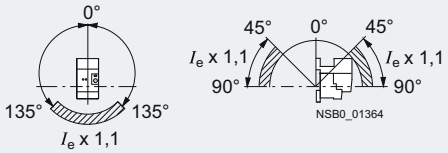
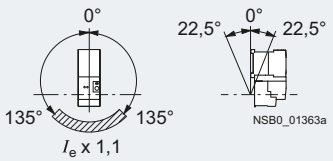
Type		**3RU2116**	**3RU2126**
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 95
• Spring-type terminals	mm	45 x 102 x 79	45 x 114 x 95
General data (continued)			
Electromagnetic compatibility (EMC) – Interference immunity			
• Conductor-related interference			
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.	
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays.	
Electromagnetic compatibility (EMC) – emitted interference		EMC interference immunity is not relevant for thermal overload relays.	
Resistance to extreme climates – air humidity	%	90	
Dimensions		"Dimensional drawings" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60298164.	
Installation altitude above sea level	m	Up to 2 000; above this on request	
Mounting position		The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented. Stand-alone installation:  Contactor + overload relay:  	
Type of mounting		Mounting onto contactor/stand-alone installation with terminal support (For screw and snap-on mounting onto TH 35 standard mounting rail. Technical specifications of the terminal supports see manual SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60298164.)	

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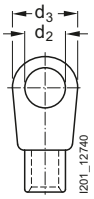
Type		3RU2116	3RU2126
Size		S00	S0
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated operational voltage U_e	V	690	
Type of current			
• Direct current		Yes	
• Alternating current		Yes, frequency range up to 400 Hz	
Current setting	A A	0.11 ... 0.16 up to 11 ... 16	1.8 ... 2.5 up to 34 ... 40
Power loss per unit (max.)	W	4.1 ... 6.3	6.2 ... 7.5
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/95 and 7/96	
• With fuse and contactor		"Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" http://support.automation.siemens.com/WW/view/en/50250599.	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1			
• Screw terminals or ring terminal lug connections	V	440	690: Setting ranges ≤ 25 A
• Spring-type terminals	V	440	440: Setting ranges > 25 A
Conductor cross-sections of main circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 2 x 4	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1], 2 x 12	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)
Connection type		**Ring terminal lug connections**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	d_2 = min. 4.3, d_3 = max. 12.2
• DIN 46234 without insulation sleeve			
• DIN 46225 without insulation sleeve			
• DIN 46237 with insulation sleeve			
• JIS C2805 Type R without insulation sleeve			
• JIS C2805 Type RAV with insulation sleeve			
• JIS C2805 Type RAP with insulation sleeve			



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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Type		3RU2116	3RU2126
Size		S00	S0
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Contact rating of the auxiliary contacts			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 230 V	A	3	
- 400 V	A	2	
- 600 V	A	0.75	
- 690 V	A	0.75	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.75	
- 690 V	A	0.75	
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current I_{th}	A	6	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse			
- Operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6[1)]	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	440	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		B600, R300	

1) Up to $I_k \leq 0.5$ kA; $U \leq 260$ V.

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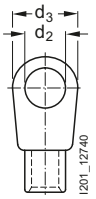
Type		3RU2116	3RU2126
Size		S00	S0
Conductor cross-sections for auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1]	
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	2 x (0.5 ... 2.5)	
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)	
Connection type		**Ring terminal lug connections**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	
• DIN 46234 without insulation sleeve			
• DIN 46225 without insulation sleeve			
• DIN 46237 with insulation sleeve			
• JIS C2805 Type R without insulation sleeve			
• JIS C2805 Type RAV with insulation sleeve			
• JIS C2805 Type RAP with insulation sleeve			



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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Selection and ordering data

3RU21 thermal overload relays for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Screw terminals, spring-type terminals or ring terminal lug connections[2]
- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Sealable covers (optional accessory)
- Terminal covers for devices with ring terminal lug connection (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41F

3RU2116-4AB0

3RU2116-4AC0

3RU2126-4FB0

3RU2126-4AC0

Size contactor[3]	Rating for three-phase motor, rated value[4]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[5]	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
	kW	A	A						
Size S00									
S00	0.04	0.11 ... 0.16	0.5	▶	**3RU2116-0AB0**		B	**3RU2116-0AC0**	
	0.06	0.14 ... 0.2	1	▶	**3RU2116-0BB0**		B	**3RU2116-0BC0**	
	0.06	0.18 ... 0.25	1	▶	**3RU2116-0CB0**		B	**3RU2116-0CC0**	
	0.09	0.22 ... 0.32	1.6	▶	**3RU2116-0DB0**		B	**3RU2116-0DC0**	
	0.09	0.28 ... 0.4	2	▶	**3RU2116-0EB0**		B	**3RU2116-0EC0**	
	0.12	0.35 ... 0.5	2	▶	**3RU2116-0FB0**		B	**3RU2116-0FC0**	
	0.18	0.45 ... 0.63	2	▶	**3RU2116-0GB0**		B	**3RU2116-0GC0**	
	0.18	0.55 ... 0.8	4	▶	**3RU2116-0HB0**		B	**3RU2116-0HC0**	
	0.25	0.7 ... 1	4	▶	**3RU2116-0JB0**		B	**3RU2116-0JC0**	
	0.37	0.9 ... 1.25	4	▶	**3RU2116-0KB0**		B	**3RU2116-0KC0**	
	0.55	1.1 ... 1.6	6	▶	**3RU2116-1AB0**		B	**3RU2116-1AC0**	
	0.75	1.4 ... 2	6	▶	**3RU2116-1BB0**		B	**3RU2116-1BC0**	
	0.75	1.8 ... 2.5	10	▶	**3RU2116-1CB0**		B	**3RU2116-1CC0**	
	1.1	2.2 ... 3.2	10	▶	**3RU2116-1DB0**		B	**3RU2116-1DC0**	
	1.5	2.8 ... 4	16	▶	**3RU2116-1EB0**		B	**3RU2116-1EC0**	
	1.5	3.5 ... 5	20	▶	**3RU2116-1FB0**		B	**3RU2116-1FC0**	
	2.2	4.5 ... 6.3	20	▶	**3RU2116-1GB0**		B	**3RU2116-1GC0**	
	3	5.5 ... 8	25	▶	**3RU2116-1HB0**		B	**3RU2116-1HC0**	
	4	7 ... 10	35	▶	**3RU2116-1JB0**		B	**3RU2116-1JC0**	
	5.5	9 ... 12.5	35	▶	**3RU2116-1KB0**		B	**3RU2116-1KC0**	
	7.5	11 ... 16	40	▶	**3RU2116-4AB0**		B	**3RU2116-4AC0**	
Size S0									
S0	0.75	1.8 ... 2.5	10	▶	**3RU2126-1CB0**		B	**3RU2126-1CC0**	
	1.1	2.2 ... 3.2	10	▶	**3RU2126-1DB0**		B	**3RU2126-1DC0**	
	1.5	2.8 ... 4	16	▶	**3RU2126-1EB0**		B	**3RU2126-1EC0**	
	1.5	3.5 ... 5	20	▶	**3RU2126-1FB0**		B	**3RU2126-1FC0**	
	2.2	4.5 ... 6.3	20	▶	**3RU2126-1GB0**		B	**3RU2126-1GC0**	
	3	5.5 ... 8	25	▶	**3RU2126-1HB0**		B	**3RU2126-1HC0**	
	4	7 ... 10	35	▶	**3RU2126-1JB0**		B	**3RU2126-1JC0**	
	5.5	9 ... 12.5	35	▶	**3RU2126-1KB0**		B	**3RU2126-1KC0**	
	7.5	11 ... 16	40	▶	**3RU2126-4AB0**		▶	**3RU2126-4AC0**	
	7.5	14 ... 20	50	▶	**3RU2126-4BB0**		▶	**3RU2126-4BC0**	
	11	17 ... 22	63	▶	**3RU2126-4CB0**		▶	**3RU2126-4CC0**	
	11	20 ... 25	63	▶	**3RU2126-4DB0**		▶	**3RU2126-4DC0**	
	15	23 ... 28	63	▶	**3RU2126-4NB0**		▶	**3RU2126-4NC0**	
	15	27 ... 32	80	▶	**3RU2126-4EB0**		▶	**3RU2126-4EC0**	
	18.5	30 ... 36	80	▶	**3RU2126-4PB0**		▶	**3RU2126-4PC0**	
	18.5	34 ... 40	80	▶	**3RU2126-4FB0**		▶	**3RU2126-4FC0**	

1) With the suitable terminal supports (see "Accessories", page 7/97), the 3RU2 overload relays for mounting on contactors can also be installed as stand-alone units.

2) The 3RU21 overload relays are also available with ring terminal lug connection. The Article No. must be changed in the 10th digit to **"J"**: e.g. 3RU2116-0A**J**0.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250599.

*** You can order this quantity or a multiple thereof.**
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3RU2 up to 40 A for standard applications

3RU21 thermal overload relays for stand-alone installation[1], CLASS 10

Features and technical specifications:

- Screw or spring-type terminals
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41F

3RU2116-4AB1

3RU2116-4AC1

3RU2126-4FB1

3RU2126-4FC1

Size contactor[2]	Rating for three-phase motor, rated value[3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Article No. / Price per PU		Article No. / Price per PU
	kW	A	A				
Size S00							
S00	0.04	0.11 ... 0.16	0.5	B	**3RU2116-0AB1**	B	**3RU2116-0AC1**
	0.06	0.14 ... 0.2	1	B	**3RU2116-0BB1**	B	**3RU2116-0BC1**
	0.06	0.18 ... 0.25	1	B	**3RU2116-0CB1**	B	**3RU2116-0CC1**
	0.09	0.22 ... 0.32	1.6	B	**3RU2116-0DB1**	B	**3RU2116-0DC1**
	0.09	0.28 ... 0.4	2	B	**3RU2116-0EB1**	B	**3RU2116-0EC1**
	0.12	0.35 ... 0.5	2	B	**3RU2116-0FB1**	B	**3RU2116-0FC1**
	0.18	0.45 ... 0.63	2	B	**3RU2116-0GB1**	B	**3RU2116-0GC1**
	0.18	0.55 ... 0.8	4	B	**3RU2116-0HB1**	B	**3RU2116-0HC1**
	0.25	0.7 ... 1	4	B	**3RU2116-0JB1**	B	**3RU2116-0JC1**
	0.37	0.9 ... 1.25	4	B	**3RU2116-0KB1**	B	**3RU2116-0KC1**
	0.55	1.1 ... 1.6	6	B	**3RU2116-1AB1**	B	**3RU2116-1AC1**
	0.75	1.4 ... 2	6	B	**3RU2116-1BB1**	B	**3RU2116-1BC1**
	0.75	1.8 ... 2.5	10	B	**3RU2116-1CB1**	B	**3RU2116-1CC1**
	1.1	2.2 ... 3.2	10	B	**3RU2116-1DB1**	B	**3RU2116-1DC1**
	1.5	2.8 ... 4	16	B	**3RU2116-1EB1**	B	**3RU2116-1EC1**
	1.5	3.5 ... 5	20	B	**3RU2116-1FB1**	B	**3RU2116-1FC1**
	2.2	4.5 ... 6.3	20	B	**3RU2116-1GB1**	B	**3RU2116-1GC1**
	3	5.5 ... 8	25	B	**3RU2116-1HB1**	B	**3RU2116-1HC1**
	4	7 ... 10	35	B	**3RU2116-1JB1**	B	**3RU2116-1JC1**
	5.5	9 ... 12.5	35	B	**3RU2116-1KB1**	B	**3RU2116-1KC1**
	7.5	11 ... 16	40	B	**3RU2116-4AB1**	B	**3RU2116-4AC1**
Size S0							
S0	7.5	14 ... 20	50	B	**3RU2126-4BB1**	B	**3RU2126-4BC1**
	11	17 ... 22	63	B	**3RU2126-4CB1**	B	**3RU2126-4CC1**
	11	20 ... 25	63	B	**3RU2126-4DB1**	B	**3RU2126-4DC1**
	15	23 ... 28	63	B	**3RU2126-4NB1**	B	**3RU2126-4NC1**
	15	27 ... 32	80	B	**3RU2126-4EB1**	B	**3RU2126-4EC1**
	18.5	30 ... 36	80	B	**3RU2126-4PB1**	B	**3RU2126-4PC1**
	18.5	34 ... 40	80	B	**3RU2126-4FB1**	B	**3RU2126-4FC1**

1) Screw and snap-on mounting onto TH 35 standard mounting rail.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250599.

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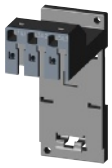
Overview

Overload relays for standard applications

The following optional accessories are available for the 3RU21 thermal overload relays:

- Terminal support for stand-alone installation with screw or spring-type terminals for every size
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage variants (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for devices with ring terminal lug connection

Selection and ordering data

	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal supports for stand-alone installation								
3RU2916-3AA01	**Terminal supports for overload relays with screw terminals**			**Screw terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	▶	**3RU2916-3AA01**		1	1 unit	41F
		S0	▶	**3RU2926-3AA01**		1	1 unit	41F
3RU2926-3AA01								
3RU2916-3AC01	**Terminal supports for overload relays with spring-type terminal**			**Spring-type terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	B	**3RU2916-3AC01**		1	1 unit	41F
		S0	B	**3RU2926-3AC01**		1	1 unit	41F
 3RU2926-3AC01								
Mechanical RESET								
3RU2900-1A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S00, S0	▶	**3RU2900-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00, S0	B	**3SB3000-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay	S00, S0	A	**3SX1335**		1	1 unit	41J
Cable releases with holder for RESET								
3RU2900-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm							
	• Length 400 mm	S00, S0	▶	**3RU2900-1B**		1	1 unit	41F
	• Length 600 mm	S00, S0	▶	**3RU2900-1C**		1	1 unit	41F

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Accessories

	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modules for remote RESET, electrical								
3RU1900-2A.71	Operating range 0.85 ... 1.1 × U_s, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h							
	• 24 ... 30 V AC/DC	S00, S0	A	**3RU1900-2AB71**		1	1 unit	41F
	• 110 ... 127 V AC/DC	S00, S0	A	**3RU1900-2AF71**		1	1 unit	41F
	• 220 ... 250 V AC/DC	S00, S0	A	**3RU1900-2AM71**		1	1 unit	41F
Sealable covers								
3RV2908-0P	For covering the setting knobs	S00, S0	▶	**3RV2908-0P**		100	10 units	41E
Terminal covers								
3RU2916-3BJ21	**Covers for devices with ring terminal lug connection** (ensure finger-safety)			**Ring terminal lug connection**				
	• Main current level							
	- Cover between contactor and overload relay for direct mounting of the overload relay	S00	C	**3RU2916-3BJ21**		1	10 units	41F
		S0	C	**3RU2926-3BJ21**		1	10 units	41F
3RU2926-3BJ21	- Cover for overload relay on load side	S00	C	**3RU2916-3BJ20**		1	10 units	41F
		S0	B	**3RV2928-4AA00**		1	1 unit	41E
3RU2916-3BJ20	• Auxiliary current level	S00, S0	B	**3RT2916-4EA13**		1	10 units	41B
3RV2928-4AA00								
3RT2916-4EA13								

* You can order this quantity or a multiple thereof.
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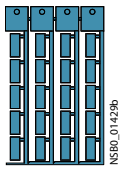
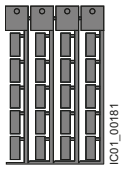
General accessories

	Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RU2	A	**3RA2908-1A**		1	1 unit	41B
Blank labels										
 3RT1900-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RU2	D	**3RT1900-1SB20**		100	340 units	41B
 3RT2900-1SB20		20 mm x 7 mm	Titanium gray	3RU2	D	**3RT2900-1SB20**		100	340 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

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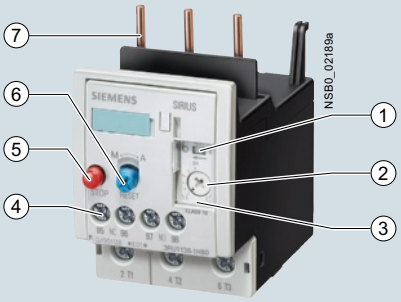
3RU11 up to 100 A for standard applications

Overview

Note:

The 3RU11 devices (sizes S00/S0 to S3) can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



(1) Switch position indicator and TEST function of the wiring:
Indicates a trip and enables the wiring test.

(2) Motor current setting:
Setting the device to the rated motor current is easy with the large rotary knob.

(3) Transparent, sealable cover:
Secures the motor current setting and the TEST function against adjustment.

(4) Connecting terminals:
The generously sized terminals permit connection of two conductors with different cross-sections for main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.

(5) STOP button:
If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.

(6) Selector switch for manual/automatic RESET and RESET button:
With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.

(7) Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal support for stand-alone installation).

SIRIUS 3RU1136-1HB0 thermal overload relay

The 3RU11 thermal overload relays up to 100 A have been designed for inverse-time delayed protection of loads with normal starting ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays, http://support.automation.siemens.com/WW/view/en/35681830) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/20356133/134300) .

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays "http://support.automation.siemens.com/WW/view/en/35681830).

The 3RU11 thermal overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", see http://support.automation.siemens.com/WW/view/en/35681830.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

3RU21 overload relays in sizes S00 and S0 see page 7/95 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU11 thermal overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

The relays meet the requirements of IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G 001.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Thermal overload relays	**3 R U**									
SIRIUS 1st generation		**1**								
Device series			□							
Size, rated operational current and power				□	□					
Setting range of the overload release							□	□		
Connection methods									□	
Installation type										□
Example	**3 R U**	**1**	**1**	**3**	**6**	**–**	**1**	**H**	**B**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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Benefits

The most important features and benefits of the 3RU11 thermal overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

Application

Industries

The 3RU11 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

Application

The 3RU11 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

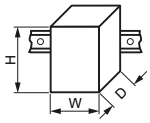
If single-phase AC or DC loads are to be protected by the 3RU11 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

Ambient conditions

The 3RU11 thermal overload relays have temperature compensation in accordance with IEC 60947-4-1 for the temperature range of -20 to +60 °C. For temperatures from +60 to +70 °C, the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature °C	Derating factor for the upper set value
+60	1.0
+65	0.94
+70	0.87

Technical specifications

Type		**3RU1136**	**3RU1146**
Size		S2	S3
Dimensions (W x H x D) (overload relay with stand-alone installation support)	mm	55 x 105 x 118	70 x 120 x 140
General data			
Trips in the event of		Overload and phase failure	
Trip class acc. to IEC 60947-4-1	CLASS	10	
Phase failure sensitivity		Yes	
Overload warning		No	
Reset and recovery			
• Reset options after tripping		Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Recovery time			
- For automatic RESET	min	Depends on the strength of the tripping current and characteristic	
- For manual RESET	min	Depends on the strength of the tripping current and characteristic	
- For remote RESET	min	Depends on the strength of the tripping current and characteristic	
Features			
• Display of operating state on device		Yes, by means of TEST function/switch position indicator slide	
• TEST function		Yes	
• RESET button		Yes	
• STOP button		Yes	
Safe operation of motors with "increased safety" type of protection			
EC type test certificate number according to directive 94/9/EC (ATEX)		DMT 98 ATEX G 001 Ex II (2) GD, DMT 98 ATEX G 001 N1	
Ambient temperature			
• Storage/transport	°C	-55 ... +80	
• Operation	°C	-20 ... +70	
• Temperature compensation	°C	up to 60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C	%	87	
Repeat terminals			
• Coil repeat terminals		Not required	
• Auxiliary contact repeat terminal		Not required	
Degree of protection acc. to IEC 60529		IP20 (terminal compartment: IP00 degree of protection)	
Touch protection acc. to IEC 61140		Finger-safe for vertical contact from the front	
Shock resistance with sine acc. to IEC 60068-2-27	*g*/ms	8/10	

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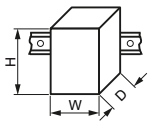
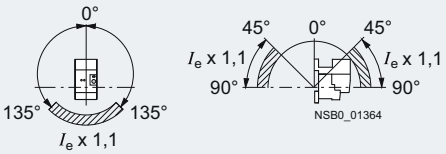
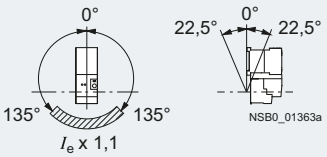
Type			3RU1136	3RU1146
Size			S2	S3
Dimensions (W x H x D) (overload relay with stand-alone installation support)		mm	55 x 105 x 118	70 x 120 x 140

General data (continued)

Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays.
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays.
Electromagnetic compatibility (EMC) – emitted interference		EMC interference immunity is not relevant for thermal overload relays.
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" http://support.automation.siemens.com/WW/view/en/35681830.
Installation altitude above sea level	m	Up to 2 000; above this on request
Mounting position		The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented. Stand-alone installation:  Contactor + overload relay: 
Type of mounting		Direct mounting/stand-alone installation with terminal support (For screw and snap-on mounting onto TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail. For technical specifications of the terminal supports see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681830.)

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Type		3RU1136	3RU1146
Size		S2	S3
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	1 000
Rated impulse withstand voltage U_{imp}	kV	6	8
Rated operational voltage U_e	V	690	1 000
Type of current			
• Direct current		Yes	
• Alternating current		Yes, frequency range up to 400 Hz	
Current setting	A	5.5 ... 8 up to 40 ... 50	18 ... 25 up to 80 ... 100
Power loss per unit (max.)	W	6 ... 9	10 ... 16.5
Short-circuit protection			
• With fuse without contactor		See "Selection and ordering data" on pages 7/105 to 7/107	
• With fuse and contactor		See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681830 → "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders".	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1	V	500	690
Conductor cross-section of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm^2	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Connection type		**Busbar connection**[1]	
Terminal screw		--	M6 x 20
Prescribed tightening torque	Nm	--	4 ... 6
Conductor cross-sections (min./max.)			
• Finely stranded with cable lug	mm^2	--	2 x 70
• Stranded with cable lug	mm^2	--	3 x 70
• AWG cables, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bars (max. width)	mm	--	12

[1] The box terminal is removable. Rail and cable lug connections are possible if the box terminal is removed.

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Type		3RU1136	3RU1146
Size		S2	S3
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Contact rating of the auxiliary contacts			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 230 V	A	3	
- 400 V	A	2	
- 600 V	A	0.6	
- 690 V	A	0.5	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.6	
- 690 V	A	0.5	
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current I_{th}	A	6	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse			
- Operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6[1)]	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	440	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		B600, R300	
Conductor cross-sections of the auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[2)], 2 x (0.75 ... 2.5)[2)]	
• Finely stranded without end sleeve	mm^2	--	
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[2)], 2 x (0.75 ... 2.5)[2)]	
• Stranded	mm^2	2 x (0.5 ... 1.5)[2)], 2 x (0.75 ... 2.5)[2)]	
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	

1) Up to $I_k \leq 0.5$ kA; ≤ 260 V.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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Selection and ordering data

3RU11 thermal overload relays with screw terminals on the auxiliary current side for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

	Size contactor[2]	Rating for three-phase motor, rated value[3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals** (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG
		kW	A	A		Article No. / Price per PU			
Size S2									
3RU1136-..B0	S2	3	5.5 ... 8	25	▶	**3RU1136-1HB0**	1	1 unit	41F
		4	7 ... 10	35	▶	**3RU1136-1JB0**	1	1 unit	41F
		5.5	9 ... 12.5	35	▶	**3RU1136-1KB0**	1	1 unit	41F
		7.5	11 ... 16	40	▶	**3RU1136-4AB0**	1	1 unit	41F
		7.5	14 ... 20	50	▶	**3RU1136-4BB0**	1	1 unit	41F
		11	18 ... 25	63	▶	**3RU1136-4DB0**	1	1 unit	41F
		15	22 ... 32	80	▶	**3RU1136-4EB0**	1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU1136-4FB0**	1	1 unit	41F
		22	36 ... 45	100	▶	**3RU1136-4GB0**	1	1 unit	41F
		22	40 ... 50	100	▶	**3RU1136-4HB0**	1	1 unit	41F
Size S3									
3RU1146-..B0	S3	11	18 ... 25	63	▶	**3RU1146-4DB0**	1	1 unit	41F
		15	22 ... 32	80	▶	**3RU1146-4EB0**	1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU1146-4FB0**	1	1 unit	41F
		22	36 ... 50	125	▶	**3RU1146-4HB0**	1	1 unit	41F
		30	45 ... 63	125	▶	**3RU1146-4JB0**	1	1 unit	41F
		37	57 ... 75	160	▶	**3RU1146-4KB0**	1	1 unit	41F
		45	70 ... 90	160	▶	**3RU1146-4LB0**	1	1 unit	41F
		45	80 ... 100[5]	200	▶	**3RU1146-4MB0**	1	1 unit	41F

1) With the appropriate terminal supports (see "Accessories", page 7/108), the 3RU11 overload relays for mounting onto contactors can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681830 → "Technical Specifications" → "Short-Circuit Protection with Fuses/ Motor Starter Protectors for Motor Feeders".

5) For overload relays > 100 A, see 3RB2 solid-state overload relays on page 7/126 onwards.

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3RU11 up to 100 A for standard applications

3RU11 thermal overload relays with screw terminals on the auxiliary current side for stand-alone installation[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

	Size contactor [2]	Rating for three-phase motor, rated value [3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG [4]	DT	**Screw terminals** (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG
		kW	A	A		Article No.			
Size S2									
3RU1136-4EB1	S2	15	22 ... 32	80	▶	**3RU1136-4EB1**	1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU1136-4FB1**	1	1 unit	41F
		22	36 ... 45	100	▶	**3RU1136-4GB1**	1	1 unit	41F
		22	40 ... 50	100	▶	**3RU1136-4HB1**	1	1 unit	41F
Size S3									
3RU1146-4JB1	S3	30	45 ... 63	125	▶	**3RU1146-4JB1**	1	1 unit	41F
		37	57 ... 75	160	▶	**3RU1146-4KB1**	1	1 unit	41F
		45	70 ... 90	160	▶	**3RU1146-4LB1**	1	1 unit	41F
		45	80 ... 100 [5]	200	▶	**3RU1146-4MB1**	1	1 unit	41F

1) Sizes S2 and S3 for screw and snap-on mounting onto TH 35 standard mounting rails, size S3 also for TH 75 standard mounting rails.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681830 → "Technical Specifications" → "Short-Circuit Protection with Fuses/ Motor Starter Protectors for Motor Feeders".

5) For overload relays > 100 A, see 3RB2 solid-state overload relays on page 7/126 onwards.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RU11 thermal overload relays with spring-type terminals for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated sealable cover

	Size contactor [2]	Rating for three-phase motor, rated value [3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG [4]	DT	**Spring-type terminals** (on auxiliary current side) Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		kW	A	A						
Size S2 [1][5]										
3RU1136-..D0	S2	3	5.5 ... 8	25	B	**3RU1136-1HD0**		1	1 unit	41F
		4	7 ... 10	35	B	**3RU1136-1JD0**		1	1 unit	41F
		5.5	9 ... 12.5	35	B	**3RU1136-1KD0**		1	1 unit	41F
		7.5	11 ... 16	40	B	**3RU1136-4AD0**		1	1 unit	41F
		7.5	14 ... 20	50	B	**3RU1136-4BD0**		1	1 unit	41F
		11	18 ... 25	63	B	**3RU1136-4DD0**		1	1 unit	41F
		15	22 ... 32	80	▶	**3RU1136-4ED0**		1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU1136-4FD0**		1	1 unit	41F
		22	36 ... 45	100	▶	**3RU1136-4GD0**		1	1 unit	41F
		22	40 ... 50	100	▶	**3RU1136-4HD0**		1	1 unit	41F
Size S3 [1][5]										
3RU1146-..D0	S3	11	18 ... 25	63	B	**3RU1146-4DD0**		1	1 unit	41F
		15	22 ... 32	80	B	**3RU1146-4ED0**		1	1 unit	41F
		18.5	28 ... 40	80	B	**3RU1146-4FD0**		1	1 unit	41F
		22	36 ... 50	125	B	**3RU1146-4HD0**		1	1 unit	41F
		30	45 ... 63	125	▶	**3RU1146-4JD0**		1	1 unit	41F
		37	57 ... 75	160	▶	**3RU1146-4KD0**		1	1 unit	41F
		45	70 ... 90	160	▶	**3RU1146-4LD0**		1	1 unit	41F
		45	80 ... 100	200	▶	**3RU1146-4MD0**		1	1 unit	41F

[1] With the appropriate terminal supports (see "Accessories", page 7/108), the 3RU11 overload relays for mounting onto contactors can also be installed as stand-alone units.

[2] Observe maximum rated operational current of the devices.

[3] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[4] Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors, see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681830 → "Technical Specifications" → "Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders".

[5] Auxiliary conductor connections with spring-type terminals and main conductor connections with screw terminals.

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Accessories

Overview

Overload relays for standard applications

The following optional accessories are available for the 3RU11 thermal overload relays:

- Terminal support for stand-alone installation of overload relays sizes S2 and S3
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage variants (for all sizes)
- Terminal covers

Technical specifications

Terminal supports for stand-alone installation

Type		3RU1936-3AA01	3RU1946-3AA01
For overload relays		**3RU1136**	**3RU1146**
Mounting type		For screw and snap-on mounting onto TH 35 standard mounting rails, size S2 also for TH 75 standard mounting rails	
Connection for main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded without end sleeve	mm^2	--	--
• Finely stranded with end sleeve	mm^2	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)

Selection and ordering data

Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal supports for stand-alone installation							
3RU19.6-3AA01							
For separate mounting of overload relays; screw and snap-on mounting onto TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail	S2	▶	**3RU1936-3AA01**		1	1 unit	41F
	S3	▶	**3RU1946-3AA01**		1	1 unit	41F
Mechanical RESET							
3RU1900-1A with pushbutton and extension plunger							
Resetting plungers, holders and formers	S2, S3	▶	**3RU1900-1A**		1	1 unit	41F
Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S2, S3	B	**3SB3000-0EA11**		1	1 unit	41J
Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay	S2, S3	A	**3SX1335**		1	1 unit	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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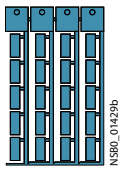
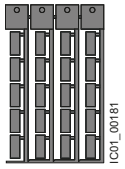
Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Cable releases with holder for RESET							
3RU1900-1. For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm							
• Length 400 mm	S2, S3	▶	**3RU1900-1B**		1	1 unit	41F
• Length 600 mm	S2, S3	▶	**3RU1900-1C**		1	1 unit	41F
Modules for remote RESET, electrical							
3RU1900-2A.71 Operating range 0.85 ... 1.1 × U_S, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h							
• 24 ... 30 V AC/DC	S2, S3	A	**3RU1900-2AB71**		1	1 unit	41F
• 110 ... 127 V AC/DC	S2, S3	A	**3RU1900-2AF71**		1	1 unit	41F
• 220 ... 250 V AC/DC	S2, S3	A	**3RU1900-2AM71**		1	1 unit	41F
Terminal covers							
Covers for cable lugs and busbar connections							
• Length 55 mm	S3	B	**3RT1946-4EA1**		1	1 unit	41B
Covers for box terminals							
• Length 20.6 mm	S2	B	**3RT1936-4EA2**		1	1 unit	41B
• Length 20.8 mm	S3	▶	**3RT1946-4EA2**		1	1 unit	41B

General accessories

Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals									
					Spring-type terminals				
3RA2908-1A **Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RU1	A	**3RA2908-1A**		1	1 unit	41B
Blank labels									
 3RT1900-1SB20 **Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RU1	D	**3RT1900-1SB20**		100	340 units	41B
	20 mm x 7 mm	Titanium gray	3RU1	D	**3RT2900-1SB20**		100	340 units	41B
Adhesive inscription labels[1] for SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RU1	C	**3RT1900-1SB60**		100	3 060 units	41B
	19 mm x 6 mm	Zinc yellow	3RU1	C	**3RT1900-1SD60**		100	3 060 units	41B
 3RT2900-1SB20									

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

*** You can order this quantity or a multiple thereof.**
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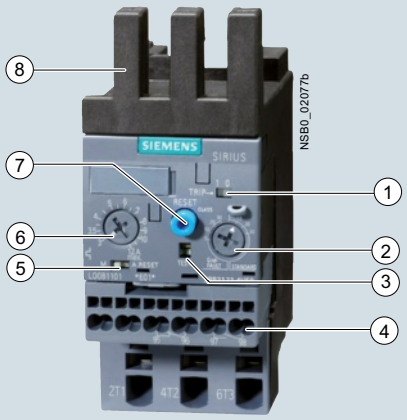
Overview



1. Switch position indicator and TEST function of the wiring: Indicates a trip and enables the wiring test.
2. Trip class setting/internal ground-fault detection (only 3RB31): Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.
3. Solid-state test (device test): Enables a test of all important device components and functions.
4. Connecting terminals (removable joint block for auxiliary circuits): Depending on the device version, the terminals for screw and spring-type connection are configured for the main and auxiliary circuit.
5. Selector switch for manual/automatic RESET: With the slide switch you can choose between manual and automatic RESET.
6. Motor current setting: Setting the device to the rated motor current is easy with the large rotary knob.
7. A device set to manual RESET can be reset locally by pressing the RESET button. On 3RB31 overload relays an electrical remote RESET is integrated.
8. Connection for mounting onto contactors: Optimally adapted in electrical, mechanical and design terms to the contactors 3RT2. The overload relay can be connected directly using these connection pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal support for stand-alone installation).

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

SIRIUS 3RB3123-4VE00 solid-state overload relays

The 3RB30/3RB31 solid-state overload relays up to 40 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting (for "Function" see the manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60314990) against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/34290881/134300) .

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB31 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). This provides protection of loads against high-resistance short circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60314990).

The 3RB3 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS Innovations – 3RU2/3RB3 Overload Relays", see http://support.automation.siemens.com/WW/view/en/60314990.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

3RB20 and 3RB21 overload relays in sizes S2 to S10/S12 see page 7/126 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RB30/3RB31 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

The relays meet the requirements of IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 09 ATEX 3001.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 3rd generation		**3**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**3**	**0**	**1**	**6**	**–**	**1**	**R**	**B**	**0**

Note:

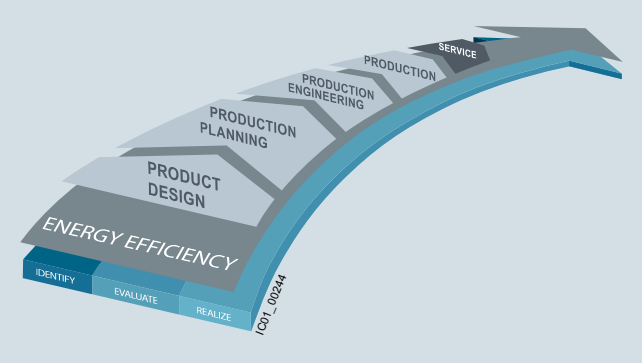
The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB30/3RB31 solid-state overload relays are listed in the overview table (see "General Data" on page 7/82).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB30/3RB31 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB30/3RB31 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB30/3RB31 solid-state overload relays have been designed for the protection of three-phase motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU21 thermal overload relay or the 3RB22/3RB23 solid-state overload relay can be used for single-phase AC loads. For DC loads we recommend the 3RU21 thermal overload relay.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 °C to +60 °C, the 3RB30/3RB31 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

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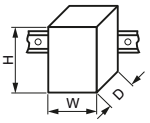
3RB30, 3RB31 up to 40 A for standard applications

Technical specifications



		3RB301., 3RB311.	3RB302., 3RB312.
Type			
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 94
• Spring-type terminals	mm	45 x 102 x 80	45 x 116 x 95
General data			
Trips in the event of		Overload, phase failure, and phase unbalance + ground fault (for 3RB31 only)	
Trip class acc. to IEC 60947-4-1	CLASS	3RB30: 10, 20; 3RB31: 5, 10, 20 and 30 adjustable	
Phase failure sensitivity		Yes	
Overload warning		No	
Reset and recovery			
• Reset options after tripping		Manual, automatic and remote RESET (depending on the version)	
• Recovery time			
- For automatic RESET		Approx. 3 min	
- For manual RESET		Immediately	
- For remote RESET		Immediately	
Features			
• Display of operating state on device		Yes, by means of switch position indicator slide	
• TEST function		Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/ self-monitoring	
• RESET button		Yes	
• STOP button		No	
Explosion protection – Safe operation of motors with "increased safety" type of protection			
EC type test certificate number according to directive 94/9/EC (ATEX)		PTB 09 ATEX 3001 Ex II (2) GD	
Ambient temperatures			
• Storage/transport	°C	-40 ... +80	
• Operation	°C	-25 ... +60	
• Temperature compensation	°C	+60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100	100[1]
- Temperature inside control cabinet 70 °C	%	On request	
Repeat terminals			
• Coil repeat terminals		Yes	Not required
• Auxiliary contact repeat terminal		Yes	Not required
Degree of protection acc. to IEC 60529		IP20	
Touch protection acc. to IEC 61140		Finger-safe for vertical contact from the front	
Shock resistance with sine acc. to IEC 60068-2-27	*g*/ms	15/12 (signaling contact 97/98 in position "tripped": 4/11*g*/ms)	
Electromagnetic compatibility (EMC) – Interference immunity			
• Conductor-related interference			
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)	
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)	
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)	
• Field-related interference acc. to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10	
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)	
Resistance to extreme climates – air humidity	%	95	
Dimensions		"Dimensional drawings" see manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays", http://support.automation.siemens.com/WW/view/en/60314990.	
Installation altitude above sea level	m	Up to 2 000	
Mounting position		Any	
Type of mounting		Direct mounting/stand-alone installation with terminal support	

[1] Permissible rated current in case of heavy starting
Size S0 at 10 A up to 40 A:
- CLASS 20, $I_{e\ max}$ = 32 A,
- CLASS 30, $I_{e\ max}$ = 25 A.

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Type		3RB301., 3RB311.	3RB302., 3RB312.
Size		S00	S0
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated operational voltage U_e	V	690	
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A A	0.1 ... 0.4 up to 4 ... 16	0.1 ... 0.4 up to 10 ... 40
Power loss per unit (max.)	W	0.05 ... 0.2	
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/115 to 7/117	
• With fuse and contactor		"Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see Configuration Manual for "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250600.	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
Conductor cross-sections of main circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], 2 x (0.5 ... 4)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1], 2 x 12	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228-1)	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

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Type		3RB301., 3RB311.	3RB302., 3RB312.
Size		S00	S0
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	300	
Rated impulse withstand voltage U_{imp}	kV	4	
Auxiliary contacts – contact rating			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 250 V	A	3	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 250 V	A	3	
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	2	
- 60 V	A	0.55	
- 110 V	A	0.3	
- 125 V	A	0.3	
- 250 V	A	0.11	
• Conventional thermal current I_{th}	A	5	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse, operational class gG	A	6	
Ground-fault protection (only 3RB31)		The information refers to sinusoidal residual currents at 50/60 Hz.	
• Tripping value I_Δ		> 0.75 × I_{motor}	
• Operating range I		Lower current setting value < I_{motor} < 3.5 × upper current setting value	
• Response time t_{trip} (in steady-state condition)	s	< 1	
Integrated electrical remote RESET (only 3RB31)			
Connecting terminals A3, A4		24 V DC, max. 200 mA for approx. 20 ms, then < 10 mA	
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	300	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		3RB30: B600, R300; 3RB31: B300, R300	
Conductor cross-sections for auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)	
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 × (0.25 ... 1.5)	
• Finely stranded without end sleeve	mm^2	2 × (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)	

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Selection and ordering data

3RB30 solid-state overload relays for mounting onto contactors[1], CLASS 10

Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB3016-1TB0

3RB3016-1TE0

3RB3026-1VB0

3RB3026-1VE0

Size contactor[2]	Rating for three-phase motor, rated value[3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	Screw terminals	DT	Spring-type terminals
					Article No. / Price per PU		Article No. / Price per PU
	kW	A	A				
Size S00[1]							
S00	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3016-1RB0**	A	**3RB3016-1RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3016-1NB0**	A	**3RB3016-1NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3016-1PB0**	A	**3RB3016-1PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3016-1SB0**	A	**3RB3016-1SE0**
	2.2 … 7.5	4 ... 16	25	▶	**3RB3016-1TB0**	A	**3RB3016-1TE0**
Size S0[1]							
S0	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3026-1RB0**	A	**3RB3026-1RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3026-1NB0**	A	**3RB3026-1NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3026-1PB0**	A	**3RB3026-1PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3026-1SB0**	A	**3RB3026-1SE0**
	3 … 11	6 … 25	50	▶	**3RB3026-1QB0**	A	**3RB3026-1QE0**
	5.5 … 18.5	10 ... 40	50	▶	**3RB3026-1VB0**	A	**3RB3026-1VE0**

1) With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" http://support.automation.siemens.com/WW/view/en/50250600.

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3RB30, 3RB31 up to 40 A for standard applications

3RB30 solid-state overload relays for mounting onto contactors[1], CLASS 20

Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB3016-2TB0

3RB3016-2TE0

3RB3026-2VB0

3RB3026-2VE0

Size contactor [2]	Rating for three-phase motor, rated value[3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Article No. / Price per PU		Article No. / Price per PU
	kW	A	A				
Size S00[1]							
S00	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3016-2RB0**	A	**3RB3016-2RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3016-2NB0**	A	**3RB3016-2NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3016-2PB0**	A	**3RB3016-2PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3016-2SB0**	A	**3RB3016-2SE0**
	2.2 … 7.5	4 ... 16	25	▶	**3RB3016-2TB0**	A	**3RB3016-2TE0**
Size S0[1]							
S0	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3026-2RB0**	A	**3RB3026-2RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3026-2NB0**	A	**3RB3026-2NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3026-2PB0**	A	**3RB3026-2PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3026-2SB0**	A	**3RB3026-2SE0**
	3 … 11	6 … 25	50	▶	**3RB3026-2QB0**	A	**3RB3026-2QE0**
	5.5 … 18.5	10 ... 40	50	▶	**3RB3026-2VB0**	A	**3RB3026-2VE0**

1) With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" http://support.automation.siemens.com/WW/view/en/50250600.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RB31 solid-state overload relays for mounting onto contactors[1], CLASS 5, 10, 20 and 30 adjustable

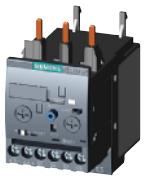
Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal ground-fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB3113-4TB0

3RB3113-4TE0


3RB3123-4VB0

3RB3123-4VE0

Size contactor[2]	Rating for three-phase motor, rated value[3]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Article No. / Price per PU		Article No. / Price per PU
	kW	A	A				
Size S00[1]							
S00	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3113-4RB0**	A	**3RB3113-4RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3113-4NB0**	A	**3RB3113-4NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3113-4PB0**	A	**3RB3113-4PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3113-4SB0**	A	**3RB3113-4SE0**
	2.2 … 7.5	4 ... 16	25	▶	**3RB3113-4TB0**	A	**3RB3113-4TE0**
Size S0[1]							
S0	0.04 … 0.09	0.1 … 0.4	4	▶	**3RB3123-4RB0**	A	**3RB3123-4RE0**
	0.12 … 0.37	0.32 … 1.25	6	▶	**3RB3123-4NB0**	A	**3RB3123-4NE0**
	0.55 … 1.5	1 … 4	20	▶	**3RB3123-4PB0**	A	**3RB3123-4PE0**
	1.1 … 5.5	3 … 12	25	▶	**3RB3123-4SB0**	A	**3RB3123-4SE0**
	3 … 11	6 … 25	50	▶	**3RB3123-4QB0**	A	**3RB3123-4QE0**
	5.5 … 18.5	10 ... 40	50	▶	**3RB3123-4VB0**	A	**3RB3123-4VE0**

1) With the appropriate terminal supports (see "Accessories", page 7/118), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse only for overload relay, type of coordination "2". Fuse values in connection with contactors see Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" http://support.automation.siemens.com/WW/view/en/50250600.

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Accessories

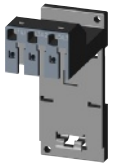
Overview

Overload relays for standard applications

The following optional accessories are available for the 3RB30/3RB31 solid-state overload relays:

- Terminal supports for stand-alone installation with screw or spring-type terminals for every size
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)

Selection and ordering data

	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal supports for stand-alone installation								
3RU2916-3AA01	**Terminal supports for overload relays with screw terminals**			**Screw terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	▶	**3RU2916-3AA01**		1	1 unit	41F
		S0	▶	**3RU2926-3AA01**		1	1 unit	41F
3RU2926-3AA01								
3RU2916-3AC01	**Terminal supports for overload relays with spring-type terminal**			**Spring-type terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	B	**3RU2916-3AC01**		1	1 unit	41F
		S0	B	**3RU2926-3AC01**		1	1 unit	41F
 3RU2926-3AC01								
Mechanical RESET								
3RB3980-0A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S00, S0	▶	**3RB3980-0A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00, S0	B	**3SB3000-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of the relay	S00, S0	A	**3SX1335**		1	1 unit	41J
Cable releases with holder for RESET								
3RB3980-0.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm							
	• Length 400 mm	S00, S0	▶	**3RB3980-0B**		1	1 unit	41F
	• Length 600 mm	S00, S0	▶	**3RB3980-0C**		1	1 unit	41F
Sealable covers								
3RB3984-0	For covering the setting knobs	S00, S0	▶	**3RB3984-0**		1	1 unit	41F

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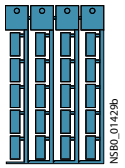
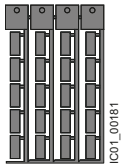
General accessories

	Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB3	A	**3RA2908-1A**		1	1 unit	41B
Blank labels										
 3RT1900-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB3	D	**3RT1900-1SB20**		100	340 units	41B
 3RT2900-1SB20		20 mm x 7 mm	Titanium gray	3RB3	D	**3RT2900-1SB20**		100	340 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

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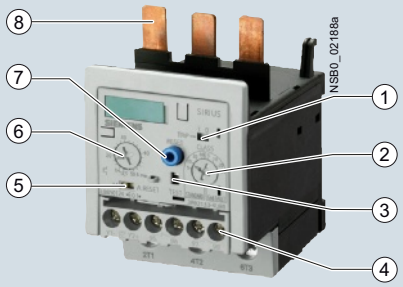
Overview

Note:

The 3RB20 and 3RB21 devices (sizes S00/S0 to S12) can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



1. Switch position indicator and TEST function of the wiring: Indicates a trip and enables the wiring test.
2. Trip class setting/internal ground-fault detection (only 3RB21): Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.
3. Solid-state test (device test): Enables a test of all important device components and functions.
4. Connecting terminals (removable terminal block for auxiliary circuits): The generously sized terminals permit connection of two conductors with different cross-sections for the main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.
5. Selector switch for manual/automatic RESET: With the slide switch you can choose between manual and automatic RESET.
6. Motor current setting: Setting the device to the rated motor current is easy with the large rotary knob.
7. A device set to manual RESET can be reset locally by pressing the RESET button. On the 3RB21 overload relay a solid-state remote RESET is integrated.
8. Connection for mounting onto contactors: Optimally adapted in electrical, mechanical and design terms to the contactors 3RT1. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal bracket for stand-alone installation).

SIRIUS 3RB2133-4UB0 solid-state overload relay

The 3RB20 and 3RB21 solid-state overload relays up to 630 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" http://support.automation.siemens.com/WW/view/en/35681297) against excessive temperature rises due to overload, phase unbalance or phase failure.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/20357046/134300) .

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB21 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). This provides protection of loads against high-resistance short circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297).

The 3RB2 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1 and 3RB2 Overload Relays", see http://support.automation.siemens.com/WW/view/en/35681297.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

For 3RB30 and 3RB31 overload relay sizes S00 and S0 see page 7/115 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RB20/3RB21 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EExe.

The relays meet the requirements of IEC 60079-7 (Electrical apparatus for areas subject to explosion hazards – Increased safety "e").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 06 ATEX 3001.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**0**	**3**	**6**	**–**	**1**	**Q**	**B**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB20/3RB21 solid-state overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

Application

Industries

The 3RB20 and 3RB21 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB20 and 3RB21 solid-state overload relays have been designed for the protection of three-phase motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU11 thermal overload relays or the 3RB22 to 3RB24 solid-state overload relays can be used for single-phase AC loads. For DC loads we recommend the 3RU11 thermal overload relay.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB20 and 3RB21 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

For the 3RB20 and 3RB21 solid-state overload relays with the sizes S6, S10 and S12, the upper set value of the setting range must be reduced for ambient temperatures > 50 °C by a certain factor.

Type	Setting range	Stand-alone installation Derating factor for the upper set value at ambient temperature	
		+50 °C	+60 °C
3RB2056, 3RB2156	50 ... 200 A	100 %	100 %
3RB2066, 3RB2166	55 ... 250 A	100 %	100 %
3RB2066, 3RB2166	160 ... 630 A	100 %	90 %

Type	Setting range	Mounting onto contactor Derating factor for the upper set value at ambient temperature	
		+50 °C	+60 °C
3RB2056, 3RB2156	50 ... 200 A	100 %	70 %
3RB2066, 3RB2166	55 ... 250 A	100 %	70 %
3RB2066, 3RB2166	160 ... 630 A	100 %	70 %

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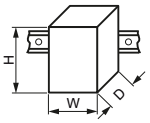
Technical specifications

Type			**3RB2036, 3RB2133**	**3RB2046, 3RB2143**	**3RB2056, 3RB2153**	**3RB2066, 3RB2163**
Size			S2	S3	S6	S10/S12
Dimensions (W x H x D) (overload relay with stand-alone installation support)		mm	55 x 74 x 109	70 x 86 x 124	120 x 119 x 155	145 x 147 x 156
General data						
Trips in the event of			Overload, phase failure, and phase unbalance + ground fault (for 3RB21 only)			
Trip class acc. to IEC 60947-4-1		CLASS	3RB20: 10 or 20; 3RB21: 5, 10, 20 and 30 adjustable			
Phase failure sensitivity			Yes			
Overload warning			No			
Reset and recovery						
• Reset options after tripping			3RB20: Manual and automatic RESET; 3RB21: Manual, automatic and remote RESET			
• Recovery time						
- For automatic RESET			Approx. 3 min			
- For manual RESET			Immediately			
- For remote RESET			Immediately			
Features						
• Display of operating state on device			Yes, by means of switch position indicator slide			
• TEST function			Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/self-monitoring			
• RESET button			Yes			
• STOP button			No			
Explosion protection – Safe operation of motors with "increased safety" type of protection						
EC type test certificate number according to directive 94/9/EC (ATEX)			PTB 06 ATEX 3001 Ex II (2) GD			
Ambient temperatures						
• Storage/transport		°C	-40 ... +80			
• Operation		°C	-25 ... +60			
• Temperature compensation		°C	+60			
• Permissible rated current at						
- Temperature inside control cabinet 60 °C, stand-alone installation		%	100	100	100	100 or 90[1]
- Temperature inside control cabinet 60 °C, mounted on contactor		%	100	100	70	70
- Temperature inside control cabinet 70 °C		%	On request			
Repeat terminals						
• Coil repeat terminals			Yes	Not required		
• Auxiliary contact repeat terminal			Yes	Not required		
Degree of protection acc. to IEC 60529			IP20		IP20 (terminal compartment: IP00 degree of protection)	
Touch protection acc. to IEC 61140			Finger-safe for vertical contact from the front		Finger-safe; for busbar connection with cover	Finger-safe with cover
Shock resistance with sine acc. to IEC 60068-2-27		*g*/ms	15/11 (signaling contact 97/98 in position "tripped": 4/11*g*/ms)			
Electromagnetic compatibility (EMC) – Interference immunity						
• Conductor-related interference						
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)		kV	2 (power ports), 1 (signal ports)			
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)		kV	2 (line to earth), 1 (line to line)			
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	8 (air discharge), 6 (contact discharge)			
• Field-related interference acc. to IEC 61000-4-3 (corresponds to degree of severity 3)		V/m	10			
Electromagnetic compatibility (EMC) – emitted interference			Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)			
Resistance to extreme climates – air humidity		%	100			
Dimensions			For "Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297.			
Installation altitude above sea level		m	Up to 2 000			
Mounting position			Any			
Type of mounting			Direct mounting/stand-alone installation with terminal support		Direct mounting/stand-alone installation	

[1] 90 % for relay with current setting range 160 A to 630 A.

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Type		**3RB2036, 3RB2133**	**3RB2046, 3RB2143**
Size		S2	S3
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690/1 000[1]	1 000
Rated impulse withstand voltage U_{imp}	kV	6/8[2]	8
Rated operational voltage U_e	V	690/1 000[1]	1 000
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A	6 ... 25, 12.5 ... 50	12.5 ... 50, 25 ... 100
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/126 to 7/128	
• With fuse and contactor		See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297 → "Technical Specifications" → "Short-circuit protection with Fuses for Motor Feeders"	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
Conductor cross-sections of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 × (1 ... 16)	2 × (2.5 ... 16)
• Finely stranded without end sleeve	mm^2	--	--
• Finely stranded with end sleeve	mm^2	2 × (1 ... 16), 1 × (1 ... 25)	2 × (2.5 ... 35), 1 × (2.5 ... 50)
• Stranded	mm^2	2 × (max. 25), 1 × (1 ... 35)	2 × (10 ... 50), 1 × (10 ... 70)
• AWG cables, solid or stranded	AWG	2 × (max. 4), 1 × (18 ... 2)	2 × (10 ... 1/0), 1 × (10 ... 2/0)
• Ribbon cables (Number x Width x Thickness)	mm	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)
Connection type		**Busbar connections**	
Terminal screw		--	M6 × 20
Prescribed tightening torque	Nm	--	4 ... 6
Conductor cross-sections (min./max.)			
• Finely stranded with cable lug	mm^2	--	2 × 70
• Stranded with cable lug	mm^2	--	3 × 70
• AWG cables, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bars (max. width)	mm	--	12
Connection type		**Straight-through transformers**	
Diameter of opening	mm	15	18

[1] For version with straight-through transformer up to 1 000 V AC.

[2] For version with straight-through transformer up to 8 kV.

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3RB20, 3RB21 up to 630 A for standard applications

Type		3RB2056, 3RB2153	3RB2066, 3RB2163
Size		S6	S10/S12
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	1 000	
Rated impulse withstand voltage U_{imp}	kV	8	
Rated operational voltage U_e	V	1 000	
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A	50 ... 200	55 ... 250, 160 ... 630
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
• With fuse without contactor • With fuse and contactor		See "Selection and Ordering Data" on pages 7/126 to 7/128 See Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297 ➞ "Technical Specifications" ➞ "Short-circuit protection with Fuses for Motor Feeders"	
Protective separation between main and auxiliary current paths acc. to IEC 60947-1 (pollution degree 2)			
• For systems with grounded neutral point	V	690	
• For systems with ungrounded neutral point	V	600	
Conductor cross-sections of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw	mm	4 mm Allen screw	5 mm Allen screw
Operating devices	mm	4 mm Allen screw	5 mm Allen screw
Prescribed tightening torque	Nm	1 ... 12	20 ... 22
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	--	--
• Finely stranded without end sleeve	mm^2	With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70); With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240); rear clamping point only: 1 × (120 ... 185)
• Finely stranded with end sleeve	mm^2	With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70); With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	2 × (50 ... 185), Rear clamping point only: 1 × (70 ... 240); rear clamping point only: 1 × (120 ... 185)
• Stranded	mm^2	With 3RT1955 -4G box terminal: 2 × (max. 70), 1 × (16 ... 70); With 3RT1956-4G box terminal: 2 × (max. 120), 1 × (16 ... 120)	2 × (70 ... 240), Rear clamping point only: 1 × (95 ... 300); rear clamping point only: 1 × (120 ... 240)
• AWG cables, solid or stranded	AWG	With 3RT1955-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0); With 3RT1956-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil)	2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil); rear clamping point only: 1 × (250 kcmil ... 500 kcmil)
• Ribbon cables (Number x Width x Thickness)	mm	With 3RT1955-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8); With 3RT1956-4G box terminal: 2 × (10 × 15,5 × 0.8), 1 × (3 × 9 × 0,8 ... 10 × 15,5 × 0.8)	2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5)
Connection type		**Busbar connections**	
Terminal screw		M8 × 25	M10 × 30
Prescribed tightening torque	Nm	10 ... 14	14 ... 24
Conductor cross-section (min./max.)			
• Finely stranded with cable lug	mm^2	16 ... 95[1)]	50 ... 240[2)]
• Stranded with cable lug	mm^2	25 ... 120[1)]	70 ... 240[2)]
• AWG cables, solid or stranded, with cable lug	AWG	4 ... 250 kcmil	2/0 ... 500 kcmil
• With connecting bars (max. width)	mm	15	25
Connection type		**Straight-through transformers**	
Diameter of opening	mm	24.5	--

1) When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm^2 and more, the 3RT1956-4EA1 terminal cover must be used to ensure phase clearance.

2) When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm^2 and more as well as to DIN 46235 with conductor cross-sections of 185 mm^2 and more, the 3RT1956-4EA1 terminal cover must be used to ensure the phase clearance.

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Type		3RB2036, 3RB2133	3RB2046, 3RB2143	3RB2056, 3RB2153	3RB2066, 3RB2163
Size		S2	S3	S6	S10/S12
Auxiliary circuit					
Number of NO contacts		1			
Number of NC contacts		1			
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor			
Rated insulation voltage U_i (pollution degree 3)	V	300			
Rated impulse withstand voltage U_{imp}	kV	4			
Auxiliary contacts – contact rating					
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:					
- 24 V	A	4			
- 120 V	A	4			
- 125 V	A	4			
- 250 V	A	3			
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:					
- 24 V	A	4			
- 120 V	A	4			
- 125 V	A	4			
- 250 V	A	3			
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:					
- 24 V	A	2			
- 60 V	A	0.55			
- 110 V	A	0.3			
- 125 V	A	0.3			
- 250 V	A	0.11			
• Conventional thermal current I_{th}	A	5			
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes			
Short-circuit protection					
• With fuse, operational class gG	A	6			
Ground-fault protection (only 3RB21)		The information refers to sinusoidal residual currents at 50/60 Hz.			
• Tripping value I_Δ		> 0.75 × I_{motor}			
• Operating range I		Lower current setting value < I_{motor} < 3.5 × upper current setting value			
• Response time t_{trip} (in steady-state condition)	s	< 1			
Integrated electrical remote RESET (only 3RB21)					
Connecting terminals A3, A4		24 V DC, 100 mA, 2.4 W short-term			
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	300			
CSA, UL, UR rated data					
Auxiliary circuit – switching capacity		B300, R300			
Conductor cross-sections of the auxiliary circuit					
Connection type		**Screw terminals**			
Terminal screw		M3, Pozidriv size 2			
Operating devices	mm	⌀ 5 ... 6			
Prescribed tightening torque	Nm	0.8 ... 1.2			
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)			
• Finely stranded without end sleeve	mm^2	--			
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)			
• Stranded	mm^2	--			
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)			
Connection type		**Spring-type terminals**			
Operating devices	mm	3.0 x 0.5			
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	2 × (0.25 ... 1.5)			
• Finely stranded without end sleeve	mm^2	--			
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)			
• Stranded	mm^2	2 × (0.25 ... 1.5)			
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)			

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Selection and ordering data

3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 10

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB2036-1UB0

3RB2046-1ED0

3RB2056-1FW2

3RB2066-1MF2

Size contactor[4)]	Rating for three-phase motor, rated value[5)]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Article No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Article No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	▶	**3RB2036-1QB0**		▶	**3RB2036-1QD0**	
				▶	**3RB2036-1QW1**		▶	**3RB2036-1QX1**	
	7.5 … 22	12.5 … 50	80	▶	**3RB2036-1UB0**		A	**3RB2036-1UD0**	
				▶	**3RB2036-1UW1**		▶	**3RB2036-1UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	▶	**3RB2046-1UB0**		A	**3RB2046-1UD0**	
	11 … 45	25 … 100	315	▶	**3RB2046-1EB0**		A	**3RB2046-1ED0**	
				▶	**3RB2046-1EW1**		▶	**3RB2046-1EX1**	
Size S6[2)7)]									
S6 with busbar connection	22 … 90	50 … 200	315	▶	**3RB2056-1FC2**		A	**3RB2056-1FF2**	
For mounting onto S6 contactors with box terminals				▶	**3RB2056-1FW2**		▶	**3RB2056-1FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/ 3TF69)	22 … 110	55 … 250	400	▶	**3RB2066-1GC2**		▶	**3RB2066-1GF2**	
	90 … 450	160 … 630	800	▶	**3RB2066-1MC2**		▶	**3RB2066-1MF2**	

1) The relays with an Article No. ending with **"0"** are designed for mounting onto contactor.

2) The relays with an Article No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Article No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

6) Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297 → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".

7) The relays with an Article No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 20

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB2036-2UB0

3RB2046-2ED0

3RB2056-2FW2

3RB2066-2MF2

Size contactor[4)]	Rating for three-phase motor, rated value[5)]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Article No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Article No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	▶	**3RB2036-2QB0**		▶	**3RB2036-2QD0**	
				▶	**3RB2036-2QW1**		▶	**3RB2036-2QX1**	
	7.5 … 22	12.5 … 50	80	▶	**3RB2036-2UB0**		A	**3RB2036-2UD0**	
				▶	**3RB2036-2UW1**		▶	**3RB2036-2UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	▶	**3RB2046-2UB0**		A	**3RB2046-2UD0**	
	11 … 45	25 … 100	315	▶	**3RB2046-2EB0**		A	**3RB2046-2ED0**	
				▶	**3RB2046-2EW1**		▶	**3RB2046-2EX1**	
Size S6[2)7)]									
S6 with busbar connections	22 … 90	50 … 200	315	▶	**3RB2056-2FC2**		A	**3RB2056-2FF2**	
For mounting onto S6 contactors with box terminals				▶	**3RB2056-2FW2**		▶	**3RB2056-2FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/ 3TF69)	22 … 110	55 … 250	400	▶	**3RB2066-2GC2**		▶	**3RB2066-2GF2**	
	90 … 450	160 … 630	800	▶	**3RB2066-2MC2**		▶	**3RB2066-2MF2**	

1) The relays with an Article No. ending with **"0"** are designed for mounting onto contactor.

2) The relays with an Article No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Article No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

6) Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297 → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".

7) The relays with an Article No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RB20, 3RB21 up to 630 A for standard applications

3RB21 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal ground-fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB2133-4UB0

3RB2143-4ED0

3RB2153-4FX2

3RB2163-4MC2

Size contactor[4)]	Rating for three-phase motor, rated value[5)]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Article No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Article No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	▶	**3RB2133-4QB0**		▶	**3RB2133-4QD0**	
				▶	**3RB2133-4QW1**		▶	**3RB2133-4QX1**	
	7.5 … 22	12.5 … 50	80	▶	**3RB2133-4UB0**		▶	**3RB2133-4UD0**	
				▶	**3RB2133-4UW1**		▶	**3RB2133-4UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	▶	**3RB2143-4UB0**		▶	**3RB2143-4UD0**	
	11 … 45	25 … 100	315	▶	**3RB2143-4EB0**		▶	**3RB2143-4ED0**	
				▶	**3RB2143-4EW1**		▶	**3RB2143-4EX1**	
Size S6[2)7)]									
S6 with busbar connection	22 … 90	50 … 200	315	▶	**3RB2153-4FC2**		▶	**3RB2153-4FF2**	
For mounting onto S6 contactors with box terminals				▶	**3RB2153-4FW2**		▶	**3RB2153-4FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/ 3TF69)	22 … 110	55 … 250	400	▶	**3RB2163-4GC2**		▶	**3RB2163-4GF2**	
	90 … 450	160 … 630	800	▶	**3RB2163-4MC2**		▶	**3RB2163-4MF2**	

1) The relays with an Article No. ending with **"0"** are designed for mounting onto contactor.

2) The relays with an Article No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Article No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

6) Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors, see the Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297 → "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders".

7) The relays with an Article No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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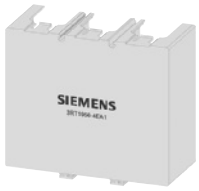
Overview

Overload relays for standard applications

The following optional accessories are available for the 3RB20 and 3RB21 solid-state overload relays:

- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for sizes S2 to S10/S12
- Box terminal blocks for sizes S6 and S10/S12

Selection and ordering data

	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical RESET								
3RU1900-1A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S2 ... S10/S12	▶	**3RU1900-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S2 ... S10/S12	B	**3SB3000-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of the relay	S2 ... S10/S12	A	**3SX1335**		1	1 unit	41J
Cable releases with holder for RESET								
3RU1900-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm	S2 ... S10/S12						
	• Length 400 mm		▶	**3RU1900-1B**		1	1 unit	41F
	• Length 600 mm		▶	**3RU1900-1C**		1	1 unit	41F
Sealable covers								
3RB2984-0	For covering the setting knobs	S2 ... S10/S12	▶	**3RB2984-0**		1	10 units	41F
Terminal covers								
 3RT1946-4EA1	**Covers for cable lugs and busbar connections**							
	• Length 55 mm	S3	B	**3RT1946-4EA1**		1	1 unit	41B
	• Length 100 mm	S6	▶	**3RT1956-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	▶	**3RT1966-4EA1**		1	1 unit	41B
	Covers for box terminals							
	• Length 20.6 mm	S2	B	**3RT1936-4EA2**		1	1 unit	41B
	• Length 20.8 mm	S3	▶	**3RT1946-4EA2**		1	1 unit	41B
	• Length 25 mm	S6	▶	**3RT1956-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	▶	**3RT1966-4EA2**		1	1 unit	41B
3RT1936-4EA2	**Covers for screw terminals** between contactor and overload relay, without box terminals (1 unit required per combination)	S6	▶	**3RT1956-4EA3**		1	1 unit	41B
		S10/S12	▶	**3RT1966-4EA3**		1	1 unit	41B
Box terminal blocks								
3RT195.-4G	For round and ribbon cables							
	• Up to 70 mm^2	S6[1)]	▶	**3RT1955-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	▶	**3RT1956-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	▶	**3RT1966-4G**		1	1 unit	41B
	For technical specifications for conductor cross-sections see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297.							

[1)] In the scope of supply for 3RT1054-1 contactors (55 kW).

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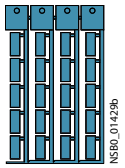
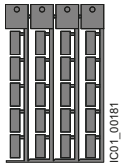
Accessories for 3RB20, 3RB21

General accessories

	Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**3RA2908-1A**		1	1 unit	41B
Blank labels										
 3RT1900-1SB20	**Unit labeling plates** [1] For SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	**3RT1900-1SB20**		100	340 units	41B
		20 mm x 7 mm	Titanium gray	3RB2	D	**3RT2900-1SB20**		100	340 units	41B
 3RT2900-1SB20	**Adhesive inscription labels** [1] For SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RB2	C	**3RT1900-1SB60**		100	3 060 units	41B
		19 mm x 6 mm	Zinc yellow	3RB2	C	**3RT1900-1SD60**		100	3 060 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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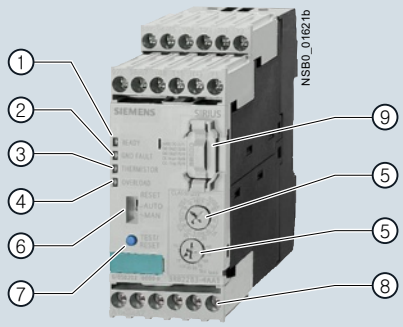
Overview



1. Green LED "READY":
A continuous green light signals that the device is working correctly.
2. Red LED "GND FAULT":
A continuous red light signals a ground-fault tripping.
3. Red LED "THERMISTOR":
A continuous red light signals an active thermistor trip.
4. Red LED "OVERLOAD":
A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
5. Motor current and trip class setting:
Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
6. Selector switch for manual/automatic RESET:
With this switch you can choose between manual and automatic RESET.
7. Test/RESET button:
Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
8. Connecting terminals (removable joint block):
The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
9. 3RB2985 function expansion module:
Enables more functions to be added, e. g. internal ground-fault detection and/or an analog output with corresponding signals.

SIRIUS 3RB22 and 3RB23 evaluation modules

The 3RB22 and 3RB23 solid-state overload relays up to 630 A (up to 820 A possible in combination with a series transformer) are from a modular system and comprise an evaluation unit, a current measuring module and a connecting cable. The 3RB22 overload relays (with monostable auxiliary contacts) and the 3RB23 overload relays (with bistable auxiliary contacts) are supplied from an external voltage.

These units have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297) against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of a current measuring module (see page 7/147) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor.

The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/20357046/134300).

The "tripped" status is signaled by means of a continuous red "OVERLOAD" LED.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. In the case of the 3RB22 and 3RB23 overload relays this warning can also be issued through auxiliary contacts.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB22 and 3RB23 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED.

To protect the loads against high-resistance short circuits due to damage to the insulation, humidity, condensed water, etc., the 3RB22 and 3RB23 solid-state overload relays offer the possibility of internal ground-fault detection in conjunction with a function expansion module (for details see "Selection and Ordering Data" page 7/137, not possible in conjunction with contactor assemblies for wye-delta starting). In the event of a ground fault the 3RB22 and 3RB23 relays trip instantaneously.

The "tripped" status is signaled by means of a continuous red "Ground Fault" LED. Signaling through auxiliary contacts is also possible.

After tripping due to overload, phase unbalance, phase failure, thermistor or ground-fault tripping, the relay is reset manually or automatically after the recovery time has elapsed ("Function" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" http://support.automation.siemens.com/WW/view/en/35681297). In conjunction with a function expansion module, the motor current measured by the microprocessor can be output in the form of an analog signal 4 mA to 20 mA DC for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

With an additional AS-Interface analog module the current values can also be transferred over the AS-i bus system.

The 3RB2 solid-state overload relays are suitable for operation with frequency converters. Please follow the instructions in the Reference Manual "Protection Equipment – 3RU1 and 3RB2 Overload Relays", see http://support.automation.siemens.com/WW/view/en/35681297.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" according to ATEX Directive 94/9/EC

The 3RB22 solid-state overload relays (monostable) provide quick and reliable protection for motors with types of protection EEx e and EEx d in hazardous areas.

They comply with the requirements of IEC 60079-7 (Electrical devices for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d").

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 05 ATEX 3022.

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3RB22, 3RB23 up to 630 A for High-Feature applications

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**2**	**8**	**3**	**–**	**4**	**A**	**A**	**1**

Note:

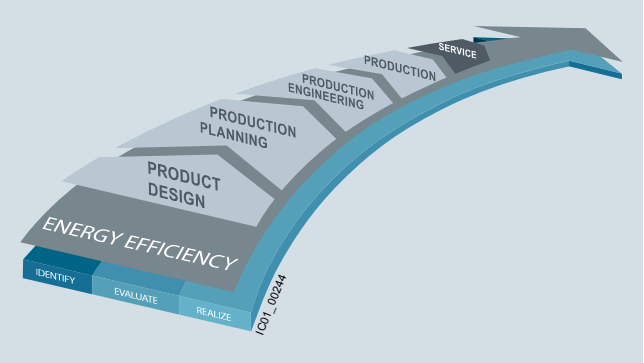
The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB22 and 3RB23 solid-state overload relays are listed in the overview table (see "General Data", page 7/82 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB22 and 3RB23 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB22 and 3RB23 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB22 and 3RB23 devices have been designed for the protection of three-phase asynchronous and single-phase AC motors.

If single-phase AC motors are to be protected by the 3RB22 and 3RB23 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Circuit Diagrams" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays" http://support.automation.siemens.com/WW/view/en/35681297).

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB22 and 3RB23 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

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Technical specifications

Type – Overload relay: Evaluation modules		**3RB2283-4A.1, 3RB2383-4A.1**
Size contactor		S00 ... S10/S12
General data		
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (with corresponding function expansion module) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x I_e for symmetrical loads and from 0.85 x I_e for unsymmetrical loads
Reset and recovery		
• Reset options after tripping		Manual, automatic and remote RESET
• Recovery time		
- For automatic RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: no automatic RESET
- For manual RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
- For remote RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
Features		
• Display of operating state on device		Yes, with 4 LEDs - Green LED "Ready" - Red LED "Ground Fault" - Red LED "Thermistor" - Red "Overload" LED
• TEST function		Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring
• RESET button		Yes, with the TEST/RESET button
• STOP button		No
Explosion protection – Safe operation of motors with "increased safety" type of protection		
EC type test certificate number according to directive 94/9/EC (ATEX)		3RB22: PTB 05 ATEX 3022 Ex II (2) GD 3RB23: --
Ambient temperatures		
• Storage/transport	°C	-40 ... +80
• Operation	°C	-25 ... +60
• Temperature compensation	°C	+60
• Permissible rated current		
- Temperature inside control cabinet 60 °C	%	100
- Temperature inside control cabinet 70 °C	%	On request
Repeat terminals		
• Coil repeat terminals		Not required
• Auxiliary contact repeat terminal		Not required
Degree of protection acc. to IEC 60529		IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.
Touch protection acc. to IEC 61140		Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.
Shock resistance with sine acc. to IEC 60068-2-27	g/ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		For "Dimensional drawings" see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297.
Installation altitude above sea level	m	Up to 2 000
Mounting position		Any
Type of mounting		
• Evaluation modules		Stand-alone installation
• Current measuring module	Size	S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

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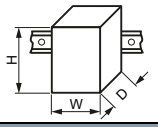
Type – Overload relay: Evaluation modules			**3RB2283-4A.1, 3RB2383-4A.1**
Size contactor			S00 ... S10/S12
Dimensions of evaluation modules (W x H x D)		mm	45 x 111 x 95
Auxiliary circuit			
Number of NO contacts			2
Number of NC contacts			2
Number of CO contacts			--
Auxiliary contacts – assignment			• Alternative 1 - 1 NO for the signal "tripped by overload and/or thermistor" - 1 NC for disconnecting the contactor - 1 NO for the signal "tripped by ground fault" - 1 NC for disconnecting the contactor or[1)] • Alternative 2 - 1 NO for the signal "tripped by overload and/or thermistor and/or ground fault" - 1 NC for disconnecting the contactor - 1 NO for overload warning - 1 NC for disconnecting the contactor
Rated insulation voltage U_i (pollution degree 3)		V	300
Rated impulse withstand voltage U_{imp}		kV	4
Auxiliary contacts – contact rating			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e			
- 24 V		A	6
- 120 V		A	6
- 125 V		A	6
- 250 V		A	3
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e			
- 24 V		A	6
- 120 V		A	6
- 125 V		A	6
- 250 V		A	3
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e			
- 24 V		A	2
- 60 V		A	0.55
- 110 V		A	0.3
- 125 V		A	0.3
- 250 V		A	0.2
• Conventional thermal current I_{th}		A	5
• Contact reliability (suitability for PLC control; 17 V, 5 mA)			Yes
Short-circuit protection			
• With fuse, operational class gG		A	6
• With miniature circuit breaker, C characteristic		A	1.6
Protective separation between auxiliary current paths acc. to IEC 60947-1		V	300
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity			B300, R300
Conductor cross-sections of the auxiliary circuit			
Connection type			**Screw terminals**
Terminal screw			M3, Pozidriv size 2
Operating devices		mm	3.0 x 0.5
Prescribed tightening torque		Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid		mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve		mm^2	--
• Finely stranded with end sleeve		mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded		mm^2	--
• AWG cables, solid or stranded		AWG	2 × (20 ... 14)
Connection type			**Spring-type terminals**
Operating devices		mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid		mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve		mm^2	–
• Finely stranded with end sleeve		mm^2	2 × (0.25 ... 1.5)
• Stranded		mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 × (24 ... 16)

[1)] The assignment of auxiliary contacts may be influenced by function expansion modules.

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Type – Overload relay: Evaluation modules		**3RB2283-4A.1, 3RB2383-4A.1**
Size contactor		S00 ... S10/S12
Control and sensor circuit as well as the analog output		
Rated insulation voltage U_i (pollution degree 3)[1]	V	300
Rated impulse withstand voltage U_{imp}[1]	kV	4
Rated control supply voltage U_s[1]		
• 50/60 Hz AC	V	24 ... 240
• DC	V	24 ... 240
Operating range[1]		
• 50/60 Hz AC		$0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$
• DC		$0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$
Rated power[1]		
• 50/60 Hz AC	W	0.5
• DC	W	0.5
Mains buffering time[1]	ms	200
Thermistor motor protection (PTC thermistor detector)[2]		
• Summation cold resistance	kΩ	≤ 1.5
• Response value	kΩ	3.4 ... 3.8
• Return value	kΩ	1.5 ... 1.65
Ground-fault detection		The information refers to sinusoidal residual currents at 50/60 Hz.
• Tripping value I_Δ[3]		
- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$		$> 0.3 \times I_e$
- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		$> 0.15 \times I_{motor}$
• Response time t_{trip}	ms	500 ... 1 000
Analog output[3][4]		
• Output signal	mA	4 ... 20
• Measuring range		0 ... 1.25 × I_e 4 mA corresponds to 0 × I_e 16.8 mA corresponds to 1.0 × I_e 20 mA corresponds to 1.25 × I_e
• Load, max.	Ω	100
Conductor cross-sections for the control and sensor circuit as well as the analog output		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

1) Control circuit.

2) Sensor circuit.

3) For the 3RB22 and 3RB23 overload relays in combination with a corresponding function expansion module.

4) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22 and 3RB23 relay.

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Selection and ordering data

Functions of the 3RB22 and 3RB23 evaluation modules in combination with the 3RB2985 function expansion modules

Evaluation modules	With function expansion module	Basic functions	Inputs		
			A1/A2	T1/T2	Y1/Y2
3RB2283-4AA1 3RB2283-4AC1 3RB2383-4AA1 3RB2383-4AC1	--	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB2985-2CA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB2985-2CB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB2985-2AA0	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB2985-2AA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB2985-2AB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET

Evaluation modules	With function expansion module	Outputs				
		I (–) / I (+)	95/96 NC	97/98 NO	05/06 NC	07/08 NO
3RB2283-4AA1 3RB2283-4AC1 3RB2383-4AA1 3RB2383-4AC1	--	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2CA1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2CB1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"
	3RB2985-2AA0	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2AA1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB2985-2AB1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"

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3RB22 and 3RB23 solid-state overload relays (evaluation modules) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Type	3RB2283-4A.1, 3RB2383-4A.1
Features and technical specifications	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 ... 240 V AC/DC
Auxiliary contacts	✓ 2 NO + 2 NC
Electrical remote RESET integrated	✓
Four LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓ (with function expansion module)
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓ (with function expansion module)

✓ Available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB2283-4AA1,
3RB2383-4AA1

3RB2283-4AC1,
3RB2383-4AC1

Size contactor	Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Evaluation modules							
S00 ... S12	Monostable	►	**3RB2283-4AA1**		►	**3RB2283-4AC1**	
	Bistable	►	**3RB2383-4AA1**		►	**3RB2383-4AC1**	

Note:

Overview of overload relays – matching contactors see page 7/88.

Current measuring modules and related connecting cables see page 7/148, general accessories see page 7/150 onwards.

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Function expansion modules for 3RB22 and 3RB23 overload relays (evaluation modules)

	Size contactor	Version	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sizes S00 to S12									
		For plugging into evaluation module (1 unit)							
3RB2985-2..1	S00 ... S12	**Analog Basic 1 modules**[1] Analog output DC 4 ... 20 mA, with overload warning	3RB22, 3RB23	►	**3RB2985-2AA0**		1	1 unit	41F
		Analog Basic 1 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload warning	3RB22, 3RB23	►	**3RB2985-2AA1**		1	1 unit	41F
		Analog Basic 2 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload ground-fault signaling	3RB22, 3RB23	►	**3RB2985-2AB1**		1	1 unit	41F
		Basic 1 GF modules[2)] with internal ground-fault detection and overload warning	3RB22, 3RB23	►	**3RB2985-2CA1**		1	1 unit	41F
		Basic 2 GF modules[2)] with internal ground-fault detection and ground-fault signaling	3RB22, 3RB23	►	**3RB2985-2CB1**		1	1 unit	41F

Note:

Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22/3RB23 relay.

1) The analog signal DC 4 mA up to 20 mA can be used for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

2) The following information on ground-fault protection refers to sinusoidal residual currents at 50/60 Hz:
- With a motor current of between 0.3 and 2 times the current setting I_e, the unit will trip at a ground-fault current equal to 30 % of the current setting.
- With a motor current of between 2 and 8 times the current setting I_e, the unit will trip at a ground-fault current equal to 15 % of the set current.
- The response delay amounts to between 0.5 s and 1 s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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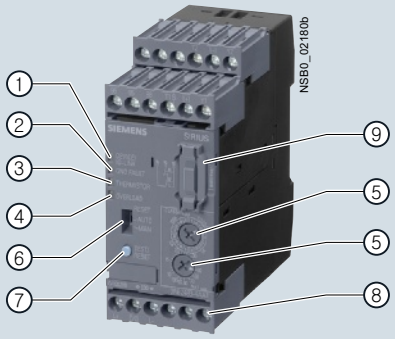
Overview



1. Green LED "DEVICE/IO-Link:
A continuous green light signals that the device is working correctly, a green flickering light signals the communication through IO-Link.
2. Red LED "GND FAULT":
A continuous red light signals an active ground-fault trip.
3. Red LED "THERMISTOR":
A continuous red light signals an active thermistor trip.
4. Red LED "OVERLOAD":
A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
5. Motor current and trip class setting:
Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
6. Selector switch for manual/automatic RESET:
With this switch you can choose between manual and automatic RESET.
7. Test/RESET button:
Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
8. Connecting terminals (removable terminal block):
The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
9. Plug-in point for operator panel:
enables connection of the 3RA6935-0A operator panel.

SIRIUS 3RB24 evaluation module

The modular 3RB24 solid-state overload relay, which is powered via IO-Link (with monostable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", http://support.automation.siemens.com/WW/view/en/46165627) against excessive temperature rises due to overload, phase unbalance or phase failure. It comprises an evaluation unit, a current measuring module and a connecting cable.

The evaluation module 3RB24 also offers an engine starter function: The contactors, which are connected via the auxiliary contacts, can also be actuated for operation via IO-Link. In this way, direct, reversing and wye-delta starters up to 630 A (or 830 A) can be connected to the controller wirelessly via the IO-Link controller.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of the current measuring module (see page 7/147) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor.

The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see "Characteristic Curves" http://support.automation.siemens.com/WW/view/en/20357046/134300). The "tripped" status is signaled by means of a continuously illuminated red "OVERLOAD" LED and also reported as a group fault via IO-Link.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be reported to the higher-level PLC via IO-Link at the 3RB24 overload relay.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB24 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED and also reported as a group fault via IO-Link.

To protect the loads against incomplete ground faults due to damage to the insulation, humidity, condensed water, etc., the 3RB24 solid-state overload relays offer the possibility of internal ground-fault detection (for details, see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", http://support.automation.siemens.com/WW/view/en/46165627, not possible in conjunction with contactor assemblies for wye-delta starting). In the event of a ground fault, the 3RB24 relays trip instantaneously.

The "tripped" status is signaled by means of a flashing red LED "Ground Fault" and reported at the overload relay 3RB24 as a group fault via IO-Link.

The reset after overload, phase unbalance, phase failure, thermistor or ground-fault tripping is performed manually by key on site, via IO-Link or by electrical remote RESET or automatically after the cooling time (motor model) or for thermistor protection after sufficient cooling. Power cuts in devices due to function monitors (broken wire or short-circuit on the thermistor) can only be reset on-site ("Function" see Manual "SIRIUS 3RB24 Solid-Statec Overload Relay for IO-Link", http://support.automation.siemens.com/WW/view/en/46165627).

In conjunction with a function expansion module, the motor current measured by the microprocessor can be output in the form of an analog signal DC 4 to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

The current values can be transmitted to the higher-level controller via IO-Link.

The 3RB24 solid-state overload relay for IO-Link is suitable for operation with frequency converters. Please follow the instructions in the manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", see http://support.automation.siemens.com/WW/view/en/46165627.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

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3RB24 for IO-Link, up to 630 A for High-Feature applications

Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" according to ATEX Directive 94/9/EC

The electronic overload relay 3RB24 (monostable) are suitable for the overload protection of explosion-proof motors of types of protection EEx e and EEx d.

They comply with the requirements of IEC 60079-7 (Electrical devices for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d").

EC type test certificate for Group II, Category (2) G/D has been submitted. On request.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**4**	**8**	**3**	**–**	**4**	**A**	**A**	**1**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

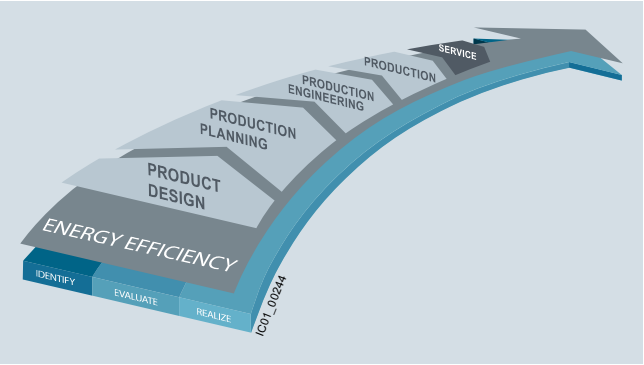
For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

7

Benefits

The most important features and benefits of the 3RB24 solid-state overload relays for IO-Link are listed in the overview table (see "General Data", page 7/82 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB24 solid-state overload relays for IO-Link contribute to energy efficiency throughout the plant as follows:

- Transmission of current values
- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB24 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB24 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

In addition to protection function, these devices can be used together with contactors as direct or reversing starters (star-delta (wye-delta) start also possible), which are controlled via IO-Link. This makes it possible to directly control drives via IO-Link from a higher-level controller or on site via the optional hand-held device lamps and also, for example, to return current values directly via IO-Link.

If single-phase AC motors are to be protected by the 3RB24 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Circuit Diagrams" see Manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", http://support.automation.siemens.com/WW/view/en/46165627).

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB24 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

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Technical specifications

Type – Overload relay: Evaluation modules		**3RB2483-4A.1**
Size contactor		S00 ... S10/S12
General data		
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (connectable and disconnectable) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x I_e for symmetrical loads and from 0.85 x I_e for unsymmetrical loads
Reset and recovery		
• Reset options after tripping		Manual and automatic RESET, electrical remote RESET or through IO-Link
• Recovery time		
- For automatic RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: no automatic RESET
- For manual RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
- For remote RESET	min	- for tripping due to overcurrent: 3 (stored permanently), - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
Features		
• Display of operating state on device		Yes, with 4 LEDs - Green "DEVICE/IO-Link" LED - Red LED "Ground Fault" - Red LED "Thermistor" - Red "Overload" LED
• TEST function		Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring
• RESET button		Yes, with the TEST/RESET button
• STOP button		No
Explosion protection – Safe operation of motors with "increased safety EEX e and explosion-proof enclosure EEx d" type of protection		
EC type test certificate number according to directive 94/9/EC (ATEX)		On request
Ambient temperatures		
• Storage/transport	°C	-40 ... +80
• Operation	°C	-25 ... +60
• Temperature compensation	°C	+60
• Permissible rated current		
- Temperature inside control cabinet 60 °C	%	100
- Temperature inside control cabinet 70 °C	%	On request
Repeat terminals		
• Coil repeat terminals		Not required
• Auxiliary contact repeat terminal		Not required
Degree of protection acc. to IEC 60529		IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover
Touch protection acc. to IEC 61140		Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover
Shock resistance with sine acc. to IEC 60068-2-27	g/ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see manual "SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", http://support.automation.siemens.com/WW/view/en/46165627.
Installation altitude above sea level	m	Up to 2 000
Mounting position		Any
Type of mounting		
• Evaluation modules		Stand-alone installation
• Current measuring module	Size	S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

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Type – Overload relay: Evaluation modules		**3RB2483-4A.1**
Size contactor		S00 ... S10/S12
Dimensions of evaluation modules (W x H x D)	mm	45 x 111 x 95
Auxiliary circuit		
Number of auxiliary switches		1 CO contact, 1 NO contact connected in series internally
Auxiliary contacts – assignment		• 1 CO contact for selecting the contactor (for reversing starter function), actuated by the control system • 1 NO contact for normal switching duty, actuated by the control system (opens automatically when tripping occurs)
Rated insulation voltage U_i (pollution degree 3)	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Auxiliary contacts – contact rating		
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e		
- 24 V	A	2
- 60 V	A	0.55
- 110 V	A	0.3
- 125 V	A	0.3
- 250 V	A	0.2
• Conventional thermal current I_{th}	A	5
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes
Short-circuit protection		
• With fuse, operational class gG	A	6
• With miniature circuit breaker, C characteristic	A	1.6
Protective separation between auxiliary current paths acc. to IEC 60947-1	V	300
CSA, UL, UR rated data		
Auxiliary circuit – switching capacity		B300, R300
Conductor cross-sections of the auxiliary circuit		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	–
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

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Type – Overload relay: Evaluation modules		3RB2483-4A.1
Size contactor		S00 ... S10/S12
Control and sensor circuit as well as the analog output		
Rated insulation voltage U_i (pollution degree 3)[1]	V	300
Rated impulse withstand voltage U_{imp}[1]	kV	4
Rated control supply voltage U_s[1]		
• DC	V	24 through IO-Link
Operating range[1]		
• DC		$0.85 \times U_{s\,min} \leq U_s \leq 1.1 \times U_{s\,max}$
Rated power[1]		
• DC	W	0.5
Mains buffering time[1]	ms	200
Thermistor motor protection (PTC thermistor detector)[2]		
• Summation cold resistance	kΩ	≤ 1.5
• Response value	kΩ	3.4 ... 3.8
• Return value	kΩ	1.5 ... 1.65
Ground-fault detection		The information refers to sinusoidal residual currents at 50/60 Hz.
• Tripping value I_Δ - For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$ - For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		 $> 0.3 \times I_e$ $> 0.15 \times I_{motor}$
• Response time t_{trip}	ms	500 ... 1 000
Analog output[3]		
• Output signal	mA	4 ... 20
• Measuring range		0 ... $1.25 \times I_e$ 4 mA corresponds to $0 \times I_e$ 16.8 mA corresponds to $1.0 \times I_e$ 20 mA corresponds to $1.25 \times I_e$
• Load, max.	Ω	100
Conductor cross-sections for the control and sensor circuit as well as the analog output		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

1) Control circuit.
2) Sensor circuit.
3) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 overload relay.

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Selection and ordering data

3RB24 solid-state overload relays (evaluation module) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Type	3RB2483-4A.1
Features and technical specifications	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 V DC through IO-Link
Direct-on-line or reversing starters (wye-delta starting also possible) controllable through IO-Link	✓
Auxiliary contacts	✓ 1 CO and 1 NO in series
Manual and automatic RESET	✓
Remote RESET	✓ (electrically or via IO-Link)
Four LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓
IO-Link-specific functions	
• Connection of direct-on-line, reversing and star-delta starters to the controller via IO-Link	✓
• On-site controlling of the starter using the hand-held device	✓
• Accessing process data (e.g. current values in all three phases) via IO-Link	✓
• Accessing parameterization and diagnostics data (e.g. tripped signals) via IO-Link	✓

✓ Available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G

3RB2483-4AA1

3RB2483-4AC1

Size contactor	Version	DT	Screw terminals		DT	Spring-type terminals	
			Article No.	Price per PU		Article No.	Price per PU
Evaluation modules							
S00 ... S12	Monostable	►	**3RB2483-4AA1**		A	**3RB2483-4AC1**	

Notes:

- Overview of overload relays – matching contactors see page 7/88.
- Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 relay.

For current measuring modules and related connecting cables see page 7/147, "Accessories" see page 7/149 onwards.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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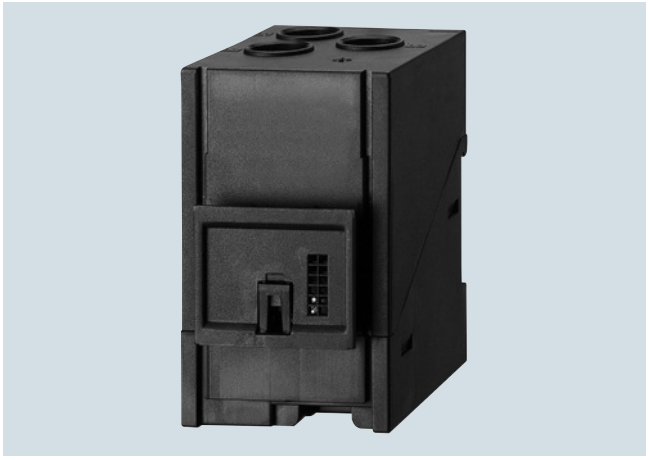
Overview

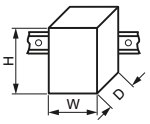


SIRIUS 3RB2906 current measuring module

The current measuring modules are designed as system components for connecting to evaluation units 3RB22 to 3RB24. Using these evaluation units the motor current is measured and the measured value sent to the evaluation unit for evaluation.

The current measuring modules in sizes S00 to S3 up to 55 mm wide are equipped with straight-through transformers and can be snap-fitted under the evaluation units. The larger evaluation units are installed directly on the contactor or as stand-alone units.

Technical specifications

Type – Overload relays: Current measuring modules			**3RB2906**		**3RB2956**	**3RB2966**
Size contactor			S00/S0	S2/S3	S6	S10/S12
Dimensions of current measuring modules (W x H x D)		mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Main circuit						
Rated insulation voltage U_i (pollution degree 3)		V	1 000			
Rated impulse withstand voltage U_{imp}		kV	6		8	
Rated operational voltage U_e		V	1 000			
Type of current						
• Direct current			No			
• Alternating current			Yes, 50/60 Hz 5 %			
Current setting		A	0.3 ... 3; 2.4 ... 25	10 ... 100	20 ... 200	63 ... 630
Power loss per unit (max.)		W	0.5			
Short-circuit protection						
• With fuse without contactor			See "Selection and ordering data" on page 7/147			
• With fuse and contactor			See configuration manuals • "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250039 • "SIRIUS Configuration – Selection Data for Fuseless Load Feeders", http://support.automation.siemens.com/WW/view/en/68115041			
Protective separation between main and auxiliary current paths acc. to IEC 60947-1 (pollution degree 2)						
• For systems with grounded neutral point		V	690			
• For systems with ungrounded neutral point		V	600			

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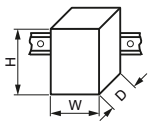
Current measuring modules for 3RB22, 3RB23, 3RB24



Type – Overload relays: Current measuring modules		3RB2906		3RB2956	3RB2966
Size contactor		S00/S0	S2/S3	S6	S10/S12
Dimensions of current measuring modules (W x H x D)	mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Conductor cross-sections of the main circuit					
Connection type		**Screw terminals with box terminal**			
Terminal screw	mm	--		4 mm Allen screw	5 mm Allen screw
Operating devices	mm	--		4 mm Allen screw	5 mm Allen screw
Prescribed tightening torque	Nm	--		10 ... 12	20 ... 22
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	--		--	--
• Finely stranded without end sleeve	mm^2	--		With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)
				With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Finely stranded with end sleeve	mm^2	--		With 3RT1955-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), Rear clamping point only: 1 × (70 ... 240)
				With 3RT1956-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Stranded	mm^2	--		With 3RT1955-4G box terminal: 2 × (max. 70), 1 × (16 ... 70)	2 × (70 ... 240), Rear clamping point only: 1 × (95 ... 300)
				With 3RT1956-4G box terminal: 2 × (max. 120), 1 × (16 ... 120)	Rear clamping point only: 1 × (120 ... 240)
• AWG cables, solid or stranded	AWG	--		With 3RT1955-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0)	2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil)
				With 3RT1956-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil)	Rear clamping point only: 1 × (250 kcmil ... 500 kcmil)
• Ribbon cables (Number x Width x Thickness)	mm	--		With 3RT1955-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8)	2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5)
				With 3RT1956-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8)	
Connection type		**Busbar connections**			
Terminal screw		--		M8 × 25	M10 x 30
Prescribed tightening torque	Nm	--		10 ... 14	14 ... 24
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid with cable lug	mm^2	--		16 ... 95[1]	50 ... 240[2]
• Stranded with cable lug	mm^2	--		25 ... 120[1]	70 ... 240[2]
• AWG cables, solid or stranded, with cable lug	AWG	--		4 ... 250 kcmil	2/0 ... 500 kcmil
• With connecting bars (max. width)	mm	--		17	25
Connection type		**Straight-through transformers**			
Diameter of opening	mm	7.5	14	25	--

[1] When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm^2 and more, the 3RT1956-4EA1 terminal cover must be used to ensure phase clearance.

[2] When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm^2 and more as well as to DIN 46235 with conductor cross-sections of 185 mm^2 and more, the 3RT1956-4EA1 terminal cover must be used to ensure the phase clearance.

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Selection and ordering data

Current measuring modules for mounting onto contactor[1] and stand-alone installation[1)2)] (essential accessories)

3RB2906-2JG1

3RB2906-2JG1

3RB2956-2TG2

3RB2966-2WH2

Size contactor[3]	Rating for three-phase motor, rated value[4]	Current setting value of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[5]	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	A							
Sizes S00/S0[2)6)]										
S00/S0	0.09 … 1.1	0.3 … 3	20	3RB22 to 3RB24	►	**3RB2956-2TH2**		1	1 unit	41G
	1.1 … 11	2.4 … 25	63		►	**3RB2956-2TG2**		1	1 unit	41G
Sizes S2/S3[2)6)]										
S2/S3	5.5 … 45	10 … 100	315	3RB22 to 3RB24	►	**3RB2906-2JG1**		1	1 unit	41G
Size S6[1)6)]										
S6 with busbar connection	11 … 90	20 … 200	315	3RB22 to 3RB24	►	**3RB2956-2TH2**		1	1 unit	41G
For mounting onto S6 contactors with box terminals	11 … 90	20 … 200	315	3RB22 to 3RB24	►	**3RB2956-2TG2**		1	1 unit	41G
Sizes S10/S12[1)]										
S10/S12 and size 14 (3TF68/ 3TF69)	37 … 450	63 … 630	800	3RB22 to 3RB24	►	**3RB2966-2WH2**		1	1 unit	41G

Note:

The connecting cable between the current measuring module and the evaluation module is not included in the scope of supply; please order separately (see page 7/148).

1) The current measuring modules with an Article No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The current measuring modules with an Article No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse only for overload relay, type of coordination "2". For fuse values in connection with contactors" see Configuration Manuals
- "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders", http://support.automation.siemens.com/WW/view/en/50250039
- "SIRIUS Configuration – Selection Data for Fuseless Load Feeders", http://support.automation.siemens.com/WW/view/en/68115041.

6) The modules with an Article No. with **"G"** in penultimate position are equipped with a straight-through transformer.

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Current measuring modules for 3RB22, 3RB23, 3RB24

Accessories

Size contactor	Version	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting cables (necessary accessories)								
3RB2987-2.	For connection between evaluation module and current measuring module							
S00 ... S3	• Length 0.1 m (only for mounting of the evaluation module directly onto the current measuring module)	3RB24, 3RB29	►	**3RB2987-2B**		1	1 unit	41F
S00 ... S12	• Length 0.5 m	3RB24, 3RB29	►	**3RB2987-2D**		1	1 unit	41F

Additional general accessories see page 7/150.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Overload relays for High-Feature applications

The following optional accessories are available for the 3RB22 to 3RB24 solid-state overload relays:

- Operator panel for the evaluation modules 3RB24
- Manual for the evaluation modules 3RB24
- Sealable cover for the evaluation modules 3RB22 to 3RB24
- Terminal covers for the 3RB29 current measuring modules size S6 and S10/S12
- Box terminal blocks for the 3RB29 current measuring modules size S6 and S10/S12
- Push-in lugs for screw fixing for 3RB22 to 3RB24 evaluation modules and 3RB2906 current measuring modules

Selection and ordering data

Accessories for 3RB24 overload relays

	Version	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operator panels for evaluation modules								
3RA6935-0A	**Operator panels (set)** One set comprises: • 1 x operator panel • 1 x 3RA6936-0A enabling module • 1 x 3RA6936-0B interface cover • 1 x fixing terminal Note: The connecting cable between the evaluation module and the operator panel is not included in the scope of supply; please order separately.	3RB24	A	**3RA6935-0A**		1	1 unit	42F
	Connecting cable Length 2.5 m (round), for connecting the evaluation module to the operator panel	3RB24	▶	**3UF7933-0BA00-0**		1	1 unit	42J
	Enabling modules (replacement)	3RB24	A	**3RA6936-0A**		1	1 unit	42F
	Interface covers	3RB24	A	**3RA6936-0B**		1	5 units	42F
Manuals								
Manual "Solid-State Overload Relay for IO-Link"	**Manual "Solid-State Overload Relay for IO-Link"** The manual can be downloaded free of charge, see http://support.automation.siemens.com/WW/view/en/46165627	3RB24						

Additional general accessories see next page.

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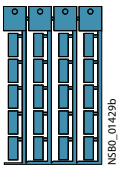
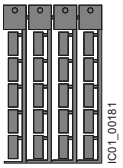
Accessories for 3RB22, 3RB23, 3RB24

General accessories

	Version	Size	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers for evaluation modules									
3RB2984-2	For covering the setting knobs	--	3RB22 to 3RB24	▶	**3RB2984-2**		1	10 units	41F
Terminal covers for current measuring modules									
	Covers for cable lugs and busbar connections								
	• Length 100 mm	S6	3RB2956	▶	**3RT1956-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	3RB2966	▶	**3RT1966-4EA1**		1	1 unit	41B
	Covers for box terminals								
	• Length 25 mm	S6	3RB2956	▶	**3RT1956-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	3RB2966	▶	**3RT1966-4EA2**		1	1 unit	41B
	Covers for screw terminals between contactor and overload relay, without box terminals (1 unit required per combination)	S6	3RB2956	▶	**3RT1956-4EA3**		1	1 unit	41B
		S10/S12	3RB2966	▶	**3RT1966-4EA3**		1	1 unit	41B
Box terminal blocks for current measuring modules									
3RT195.-4G	For round and ribbon cables								
	• Up to 70 mm^2	S6[1)]	3RB2956	▶	**3RT1955-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	3RB2956	▶	**3RT1956-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	3RB2966	▶	**3RT1966-4G**		1	1 unit	41B
	For technical specifications for conductor cross-sections see Reference Manual "Protection Equipment – 3RU1, 3RB2 Overload Relays", http://support.automation.siemens.com/WW/view/en/35681297.								
Push-in lugs for evaluation modules and current measuring modules									
3RP1903	For screw fixing the evaluation modules	--	3RB22 to 3RB24	B	**3RP1903**		1	10 units	41H
3RB1900-0B	For screw fixing the current measuring modules (2 units per module)	S00 ... S3	3RB2906	A	**3RB1900-0B**		100	10 units	41F

[1)] In the scope of supply for 3RT1054-1 contactors (55 kW).

	Version	Size	Color	For overload relays	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**3RA2908-1A**		1	1 unit	41B
Blank labels										
 3RT1900-1SB20	**Unit labeling plates**[1)] For SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	**3RT1900-1SB20**		100	340 units	41B
		20 mm x 7 mm	Titanium gray	3RB2	D	**3RT2900-1SB20**		100	340 units	41B
 3RT2900-1SB20										

[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Load Feeders and Motor Starters for Use in the Control Cabinet

8

Price groups
PG 12W, 14O, 230, 241, 250, 260, 41B, 41D, 41E, 41L, 42C, 42D, 42F, 471, 4N1, 5K1, 5K2, 5N2, 764, 815, 816

8/2 **Introduction**

SIRIUS 3RA2 load feeders
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3RA21 direct-on-line starters
8/16 For snapping onto standard mounting rails or for screw fixing
8/20 For 60 mm busbars
3RA22 reversing starters
8/24 For snapping onto standard mounting rails or for screw fixing
8/28 For 60 mm busbars
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SIRIUS 3RA1 load feeders
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3RA12 reversing starters
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8/50 Accessories
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SIRIUS 3RA6 compact starters
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3RA61, 3RA62 compact starters
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ET 200S motor starters and safety motor starters
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8/140 ET 200S – I/O modules
8/150 ET 200S – fail-safe I/O modules
8/154 ET 200S – IO-Link master modules
8/155 ET 200S software

Notes:

The 3RA1 load feeders (sizes S00/S0 to S3) can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC01
- in the catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool see www.siemens.com/sirius/conversion-tool

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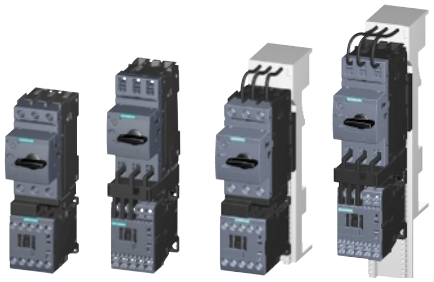
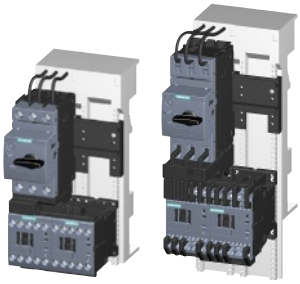
Load Feeders and Motor Starters
For Use in the Control Cabinet

Overview



3RA21 10

3RA22 10



3RA11 30

		Article No.	Page
SIRIUS 3RA2 load feeders			
	• The 3RA2 fuseless load feeders consist of the 3RV2 motor starter protector and the 3RT2 contactor. The motor starter protector and contactor are prewired and mechanically and electrically connected in pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters). • 2 sizes (S00, S0) • Can be supplied for direct-on-line start or reversing duty as - complete unit or - single devices for self-assembly • Can be supplied with screw or spring-type terminals		
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA21**	8/16
3RA21 direct-on-line starters for 60 mm busbars	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA21**	8/20
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA22**	8/24
3RA22 reversing starters for 60 mm busbars	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA22**	8/28
Accessories for 3RA2 direct-on-line and reversing starters			8/32
SIRIUS 3RA1 load feeders			
	• The 3RA1 fuseless load feeders consist of the 3RV1 motor starter protector and the 3RT1 contactor. The motor starter protector and contactor are prewired and mechanically and electrically connected in pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters). • 2 sizes (S2, S3) • Can be supplied for direct-on-line start or reversing duty as - complete unit or - single devices for self-assembly • Can be supplied with screw terminals		
3RA11 direct-on-line starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 35 mm standard mounting rail or for screw fixing	**3RA1130**	8/46
3RA11 direct-on-line starters for busbar systems	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 40 and 60 mm busbar systems	Only for self-assembly	8/47
3RA12 reversing starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 35 mm standard mounting rail or for screw fixing	Only for self-assembly	8/48
3RA12 reversing starters for busbar systems	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 40 and 60 mm busbar systems	Only for self-assembly	8/49
Accessories for 3RA1 direct-on-line and reversing starters			8/50

Central and compact starter solutions

Our range offers you many different possibilities for simple and practical starter solutions in the control cabinet. Features common to all our load feeders, compact starters and motor starters: Like all SIRIUS devices they are optimally coordinated with each other, have a very compact design and are particularly easy and quick to install and wire up.

In addition there is a seamless range of SIRIUS 3RW soft starters available for soft starting in the control cabinet (see Chapter 6 "Soft Starters and Solid-State Switching Devices" → "SIRIUS 3RW Soft Starters").

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3RA61 3RA62 3RA64 3RA65 3RA68 3RM12 3RM13 3RK1301

		Article No.	Page
SIRIUS 3RA6 compact starters			
	• Integrated functionality of a motor starter protector, contactor and solid-state overload relay and various functions of optional mountable accessories • Can be used for direct starting of standard three-phase motors up to 32 A		
3RA61 direct-on-line starters	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA61**	8/64
3RA62 reversing starters	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA62**	8/65
3RA64 direct-on-line starters for IO-Link	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA64**	8/66
3RA65 reversing starters for IO-Link	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA65**	8/67
Accessories for 3RA6 direct-on-line and reversing starters		**3RA69**	8/68
Add-on modules for AS-Interface		**3RA69**	8/74
Infeed systems for 3RA6	• Modular expandability, up to 100 A, terminals up to 70 mm^2	**3RA68**	8/76
SIRIUS 3RM1 motor starters			
	• For switching three-phase motors up to 3 kW (at 400 V) and resistive loads up to 10 A at AC voltages up to 500 V under normal operating conditions • Space-saving design (22.5 mm wide)		
3RM10 direct-on-line starters	• Direct-on-line starting with solid-state overload protection	**3RM10**	8/89
3RM12 reversing starters	• Reversing functionality with solid-state overload protection	**3RM12**	8/90
3RM11 Failsafe direct-on-line starters	• As 3RM10 plus safety-related shutdown	**3RM11**	8/91
3RM13 Failsafe reversing starters	• As 3RM12 plus safety-related shutdown	**3RM13**	8/92
Accessories for 3RM1 motor starters	• 3RM19 3-phase infeed system • Device connectors, push-in lugs for wall mounting, spare terminals for main and control circuits	**3RM19** **3ZY1**	8/93
ET 200S motor starters and safety motor starters			
ET 200S motor starters	• Completely factory-wired motor starters for switching and protecting any AC loads, optionally as direct-on-line, reversing or soft starters		8/98
• Standard motor starters		**3RK1301**	8/105
• High-Feature motor starters		**3RK1301**	8/108
Power modules for ET 200S motor starters	• For infeed and monitoring the auxiliary voltages for motor starters	**3RK1903-0BA00**	8/111
ET 200S Failsafe motor starters	• High-Feature direct-on-line and reversing starters	**3RK1301**	8/113
Terminal modules for ET 200S motor starters	• Mechanical modules in which the motor starter and expansion modules are inserted	**3RK1903**	
• Standard terminal modules			8/106
• High-Feature terminal modules			8/110
• Failsafe terminal modules			8/115
• Power module terminal modules			8/112
• Safety modules local and PROFIsafe terminal modules			8/125
Safety modules local	• For safety category SIL 3/PL e according to IEC 62061 or ISO 13849-1	**3RK1903**	8/116
Safety modules PROFIsafe	• Sensor and actuator assignment are freely configurable (distributed safety concept)	**3RK1903**	8/116
Accessories			8/127
ET 200S – interface modules	• Interface modules - With CPU - With fail-safe CPU - Without CPU	**6ES7 6AG1**	8/132
ET 200S – I/O modules	• Power modules, reserve modules, potential distributor modules, digital/analog electronic modules • Technology modules: SSI modules, 2PULSE pulse generators, 1STEP step modules, positioning modules, counter modules, 1 SI interface modules, SIWAREX CS, SIMAREX CF, terminal modules for power and electronic modules	**6ES7 6AG1 7MH4**	8/140
ET 200S – fail-safe I/O modules	• F power and F electronic modules, F terminal modules	**6ES7 6AG1**	8/150
ET 200S – IO-Link master modules	• IO-Link 4SI and SIRIUS 4SI electronic modules	**6ES7 3RK1**	8/154

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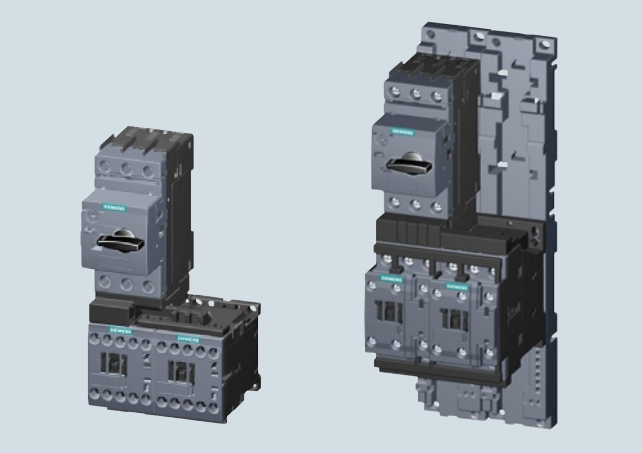
General data

Overview

3RA2 load feeders



3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing with screw terminals

The 3RA2 fuseless load feeders consist of the 3RV2 motor starter protector and the 3RT2 electromechanical contactor. The devices are electrically and mechanically connected using preassembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

Around 500 preassembled 3RA2 combinations of these innovative 3RT2 controls and 3RV2 protection equipment can be ordered for direct-on-line and reversing starting of standard three-phase motors up to 32 A (approx.15 kW/400 V).

In the 3RA2 load feeder, the 3RV2 motor starter protector is responsible for overload and short-circuit protection. Back-up protective devices, such as melting fuses or limiters, are superfluous here, as the motor starter protector is short-circuit proof up to 150 kA at 400 V.

The 3RT2 contactor is particularly suitable for extremely complex switching tasks requiring the greatest endurance.

The 3RA2 load feeders are available with setting ranges from 0.14 to 32 A in sizes S00 and S0:

Size	Width Direct-on-line starters/ reversing starters	Max. rated current $I_{n\ max}$	For three-phase motors up to
	mm	A	kW
S00	45/90	16	7.5
S0	45/90	32	15

The size of the 3RA2 load feeders is based on the size of the contactor:

Size 3RA2	S00	S0
Size of 3RV2 motor starter protector	S00	S00[1], S0
Size of 3RT2 contactor	S00	S0

[1] The combination of an S00 motor starter protector with an S0 contactor is possible only for screw connection versions.

Operating conditions

3RA2 load feeders are climate-proof. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

Behavior in the event of short circuit

EN 60947-4-1 (VDE 0660 Part 102) and IEC 60947-4-1 make a distinction between two different types of coordination (types "1" and "2"). Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

ToC 1 Type of coordination "1"
The load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible.

ToC 2 Type of coordination "2"
There must be no damage to the overload release or to any other component after a short circuit has been cleared. The load feeder can resume operation without needing to be renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Tripping times

All 3RA2 load feeders described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the motor starter protectors.

Connection methods

For all 3RA2 feeders up to 32 A, spring-type connection is available as well as screw terminals. To connect two devices with spring-type terminals, there are plug-in connection modules for sizes S00 and S0 which enable very quick mounting of the feeders and a vibration-resistant assembly.

To connect a motor starter protector with screw terminals to a contactor with spring-type terminals there are special hybrid connection modules for the sizes S00 and S0.

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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3RA2 complete units

The 3RA2 fuseless load feeders can be ordered as preassembled complete units for direct-on-line starting (3RA21) or for reversing duty (3RA22) with screw or spring-type connection.

There are control supply voltages available of 50/60 Hz 230 V AC and 24 V DC.

A distinction is also drawn between whether the feeder is mounted onto a 35 mm standard mounting rail, on a flat surface using screws, or on a 60 mm busbar system.

3RA21 load feeders in the size S0 must be configured on standard mounting rail adapters if high vibration and shock loads (railways, power generation,...) are involved.

A vibration and shock kit is available for mounting on busbar adapters.

Accessories

As the 3RA2 fuseless load feeders are constructed from 3RV2 motor starter protectors and 3RT2 contactors, the same accessories – such as auxiliary switches, undervoltage releases or door-coupling rotary operating mechanisms – can be used for the 3RA2 fuseless load feeders as for these motor starter protectors and contactors.

In particular, certain accessories have been optimized for the fuseless load feeders. They include the top-connected, transverse auxiliary switch on the motor starter protector, which is available with 1 CO contact or 1 NO contact + 1 NC contact. Special auxiliary switch blocks that can be snapped on from below are available for the contactor. These two accessories enable the fuseless load feeders to be wired simply without having to route cables through the device.

Incoming energy supply

On the whole four different energy supply possibilities are available (see "3RV29 Infeed System for Load Feeders" on 8/40).

Customer assembly of fuseless load feeders

While the preassembled 3RA2 load feeders can be ordered up to 32 A, combinations up to 40 A (approx. 18.5 kW/400 V) are possible for customer assembly without link modules.

The standard devices can be combined optimally – in terms of both technical specifications and dimensions, thanks to the modular system of the SIRIUS series.

The fuseless load feeders can thus be assembled easily by the customer. It is simply necessary to assemble the standard 3RV2 motor starter protector, the 3RT2 contactor and the appropriate assembly kit.

For single devices and assembly kits see the "Selection and ordering data" for 3RA21 direct-on-line starters and 3RA22 reversing starters.

For assembly kits for direct-on-line starting or reversing duty for mounting onto standard mounting rails or busbars see "Selection and ordering data" at "Accessories".

For reversing starters size S0 it is imperative to use a standard mounting rail adapter in order to ensure the necessary mechanical strength. A standard mounting rail adapter is not necessary if a busbar adapter is used.

The 3RA1 fuseless load feeders can be used for fuseless load feeders between 32 A and 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors are available for rated currents >100 A.

Special equipment for customer assembly can be ordered if other rated control supply voltages are required. Assembly kits can be used to facilitate assembly.

Customers can also assemble tested combinations of motor starter protectors with solid-state controls (soft starters, solid-state contactors) and load feeders with additional monitoring and control devices (3RR monitoring relays, SIMOCODE 3UF).

For the electrical and mechanical connection of protection equipment and controls there are preassembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

The following types of configuration are possible:

- Direct-on-line/reversing starting
  (see preassembled 3RA2 combinations)
- Wye-delta starting (only customer assembly with link module)
- Solid-state/soft starting (only customer assembly with link module)

For more information and assignment tables for combinations of the 3RA2 generation for self-assembly see the configuration manual :
http://support.automation.siemens.com/WW/view/en/39714188.

Self-assembly of fused load feeders

The flexible, modular system of SIRIUS also enables the configuration of fused load feeders up to 40 A (approx. 18.5 kW/400 V). Up to 32 A is also available for 45 mm installation widths.

Compact 3NW7...-1 cylindrical fuse holders for IEC fuses size 10 x 38 mm, or 3NW7...-1HG holders for Class CC UL fuses, can be used for this purpose.

For more information about fuse systems, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology" → "SENTRON Safety, Switching, Measuring and Monitoring Devices".

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General data

Communications integration using IO-Link

Load feeders can also be assembled with IO-Link for connection to the higher-level control system. For each feeder this requires a communication-capable contactor onto which a 3RA2711 function module is plugged (various versions for direct-on-line, reversing and wye-delta starters). The design of the SIRIUS load feeders permits a group of up to 4 SIRIUS controls to be conveniently connected through the standardized open IO-Link system to a control system, thus reducing wiring work considerably compared to the conventional parallel wiring method. The electrical connection is made using only three standard cables.

The function modules perform not only the communication (contactor operation and feedback, ready signal) but also the electrical interlocking (for reversing and wye-delta starters) and the timing relay function (wye-delta reversing time).

Communication information and control supply voltages are passed on through ribbon cables so that the complete control current wiring on the feeder is no longer needed.

The monitoring and maintenance of a plant is made considerably easier by transmitting diverse diagnostics data from the function modules (e.g. missing main and auxiliary voltage, local disconnection…) through IO-Link to the higher-level control system. Also, feeders equipped for IO-Link can be conveniently controlled from the control cabinet door using the optional operator panel.

More information:

- IO-Link see Chapter 2 "Industrial Communication"
- 3RA27 function modules see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" ➞ "Function Modules".

Communications integration through AS-Interface

Connection of the load feeders to the higher-level control system is possible not only through IO-Link but also through AS-Interface. The AS-Interface connection is recommended wherever load feeders are used in distributed applications. This solution also requires a communication-capable contactor and a corresponding 3RA2712 function module (various versions for direct-on-line, reversing and wye-delta starters). The devices are implemented in A/B technology, making it easy to connect up to 62 feeders to an AS-i master (regardless of whether they are direct-on-line, reversing or wye-delta starters). This results in a significant reduction of wiring compared to the conventional parallel wiring method. The electrical connection is made using standard cables.

The function modules perform not only the communication (contactor operation and feedback, ready signal) but also the electrical interlocking (for reversing and wye-delta starters) and the timing relay function (wye-delta reversing time).

Communication information and control supply voltages are passed on through ribbon cables so that the complete control current wiring on the starter is no longer needed.

More information:

- AS-Interface see Chapter 2 "Industrial Communication"
- 3RA27 function modules see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" ➞ "Function Modules".

Contactors with communication interface

Contactors with a communication interface are required for configuring load feeders with a communication interface (AS-i/IO-Link). These contactors are not included as standard in the preassembled 3RA2 load feeders. A load feeder with communication interface must be assembled therefore from single devices.

Complete integration in the automation landscape

As the result of the communication connection through IO-Link or AS-i, the SIRIUS load feeders are fully integrated in the automation landscape and can draw on all the advantages of TIA (e.g. integration in the TIA Maintenance Station).

Mounting

3RA2 fuseless load feeders can be supplied:

- For assembly on TH 35 standard mounting rails according to EN 60715 (depth 15 mm)
- For assembly on busbar adapters (busbar center-to-center clearance 60 mm, busbar thickness 5 to 10 mm with beveled edges)

The fuseless load feeders are also suitable for screw fixing using two 3RV2928-0B push-in lugs.

The 3RA2 fuseless load feeders can also be configured with the 3RV29 infeed system (see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors/Circuit Breakers" ➞ "SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A" ➞ "Accessories" ➞ "3RV29 Infeed System").

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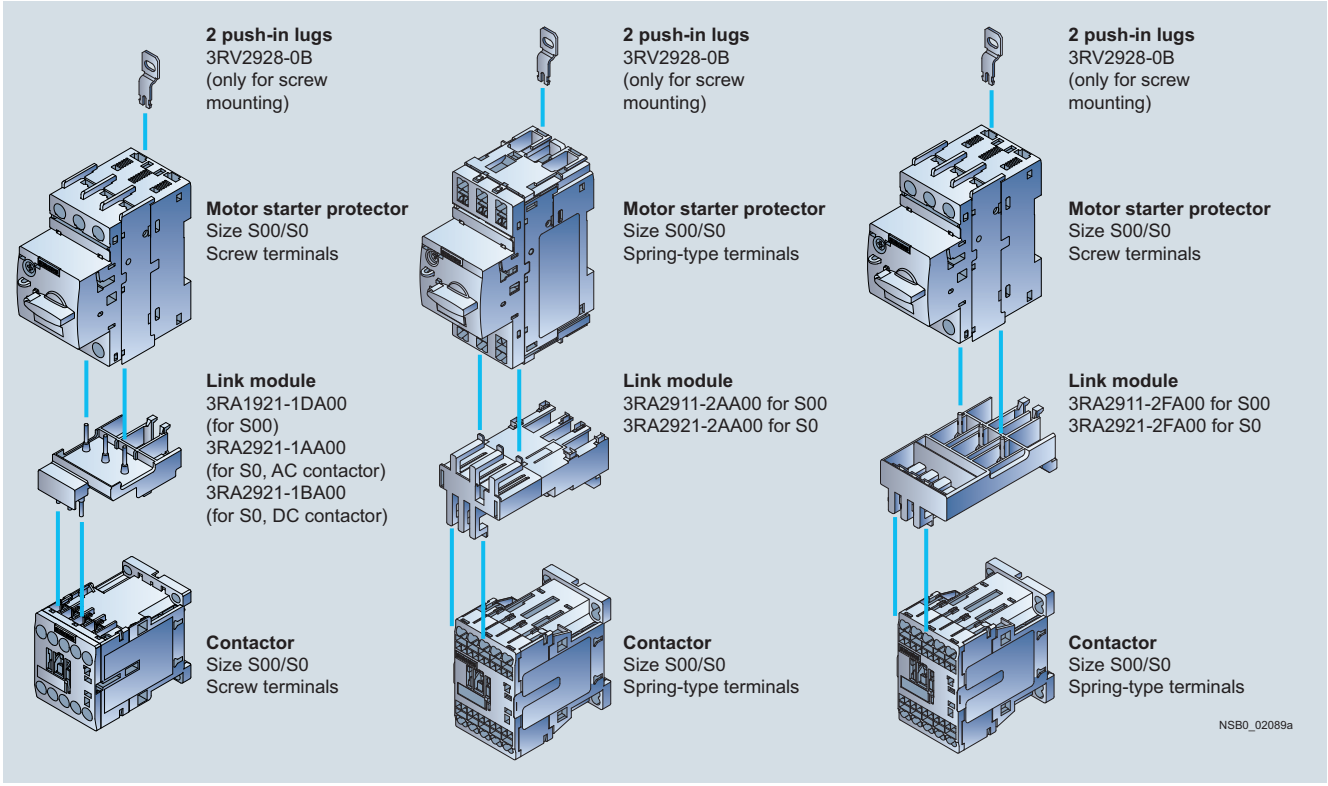
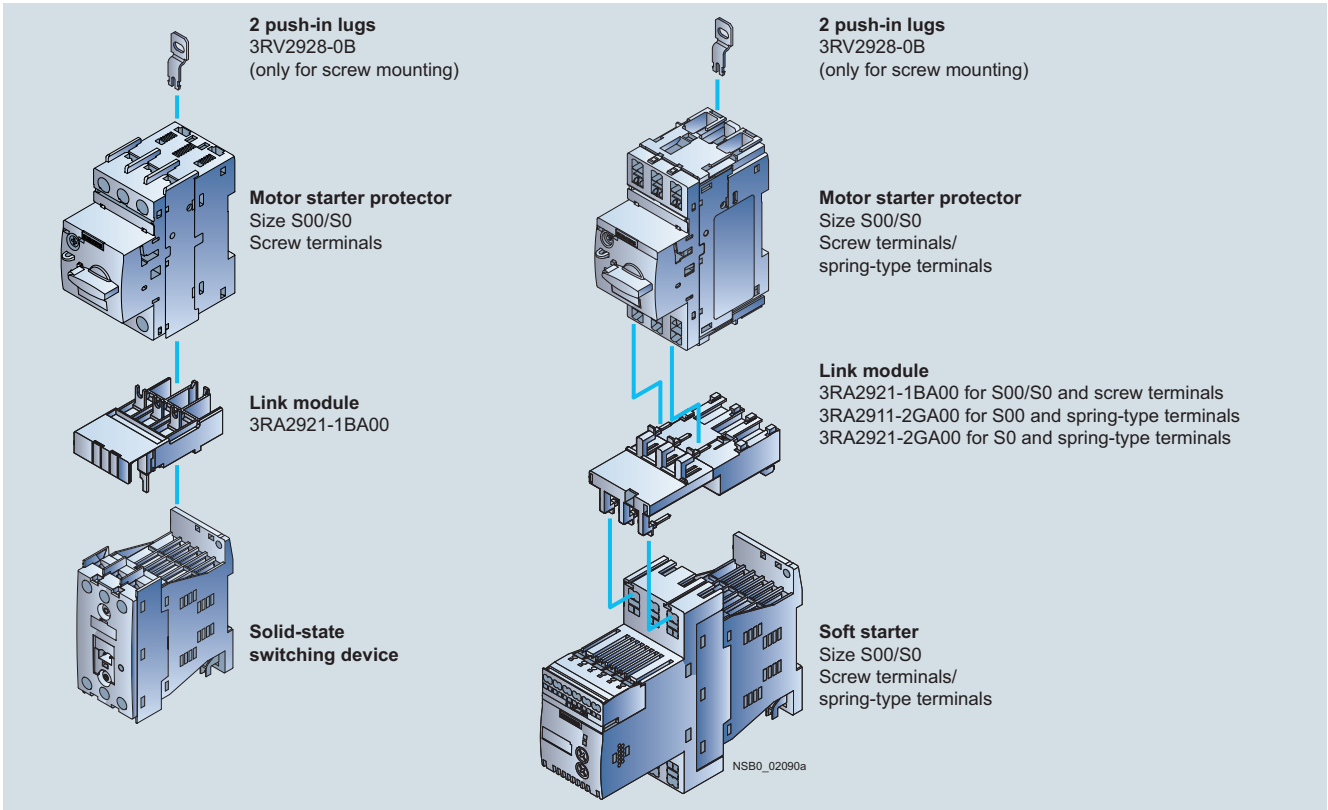
Direct-on-line starting • For standard rail mounting or screw fixing • Sizes S00 and S0



Left: 3RA21 load feeder with screw terminals
Center: 3RA21 load feeder with spring-type terminals
Right: Motor starter protector combination with screw terminals, with contactor with spring-type terminals



Left: Motor starter protector combination with solid-state switching device with screw terminals
Right: Motor starter protector combination with soft starter with spring-type terminals

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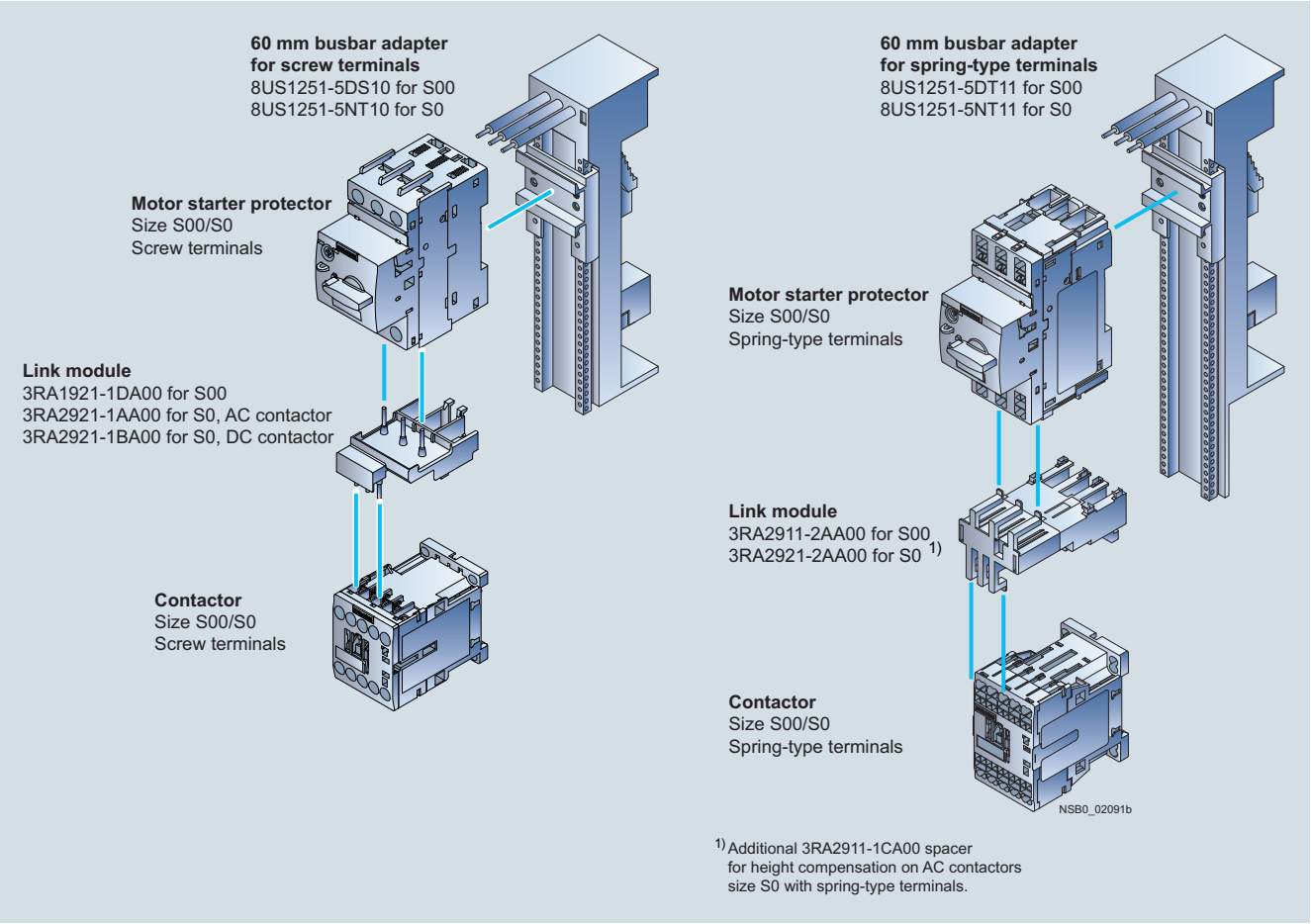
General data

Direct-on-line starting • For 60 mm busbar systems • Sizes S00 and S0



1) Additional 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

Left: 3RA21 load feeder for direct-on-line starting with busbar adapter with screw terminals
Right: 3RA21 load feeder for direct-on-line starting with busbar adapter with spring-type terminals

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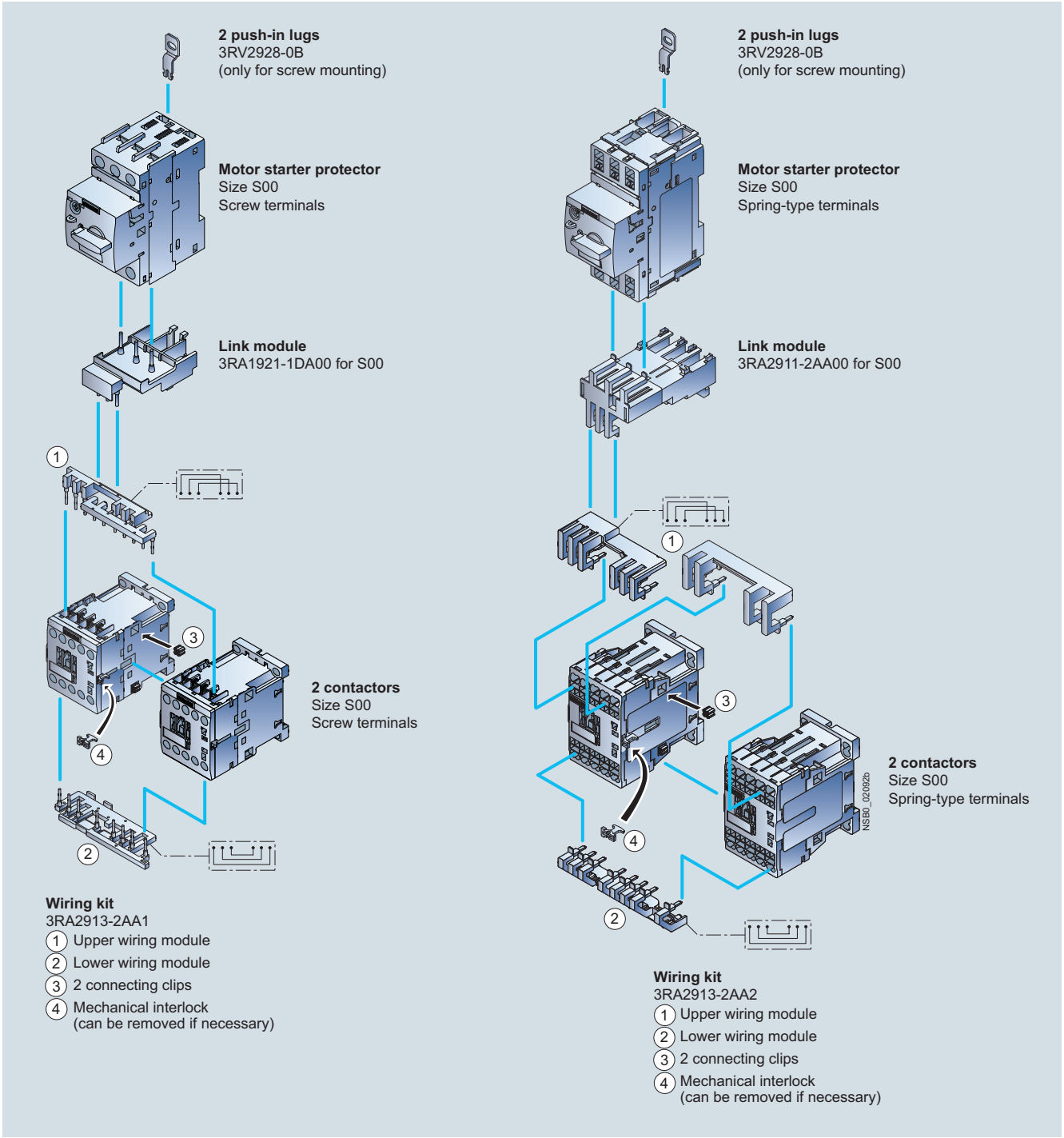
Reversing duty • For standard rail mounting or screw fixing • Size S00



Left: 3RA22 load feeder with screw terminals with push-in lugs with 2 contactors for reversing duty and 3RA2913-2AA1 wiring kit for connection of the contactors (incl. mechanical interlocking and connecting clips)
Right: 3RA22 load feeder with spring-type terminals with push-in lugs with 2 contactors for reversing duty and wiring kit 3RA2913-2AA2 (incl. mechanical interlocking and connecting clips)

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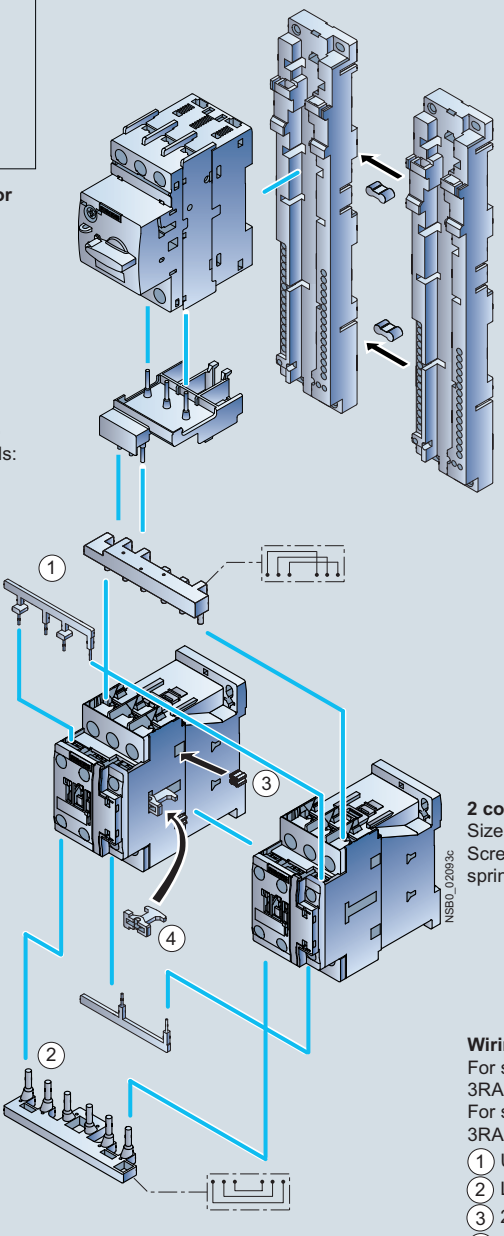
General data

Reversing duty • For standard rail mounting • Size S0

RH assembly kit for reversing duty and standard rail mounting in size S0
For screw terminals:
3RA2923-1BB1
For spring-type terminals:
3RA2923-1BB2[1)]
Comprising:
1 wiring kit
2 standard mounting rail adapters
2 connecting wedges

[1)] Also includes 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.



[2)] Additional 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals

3RA22 load feeder for reversing duty and standard rail mounting in size S0
(the version with screw terminals is shown in the picture)

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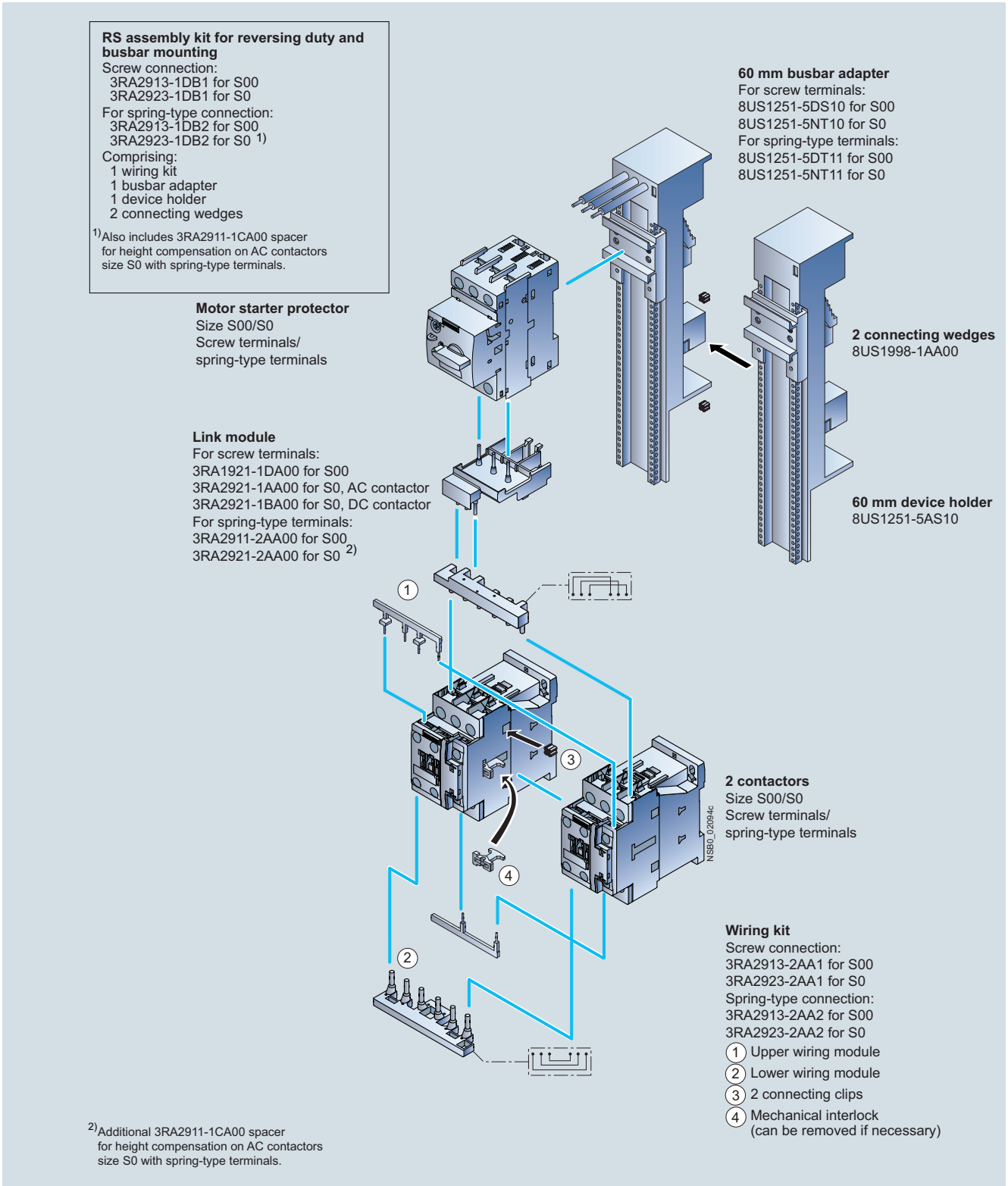
Reversing duty • For 60 mm busbar systems • Sizes S00 and S0



3RA22 load feeder for reversing duty and 60 mm busbar in size S00/S0
(the version with screw terminals is shown in the picture)

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General data

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	**0**	–	□	□	□	□	□	–	□	□	□	□
SIRIUS feeders	**3 R A**															
SIRIUS 2nd generation		**2**														
Type of feeder (direct-on-line starter = 1, reversing starter = 2)			□													
Size (S00 = 1, S0 = 2)				□												
Setting range for overload release							□	□								
Design type and connection method									□							
Rated power at 400 V AC										□	□					
Integrated auxiliary switches of the contactor													□			
Operating range/solenoid coil circuit (contactor)														□		
Rated control supply voltage (contactor)															□	□
Example	**3 R A**	**2**	**1**	**1**	**0**	**–**	**0**	**B**	**A**	**1**	**5**	**–**	**1**	**A**	**P**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

The 3RA2 fuseless load feeders offer a number of benefits:

- Minimum planning and assembly work and far less wiring with the preassembled complete units (only one article number 3RA2)
- Plug-in connectors from the motor starter protector to all types of SIRIUS controls, for quicker and error-free assembly of feeders with screw and spring-type connection
- High planning reliability through consistent combination tests for fuseless (400 V according to IEC) and fused configuration (400 V, 500 V and 690 V according to IEC)
- Comprehensive approvals for use world-wide on request, see Chapter 16 "Appendix" → "Standards and Approvals".
- High operational reliability through short-circuit breaking capacity of 150 kA with type of coordination "1" and "2"
- Uniform accessories for the two sizes S00 and S0
- Spring-type connection possible throughout: Enhanced operational reliability (vibration-resistant wiring) and less wiring work thanks to plug-in connections
- Power loss 5 to 10 % smaller than for comparable devices, hence lower energy consumption
- Connection of feeders to the control system through standardized system connection (IO-Link and AS-i), for fast integration in TIA and less wiring work

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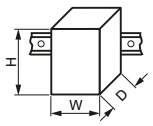
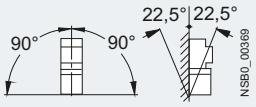
Technical specifications

Direct-on-line starters/ reversing starters	Size	Connection methods	Mounting	Control voltage	Width W	Height H	Depth D
					mm	mm	mm
Mounting dimensions							
Direct-on-line starters 3RA21.	S00 3RA211.	Screw terminals	Standard mounting rails	AC/DC	45	167	97
			Busbar adapters	AC/DC	45	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	45	198	97
			Busbar adapters	AC/DC	45	260	155
	S0 3RA212.	Screw terminals	Standard mounting rails	AC	45	193	97
				DC	45	193	107
			Busbar adapters	AC	45	260	155
				DC	45	260	165
		Spring-type terminals	Standard mounting rails	AC/DC	45	243	107
			Busbar adapters	AC/DC	45	260	165
Reversing starters 3RA22.	S00 3RA221.	Screw terminals	Standard mounting rails	AC/DC	90	170	97
			Busbar adapters	AC/DC	90	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	90	204	97
			Busbar adapters	AC/DC	90	260	155
	S0 3RA222.	Screw terminals	Standard mounting rail adapters	AC	90	265	120.3
				DC	90	265	130
			Busbar adapters	AC	90	260	155
				DC	90	260	165
		Spring-type terminals	Standard mounting rail adapters	AC/DC	90	270	131
			Busbar adapters	AC/DC	90	260	165



Type Size Number of poles			**3RA2.1** **S00** **3**	**3RA2.2** **S0** **3**
Mechanics and environment				
Permissible ambient temperature • During operation • During storage and transport		°C °C	-20 ... +60 -55 ... +80	
Weight		kg	0.6 ... 1.5	0.8 ... 2.3
Permissible mounting position			 Important: Acc. to DIN 43602 start command "I" at the right or top	
Shock resistance	Acc. to IEC 60068-2-27	*g*/ms	6/11 (sine pulse)	
Degree of protection	Acc. to IEC 60947-1		IP20	

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General data

Type			**3RA2.1**	**3RA2.2**
Size			**S00**	**S0**
Number of poles			**3**	**3**
Electrical specifications				
Standards			IEC 60947-1, EN 60947-1 (VDE 0660 Part 100) IEC 60947-2, EN 60947-2 (VDE 0660 Part 101) IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)	
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	16	32
Rated operational voltage U_e		V	690	
Rated frequency		Hz	50/60	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Trip class (CLASS)	Acc. to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)		10	
Rated short-circuit current I_q at 50/60 Hz 400 V AC according to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)		kA	150	
Types of coordination according to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)			See "Selection and ordering data"	
Power loss $P_{v\ max}$ of all main current paths Dependent on the rated current I_n (upper setting range)	Up to 1.25 A	W	2	--
	1.6 ... 6.3 A	W	2.3	--
	8 ... 12 A	W	3.5	--
	16 A	W	4.3	--
	5 ... 6.3 A	W	--	2.3
	8 ... 12 A	W	--	3.5
	16 ... 32 A	W	--	4.3
Power consumption of the solenoid coils for contactors as a function of the standard output P of the motor (when coil is cold and U_s, 50 Hz)				
• AC operation				
- Closing	Up to 4 kW	VA	27	--
	5.5 ... 7.5 kW	VA	37	--
	Up to 5.5 kW	VA	--	65
	7.5 ... 15 kW	VA	--	77
	P.f.		0.8	0.82
- Closed	Up to 4 kW	VA	4.2	--
	5.5 ... 7.5 kW	VA	5.7	--
	Up to 5.5 kW	VA	--	8.5
	7.5 ... 15 kW	VA	--	9.8
	P.f.		0.25	0.25
• DC operation	Closing = Closed	W	4	5.9
Magnetic coil operating range for contactors			0.8 ... 1.1 x U_s	
	Low limit at 55 °C		0.8 x U_s	--
	At 60 °C		0.85 x U_s	--
Endurance of the motor starter protector				
• Mechanical endurance	Operating cycles		100 000	
• Electrical endurance	Operating cycles		100 000	
• Max. switching frequency per hour (motor starts)		1/h	15	
Endurance of contactor				
• Mechanical endurance	Operating cycles		30 million	10 million
• Electrical endurance	Operating cycles		See endurance characteristic curves of the contactors → Chapter 3 "Switching Devices – Contactors and Contactor Assemblies"	
Touch protection	Acc. to EN 50274		Finger-safe	
Phase failure sensitivity of the motor starter protector	Acc. to IEC 60947-1, EN 60947-1 (VDE 0660 Part 102)		Yes	
Isolating features of the motor starter protector	Acc. to IEC 60947-2, EN 60947-2 (VDE 0660 Part 101)		Yes	
Main control and EMERGENCY-STOP switch characteristics of the motor starter protector and accessories	Acc. to IEC 60204-1, EN 60204-1 (VDE 0113 Part 1)		Yes (with overvoltage releases of category 1 under conditions of proper use)	
Protective separation between main and auxiliary circuits	Acc. to EN 60947-1, Appendix N	V	Up to 400	
Mirror contacts for contactors			Yes	Yes, from main contact to auxiliary NC contact

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Type		SIRIUS 3RA2 load feeders		
Connection type		**Screw terminals**	**Spring-type terminals**	
Conductor cross-sections for main conductors Size S00				
		Motor starter protectors, contactors	**Motor starter protectors, contactors**	
Terminal screw		M3, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	0.8 ... 1.2	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2 mm^2	2 x (0.5 ...1.5)[1] only for contactors, 2 x (0.75 ... 2.5)[1], max. 2 x 4	2 x (0.5 ... 4)	
• Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	
• Finely stranded with end sleeves (DIN 46 228 T1)	mm^2 mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (0.5 ... 2.5)	
• AWG cables, solid or stranded	AWG AWG AWG	2 x (20 ... 16)[1] only for contactors, 2 x (18 ... 14)[1], 2 x 12	2 x (20 ... 12)	
Max. external diameter of the conductor insulation	mm	--	3.6	
Conductor cross-sections for main conductors Size S0				
		Motor starter protectors, contactors	**Motor starter protectors, contactors**	
Terminal screw		M4, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	2.0 ... 2.5	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2	2 x (1.0 ... 2.5)[1], 2 x (2.5 ... 10)[1]	2 x (1.0 ... 10)	
• Finely stranded without end sleeve	mm^2	--	2 x (1.0 ... 6.0)	
• Finely stranded with end sleeves (DIN 46 228 T1)	mm^2 mm^2 mm^2	2 x (1.0 ... 2.5)[1], 2 x (2.5 ... 6)[1] max. 1 x 10	2 x (1.0 ... 6.0)	
• AWG cables, solid or stranded	AWG AWG	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]	2 x (18 ... 8)	
Max. external diameter of the conductor insulation	mm	--	3.6	
Conductor cross-sections for auxiliary conductors – Size S00/S0				
		Contactors (basic unit), motor starter protectors (accessories), contactors (mountable accessories), overload relays	**Contactors S00**	**Contactors S0, motor starter protectors (accessories), contactors (accessories), overload relays**
Terminal screw		M3, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	0.8 ... 1.2	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2 mm^2	2 x (0.5 ... 1.5)[1] 2 x (0.75 ... 2.5)[1], Max. 2 x 4 only for contactors S00	2 x (0.5 ... 4)	2 x (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	2 x (0.5 ... 1.5)
• Finely stranded with end sleeve	mm^2 mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (0.5 ... 2.5)	2 x (0.5 ... 1.5)
• AWG cables, solid or stranded	AWG AWG AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1], 2 x 12 only for contactors S00	2 x (20 ... 12)	2 x (20 ... 14)
Max. external diameter of the conductor insulation	mm	--	3.6	3.6

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified. If identical cross-sections are used, this restriction does not apply.

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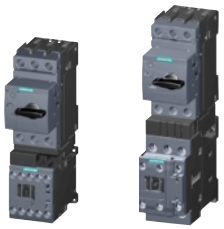
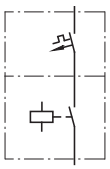
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data



3RA2110 3RA2120

Direct-on-line start



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With screw terminals

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches: Contactor size S00: 1 NO, contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Screw terminals / Configurator / Article No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP01	19 21-1DA00	A	**3RA2110-0BA15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10			A	**3RA2110-0CA15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2110-0DA15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2110-0EA15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2110-0FA15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2110-0GA15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2110-0HA15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2110-0JA15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2110-0KA15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2110-1AA15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2110-1BA15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2110-1CA15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2110-1DA15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2110-1EA15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA2120-1FA24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA2120-1GA24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2120-1HA24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2120-1JA24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2120-1KA24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA2120-4AA26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2120-4BA27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA2120-4CA27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2120-4DA27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2120-4EA27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP01	19 21-1DA00	A	**3RA2110-1FA15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA2110-1GA15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2110-1HA15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP01		A	**3RA2110-1JA16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP01		A	**3RA2110-1KA17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP01		A	**3RA2110-4AA18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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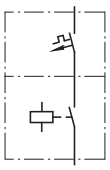
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protector	+ Contactor	+ Link module		**Spring-type terminals**				
								Configurator				
								Article No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")												
				3RV20	**3RT20**	**3RA**		ToC 2				
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP01	29 11-2AA00	A	**3RA2110-0BE15-1AP0**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20			A	**3RA2110-0CE15-1AP0**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2110-0DE15-1AP0**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2110-0EE15-1AP0**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2110-0FE15-1AP0**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2110-0GE15-1AP0**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2110-0HE15-1AP0**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2110-0JE15-1AP0**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2110-0KE15-1AP0**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2110-1AE15-1AP0**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2110-1BE15-1AP0**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2110-1CE15-1AP0**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2110-1DE15-1AP0**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2110-1EE15-1AP0**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	29 21-2AA00	C	**3RA2120-1FE24-0AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20			C	**3RA2120-1GE24-0AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2120-1HE24-0AP0**		1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2120-1JE24-0AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2120-1KE24-0AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00		A	**3RA2120-4AE26-0AP0**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2120-4BE27-0AP0**		1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2AP00		A	**3RA2120-4CE27-0AP0**		1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2120-4DE27-0AP0**		1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2120-4EE27-0AP0**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1				
	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP01	29 11-2AA00	A	**3RA2110-1FE15-1AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20			A	**3RA2110-1GE15-1AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2110-1HE15-1AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP01		A	**3RA2110-1JE16-1AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP01		A	**3RA2110-1KE17-1AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP01		A	**3RA2110-4AE18-1AP0**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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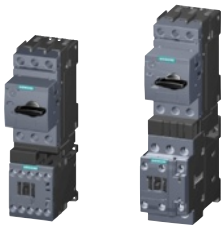
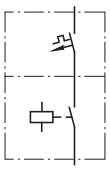
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing



3RA2110 3RA2120

Direct-on-line start



Rated control supply voltage 24 V DC
With screw terminals

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches: Contactor size S00: 1 NO, contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Screw terminals / Configurator / Article No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB41	19 21-1DA00	A	**3RA2110-0BA15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10			A	**3RA2110-0CA15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2110-0DA15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2110-0EA15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2110-0FA15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2110-0GA15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2110-0HA15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2110-0JA15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2110-0KA15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2110-1AA15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2110-1BA15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2110-1CA15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2110-1DA15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2110-1EA15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA2120-1FA24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA2120-1GA24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2120-1HA24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2120-1JA24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2120-1KA24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA2120-4AA26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2120-4BA27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA2120-4CA27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2120-4DA27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2120-4EA27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB41	19 21-1DA00	A	**3RA2110-1FA15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA2110-1GA15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2110-1HA15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB41		A	**3RA2110-1JA16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB41		A	**3RA2110-1KA17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB41		A	**3RA2110-4AA18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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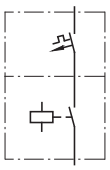
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage 24 V DC
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protector	+ Contactor	+ Link module		Spring-type terminals			
								Configurator			
	kW	A	A					Article No.	Basic price per PU		
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB41	29 11-2AA00	A	**3RA2110-0BE15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20			A	**3RA2110-0CE15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2110-0DE15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2110-0EE15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2110-0FE15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2110-0GE15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2110-0HE15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2110-0JE15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2110-0KE15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2110-1AE15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2110-1BE15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2110-1CE15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2110-1DE15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2110-1EE15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	29 21-2AA00	C	**3RA2120-1FE24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20			C	**3RA2120-1GE24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2120-1HE24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2120-1JE24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2120-1KE24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40		A	**3RA2120-4AE26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2120-4BE27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA2120-4CE27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2120-4DE27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2120-4EE27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB41	29 11-2AA00	A	**3RA2110-1FE15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20			A	**3RA2110-1GE15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2110-1HE15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB41		A	**3RA2110-1JE16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB41		A	**3RA2110-1KE17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB40		A	**3RA2110-4AE18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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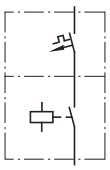
3RA21 direct-on-line starters for 60 mm busbars

3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With screw terminals

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Screw terminals				
								Configurator				
								Article No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2				
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP01	19 21-1DA00	A	**3RA2110-0BD15-1AP0**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 8US12 51-	A	**3RA2110-0CD15-1AP0**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10		5DS10	A	**3RA2110-0DD15-1AP0**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2110-0ED15-1AP0**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2110-0FD15-1AP0**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2110-0GD15-1AP0**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2110-0HD15-1AP0**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2110-0JD15-1AP0**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2110-0KD15-1AP0**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2110-1AD15-1AP0**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2110-1BD15-1AP0**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2110-1CD15-1AP0**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2110-1DD15-1AP0**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2110-1ED15-1AP0**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA2120-1FD24-0AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA2120-1GD24-0AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DT10	A	**3RA2120-1HD24-0AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2120-1JD24-0AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2120-1KD24-0AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00	29 21-1AA00	A	**3RA2120-4AD26-0AP0**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10		+ 8US12 51-	B	**3RA2120-4BD27-0AP0**		1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00	5NT10	A	**3RA2120-4CD27-0AP0**		1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2120-4DD27-0AP0**		1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2120-4ED27-0AP0**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1				
	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP01	19 21-1DA00	A	**3RA2110-1FD15-1AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA2110-1GD15-1AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DS10	A	**3RA2110-1HD15-1AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP01		A	**3RA2110-1JD16-1AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP01		A	**3RA2110-1KD17-1AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP01		A	**3RA2110-4AD18-1AP0**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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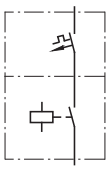
3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With spring-type connection

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Spring-type terminals / Configurator / Article No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP01	29 11-2AA00	A	**3RA2110-0BH15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 8US12 51-	A	**3RA2110-0CH15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20		5DT11	A	**3RA2110-0DH15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2110-0EH15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2110-0FH15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2110-0GH15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2110-0HH15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2110-0JH15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2110-0KH15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2110-1AH15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2110-1BH15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2110-1CH15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2110-1DH15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2110-1EH15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	29 21-2AA00	C	**3RA2120-1FH24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 8US12 51-	C	**3RA2120-1GH24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20		5NT11[3]	C	**3RA2120-1HH24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2120-1JH24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2120-1KH24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00		A	**3RA2120-4AH26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2120-4BH27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2AP00		A	**3RA2120-4CH27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2120-4DH27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2120-4EH27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP01	29 11-2AA00	A	**3RA2110-1FH15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 8US12 51-	A	**3RA2110-1GH15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20		5DT11	A	**3RA2110-1HH15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP01		A	**3RA2110-1JH16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP01		A	**3RA2110-1KH17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP01		A	**3RA2110-4AH18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) A 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals is included in the scope of supply.

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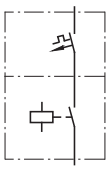
3RA21 direct-on-line starters for 60 mm busbars

3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage 24 V DC
With screw terminals

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Screw terminals			
								Configurator			
								Article No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB41	19 21-1DA00	A	**3RA2110-0BD15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 8US12 51-	A	**3RA2110-0CD15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10		5DS10	A	**3RA2110-0DD15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2110-0ED15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2110-0FD15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2110-0GD15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2110-0HD15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2110-0JD15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2110-0KD15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2110-1AD15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2110-1BD15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2110-1CD15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2110-1DD15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2110-1ED15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA2120-1FD24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA2120-1GD24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DT10	A	**3RA2120-1HD24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2120-1JD24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2120-1KD24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40	29 21-1BA00	A	**3RA2120-4AD26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10		+ 8US12 51-	B	**3RA2120-4BD27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40	5NT10	A	**3RA2120-4CD27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2120-4DD27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2120-4ED27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB41	19 21-1DA00	A	**3RA2110-1FD15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA2110-1GD15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DS10	A	**3RA2110-1HD15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB41		A	**3RA2110-1JD16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB41		A	**3RA2110-1KD17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB41		A	**3RA2110-4AD18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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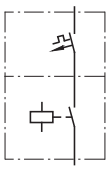
3RA2110

3RA2120

Direct-on-line start



Rated control supply voltage 24 V DC
With spring-type connection

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  Contactor size S0: 1 NO + 1 NC

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Spring-type terminals			
								Configurator			
								Article No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB41	29 11-2AA00	A	**3RA2110-0BH15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 8US12 51-	A	**3RA2110-0CH15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20		5DT11	A	**3RA2110-0DH15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2110-0EH15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2110-0FH15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2110-0GH15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2110-0HH15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2110-0JH15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2110-0KH15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2110-1AH15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2110-1BH15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2110-1CH15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2110-1DH15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2110-1EH15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	29 21-2AA00	C	**3RA2120-1FH24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 8US12 51-	C	**3RA2120-1GH24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20		5NT11	C	**3RA2120-1HH24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2120-1JH24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2120-1KH24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40		A	**3RA2120-4AH26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2120-4BH27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA2120-4CH27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2120-4DH27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2120-4EH27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB41	29 11-2AA00	A	**3RA2110-1FH15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 8US12 51-	A	**3RA2110-1GH15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20		5DT11	A	**3RA2110-1HH15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB41		A	**3RA2110-1JH16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB41		A	**3RA2110-1KH17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB40		A	**3RA2110-4AH18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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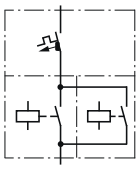
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data

3RA2210 3RA2220

Reversing duty



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With screw terminals

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Screw terminals			
								Configurator			
								Article No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP02	19 21-1DA00	A	**3RA2210-0BA15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-2AA1	A	**3RA2210-0CA15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2210-0DA15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2210-0EA15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2210-0FA15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2210-0GA15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2210-0HA15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2210-0JA15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2210-0KA15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2210-1AA15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2210-1BA15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2210-1CA15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2210-1DA15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2210-1EA15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA2220-1FB24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1BB1	A	**3RA2220-1GB24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2220-1HB24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2220-1JB24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2220-1KB24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA2220-4AB26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2220-4BB27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA2220-4CB27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2220-4DB27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2220-4EB27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP02	19 21-1DA00	A	**3RA2210-1FA15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-2AA1	A	**3RA2210-1GA15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2210-1HA15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP02		A	**3RA2210-1JA16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP02		A	**3RA2210-1KA17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP02		A	**3RA2210-4AA18-2AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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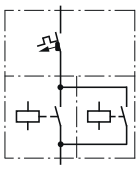
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing

3RA2210

3RA2220

Reversing duty



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Spring-type terminals			
								Configurator			
								Article No.			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				3RV20	3RT20	3RA		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP02	29 11-2AA00	A	**3RA2210-0BE15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-2AA2	A	**3RA2210-0CE15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2210-0DE15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2210-0EE15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2210-0FE15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2210-0GE15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2210-0HE15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2210-0JE15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2210-0KE15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2210-1AE15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2210-1BE15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2210-1CE15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2210-1DE15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2210-1EE15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	29 21-2AA00	C	**3RA2220-1FF24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 29 23-1BB2[5)]	C	**3RA2220-1GF24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2220-1HF24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2220-1JF24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2220-1KF24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00		A	**3RA2220-4AF26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2220-4BF27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20			A	**3RA2220-4CF27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20	27-2AP00		A	**3RA2220-4DF27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2220-4EF27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")								ToC 1			
S00	For load feeders for lower outputs, see this table at type of coordination "2".										
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP02	29 11-2AA00	A	**3RA2210-1FE15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-2AA2	A	**3RA2210-1GE15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2210-1HE15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP02		A	**3RA2210-1JE16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP02		A	**3RA2210-1KE17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP02		A	**3RA2210-4AE18-2AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

5) The RH assembly kit also includes the 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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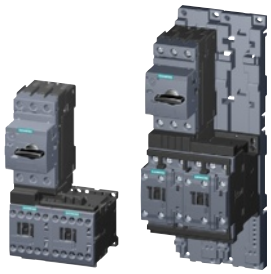
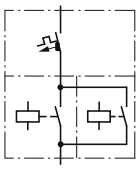
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing



3RA2210 3RA2220

Reversing duty



Rated control supply voltage 24 V DC
With screw terminals

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		**Screw terminals**			
								Configurator			
								Article No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	3RT20	3RA		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB42	19 21-1DA00	A	**3RA2210-0BA15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-2AA1	A	**3RA2210-0CA15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2210-0DA15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2210-0EA15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2210-0FA15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2210-0GA15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2210-0HA15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2210-0JA15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2210-0KA15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2210-1AA15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2210-1BA15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2210-1CA15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2210-1DA15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2210-1EA15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA2220-1FB24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1BB1	A	**3RA2220-1GB24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2220-1HB24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2220-1JB24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2220-1KB24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA2220-4AB26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2220-4BB27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA2220-4CB27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2220-4DB27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2220-4EB27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB42	19 21-1DA00	A	**3RA2210-1FA15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-2AA1	A	**3RA2210-1GA15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2210-1HA15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB42		A	**3RA2210-1JA16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB42		A	**3RA2210-1KA17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB42		A	**3RA2210-4AA18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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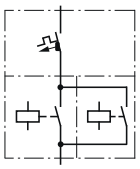
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing

3RA2210 3RA2220

Reversing duty



Rated control supply voltage 24 V DC
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Spring-type terminals / Configurator			
	kW	A	A					Article No. / Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA29**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB42	29 11-2AA00	A	**3RA2210-0BE15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-2AA2	A	**3RA2210-0CE15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2210-0DE15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2210-0EE15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2210-0FE15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2210-0GE15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2210-0HE15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2210-0JE15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2210-0KE15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2210-1AE15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2210-1BE15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2210-1CE15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2210-1DE15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2210-1EE15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	29 21-2AA00	C	**3RA2220-1FF24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 29 23-1BB2	C	**3RA2220-1GF24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2220-1HF24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2220-1JF24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2220-1KF24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40		A	**3RA2220-4AF26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2220-4BF27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA2220-4CF27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2220-4DF27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2220-4EF27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB42	29 11-2AA00	A	**3RA2210-1FE15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-2AA2	A	**3RA2210-1GE15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2210-1HE15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB42		A	**3RA2210-1JE16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB42		A	**3RA2210-1KE17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB42		A	**3RA2210-4AE18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

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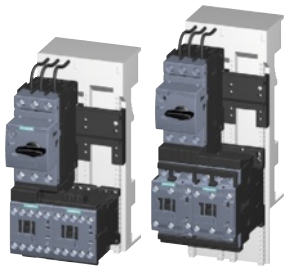
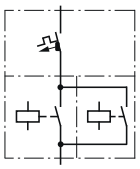
3RA22 reversing starters for 60 mm busbars



3RA2210 3RA2220

Reversing duty



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With screw terminals

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		Screw terminals			
								Configurator			
	kW	A	A					Article No.	Basic price per PU		
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP02	19 21-1DA00	A	**3RA2210-0BD15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-1DB1	A	**3RA2210-0CD15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2210-0DD15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2210-0ED15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2210-0FD15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2210-0GD15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2210-0HD15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2210-0JD15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2210-0KD15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2210-1AD15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2210-1BD15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2210-1CD15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2210-1DD15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2210-1ED15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA2220-1FD24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1DB1	A	**3RA2220-1GD24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2220-1HD24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2220-1JD24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2220-1KD24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA2220-4AD26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2220-4BD27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA2220-4CD27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2220-4DD27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2220-4ED27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP02	19 21-1DA00	A	**3RA2210-1FD15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-1DB1	A	**3RA2210-1GD15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2210-1HD15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP02		A	**3RA2210-1JD16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP02		A	**3RA2210-1KD17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP02		A	**3RA2210-4AD18-2AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) RS = assembly kit for reversing duty and busbar mounting

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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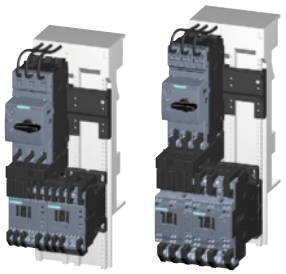
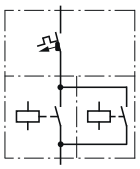


3RA2210 3RA2220

Reversing duty



Rated control supply voltage
50/60 Hz 230 V AC for S00, 50 Hz 230 V AC for S0
With spring-type connection

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		Spring-type terminals				
								Configurator				
								Article No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**						
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP02	29 11-2AA00	A	**3RA2210-0BH15-2AP0**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-1DB2	A	**3RA2210-0CH15-2AP0**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2210-0DH15-2AP0**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2210-0EH15-2AP0**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2210-0FH15-2AP0**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2210-0GH15-2AP0**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2210-0HH15-2AP0**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2210-0JH15-2AP0**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2210-0KH15-2AP0**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2210-1AH15-2AP0**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2210-1BH15-2AP0**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2210-1CH15-2AP0**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2210-1DH15-2AP0**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2210-1EH15-2AP0**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	29 21-2AA00	C	**3RA2220-1FH24-0AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 29 23-1DB2[4]	C	**3RA2220-1GH24-0AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2220-1HH24-0AP0**		1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2220-1JH24-0AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2220-1KH24-0AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00		A	**3RA2220-4AH26-0AP0**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2220-4BH27-0AP0**		1	1 unit	41D
	11	22	17 ... 22	21-4CA20			A	**3RA2220-4CH27-0AP0**		1	1 unit	41D
	11	22	20 ... 25	21-4DA20	27-2AP00		A	**3RA2220-4DH27-0AP0**		1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2220-4EH27-0AP0**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".											
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP02	29 11-2AA00	A	**3RA2210-1FH15-2AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-1DB2	A	**3RA2210-1GH15-2AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2210-1HH15-2AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP02		A	**3RA2210-1JH16-2AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP02		A	**3RA2210-1KH17-2AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP02		A	**3RA2210-4AH18-2AP0**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) RS = assembly kit for reversing duty and busbar mounting

4) The RS assembly kit also includes the 3RA2911-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

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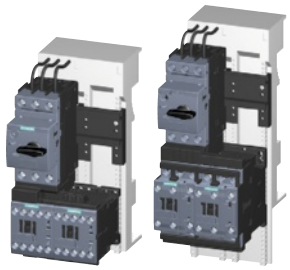
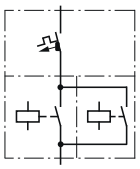
3RA22 reversing starters for 60 mm busbars



3RA2210 3RA2220

Reversing duty



Rated control supply voltage 24 V DC
With screw terminals

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		**Screw terminals**			
								Configurator			
	kW	A	A					Article No. / Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB42	19 21-1DA00	A	**3RA2210-0BD15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-1DB1	A	**3RA2210-0CD15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA2210-0DD15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA2210-0ED15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA2210-0FD15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA2210-0GD15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA2210-0HD15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA2210-0JD15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA2210-0KD15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA2210-1AD15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA2210-1BD15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA2210-1CD15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA2210-1DD15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA2210-1ED15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA2220-1FD24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1DB1	A	**3RA2220-1GD24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2220-1HD24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA2220-1JD24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA2220-1KD24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA2220-4AD26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA2220-4BD27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA2220-4CD27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA2220-4DD27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA2220-4ED27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB42	19 21-1DA00	A	**3RA2210-1FD15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-1DB1	A	**3RA2210-1GD15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA2210-1HD15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB42		A	**3RA2210-1JD16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB42		A	**3RA2210-1KD17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB42		A	**3RA2210-4AD18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) RS = assembly kit for reversing duty and busbar mounting

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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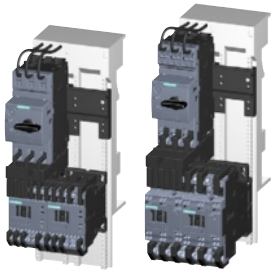
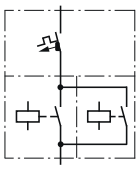


3RA2210 3RA2220

Reversing duty



Rated control supply voltage 24 V DC
With spring-type connection

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		**Spring-type terminals**			
								Configurator			
								Article No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA29**					
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB42	29 11-2AA00	A	**3RA2210-0BH15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-1DB2	A	**3RA2210-0CH15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA2210-0DH15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA2210-0EH15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA2210-0FH15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA2210-0GH15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA2210-0HH15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA2210-0JH15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA2210-0KH15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA2210-1AH15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA2210-1BH15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA2210-1CH15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA2210-1DH15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA2210-1EH15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	29 21-2AA00	C	**3RA2220-1FH24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	21-1GA20		+ 29 23-1DB2	C	**3RA2220-1GH24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	21-1HA20			C	**3RA2220-1HH24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	21-1JA20			C	**3RA2220-1JH24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	21-1KA20			C	**3RA2220-1KH24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40		A	**3RA2220-4AH26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA2220-4BH27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA2220-4CH27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA2220-4DH27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA2220-4EH27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".										
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB42	29 11-2AA00	A	**3RA2210-1FH15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-1DB2	A	**3RA2210-1GH15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA2210-1HH15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB42		A	**3RA2210-1JH16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB42		A	**3RA2210-1KH17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB42		A	**3RA2210-4AH18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) RS = assembly kit for reversing duty and busbar mounting

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Accessories

Overview

The accessories listed here are parts and add-ons for the 3RA2 direct-on-line and reversing starters as well as components for the customer assembly of fuseless load feeders.

Selection and ordering data

Accessories for motor starter protectors

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E

3RV2901-1E

3RV2901-2E

3RV2901-1A

3RV2901-2A

Version	For motor starter protectors	DT	Screw terminals	DT	Spring-type terminals
			Article No. / Price per PU		Article No. / Price per PU
	Size				
Auxiliary switches					
Transverse auxiliary switches for front mounting					
1 CO	S00/S0	▶	**3RV2901-1D**	▶	**--**
1 NO + 1 NC		▶	**3RV2901-1E**	▶	**3RV2901-2E**
Lateral auxiliary switches mountable on the left					
1 NO + 1 NC	S00/S0	▶	**3RV2901-1A**	▶	**3RV2901-2A**

1) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E

3RV2902-1A..

3RV2902-2A..

Rated control supply voltage U_s				For motor starter protectors	DT	Screw terminals	DT	Spring-type terminals
AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]			Article No. / Price per PU		Article No. / Price per PU
V	V	V	V	Size				
Auxiliary releases for motor starter protectors[3]								
Undervoltage releases								
230	240	--	--	S00/S0	▶	**3RV2902-1AP0**	▶	**3RV2902-2AP0**
Shunt releases								
--	--	210 ... 240	190 ... 330	S00/S0	▶	**3RV2902-1DP0**	▶	**3RV2902-2DP0**

1) The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

2) The voltage range is valid for 5 s ON period at AC 50/60 Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

3) One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV21 motor starter protectors with overload relay function).

Complete range of accessories for the motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors/Circuit Breakers" → "SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A" → "Accessories".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories for contactors

	For contactors Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switch blocks for snapping onto the front of contactors								
3RH2911-1BA..				**Screw terminals**				
	Cable entry from below							
	S00/S0	1-pole						
		- 1 NO	▶	**3RH2911-1BA10**		1	1 unit	41B
		- 1 NC	▶	**3RH2911-1BA01**		1	1 unit	41B
3RH2911-1MA..	S00/S0	2-pole						
		- 1 NO + 1 NC	▶	**3RH2911-1MA11**		1	1 unit	41B
		- 2 NO	▶	**3RH2911-1MA20**		1	1 unit	41B
Auxiliary switch blocks for contactors, for lateral mounting								
3RH2911-1DA..				**Screw terminals**				
	S00	2 NC	A	**3RH2911-1DA02**		1	1 unit	41B
	S00	1 NO + 1 NC	A	**3RH2911-1DA11**		1	1 unit	41B
	S00	2 NO	A	**3RH2911-1DA20**		1	1 unit	41B
	S0	2 NC	A	**3RH2921-1DA02**		1	1 unit	41B
	S0	1 NO + 1 NC	A	**3RH2921-1DA11**		1	1 unit	41B
	S0	2 NO	A	**3RH2921-1DA20**		1	1 unit	41B
3RH2911-2DA..				**Spring-type terminals**				
	S00	2 NC	A	**3RH2911-2DA02**		1	1 unit	41B
	S00	1 NO + 1 NC	A	**3RH2911-2DA11**		1	1 unit	41B
	S00	2 NO	A	**3RH2911-2DA20**		1	1 unit	41B
	S0	2 NC	A	**3RH2921-2DA02**		1	1 unit	41B
	S0	1 NO + 1 NC	A	**3RH2921-2DA11**		1	1 unit	41B
	S0	2 NO	A	**3RH2921-2DA20**		1	1 unit	41B
Connection modules for contactors with screw terminals (can be used only for direct-on-line starters)								
3RT1926-4RD01				**Screw terminals**				
	Adapters for contactors Ambient temperature $T_{u\,max}$ = 60 °C							
	S00	Rated operational current I_e at AC-3/400 V: 20 A	B	**3RT1916-4RD01**		1	1 unit	41B
	S0	Rated operational current I_e at AC-3/400 V: 25 A	B	**3RT1926-4RD01**		1	1 unit	41B
3RT1900-4RE01	**Plugs for contactors**							
	S00, S0	--	B	**3RT1900-4RE01**		1	1 unit	41B

Complete range of accessories for the contactors see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" ➞ "Accessories and Spare Parts".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

For contactors	Version	Rated control supply voltage U_s [1]	DT	Article No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V						
Surge suppressors without LED for contactors								
Size S00								
For plugging onto the front side of the contactors with and without auxiliary switch blocks								
3RT2.	**Varistors**	24 ... 48 AC, 24 ... 70 DC	►	**3RT2916-1BB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT2916-1BD00**		1	1 unit	41B
3RT2.	**RC elements**	24 ... 48 AC, 24 ... 70 DC	►	**3RT2916-1CB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT2916-1CD00**		1	1 unit	41B
3RT2.	**Noise suppression diodes**	12 ... 250 DC	►	**3RT2916-1DG00**		1	1 unit	41B
3RT2.	**Diode assemblies** (diode and Zener diode) for DC operation and short break times	12 ... 250 DC	►	**3RT2916-1EH00**		1	1 unit	41B
Size S0								
For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)								
3RT202	**Varistors**	24 ... 48 AC, 24 ... 70 DC	►	**3RT2926-1BB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT2926-1BD00**		1	1 unit	41B
3RT202	**RC elements**	24 ... 48 AC, 24 ... 70 DC	►	**3RT2926-1CB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT2926-1CD00**		1	1 unit	41B
3RT202	**Diode assemblies** for DC operation and short break times	24 DC	►	**3RT2926-1ER00**		1	1 unit	41B
		30 ... 250 DC	►	**3RT2926-1ES00**		1	1 unit	41B

3RT2916-1B.00

3RT2926-1E.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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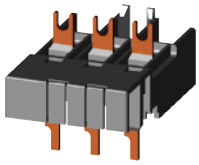
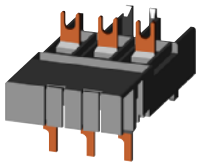
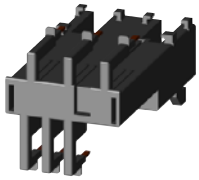
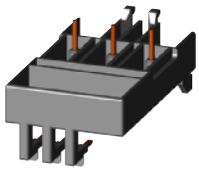
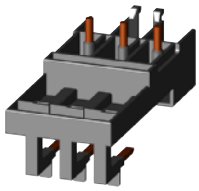
Accessories for the customer assembly of fuseless load feeders

	For motor starter protectors	For contactors	Actuating voltage of contactor	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size							
Link modules from motor starter protector to contactor[2]									
 3RA2921-1AA00	Electrical and mechanical link between motor starter protector and contactor				**Screw terminals**				
	Single-unit packaging								
	S00/S0	S00	AC and DC	▶	**3RA1921-1DA00**		1	1 unit	41B
	S00/S0	S0	AC	A	**3RA2921-1AA00**		1	1 unit	41B
	S00/S0	S0	DC	A	**3RA2921-1BA00**		1	1 unit	41B
 3RA2921-1BA00	**Multi-unit packaging**								
	S00/S0	S00	AC and DC	▶	**3RA1921-1D**		1	10 units	41B
	S00/S0	S0	AC	A	**3RA2921-1A**		1	10 units	41B
	S00/S0	S0	DC	A	**3RA2921-1B**		1	10 units	41B
 3RA2911-2AA00	Electrical and mechanical link between motor starter protector and contactor				**Spring-type terminals**				
	Single-unit packaging								
	S00	S00	AC and DC	▶	**3RA2911-2AA00**		1	1 unit	41B
	S0	S0	AC[1] and DC	▶	**3RA2921-2AA00**		1	1 unit	41B
	Multi-unit packaging								
	S00	S00	AC and DC	▶	**3RA2911-2A**		1	10 units	41B
	S0	S0	AC[1] and DC	▶	**3RA2921-2A**		1	10 units	41B
Hybrid link modules from motor starter protector to contactor[2)3)]									
 3RA2911-2FA00	Electrical and mechanical link between motor starter protector with screw terminals and contactor with spring-type terminals								
	Single-unit packaging								
	S00	S00	AC and DC	▶	**3RA2911-2FA00**		1	1 unit	41B
	S0	S0	AC[1] and DC	▶	**3RA2921-2FA00**		1	1 unit	41B
 3RA2921-2FA00	**Multi-unit packaging**								
	S00	S00	AC and DC	▶	**3RA2911-2F**		1	10 units	41B
	S0	S0	AC[1] and DC	▶	**3RA2921-2F**		1	10 units	41B

Note:

Link modules and hybrid link modules up to max. 32 A can be used.

[1] A spacer for height compensation on AC contactors with spring-type terminals, size S0, is optionally available, see page 8/39.

[2] The link modules from motor starter protector to contactor and the hybrid link modules from motor starter protector to contactor cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

[3] The motor starter protector to contactor hybrid link modules are only suitable for constructing direct-on-line starters.

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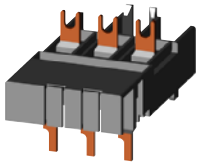
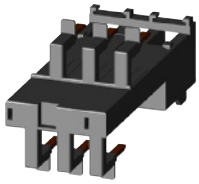
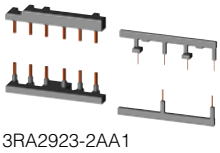
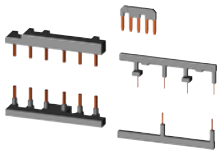
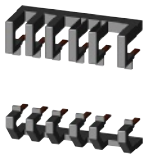
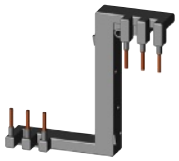
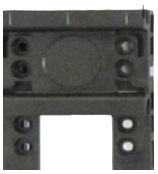
Accessories

	For motor starter protectors Size	For soft starters Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules from motor starter protector to soft starter[1)]								
 3RA2921-1BA00	Electrical and mechanical link between motor starter protector and soft starter			**Screw terminals**				
	Single-unit packaging							
	S00/S0	S00/S0	A	**3RA2921-1BA00**		1	1 unit	41B
	Multi-unit packaging							
	S00/S0	S00/S0	A	**3RA2921-1B**		1	10 units	41B
 3RA2921-2GA00	Electrical and mechanical link between motor starter protector and soft starter			**Spring-type terminals**				
	Single-unit packaging							
	S00	S00	▶	**3RA2911-2GA00**		1	1 unit	41B
	S0	S0	▶	**3RA2921-2GA00**		1	1 unit	41B
	Multi-unit packaging							
	S00	S00	▶	**3RA2911-2G**		1	10 units	41B
	S0		▶	**3RA2921-2G**		1	10 units	41B

Note:

Link modules up to max. 32 A can be used.

[1)] The link modules for motor starter protector to soft starter cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV27 and 3RV28 motor starter protectors/circuit breakers.

	For contactors Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Wiring kits for contactors								
 3RA2923-2AA1				**Screw terminals**				
		Reversing duty						
	S00	Electrical and mechanical link for reversing	▶	**3RA2913-2AA1**		1	1 unit	41B
	S0	contactors, optionally with integrated	▶	**3RA2923-2AA1**		1	1 unit	41B
		electrical and mechanical interlock						
 3RA2923-2BB1		**Wye-delta starting**						
	S00	Electrical and mechanical link for three	▶	**3RA2913-2BB1**		1	1 unit	41B
	S0	contactors of same size	▶	**3RA2923-2BB1**		1	1 unit	41B
 3RA2923-2AA2				**Spring-type terminals**				
		Reversing duty						
	S00	Electrical and mechanical link for reversing	▶	**3RA2913-2AA2**		1	1 unit	41B
	S0	contactors, optionally with integrated	▶	**3RA2923-2AA2**		1	1 unit	41B
		electrical and mechanical interlock						
		Wye-delta starting						
	S00	Electrical and mechanical link for three	▶	**3RA2913-2BB2**		1	1 unit	41B
	S0	contactors of same size	▶	**3RA2923-2BB2**		1	1 unit	41B
Safety main current connectors for 2 contactors								
 3RA2916-1A		Switches 2 contactors in series		**Screw terminals**				
	S00		A	**3RA2916-1A**		1	1 unit	41B
	S0		A	**3RA2926-1A**		1	1 unit	41B
Mounting rails for mounting contactors for the customer assembly of 3RA21 load feeders with busbar adapters for 60 mm systems								
 8US1998-7CB45	For the discrete configuration of direct-on-line starters a further mounting rail is needed for the contactor in addition to the mounting rail existing on the busbar adapter.							
	S0	For pushing onto the busbar adapter, including fixing screws	A	**8US1998-7CB45**		1	10 units	14O

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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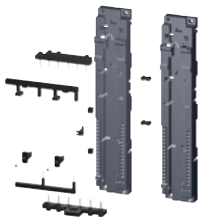
	For motor starter protectors	For contactors	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size							
Standard mounting rail adapters									
3RA2922-1AA00			For mechanical fixing of motor starter protector and contactor; for snapping onto standard mounting rail or for screw fixing						
	S00, S0	S00, S0	**Single-unit packaging**	A	**3RA2922-1AA00**		1	1 unit	41B
	S00, S0	S00, S0	**Multi-unit packaging**	A	**3RA2922-1A**		1	5 units	41B
Side modules for standard mounting rail adapters									
3RA1902-1B	S00/S0	S00/S0	For standard mounting rail adapters 10 mm wide, 96 mm long, for widening standard mounting rail adapters when using lateral auxiliary switches, 2 units required	▶	**3RA1902-1B**		1	10 units	41B
RH assembly kits for reversing duty and standard rail mounting in size S0									
 3RA2923-1BB1	**RH assembly kits for screw terminals**				**Screw terminals**				
	S0	S0	Comprising: • Wiring kit • 2 standard mounting rail adapters • 2 connecting wedges Link modules must be ordered separately.	A	**3RA2923-1BB1**		1	1 unit	41B
	RH assembly kits for spring-type terminals				**Spring-type terminals**				
	S0	S0	Comprising: • Wiring kit • 2 standard mounting rail adapters • 2 connecting wedges • Spacers Link modules must be ordered separately.	A	**3RA2923-1BB2**		1	1 unit	41B
Push-in lugs for screw fixing									
3RV2928-0B	S00, S0	--	For screwing the motor starter protector (of the load feeder) onto mounting plates; 2 units are required for each motor starter protector	A	**3RV2928-0B**		100	10 units	41E

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Accessories

Busbar adapters

8US1251-5DS10

8US1251-5DT11

8US1250-5AS10

8US1250-5AT10

For load feeders	Rated current	Con-necting cable	Adapter length	Adapter width	Rated voltage	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
• For load feeders with screw terminals							**Screw terminals**				
S00/S0	25	12	200	45	690	►	**8US1251-5DS10**		1	1 unit	14O
S00 (motor starter protector)/S0 (contactor)	25	12	260	45	690	►	**8US1251-5DT10**		1	1 unit	14O
S0	32	10	260	45	690	►	**8US1251-5NT10**		1	1 unit	14O
• For load feeders with spring-type terminals							**Spring-type terminals**				
S00	25	12	200	45	690	►	**8US1251-5DS11**		1	1 unit	14O
S00/S0	25	12	260	45	690	►	**8US1251-5DT11**		1	1 unit	14O
S0	32	10	260	45	690	►	**8US1251-5NT11**		1	1 unit	14O
Accessories[1]											
Device holders for lateral attachment to busbar adapters	--	--	200	45	--	►	**8US1250-5AS10**		1	1 unit	14O
	--	--	260	45	--	►	**8US1250-5AT10**		1	1 unit	14O
Side modules for widening busbar adapters	--	--	200	9	--	A	**8US1998-2BJ10**		1	10 units	14O
Spacers For fixing the load feeder onto the busbar adapter	--	--	--	--	--	►	**8US1998-1BA10**		1	10 units	14O
Vibration and shock kits For high vibration and shock loads	--	--	--	--	--	►	**8US1998-1CA10**		1	2 unit	14O

[1] Additional mounting rails for busbar adapter see page 8/36.

For motor starter protectors	For contactors	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Size							
RS assembly kits for reversing duty for 60 mm busbar systems								
RS assembly kits for screw terminals				**Screw terminals**				
S00, S0	S00	Comprising:	A	**3RA2913-1DB1**		1	1 unit	41B
S0	S0	• Wiring kit	A	**3RA2923-1DB1**		1	1 unit	41B
S00	S0	• Busbar adapters • Device holders • 2 connecting wedges	A	**3RA2923-1EB1**		1	1 unit	41B
		Link modules must be ordered separately.						
RS assembly kits for spring-type terminals				**Spring-type terminals**				
S00	S00	Comprising:	A	**3RA2913-1DB2**		1	1 unit	41B
S0	S0	• Wiring kit • Busbar adapters • Device holders • 2 connecting wedges • Spacers	A	**3RA2923-1DB2**		1	1 unit	41B
		Link modules must be ordered separately.						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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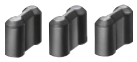
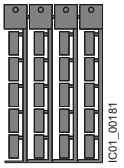
	For motor starter protectors Size	For contactors Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting wedges									
 8US1998-1AA00	For mechanical linking of busbar adapters and device holders or of standard mounting rail adapters (2 units per combination required)			►	**8US1998-1AA00**		100	100 units	14O
Spacers									
3RA2911-1CA00	For height compensation on AC contactors size S0 with spring-type terminals				**Spring-type terminals**				
	S0	S0	**Single-unit packaging**	A	**3RA2911-1CA00**		1	1 unit	41B
	S0	S0	**Multi-unit packaging**	A	**3RA2911-1C**		1	5 units	41B

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals							
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Blank labels							
 3RT2900-1SB20	**Unit labeling plates**[1] for SIRIUS devices 20 mm x 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
Documentation							
	Configuration manuals for new combinations of load feeders[2] Information and assignment tables for combinations for self-assembly						

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de

2) See http://support.automation.siemens.com/WW/view/en/39714188.

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3RV29 infeed system for load feeders

Overview

Types of infeed for 3RA2 fuseless load feeders

On the whole four different power infeed possibilities are available:

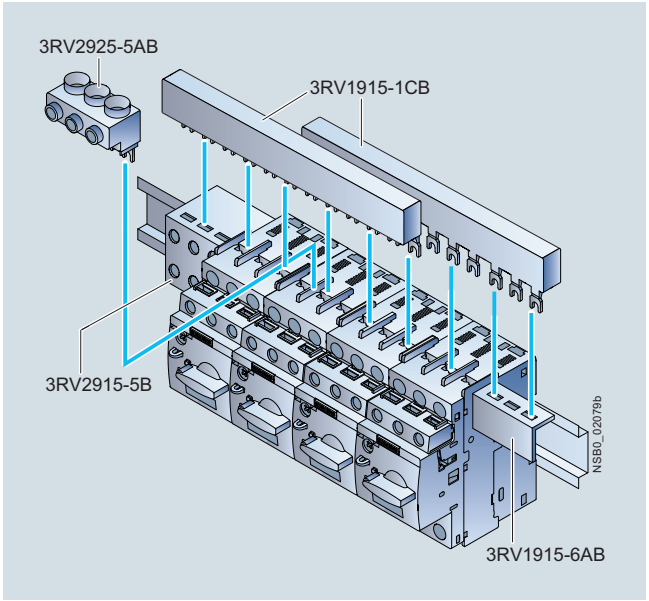
- Parallel wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and contactors possible)
- 8US busbar adapters
- SIRIUS 3RV29 infeed systems

Insulated three-phase busbar systems

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RA2 load feeders with screw terminals. Different versions are available for sizes S00 and S0 and can also be used for the various different types of motor starter protectors.

The busbars are suitable for between 2 and 5 feeders. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A combination of feeders of different sizes is possible with sizes S00 and S0. Connecting pieces are available for this purpose. The motor starter protectors/circuit breakers are supplied by appropriate infeed terminals.



SIRIUS three-phase busbar system size S00/S0

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

The three-phase busbar systems can also be used to construct "Type E Starters" of size S0 or S2 according to UL/CSA. Special infeed terminals must be used for this purpose, see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors/Circuit Breakers" ➞ "SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A" ➞ "Accessories" ➞ "Busbar Accessories".

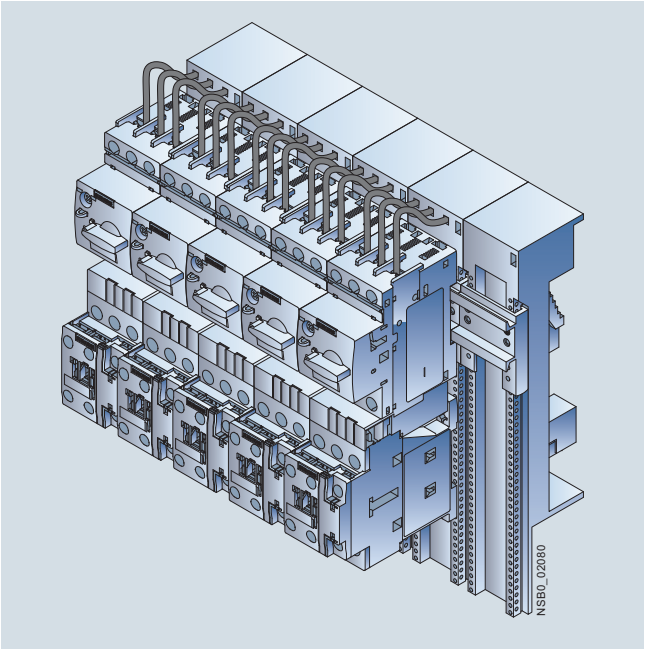
8US busbar adapters for 60 mm systems

The load feeders are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

"Selection and ordering data" see page 8/38.



SIRIUS load feeders with busbar adapters snapped onto busbars

SIRIUS 3RV29 infeed systems

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete load feeders with a screw or spring-type connection up to size S0.

The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed) which has two slots.

Expansion modules are available for extending the system (three-phase busbars for system expansion).

3RV29 infeed system see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors/Circuit Breakers" ➞ "SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 40 A" ➞ "Accessories".

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Overview

3RA1 fuseless load feeders

Note:

The 3RA1 fuseless load feeders, including sizes S00 and S0, can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

The 3RA1 fuseless load feeders consist of the 3RV1 motor starter protector and the 3RT1 contactor. Motor starter protectors and contactors are electrically and mechanically connected using pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

As the 3RA1 fuseless load feeders are constructed from 3RV1 motor starter protectors and 3RT1 contactors, the same accessories can be used for the 3RA1 fuseless load feeders as for these motor starter protectors and contactors.

Pre-assembled link modules are available as accessories for the power spectrum up to 45 kW. The desired fuseless load feeder can thus be assembled quickly and economically by the customer. A time saving is also achieved in connection with switchgear acceptances, as – unlike with conventional wiring systems – there is no need to rectify possible wiring errors.

The 3RV1 motor starter protector is responsible for overload and short-circuit protection in the fuseless load feeder. Back-up protective devices, such as melting fuses or limiters, are superfluous here, as the circuit breaker is capable of withstanding short circuits of up to 50 or 100 kA at 400 V.

The 3RT1 contactor is particularly suitable for extremely complex switching tasks requiring the greatest endurance.

The permissible ambient temperature is 60 °C with butt-mounting and without derating (70 °C possible subject to certain restrictions).

3RA1 fuseless load feeders are available for motors up to 45 kW at AC-3 and 400 V (grounded network) and setting ranges from 0.14 A to 100 A.

Only sizes S2 and S3 of the 3RA1 fuseless load feeders are covered in IC 10. 3RA2 fuseless load feeders are available for sizes S00 and S0 (see page 8/4).

Size	Width of direct-on-line starter	Max. rated current $I_{n\,max}$	For three-phase motors up to
	mm	A	kW
S2	55	50	22
S3	70	100	45

3RA1 load feeder sizes S2 and S3 can be ordered preassembled only as direct-on-line starters in size S2. The direct-on-line starter size S3 and the reversing starter sizes S2 and S3 are available only for self-assembly.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for fuseless load feeders >100 A. The corresponding distances from grounded or live parts, as detailed in the technical specifications, must be observed.

More information and assignment tables for self-assembly combinations for 400 V, 440 V, 480 V, 500 V, 550 V and 690 V see the configuration manual "Configuring SIRIUS – Selection Data for Fuseless Load Feeders", page 8/53 or http://support.automation.siemens.com/WW/view/en/40625241/0.

Operating conditions

3RA1 load feeders are climate-proof. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

Overload tripping times

All 3RA1 fuseless load feeders described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the motor starter protectors.

Types of coordination

EN 60947-4-1 (VDE 0660 Part 102) and IEC 60947-4-1 make a distinction between two different types of coordination (types "1" and "2"). Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

ToC 1 Type of coordination "1"
The load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible.

ToC 2 Type of coordination "2"
There must be no damage to the overload release or to any other components after a short circuit has been cleared. The load feeder can resume operation without needing to be renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Connection methods

3RA1 load feeders are offered with screw terminals.

Screw terminals

The terminals are indicated in the corresponding tables by the symbol shown on an orange background.

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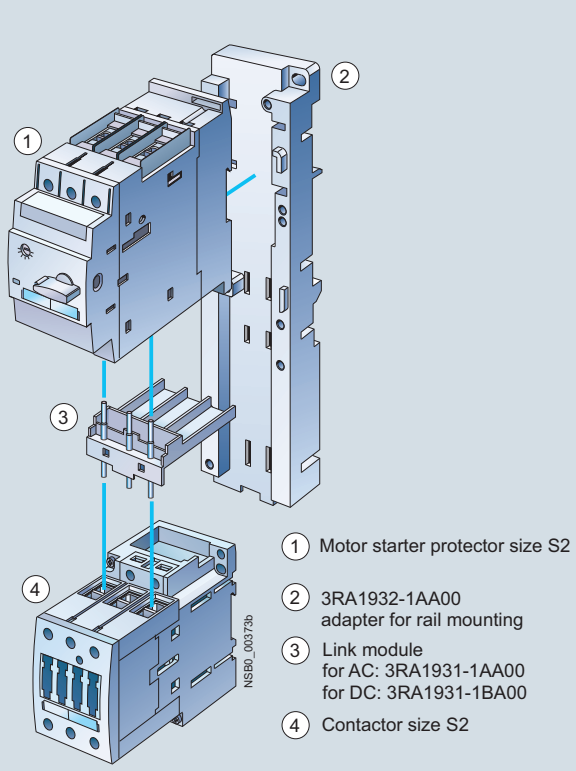
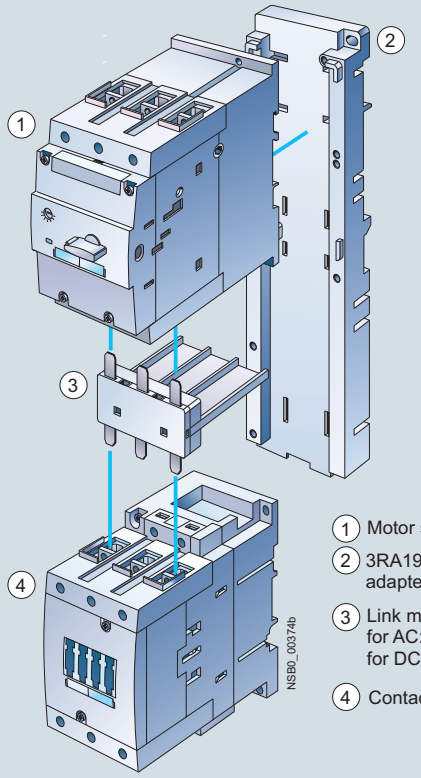
General data

Direct-on-line start • For standard rail mounting • Size S2 and S3

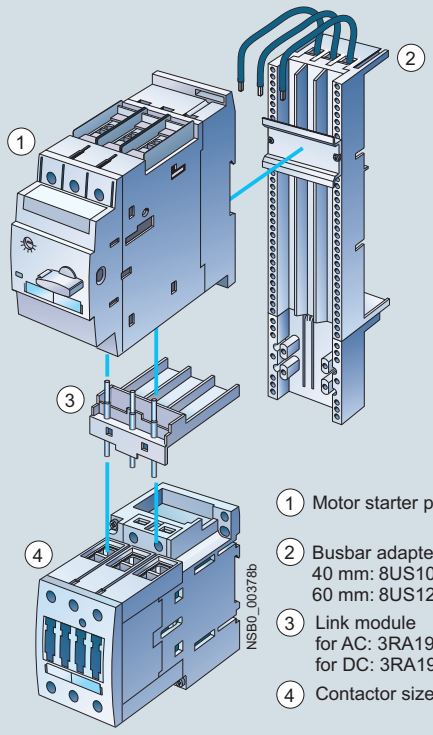


1 Motor starter protector size S2
2 3RA1932-1AA00 adapter for rail mounting
3 Link module for AC: 3RA1931-1AA00 for DC: 3RA1931-1BA00
4 Contactor size S2



1 Motor starter protector size S3
2 3RA1942-1AA00 adapter for rail mounting
3 Link module for AC: 3RA1941-1AA00 for DC: 3RA1941-1BA00
4 Contactor size S3

Direct-on-line starting • For 40 mm and 60 mm busbar systems • Size S2



1 Motor starter protector size S2
2 Busbar adapter 40 mm: 8US1061-5FP08 60 mm: 8US1261-5FP08
3 Link module for AC: 3RA1931-1AA00 for DC: 3RA1931-1BA00
4 Contactor size S2

These graphical overviews are shown without small mounting parts (screws etc.).

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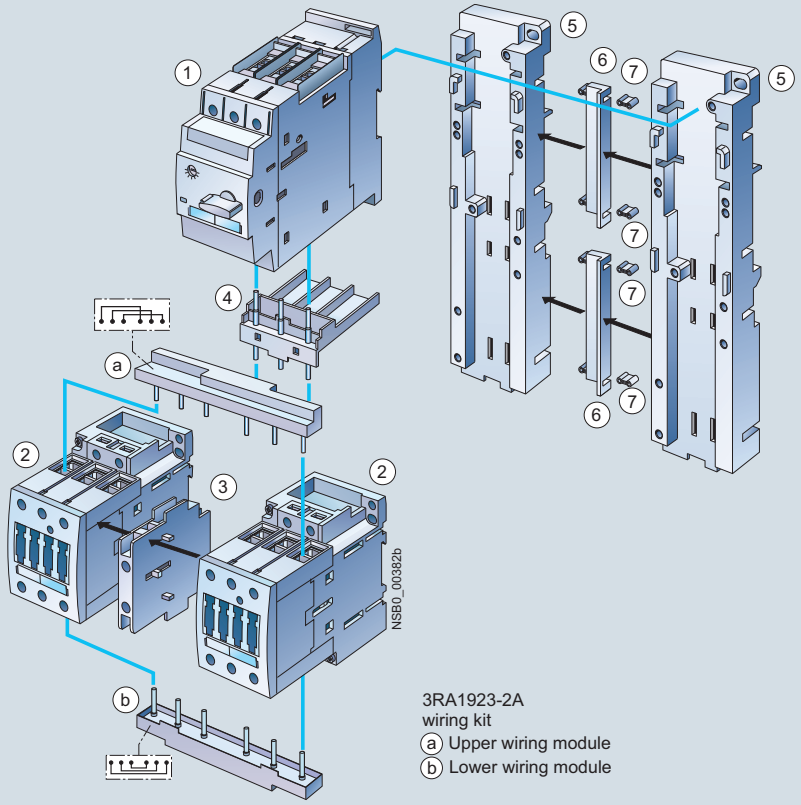
Reversing duty • For standard rail mounting • Size S2

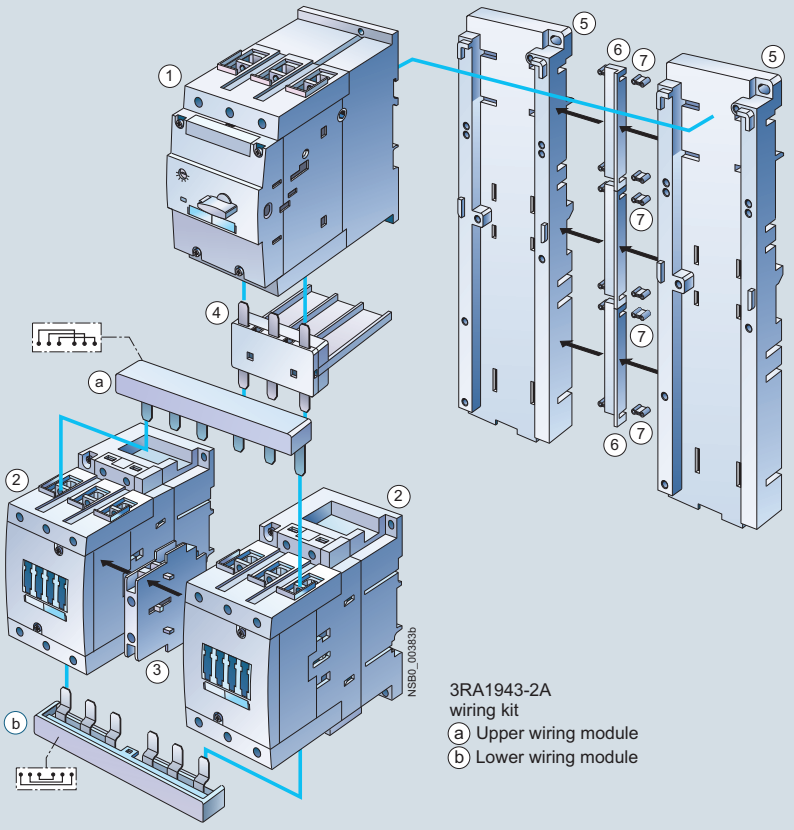


3RA1933-1B
assembly kit (RH)
for reversing duty
for mounting onto
standard rails
comprising:
1 wiring kit
2 adapters for rail mounting
2 side modules
2 link wedges

3RA1923-2A
wiring kit
(a) Upper wiring module
(b) Lower wiring module

(1) Motor starter protector size S2
(2) 2 contactors size S2
(3) 3RA1924-2B
mechanical interlock
(4) Link module
for AC: 3RA1931-1AA00
for DC: 3RA1931-1BA00
(5) 3RA1932-1AA00
adapters for rail mounting
(6) 3RA1902-1B side modules
for adapter for rail mounting
(7) 8US1998-1AA00
link wedges

Reversing duty • for standard rail mounting • size S3



3RA1943-1B
assembly kit (RH)
for reversing duty
for mounting onto
standard rails
comprising:
1 wiring kit
2 adapters for rail mounting
2 side modules
2 link wedges

3RA1943-2A
wiring kit
(a) Upper wiring module
(b) Lower wiring module

(1) Motor starter protector size S3
(2) 2 contactors size S3
(3) 3RA1924-2B
mechanical interlock
(4) Link module
for AC: 3RA1941-1AA00
for DC: 3RA1941-1BA00
(5) 3RA1942-1AA00
adapters for rail mounting
(6) 3RA1902-1B side modules
for adapter for rail mounting
(7) 8US1998-1AA00
link wedges

This graphical overview is shown without small mounting parts (screws etc.).

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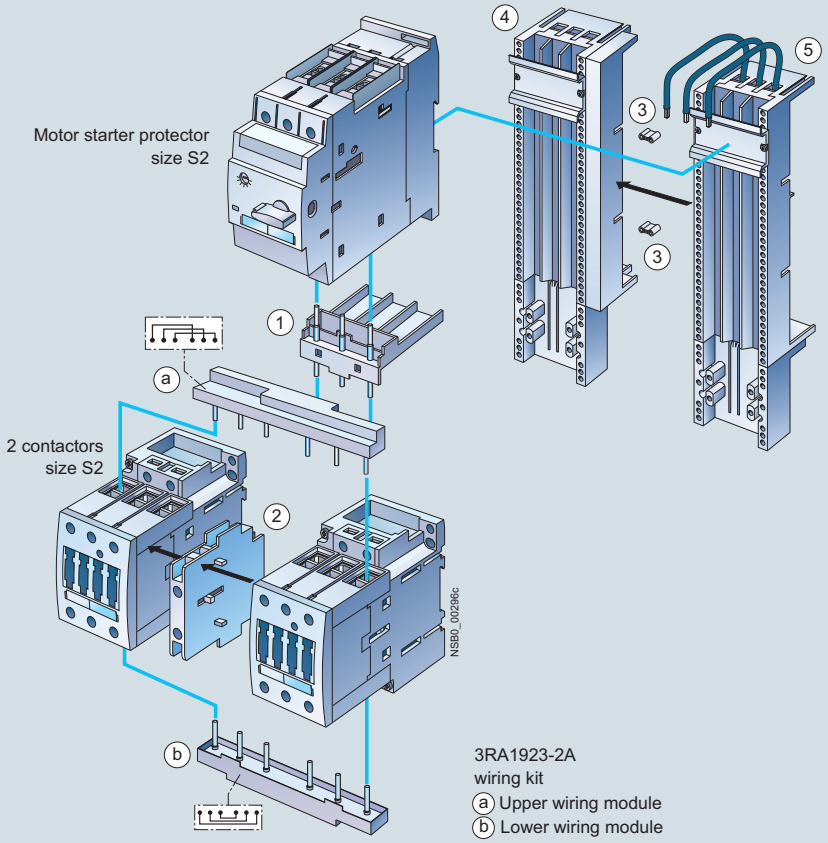
General data

Reversing duty • for 60 mm busbar systems • size S2

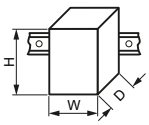


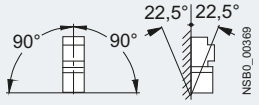
Assembly kit (RS)
for reversing duty
for busbar mounting
60 mm: 3RA1933-1D
consisting of:
1 wiring kit
1 busbar adapter
1 switching device holder
1 side module
2 link wedges

1. Link module
   for AC: 3RA1931-1AA00
   for DC: 3RA1931-1BA00
2. 3RA1924-2B
   mechanical interlock
3. 8US1998-1AA00
   link wedges
4. Switching device holder
   60 mm: 8US1260-5AP00
   with 8US1998-2BM00
   side module
   for busbar adapter
5. Busbar adapter
   60 mm: 8US1261-5FP08

These graphical overviews are shown without small mounting parts (screws etc.).

Technical specifications

Direct-on-line starters/ reversing starters	Size	Connection methods	Mounting	Control voltage	Width W	Height H	Depth D
					mm	mm	mm
Mounting dimensions							
3RA11. direct-on-line starters 	S2	Screw terminals	Standard mounting rails	AC/DC	55	295	168
	3RA113.		Busbar adapters	AC/DC	55	276	176
	S3	Screw terminals	Standard mounting rails	AC/DC	70	330	192
3RA12. reversing starters	S2	Screw terminals	Standard mounting rails	AC/DC	120	295	168
			Busbar adapters	AC/DC	120	276	176
	S3	Screw terminals	Standard mounting rail adapters	AC/DC	150	330	192

Type			**3RA1. 3**	**3RA1. 4**
Size			**S2**	**S3**
Number of poles			**3**	**3**
Mechanics and environment				
Permissible ambient temperature				
• During operation		°C	-20 ... +70 (up to +60 °C without restriction)	
• During storage and transport		°C	-55 ... +80	
Weight of the 3RA1130. direct-on-line starters		kg	2.1 at 230 V AC 2.7 at 24 V DC	--
Permissible mounting position			 Important: Acc. to DIN 43602 start command "I" at the right or top	
Shock resistance (sine-wave pulse)	Acc. to IEC 60086 Part 2-27	*g*	up to 8	up to 6
Degree of protection	Acc. to IEC 60947-1		IP20	

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Type			**3RA1. 3**	**3RA1. 4**
Size			**S2**	**S3**
Number of poles			**3**	**3**
Electrical specifications				
Standards			IEC 60947-1, EN 60947-1 (VDE 0660 Part 100) IEC 60947-2, EN 60947-2 (VDE 0660 Part 101) IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)	
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	50	100
Rated operational voltage U_e		V	690	
Rated frequency		Hz	50/60	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Trip class (CLASS)	Acc. to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)		10	
Rated short-circuit current I_q at 50/60 Hz 400 V AC according to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)		kA	50	
Types of coordination according to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)			See "Selection and ordering data"	
Power loss $P_{v\ max}$ of all main current paths Dependent on the rated current I_n (upper setting range)				
	25 ... 32 A	W	19	
	40 A	W	28	
	45 ... 50 A	W	35	
	63 A	W		29
	75 ... 90 A	W		45
	100 A	W		60
Power consumption of the solenoid coils in the case of contactors (for cold coil and U_s, 50 Hz)				
• AC operation	Closing	VA	127	270
	P.f.		0.82	0.68
	Closed	VA	13.5	22
	P.f.		0.34	0.27
• DC operation	Closing = Closed	W	11.5	15
Endurance of the motor starter protector				
• Mechanical endurance	Operating cycles		50 000	
• Electrical endurance	Operating cycles		50 000	
• Max. switching frequency per hour (motor starts)		1/h	15	
Endurance of contactor				
• Mechanical endurance	Operating cycles		10 million	
• Electrical endurance	Operating cycles		See endurance characteristic curves of the contactors → Chapter 3 "Switching Devices – Contactors and Contactor Assemblies"	
Touch protection	Acc. to EN 50274		Finger-safe	
Phase failure sensitivity of the motor starter protector	Acc. to IEC 60947-1, EN 60947-1 (VDE 0660 Part 102)		Yes	
Isolating features of the motor starter protector	Acc. to IEC 60947-2, EN 60947-2 (VDE 0660 Part 101)		Yes	
Main control and EMERGENCY-STOP switch characteristics of the motor starter protector and accessories	Acc. to IEC 60204-1, EN 60204-1 (VDE 0113 Part 1)		Yes, (with overvoltage releases of category 1 under conditions of proper use)	
Protective separation between main and auxiliary circuits	Acc. to EN 60947-1, Appendix N	V	Up to 400	
Positively-driven operation at contactors			Yes, from main contact to auxiliary NC contact	
Conductor cross-sections of main circuit				
Standards			IEC 60947-1, EN 60947-1 (VDE 0660 Part 100) IEC 60947-2, EN 60947-2 (VDE 0660 Part 101) IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)	
Connection type			Box terminals	Box terminals
Terminal screw			Pozidriv size 2	Allen screw
Conductor cross-sections (min. ... max.)				
• Finely stranded with end sleeve				
- 1 conductor		mm^2	0.75 ... 25	2.5 ... 50
- 2 conductors		mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 35)
• Solid				
- 1 conductor		mm^2	0.7 ... 35	2.5 ... 16
- 2 conductors		mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Stranded				
- 1 conductor		mm^2	0.7 ... 35	2.5 ... 70
- 2 conductors		mm^2	2 x (0.75 ... 25)	2 x (2.5 ... 50)
Connection, main contacts, ribbon cable conductors			Yes	Yes
Busbar connections				Yes
• Solid or stranded		AWG	2 x (30 ... 2)	--
• Stranded		AWG	--	2 x (10 ... 1/0)

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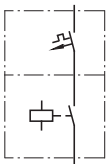
3RA11 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data

3RA1130

Direct-on-line start



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 35 mm standard mounting rail or for screw mounting

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- As from size S2 with standard mounting rail adapter[1] for mechanical reinforcement
- Auxiliary switches[2] on the motor starter protector and the contactor can be easily fitted due to the modular system.

Size	Standard three-phase motor 4-pole at 400 V AC[3]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ Contactor	+ Link module + Standard mounting rail adapter		Screw terminals			
								Configurator			
	kW	A	A					Article No.		Price per PU	
Type of coordination "2" at I_q = 50 kA/100 kA[4] at 400 V (also compatible with type of coordination "1")											
				3RV10	**3RT10**	**3RA19**		ToC 2			
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00	A	**3RA1130-4DB34-0AP0**	1	1 unit	41D
	15	29	22 ... 32	31-4EA10		+	A	**3RA1130-4EB34-0AP0**	1	1 unit	41D
	18.5	35	28 ... 40	31-4FA10	35-1AP00	32-1AA00	A	**3RA1130-4FB35-0AP0**	1	1 unit	41D
	22	41	36 ... 45	31-4GA10	36-1AP00		A	**3RA1130-4GB36-0AP0**	1	1 unit	41D
	22	41	40 ... 50	31-4HA10			A	**3RA1130-4HB36-0AP0**	1	1 unit	41D
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1AP00	+					
	45	80	70 ... 90	41-4LA10	46-1AP00	42-1AA00					
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00	A	**3RA1130-4DB34-0BB4**	1	1 unit	41D
	15	29	22 ... 32	31-4EA10		+	A	**3RA1130-4EB34-0BB4**	1	1 unit	41D
	18.5	35	28 ... 40	31-4FA10	35-1BB40	32-1AA00	A	**3RA1130-4FB35-0BB4**	1	1 unit	41D
	22	41	36 ... 45	31-4GA10	36-1BB40		A	**3RA1130-4GB36-0BB4**	1	1 unit	41D
	22	41	40 ... 50	31-4HA10			A	**3RA1130-4HB36-0BB4**	1	1 unit	41D
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1BB40	+					
	45	80	70 ... 90	41-4LA10	46-1BB40	42-1AA00					
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators

1) Standard mounting rail adapter is also suitable for screw fixing.

2) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) For size S2 100 kA, for size S3 50 kA.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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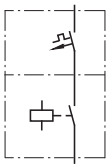
Selection and ordering data

Direct-on-line start



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 40 and 60 mm busbar systems

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ Contactor	+ Link module + Busbar adapter		Screw terminals			
								Configurator			
	kW	A	A					Article No.[3]	Price per PU		
Type of coordination "2" at I_q = 50 kA at 400 V (compatible with type of coordination "1")											
				3RV10	**3RT10**			ToC 2			
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	3RA1931-1AA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1AP00	40 mm					
	22	41	36 ... 45	31-4GA10	36-1AP00	8US1061-5FP08					
	22	41	40 ... 50	31-4HA10		or 60 mm 8US1261-5FP08					
S3	30	55	45 ... 63	41-4JA10	44-1AP00	3RA1941-1AA00		Size S3 is only available for self-assembly. For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1AP00						
	45	80	70 ... 90	41-4LA10	46-1AP00						
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	3RA1931-1BA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1BB40	40 mm					
	22	41	36 ... 45	31-4GA10	36-1BB40	8US1061-5FP08					
	22	41	40 ... 50	31-4HA10		or 60 mm 8US1261-5FP08					
S3	30	55	45 ... 63	41-4JA10	44-1BB40	3RA1941-1BA00		Size S3 is only available for self-assembly. For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1BB40	+					
	45	80	70 ... 90	41-4LA10	46-1BB40	not available					
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators

1) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) For article numbers see single devices:
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors/Circuit Breakers" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

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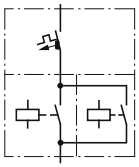
3RA12 reversing starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data

Reversing duty



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 35 mm standard mounting rail or for screw mounting

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- With standard mounting rail adapter[1] for mechanical reinforcement
- Auxiliary switches[2] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Complete unit always with electrical and mechanical interlock

Size	Standard three-phase motor 4-pole at 400 V AC[3]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RH[1][4]		Screw terminals			
								Configurator			
	kW	A	A					Article No.[6]	Price per PU		
Type of coordination "2" at I_q = 50 kA/100 kA[7] at 400 V (also compatible with type of coordination "1")											
				3RV10	**3RT10**	**3RA19**					
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00 + 33-1B[5]		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10							
	18.5	35	28 ... 40	31-4FA10	35-1AP00						
	22	41	36 ... 45	31-4GA10	36-1AP00						
	22	41	40 ... 50	31-4HA10							
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00 + 43-1B[5]		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1AP00						
	45	80	70 ... 90	41-4LA10	46-1AP00						
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00 + 33-1B[5]		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10							
	18.5	35	28 ... 40	31-4FA10	35-1BB40						
	22	41	36 ... 45	31-4GA10	36-1BB40						
	22	41	40 ... 50	31-4HA10							
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00 + 43-1B[5]		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1BB40						
	45	80	70 ... 90	41-4LA10	46-1BB40						
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators

1) Assembly kit for standard mounting rail adapter also suitable for screw fixing.

2) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

3) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) RH = Reversing duty for standard rail mounting.

5) Mechanical locking device must be ordered separately, see "Accessories" for direct-on-line and reversing starters on page 8/51.

6) For article numbers see single devices:
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors/Circuit Breakers" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

7) For size S2 100 kA, for size S3 50 kA.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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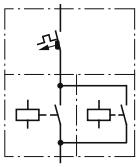
Selection and ordering data

Reversing duty



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 40 and 60 mm busbar systems

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Complete unit always with electrical and mechanical interlock

Size	Standard three-phase motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]		Screw terminals			
								Configurator			
	kW	A	A					Article No.[4]	Price per PU		
Type of coordination "2" at I_q = 50 kA at 400 V (compatible with type of coordination "1")				**3RV10**	**3RT10**	**3RA19**		ToC 2			
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1AP00	40 mm					
	22	41	36 ... 45	31-4GA10	36-1AP00	33-1C[4]					
	22	41	40 ... 50	31-4HA10		or 60 mm					
						33-1D[4]					
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00		For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1AP00	+					
	45	80	70 ... 90	41-4LA10	46-1AP00	not available					
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1BB40	40 mm					
	22	41	36 ... 45	31-4GA10	36-1BB40	33-1C[4]					
	22	41	40 ... 50	31-4HA10		or 60 mm					
						33-1D[4]					
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00		For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1BB40	+					
	45	80	70 ... 90	41-4LA10	46-1BB40	not available					
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators

1) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

2) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

3) RS = Reversing duty for busbar systems.

4) For article numbers see single devices.
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors/Circuit Breakers" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

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Accessories

Selection and ordering data

	For motor starter protectors	For contactors	Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size								
Motor starter protectors[1]										
3RV1901-1E			**Auxiliary switches**							
	S2 ... S3	--	Transverse	1 CO	▶	**3RV1901-1D**		1	1 unit	41E
				1 NO + 1 NC	▶	**3RV1901-1E**		1	1 unit	41E
	S2 ... S3	--	Laterally mountable	1 NO + 1 NC	▶	**3RV1901-1A**		1	1 unit	41E
3RV1901-1A										
3RV1902-1...	S2 ... S3	--	**Undervoltage releases** 50 Hz 230 V AC		▶	**3RV1902-1AP0**		1	1 unit	41E
	S2 ... S3	--	**Shunt releases** 50 Hz 230 V AC		▶	**3RV1902-1DP0**		1	1 unit	41E
Contactors[2]										
			Snap-on auxiliary switch blocks							
			Connection from below							
	--	S2 ... S3	2-pole	1 NO + 1 NC	▶	**3RH1921-1MA11**		1	1 unit	41B
				2 NO	▶	**3RH1921-1MA20**		1	1 unit	41B
				2 NC	▶	**3RH1921-1MA02**		1	1 unit	41B
			Connection from 2 sides							
	--	S2 ... S3	1-pole	1 NO	▶	**3RH1921-1CA10**		1	1 unit	41B
				1 NC	▶	**3RH1921-1CA01**		1	1 unit	41B
	--	S2 ... S3	4-pole	2 NO + 2 NC	▶	**3RH1921-1FA22**		1	1 unit	41B

1) See also Chapter 7 "Protection Equipment" → "Motor Starter Protectors/ Circuit Breakers" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".

2) See also Chapter 3 "Switching Devices – Contactors and Contactor Assemblies".

	For contactors	Version	Rated control supply voltage U_s[1]	DT	Article No.[2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Type								
Surge suppressors without LED									
	Sizes S2 and S3								
		For fitting onto the coil terminals at top or bottom							
	3RT103, 3RT104	**Varistors**	24 ... 48 V AC 24 ... 70 V DC	▶	**3RT1926-1BB00**		1	1 unit	41B
			127 ... 240 V AC 150 ... 250 V DC	▶	**3RT1926-1BD00**		1	1 unit	41B
3RT1936-1C.00	3RT103, 3RT104	**RC elements**	24 ... 48 V AC 24 ... 70 V DC	▶	**3RT1936-1CB00**		1	1 unit	41B
			127 ... 240 V AC 150 ... 250 V DC	▶	**3RT1936-1CD00**		1	1 unit	41B
	3RT103, 3RT104	**Diode assemblies** For DC operation and short break times							
		• Can be plugged in at bottom	24 V DC	▶	**3RT1936-1TR00**		1	1 unit	41B
			30 ... 250 V DC	B	**3RT1936-1TS00**		1	1 unit	41B

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units, "**-Z**" and order code "**X90**" must be added to the Article No.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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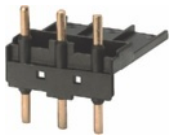
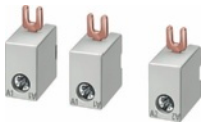
	For motor starter protectors Size	For contactors Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules									
			Electrical and mechanical link between motor starter protector and contactor.						
 3RA1931-1AA00	***Single-unit packaging***								
			Actuating voltage of contactor						
	S2	S2	AC	▶	**3RA1931-1AA00**		1	1 unit	41B
	S3	S3		▶	**3RA1941-1AA00**		1	1 unit	41B
	S2	S2	DC	▶	**3RA1931-1BA00**		1	1 unit	41B
	S3	S3		▶	**3RA1941-1BA00**		1	1 unit	41B
	Multi-unit packaging								
			Actuating voltage of contactor						
	S2	S2	AC	▶	**3RA1931-1A**		1	5 units	41B
	S3	S3		▶	**3RA1941-1A**		1	5 units	41B
	S2	S2	DC	▶	**3RA1931-1B**		1	5 units	41B
	S3	S3		▶	**3RA1941-1B**		1	5 units	41B
Wiring kit									
			Reversing duty						
	--	S2	Electrical and mechanical link for reversing contactors. Can be combined with link module. For sizes S2 and S3: mechanical locking device must be ordered separately.	▶	**3RA1933-2A**		1	1 unit	41B
		S3		▶	**3RA1943-2A**		1	1 unit	41B
			Wye-delta starting						
	--	S2	Electrical and mechanical link for three contactors of same size	▶	**3RA1933-2B**		1	1 unit	41B
		S3		▶	**3RA1943-2B**		1	1 unit	41B
Mechanical interlocks									
3RA1924-2B	--	S2, S3	For reversing contactors, laterally mountable with 1 auxiliary contact (1 NC) each per contactor.	▶	**3RA1924-2B**		1	1 unit	41B
Coil repeat terminals									
 3RA1923-3B	--	S2, S3	For A1 and A2 of the reversing contactors (one set contains 10 x A1 and 5 x A2)	B	**3RA1923-3B**		1	1 unit	41B

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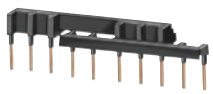
Accessories

For motor starter protectors Size	For contactors Size	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Standard mounting rail adapters								
		Single-unit packaging						
S2	S2	For mechanical fixing of motor starter protector and contactor; for snapping onto standard mounting rail or for screw fixing	►	**3RA1932-1AA00**		1	1 unit	41B
S3	S3		►	**3RA1942-1AA00**		1	1 unit	41B
		Multi-unit packaging						
S2	S2	For mechanical fixing of motor starter protector and contactor; for snapping onto standard mounting rail or for screw fixing	►	**3RA1932-1A**		1	5 units	41B
S3	S3		►	**3RA1942-1A**		1	5 units	41B
Side modules								
S2 ... S3	S2 ... S3	For standard mounting rail adapter 10 mm wide, 96 mm long, for widening standard mounting rail adapters. For size S2: 2 units required. For size S3: 3 units required.	►	**3RA1902-1B**		1	10 units	41B
Assembly kits (RH) for reversing duty for standard mounting rails								
S2	S2	Also suitable for screw fixing. comprising:	A	**3RA1933-1B**		1	1 unit	41B
S3	S3	Wiring kit, standard mounting rail adapters, side modules. Link modules to be ordered separately. Mechanical locking device also to be ordered separately.	A	**3RA1943-1B**		1	1 unit	41B

3RA1932 3RA1922

3RA1902

3RA1933-1B



* You can order this quantity or a multiple thereof.
Illustrations are approximate

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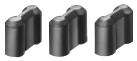
	For motor starter protectors	For contactors	Version	Busbar center-to-center clear-ance	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size		mm						
Busbar adapters										
	S2	S2	55 mm wide, 242 mm long including screw and spacer	40	►	**8US1061-5FP08**		1	1 unit	14O
				60	►	**8US1261-5FP08**		1	1 unit	14O
Device holders										
	S2	S2	55 mm wide, 242 mm long including screw and spacer	60	►	**8US1260-5AP00**		1	1 unit	14O
Assembly kits (RS) for reversing duty for 40 mm and 60 mm busbar systems										
	S2	S2	Consisting of wiring kit, busbar adapter, device holder, and side module. Link modules and mechanical locking devices to be ordered separately.	60	A	**3RA1933-1D**		1	1 unit	41B
Connecting wedges										
 8US1998-1AA00	--	--	For mechanical linking of busbar adapters and device holders or of standard mounting rail adapters (2 units per combination required) (1 pack = 100 units)		►	**8US1998-1AA00**		100	100 units	14O

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Documentation							
	Configuration Manual[1)] "SIRIUS Configuration: Selection Data for Load Feeders in Fuseless Designs" More information and assignment tables for self-assembly combinations for 400 V, 440 V, 480 V, 500 V, 550 V and 690 V						

1) http://support.automation.siemens.com/WW/view/en/40625241/0

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

Insulated three-phase busbar systems

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RA1 load feeders with screw terminals. Different versions are available for size S2 and can also be used for the various different types of motor starter protectors.

The busbars are suitable for between 2 and 5 feeders. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

The three-phase busbar systems can also be used to construct "Type E Starters" size S2 according to UL/CSA. Special infeed terminals must be used for this purpose, see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors/Circuit Breakers" ➞ "SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A" ➞ "Accessories" ➞ "Busbar Accessories".

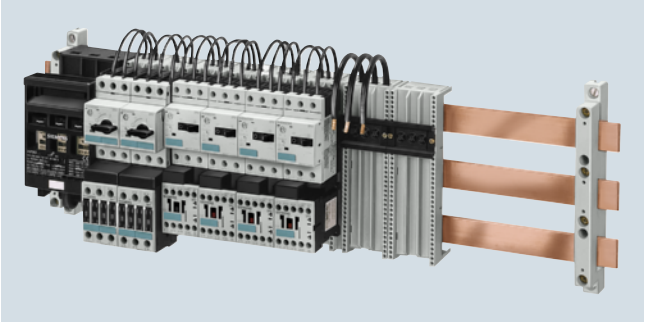
Busbar adapters for 40 mm and 60 mm systems

The load feeders are mounted directly with the aid of busbar adapters on busbar systems with 40 mm and 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

Busbar adapters for busbar systems with 40 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

"Selection and ordering data" see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors/Circuit Breakers" ➞ "SIRIUS 3RV1 Motor Starter Protectors/Circuit Breakers up to 100 A" ➞ "Accessories" ➞ "Busbar Accessories".



SIRIUS motor starter protectors and load feeders with busbar adapters snapped onto busbars

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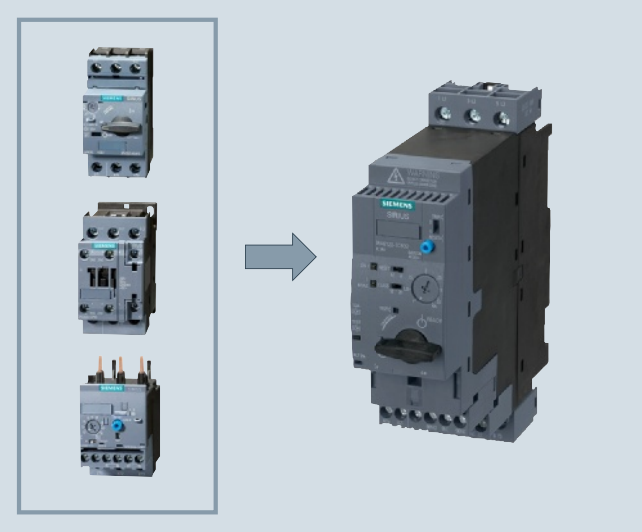
Overview

3RA6 fuseless compact starters and infeed system for 3RA6

3RA62 reversing starter

Integrated functionality

The SIRIUS 3RA6 compact starters are a generation of innovative load feeders with the integrated functionality of a motor starter protector, contactor and solid-state overload relay. In addition, various functions of optional mountable accessories (e.g. auxiliary switches, surge suppressors) are already integrated in the SIRIUS compact starter.



3RA6 compact starters with the integrated functionality of a motor starter protector, contactor and solid-state overload relay.

Applications

The SIRIUS compact starters can be used wherever standard three-phase motors up to 32 A (approx. 15 kW/400 V) are directly started.

The compact starters are not suitable for the protection of DC loads.

Approvals according to IEC, UL, CSA and CCC standards have been issued for the compact starters.

Low variance of devices

Thanks to wide setting ranges for the rated current and wide voltage ranges, the equipment variance is greatly reduced compared to conventional load feeders.

Very high operational reliability

The high short-circuit breaking capacity and defined shut-down when the end of service life is reached means that the SIRIUS compact starter achieves a very high level of operational reliability that would otherwise have only been possible with considerable additional outlay. This sets it apart from devices with similar functionality.

Safe disconnection

The auxiliary switches (NC contacts) of the 3RA6 compact starters are designed as mirror contacts. This enables their use for safe disconnection - e.g. EMERGENCY STOP up to SIL 1 (IEC 62061) or PL c (ISO 13849-1) or, if used in conjunction with an additional infeed contactor, up to SIL 3 (IEC 62061) or PL e (ISO 13849-1).

Communications integration through AS-Interface

To enable communications integration through AS-Interface there is an AS-i add-on module available in several versions for mounting instead of the control circuit terminals on the SIRIUS compact starter.

The design of the AS-i add-on module permits a group of up to 62 feeders with a total of four cables to be connected to the control system. This reduces wiring work considerably compared to the parallel wiring method.

Communications integration using IO-Link

Up to 4 compact starters in IO-Link version (reversing and direct-on-line starters) can be connected together and conveniently linked to the IO-Link master through a standardized IO-Link connection. The SIRIUS 4SI electronic modules are used e.g. as IO-Link masters for connection to the SIMATIC ET 200S distributed I/O system.

The IO-Link connection enables a high density of information in the local range.

Details of the communications integration using IO-Link see Chapter 2 "Industrial Communication" → "IO-Link".

The diagnostics data of the process collected by the 3RA6 compact starter, e.g. short circuit, end of service life, limit position etc., are not only indicated on the compact starter itself but also transmitted to the higher-level control system through IO-Link.

Thanks to the optionally available operator panel, which can be installed in the control cabinet door, it is easy to control the 3RA6 compact starters with IO-Link from the control cabinet door.

Permanent wiring/easy replacement

Using the SIRIUS infeed system for 3RA6 (see page 8/76) it is possible to carry out the wiring in advance without a compact starter needing to be connected.

A compact starter is very easily replaced simply by pulling it out of the device without disconnecting the wiring.

Even with screw connections or mounting on a standard mounting rail there is no need to disconnect any wiring (on account of the removable main and control circuit terminals) in order to replace a compact starter.

Consistent solution from the infeed to the motor feeder

The SIRIUS infeed system for 3RA6 with integrated PE bar is offered as a user-friendly possibility of feeding in summation currents up to 100 A with a maximum conductor cross-section of 70 mm² and connecting the motor cable directly without additional intermediate terminals.

Screw and spring-type terminals

The SIRIUS compact starters and the infeed system for 3RA6 are available with screw and spring-type terminals.

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General data

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

System configurator for engineering

A free system configurator is available to reduce further the amount of engineering work for selecting the required compact starters and matching infeed.

Types of infeed for the 3RA6 fuseless compact starters

On the whole four different infeed possibilities are available:

- Parallel wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and SIRIUS contactors possible)
- 8US busbar adapters
- SIRIUS infeed system for 3RA6 (see page 8/76)

To comply with the clearance and creepage distances demanded according to UL 508 there are the following infeed possibilities:

Type of infeed	Infeed terminal (acc. to UL 508, type E)	Type
Parallel wiring	Terminal block for "Self-Protected Combination Motor Controller (Type E)"	**3RV2928-1H**
Three-phase busbars	Three-phase infeed terminal for constructing "Type E Starters", UL 508	**3RV2925-5EB**
Infeed systems for 3RA6	Infeed on left, 50/70 mm^2, screw terminal with 3 sockets, outgoing terminal with screw/spring-type connections, including PE bar	**3RA6813-8AB** (screw terminals), **3RA6813-8AC** (spring-type terminals)

SIRIUS 3RA6 compact starters

The SIRIUS 3RA6 compact starters are universal motor feeders according to IEC 60947-6-2. As control and protective switching devices (CPS) they can connect, convey and disconnect the thermal, dynamic and electrical loads from short-circuit currents up to I_q = 53 kA, i.e. they are practically weld-free. They combine the functions of a motor starter protector, a contactor and a solid-state overload relay in one enclosure. Direct-on-line starters with 45 mm width and reversing starters with 90 mm width are available as variants.

The reversing starter version comes with not only an internal electrical interlock but also with a mechanical interlock to prevent simultaneous actuation of both directions of rotation.

The compact starters have isolating features in accordance with IEC 60947.2 and can be used as disconnector units (main control switch according to DIN EN 60204 or DIN VDE 0113). Isolation is effected by moving the handle into the "OFF" position; disconnection by means of the control contacts is not enough.

3RA6 fuseless compact starters are supplied for 5 different current setting ranges. The 3RA61 and 3RA62 have 2 control voltage ranges (AC/DC), the 3RA64 and 3RA65 have one control voltage range (DC):

Current setting range	At 400 V AC for three-phase motors Standard output *P*	Rated control supply voltage for 3RA61, 3RA62 compact starters	Rated control supply voltage for 3RA64, 3RA65 compact starters for IO-Link
A	kW	V AC/DC	V DC
0.1 ... 0.4	0.09	24	24
0.32 ... 1.25	0.37	110 ... 240	
1 ... 4	1.5		
3 ... 12	5.5		
8 ... 32	15		

Note:

The 3RA1 load feeders can be used for fuseless load feeders > 32 A up to 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for fuseless load feeders >100 A.

Operating conditions

The SIRIUS 3RA6 compact starters are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

The SIRIUS compact starters are generally designed to degree of protection IP20. The permissible ambient temperature during operation is -20 to +60 °C.

The rated short-circuit current I_{CS} according to IEC 60947-6-2 is 53 kA at 400 V.

Note:

The maximum permissible short-circuit currents of the device versions for the various forms of power supply and voltages are available on request from Technical Assistance:
Tel.: +49 (9 11) 8 95-59 00
E-mail: technical-assistance@siemens.com

Overload tripping times

The tripping time in the event of overload can be set on the device to normal starting conditions (CLASS 10) and to heavy starting conditions (CLASS 20). As the breaker mechanism still remains closed after an overload, resetting is possible by either local manual reset or auto reset after 3 minutes cooling time.

With autoreset there is no need to open the control cabinet.

Diagnostics options

The compact starter provides the following diagnostics options:

- With LEDs
  - Connection to the control voltage
  - Position of the main contacts
- With mechanical display
  - Tripping due to overload
  - Tripping due to short circuit
  - Tripping due to malfunction (end of service life reached because of worn switching contacts or a worn switching mechanism or faults in the control electronics)

These states can also be evaluated in the higher-level control system:

- With parallel wiring using the integrated auxiliary and signaling switches of the compact starter
- With AS-Interface or IO-Link in even greater detail using the respective communication interface

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Four complement versions for 3RA61 and 3RA62 compact starters

- For standard mounting rail or screw fixing:
  basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals
- For standard mounting rail or screw fixing when using the AS-i add-on module:
  without control circuit terminals because the AS-i add-on module is plugged on instead
- For use with the infeed system for 3RA6:
  without main circuit terminals because they are supplied with the infeed system and the expansion modules
- For use with the infeed system for 3RA6 and the AS-i add-on module: without terminal complement (also for reordering when replacing the compact starter)

The control circuit terminals are always required by the compact starters for IO-Link; the main circuit terminals depend on the use of the infeed system.

More components of the 3RA6

Apart from the control supply voltage, "Overload" (1 CO) and "Short circuit / Function fault" (1 NO) signaling contacts are already integrated into the 3RA61/3RA62 – and lockable via two 6-pole removable control circuit terminals. The 3RA61 has two auxiliary contacts (1 NO + 1 NC) for displaying the position of the main contacts. Unlike the 3RA61 direct-on-line starter, the 3RA62 reversing starter has one auxiliary contact (1 NO) per direction of rotation per main contact.

Available for the 3RA61 and 3RA64 direct-on-line starters is a slot for an optional auxiliary switch block (optionally 2 NO, 2 NC or 1 NO + 1 NC) and for the 3RA62 and 3RA65 reversing starters there are two slots (for auxiliary switch blocks see "Accessories" on page 8/69).

Positively-driven operation of the auxiliary contacts

Positively-driven operation between individual auxiliary circuits exists for the compact starter in the version as a direct-on-line starter for parallel wiring (3RA61) between the auxiliary circuits of the NC contacts (NC 21-22) and the NO contacts (NO 13-14) in the basic unit.

In addition, the optional auxiliary switch block offers positively driven contacts in the 3RA6913-1A version, each with one normally closed contact and one normally open contact.

Article No. scheme

Digit of the article No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□□	□	□	□	–	□	□	□	□	□
SIRIUS 3RA6 compact starters	**3 R A 6**									
Version (direct-on-line starter = 1, reversing starter = 2, direct-on-line starter for IO-Link = 4, reversing starter for IO-Link = 5, infeed system = 8, accessories = 9)		□								
Details of accessories			□	□						
Connection method (0 = without terminals, 1 = screw terminals, 2 = spring-type terminals)						□				
Setting range							□			
Rated control supply voltage								□	□	
Terminals complement variant										□
Special versions										
Example	**3 R A 6**	**1**	**2**	**0**	**–**	**0**	**A**	**B**	**3**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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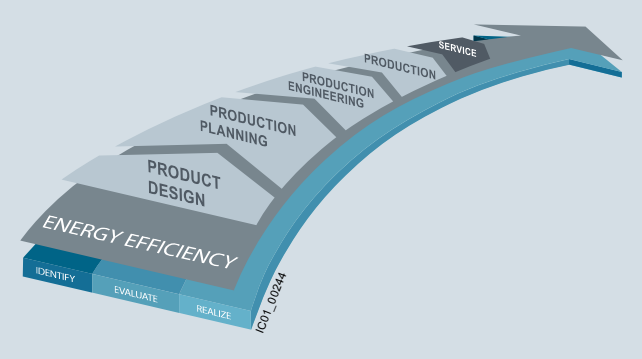
General data

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

With the 3RA6 compact starters, control cabinets heat up less because power losses have been minimized by operation:

- Lower intrinsic power loss (than comparable motor feeders with thermal overload trips) thanks to electronic current analysis
- Lower power losses (than conventional load feeders) because there is only one switching point for short circuit and operational switching
- Lower control circuit power losses (compared with conventional switching devices) as a result of electronic control of switching points
- Thanks to the above advantages, additional energy savings are possible because less cooling is required (and a more compact design is possible)

Product advantages

The SIRIUS 3RA6 compact starters offer a number of benefits:

- Compact design saves space in the control cabinet
- Little planning and assembly work and far less wiring thanks to a single complete unit with one article number
- Little variance through wide voltage range and 5 wide setting ranges for the rated current mean low stock levels
- High plant availability through integrated functionalities such as prevention of main contact welding and disconnection at end of service life
- Greater productivity through automatic device reset in case of overload and differentiated detection of overload and short circuit
- Easy checking of the wiring and testing of the motor direction prior to start-up thanks to optional "control kits"
- Speedy replacement of devices thanks to removable terminals with spring-type and screw connections in the main and control circuit
- Efficient power distribution through the related SIRIUS infeed system for 3RA6
- Direct connection of the motor feeder cable to the SIRIUS infeed system for 3RA6 thanks to integrated PE bar
- Connecting and looping through incoming feeders up to a cross-section of 70 mm^2
- When using the infeed system for 3RA6, possibility of directly connecting the motor cable without intermediate terminals
- Integration in Totally Integrated Automation thanks to the optional connection to AS-Interface or IO-Link

The SIRIUS 3RA6 compact starters create the basis for high-availability and future-proof machine concepts.

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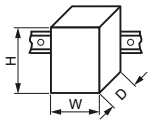
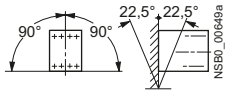
Technical specifications

Type			**3RA61**	**3RA62**	**3RA64**	**3RA65**
Size			**S0**			
Number of poles			**3**			
Mechanics and environment						
Mounting dimensions (W x H x D)						
• Screw terminals		mm	45 x 170 x 165	90 x 170 x 165	45 x 170 x 165	90 x 170 x 165
• Spring-type terminals		mm	45 x 191 x 165	90 x 191 x 165	45 x 191 x 165	90 x 191 x 165
Depth from standard mounting rail		mm	160			
Permissible ambient temperature						
• For operation (permissible operational current see the following section "Electrical Specifications")		°C	-20 ... +60, with restriction up to +70			
• During storage		°C	-55 ... +80			
• During transport		°C	-55 ... +80			
Permissible mounting position						
Shock resistance (sine-wave pulse)			a = 60 m/s² = 6 g with 10 ms; for every 3 shocks in all axes			
Vibratory load			f = 4 ... 5.8 Hz; d =15 mm; f = 5.8 ... 500 Hz; a = 20 m/s²;10 cycles			
Degree of protection	Acc. to IEC 60947-1		IP20			
Installation altitude		m	Up to 2 000 above sea level without restriction			
Relative air humidity		%	10 ... 90			
Pollution degree			3			
Electrical specifications						
Device standard			IEC 60947-6-2			
Maximum rated operational voltage U_e		V V	690 400 at 3RA6250-.E... and 3RA6500-.E... (reversing starter 32 A versions)			
Rated frequency		Hz	50/60			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Rated impulse withstand voltage U_{imp}		kV	6			
Rated current I_e and setting range for overload release	0.1 ... 0.4 A 0.32 ...1.25 A 1 ... 4 A 3 ... 12 A 8 ... 32 A	A A A A A	0.4 1.25 4 12 32			
Permissible operational current of the compact starter when several compact starters are mounted side-by-side on a vertical standard mounting rail or in the infeed system for 3RA6						
• For a control cabinet inside temperature of	+40 °C	%	100			
• For a control cabinet inside temperature of	+60 °C	%	80			
Trip class (CLASS)	Acc. to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)		10/20			
Overload function Ratio of lower to upper current mark			1:4			
Rated service short-circuit breaking capacity I_{CS} at 50/60 Hz 400 V AC		kA	53			
Rated service short-circuit breaking capacity I_{CSIT} at 50/60 Hz 400/690 V AC in IT systems		kA	1.5			
Power loss $P_{v\ max}$ of all main current paths dependent on the rated current I_n (upper setting range)	0.4 A 1.25 A 4 A 12 A 32 A	mW mW W W W	10 100 1 1.8 5.4			
Max. switching frequency	AC-41 AC-43 AC-44	1/h 1/h 1/h	750 250 15			
No-load switching frequency		1/h	3 600		3 600, depending on the IO-Link communication time	
Touch protection	Acc. to DIN VDE 0106, Part 100		Finger-safe			
Isolating features of the compact starter	Acc. to IEC 60947-3		Yes: Isolation is assured only by moving the handle into the "OFF" position.			
Main and EMERGENCY-STOP switch characteristics of the compact starter and accessories	Acc. to IEC 60204		Yes			

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General data

Type Size Number of poles			3RA61 S0 3	3RA62	3RA64	3RA65
Electrical specifications (continued)						
Protective separation	Acc. to IEC 60947-2					
Control circuit to auxiliary circuit						
• Horizontal standard mounting rail		V	Up to 400			
• Other mounting position		V	Up to 250			
Auxiliary circuit to auxiliary circuit						
• Horizontal standard mounting rail		V	Up to 400			
• Other mounting position		V	Up to 250			
Main circuit to auxiliary circuit						
• Any mounting position		V	Up to 400			
EMC interference immunity	Acc. to IEC 60947-1		Corresponds to degree of severity 3			
Conducted interference	BURST acc. to IEC 61000-4-4					
• In the main circuit		kV	4		4	
• In the auxiliary circuit		kV	3		2	
Conducted interference	SURGE acc. to IEC 61000-4-5					
• In the main circuit						
- Conductor - Ground		kV	4		2	
- Conductor - Conductor		kV	2		1	
• In the auxiliary circuit						
- Conductor - Ground		kV	2		0.5[1]	
- Conductor - Conductor		kV	1		0.5[1]	
Auxiliary switches						
• Integrated						
- Position of the main contacts			1 NO + 1 NC	2 NO	1 NO + 1 NC	2 NO
- Overload/short circuit and malfunction signal			1 CO/1 NO			
• Expandable						
- Position of the main contacts			2 NO, 2 NC, 1 NO, 1 NC			
Surge suppressors			Integrated (Varistor)			
Electromagnetic operating mechanisms						
Control voltage		V	24 AC/DC		24 DC	
		V	110 ... 240 AC/DC		--	
Frequency	At AC	Hz	50/60 (±5 %)			
Operating range			0.7 ... 1.25 U_s		0.85 ... 1.2 U_s	
No-load switching frequency		1/h	3 600			
Line protection	At 10 kA	mm²	2.5			
	At 50 kA	mm²	4			
Shock resistance						
• Breaker mechanism OFF		*g*	25			
• Breaker mechanism ON		*g*	15			
Normal switching duty						
Making capacity			12 x I_n			
Breaking capacity			10 x I_n			
Switching capacity dependent on rated current	Up to 12 A	kW	5.5			
	Up to 32 A	kW	15			
Endurance in operating cycles						
• Electrical endurance	At I_e = 0.9 x I_n and 400 V		3 ... 10 000 000	2 x 3 ... 10 000 000	3 000 000	2 x 1 500 000

[1] To maintain maximum interference immunity in a harsh electromagnetic environment, additional overvoltage protection should be provided in the control circuit. A suitable answer is for example the Dehn Blitzductor BVT AD 24 V, Art. No. 918 402 or an equivalent protection element.
Manufacturer:
DEHN+SÖHNE GmbH+Co. KG
Hans-Dehn-Straße 1
Postfach 1640
D-92306 Neumarkt.

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Type		3RA6120-.☐B3., 3RA6250-.☐B3. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA6120-.EB3., 3RA6250-.EB3. Rated operational current 32 A			
Rated control supply voltage	**V**	**24 AC**		**24 DC**		**24 AC**		**24 DC**	
Inrush peak current	A	0.59		0.47		0.59		0.47	
Hold current	A	0.13		0.12		0.17		0.14	
Closed	W	2.8		2.9		3.5		3.1	
Operating times, typical									
• On	ms	<160		<140		<160		<140	
• Off	ms	<35		<35		<30		<30	
Type		3RA6 20-.☐P3., 3RA6250-.☐P3. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA6120-.EP3., 3RA6250-.EP3. Rated operational current 32 A			
Rated control supply voltage	**V**	**110 AC**	**240 AC**	**110 DC**	**240 DC**	**110 AC**	**240 AC**	**110 DC**	**240 DC**
Inrush peak current	A	0.24	0.40	0.17	0.29	0.24	0.40	0.17	0.29
Hold current	A	0.06	0.08	0.03	0.02	0.06	0.07	0.04	0.03
Closed	W	3.8	6	3.1	5.1	3.7	5.2	3.4	5.8
Operating times, typical									
• On	ms	<160	<140	<150	<140	<160	<140	<150	<140
• Off	ms	<50	<80	<50	<70	<40	<60	<40	<60
Type		3RA6400-.☐B4., 3RA6500-.☐B4. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA6400-.EB4., 3RA6500-.EB4. Rated operational current 32 A			
Rated control supply voltage	**V**	**24 DC**				**24 DC**			
Inrush peak current	A	0.39				0.53			
Hold current	A	0.13				0.15			
Closed	W	2.9				3.4			
Operating times, typical[1)]									
• On	ms	<140				<140			
• Off	ms	<35				<30			

1) Plus IO-Link communication

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General data

Type Size Number of poles			3RA61 S0 3	3RA62	3RA64	3RA65
Control circuit						
Rated operational voltage						
• External auxiliary switch block		V	400/690			
• Internal auxiliary switch		V	400/690			
• Short-circuit signaling switch		V	400			
• Overload signaling switch		V	400			
Switching capacity						
• External auxiliary switch block	**AC-15**					
	• Up to U_e = 230 V	A	6			
	• Up to U_e = 400 V	A	3			
	• Up to U_e = 289/500 V	A	2			
	• Up to U_e = 400/690 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	6			
	• Up to U_e = 60 V	A	0.9			
	• Up to U_e = 125 V	A	0.55			
	• Up to U_e = 250 V	A	0.27			
• Internal auxiliary switch	**AC-15**					
	• Up to U_e = 230 V	A	6			
	• Up to U_e = 400 V	A	3			
	• Up to U_e = 289/500 V	A	2			
	• Up to U_e = 400/690 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	10			
	• Up to U_e = 60 V	A	2			
	• Up to U_e = 125 V	A	1			
	• Up to U_e = 250 V	A	0.27			
	• Up to U_e = 480 V	A	0.1			
• Signaling switches	**AC-15**					
	• Up to U_e = 230 V	A	3			
	• Up to U_e = 400 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	2			
	• Up to U_e = 250 V	A	0.11			
External auxiliary switch blocks, internal auxiliary switches						
Endurance in operating cycles						
• Mechanical endurance			10 000 000		3 000 000	
• Electrical endurance	**AC-15, 230 V**					
	• Up to 6 A		200 000			
	• Up to 3 A		500 000			
	• Up to 1 A		2 000 000			
	• Up to 0.3 A		10 000 000			
	DC-13, 24 V					
	• Up to 6 A		30 000			
	• Up to 3 A		100 000			
	• Up to 0.5 A		2 000 000			
	• Up to 0.2 A		10 000 000			
	DC-13, 110 V					
	• Up to 1 A		40 000			
	• Up to 0.55 A		100 000			
	• Up to 0.3 A		300 000			
	• Up to 0.1 A		2 000 000			
	• Up to 0.04 A		10 000 000			
	DC-13, 220 V					
	• Up to 0.3 A		110 000			
	• Up to 0.1 A		650 000			
	• Up to 0.05 A		2 000 000			
	• Up to 0.018 A		10 000 000			
Contact reliability	At 17 V and 5 mA	Operating cycles	1 incorrect switching operation per 100 000 000			
Short-circuit protection						
• Short-circuit current $I_K \leq$ 1.1 kA	Fuse links, operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	10			
• Short-circuit current $I_K <$ 400 A	Miniature circuit breaker up to 230 V with C characteristic	A	10			

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Type			**3RA61**	**3RA62**	**3RA64**	**3RA65**
Size			**S0**			
Number of poles			**3**			
Signaling switches						
Endurance in operating cycles						
• Mechanical endurance			20 000			
• Electrical endurance AC-15	At 230 V and 3 A		6 050			
Contact reliability	At 17 V and 5 mA	Operating cycles	1 incorrect switching operation per 100 000 000			
Short-circuit protection						
• Short-circuit current $I_K \leq 1.1$ kA	Fuse links, operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	6			
• Short-circuit current $I_K < 400$ A	Miniature circuit breaker up to 230 V with C characteristic	A	6			
Overload (short-circuit current $I_K \leq 1.1$ kA)	Fuse links, operational class gG - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	4			

More information

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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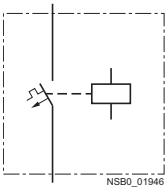
Selection and ordering data

3RA6120-1CB32

3RA6120-2EB32

Direct-on-line start



Width 45 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

A set of 3A6940-0A adapters is required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard three-phase motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for solid-state overload release	Instantaneous overcurrent release	DT[2]	Article No. Configurator	Price per PU	DT[2]	Article No. Configurator	Price per PU
kW	A	A						
For use with the infeed system for 3RA6 and with the AS-i add-on module or as a replacement device, without main and control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6120-0A□30**			**--**	
0.37	0.32 ... 1.25	56	C	**3RA6120-0B□30**			**--**	
1.5	1 ... 4	56	A	**3RA6120-0C□30**			**--**	
5.5	3 ... 12	168	A	**3RA6120-0D□30**			**--**	
15	8 ... 32	448	A	**3RA6120-0E□30**			**--**	
				Screw terminals			**Spring-type terminals**	
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	A	**3RA6120-1A□32**		A	**3RA6120-2A□32**	
0.37	0.32 ... 1.25	56	A	**3RA6120-1B□32**		A	**3RA6120-2B□32**	
1.5	1 ... 4	56	A	**3RA6120-1C□32**		A	**3RA6120-2C□32**	
5.5	3 ... 12	168	A	**3RA6120-1D□32**		A	**3RA6120-2D□32**	
15	8 ... 32	448	A	**3RA6120-1E□32**		A	**3RA6120-2E□32**	
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6120-1A□33**		C	**3RA6120-2A□33**	
0.37	0.32 ... 1.25	56	A	**3RA6120-1B□33**		C	**3RA6120-2B□33**	
1.5	1 ... 4	56	A	**3RA6120-1C□33**		A	**3RA6120-2C□33**	
5.5	3 ... 12	168	A	**3RA6120-1D□33**		A	**3RA6120-2D□33**	
15	8 ... 32	448	A	**3RA6120-1E□33**		A	**3RA6120-2E□33**	
Article No. supplements for rated control supply voltage								
• 24 V AC/DC				**B**			**B**	
• 110 ... 240 V AC/DC				**P**			**P**	
For standard mounting rail or screw fixing when using the AS-i add-on module with 1 pair of main circuit terminals without control circuit terminals Rated control supply voltage 24 V AC/DC								
0.09	0.1 ... 0.4	56	C	**3RA6120-1AB34**		C	**3RA6120-2AB34**	
0.37	0.32 ... 1.25	56	C	**3RA6120-1BB34**		C	**3RA6120-2BB34**	
1.5	1 ... 4	56	C	**3RA6120-1CB34**		C	**3RA6120-2CB34**	
5.5	3 ... 12	168	A	**3RA6120-1DB34**		C	**3RA6120-2DB34**	
15	8 ... 32	448	C	**3RA6120-1EB34**		C	**3RA6120-2EB34**	

For online configurator see www.siemens.com/sirius/configurators

1) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

2) The delivery time classes apply for a rated control supply voltage of 24 V AC/DC. For the other rated control supply voltages, longer delivery times are possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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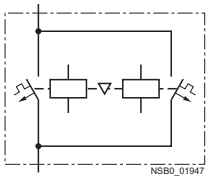
Selection and ordering data

3RA6250-1CP32

3RA6250-2DP32

Reversing duty



Width 90 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

Two sets of 3RA6940-0A adapters are required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard three-phase motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT[2]	Article No.	Price per PU	DT[2]	Article No.	Price per PU
				Configurator			**Configurator**	
kW	A	A						
For use with the infeed system for 3RA6 and with the AS-i add-on module or as a replacement device, without main and control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6250-0A□30**			**--**	
0.37	0.32 ... 1.25	56	C	**3RA6250-0B□30**			**--**	
1.5	1 ... 4	56	C	**3RA6250-0C□30**			**--**	
5.5	3 ... 12	168	C	**3RA6250-0D□30**			**--**	
15	8 ... 32	448	C	**3RA6250-0E□30**			**--**	
				Screw terminals			**Spring-type terminals**	
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6250-1A□32**		C	**3RA6250-2A□32**	
0.37	0.32 ... 1.25	56	A	**3RA6250-1B□32**		A	**3RA6250-2B□32**	
1.5	1 ... 4	56	C	**3RA6250-1C□32**		A	**3RA6250-2C□32**	
5.5	3 ... 12	168	A	**3RA6250-1D□32**		A	**3RA6250-2D□32**	
15	8 ... 32	448	C	**3RA6250-1E□32**		C	**3RA6250-2E□32**	
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6250-1A□33**		C	**3RA6250-2A□33**	
0.37	0.32 ... 1.25	56	C	**3RA6250-1B□33**		C	**3RA6250-2B□33**	
1.5	1 ... 4	56	C	**3RA6250-1C□33**		C	**3RA6250-2C□33**	
5.5	3 ... 12	168	C	**3RA6250-1D□33**		C	**3RA6250-2D□33**	
15	8 ... 32	448	C	**3RA6250-1E□33**		C	**3RA6250-2E□33**	
Article No. supplements for rated control supply voltage								
• 24 V AC/DC				**B**			**B**	
• 110 ... 240 V AC/DC				**P**			**P**	
For standard mounting rail or screw fixing when using the AS-i add-on module with 1 pair of main circuit terminals without control circuit terminals Rated control supply voltage 24 V AC/DC								
0.09	0.1 ... 0.4	56	C	**3RA6250-1AB34**		C	**3RA6250-2AB34**	
0.37	0.32 ... 1.25	56	C	**3RA6250-1BB34**		C	**3RA6250-2BB34**	
1.5	1 ... 4	56	A	**3RA6250-1CB34**		C	**3RA6250-2CB34**	
5.5	3 ... 12	168	C	**3RA6250-1DB34**		C	**3RA6250-2DB34**	
15	8 ... 32	448	C	**3RA6250-1EB34**		C	**3RA6250-2EB34**	

For online configurator see www.siemens.com/sirius/configurators

1) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

2) The delivery time classes apply for a rated control supply voltage of 24 V AC/DC. For the other rated control supply voltages, longer delivery times are possible.

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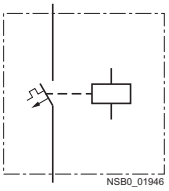
3RA64, 3RA65 compact starters for IO-Link
3RA64 direct-on-line starters

Selection and ordering data

3RA64 with 3RA6911-1A auxiliary switch block

Direct-on-line start



Rated control supply voltage 24 V DC

Width 45 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

A set of 3A6940-0A adapters is required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard three-phase motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT	Article No.	Price per PU	DT	Article No.	Price per PU
				Configurator			**Configurator**	
kW	A	A		**Screw terminals**			**Spring-type terminals**	
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6400-1AB42**		C	**3RA6400-2AB42**	
0.37	0.32 ... 1.25	56	A	**3RA6400-1BB42**		A	**3RA6400-2BB42**	
1.5	1 ... 4	56	A	**3RA6400-1CB42**		A	**3RA6400-2CB42**	
5.5	3 ... 12	168	A	**3RA6400-1DB42**		A	**3RA6400-2DB42**	
15	8 ... 32	448	C	**3RA6400-1EB42**		C	**3RA6400-2EB42**	
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6400-1AB43**		C	**3RA6400-2AB43**	
0.37	0.32 ... 1.25	56	A	**3RA6400-1BB43**		A	**3RA6400-2BB43**	
1.5	1 ... 4	56	A	**3RA6400-1CB43**		A	**3RA6400-2CB43**	
5.5	3 ... 12	168	A	**3RA6400-1DB43**		A	**3RA6400-2DB43**	
15	8 ... 32	448	C	**3RA6400-1EB43**		C	**3RA6400-2EB43**	

For online configurator see www.siemens.com/sirius/configurators

1) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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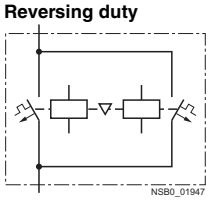
Selection and ordering data

3RA65 with 3RA6911-1A auxiliary switch blocks

Reversing duty



Rated control supply voltage 24 V DC

Width 90 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

Two sets of 3RA6940-0A adapters are required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard three-phase motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT	Article No.	Price per PU	DT	Article No.	Price per PU
				Configurator			**Configurator**	
kW	A	A		**Screw terminals**			**Spring-type terminals**	
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6500-1AB42**		C	**3RA6500-2AB42**	
0.37	0.32 ... 1.25	56	A	**3RA6500-1BB42**		A	**3RA6500-2BB42**	
1.5	1 ... 4	56	A	**3RA6500-1CB42**		A	**3RA6500-2CB42**	
5.5	3 ... 12	168	A	**3RA6500-1DB42**		A	**3RA6500-2DB42**	
15	8 ... 32	448	C	**3RA6500-1EB42**		C	**3RA6500-2EB42**	
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA6500-1AB43**		C	**3RA6500-2AB43**	
0.37	0.32 ... 1.25	56	A	**3RA6500-1BB43**		A	**3RA6500-2BB43**	
1.5	1 ... 4	56	A	**3RA6500-1CB43**		A	**3RA6500-2CB43**	
5.5	3 ... 12	168	A	**3RA6500-1DB43**		A	**3RA6500-2DB43**	
15	8 ... 32	448	C	**3RA6500-1EB43**		C	**3RA6500-2EB43**	

For online configurator see www.siemens.com/sirius/configurators

1) The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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Accessories

Overview

Accessories for SIRIUS 3RA6 compact starters

The following accessories are available specially for the 3RA6 compact starters:

- Infeed system for 3RA6: see page 8/76 onwards.
- AS-i add-on module: see page 8/74 onwards "AS-Interface add-on modules"
- External auxiliary switch blocks: Snap-on auxiliary switch as versions 2 NO, 2 NC and 1 NO 1 NC with screw or spring-type terminals; the contacts of the auxiliary switch block open and close jointly with the main contacts of the compact starter. The NC contacts are designed as mirror contacts.
- Control kit: Aid for manually closing the main contacts in order to check the wiring and motor direction under conditions of short-circuit protection
- Adapter for screw fixing the compact starter, including push-in lugs
- Main circuit terminals: Available with screw and spring-type terminals
- Main circuit terminals mixed connection method: With the main circuit terminals mixed connection method it is also possible in the main circuit to switch from screw terminals on the line side to spring-type terminals on the outgoing side. This enables for example the side-by-side mounting of several compact starters and their cost-efficient connection using three-phase busbars on the infeed side. The motors are then connected directly by the quick and reliably contacting spring-type connection method.

Accessories for UL applications

The terminal block for "Self-Protected Combination Motor Controller", type E is available for complying with the clearance and creepage distances demanded according to UL 508.

Accessories for infeed using three-phase busbar systems

The three-phase busbars can be used as an easy, time-saving and clearly arranged means of feeding SIRIUS 3RA6 compact starters with screw connection. Motor starter protector sizes S00 and S0 can also be integrated.

The busbars are suitable for between 2 and 5 devices. However, any kind of extension up to a maximum summation current of 63 A is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A connecting piece is required for the combination with 3RV1 motor starter protector size S00. Motor starter protectors S00 and S0 of the 3RV2 series can be combined in any way (without a special connecting piece). The motor starter protectors are supplied by appropriate infeed terminals. Special infeed terminals are required for constructing "Type E Starters" according to UL/CSA.

The three-phase busbar systems are finger-safe but empty connection tags must be fitted with covers. They are designed for any short-circuit stress which can occur at the output side of connected SIRIUS 3RA6 compact starters or motor starter protectors.

Busbar adapters for 60 mm systems

The compact starters are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. These feeders are suitable for copper busbars with a width from 12 to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The 8US busbar system can be loaded with a maximum summation current of 630 A.

The "reversing starter" version requires a device holder along side the busbar adapter for lateral mounting.

The compact starters are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For more accessories such as incoming and outgoing terminals, flat copper profiles etc., see Catalog LV 10.

Accessories for operation with closed control cabinet doors

Door-coupling rotary operating mechanisms for standard and emergency-stop applications are available for operating the compact starter with closed control cabinet doors.

Accessories for SIRIUS 3RA6 compact starters in IO-Link version

The following accessories are available specially for the 3RA64, 3RA65 compact starters:

- The 4SI SIRIUS electronic module as IO-Link master allows for the simple and economical connection of SIRIUS controls with IO-Link (e.g. up to four groups of 4 compact starters) to the multifunctional SIMATIC ET 200S distributed I/O system.
- Additional connection cables for side-by-side mounting of up to 4 compact starters
- Operator panel for on-site control and diagnostics of up to 4 compact starters coupled to each other

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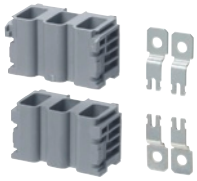
Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories specially for 3RA6 compact starters						
3RA6950-0A **Control kit** For mechanical actuation of the compact starter	A	**3RA6950-0A**		1	1 unit	42F
 3RA6940-0A **Adapters for screw fixing the compact starter** (set including push-in lugs) Direct-on-line starters require one set, reversing starters two sets.	A	**3RA6940-0A**		1	1 unit	42F
		Screw terminals				
Auxiliary switch blocks for compact starters						
3RA6911-1A • 2 NO	A	**3RA6911-1A**		1	1 unit	42F
• 2 NC	A	**3RA6912-1A**		1	1 unit	42F
• 1 NO +1 NC (these auxiliary contacts are positively driven)	A	**3RA6913-1A**		1	1 unit	42F
3RA6920-1A **Main circuit terminals** (incoming and outgoing side)	A	**3RA6920-1A**		1	1 unit	42F
Control circuit terminals						
3RA6920-1B • For 3RA61	A	**3RA6920-1B**		1	1 unit	42F
• For 3RA62	A	**3RA6920-1C**		1	1 unit	42F
		Spring-type terminals				
Auxiliary switch blocks for compact starters						
3RA6911-2A • 2 NO	A	**3RA6911-2A**		1	1 unit	42F
• 2 NC	A	**3RA6912-2A**		1	1 unit	42F
• 1 NO +1 NC (these auxiliary contacts are positively driven)	A	**3RA6913-2A**		1	1 unit	42F
3RA6920-2A **Main circuit terminals** (incoming and outgoing side)	A	**3RA6920-2A**		1	1 unit	42F
Control circuit terminals						
3RA6920-2B • For 3RA61	A	**3RA6920-2B**		1	1 unit	42F
• For 3RA62	A	**3RA6920-2C**		1	1 unit	42F

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories specially for 3RA6 compact starters (continued)						
3RA6920-3A						
Main circuit terminals mixed connection method 1 set comprises: • 1 joint block on the line side with screw terminals • 1 joint block on the outgoing side with spring-type terminals	C	**3RA6920-3A**		1	1 unit	42F

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories especially for 3RA64, 3RA65 compact starters for IO-Link						
3RA6931-0A						
Additional connection cables (flat) for side-by-side mounting of up to 4 compact starters						
• 10-pole						
- 8 mm [1]	A	**3RA6932-0A**		1	5 units	42F
- 200 mm [1]	A	**3RA6933-0B**		1	5 units	42F
• 14-pole						
- 8 mm [2]	A	**3RA6931-0A**		1	5 units	42F
- 200 mm	A	**3RA6933-0C**		1	5 units	42F
3RA6935-0A						
Operator panels (set) • 1 operator panel • 1 enabling module • 1 interface cover • 1 fixing terminal	A	**3RA6935-0A**		1	1 unit	42F
Enabling modules (replacement)	A	**3RA6936-0A**		1	1 unit	42F
Interface covers (replacement)	A	**3RA6936-0B**		1	5 units	42F
Connection cable (round) for connecting the operator panel 10-pole, 2 000 mm	A	**3RA6933-0A**		1	1 unit	42F

[1] 10-pole connection cables are required for EMERGENCY-STOP group concepts.

[2] Is included in the scope of supply of the SIRIUS 3RA6 compact starter in IO-Link version.

Matching IO-Link masters see Chapter 2 "Industrial Communication" → "IO-Link" → "Masters".

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminals for "Self-Protected Combination Motor Controllers (Type E)" acc. to UL 508 for infeed through parallel wiring with compact starters						
3RV2928-1H						
Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". Terminal blocks are not required for use according to CSA. These terminal blocks cannot be used in combination with 3RV19.5 three-phase busbars.						
Terminal blocks type E For extended clearance and creepage distances (1 and 2 inch)	►	**3RV2928-1H**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Number of compact starters and motor starter protectors that can be connected Without lateral accessories	Modular spacing	Rated current I_n at 690 V	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm	A	Size						
Three-phase busbars for infeed with 3RA6									
 3RV1915-1AB	For feeding several compact starters and/or motor starter protectors with screw terminals, mounted side-by-side on standard mounting rails, insulated, with touch protection.								
2	45	63	S00, S0[1]	▶	**3RV1915-1AB**		1	1 unit	41E
 3RV1915-1BB 3	45	63	S00, S0[1]	▶	**3RV1915-1BB**		1	1 unit	41E
 3RV1915-1CB 4	45	63	S00, S0[1]	▶	**3RV1915-1CB**		1	1 unit	41E
 3RV1915-1DB 5	45	63	S00, S0[1]	▶	**3RV1915-1DB**		1	1 unit	41E

[1] Not suitable for 3RV11/3RV21 motor starter protectors for motor protection with overload relay function and for 3RV17/3RV27 and 3RV18/3RV28 circuit breakers according to UL 489 / CSA C22.2 No.5-02.
Joint clamping of 3RV1 motor starter protector sizes S00 and S0 is not possible on account of the different modular spacings and the different height of the terminals. The 3RV1915-5DB connecting piece is available for connecting the compact starters to the 3RV1 motor starter protector size S00.
Motor starter protectors S00/S0 of the 3RV2 series can be jointly clamped; no connecting piece has to be used.

Version	Modular spacing	For motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm	Size						
Covers for connection tags of the three-phase busbars								
 3RV1915-6AB Touch protection for empty positions	--	S00, S0	▶	**3RV1915-6AB**		1	10 units	41E

Conductor cross-section: Solid or stranded	Conductor cross-section: Finely stranded with end sleeve	Conductor cross-section: AWG cables, solid or stranded	Tightening torque	For compact starters and motor starter protectors	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm^2	mm^2	AWG	Nm	Size						
Three-phase infeed terminals for three-phase busbars[1]										
Connection from top										
 3RV1925-5AB 2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	▶	**3RV1925-5AB**		1	1 unit	41E
Connection from below[2]										
 3RV2915-5B 2.5 ... 25	2.5 ... 16	10 ... 4	Input: 4; Output: 2 ... 2.5	S00, S0	▶	**3RV2915-5B**		1	1 unit	41E
Three-phase infeed terminals for constructing "Type E Starters" according to UL 508 for three-phase busbars										
Connection from top										
 3RV2925-5EB 2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S0	A	**3RV2925-5EB**		1	1 unit	41E

[1] The 3RV2925-5AB three-phase infeed terminals cannot be used with the 3RA6.

[2] This terminal is connected in place of a compact starter, please take the space requirement (45 mm) into account.

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Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Busbar adapters for 60 mm systems							
8US1211-1NS10	For flat copper profiles according to DIN 46433 Width: 12 ... 30 mm Thickness: 4 ... 5 mm or 10 mm	►	**8US1211-1NS10**		1	1 unit	14O
Device holders for lateral mounting along side the busbar adapter for 60 mm systems							
8US1250-1AA10	Required in addition to the busbar adapter for mounting a reversing starter	►	**8US1250-1AA10**		1	1 unit	14O

	Version	Color of handle	Version of extension shaft	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
			mm						
Door-coupling rotary operating mechanisms for operating the compact starter with closed control cabinet doors									
3RV2926-0B	The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.								
	Door-coupling rotary operating mechanisms	Black	130	►	**3RV2926-0B**		1	1 unit	41E
	EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	130	►	**3RV2926-0C**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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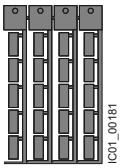
	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals							
			Spring-type terminals				
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Blank labels							
 3RT2900-1SB20	**Unit labeling plates**[1] for SIRIUS devices 20 mm x 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
Documentation							
	System Manual[2] SIRIUS 3RA6 Compact Starter, SIRIUS Infeed System for 3RA6						

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de

2) This manual is available in all language versions at: http://support.automation.siemens.com/WW/view/en/27865747

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Add-on modules for AS-Interface

Overview

Various AS-i add-on modules are available for communication of the 3RA6 compact starter with the control system using AS-Interface:

- Standard version
- With two local inputs
- With two free external inputs
- With one free external input and one free external output
- With two free external outputs
- For local control

The AS-i add-on modules can be combined only in connection with compact starters with a rated control supply voltage of 24 V AC/DC.

AS-i add-on module for local controller

With this new module it is also possible for the connected compact starter to be operated directly using simple switches, i.e. without recourse to AS-i communication, if required.

"Automatic" mode

NC contacts can be connected to the inputs Y2 and Y4 through the local terminals on the AS-i add-on module. If the "+" connections are connected simultaneously to both local inputs, the AS-i add-on module will be in "Automatic" mode, i.e. it will communicate with the control system through AS-Interface.

Local control

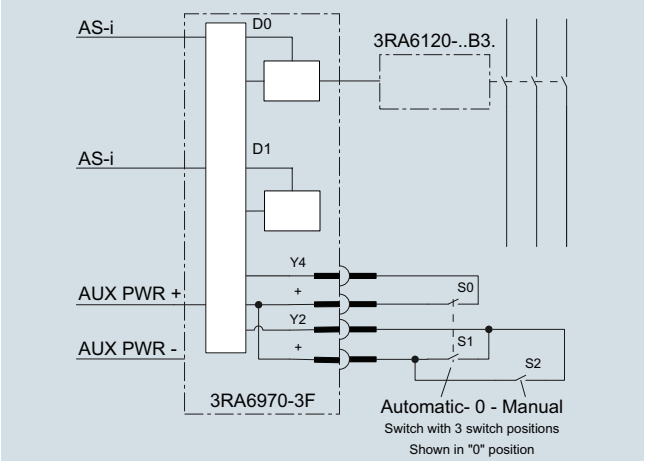
Opening the two inputs Y2 and Y4 will result in the direct disconnection of the compact starter. Operation through AS-i communication is finished and the compact starter can now be switched on and off directly using NO contacts (one NO contact per direction of rotation on the reversing starter).

"LED AUX Power" must light up green, the 24 V DC supply must be ensured and the AS-i control supply voltage must no longer be applied.

Resetting to "Automatic" mode

Simultaneous application of a "1" signal at the local inputs. The availability bit DI 0 is switched to a "1" signal.

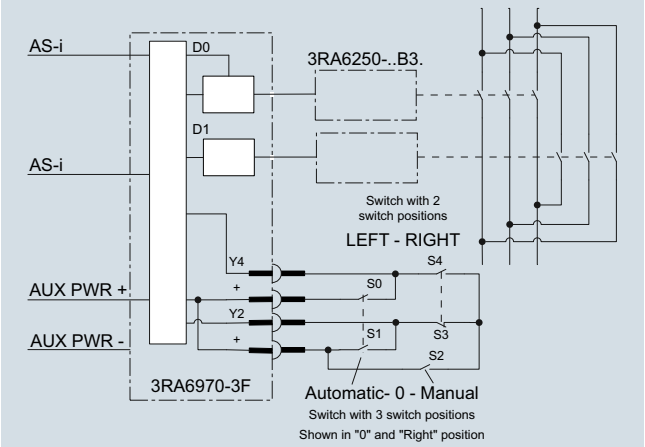
If AS-i communication is reset, the motor is first switched off and then on again when requested by the control system.



Switch with 3 switch positions			
Switch	Automatic	0	Manual
S0	Closed	Open	Open
S1	Closed	Open	Closed
S2	Open	Open	Closed

NSB0_02096a

Circuit diagram example for controlling a 3RA6120 direct-on-line starter using an AS-i add-on module for local control



Switch with 3 switch positions			
Switch	Automatic	0	Manual
S0	Closed	Open	Open
S1	Closed	Open	Open
S2	Open	Open	Closed

Switch with 2 switch positions		
Switch	Left	Right
S3	Open	Closed
S4	Closed	Open

NSB0_02097a

Circuit diagram example for controlling a 3RA6250 reversing starter using an AS-i add-on module for local control

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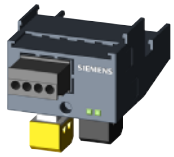
Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-i add-on modules						
3RA6970-3A						
Standard version For communication of the compact starter with the control system using AS-Interface	A	**3RA6970-3A**		1	1 unit	42F
With two local inputs For safe disconnection through local safety relays, e.g. cable-operated switches	A	**3RA6970-3B**		1	1 unit	42F
 3RA6970-3B to -3F						
With two free external inputs Replaces the digital standard inputs "Motor On" and "Group warning"	A	**3RA6970-3C**		1	1 unit	42F
With one free external input and one free external output Replaces the digital standard input "Group warning"	A	**3RA6970-3D**		1	1 unit	42F
With two free external outputs Only for direct-on-line starters, replaces the digital standard output "Motor left"	A	**3RA6970-3E**		1	1 unit	42F
For local control Control of the compact starter optionally using AS-Interface or local switches	A	**3RA6970-3F**		1	1 unit	42F
Spare parts for AS-i add-on modules						
Connectors for data and auxiliary supply cable with 2 insulation displacement terminations for standard litz wires 2 x 0.5 ... 0.75 mm^2						
• Flat, yellow, extender	C	**3RK1901-0NA00**		1	5 units	42C
• Flat, black, extender	C	**3RK1901-0PA00**		1	5 units	42C
Accessories for AS-i add-on modules						
3RK1904-2AB02						
AS-Interface addressing unit V 3.0 • For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5m	►	**3RK1904-2AB02**		1	1 unit	42C

Matching AS-Interface masters, routers and power supply units
see Chapter 2 "Industrial Communication" ➞ "AS-Interface".

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Infeed systems for 3RA6

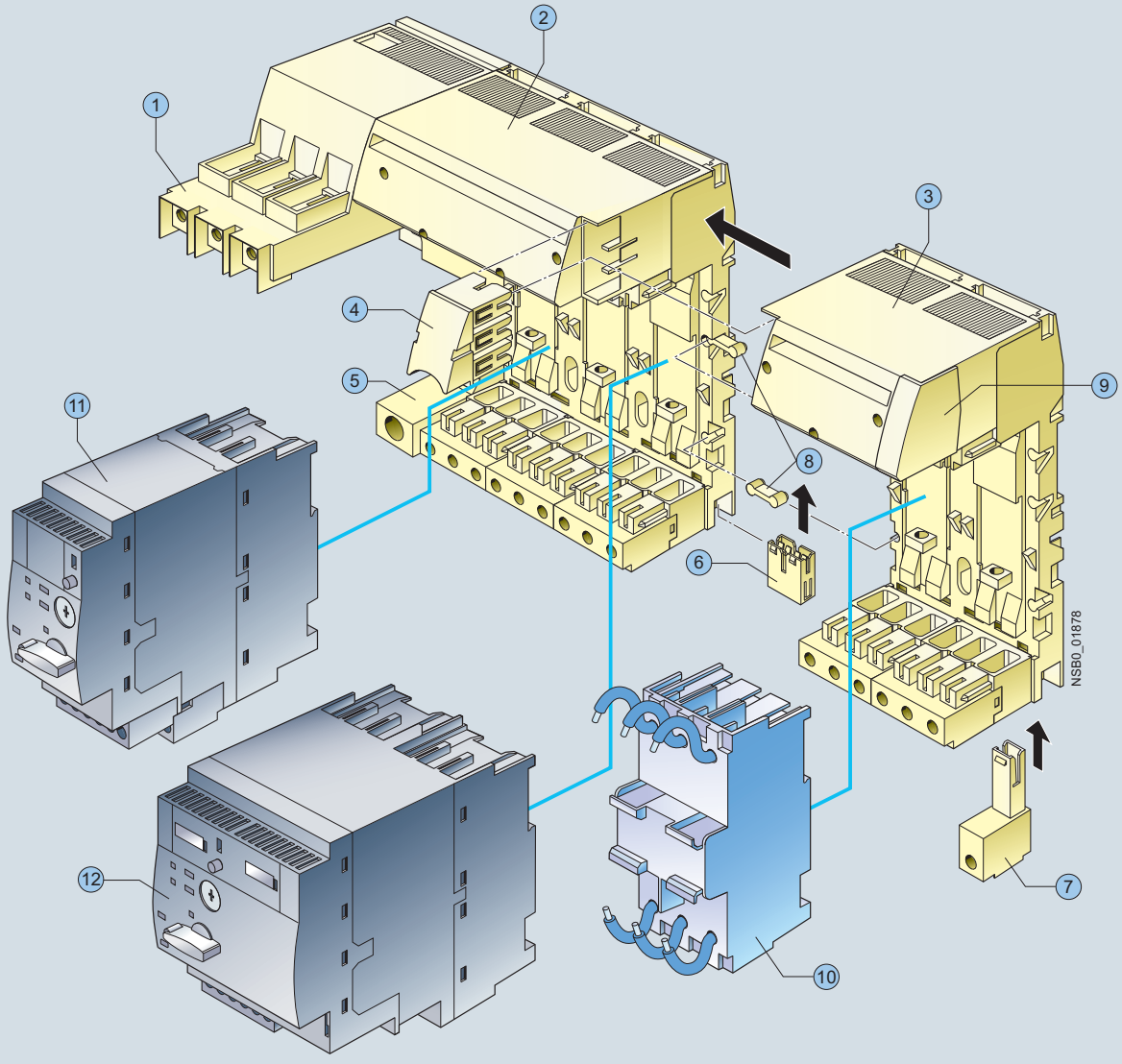
Overview

The infeed system for 3RA6 compact starters enables far less wiring in the main circuit and, thanks to the easy exchangeability of the compact starters, reduces the usual downtimes for maintenance work during the plant's operating phase.

The infeed system provides the possibility of completely prewiring the main circuit without a compact starter needing to be connected at the same time. As the result of the removable terminals in the main circuit, compact starters can be integrated in an infeed system in easy manner (without the use of tools).

In addition, the integrated PE bar means it is optionally possible to connect the motor cable directly to the infeed system without additional intermediate terminals. The infeed system for 3RA6 compact starters is designed for summation currents up to 100 A with a maximum conductor cross-section of up to 70 mm^2 on the infeed terminal block.

The infeed system can be mounted on a standard mounting rail or flat surfaces.



1 Feeder terminal
2 Three-socket expansion module
3 Two-socket expansion module
4 Expansion plug
5 PE infeed
6 PE expansion plug
7 PE pick-off
8 Connecting wedges
9 End cover
10 45 mm adapter for SIRIUS motor starter protector size S0
11 3RA61 direct-on-line starter
12 3RA62 reversing starter

Infeed system for 3RA6 compact starters

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① *Infeed*

The 3-phase infeed is available with screw connection (25/35 mm^2 up to 63 A or 50/70 mm^2 up to 100 A) and spring-type connection (25/35 mm^2 up to 63 A).

The infeed with spring-type terminal can be fitted on the left as well on as the right to an expansion module.

The infeed with screw terminal is supplied only with a 3-socket expansion module and permanently fitted on the left side.

The infeeds with screw connection enable connection of the main conductors (L1, L2, L3) either from above or from below.

The infeed with screw connection is supplied complete with 1 end cover, the infeed with spring-type connection complete with 2 end covers.

② *Three-socket expansion modules*

The expansion module with 3 sockets for compact starters is available with screw connection and with spring-type connection.

Expansion modules enable the infeed system to be expanded and can be fitted to each other in any number.

Two expansion modules are held together with the help of 2 connecting wedges and 1 expansion plug. These assembly parts are included in the scope of supply of the respective expansion module.

When the infeed system for 3RA6 is used, the compact starters (plug-in modules) are easily assembled and disassembled even when live.

Optional possibilities:
- PE connection on motor outgoing side
- Outfeed for external auxiliary devices
- Connection to 3RV29 infeed system
- Integration of SIRIUS 3RV1 motor starter protectors size S0 (using 3RA6890-0BA adapter)

③ *Two-socket expansion modules*

If only 2 instead of 3 additional sockets are required, then the 2-socket expansion module is the right choice. It has the same functionality as the 3-socket expansion module.

④ *Expansion plug*

Two expansion modules can be connected together using the expansion plug. Flexible expansion of the infeed system is thus possible.

⑤ *PE infeeds*

This module enables a PE cable to be connected.

The PE infeed can be ordered with screw connection and spring-type connection (35 mm^2) and can be fitted on the right or left to the expansion block.

⑥ *PE expansion plug*

The PE expansion plug is inserted from below and enables two PE bars to be connected.

⑦ *PE pick-off*

The PE pick-off is available with screw connection and spring-type connection (6/10 mm^2). It is snapped into the infeed system from below.

⑧ *Connecting wedges*

Two connecting wedges are used to hold together 2 expansion modules.

⑨ *End covers*

On the last expansion module of a row, the socket provided for the expansion plug can be covered by inserting the end cover.

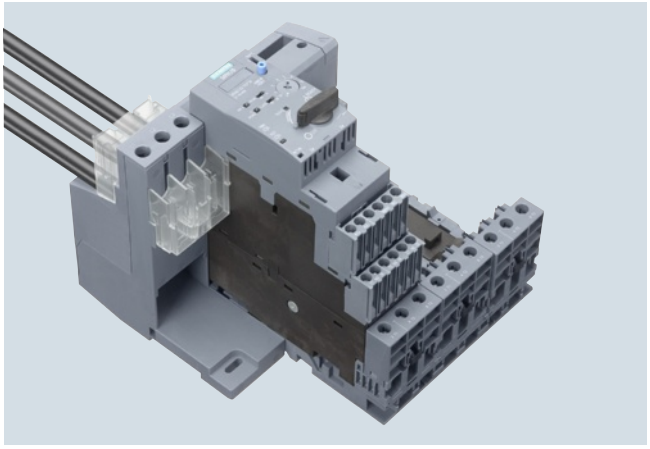
⑩ *45 mm adapters for SIRIUS 3RV1 motor starter protectors*

SIRIUS 3RV1 motor starter protectors size S0 with screw connection can be fitted to the adapter, enabling them to be plugged into the infeed system.

IP20 terminal covers for increasing finger-safety

Universally configured terminal covers are available for the 3-phase infeeds with screw connection 25/35 mm^2 and 50/70 mm^2:
- 3RA6880-2AB terminal covers for infeeds with screw connection 25/35 mm^2 (3RA6812-8AB/AC)
- 3RA6880-3AB terminal covers for infeeds with screw connection 50/70 mm^2 (3RA6813-8AB/AC)

The terminal covers can be used in two ways on the infeed terminals of the infeeds with screw connection 25/35 mm^2 and 50/70 mm^2 (see illustration):
- If the terminals are connected, the cables are also covered:
  - by approx. 14 mm with the 3RA6880-2AB
  - by approx. 18 mm with the 3RA6880-3AB
- On clamping points without connected cables, the covers can be turned once and then pushed over the clamping points for finger-safe covering of the metal parts.



Use of the 3RA6880-2AB terminal cover on the infeed with screw connection 25/35 mm^2 (3RA6812-8AB/AC). The upper cover increases the finger-safety for the connected conductors. The identical lower cover is turned for use and prevents touching of the voltage-carrying metal parts of the infeed terminal. For better recognition, the covers are shown as transparent in this illustration and not in their original color.

Terminal blocks

Using the terminal block the 3 phases can be fed out of the system; this means that single-phase, two-phase and three-phase components can also be integrated in the system.

After the end cover is pulled out, the terminal block can be plugged onto an expansion module.

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Infeed systems for 3RA6

Expansion plugs for SIRIUS 3RV29 infeed systems

After the end cover is pulled out, the expansion plug for the SIRIUS 3RV29 infeed system can be plugged onto an expansion module. It connects the infeed system for 3RA6 compact starters with the SIRIUS 3RV29 infeed system.

Maximum rated operational current

The following maximum rated operational currents apply for the components of the infeed system for 3RA6:

Component	Maximum rated operational current A
Infeed with screw connection 50/70 mm²	100
Infeed with screw connection 25/35 mm²	63
Infeed with spring-type connection 25/35 mm²	63
Expansion plug	63

With side-by-side mounting of several expansion modules, the maximum rated operational current from the second expansion module to the end of the row is 63 A.

Proposal for upstream short-circuit protection devices

The following short-circuit data apply for the components of the infeed system for 3RA6 compact starters.

Conductor cross-section mm²	Inscriptions	Proposal for upstream short-circuit protection device
Short-circuit protection for infeed block (25/35 mm²) with screw connection		
2.5 ... 35	$I_{d,\,max}$ = 19 kA, I^2t = 440 kA²s	**3RV1041-4JA10**
Short-circuit protection for infeed block (50/70 mm²) with screw connection		
2.5 ... 70	$I_{d,\,max}$ = approx. 22 kA	**3RV1041-4MA10**
Short-circuit protection for infeed block with spring-type connection		
4	$I_{d,\,max}$ = 9.5 kA, I^2t = 85 kA²s	**3RV1021-4DA10**
6	$I_{d,\,max}$ = 12.5 kA, I^2t = 140 kA²s	**3RV1031-4EA10**
10	$I_{d,\,max}$ = 15 kA, I^2t = 180 kA²s	**3RV1031-4HA10**
16/25	$I_{d,\,max}$ = 19 kA, I^2t = 440 kA²s	**3RV1041-4JA10**
Short-circuit protection for terminal block		
1.5	$I_{d,\,max}$ = 7.5 kA	**5SY...** [1]
2.5	$I_{d,\,max}$ = 9.5 kA	
4	$I_{d,\,max}$ = 9.5 kA	
6	$I_{d,\,max}$ = 12.5 kA	

[1] To prevent the possibility of short circuits, the cables on the terminal block must be installed so that they are short-circuit proof according to EN 60439-1 Section 7.5.5.1.2.

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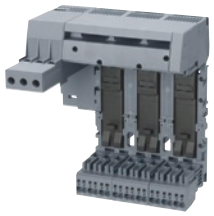
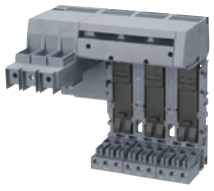
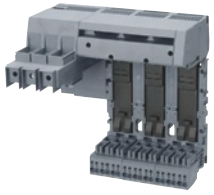
Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Configurator				
Three-phase infeeds and expansion modules						
Infeeds with screw connection 25/35 mm² left						
Infeeds with screw connection at line side with a permanently fitted **3-socket expansion module with screw or spring-type terminals on the outgoing side and integrated PE bar** **Expansion module** with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter		**Screw terminals**				
• Screw terminals on the outgoing side	A	**3RA6812-8AB**		1	1 unit	42F
• Spring-type terminals on the outgoing side	A	**3RA6812-8AC**		1	1 unit	42F
Infeeds with screw connection 50/70 mm² left						
Infeeds with screw connection at line side with a permanently fitted **3-socket expansion module with screw or spring-type terminals on the outgoing side and integrated PE bar** **Expansion module** with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter, suitable for UL operation according to UL 508 Type E		**Screw terminals**				
• Screw terminals on the outgoing side	A	**3RA6813-8AB**		1	1 unit	42F
• Spring-type terminals on the outgoing side	A	**3RA6813-8AC**		1	1 unit	42F
Infeeds with spring-type connection 25/35 mm² left or right						
		Spring-type terminals				
Up to 63 A	A	**3RA6830-5AC**		1	1 unit	42F

3RA6812-8AB


3RA6812-8AC


3RA6813-8AB


3RA6813-8AC

3RA6830-5AC

For online configurator see www.siemens.com/sirius/configurators

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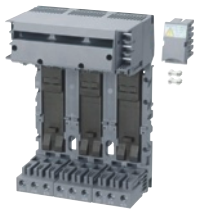
Infeed systems for 3RA6

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Configurator				
Expansion modules						
Two-socket expansion modules						
with screw or spring-type connection and integrated PE bar with 2 sockets for 2 direct-on-line starters or 1 reversing starter Expansion plug and 2 connecting wedges are included in the scope of supply.						
		Screw terminals				
 3RA6822-0AB						
• Screw terminals	A	**3RA6822-0AB**		1	1 unit	42F
		Spring-type terminals				
 3RA6822-0AC						
• Spring-type terminals	A	**3RA6822-0AC**		1	1 unit	42F
Three-socket expansion modules						
with screw or spring-type connection and integrated PE bar with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter Expansion plug and 2 connecting wedges are included in the scope of supply.						
		Screw terminals				
 3RA6823-0AB						
• Screw terminals	A	**3RA6823-0AB**		1	1 unit	42F
		Spring-type terminals				
 3RA6823-0AC						
• Spring-type terminals	A	**3RA6823-0AC**		1	1 unit	42F

For online configurator see www.siemens.com/sirius/configurators

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for infeed systems for 3RA6							
	PE infeeds 25/35 mm²						
3RA6860-6AB	• Screw terminals	A	**Screw terminals** **3RA6860-6AB**		1	1 unit	42F
3RA6860-5AC	• Spring-type terminals	A	**Spring-type terminals** **3RA6860-5AC**		1	1 unit	42F
	PE pick-offs 6/10 mm²						
3RA6870-4AB	• Screw terminals	A	**Screw terminals** **3RA6870-4AB**		1	1 unit	42F
3RA6870-3AC	• Spring-type terminals	A	**Spring-type terminals** **3RA6870-3AC**		1	1 unit	42F
	Expansion plug						
3RA6890-0EA	**PE expansion plugs**	A	**3RA6890-0EA**		1	1 unit	42F
3RA6890-1AB	**Expansion plugs** between 2 expansion modules Is included in the scope of supply of the expansion modules.	A	**3RA6890-1AB**		1	1 unit	42F
3RA6890-1AA	**Expansion plugs for SIRIUS 3RV29 infeed system** Connects infeed system for 3RA6 to 3RV29 infeed system	A	**3RA6890-1AA**		1	1 unit	42F

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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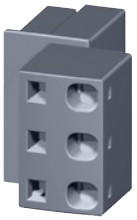
Infeed systems for 3RA6

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for infeed systems for 3RA6 (Continued)							
	45 mm adapters						
3RA6890-0BA	For SIRIUS 3RV1 motor starter protectors size S0		**Screw terminals**				
	• Screw terminals (conductor cross-section AWG 10)	A	**3RA6890-0BA**		1	1 unit	42F
	Terminal covers for infeeds with screw connection						
3RA6880-2AB	**IP 20 terminal covers for infeeds with screw connection 25/35 mm² (3RA6812-8AB/AC)** (2 units per pack)	A	**3RA6880-2AB**		1	1 unit	42F
3RA6880-3AB	**IP 20 terminal covers for infeeds with screw connection 50/70 mm² (3RA6813-8AB/AC)** (2 units per pack)	A	**3RA6880-3AB**		1	1 unit	42F
	Terminal blocks						
 3RV2917-5D	For integration of single-phase, 2-phase and 3-phase external components		**Spring-type terminals**				
	• Spring-type terminals	A	**3RV2917-5D**		1	1 unit	41E
Tools for opening spring-type terminals							
	Screwdrivers						
3RA2908-1A	For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B
Documentation							
	See page 8/73						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

3RM13 motor starter with reversing functionality, electronic overload protection and safety-related shutdown

SIRIUS 3RM1 motor starters are compact devices 22.5 mm wide, combining a large number of functions in a single enclosure. They consist of combinations of relay contacts, power semiconductors (hybrid technology), and a solid-state overload relay for operational switching of three-phase motors up to 3 kW (at 400 V) and resistive loads up to 10 A at AC voltages up to 500 V.

Characteristic	Value
Rated current (wide setting range of the electronic overload release)	0.1 ... 0.5 A 0.4 ... 2.0 A 1.6 ... 7.0 A (10 A)
Rated operational voltage	48 ... 500 V
Rated frequency	50/60 Hz
Rated control supply voltage	24 V DC, 110 V DC, 110 ... 230 V AC
Trip class	CLASS 10A

The 3RM1 motor starters with overload protection with wide setting range are offered as direct-on-line starters and reversing starters and as versions with safety-related shutdown.

The 3RM1 motor starters are available in four versions:

Characteristic	3RM10	3RM11	3RM12	3RM13
Direct-on-line starters	✓	✓	--	--
Reversing starters	--	--	✓	✓
Overload protection with wide setting range	✓	✓	✓	✓
ATEX certification overload protection	--	✓	--	✓
Safety-related shutdown up to SIL 3/PL e	--	✓	--	✓

✓ Function available

-- Function not available

Hybrid technology

The 3RM1s combine the benefits of semiconductor technology and relay technology. This combination is also known as hybrid technology. The hybrid technology in the motor starter is characterized by the following features:

- The inrush current is is conducted briefly via the semiconductors.
  Advantage: protection of relay contacts, long service life due to low wear
- The uninterrupted current is conducted via relay contacts.
  Advantage: lower heat losses compared with the semiconductor.
- Shutdown is implemented again via the semiconductor.
  Advantage: the contacts are only slightly exposed to arcs, and this results in a longer service life.

Functional density/space requirement

The 3RM1 motor starters combine the functions of direct-on-line/reversing starting, electronic overload protection and safety-related shutdown in a single device, without changing in size.

For simple applications (such as starting and reversing three-phase loads with overload protection), motor starter combinations of power contactors and a solid-state overload relay, for example, can be replaced by a 3RM1 device. The more functions are required, the more devices can be replaced. The surface area required for each motor starter in the control cabinet is reduced by values of 20 to 80 %.

In the case of assemblies and grouped feeder units there are further advantages.

Wiring outlay

By combining various functions in a single device, wiring outlay is reduced. The greater the scope of functions, the greater the saving in wiring. Savings can be made in:

- mains supply line and motor feeder, and device connections in the main circuit
- wiring of the reversing contactor assembly in the main circuit, if required
- contact locking if there is a reversing contactor assembly in the control circuit
- control cables for coil terminals in the control circuit

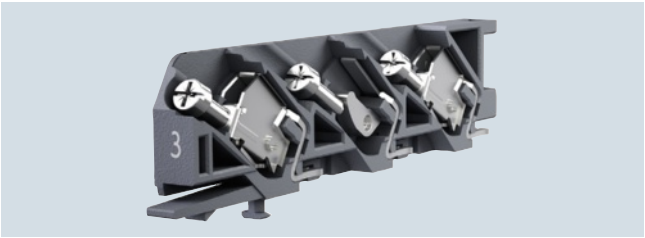
These savings reduce the time required for the wiring itself, while at the same time reducing both the risk of wiring errors and the amount of testing required after control cabinets have been completed.

Configuration and stock keeping

The wide setting range of the electronic overload release (up to 1:5) reduces the cost of keeping stocks and the considerations involved in configuration where the actual motor current to be expected is concerned. Compared with protection equipment with thermal overload protection, only 3 versions are now required, instead of 17, to cover a current range of 0.1 to 7 A when using the 3RM1.

Connection methods

The 3RM1 is available with screw terminals and spring-type terminals or mixed connection method (screw terminals for the main circuit and push-in terminals for the control circuit).



Screw terminal for removable terminal (3-pole) for 3RM1 motor starters and 3SK1 safety relays

Spring-type terminal as push-in connection for removable terminal (3-pole) for 3RM1 motor starters and 3SK1 safety relays

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General data

Push-in connection method

Push-in connections are a form of spring-type connection allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

Finely-stranded or stranded conductors with no end sleeve are wired using a screwdriver (with a 3.0 x 0.5 mm blade).

As with other spring-type terminals, a screwdriver is also required to release the conductor. The same tool as above can be used for this purpose.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

	Screw terminals
	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Innovative enclosure concept

① Terminals

The terminals are easy to replace, optionally with screw or spring-type connections:
- 1,2,3: 3-pole terminals for the control circuit
- 4,5,6: 2-pole terminals for the main circuit

② Labeled cover caps

To access the top and bottom terminals, the covers must be opened. To facilitate orientation, there is a laser inscription on the inside of the caps for the connections.

③ Sealable cover

To protect against unauthorized access, a sealable cover can be attached.

④ LED status display

You can see at a glance from the LED status display whether operation is normal or whether faults exist. This allows fast, selective commissioning. Faults can be quickly traced and even more quickly corrected.

⑤ Rotary coding switch

The current of the motor to be monitored can be set using the rotary coding switch. When a motor is replaced, it can be adapted within the respective wide setting range. This means that in most cases the motor starter does not have to be replaced.

⑥ TEST/RESET button

Acknowledgment in the event of a fault:
1. Resetting in the event of overload
2. Performance of the test function
3. Switching from manual to auto reset

⑦ 2D matrix code

The 2D matrix code enables simple and fast scanning in of article numbers and serial numbers.

⑧ Width

The width of only 22.5 mm saves space in the control cabinet, and is thus cost-effective, especially in plants with a large number of small motors up to 3 kW.

① Connecting terminals
② Labeled cover caps
③ Sealable cover
④ LED status display
⑤ Rotary coding switch
⑥ TEST/RESET button
⑦ 2D matrix code
⑧ Width

Innovative enclosure concept for the SIRIUS 3RM1 motor starters

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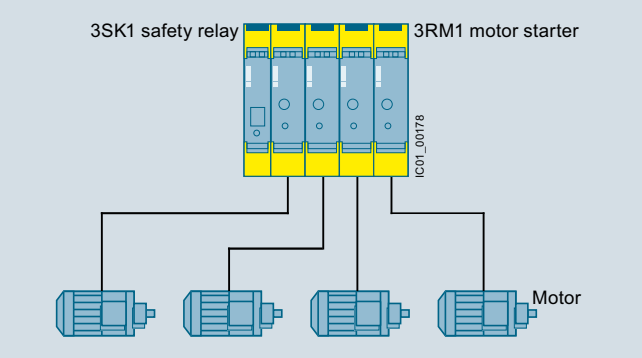
Safety-related shutdown/safety integration

Thanks to the redundant design of the main circuit and internal monitoring, safety-related shutdown in accordance with SIL 3/PL e is possible by shutting down the control supply voltage with 3RM11 Failsafe and 3RM13 Failsafe motor starters. Additional safety relays are not required in the main circuit.



Combination of four SIRIUS 3RM1 Failsafe motor starters with SIRIUS 3SK1 safety relay to allow safety-related collective disconnection of connected motors

3RM1 motor starters are ideal for combining with the 3SK1 safety relay (see "Safety Technology" ➞ "SIRIUS 3SK1 Safety Relays"). They can be combined by means of:

- conventional wiring
- a special device connector

This makes it very simple to shut down connected motors collectively. The wiring, and ultimately the shutting down of the control supply voltage in Emergency-Stop situations, is performed via the device connector. There is no further need for complex looping of the connecting cables.

Feedback to the control system

The electronic output in the 24 V DC control voltage version of the 3RM10 and 3RM12 motor starters allows the status of the connected motor to be reported to the higher-level control system. If the motor starter is controlled via inputs IN1 to 2, once the motor has been switched on and has started up correctly the output "OUT" is set.

Infeed system for the main circuit

The 3RM19 infeed system available as an accessory for the main circuit with three-phase busbars allows fast, virtually error-free wiring of motor starters on the mains connection side and may reduce the number of short-circuit protective devices.

Article No. scheme

Digit of the Article No.	1st - 3rd ❒❒❒	4th ❒	5th ❒	6th ❒	7th ❒	–	8th ❒	9th ❒	10th ❒	11th ❒	12th ❒
SIRIUS 3RM1 motor starter	**3RM**										
Generation (1)		❒									
Function (direct-on-line starter = 0, Failsafe direct-on-line starter = 1; reversing starter = 2; Failsafe reversing starter = 3; accessories = 9)			❒								
Setting range rated motor current (0.1 ... 0.5 A = 01, 0.4 ... 2.0 A = 02, 1.6 ... 7.0 A = 07)				❒	❒						
Connection type (screw terminal = 1, push-in spring-type terminal = 2, mixed connection method[1] = 3)							❒				
Reserved (A)								❒			
Width (22.5 mm = A)									❒		
Rated control supply voltage (24 V DC = 0; 110 V DC, 110 V ... 230 V AC = 1)										❒	
Rated operational voltage (48 ... 500 V = 4)											❒
Example	**3RM**	**1**	**0**	**0**	**1**	**-**	**1**	**A**	**A**	**0**	**4**

[1] Mixed connection method: Control circuit realized as push-in spring-type terminal and main circuit as screw terminal

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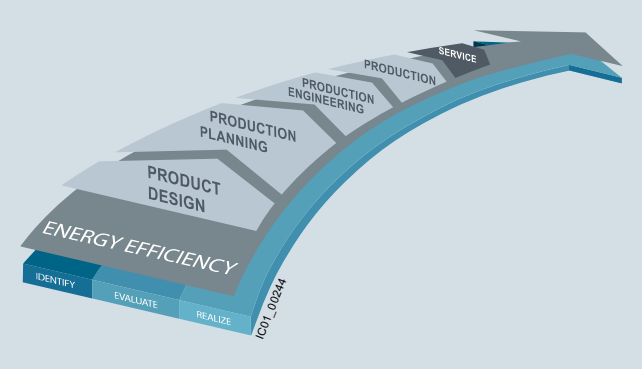
General data

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

With 3RM1 motor starters, control cabinets warm up less because power losses have been reduced by operation:

- Lower intrinsic power loss (than comparable motor feeders with thermal overload trips) thanks to electronic current analysis
- Lower control circuit power losses (compared with conventional switching devices) as a result of electronic control of switching points
- Thanks to the above advantages, additional energy savings are possible because less cooling is required (and a more compact design is possible)

Product advantages

The SIRIUS 3RM1 motor starters offer a number of benefits:

- Greater endurance and reduced heat losses thanks to hybrid technology
- Less space required in the control cabinet (20 to 80 %) as a result of greater functional density
- Less wiring and testing required as a result of integrating several functions into a single device
- Lower costs for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:5)
- Fast wiring without tools for rigid conductors or conductors equipped with end sleeves thanks to push-in spring-type connections
- Safety-related shutdown in accordance with SIL3/PIe by shutting down the control supply voltage without additional devices in the main circuit
- Motor status feedback to the higher-level control system in the case of 3RM10 and 3RM12 motor starters in the 24 V DC version
- Virtually error-free wiring on the mains connection side and reduction in short-circuit protective devices by means of 3RM19 infeed system
- ATEX certification: "Increased safety" type of protection EEx e according to ATEX Directive 94/9/EC (3RM1 motor starters in the Failsafe version are suitable for overload protection of explosion-proof motors with "increased safety" type of protection EEx e)

Application

3RM1 motor starters are designed for applications in which small motors have to be connected in the most confined spaces.

Main areas of use

- Conveyor systems
- Logistics systems
- Production machines
- Machine tools
- Small elevators

Standards and approvals

The motor starter complies with the following standards:

- IEC/EN 60947-4-2
- UL 508
- ATEX (available soon)
- IEC 61508-1: SIL3 (available soon)
- ISO 13849: PLe (available soon)

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Technical specifications

Type		3RM1
Mechanics and environment		
Dimensions (W x H x D)		
• Width	mm	22.5
• Height	mm	100
• Depth	mm	136.5 (from the standard mounting rail) 141.6 (entire enclosure depth)
Ambient temperature		
• During operation	°C	-25 … +60
• During storage	°C	-40 … +70
• During transport	°C	-40 … +70
Installation altitude at height above sea level, maximum	m	4 000
Shock resistance		6g / 11 ms
Vibration resistance		1 ... 6 Hz, 15 mm; 20 m/s², 500 Hz
IP degree of protection		IP20
Mounting position		
Electromagnetic compatibility (EMC)		
Emitted interference		
• Conducted RF interference emission according to CISPR11		Class B for residential, business and commercial applications
• Non-conducted RF interference emission according to CISPR11		Class B for residential, business and commercial applications
Interference immunity		
• Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge / 8 kV air discharge
• Conducted interference as high frequency interference according to IEC 61000-4-6		10 V
• Conducted interference BURST according to IEC 61000-4-4		2 kV / 5 kHz
• Conducted interference - phase-to-ground SURGE according to IEC 61000-4-5		2 kV
• Conducted interference - phase-to-phase SURGE according to IEC 61000-4-5		1 kV

Article No.		3RM1 .01	3RM1 .02	3RM1 .07
Main circuit				
Operational voltage rated value maximum	V	500		
Operating frequency				
• 1 rated value	Hz	50		
• 2 rated value	Hz	60		
Insulation voltage rated value	V	600		
Impulse withstand voltage rated value	kV	6		
Operational current at 400 V at AC rated value	A	0.5	2	7
Active power loss typical	W	0.02	0.3	3.4
Minimum load in % of I_M	%	20		
Adjustable response value current				
• of the inverse-time delayed overload release	A	0.1 … 0.5	0.4 … 2	1.6 … 7

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General data

Article No.		3RM1 ...-.AA0.	3RM1 ...-.AA1.
Control circuit			
Type of voltage of the control supply voltage		DC	AC/DC
Control supply voltage 1			
• At DC	V	24	110
• At 50/60 Hz			
- At AC	V	--	110 … 230
Frequency of the control supply voltage			
• 1 rated value	Hz	--	50
• 2 rated value	Hz	--	60
Operating range factor of the control supply voltage, rated value			
• At DC		0.8 … 1.25	0.85 … 1.1
• At 50 Hz/60 Hz			
- At AC		--	0.85 … 1.1
Control current	A	0.08	0.05
Input voltage at the digital input			
• At DC	V	24	110
• At AC	V	--	110 … 230
- Rated value			
Input voltage at the digital input with signal <1>			
• At DC	V	19.2 … 30	93 ... 121
• At AC	V	--	93 … 253
Input current at the digital input with signal <1>, typical	A	0.01	0.002

Article No.		Screw terminals	Spring-type terminals
Connection methods for 3RM1			
Connectable conductor cross-section for main contacts			
• Solid	mm^2	0.5 … 4	
• Finely stranded			
- With end sleeves	mm^2	0.5 … 2.5	
- Without end sleeves	mm^2	--	0.5 … 4
Connectable conductor cross-section for auxiliary contacts			
• Solid	mm^2	0.5 … 2.5	0.5 … 1.5
• Finely stranded			
- With end sleeves	mm^2	0.5 … 2.5	0.5 … 1
- Without end sleeves	mm^2	--	0.5 … 1.5
AWG number as coded connectable conductor cross-section			
• For main contacts		20 … 12	
• For auxiliary contacts		20 … 14	20 … 16

Note:

All the above technical specifications are relevant for selecting the motor starters. Details about installation conditions and the use of the motor starters, and particularly about the derating of the rated current, can be found in the manual (see Accessories) and the data sheets.

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Selection and ordering data

3RM100.-1AA.4

3RM100.-2AA.4, 3RM100.-3AA.4

Rating for three-phase motor at 400 V at 50/60 Hz with 3-phase AC[1]	Adjustable current response value of the inverse-time delayed overload release	DT	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Configurator			
kW	A		Article No.			
3RM10 motor starter for direct-on-line start, with electronic overload protection						
Rated control supply voltage U_s = 24 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1001-□AA04**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1002-□AA04**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1007-□AA04**	1	1 unit	41D
Rated control supply voltage U_s = 110 ... 230 V AC 50/60 Hz; 110 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1001-□AA14**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1002-□AA14**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1007-□AA14**	1	1 unit	41D

Article No. supplements for connection types

- With screw terminals for main and control circuit **1**
- With spring-type terminals for main and control circuit **2**
- With screw terminals for main circuit and spring-type terminals for control circuit **3**

For online configurator see www.siemens.com/sirius/configurators

1) The actual startup characteristics of the motor as well as its rated data are important factors here.

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3RM12 reversing starters

Selection and ordering data

3RM120.-1AA.4

3RM120.-2AA.4, 3RM120.-3AA.4

Rating for three-phase motor at 400 V at 50/60 Hz with 3-phase AC[1]	Adjustable current response value of the inverse-time delayed overload release	DT	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Configurator			
kW	A		Article No.			
3RM12 motor starter with reversing functionality and electronic overload protection						
Rated control supply voltage U_s = 24 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1201-□AA04**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1202-□AA04**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1207-□AA04**	1	1 unit	41D
Rated control supply voltage U_s = 110 ... 230 V AC 50/60 Hz; 110 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1201-□AA14**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1202-□AA14**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1207-□AA14**	1	1 unit	41D

Article No. supplements for connection types

- With screw terminals for main and control circuit **1**
- With spring-type terminals for main and control circuit **2**
- With screw terminals for main circuit and spring-type terminals for control circuit **3**

For online configurator see www.siemens.com/sirius/configurators

1) The actual startup characteristics of the motor as well as its rated data are important factors here.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

3RM110.-1AA.4

3RM110.-2AA.4, 3RM110.-3AA.4

Rating for three-phase motor at 400 V at 50/60 Hz with 3-phase AC[1]	Adjustable current response value of the inverse-time delayed overload release	DT	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Configurator			
kW	A		Article No.			
3RM11 motor starter for direct-on-line start, with electronic overload protection and safety-related shutdown[2]						
Rated control supply voltage U_s = 24 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1101-□AA04**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1102-□AA04**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1107-□AA04**	1	1 unit	41D
Rated control supply voltage U_s = 110 ... 230 V AC 50/60 Hz; 110 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1101-□AA14**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1102-□AA14**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1107-□AA14**	1	1 unit	41D

Article No. supplements for connection types

- With screw terminals for main and control circuit — **1**
- With spring-type terminals for main and control circuit — **2**
- With screw terminals for main circuit and spring-type terminals for control circuit — **3**

For online configurator see www.siemens.com/sirius/configurators

1) The actual startup characteristics of the motor as well as its rated data are important factors here.

2) Start of delivery on request.

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3RM13 Failsafe reversing starters

Selection and ordering data

3RM130.-1AA.4

3RM130.-2AA.4, 3RM130.-3AA.4

Rating for three-phase motor at 400 V at 50/60 Hz with 3-phase AC[1]	Adjustable current response value of the inverse-time delayed overload release	DT	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Configurator			
kW	A		Article No.			
3RM13 motor starter with reversing functionality, electronic overload protection and safety-related shutdown[2]						
Rated control supply voltage U_S = 24 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1301-□AA04**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1302-□AA04**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1307-□AA04**	1	1 unit	41D
Rated control supply voltage U_S = 110 ... 230 V AC 50/60 Hz; 110 V DC						
0 … 0.12	0.1 … 0.5	A	**3RM1301-□AA14**	1	1 unit	41D
0.09 … 0.75	0.4 … 2	A	**3RM1302-□AA14**	1	1 unit	41D
0.55 … 3	1.6 … 7	A	**3RM1307-□AA14**	1	1 unit	41D

Article No. supplements for connection types

- With screw terminals for main and control circuit **1**
- With spring-type terminals for main and control circuit **2**
- With screw terminals for main circuit and spring-type terminals for control circuit **3**

For online configurator see www.siemens.com/sirius/configurators

1) The actual startup characteristics of the motor as well as its rated data are important factors here.

2) Start of delivery on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Accessories for 3RM1 motor starters

The following accessories are available for the 3RM1 motor starter:

- 3-phase infeed system for the main circuit
- Device connectors for the control circuit
- Spare terminals for main and control circuits
  - With screw terminals
  - With push-in spring-type terminals
- Push-in lugs for wall mounting the motor starters
- Sealable cover as protection against unauthorized access

Three-phase infeed system (3RM19 three-phase busbar system)

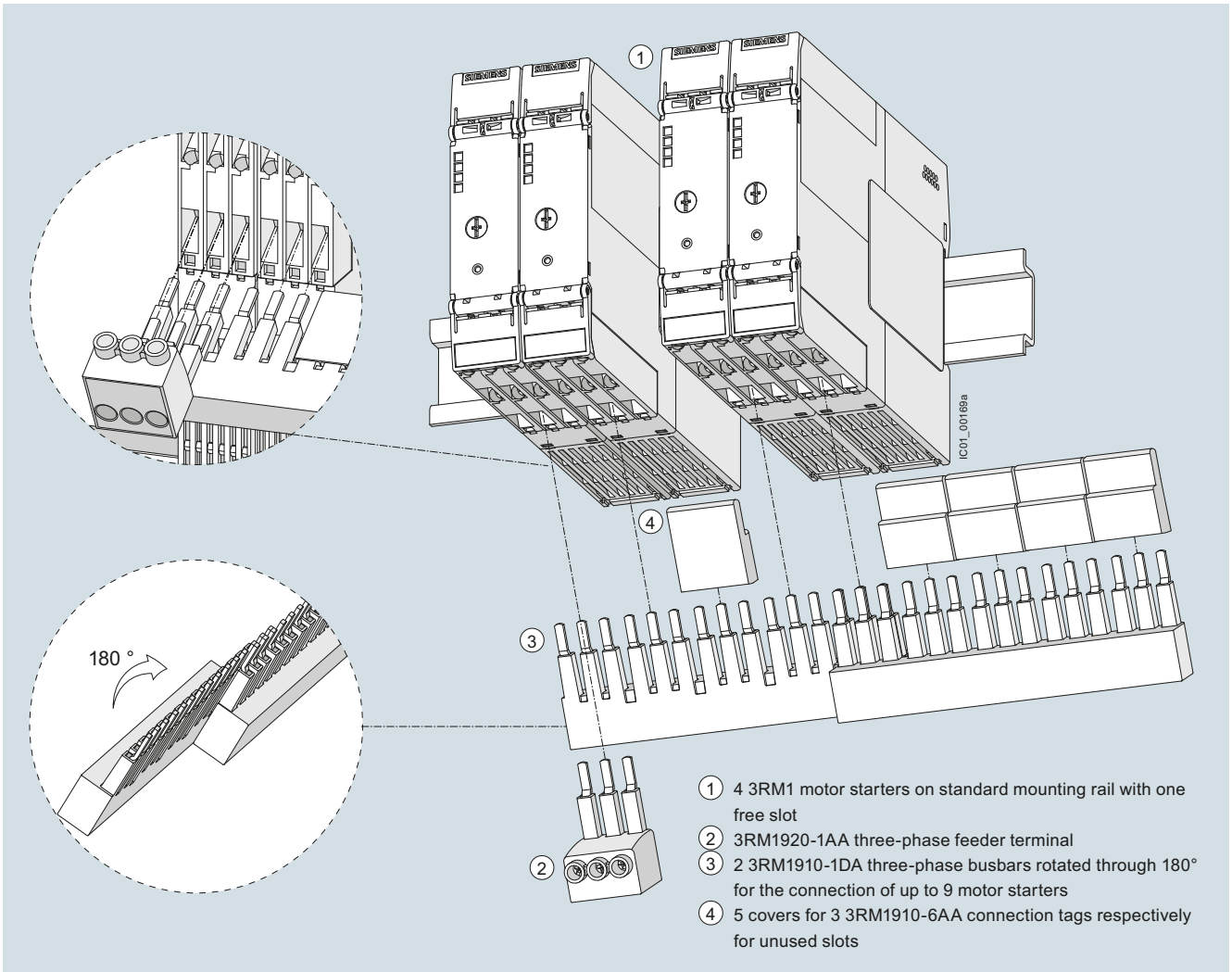
Special three-phase busbar systems can be used to provide an easy, time-saving and safe means of feeding two or more 3RM1 motor starters with screw terminals.

These busbars are available in three lengths, thus allowing 2, 3 or 5 motor starters (arranged side-by-side) to be connected at the same time. More than 5 devices can be connected by clamping the connection tags of an additional busbar rotated by 180° (e.g. 6 devices using one 5-pole busbar and one 2-pole busbar).

A single motor starter can be removed from the assembly without loosening the terminal screws of neighboring motor starters.

The maximum summation current must not exceed 25 A. Primary infeed is connected via a three-phase infeed terminal.

The three-phase busbars are finger-safe but empty connection tags must be fitted with covers.



3RM19 infeed system with three-phase infeed terminal: In the above example, two three-phase busbars (5-pole busbars) rotated through 180° allow up to 9 3RM1 motor starters to be connected. Contact with the unused connection tags in unoccupied positions is prevented safely by the covers.

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Accessories

Device connectors for the control circuit

The outlay for cabling between the devices is reduced using device connectors snapped onto a mounting rail, or screwed onto a level mounting panel (one device connector per motor starter).

Using the device connectors only for feeding in the control supply voltage

By using device connectors, several motor starters can be jointly supplied with a control supply voltage of 24 V DC. This requires the control supply voltage to be applied to the A1 and A2 terminals of only one motor starter.

Up to ten motor starters can be connected with device connectors. The 24 V DC control supply voltage must be within the operating range of 0.9 to 1.1 for this purpose. If the full operating range of 0.8 to 1.25 is to be used, no more than five motor starters can be used.

If the motor starters are not to be interconnected side-by-side, device daisy chain connectors must be used for the gaps.

When removing a motor starter, the corresponding device connector must be replaced by a device daisy chain connector if the control voltage is not to be interrupted for motor starters on the right.

The last motor starter in a row can be placed on a device termination connector. Flush termination of the configuration is thus possible.

Using device connectors in conjunction with 3SK1 safety relays

Interconnection of several Standard or Failsafe version motor starters into a group can also be used for joint disconnection by a 3SK1 safety relay.

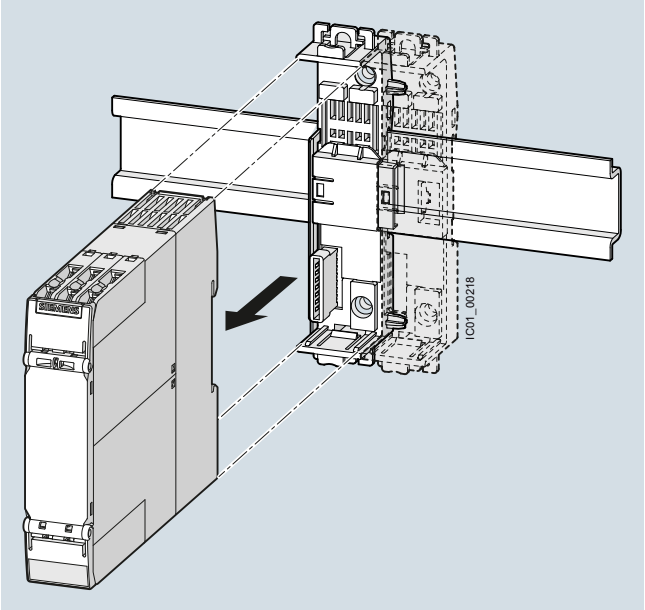
Disconnection of the motor starters occurs through the removal of the control supply voltage by means of the 3SK1 relay. For this reason, the voltage must not also be applied to the motor starters.

The motors can then also be shut down safely according to SIL 3/PL e with the motor starters.

Up to five motor starters can be operated on one safety relay with device connectors. If the motor starters are not to be interconnected side-by-side, device daisy chain connectors must be used for the gaps.

The last motor starter in a row must be placed on a device termination connector. This closes the circuits that were built up with the connectors.

For 3SK1 safety relays and associated device connectors see Chapter 11 "Safety Technology" → "SIRIUS 3SK1 Safety Relays"



Device connectors snapped onto a standard mounting rail to allow the joint connection of the control supply voltage for 3RM1 motor starters or connection to the 3SK1 safety relays

Usage restrictions for accessories

- The 3RM19 3-phase infeed system for the main circuit can only be used with 3RM1 motor starters with screw terminals.
- The device connectors are only suitable for 3RM1 motor starters with a control supply voltage of 24 V DC.

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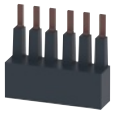
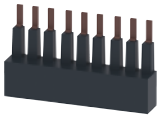
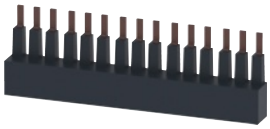
Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RM19 three-phase infeed system for 3RM1 with screw terminals							
3RM1920-1AA	**Three-phase infeed terminals**	A	**3RM1920-1AA**		1	1 unit	41D
	Three-phase busbars						
 3RM1910-1AA	• For 2 motor starters	A	**3RM1910-1AA**		1	1 unit	41D
 3RM1910-1BA	• For 3 motor starters	A	**3RM1910-1BA**		1	1 unit	41D
 3RM1910-1DA	• For 5 motor starters	A	**3RM1910-1DA**		1	1 unit	41D
3RM1910-6AA	**Covers** for 3 connection tags of the three-phase busbars	A	**3RM1910-6AA**		1	10 units	41D
Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure[1)]							
3ZY1212-2EA00	**Device connectors** for 3RM1 motor starters 24 V DC, 22.5 mm	A	**3ZY1212-2EA00**		1	1 unit	41L
3ZY1212-2AB00	**Device daisy chain connectors** for 3RM1 motor starters 24 V DC, 22.5 mm for gaps without motor starters in assemblies.	X	**3ZY1212-2AB00**		1	1 unit	41L
3ZY1212-2FA00	**Device termination connectors** for 3RM1 motor starters 24 V DC, 22.5 mm	A	**3ZY1212-2FA00**		1	1 unit	41L

[1)] Device connectors are only suitable for 3RM1 motor starters with a control supply voltage of 24 V DC.

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Accessories

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Removable terminals for SIRIUS devices in the industrial standard mounting rail enclosure for use in the main circuit							
	Terminals, 2-pole						
			Screw terminals				
3ZY1122-1BA00	• Screw terminals, 1x4 mm²	A	**3ZY1122-1BA00**		1	6 units	41L
			Spring-type terminals				
3ZY1122-2BA00	• Spring-type terminals as push-in terminals, 1x4 mm²	A	**3ZY1122-2BA00**		1	6 units	41L
Removable terminals for SIRIUS devices in the industrial standard mounting rail enclosure for use in the control circuit							
	Terminals, 3-pole						
			Screw terminals				
3ZY1131-1BA00	• Screw terminals, 1x2.5 mm²	A	**3ZY1131-1BA00**		1	6 units	41L
			Spring-type terminals				
3ZY1131-2BA00	• Spring-type terminals as push-in terminals, 1x2.5 mm²	A	**3ZY1131-2BA00**		1	6 units	41L

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Further accessories							
3ZY1311-0AA00	**Push-in lugs for wall mounting** (2 lugs per motor starter are required, i.e. 1 PS is sufficient for 5 motor starters)	A	**3ZY1311-0AA00**		1	10 units	41L
3ZY1321-2AA00	**Sealable covers, 22.5 mm** (Simple protection against unauthorized access)	A	**3ZY1321-2AA00**		1	5 units	41L
3ZY1440-1AA00	**Coding pins for removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure** For mechanical coding of removable terminals	A	**3ZY1440-1AA00**		1	12 units	41L
Documentation							
	Manual[1)] SIRIUS 3RM1 Motor Starters						

1) Available as a PDF (also in other languages) see http://support.automation.siemens.com/WW/view/en/66295730

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General data

Overview

ET 200S motor starters in the ET 200S I/O system

The SIMATIC ET 200S is the multifunctional and bit-modular I/O system in degree of protection IP20 for exact adaptation to the automation task.

Interface modules (IM) are used for connecting the ET 200S to PROFIBUS DP or PROFINET. If interface modules with integrated S7-CPU are used, the ET 200S can act as a miniature controller.

The ET 200S is designed for combining with a large range of digital and analog input or output modules, technology modules, IO-Link master modules, pneumatic connections, or motor starters and frequency converters for the control of drives.

In addition to the standard versions, SIPLUS versions are available both for interface modules and I/O modules. They can be used for an extended temperature range and increased medial loads.

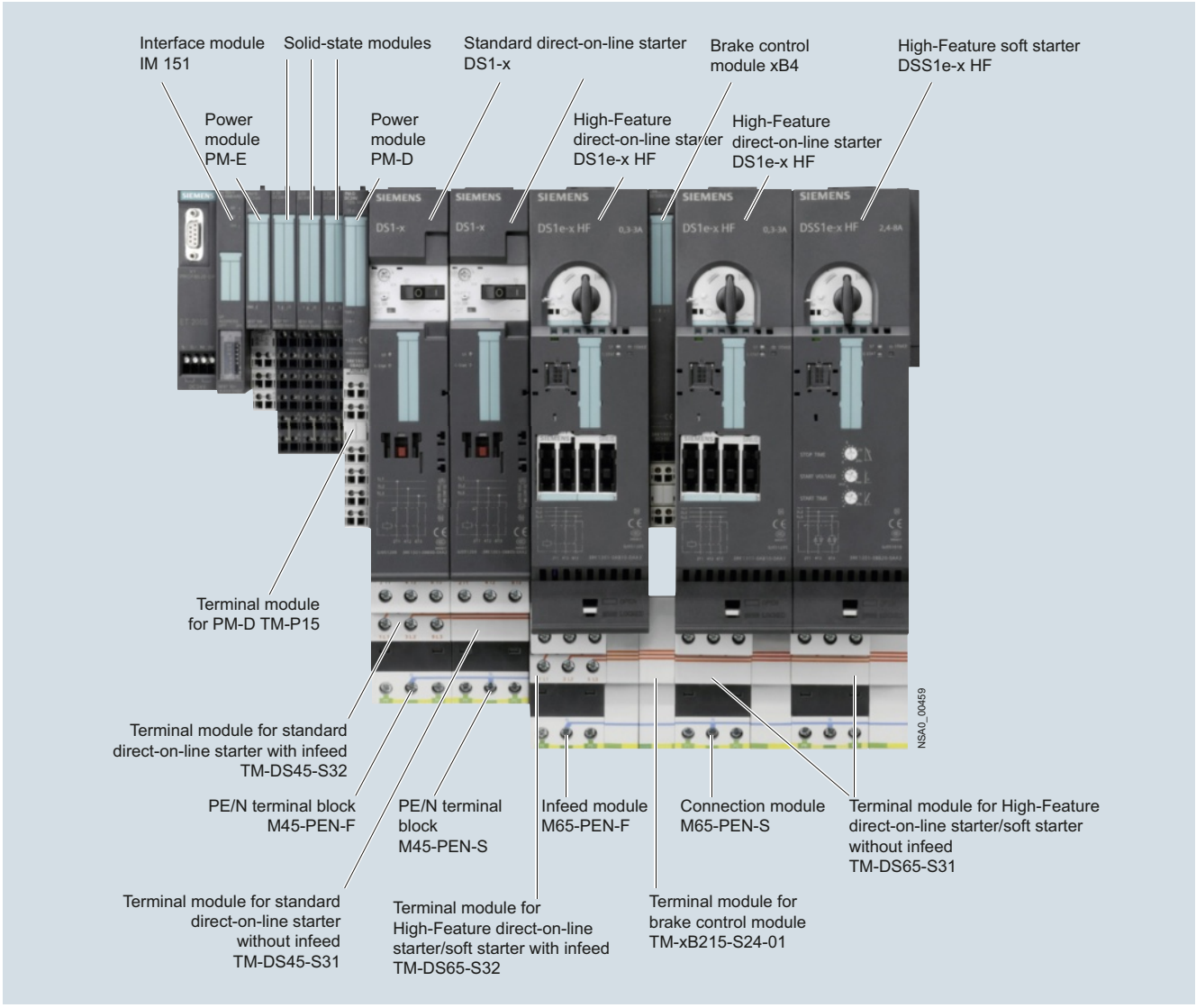
Device replacement is easy and quick thanks to permanent wiring and automatic re-parameterization.

Hot swapping, i. e. the disconnection and connection of modules without prior isolation, guarantees high availability of the automation system along with extensive diagnostics information.

The ET 200S motor starters are connected to the control system and parameterized through the fieldbus using either PROFIBUS or PROFINET via IM modules – available in both standard and safety-related versions.

For detailed information about SIMATIC ET 200S see Catalog ST 70 · 2013.

With the ET 200S motor starters, any AC loads can be protected and switched. The communication interface makes them ideal for operation in distributed control cabinets or control enclosures.



Interaction of ET 200S motor starter components in the ET 200S I/O system

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Motor starter versions

The ET 200S motor starters are available as direct-on-line, reversing or soft starter versions:

- Standard motor starters up to 5.5 kW (direct-on-line and reversing starters)
- High-Feature motor starters up to 7.5 kW (direct-on-line, reversing and direct-on-line soft starters)
- Failsafe motor starters up to 7.5 kW (direct-on-line and reversing starters)
  - Properties of the High-Feature motor starter
  - Failsafe functionality

Innovation of the ET 200S High-Feature motor starters

The ET 200S High-Feature motor starters have undergone radical innovation and now support the acyclic services on PROFIBUS and PROFINET as well as PROFIenergy on PROFINET. They are now:

- Even more flexible – flexible assignment of parameters
- Even better integrated in TIA (Totally Integrated Automation)
- Even more transparent – through comprehensive diagnostic data records
- Even more anticipatory – through maintenance functions
- Energy-efficient – through PROFIenergy

Basic functionality of the ET 200S motor starters

All versions of the ET 200S motor starters have the following functionality. Any additional specific functionality is described for the respective versions.

- Fully pre-wired motor starters for switching and protecting any AC loads up to 7.5 kW at 400 V AC and 500 V AC
- With self-assembling 40/50 A power bus, i. e. the load voltage is only fed in once for a group of motor starters
- All control supply voltages connected only once, i.e. when modules are added they are automatically connected to the next module
- Hot swapping is permissible
- Inputs and outputs for activating and signaling the status are already integrated
- Control of the motor starter from the control system and of the diagnostics status via the cyclic process image
- Diagnostics capability for active monitoring of the switching and protection functions
- The signal states in the process image of the motor starter provide information about protective devices (short circuit or overload), the switching states of contactor(s) or soft starters, and system faults.
- Interface for controlling an expansion module, e. g. brake control module xB1 ... xB4 for controlling mechanical brakes in three-phase motors for 24 V DC and 500 V DC.
- Brake control module xB5 and xB6 for 400 V AC
- Can be combined with safety technology for use in safety-related system components (IEC 62061 and ISO 13849-1).

Mounting

As the motor starters are fully pre-wired, up to 80 % of the wiring outlay can be saved. The control cabinets can be assembled far more quickly and compactly.

Expansions are easily possible through the subsequent adding of terminal modules. With their terminal block design (10 mm^2), the latter also do away with the distribution wiring otherwise required. Through the permanent wiring and the "hot swapping" function (disconnection and connection during operation) a motor starter can be replaced within seconds if necessary. The motor starters are therefore recommendable in particular for applications with special demands on availability.

Parameterization and configuration

Configuration is made easier by the bit-modular structure.

When using the ET 200S motor starters, the list of parts per load feeder is reduced to two main items: The passive terminal module and the motor starter. This makes the ET 200S ideal for modular machine concepts as well.

All ET 200S motor starters are set up without fuses. Contactors and soft starters are activated through the integrated outputs. The inputs of the motor starters evaluate the signal states of the protective devices (short circuit or overload), the switching states of contactor(s) or soft starters, and system faults.

The motor starter protector signaling is freely programmable with regard to group fault signals (group fault at motor starter protector "Off"/group fault signal at motor starter protector "Off" only in case of "On" command from the motor starter).

Brake control modules and optional digital inputs and outputs

With one of the optional brake control modules (xB1-xB6), which is butt-mounted to the right of a motor starter, it is possible to control a mechanical holding brake on a three-phase motor from the process image of the motor starter.

Motors with 24 V DC brakes (xB1, xB3) as well as motors with 500 V DC brakes (xB2, xB4) can be controlled using the brake control modules xB1-xB4.

The modules xB5 (without digital input) and xB6 (with two digital inputs) have been added to the range in order to control a mechanical holding brake with a rated operational voltage of 400 V AC. A further motor brake voltage commonly found on the market is thus supported.

The 24 V DC brakes have an external supply and can be released independently of the switching state of the motor starter. By contrast the 500 V DC brakes and the 400 V AC brakes usually have a direct supply from the terminal board of the motor through a rectifier module and therefore cannot be released when the motor starter is switched off. These brakes cannot be used in combination with the DSS1e-x motor starter (soft starter).

The outputs of the brake control modules can be used alternatively for other purposes, e.g. for controlling DC valves.

With two digital inputs available on the brake control modules (xB3, xB4, xB6) and another two digital inputs available on the optional control module it is possible to realize autonomous special functions which work independently of the bus and the higher-level control system, e.g. as a quick stop on gate valve controls. The signals of these digital inputs are in the process image and are reported to the control system.

Power supply through terminal modules

Power is supplied through the terminal modules for motor starters:

- The auxiliary voltages are fed in only once via the PM-D or PM-DFx power module which must be connected to the left of the first motor starter.
- The load voltage is fed in at the first (left) TM-xxxxS32 terminal module of a motor starter. The other TM-xxxxS31 terminal modules are automatically supplied with power through the integrated power bus when they are mounted side by side. If the power bus is utilized to its full capacity of 40 A for Standard motor starters or 50 A for High-Feature motor starters, a new supply must be fed in through an additional TM-xxxxS32 terminal module.

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General data

TM-DS and TM-RS terminal modules for motor starters

- Mechanical modules in which the motor starter and expansion modules are inserted
- For constructing the permanent wiring and self-assembling voltage bus
- For connecting the motor connection cables
- Positive-locking connection to ensure enhanced vibration resistance

Terminal modules are purely mechanical components for accommodating the ET 200S I/O modules. The self-assembling voltage buses integrated into the terminal modules reduce wiring outlay to the single infeed (both of auxiliary and load voltage). All modules following on the right are automatically supplied upon plugging the terminal modules together. The rugged design and keyed connection technology enables use in harsh industrial conditions.

The TM-DS and TM-RS terminal modules are available in various versions for the Standard motor starters and the High-Feature motor starters.

Terminal modules with the suffix "-S32"

- The terminal modules with the suffix "-S32" have connection terminals for feeding into the integrated 40A/50A power bus and connection terminals for the motor connection cable. They are mounted at the beginning (left) of a power bus segment.
- To configure a new load group, another "-S32" terminal module is plugged in.
- The "-S32" terminal modules are supplied with three caps for closing the power bus contacts on the final terminal module of a segment.
- Optionally expandable with PE/N modules

Terminal modules with the suffix "-S31"

- The terminal modules with the suffix "-S31" only have connection terminals for the motor connection cable. These terminal modules follow on the right after a "-S32" terminal module.
- Optionally expandable with PE/N modules

All connection terminals of the terminal modules for motor starters are equipped with powerful 10 mm^2 screw terminals.

Power modules (page 8/111)

PM-D power modules are used for monitoring the two 24 V DC auxiliary voltages for the group of motor starters following on the right or for supplying power to the group of frequency converters following on the right.

TM-P terminal modules for PM-D power modules (page 8/112)

- Connection using screw terminals
- Light colored enclosure for visual distinction
- Always before the first TM-DS/TM-RS

ET 200S Safety motor starters with integrated safety technology

The safety-related, communication-capable ET 200S motor starters offer the right solution for every safety application. The range extends from the simple local safety solution through to the user-friendly version with PROFIsafe, which can be used in conjunction with a safe control system (see "Safety Modules local and PROFIsafe", page 8/116).

The safety technology is an integral part and is therefore pre-wired at the factory.

The ET 200S Safety Motor Starter Solutions comprise:

- Safety modules (page 8/117)
- Standard motor starters (page 8/105)
- High-Feature motor starters (page 8/108)
- Failsafe motor starters (page 8/113)

System configuration with ET 200S motor starters

When constructing an ET 200S station with motor starters a distinction can be made between the following configurations:

- Conventional ET 200S motor starter solution consisting of:
  - PM-D module
  - Standard motor starter or High-Feature motor starter
- ET 200S Safety Motor Starter Solution local (see page 8/116)
- ET 200S Safety Motor Starter Solutions PROFIsafe (see page 8/120)

SIRIUS motor starter block library for SIMATIC PCS 7

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S motor starters (direct and reversing starters, direct-on-line soft starters) can be easily and simply integrated into the SIMATIC PCS 7 process control system. The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver concept of SIMATIC PCS 7 corresponding diagnostics and driver blocks as well as the elements required for operation and monitoring (symbols and faceplates), see Chapter "Parameterization, Configuration and Visualization with SIRIUS".

Configuration tool for ET 200S station

The "SIMATIC Selection Tool" enables the fast and accurate selection of SIMATIC hardware. It is available as a configurator in the Siemens Industry Mall free of charge. Combine your stations (e.g. S7-1200, S7-300, S7-400, S7-400H) and select the desired distributed I/O (e.g. ET 200S, ET 200pro). You can transfer the parts list you receive to the Industry Mall shopping cart and place your order quickly, conveniently and with no problems.

You can find detailed information about the ET 200S system at:

www.siemens.com/ET200S

Here you will find a link to the SIMATIC Selection Tool.

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	SIMATIC ET 200S Standard motor starters	SIMATIC ET 200S High-Feature motor starters[1]
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ Dependent on interface module	
Parameterization		
PROFIBUS/PROFINET data records	--	✓
Parameterization using data record start-up	--	✓
Diagnostics		
Acyclic through data records	--	✓
Diagnostic interrupt support	✓	
Diagnostics using PROFIBUS/PROFINET	--	✓ See manual[2]
Process image		
Process image	✓ 3I/3O	✓ 16I/7O
Address area required per module	✓ 4 bits	✓ 2 bytes
Data channels		
Manual mode local interface	--	✓ Through module
Motor Starter ES via local interface	--	✓ Starting end of 2011
Motor Starter ES via bus	--	✓ Starting end of 2011
Data records (acyclic)		
Parameterization	--	✓
Support for PROFIenergy profile	--	✓ Measuring the motor current and disconnection in idle times
Diagnostics	--	✓
Measured values	--	✓
Statistics	--	✓
Commands	--	✓
Slave pointer	--	✓
Logbook	--	✓
Device identification	--	✓
I&M data	--	✓
Inputs		
Number	✓ Maximum 2, via xB3, xB4, xB6	✓ Maximum 4, 2 via xB3, xB4, xB6 and 2 via module 2DI 24 V DC COM
• Of which in the process image	--	✓ 4
Input action	✓ End position on left, right	✓ Parameterizable: flexible
Quick stop	--	✓ Parameterizable
Outputs		
Number	✓ Internal, for controlling the brake module	
Output action	✓ Brake	
Brake output with additional module		
Motor brake voltage: brake module	✓ 24 V DC: xB1/xB3, 500 V DC: xB2/xB4, 400 V AC: xB5/xB6	
Motor protection		
Overload protection	✓ Thermal, range 1:1.3	✓ Solid-state, wide range 1:10
Overload warning	-- Only tripping	✓
Short-circuit protection	✓ Motor starter protectors	✓
Full motor protection	--	
Motor protection response in case of overload Thermal motor model response	--	✓ Parameterizable: disconnection without restart, disconnection with restart, warning
Automatic reset	--	
Temperature sensor	--	
Emergency start function	-- (✓ with control unit 3RK1903-0CG00)	✓

✓ Function available
-- Function not available

[1] The specified device functions apply in full only to the new .-.AB4 starters.
[2] http://support.automation.siemens.com/WW/view/en/6008567

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General data

	SIMATIC ET 200S Standard motor starters	SIMATIC ET 200S High-Feature motor starters
Device functions (firmware features)		
Device functions		
Repair switch	✓ Rocker switch	✓ Motor starter protectors
Motor starter protector signaling	✓	✓ Parameterizable
Lower current limit monitoring	--	✓ Parameterizable, increment 3.125 %, 18.75 ... 100 %
Upper current limit monitoring	--	✓ Parameterizable, increment 3.125 %, 50 ... 400 %
Zero current detection	--	✓ Parameterizable: warning, disconnection
Stall protection/disconnecting the blocking current	--	✓ Parameterizable
Unbalance	✓	✓ Parameterizable: warning, disconnection
Load type	--	✓ Parameterizable: 1 and 3-phase
Tripping class	✓ CLASS 10	✓ Parameterizable for DS1e-x, RS1e-x: CLASS 5 (10a), 10, 15, 20 for DSS1e-x: CLASS 5 (10a), 10 (only at 0.3 ... 3 A)
Protection against voltage failure	✓	✓ Parameterizable: Activated/deactivated
Local diagnostics functions using LEDs		
"C-STAT" switching status	✓ Red/green/yellow LEDs	
"SF" group fault	✓ Red LEDs	
"DEVICE" device status	--	✓ Red/green/yellow LEDs
Auxiliary switches for enabling circuit of the ET 200S – safety technology already integrated (for use up to SIL 3 (IEC 61508) or PL e (EN ISO 13849-1) in combination with infeed contactor)	-- Failsafe kit needed	✓ Except DSS1e-x (max. SIL 1 or PL b can be achieved)

✓ Function available
-- Function not available

	ET 200S Standard motor starters	ET 200S High-Feature motor starters	
	DS1-x, RS1-x	DS1e-x, RS1e-x	DSS1e-x
Device functions (firmware features)			
Soft starter control function			
Soft start function	--		✓
Bypass function	--		
Starting time	--		✓ Locally adjustable, not through bus 0 ... 20 s
Ramp-down time	--		✓ Locally adjustable, not through bus 0 ... 20 s
Ramp-down mode	--		✓ Locally adjustable, not through bus
Start voltage	--		✓ Locally adjustable, not through bus 30 ... 100 % of U_e
Stopping voltage	--		✓ Locally adjustable, not through bus
Trace	--		

✓ Function available
-- Function not available

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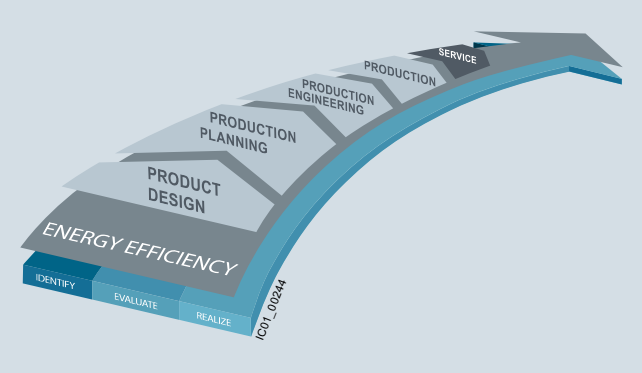
Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

SIMATIC ET 200S motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy (see "High-Feature Motor Starters", page 8/108)
- Elimination of energy consumption in dead times through disconnection using PROFIenergy (see "High-Feature Motor Starters", page 8/108)
- Current management
  Avoidance of current peaks, thus reducing the load on the grid and the mechanical system
- Reduced heating of the control cabinet
  Technology-reduced inherent power loss as speed-controlled drive systems, enabling also lower cooling costs (and a more compact design)

Application

The SIMATIC ET 200S motor starters are ideal for the use of several spatially concentrated distributed drive solutions in which several motors, digital or analog sensors and actuators are addressed by a distributed control cabinet or control box. They are perfectly suited for protecting and switching any AC loads.

Application areas

The SIMATIC ET 200S motor starters are suitable for numerous sectors of industry, e. g. machinery and plant engineering or conveying applications.

The ET 200S High-Feature motor starters are an excellent choice for the operation of ventilation systems, pump drives or winches.

Technical specifications

		ET 200S Standard motor starters	ET 200S High-Feature motor starters	
		DS1-x, RS1-x	DS1e-x, RS1e-x	DSS1e-x
Mechanics and environment				
Motor starters for connection to ET 200S, max.[1]		42	17	
Mounting dimensions (W x H x D)				
• Direct-on-line starters	mm	45 x (265 + 45) x (120 + 27); (45: PE/N block; 27: auxiliary switch contactor from F-Kit)	65 x (290 + 45) x (150 + 23); (45: PE/N block; 23: control module)	
• Reversing starters	mm	90 x (265 + 45) x (120 + 27); (45: PE/N block; 27: auxiliary switch contactor from F-Kit)	130 x (290 + 45) x (150 + 23); (45: PE/N block; 23: control module)	
Permissible ambient temperature				
• During operation	°C	0 ... +60, from +40 with derating	0 ... +60, for horizontal mounting up to +40	
• During storage	°C	-40 ... +70	-40 ... +70	
• Permissible mounting position	°C	Vertical, horizontal with derating	Vertical, horizontal	
Weight				
• Direct-on-line/reversing starters incl. terminal module	kg	1.0/1.6	1.6/2.2	1
• Direct-on-line/reversing starters incl. terminal block PE/N		1.1/1.8	1.7/2.3	1.1
Vibration resistance acc. to IEC 60068, parts 2-6	g	2		
Shock resistance acc. to IEC 60068, parts 2-27	g/ms	Square 5/11		
Conductor cross-section				
• Solid	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2], according to IEC 60947: max. 1 x 10		
• Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]		
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)		
Degree of protection		IP20, finger-safe (also applies to terminal modules on a dismounted motor starter)		
Mechanical endurance				
• Motor starter protectors	Operating cycles	100 000		
• Contactors		30 million	10 million	--
• Contactors with safety function (F-Kit)		10 million	--	--

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General data

		ET 200S Standard motor starters	ET 200S High-Feature motor starters	
		DS1-x, RS1-x	DS1e-x, RS1e-x	DSS1e-x
Electrical specifications				
Power consumption				
• From auxiliary circuit L+/M (U_1)	mA	Approx. 20	Approx. 40	
• From auxiliary circuit A1/A2 (U_2)	mA	Approx. 100	Approx. 1 700 (80 ms long), approx. 350 (after 80 ms)	Approx. 30
Rated operational current for terminal modules TM-D I_e	A	40	50	
Rated operational voltage U_e	V	400		
Approval DIN VDE 0106, part 101	V	Yes, up to 500		Yes, up to 480
CSA and U_L approval	V	Yes, up to 600		Yes, up to 480
Rated operational current I_e for motor starters				
• AC-1/2/3 at 60 °C				
- At 400 V	A	12	16	3 / 8 / 16
- At 500 V	A	9	11	--
• AC-4 at 60 °C				
- At 400 V	A	4.1	9	--
Rated short-circuit breaking capacity	kA	50 at 400 V		
Power of three-phase motors at 500 V	kW	5.5	7.5	
Utilization categories		AC-1, AC-2, AC-3, AC-4		
Protective separation between main and auxiliary circuits	V	400, according to DIN VDE 0106, part 101		
Positively-driven operation of contactor relay (NC)		Yes		--
Trip class		CLASS 10	Parameterizable CLASS 5 (10 A), 10, 15, 20	0.3 ... 3 A: CLASS 10/10A, parameterizable; 2.4 ... 8 A: CLASS 10A 2.4 ... 16 A: CLASS 10A
Type of coordination		Up to 1.6 A: 2 Up to 12 A: 1	Up to 16 A: 2	Up to 16 A: 1
Electrical endurance				
• Motor starter protectors	h	100 000		
• Contactors		See manual[3]		--
Permissible switching frequency with starting time t_A = 0.1 s and relative ON period t_{ED} = 50%	1/h	< 80	See manual[3]	
Induction protection		Already installed		

[1] Additional limits: process image, max. design width 2 m.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified. If identical cross-sections are used, this restriction does not apply.

[3] http://support.automation.siemens.com/WW/view/en/6008567

More information

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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Overview

Functionality of the Standard motor starters

- For basic functionality see "General data" → "Overview", page 8/99
- Direct-on-line and reversing starters up to 5.5 kW
- Power bus up to 40 A
- With motor starter protector and contactor assembly
- Integrated isolating function via motor starter protector
- Can be combined with local safety technology for use in safety-related system components with F-Kit and PM-D F modules (see "Accessories" → "Overview", page 8/127)

Device functions (firmware features)

See "General data" → "Overview", page 8/101

Technical specifications

See "General data" → "Technical specifications", page 8/103

Selection and ordering data

Motor rating three-phase motor 4-pole at 400 V AC, standard output *P*	Setting range of the overcurrent release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
kW	A						
Standard motor starters, with diagnostics, electromechanical, fuseless, expandable with Brake Control Module							
Direct starter DS1-x							
< 0.06	0.14 ... 0.20	A	**3RK1301-0BB00-0AA2**		1	1 unit	42D
0.06	0.18 ... 0.25	A	**3RK1301-0CB00-0AA2**		1	1 unit	42D
0.09	0.22 ... 0.32	A	**3RK1301-0DB00-0AA2**		1	1 unit	42D
0.10	0.28 ... 0.40	A	**3RK1301-0EB00-0AA2**		1	1 unit	42D
0.12	0.35 ... 0.50	A	**3RK1301-0FB00-0AA2**		1	1 unit	42D
0.18	0.45 ... 0.63	A	**3RK1301-0GB00-0AA2**		1	1 unit	42D
0.21	0.55 ... 0.80	A	**3RK1301-0HB00-0AA2**		1	1 unit	42D
0.25	0.70 ... 1.00	A	**3RK1301-0JB00-0AA2**		1	1 unit	42D
0.37	0.90 ... 1.25	A	**3RK1301-0KB00-0AA2**		1	1 unit	42D
0.55	1.1 ... 1.6	A	**3RK1301-1AB00-0AA2**		1	1 unit	42D
0.75	1.4 ... 2.0	A	**3RK1301-1BB00-0AA2**		1	1 unit	42D
0.90	1.8 ... 2.5	A	**3RK1301-1CB00-0AA2**		1	1 unit	42D
1.1	2.2 ... 3.2	A	**3RK1301-1DB00-0AA2**		1	1 unit	42D
1.5	2.8 ... 4.0	A	**3RK1301-1EB00-0AA2**		1	1 unit	42D
1.9	3.5 ... 5.0	A	**3RK1301-1FB00-0AA2**		1	1 unit	42D
2.2	4.5 ... 6.3	A	**3RK1301-1GB00-0AA2**		1	1 unit	42D
3.0	5.5 ... 8.0	A	**3RK1301-1HB00-0AA2**		1	1 unit	42D
4.0	7 ... 10	A	**3RK1301-1JB00-0AA2**		1	1 unit	42D
5.5	9 ... 12	A	**3RK1301-1KB00-0AA2**		1	1 unit	42D
Reversing starter RS1-x							
< 0.06	0.14 ... 0.20	A	**3RK1301-0BB00-1AA2**		1	1 unit	42D
0.06	0.18 ... 0.25	C	**3RK1301-0CB00-1AA2**		1	1 unit	42D
0.09	0.22 ... 0.32	A	**3RK1301-0DB00-1AA2**		1	1 unit	42D
0.10	0.28 ... 0.40	A	**3RK1301-0EB00-1AA2**		1	1 unit	42D
0.12	0.35 ... 0.50	A	**3RK1301-0FB00-1AA2**		1	1 unit	42D
0.18	0.45 ... 0.63	A	**3RK1301-0GB00-1AA2**		1	1 unit	42D
0.21	0.55 ... 0.80	A	**3RK1301-0HB00-1AA2**		1	1 unit	42D
0.25	0.70 ... 1.00	A	**3RK1301-0JB00-1AA2**		1	1 unit	42D
0.37	0.90 ... 1.25	A	**3RK1301-0KB00-1AA2**		1	1 unit	42D
0.55	1.1 ... 1.6	A	**3RK1301-1AB00-1AA2**		1	1 unit	42D
0.75	1.4 ... 2.0	A	**3RK1301-1BB00-1AA2**		1	1 unit	42D
0.90	1.8 ... 2.5	A	**3RK1301-1CB00-1AA2**		1	1 unit	42D
1.1	2.2 ... 3.2	A	**3RK1301-1DB00-1AA2**		1	1 unit	42D
1.5	2.8 ... 4.0	A	**3RK1301-1EB00-1AA2**		1	1 unit	42D
1.9	3.5 ... 5.0	A	**3RK1301-1FB00-1AA2**		1	1 unit	42D
2.2	4.5 ... 6.3	A	**3RK1301-1GB00-1AA2**		1	1 unit	42D
3.0	5.5 ... 8.0	A	**3RK1301-1HB00-1AA2**		1	1 unit	42D
4.0	7 ... 10	A	**3RK1301-1JB00-1AA2**		1	1 unit	42D
5.5	9 ... 12	A	**3RK1301-1KB00-1AA2**		1	1 unit	42D

DS1-x

RS1-x

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Standard terminal modules

Overview

Terminal modules TM-DS, TM-RS

More information see also "General data" → "Overview" → from the section "Power supply through terminal modules", page 8/99.

- "–S32" version with supply terminals: 2 x 3 x 10 mm² screw terminals for power bus and motor feeder
- "–S31" version without supply terminals: 1 x 3 x 10 mm² screw terminals for motor feeder
- Optionally expandable with PE/N modules (see "Accessories", page 8/130)
- Applies only to Standard motor starters: For applications with high motor currents (> 6.3 A) or high ambient temperatures (> 40 °C), it is recommended to use the DM-V15 distance module between two DS1-x motor starters (see "Accessories", page 8/128).

Technical specifications

TM-DS45 and TM-DS65/TM-FDS65 terminal modules

		TM-DS45	TM-DS65/TM-FDS65
Dimensions			
• Mounting dimensions (W x H x D)	mm	45 x 264 x 100	65 x 290 x 100
• Height with PE/N terminal block	mm	306	332
• Depth with motor starter	mm	127	150
• Depth with motor starter and F-Kit (safety technology)	mm	152	--
• Depth with motor starter and 2DI control module	mm	--	173
Rated voltages, currents and frequencies for the power bus			
• Rated insulation voltage U_i	V	690	
• Rated operational voltage U_e	V AC	500	
• Rated impulse withstand voltage U_{imp}	kV	6	
• Rated operational current I_e	A	40	50
• Rated frequency	Hz	50/60	
Conductor cross-sections			
• Solid	mm²	2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1]	
• Finely stranded with end sleeve	mm²	1 x 10 or 2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1] according to IEC 60947	
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)	
• With additional three-phase infeed terminal if required			
- Solid or stranded	mm²	1 x 2.5 ... 25	
- Finely stranded with end sleeve	mm²	1 x 2.5 ... 25	
- AWG cables, solid or stranded	AWG	1 x 12 ... 4	
Wiring			
• Required tool		Standard screwdriver size 2 and Pozidriv 2	
• Tightening torque	Nm	2.0 ... 2.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified. If identical cross-sections are used, this restriction does not apply.

TM-RS90 and TM-RS130/TM-FRS130 terminal modules

		TM-RS90	TM-RS130/TM-FRS130
Dimensions			
• Mounting dimensions (W x H x D)	mm	90 x 264 x 100	130 x 290 x 100
• Height with PE/N	mm	306	332
• Depth with motor starter	mm	127	150
• Depth with motor starter and F-Kit (safety technology)	mm	152	--
• Depth with motor starter and 2DI control module	mm	--	173
Rated voltages, currents and frequencies for the power bus			
• Rated insulation voltage U_i	V	690	
• Rated operational voltage U_e	V AC	500	
• Rated impulse withstand voltage U_{imp}	kV	6	
• Rated operational current I_e	A	40	50
• Rated frequency	Hz	50/60	

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		TM-RS90	TM-RS130/TM-FRS130
Conductor cross-sections			
• Solid	mm^2	2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1]	
• Finely stranded with end sleeve	mm^2	1 x 10 or 2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1] according to IEC 60947	
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)	
• With additional three-phase infeed terminal if required			
- Solid or stranded	mm^2	1 x 2.5 ... 25	
- Finely stranded with end sleeve	mm^2	1 x 2.5 ... 25	
- AWG cables, solid or stranded	AWG	1 x 12 ... 4	
Wiring			
• Required tool		Standard screwdriver size 2 and Pozidriv 2	
• Tightening torque	Nm	2.0 ... 2.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified. If identical cross-sections are used, this restriction does not apply.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Standard motor starters							
3RK1 903-0AB00	**TM-DS45-S32** **for DS1-x direct-on-line starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1903-0AB00**		1	1 unit	42D
3RK1 903-0AB10	**TM-DS45-S31** **for DS1-x direct-on-line starters** without incoming power bus connection	A	**3RK1903-0AB10**		1	1 unit	42D
3RK1 903-0AC00	**TM-RS90-S32** **for RS1-x reversing starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1903-0AC00**		1	1 unit	42D
	TM-RS90-S31 **for RS1-x reversing starters** without incoming power bus connection	A	**3RK1903-0AC10**		1	1 unit	42D

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High-Feature motor starters

Overview

Functionality of the High-Feature motor starters

- For basic functionality see "General data" → "Overview", page 8/99.
- Direct-on-line, reversing or soft starter up to 7.5 kW
- With wide range in 3 setting ranges, with 0.3 to 3 A, 2.4 up to 8 A, 2.4 to 16 A available
- With combination of starter circuit breaker, electronic overload protection (parameterizable), and contactor or soft starter
- Power bus up to 50 A
- Upper and lower current limits for plant and process monitoring
- Motor stall protection, zero current detection and asymmetry detection integrated
- The actual motor current is measured and transmitted for diagnostics in the cycle process image
- Control of the motor starter from the control system and extensive diagnostics status via the cyclic process image
- Optional digital inputs available in the cyclic process image and flexibly assignable with functions for adaptation to all applications
- Integrated isolating function using starter circuit breakers
- Detection of the switching state of the starter circuit breaker via auxiliary switches and of the contactor via current evaluation
- Local safety engineering possible (without F-kit in the case of the HF starter, because the function of the failsafe kit is already integrated)
- Front-mounting 2DI LC COM control module for another 2 parameterizable digital inputs
- Optional "Motor Starter ES" software for easy commissioning and diagnostics (see Chapter "Parameterization, Configuration and Visualization with SIRIUS")
- PROFIenergy capable
- Supplying the motor current in PROFIenergy format and shutting down in dead times
- Support of all DPV1 acyclic services on PROFIBUS and PROFINET
  - Changing of parameters during operation, e.g. the rated operational current
  - Reading and writing acyclic data for exact diagnostics of the unit or process and for analysis of the plant status

Selective protection concept for ET 200S High-Feature motor starters

As the result of the selective protection concept (separate tripping of short circuit and overload) with electronic overload evaluation, additional advantages are realized on the High-Feature motor starters – advantages which soon make themselves positively felt particularly in manufacturing processes with high plant stoppage costs:

- Only two versions up to 7.5 kW – hence little order variance and stock keeping
- All settings can be parameterized by bus – hence full TIA capability
- Separate signaling of overload and short circuit – enables selective diagnostics
- Overload can be acknowledged by remote reset – ideal for highly automated plants
- Current asymmetry monitoring – complete monitoring of the motor
- Stall protection – complete monitoring of the motor
- Emergency start function in case of overload – operation is possible in an emergency
- Current value transmission via bus – monitoring of the application
- Current limit monitoring
- Trip class can be parameterized – overload tripping can be adapted to the application
- Type of coordination "2" – still functional after short circuit with magnitude of 50 kA
- Very high contact endurance

ET 200S High-Feature motor starters: DS1e-x direct-on-line starter

ET 200S High-Feature motor starters: DSS1e-x direct-on-line soft starter

ET 200S High-Feature motor starters: RS1e-x reversing starter

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PROFIenergy for ET 200S High-Feature motor starters[1)]

Increasing energy prices, far-reaching ecological problems worldwide and the threat of climate change make it necessary for you to be more conscious about your use of energy.

Active and effective energy management is possible with PROFIenergy.

PROFIenergy is a manufacturer-independent profile on PROFINET, which can be used by all manufacturers, has been standardized by PNO[1)] and supports shutting down electrical devices during dead times and reading out measured values.

The ET 200S HF motor starter supplies the motor current in PROFIenergy format and switches off during dead times.

Support of all acyclic services on PROFIBUS and PROFINET

Thanks to the acyclic services, the ET 200S HF motor starters now offer plenty of diagnostics data via data records. There are new extensive options for reading out data from the motor starter for monitoring devices, systems or processes. The motor starter is equipped internally with three logbooks for device faults, motor starter trips and events, which are issued with a time stamp. These logbooks can be read out of the motor starter on demand at any time and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations. This allows deviations in the process to be monitored, but also optimum initial commissioning to take place.

Statistical data or measured values make plant monitoring easy for the user.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication status as a basis for central device and plant monitoring.

The Installation and Maintenance functions (I&M) store, firstly, information (I&M) about the modules used in the motor starter and, secondly, data (I&M) that can be defined during configuration, e.g. location designations. I&M functions are used for for troubleshooting faults and localizing changes in hardware at a plant or checking the system configuration.

Supported data records:

- DS 0 S7-V1 system diagnostics (S7 diagnostics alarm)
- DS 72, 73, 75 logbooks, device faults, trips, events
- DS 92 device diagnostics
- DS 93 command
- DS 94 measured values
- DS 95 statistics
- DS 96 slave pointer
- DS 100 device identification
- DS 131 device parameters
- DS 134 maintenance
- DS 165 comment
- DS 226 PROFIenergy technology function
- DS 231 I&M 0 (= device identification)
- DS 232 I&M 1 (= equipment identifier)
- DS 233 I&M 2 (= installation)
- DS 234 I&M 3 (= description)

Device functions (firmware features)

See "General data" ➞ "Overview", page 8/101

1) In the PNO (PROFIBUS Nutzerorganisation e. V. - PROFIBUS User Organization), manufacturers and users have come together to agree on the standardized communication technologies PROFIBUS and PROFINET.

Technical specifications

See "General data" ➞ "Technical specifications", page 8/103

Selection and ordering data

High-Feature motor starters in fully innovated design (".-.AB4 starters") [1)]

	Setting range of the overcurrent release A	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
High-Feature motor starters, with diagnostics, electronic overload protection, fuseless, expandable with brake control module							
DS1e-x	***DS1e-x direct-on-line starters***						
	0.3 ... 3	A	**3RK1301-0AB10-0AB4**		1	1 unit	42D
	2.4 ... 8	A	**3RK1301-0BB10-0AB4**		1	1 unit	42D
	2.4 ... 16	A	**3RK1301-0CB10-0AB4**		1	1 unit	42D
	RS1e-x reversing starters						
	0.3 ... 3	A	**3RK1301-0AB10-1AB4**		1	1 unit	42D
	2.4 ... 8	A	**3RK1301-0BB10-1AB4**		1	1 unit	42D
	2.4 ... 16	A	**3RK1301-0CB10-1AB4**		1	1 unit	42D
	DSS1e-x direct-on-line soft starters						
	0.3 ... 3	A	**3RK1301-0AB20-0AB4**		1	1 unit	42D
	2.4 ... 8	A	**3RK1301-0BB20-0AB4**		1	1 unit	42D
	2.4 ... 16	A	**3RK1301-0CB20-0AB4**		1	1 unit	42D

1) When a device is replaced, the innovated motor starter will behave like the not yet innovated motor starter (".-.AA4 starter"), i.e. it will run in DPV0 mode.

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High-Feature terminal modules

Overview

Terminal modules TM-DS, TM-RS

More information see also "General data" → "Overview" → from the section "Power supply through terminal modules", page 8/99.

- "–S32" version with incoming connection: 2 x 3 x 10 mm² screw terminals for power bus and motor feeder
- "-S31" version without incoming connection: 1 x 3 x 10 mm² screw terminals for motor feeder
- Optionally expandable with PE/N modules (see "Accessories", page 8/130)

Technical specifications

See "Standard terminal modules" → "Technical specifications", page 8/106.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for High-Feature motor starters						
TM-DS65-S32 **for DS1e-x and DSS1e-x direct-on-line starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1903-0AK00**		1	1 unit	42D
TM-DS65-S31 **for DS1e-x and DSS1e-x direct-on-line starters** without incoming power bus connection	A	**3RK1903-0AK10**		1	1 unit	42D
TM-RS130-S32 **for RS1e-x reversing starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1903-0AL00**		1	1 unit	42D
TM-RS130-S31 **for RS1e-x reversing starters** Without incoming power bus connection	A	**3RK1903-0AL10**		1	1 unit	42D

3RK1 903-0AK00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

- Disconnection of a complete group of motor starters is possible without any additional outlay (PL b according to ISO 13849-1 or SIL 1 according to IEC 62061)
- PM-D power modules are plugged onto the TM-P15 terminal modules. (A PM-D power module must be followed by at least one motor starter or one frequency converter.)

PM-D power modules are used for monitoring the two 24 V DC auxiliary voltages for the group of motor starters following on the right or for supplying power to the group of frequency converters following on the right. The voltage is fed in through TM-D terminal modules to the self-assembling potential bars.

A voltage failure is signaled through PROFIBUS diagnostics to the higher-level master. Additional LEDs inform locally about the status of the auxiliary voltages.

The separation of auxiliary voltages for signal checkback and power unit actuation enables the entire group to be shut down while maintaining the diagnostics capability.

Technical specifications

		PM-D power module 3RK1903-0BA00
Rated control supply voltage U_s up to 60 °C	V	20.4 ... 28
Rated operational current I_e		
• Recommended short-circuit protection	A	10
• Melting fuse	A	10
• Miniature circuit breaker	A	10, tripping characteristic B
Power consumption from backplane bus	mA	≤ 10
Supply of		
• Motor starters		Yes
• Frequency converters		Yes
• Motor starters for safety technology		No
• Electronic modules		No
• Ex(i) modules		No
Alarms		None
Diagnostics functions		Yes
• System fault/device fault		Red "SF" LED
• Monitoring of the electronics power supply U_1		Green "PWR" LED
• Monitoring of the supply voltage for contactors U_2		Green "CON" LED
• Diagnostics information can be read out		Yes
Conductor cross-sections		
• Flexible with end sleeve	mm^2	1.5
• Rigid	mm^2	2.5
Mounting dimensions (W x H x D)	mm	15 x 195.5 x 117.5

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power modules						
PM-D power modules for 24 V DC with diagnostics	A	**3RK1903-0BA00**		1	1 unit	42D

3RK1903-0BA00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Power module terminal modules

Overview

Terminal module for power module

For supplying load and sensor voltage to the self-assembling potential bars of the Standard motor starters, High-Feature motor starters and frequency converters. Power modules for voltage monitoring are plugged onto TM-P modules.

TM-P modules can be used any number of times within the ET 200S. A power module must always be plugged upstream from the first motor starter/frequency converter.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal module for power module							
3RK1 903-0AA00	**TM-P15 S27-01 terminal module** for PM-D power module	A	**3RK1903-0AA00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

ET 200S Failsafe motor starters F-DS1e-x direct-on-line starters

The Failsafe motor starter has been developed on the basis of the High-Feature motor starter (.-.AA4 starter). It differs in that, in addition to a motor starter protector and contactor assembly, a safe electronic evaluation circuit is installed for fault detection purposes which makes the motor starter failsafe.

If the contactor to be switched fails in an EMERGENCY-STOP case, the evaluation electronics detects a fault and opens the motor starter protector in the motor starter through a shunt release in a safety-related manner. The second redundant shutdown component is therefore no longer a main contactor, as is generally the case, but the motor starter protector installed in the motor.

All functions of the High-Feature starter are already integrated

The new Failsafe motor starters are characterized by easy, space-saving assembly as well as minimal wiring outlay. Like the High-Feature starters, the Failsafe motor starters have a switching capacity of up to 7.5 kW (16 A) which is achieved with just two motor starter versions. Another important feature is the high availability due to the high short-circuit strength (type of coordination "2").

Use

The Failsafe motor starter is predestined for use in combination with PROFIsafe (see connection diagram "ET 200S Safety Motor Starter Solution PROFIsafe with Failsafe motor starters", page 8/121). Another field of application is in combination with ASIsafe or safety relays (see example 2, page 8/119).

High degree of flexibility with safety technology

PROFIsafe solution with PM-D F PROFIsafe

In EMERGENCY-STOP applications, the Failsafe motor starters are selectively switched off through the upstream PM-D F PROFIsafe safety module. For each safety module, six switch-off groups can be formed. In the first delivery stage, the fail-safe freely-programmable logic of the SIMATIC controller is used to interface with the relevant fail-safe sensor technology. The interface between PROFIsafe and installations that use conventional safety technologies is implemented through the F-CM Failsafe contact multiplier with four floating contacts.

Solution local with PM-D FX1

Failsafe motor starters with safety relay (version 1) or ASIsafe (version 2, see example 2, page 8/119):
Signals with relevance for safety can be input to ET 200S through a PM-D F X1 infeed terminal module through the enabling circuits of the AS-i safety monitor or the safety relay to control the Failsafe motor starters which then selectively switch off the downstream motors.

Benefits

Advantages over conventional safety technology

- Significant savings in components (less hardware)
- Less mounting and installation work
- Motor starters are fail-safe and offer high availability

Technical specifications

F-DS1e-x direct-on-line starters/F-RS1e-x reversing starters

			F-DS1e-x direct-on-line starters	F-RS1e-x reversing starters
Dimensions				
Dimensions (W x H x D)		mm	65 x 290 x 150 (incl. terminal module)	130 x 290 x 150 (incl. terminal module)
Height with PE/N module		mm	332	
Depth with 2DI control module (not safe)		mm	173	
Module-specific specifications				
Type of coordination			Type 2 up to $I_e \leq 16$ A at 400 V	
Internal power supply			U1 (from PM-D F / PM-D X1)	
Maximum achievable safety class				
• According to IEC 62061			SIL 3	
• According to DIN VDE 0801			Tripping class 6 (AK6)	
• According to ISO 13849-1			PL e	
Safety characteristics				
Low demand	PFD_{AVG} (10a)			
• Test interval 3 months			3.5×10^{-5}	
• Test interval 6 months			8.0×10^{-5}	
High demand/continuous mode	PFH			
• Test interval 3 months		1/h	8.1×10^{-10}	
• Test interval 6 months		1/h	1.8×10^{-9}	
Proof-test interval		Years	10	

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ET 200S Failsafe motor starters

		F-DS1e-x direct-on-line starters	F-RS1e-x reversing starters
Voltages, currents, potentials			
Switching capacity		Up to 7.5 kW at 400 V AC in three setting ranges	
	A	• 0.3 ... 3	
	A	• 2.4 ... 8	
	A	• 2.4 ... 16	
Status, alarms, diagnostics			
Status display		SF, DEVICE and C-STAT, SG1 ... SG6	
Diagnostics functions			
• Group fault display		Red LED (SF)	
• Diagnostics information can be read out		Available	
Control circuit			
Rated operational voltage for electronics U_1	V DC	24 (20.4 ... 28.8)	24 (21.6 ... 26.4)
Reverse polarity protection for electronics U_1		Yes	
Rated operational voltage for contactor U_2	V DC	24 (20.4 ... 28.8)	
Reverse polarity protection for contactor U_2		Yes	
Power consumption			
• From electronics supply U_1	mA	Approx. 40	Approx. 100
• From contactor supply U_2			
- Pickup	A	1.7 (for 80 ms)	--
- Hold	mA	Max. 350	--
• From SG1 to 6			
- Pickup	mA	250 (for 200 ms)	
- Hold	mA	Max. 55	
• Test function of the shunt release/starter circuit breaker (50 ms) from U_1	A	Approx. 1.5	
• From the backplane bus	mA	Approx. 20	
Main circuit			
Rated operational voltage U_e			
• Acc. to DIN VDE 0106, part 1014, IEC 60947-1, EN 60947-1	V AC	500	
• Protective separation between main and auxiliary circuits	V	400	
• UL, CSA	V AC	600	
Rated insulation voltage U_i	V AC	500	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated frequency	Hz	50/60	

Selection and ordering data

Setting range of the overcurrent release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A						
ET 200S Failsafe motor starters						
F-DS1e-x direct-on-line starters Failsafe direct-on-line starters up to 7.5 kW at 400 V AC Mechanically switching Electronic overload protection						
• 0.3 ... 3	A	**3RK1301-0AB13-0AA4**		1	1 unit	42D
• 2.4 ... 8	A	**3RK1301-0BB13-0AA4**		1	1 unit	42D
• 2.4 ... 16	A	**3RK1301-0CB13-0AA4**		1	1 unit	42D
F-RS1e-x reversing starters Failsafe reversing starters up to 7.5 kW at 400 V AC Mechanically switching Electronic overload protection, fuseless						
• 0.3 ... 3	A	**3RK1301-0AB13-1AA4**		1	1 unit	42D
• 2.4 ... 8	A	**3RK1301-0BB13-1AA4**		1	1 unit	42D
• 2.4 ... 16	A	**3RK1301-0CB13-1AA4**		1	1 unit	42D

F-DS1e-x
direct-on-line starters

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Failsafe motor starters						
3RK1903-3AC00	**TM-FDS65-S32-01/S31-01 terminal modules** for F-DS1e-x direct-on-line starters with coding					
• With incoming power bus connection (TM-FDS65-S32-01)	A	**3RK1903-3AC00**		1	1 unit	42D
• Without incoming power bus connection (TM-FDS65-S31-01)	A	**3RK1903-3AC10**		1	1 unit	42D
	TM-FRS130-S32-01/S31-01 terminal modules for F-RS1e-x reversing starter with coding					
• With incoming power bus connection (TM-FRS130-S32-01)	A	**3RK1903-3AD00**		1	1 unit	42D
• Without incoming power bus connection (TM-FRS130-S31-01)	A	**3RK1903-3AD10**		1	1 unit	42D

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

ET 200S Safety Motor Starter Solutions local/PROFIsafe

The ET 200S Safety Motor Starter Solutions are preferred in all production and process automation fields in which the enhancement of plant availability and flexibility play a key role.

- ET 200S Safety Motor Starters Solutions local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system.
- ET 200S Safety Motor Starters Solutions PROFIsafe, on the other hand, are often found in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.

The ET 200S Safety Motor Starter Solutions comprise:

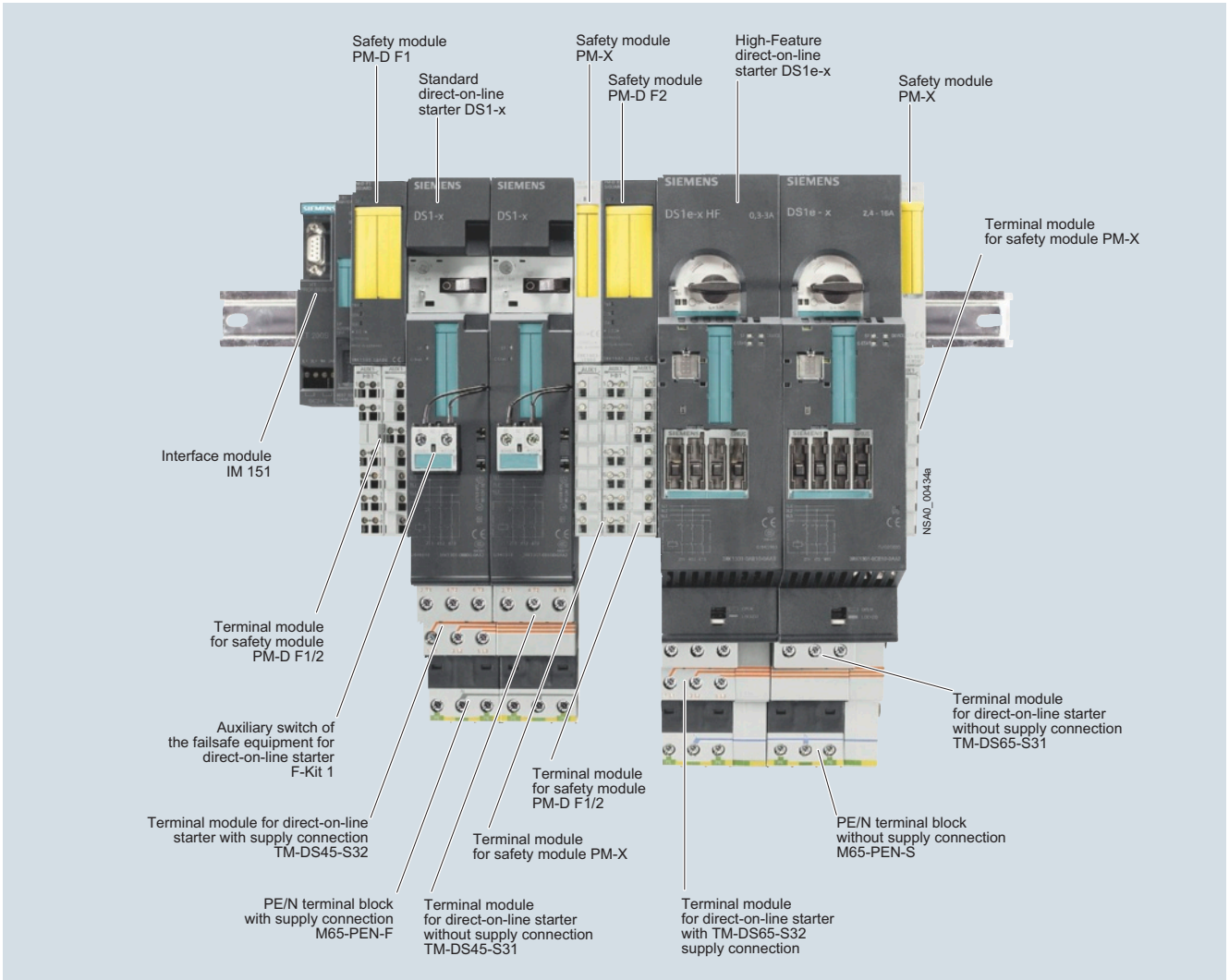
- Safety modules (page 8/117)
- Standard motor starters (page 8/105)
- High-Feature motor starters (page 8/108)
- Failsafe motor starters (page 8/113)

With the ET 200S Safety Motor Starter Solution local there is no complicated and hence cost-intensive configuring and wiring compared to conventional safety systems. The ET 200S Safety Motor Starter Solutions local are designed for PI e according to ISO 13849-1 or SIL 3 IEC 62061.

They enable the use of safety-related direct-on-line starters or reversing starters in the SIMATIC ET 200S distributed peripherals system on PROFINET or PROFIBUS. The bit-modular architecture of the system permits optimum imaging of machine or plant applications.

Within an ET 200S station the Safety Motor Starter Solutions local can also be combined with Standard motor starters or High-Feature motor starters without safety functions up to max. 4 kW up to PI d according to ISO 13849-1 or SIL 2 according to IEC 62061.

ET 200S Safety Motor Starter Solution local



Interaction of ET 200S Safety Motor Starter Solutions local components

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Components for ET 200S Safety Motor Starter Solution local

The ET 200S Safety Motor Starter Solutions local comprise:

Version 1 (see example 1, page 8/119):
- Safety modules PMD F1 ... 5
- PM-X module
- Standard motor starter or High-Feature motor starter

Version 2 (see example 2, page 8/119):
- PM-D FX1 safety module
- Failsafe motor starter

Functionality of the ET 200S Safety Motor Starter Solution local

- For using Standard, High-Feature or Failsafe motor starters in systems with safety category SIL 1 (according to IEC 62061) or PL c to Pl e (according to ISO 13849-1)
- Can also be used in combination with external safety relays
- Can also be used to activate external safety systems
- No complex wiring for conventional safety technology
- Safety module available for function-monitored and automatic starting
- Safety module available for Stop category 0 and 1
- Safety module for monitoring the auxiliary voltages for motor starters
- Safety modules can be plugged into the TM-PF30 terminal modules

With Safety Motor Starter Solutions local the highest safety category can be achieved according to ISO 13849-1 and IEC 62061. They can thus be used for evaluation of EMERGENCY-STOP circuits or for monitoring protective doors and also for time-delayed disconnections. With the contact multiplier the safety-relevant signals can also be made available to external systems.

All standard safety applications can be covered through combination of different TM-PF30 terminal modules. Needless to say, ET 200S motor starters can also be used in conjunction with external safety relays or with ASIsafe.

With the Safety Motor Starter Solutions local, up to 80 % of wiring is saved compared to conventional safety systems with local safety applications.

With the Safety Motor Starter Solutions local it is easy to configure several safety circuits. The safety sensors are connected directly and locally to the safety modules. These safety modules perform the work of the otherwise obligatory safety relays and safely shut down the downstream motor starters in accordance with the function selected. The crosslinks required for this are already integrated in the system and need no additional wiring. All signals from the safety modules are automatically relayed as diagnostic signals, e.g. in the event of cross-circuit in the EMERGENCY-STOP circuit.

The safety module evaluates the signal state of the connected safety sensors and, using the integrated safety relays, shuts down the group(s) of downstream motor starters. The shutdown function is monitored by the module, and the auxiliary voltages likewise.

Safety-relevant system signals, e.g. due to an actuated EMERGENCY-STOP switch or a missing auxiliary voltage, are automatically generated and notified to the interface module. The latter assigns an unambiguous ID to the fault. Using the PROFIBUS DP diagnostics block, faults of this type can be identified and localized without a great deal of programming work.

PM-D F1/F2/F3/F4/F5 safety modules

- PM-D F1/F2/F3/F4 safety modules monitor auxiliary voltages and contain the complete functionality of a safety relay:
  - PM-D F1: For evaluation of EMERGENCY-STOP circuits with the function "Monitored start"
  - PM-D F2: For monitoring of protective doors with the function "Automatic start"
  - PM-D F3: Expansion to PM-D F1/F2 for time-delayed disconnection
  - PM-D F4: For expanding safety circuits with other ET 200S motor starters, e. g. in a different tier
  - PM-D F5: Transmits the status from PM-D F1 ... 4 via four floating enabling circuits to external safety devices (contact multipliers)
- The PM-D F1 and PM-D F2 modules can be combined with the PM-D F3 or PM-D F4 modules.
- A PM-D F5 can be positioned at any point between a PM-D F1 ... 4 and a PM-X[1)].
- Safety modules monitor the U1 and U2 auxiliary voltages. A voltage failure is relayed as a diagnostic signal over the bus.
  - No additional PM-D safety module is required when the safety modules are used.
  - Each safety circuit, beginning with a PM-D F1 ... 4, must be terminated with one PM-X each[1)].

1) See "Accessories for Safety modules local", page 8/131.

PM-D F1 safety module

PM-D FX1 safety module

The PM-D FX1 safety module is used for feeding in 1 to 6 switch-off groups. The infeed voltage can be switched using 1 to 6 external safety shutdown devices (either ASIsafe monitors or 3TK28 safety relays). This safety module is used in applications with external safety shutdown devices where there is a need for the fully selective safety shutdown of Failsafe motor starters/frequency converters (see example 2, page 8/119).

Terminal modules for (TM-PF30) safety module

For feeding load and sensor voltage to the potential bars of the motor starters, and for connection of the 2-channel sensor circuit (e.g. EMERGENCY-STOP pushbutton) and a RESET button. Different terminal modules are available for the configuring of separate safety circuits or for the cascading of safety circuits, and for applications with time-delayed disconnection (see page 8/125).

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Safety modules local and PROFIsafe

Terminal module (TM-X)

For connection of an external infeed contactor (2nd shutdown possibility), with terminals for contactor coil and feedback contact, is always required to terminate a group of safety-related motor starters.

Failsafe Kit

The Failsafe Kit (F-Kit) must be added to each Standard motor starter in a safety segment in order to monitor the switching function.

F-Kit 1 supplements the DS1-x direct-on-line starter, F-Kit 2 the RS1-x reversing starter.

The F-Kits are comprised of:
- Contact supports for the terminal modules
- One or two auxiliary switch blocks for the contactor/contactors of the motor starter
- Connecting cables

High-Feature motor starters and their terminal modules come as standard with the functionality of the F-Kits integrated.

Components needed for applications with safety requirement

Components needed	Maximum achievable safety integrity according to ISO 13849-1 or IEC 62061				
	ISO 13849-1	PL b/c	PL c	PL d[1)]	PL d / PL e[1)]
	IEC 62061	SIL 1	SIL 1	SIL 2	SIL 3
PM-D		✓	--	--	--
PM-D F1/-F2/-F4		--	✓	✓	✓
PM-D F3		--	✓	✓	--
Fail-safe kit 1/fail-safe kit 2		--	✓[2)]	✓[2)]	✓[2)]
PM-X		--	✓	✓	✓
PM-D FX1		--	✓	✓	✓

✓ Required

-- Not required

1) An external infeed contactor is required in the main circuit (2-channel capability).

2) F-Kit is only required for the Standard motor starter; it is already integrated in the High-Feature motor starter.

Possible combinations of safety and terminal modules

Terminal modules	PM-D F1	PM-D F2	PM-D F3	PM-D F4	PM-D F5	PM-X	PM-DFX1	FCM
TM-PF30 S47-B0	✓	✓	--	--	--	--	--	--
TM-PF30 S47-B1	✓	✓	--	--	--	--	--	--
TM-PF30 S47-C0	--	--	✓	✓	--	--	--	--
TM-PF30 S47-C1	--	--	✓	✓	--	--	--	--
TM-PF30 S47-D0	--	--	--	--	✓	--	--	--
TM-X15 S27-01	--	--	--	--	--	✓	--	--
TM-PFX30 S47-G0	--	--	--	--	--	--	✓	--
TM-PFX30 S47-G1	--	--	--	--	--	--	✓	--
TM-FCM30 S47	--	--	--	--	--	--	--	✓

✓ Available

-- Not available

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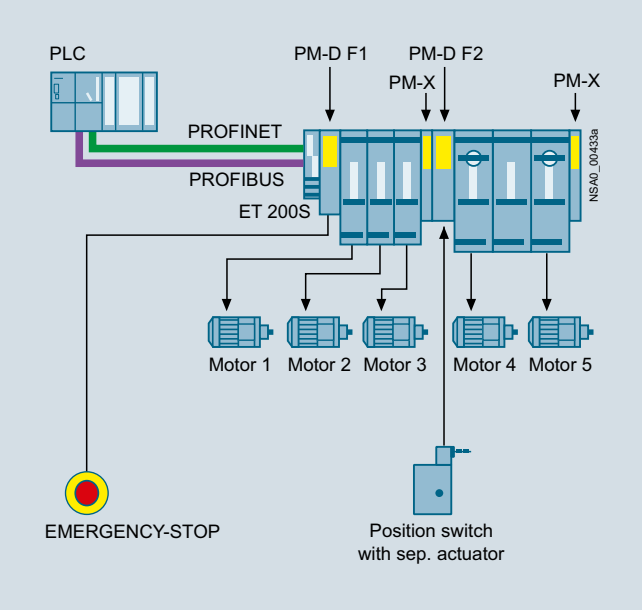
Examples

The diverse possible uses of the Safety Motor Starter Solutions local are presented in the manual SIMATIC ET 200S Motor Starters in the context of typical sample applications.

Safety functional examples for easy, quick and low-cost implementations of applications with Safety Motor Starter Solutions local are available on the Internet:

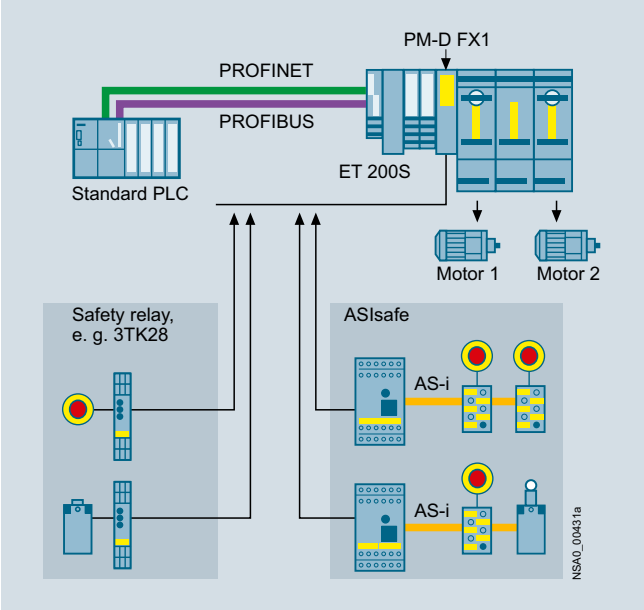
More information can be found on the Internet at:
www.siemens.com/ET200S-motorstarter

Example 1:



ET 200S Safety Motor Starter Solutions local with 2 safety circuits (= switch-off groups), Standard motor starters and High-Feature motor starters.

Example 2:



ET 200S Safety Motor Starter Solutions local with 2 external safety combinations (= safety relays or ASIsafe monitors) and with Failsafe motor starters (PM-DFX1 application). 2 of the 6 available safe switch-off groups are used.

Signals with relevance for safety can be input to ET 200S through a PM-DFX1 infeed terminal module through the enabling circuits of the ASIsafe monitor or the safety relay to control the Failsafe motor starters which then selectively switch off the downstream motors.

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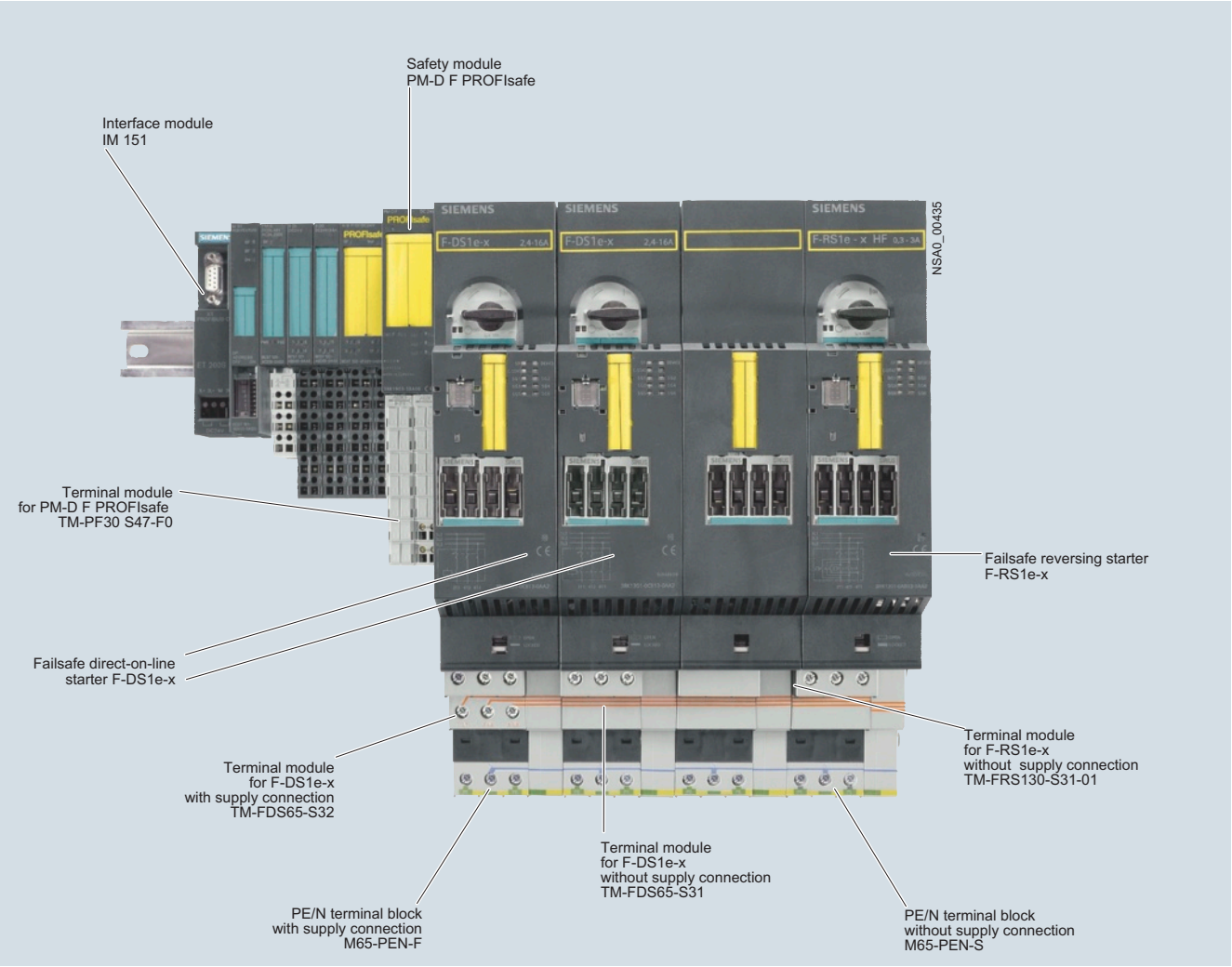
Safety modules local and PROFIsafe

ET 200S Safety Motor Starter Solution PROFIsafe



Interaction of ET 200S Safety Motor Starter Solution PROFIsafe components

Components for Safety Motor Starter ET 200S Solution PROFIsafe

The ET 200S Safety Motor Starter Solutions PROFIsafe consist of (see example, page 8/121):

- PMD F PROFIsafe safety modules
- Failsafe motor starters
- Safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile

Functionality of the ET 200S Safety Motor Starter Solution PROFIsafe

- For the use of Failsafe motor starters in plants with PL c to PL e according to ISO 13849-1 and SIL 2 and 3 according to IEC 62061. The use of Standard or High-Feature motor starters is also possible with certain assemblies.
- High flexibility (any assignment of sensors to motor starters using the PLC)
- Full selectivity of disconnection of the Failsafe motor starters
- No complex wiring for conventional safety systems, e.g. no infeed contactors even in the highest safety category
- Can also be used to activate external safety systems through F-CM contact multiplier
- Safety module available for any safety function
- Safety module available for Stop category 0 and 1
- Safety module for monitoring the auxiliary voltages for motor starters
- Safety modules can be plugged into the TM-PF30 terminal modules

Sensor and actuator assignment are freely configurable within the framework of the distributed safety concept:

The logic of the safety functions is implemented by software. Safety-related PROFIsafe communication and the use of a safety-related control system are required. Integration of the safety technology in the standard automation is realized through a single bus system (see Advantages of PROFIsafe), using PROFIBUS as well as PROFINET.

High degree of flexibility with safety technology Failsafe motor starters for PROFIsafe:

In EMERGENCY-STOP applications, the Failsafe motor starters are selectively switched off through the upstream PM-D F PROFIsafe safety module. For each safety module, six switch-off groups can be formed. In the first delivery stage, the fail-safe freely-programmable logic of the SIMATIC controller is used to interface with the relevant fail-safe sensor technology.

F-CM contact multipliers

The interface between PROFIsafe and installations that use conventional safety technology is implemented through the F-CM Failsafe contact multiplier with four floating contacts.

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PM-D F PROFIsafe safety modules

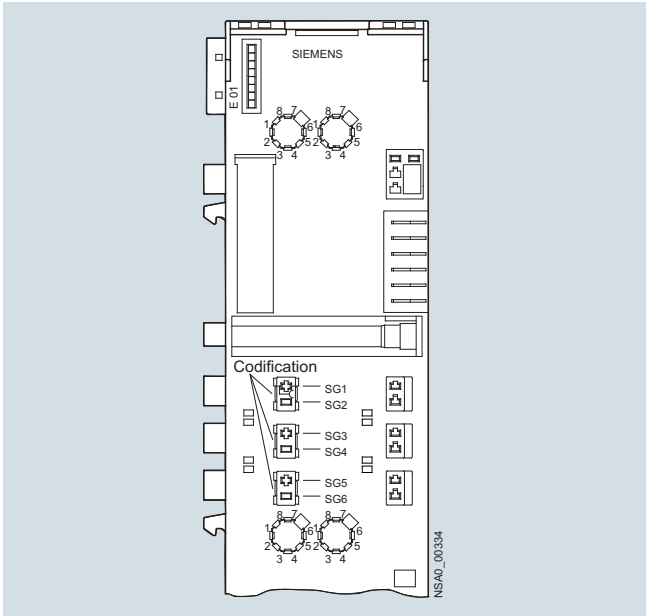
The PM-D F PROFIsafe safety module receives the shutdown signal from the interface module of the ET 200S and safely switches off 1 to 6 switch-off groups. This safety module is used in PROFIsafe applications where there is a need for the selective safety shutdown of Failsafe motor starters/frequency converters.

PM-D F PROFIsafe with TM-PF30 S47-F0 terminal module

Terminal modules

The terminal assignment of the terminal modules for safe motor starters corresponds to the terminal assignment of the 45 mm and 65 mm terminal modules. The terminal modules for safe motor starters have a coding module in addition. This enables the safe motor starter to be assigned to one of the six switch-off groups.

The terminal module contains three coding elements which fully cover the three coding openings in the terminal module. The labeled coding element contains (in the chamber marked with the dash) the busbar tap; the non-labeled coding elements are used only to cover the coding openings. Switch-off group 1 (AG1 or SG1) is coded in the as-delivered state. The coding can be changed to switch-off group 2 by releasing the coding element and turning it through 180°. Changing the coding to switch-off group 3 is possible by exchanging the labeled and blank coding elements. In this case, the dash on the labeled coding element must correlate with the dash of the required switch-off group (symbolized busbar).



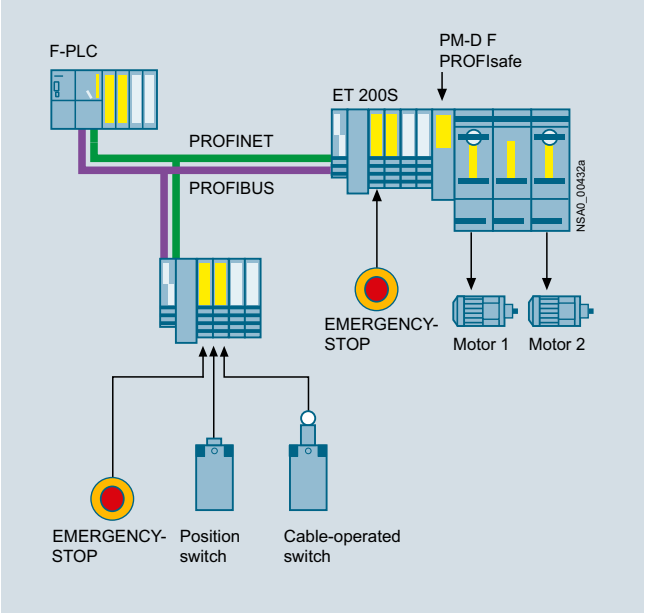
The Failsafe motor starters are assigned to one of the six possible switch-off groups.

Example:

The diverse possible uses of the Safety Motor Starter Solutions PROFIsafe are presented in the manual SIMATIC ET 200S Motor Starters in the context of typical sample applications.

Safety functional examples for easy, quick and low-cost implementations of applications with Safety Motor Starter Solution PROFIsafe are available on the Internet:

More information can be found on the Internet at:
www.siemens.com/ET200S



ET 200S Safety Motor Starter Solution PROFIsafe with Failsafe motor starters and fully selective disconnection (PM-DF PROFIsafe application)

Within an ET 200S station the Failsafe motor starters are assigned to one of 6 safety segments. For plants with distributed configuration the shutdown signals of these safety segments are preferably issued by a higher-level, safety-related control system through PROFIsafe. This permits the greatest flexibility for assigning the motor starters to different safety circuits.

Alternatively, an ET 200S F-CPU can also be used for control purposes.

If a safety-related SIMATIC CPU is used, the ET 200S is available as a safety-related I/O. Nevertheless, in such a station it is possible to configure conventional motor starters and input/output modules mixed with modules with safety functions.

Thanks to the PROFIsafe profile, the safety functions are available in the complete network, which means that the Safety Motor Starter Solutions PROFIsafe enable the selective disconnection of a Failsafe motor starters or the disconnection of a group of Standard and High-Feature motor starters regardless of where and on which peripheral station the safe control devices were connected. As such, this solution provides an unprecedented level of flexibility and reduction of wiring for applications in widespread plants or with a sporadic demand for changes in the assignment of safety segments.

The Safety Motor Starter Solutions PROFIsafe are ideally suited for safety concepts with Cat. 2 to 4 according to ISO 13849-1 and up to SIL 3 according to IEC 62061.

Each safety module switches up to 6 switch-off groups for Failsafe motor starters/frequency converters.

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Technical specifications

Safety modules PM-D F1, F2, F3, F4 and F5		
Mechanical endurance	Operating cycles	10 x 10^6
Electrical endurance	Operating cycles	200 000 at I_e
Utilization category		DC-13
Control times		
• Minimum command duration	ms	200
• Recovery time	s	< 1
• OFF-delay	ms	30
Control circuit U_1		
• Rated control supply voltage U_S	V DC	24
• Operating range DC up to 60 °C		0.85 ... 1.2 x U_s
• Power consumption	W	2.4
• Recommended short-circuit protection		gG 2 A
• Output OUT+/OUT- for control of expansion modules		24 V DC/< 50 mA (PTC fuse)
Switched auxiliary circuit U_2		
• Rated control supply voltage U_S	V DC	24
• Operating range DC up to 60 °C		0.85 ... 1.2 x U_s
• Rated operational current I_e (13 ... 24 V DC)	A	4
• Uninterrupted thermal current I_{th}	A	5
Recommended short-circuit protection for enabling and signaling circuits		Fuse links: LV HRC type 3NA, DIAZED type 5SB, NEOZED type 5SE Operating class gG 6 A
Supply of		
• Motor starters		Yes
• Electronic modules		No
• Ex(i) modules		No
• BG certification		Yes
• UL, CSA certification		Yes
Cable length for EMERGENCY-STOP and ON buttons	m	max. 1 000
Mounting dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Enabling circuits with PM-D F5		4 (floating)

PM-D FX1 safety module (infeed terminal module)		
Dimensions		
Mounting dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Ambient temperature	°C	0 ... +60
Degree of protection		IP20
Maximum achievable safety classes		
• IEC 62061		SIL 3
• DIN V 19250		Tripping class 5 and 6
• ISO 13849-1		PL e
Safety characteristics		
Proof-test interval		10 years
Voltages, currents, potentials		
Rated control supply voltage U_S	V DC	21.6 ... 26.4 to 60 °C
Rated operational current I_e	A	6 Internal fuse protection 7 A (quick-response)
Recommended upstream short-circuit protection	A	Melting fuse gG 6.3
Supply of		
• Failsafe motor starters		Yes
• Failsafe frequency converters		Yes
• Electronic modules		No
• Ex[i] modules		No
Power consumption		
• From the backplane bus	mA	≤ 10
• From U_1	mA	≤ 35
• From SGx	mA	≤ 15
Status, alarms, diagnostics		
Alarms		None
Diagnostics functions		
• Group fault/device fault		Red LED SF
• Monitoring of the electronics power supply U_1 (PWR)		Green LED PWR
• Monitoring of six switch-off groups		Green LED SG1 ... SG6
• Diagnostics information can be read out		Yes
Standards, approvals		
• TÜV		Yes
• UL, CSA certification		Yes

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F-CM contact multipliers		
Dimensions		
Dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Number of relay outputs		4 (4 x 1-channel or 2 x 2-channel safe coupling/ contact multiplication)
Internal power supply for busbar		U1 (from PM-D F / PM-D FX1)
Maximum achievable safety class		
• According to IEC 62061		SIL3
• According to DIN VDE 0801		AK 6
• According to ISO 13849-1		Cat. 4
Voltages, currents, potentials		
Switching capacity of relay outputs		Utilization category DC-13 (I_e/U_e): 1.5 A/24 V
Electrical separation		
• Between outputs and backplane bus		Yes
• Between outputs and power supply		Yes
• Between outputs		Yes
• Between outputs/power supply and shield		Yes
Status, alarms, diagnostics		
Status display		PWR and STAT
Alarms: Diagnostic interrupt		None
Diagnostics functions		Yes
• Group fault display		Red LED (SF)
• Diagnostics information can be read out		Available
• Monitoring of the electronics power supply U_1 (PWR)		Green PWR LED
• Monitoring of the switching status of the enabling circuit		Red/green LED STAT

PM-D F PROFIsafe safety modules		
Dimensions		
Dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Number of outputs, switching to P potential		6 switch-off groups (safety group 1 ... 6)
Internal power supply for busbar		U1
Assigned address range		
• in the PII	Byte	5
• in the PIQ	Byte	5
Maximum achievable safety class		
• According to IEC 62061		SIL3
• According to DIN VDE 0801		AK 6
• According to ISO 13849-1		Cat. 4
Voltages, currents, potentials		
Supply voltage	V	24 DC
Electrical separation		
• Between outputs and backplane bus		Yes
• Between outputs and power supply		No
• Between outputs		No
• Between outputs/power supply and shield		Yes
Status, alarms, diagnostics		
Status display		Green LED per SG Green LED for electronics supply Green LED for load voltage
Alarms: Diagnostic interrupt		"ON"
Diagnostics functions		
• Group fault display		Red LED (SF)
• Diagnostics information can be read out		Available
Settings		
Module address		Diverse: 1. Using a safety-related parameter in the parameterization message frame via the backplane bus 2. Using the 10-pole DIL switch (binary-coded) on the left side of the module The received address is then compared with the DIL switch setting.

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Safety modules local and PROFIsafe

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Safety modules local						
3RK1 903-3DA00						
PM-D F1 With diagnostics Safety module for EMERGENCY-STOP application Monitored start	A	**3RK1903-1BA00**		1	1 unit	42D
PM-D F2 With diagnostics Safety module for protective door monitoring Automatic start	A	**3RK1903-1BB00**		1	1 unit	42D
PM-D F3 With diagnostics Safety module for expanding PM-D F1/2 for another voltage group Time-delayed 0 to 15 s	A	**3RK1903-1BD00**		1	1 unit	42D
PM-D F4 With diagnostics Safety module for expanding PM-D F1/2 for another voltage group	A	**3RK1903-1BC00**		1	1 unit	42D
PM-D F5 With diagnostics Safety module for expanding PM-D F1...4 with four floating enabling circuits Contact multipliers	A	**3RK1903-1BE00**		1	1 unit	42D
PM-D FX1 With diagnostics Infeed terminal module for supply of 1 to 6 switch-off groups	A	**3RK1903-3DA00**		1	1 unit	42D
FC-M contact multipliers With 4 safe floating contacts	A	**3RK1903-3CA00**		1	1 unit	42D
Safety modules PROFIsafe						
PM-D F PROFIsafe safety modules For PROFIBUS and PROFINET For Failsafe motor starters For Failsafe contact multipliers With six switch-off groups (SG1 to SG6)	A	**3RK1903-3BA02**		1	1 unit	42D
F-CM contact multipliers With 4 safe floating contacts	A	**3RK1903-3CA00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Terminal modules for PM-D F1/F2/F3/F4/F5 safety modules

For supplying load and sensor voltage to the self-assembling potential bars of the Standard motor starters, High-Feature motor starters and frequency converters. Safety modules for voltage monitoring are plugged onto TM-P modules. TM-P modules can be used any number of times within the ET 200S. A safety module must always be plugged upstream from the first motor starter.

Different safety circuits can be functionally separated or else cascaded using different terminal modules. Each group in such a case must be terminated with a PM-X safety module (connection module).

TM-PF30 S47-B1

The terminal module is always positioned at the beginning of a safety segment and accommodates the PM-DF1 safety module for EMERGENCY-STOP applications or the PM-DF2 safety module for protective door monitoring. The 24 V control supply voltages for the electronics (U1) and those for supplying the contactors (U2) of the motor starters must be connected along with the 2-channel connection of the safety sensors (e.g. EMERGENCY-STOP pushbuttons) to this terminal module. Connections for the ON button (enabling) and safe output of the safety module are available in addition.

TM-PF30 S47-B0

The terminal module is used to cascade lower level safety segments and accommodates the PM-DF1 safety module for EMERGENCY-STOP applications or the PM-DF2 safety module for protective door monitoring. No other auxiliary voltage has to be connected to this terminal module. The supply comes from the preceding PM-DF1 or PM-DF2 module over the potential bars of the terminal modules. Once the potential of the preceding safety module is disconnected, this sub-potential also has no voltage.

TM-PF30 S47-C1

The terminal module is always positioned at the beginning of a safety segment expansion in a new station, e.g. at an interlace point. It accommodates the PM-D F3 safety module for time-delayed shutdown or the PM-D F4 safety module for direct shutdown in separately located ET 200S stations. The 24 V control supply voltages for the electronics (U1) and those for supplying the contactors (U2) are fed in anew.
The shutdown command from an upstream ET 200S station is received through a safe input. Separate terminals are available to connect the feedback circuit to the upstream ET 200S station. No safety sensors can be connected to this terminal module.

TM-PF30 S47-C0

The terminal module is used to cascade lower level safety segments and accommodates the PM-D F3 safety module for time-delayed shutdown or the PM-D F4 safety module. Only the U2 control supply voltage for the contactors must be connected to this terminal module. The U1 supply comes from the preceding safety module (sub-potential group) over the potential bars of the terminal modules. No safety sensors can be connected to this terminal module.

TM-PF30 S47-D0

The terminal module is used to accommodate the PM-D F5 safety module. On this terminal module, safe signals can be relayed to external systems through four groups, each with two safety relay contacts configured with redundancy. The terminal module must always be positioned between one of the above mentioned terminal modules and a terminal module for the TM-X connection module. No safety sensors can be connected to this terminal module.

Terminal module for PM-X safety module (TM-X)

TM-X15 S27-01

For connection of an external infeed contactor (second shutdown option) for SIL 2 and SIL 3 or PL d and PL e. The PM-X safety module (connection module) is plugged on the right next to the last motor starter of a safety segment. On the TM-X terminal module there are the terminals for connecting the positively driven NC contact of the contactors as well as the terminals for connecting the contactor coil. If no contactor with redundant switching is required, e.g. for PL c (ISO 13849-1), the feedback circuit has to be closed at these terminals with a jumper. In applications with external safety relays it is also used instead of the safety module as interface to the external safety relay.

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Safety modules local and PROFIsafe terminal modules

Technical specifications

TM-PFX30 S47/TM-PF30 S47 terminal modules		
Dimensions		
• Mounting dimensions (W x H x D)	mm	30 x 196.5 x 102
• Depth with power module	mm	117.5
Insulation voltages and rated currents		
• Insulation voltage	V	500
• Rated operational voltage	V DC	24
• Rated operational current	A	10
Conductor cross-sections		
• Solid	mm^2	1 x (0.14 ... 2.5), according to IEC 60947 1 x 2.5
• Finely stranded with end sleeve	mm^2	1 x (0.14 ... 1.5), according to IEC 60947
• AWG cables, solid or stranded	AWG	1 x (18 ... 22)
Wiring		
• Required tool		Standard screwdriver size 1
• Tightening torque	Nm	0.4 ... 0.7

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Safety modules local						
 3RK1 903-1AA00						
TM-PF30 S47-B1 terminal modules For PM-D F1/2 safety modules With infeed U1/U2 and sensor connection	A	**3RK1903-1AA00**		1	1 unit	42D
TM-PF30 S47-B0 terminal modules For PM-D F1/2 safety modules With sensor connection	A	**3RK1903-1AA10**		1	1 unit	42D
TM-PF30 S47-C1 terminal modules For PM-D F3/4 safety modules With infeed U1/U2 and control input IN+/IN-	A	**3RK1903-1AC00**		1	1 unit	42D
TM-PF30 S47-C0 terminal modules For PM-D F3/4 safety modules With infeed U2	A	**3RK1903-1AC10**		1	1 unit	42D
TM-PF30 S47-D0 terminal module For PM-D F5 safety modules	A	**3RK1903-1AD10**		1	1 unit	42D
TM-X15 S27-01 terminal module For PM-X safety module	A	**3RK1903-1AB00**		1	1 unit	42D
TM-P15-S27-01 terminal modules For PM-D power module	A	**3RK1903-0AA00**		1	1 unit	42D
TM-PFX30 S47-G0/G1 terminal modules For PM-D FX1 safety modules (infeed terminal modules)						
• Infeed left (TM-PFX30 S47-G0)	A	**3RK1903-3AE10**		1	1 unit	42D
• Infeed center (TM-PFX30 S47-G1)	A	**3RK1903-3AE00**		1	1 unit	42D
TM-FCM30 S47-F01 terminal module For F-CM contact multipliers	A	**3RK1903-3AB10**		1	1 unit	42D
Terminal modules for Safety modules PROFIsafe						
TM-PF30 S47-F0 terminal modules For PM-D F PROFIsafe safety modules	A	**3RK1903-3AA00**		1	1 unit	42D
TM-FCM30 S47-F01 terminal module For F-CM contact multipliers	A	**3RK1903-3AB10**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Accessories for Standard motor starters

Control kit

The control kit for the Standard motor starter provides the possibility of testing the motor during start-up or service by actuating the motor starter protector. Using the control kit with the motor starter protector tripped, the contactor is mechanically locked in ON position.

Control unit

With the control unit the contactor coils of the Standard motor starter can be directly controlled using 24 V DC. The motor starter can thus be started as normal using a local control station without PLC or bus.

Note:

The control unit cannot be used in combination with the safety system or a brake control module.

DM-V15 distance module

- Passive module without bus connection and terminals
- Does not need a separate terminal module
- Follows a TM-DS45 or TM-RS90 or TM-xB if required
- Does not need to be taken into account when configuring the GSD file

The distance module is available for applications with high motor currents or high ambient temperatures involving Standard motor starters. It can be used to the right and left of a DS1-x direct-online starter or to the right of an xB1...4 brake module in order to improve heat dissipation to the side. The distance module is a completely passive module and does not need to be taken into account with regard to the control system during configuration. Details of the distance module can be found in the manual "SIMATIC ET 200S". If you have any queries concerning the use of the distance module, contact Technical Support for Siemens Industrial Controls (Fax: +49(0)911/895-5907).

Accessories for High-Feature motor starters

2DI LC COM control module

The 2DI LC COM control module is plugged into the interface on the front of the motor starter. The module provides two inputs which can receive signals from the process and be assigned directly to the starter.

The functionality can be selected from a list of various control functions as part of the PROFIBUS parameterization. Local control point, emergency start and quick stop, for example, are available as functions. The signal levels can also be parameterized (NO/NC). For more extensive control functions the two inputs of an xB3 or xB4 brake control module, which is plugged in alongside on the right, can be integrated in addition. The signal states of all inputs are transmitted in parallel with the internal use to the higher-level control system.

When a motor starter is replaced, the parameterization is automatically transmitted by download to the new starter. The inputs on the motor starter ensure autonomous operation, e.g. in the event of PLC failure, on the one hand and short response times through direct processing in the starter on the other hand. Another advantage results from the direct assignment of functions to modular machine concepts.

The 2DI LC COM control module has in addition a PC interface for connecting the Switch ES Motorstarter parameterization and diagnostics software (Version 2.0 and higher). The module works solely on High-Feature motor starters with Motor Starter ES interface. The Logo! PC cable is used as connecting cable between the 2DI LC COM control module and the High-Feature motor starter.

Accessories for Standard and High-Feature motor starters

PE/N bridge modules

PE/N bridge modules are used to bridge gaps of the PE/N bus which are caused, for example, by using brake control modules, PM-D(F) power modules or PM-X connection modules. If a bridge module is used, the supply must not be fed in anew. They are available in 15 mm and in 30 mm widths.

L123 bridge modules

The L123 bridge modules are used to bridge gaps of the power bus (see above). They are available in 15 mm and in 30 mm widths.

Brake control module

For motors with mechanical brake (see "General Data" → "Overview", page 8/99)

Terminal modules for brake control modules

The TM-xB terminal modules are used to accommodate the xB1, xB2, xB3 and xB4 brake control modules. The TM-xB terminal module must always follow directly after a terminal module for Standard motor starters, High-Feature motor starters or frequency converters as control of the solid-state braking switch is provided through an output of the motor starter/frequency converter. The xB215 terminal modules for the brake control modules have not only the terminals for connecting the cable for the motor brake but also the terminals of the two local acting inputs. These local inputs are not evaluated by a frequency converter, which is why the xB215 terminal module can only be switched downstream of a motor starter.

Accessories for Standard, High-Feature and Failsafe motor starters

PE/N terminal blocks

The PE/N terminal block is required for direct connection of the protective conductor in the motor cable without intermediate terminals. It is plugged together with the terminal module for motor starters or frequency converters before the latter is mounted on the standard mounting rail. With two PE terminals and one N terminal the "-F" version is connected to the "-S32" terminal modules for motor starters or frequency converters. The "-S" version is combined with the "-S31" terminal module. The "F" terminal bocks are delivered with two caps for closing the PE/N bus contacts on the final terminal block of a segment. The modules for the Standard motor starters have a width of 45 mm and the modules for the High-Feature motor starters and frequency converters have a width of 65 mm.

There is no electrical connection between the terminals of the PE/N terminal block and the integrated shielding of the frequency converter. The PE/N terminal block must therefore not be used for the shielding of the motor cable.

Accessories for Safety modules local

The Fail-safe Kit (F-Kit) is required for Standard motor starters in a safety segment (see page 8/118).

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Accessories

Technical specifications

Brake control modules Xb1, Xb2, Xb3, Xb4, Xb5, Xb6

		xB1	xB3	xB2	xB4	xB5	xB6
Dimensions (W x H x D)	mm	15 x 196.5 x 125.5 including terminal module on 7.5 mm standard mounting rail					
Rated operational voltage	V	24 DC		500 DC (at least 100)		400 AC	
Power supply		Externally through terminal module		From brake rectifier through terminal module		Externally through terminal module	
Rated operational current	A	4		0.7		0.5	
Reverse polarity protection		No, in the event of polarity reversal the brake is released and the overload/short-circuit protection is ineffective				Not relevant	
Overload/short-circuit protection		Electronic				1 A melting fuse	
Conductor cross-section of terminal module for brake control module	mm^2	1 x 2.5 without end sleeve 1 x 1.5 with end sleeve					
Number of outputs		0	1 (used internally)	0	1 (used internally)	0	1 (used internally)
Number of inputs		0	2	0	2	0	2
Address area required per module							
• With summary		0	2 bits	0	2 bits	0	2 bits
• Without summary		0	1 byte	0	1 byte	0	1 byte
Diagnostics functions							
• Group fault "SF"		Red LED					
• Switching status for brake "STAT"		Yellow LED					
• Inputs 1 and 5		--	Green LED	--	Green LED	--	Green LED
Parameters (default value underlined)							
• Brake overload diagnostics		--	Disable/Enable	--	Disable/Enable	--	
• Input delay	ms	--	0 / 0.1 / 0.5 / 3 / 15	--	0 / 0.1 / 0.5 / 3 / 15	--	0 / 0.1 / 0.5 / 3 / 15

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard motor starters						
3RK1903-0CA00 **Control kits** for manually operating the contactor contacts during start-up and servicing (one set contains five control kits)	A	**3RK1903-0CA00**		1	1 unit	42D
3RK1903-0CG00 **Control units** for direct contactor control (manual control) 24 V DC	A	**3RK1903-0CG00**		1	1 unit	42D
3RK1903-0CD00 **DM-V15 distance modules for DS1-x direct-on-line starters with high temperatures or high current loading** 15 mm wide	A	**3RK1903-0CD00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard motor starters (continued)							
3RK1903-2AA00	**PE/N M45-PEN-F terminal blocks** 45 mm wide including two caps in combination with TM-DS45-S32/ TM-RS90-S32	A	**3RK1903-2AA00**		1	1 unit	42D
3RK1903-2AA10	**PE/N M45-PEN-S terminal blocks** 45 mm wide in combination with TM-DS45-S31/TM-RS90-S31	A	**3RK1903-2AA10**		1	1 unit	42D
Accessories for High-Feature motor starters							
3RK1903-0CH20	**2DI LC COM control modules** Digital input module with 2 inputs (cable length up to 100 m) for local motor starter functions for mounting onto the front of motor starters, operational voltage 24 V DC (supplied from U_1), short-circuit proof, floating contact with serial interface for connecting Motor Starter ES, connected using LOGO! PC cable	A	**3RK1903-0CH20**		1	1 unit	42D
3RK1922-3BA00	**Hand-held devices** For ET 200S High-Feature motor starters (or for ET 200pro and M200D motor starters) for local operation. The motor starter-specific serial interface cables must be ordered separately. The LOGO! PC cable is used for the MS ET 200S HF.	B	**3RK1922-3BA00**		1	1 unit	42D
6ED1057-1AA00-0BA0	**LOGO! PC cables** For connecting the ET 200S High-Feature motor starters to the RS 232 interface of a PG/PC/laptop (with the Motor Starter ES software) or the hand-held device 3RK1922-3BA00.	A	**6ED1057-1AA00-0BA0**		1	1 unit	200
	M65-PEN-F terminal blocks 65 mm wide, including two caps, in combination with TM-DS65-S32/TM-RS130-S32	A	**3RK1903-2AC00**		1	1 unit	42D
	M65-PEN-S terminal blocks 65 mm wide, in combination with TM-DS65-S31/TM-RS130-S31	A	**3RK1903-2AC10**		1	1 unit	42D

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Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard/High-Feature motor starters							
3RK1903-0AH00	**M15-PE/N bridge modules** 15 mm wide for bridging a 15 mm module	A	**3RK1903-0AH00**		1	1 unit	42D
3RK1903-0AJ00	**M30-PE/N bridge modules** 30 mm wide for bridging a 30 mm module	A	**3RK1903-0AJ00**		1	1 unit	42D
3RK1903-0AE00	**M15-L123 bridge modules** 15 mm wide for bridging a 15 mm module	A	**3RK1903-0AE00**		1	1 unit	42D
3RK1903-0AF00	**M30-L123 bridge modules** 30 mm wide for bridging a 30 mm module	A	**3RK1903-0AF00**		1	1 unit	42D
3RK1903-0AF20	**Sealing caps** for L123 and PE/N bridge modules (bag containing 20 units)	A	**3RK1903-0AF20**		1	1 unit	42D
3RK1903-0CB00	**Brake control modules** for motors with mechanical brake						
	• **xB1 for motor starters** 24 V DC/4 A	A	**3RK1903-0CB00**		1	1 unit	42D
	• **xB2 for motor starters** 500 V DC/0.7 A	A	**3RK1903-0CC00**		1	1 unit	42D
	• **xB3 for motor starters** 24 V DC/4 A/2 DI 24 V DC local control with diagnostics, with two inputs	A	**3RK1903-0CE00**		1	1 unit	42D
	• **xB4 for motor starters** 500 V DC/0.7 A/2 DI 24 V DC local control with diagnostics, with two inputs	A	**3RK1903-0CF00**		1	1 unit	42D
	• **xB5 for motor starters** 400 V AC without digital input	A	**3RK1903-0CJ00**		1	1 unit	42D
	• **xB6 for motor starters** 400 V AC with two digital inputs	A	**3RK1903-0CK00**		1	1 unit	42D
	Terminal modules for brake control modules						
	• **TM-xB15 S24-01** for xB1, xB2 or xB5	A	**3RK1903-0AG00**		1	1 unit	42D
	• **TM-xB215 S24-01** for xB3, xB4 or xB6	A	**3RK1903-0AG01**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Failsafe motor starters							
	M65-PEN-F terminal blocks With incoming connection, with caps	A	**3RK1903-2AC00**		1	1 unit	42D
	M65-PEN-S terminal blocks Without incoming connection	A	**3RK1903-2AC10**		1	1 unit	42D
Accessories for Safety modules local							
 3RK1903-1CA00	**PM-X safety modules (connection modules)** With diagnostics, for plugging onto TM-X15 S27-01 Module for connecting a safety group and for connecting an external infeed contactor or for connecting to an external safety circuit	A	**3RK1903-1CB00**		1	1 unit	42D
	F-Kit 1 Failsafe equipment for DS1-x Standard motor starters[1)]	A	**3RK1903-1CA00**		1	1 unit	42D
 3RK1903-1CA01	**F-Kit 2** Failsafe equipment for RS1-x Standard motor starters[1)]	A	**3RK1903-1CA01**		1	1 unit	42D
Documentation							
	Manual[2)] SIMATIC ET 200S Motor Starters, Failsafe Motor Starters, Safety-Integrated Systems						

1) The function of the Failsafe Kit is already integrated into High-Feature motor starters.

2) http://support.automation.siemens.com/WW/view/en/6008567

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-7 CPU interface modules						
For communication between ET 200S and higher-level masters over PROFIBUS DP						
IM 151-7 CPU FO (48 K) interface modules Including termination module	A	**6ES7151-7AB00-0AB0**		1	1 unit	250
IM 151-7 CPU (128 K) V3.3 interface modules Including termination module	A	**6ES7151-7AA21-0AB0**		1	1 unit	250
Accessories						
MMC 64 Kbyte[1] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 kbyte[1] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[1] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[1] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 Mbyte[1] For program backups	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7792-0AA00-0XA0**		1	1 unit	260
PG with integrated MMC interface		**On req.**				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts, for connection to supply voltage 24 V DC						
• With push-in terminals	A	**6ES7193-4JB00-0AA0**		1	10 units	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
PROFIBUS DP interface RS485 bus connectors With 90° cable feeder, max. transmission rate 12 Mbit/s						
• Without PG interface	A	**6ES7972-0BA12-0XA0**		1	1 unit	250
• With PG interface	A	**6ES7972-0BB12-0XA0**		1	1 unit	250
With 90° cable feeder for FastConnect connections, max. transmission rate 12 Mbit/s						
Without PG interface						
• 1 unit	A	**6ES7972-0BA52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BA52-0XB0**		1	100 units	250
With PG interface						
• 1 unit	A	**6ES7972-0BB52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BB52-0XB0**		1	100 units	250
PROFIBUS FastConnect bus cables Standard type with special design for fast installation, 2-core, shielded, sold by the meter; delivery unit max. 1000 m; minimum order quantity 20 m	A	**6XV1830-0EH10**		1	1 M	5K1
PROFIBUS bus components For setting up MPI/PROFIBUS communication		See catalogs IK PI, CA 01				
SIPLUS IM 151-7 CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-7 CPU (96 K) interface modules (-25 ... +60 °C)	D	**6AG1151-7AA21-2AB0**		1	1 unit	473
SIPLUS ET 200S termination module	D	**6AG1193-4JA00-2AA0**		1	1 unit	473
Accessories		See IM 151-7 CPU interface modules				

[1] For operation of the CPU, an MMC is essential.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-8 PN/DP CPU interface modules						
IM 151-8 PN/DP CPU interface modules (192 K) with PROFINET and PROFIBUS interfaces, including termination module	A	**6ES7151-8AB01-0AB0**		1	1 unit	250
Accessories						
MMC 64 kByte[1] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 kbyte[1] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 kByte[1] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[1] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[1] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 Mbyte[1] For program backups	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7792-0AA00-0XA0**		1	1 unit	260
PG with integrated MMC interface		**On req.**				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts, for connection to supply voltage 24 V DC						
• With push-in terminals	A	**6ES7193-4JB00-0AA0**		1	10 units	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
Industrial Ethernet FC RJ45 Plug 90 Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1
• 50 units	A	**6GK1901-1BB20-2AE0**		1	50 units	5K1
Industrial Ethernet FastConnect installation cables						
• FastConnect standard cables	A	**6XV1840-2AH10**		1	1 M	5K1
• FastConnect trailing cables	A	**6XV1840-3AH10**		1	1 M	5K1
• FastConnect marine cables	A	**6XV1840-4AH10**		1	1 M	5K1
Industrial Ethernet FastConnect stripping tool	A	**6GK1901-1GA00**		1	1 unit	5K2
SIPLUS IM 151-8 PN/DP interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-8 PN/DP CPU interface modules (-40 ... +70 °C)	D	**6AG1151-8AB01-7AB0**		1	1 unit	473
Accessories		See IM 151-8 PN/DP CPU interface modules				

[1] For operation of the CPU, an MMC is essential.

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ET 200S – interface modules with CPU

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Master interface modules for IM 151-7(8) CPU/ IM 151-7 F-CPU interface modules						
Master interface modules for IM 151-7 CPU / IM 151-7 F-CPU / IM 151-8 PN/DP CPU / IM 151-8 F PN/DP CPU interface modules	A	**6ES7138-4HA00-0AB0**		1	1 unit	250
Accessories						
PROFIBUS DP interface RS485 bus connectors With 90° cable feeder, max. transmission rate 12 Mbit/s						
• Without PG interface	A	**6ES7972-0BA12-0XA0**		1	1 unit	250
• With PG interface	A	**6ES7972-0BB12-0XA0**		1	1 unit	250
With 90° cable feeder for FastConnect connections, max. transmission rate 12 Mbit/s						
Without PG interface						
• 1 unit	A	**6ES7972-0BA52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BA52-0XB0**		1	100 units	250
With PG interface						
• 1 unit	A	**6ES7972-0BB52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BB52-0XB0**		1	100 units	250
PROFIBUS FastConnect bus cables Standard type with special design for fast installation, 2-core, shielded, sold by the meter; delivery unit max. 1000 m; minimum order quantity 20 m	A	**6XV1830-0EH10**		1	1 M	5K1
PROFIBUS bus components For setting up MPI/PROFIBUS communication		See catalogs IK PI, CA 01				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIPLUS IM 151 CPU master interface modules (extended temperature range and medial loading)						
Master interface modules for SIPLUS IM 151-7 CPU/ IM 151-7 F-CPU/IM 151-8 PN/DP CPU/IM 151-8 F PN/DP CPU interface modules (-40 ... +70 °C)	D	**6AG1138-4HA00-7AB0**		1	1 unit	473
Accessories		See master interface modules for IM 151 CPU				

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-7 F-CPU interface modules						
IM 151-7 F-CPU interface modules For constructing a fail-safe automation system with combined DP/MPI interface, 192 kbyte	A	**6ES7151-7FA21-0AB0**		1	1 unit	241
Accessories						
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
MMC 64 Kbyte[2] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 kbyte[2] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 kByte[2] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[2] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[2] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
External prommers For MMC with USB interface	A	**6ES7792-0AA00-0XA0**		1	1 unit	260
Termination modules As spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
SIPLUS IM 151-7 F-CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-7 F-CPU interface modules (-25 ... +60 °C)	D	**6AG1151-7FA21-2AB0**		1	1 unit	473
Accessories		See IM 151-7 F-CPU interface modules				
IM 151-8F PN/DP CPU interface modules						
IM 151-8F PN/DP CPU interface modules (256 K) Including termination module; with PROFINET and PROFIBUS interfaces	A	**6ES7151-8FB01-0AB0**		1	1 unit	241
Accessories						
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241

[1] Up-to-date information and availability for download see under: http://www.siemens.com/tia-online-software-delivery

[2] For operation of the CPU, an MMC is essential.

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ET 200S – interface modules with fail-safe CPU

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-8F PN/DP CPU interface modules (continued)						
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 according to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 according to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
MMC 64 Kbyte[2] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 kbyte[2] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 kByte[2] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[2] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[2] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 Mbyte[2] For program backups	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7792-0AA00-0XA0**		1	1 unit	260
PG With integrated MMC interface		**On req.**				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts, for connection to supply voltage 24 V DC						
• With push-in terminals	A	**6ES7193-4JB00-0AA0**		1	10 units	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1
• 50 units	A	**6GK1901-1BB20-2AE0**		1	50 units	5K1
Industrial Ethernet FastConnect installation cables						
• FastConnect standard cables	A	**6XV1840-2AH10**		1	1 M	5K1
• FastConnect trailing cables	A	**6XV1840-3AH10**		1	1 M	5K1
• FastConnect marine cables	A	**6XV1840-4AH10**		1	1 M	5K1
Industrial Ethernet FastConnect stripping tool	A	**6GK1901-1GA00**		1	1 unit	5K2
SIPLUS IM 151-8F PN/DP CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-8F PN/DP CPU interface modules (-25 ... +60 °C)	D	**6AG1151-8FB01-2AB0**		1	1 unit	473

Accessories

See IM 151-8F PN/DP CPU interface modules

1) Up-to-date information and availability for download see under: http://www.siemens.com/tia-online-software-delivery

2) For operation of the CPU, an MMC is essential.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-1 interface modules						
For connecting the ET 200S to PROFIBUS DP						
IM 151-1 BASIC interface modules For ET 200S; transmission rates up to 12 Mbit/s; up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1CA00-0AB0**		1	1 unit	250
IM 151-1 COMPACT 32 DI 24 V DC interface modules For ET 200S; transmission rates up to 12 Mbit/s; 32 digital inputs, up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1CA00-1BL0**		1	1 unit	250
IM 151-1 COMPACT 16 DI 24 V DC / 16 DO 24 V/0.5 A interface modules For ET 200S; transmission rates up to 12 Mbit/s; 16 digital inputs and 16 digital outputs, up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1CA00-3BL0**		1	1 unit	250
IM 151-1 STANDARD interface modules for ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1AA05-0AB0**		1	1 unit	250
IM 151-1 FO STANDARD interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus using integrated fiber-optic cable including termination module	A	**6ES7151-1AB05-0AB0**		1	1 unit	250
IM 151-1 HIGH-FEATURE interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochronous mode (clocked operation); connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1BA02-0AB0**		1	1 unit	250
Accessories						
TM-C120S terminal modules Terminal module for ET 200S COMPACT, screw terminals	A	**6ES7193-4DL10-0AA0**		1	1 unit	250
TM-C120C terminal modules Terminal module for ET 200S COMPACT, spring-type terminals	A	**6ES7193-4DL00-0AA0**		1	1 unit	250
TE-U120S4x10 additional terminals Additional terminal for TM-C120x terminal modules of ET 200S COMPACT; screw terminals for 3-conductor connection; please order two for 4-conductor connection. Can also be plugged into TM-E/TM-P if the same height of the terminal modules exists over a width of at least 120 mm.	A	**6ES7193-4FL10-0AA0**		1	1 unit	250
TE-U120C4x10 additional terminals Additional terminal for TM-C120x terminal modules of ET 200S COMPACT; spring-type terminals for 3-conductor connection; please order two for 4-conductor connection Can also be plugged into TM-E/TM-P if the same height of the terminal modules exists over a width of at least 120 mm.	A	**6ES7193-4FL00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the 3 subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
PROFIBUS DP interface RS485 bus connectors With 90° cable feeder for FastConnect connections, max. transmission rate 12 Mbit/s						
Without PG interface						
• 1 unit	A	**6ES7972-0BA52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BA52-0XB0**		1	100 units	250
With PG interface						
• 1 unit	A	**6ES7972-0BB52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7972-0BB52-0XB0**		1	100 units	250
100 Simplex connectors For plastic fiber-optic cable including 5 polishing sets	A	**6GK1901-0FB00-0AA0**		1	1 set	5K2
50 plug-in adapters Each for 2 Simplex connectors	A	**6ES7195-1BE00-0XA0**		1	50 units	250
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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ET 200S – interface modules
interface modules without CPU

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-1 interface modules (continued)						
Inscription sheets in A4 format (10 units) Can be used for ET 200S COMPACT; each sheet contains 10 labeling strips						
• Beige	A	**6ES7193-4BA10-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB10-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD10-0AA0**		1	10 units	250
• Petrol	A	**6ES7193-4BH10-0AA0**		1	10 units	250
Termination modules As spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts, for connection to supply voltage 24 V DC						
• With push-in terminals	A	**6ES7193-4JB00-0AA0**		1	10 units	250
• With screw terminals	A	**6ES7193-4JB50-0AA0**		1	10 units	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
SIPLUS IM 151-1 interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-1 STANDARD interface modules (-25 ... +70 °C) For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including termination module	D	**6AG1151-1AA05-7AB0**		1	1 unit	473
SIPLUS IM 151-1 HIGH-FEATURE interface modules (-25 ... +60 °C) (extended temperature range and medial loading) For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochronous mode (clocked operation); connection to bus through 9-pole Sub-D including termination module	D	**6AG1151-1BA02-2AB0**		1	1 unit	473
Accessories		See IM 151-1 interface modules				
IM 151-3 PN interface modules						
For connecting the ET 200S to PROFINET						
IM 151-3 PN interface modules For ET 200S; transmission rates up to 100 Mbit/s; data volume dependent on number of modules mounted, up to 63 modules can be connected, connection to bus through RJ45	A	**6ES7151-3AA23-0AB0**		1	1 unit	250
IM 151-3 PN PROFINET High-Feature interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 modules with max. width of 2 m can be connected, connection to bus through RJ45, including termination module	A	**6ES7151-3BA23-0AB0**		1	1 unit	250
IM 151-3 FO interface modules For ET 200S; with 2 PROFINET fiber-optic interfaces and integrated 2-port switch, up to 63 modules up to 2 m wide can be connected, including termination module	A	**6ES7151-3BB23-0AB0**		1	1 unit	250
Accessories						
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated insulation displacement contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1
• 50 units	A	**6GK1901-1BB20-2AE0**		1	50 units	5K1
Industrial Ethernet FastConnect installation cables						
• FastConnect standard cables	A	**6XV1840-2AH10**		1	1 M	5K1
• FastConnect trailing cables	A	**6XV1840-3AH10**		1	1 M	5K1
• FastConnect marine cables	A	**6XV1840-4AH10**		1	1 M	5K1
Termination kits						
• SC RJ POF Plug Termination kit for local mounting of SC RJ connectors, comprising insulation stripping tool, kevlar shears, microscope, abrasive paper and support	A	**6GK1900-0ML00-0AA0**		1	1 unit	5K2
• IE SC RJ POF Plug Threaded connectors for local mounting on POF fiber-optic cables (1 pack = 20 units)	A	**6GK1900-0MB00-0AC0**		1	20 units	5K2
• IE SC RJ Refill Set POF Refill set for SC RJ POF Plug termination kit, comprising abrasive paper and disk (set of 5)	A	**6GK1900-0MN00-0AA0**		1	5 units	5K2
• SC RJ PCF Plug Termination kit for local mounting of SC RJ connectors, comprising insulation stripping tool, buffer insulation stripping tool, kevlar shears, fiber cleaver, microscope	A	**6GK1900-0NL00-0AA0**		1	1 unit	5K2
• Industrial Ethernet SC RJ PCF Plug Threaded connectors for local mounting on PCF fiber-optic cables (1 pack = 10 units)	A	**6GK1900-0NB00-0AC0**		1	10 units	5K2
Industrial Ethernet FastConnect stripping tool	A	**6GK1901-1GA00**		1	1 unit	5K2

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Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-3 PN interface modules (continued)						
MMC 64 kByte[1)] For storing the unit's name	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 kbyte[1)] For storing the unit's name	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 kByte[1)] For storing the unit's name	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[1)] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[1)] For storing the unit's name and/or the firmware update	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 Mbyte[1)] For storing the unit's name and/or the firmware update	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Termination modules as spare part for ET 200S	A	**6ES7193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts, for connection to supply voltage 24 V DC						
• With push-in terminals	A	**6ES7193-4JB00-0AA0**		1	10 units	250
• With screw terminals	A	**6ES7193-4JB50-0AA0**		1	10 units	250
35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5710-8MA31**		1	1 unit	250
• 2 m long	A	**6ES5710-8MA41**		1	1 unit	250
Industrial Ethernet switches Managed Industrial Ethernet switches; isochronous real-time, LED diagnostics, error signaling contacts with SET button, redundant power supply						
• SCALANCE X202-2P IRT 2 x 10/100 Mbit/s RJ45 ports, 2 x 100 Mbit/s POF/PCF SC RJ	B	**6GK5202-2BH00-2BA3**		1	1 unit	5N2
• SCALANCE X201-3P IRT 1 x 10/100 Mbit/s RJ45 ports, 3 x 100 Mbit/s POF/PCF SC RJ	B	**6GK5201-3BH00-2BA3**		1	1 unit	5N2
• SCALANCE X200-4P IRT 4 x 100 Mbit/s POF/PCF SC RJ	B	**6GK5200-4AH00-2BA3**		1	1 unit	5N2
SIPLUS IM 151-3 PN interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-3 PN interface modules (-25 ... +60 °C) For ET 200S; transmission rates up to 100 Mbit/s; data volume dependent on number of modules mounted, up to 63 modules can be connected, connection to bus through RJ45	D	**6AG1151-3AA23-2AB0**		1	1 unit	473
SIPLUS IM 151-3 PROFINET High-Feature interface modules (-25 ... +70 °C) For ET 200S; transmission rates up to 100 Mbit/s; up to 63 modules with max. width of 2 m can be connected, connection to bus through RJ45, including termination module	D	**6AG1151-3BA23-7AB0**		1	1 unit	473
Accessories		See IM 151-3 PN interface modules				

[1)] For operation of the IM 151-3, an MMC is essential.

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules for electronic modules						
Standard PM-E power modules 24 V DC[1] For electronic modules, with diagnostics						
• 1 unit	A	**6ES7138-4CA01-0AA0**		1	1 unit	250
• 5 units	A	**6ES7138-4CA01-1AA0**		1	5 units	250
High-Feature PM-E power modules 24 V DC[1] For electronic modules, with diagnostics	A	**6ES7138-4CA60-0AB0**		1	1 unit	250
PM-E power modules 24 to 48 V DC For electronic modules, with diagnostics, with status bit "Load voltage available"						
• 1 unit	A	**6ES7138-4CA50-0AB0**		1	1 unit	250
• 5 units	A	**6ES7138-4CA50-1AB0**		1	5 units	250
PM-E power modules 24 to 48 V DC, 42 to 230 V AC For electronic modules, with diagnostics and fuse	A	**6ES7138-4CB11-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
SIPLUS PM-E power modules for electronic modules (extended temperature range and medial loading)						
SIPLUS PM-E power modules						
PM-E power modules 24 V DC[1] **(-40 ... +70 °C)** For electronic modules, with diagnostics	D	**6AG1138-4CA01-2AA0**		1	1 unit	473
PM-E power modules 24 to 48 V DC (-25 ... +60 °C) For electronic modules, with diagnostics, with status bit "Load voltage available"	D	**6AG1138-4CA50-2AB0**		1	1 unit	473
PM-E power modules 24 to 48 V DC, 24 to 230 V AC (-25 ... +60 °C) For electronic modules, with diagnostics and fuse	C	**6AG1138-4CB11-2AB0**		1	1 unit	473
Accessories		See PM-E power modules for electronic modules				
Reserve modules						
Reserve modules for ET 200S For reserving space in unused slots						
• 15 mm width (5 units)	A	**6ES7138-4AA01-0AA0**		1	5 units	250
• 30 mm width (1 unit)	A	**6ES7138-4AA11-0AA0**		1	1 unit	250
Potential distributor modules						
Potential distributor modules for ET 200S For supplying the load voltage to additional terminals, 15 mm wide, 1 unit	A	**6ES7138-4FD00-0AA0**		1	1 unit	250
Accessories for inscription						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250

[1] For all solid-state and technology modules except 2 DI 120 V AC/2 DI 230 V AC/2 DO 120/230 V AC.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital electronic modules						
Digital input modules						
Order unit 5 units						
• 2 DI 24 V DC Standard	A	**6ES7131-4BB01-0AA0**		1	5 units	250
• 2 DI 24 V DC High-Feature	A	**6ES7131-4BB01-0AB0**		1	5 units	250
• 4 DI 24 V DC Standard	A	**6ES7131-4BD01-0AA0**		1	5 units	250
• 4 DI 24 V DC High-Feature	A	**6ES7131-4BD01-0AB0**		1	5 units	250
• 2 DI 120 V AC	A	**6ES7131-4EB00-0AB0**		1	5 units	250
• 2 DI 230 V AC	A	**6ES7131-4FB00-0AB0**		1	5 units	250
• 4 DI 24 ... 48 V UC	A	**6ES7131-4CD02-0AB0**		1	5 units	250
• 4 DI 24 V DC SOURCE INPUT	A	**6ES7131-4BD51-0AA0**		1	5 units	250
Order unit 1 unit						
• 4 DI 24 V DC NAMUR	A	**6ES7131-4RD02-0AB0**		1	1 unit	250
• 8 DI 24 V DC Standard	A	**6ES7131-4BF00-0AA0**		1	1 unit	250
• 8 DI 24 V DC Standard SOURCE INPUT	A	**6ES7131-4BF50-0AA0**		1	1 unit	250
Order unit 100 units						
• 8 DI 24 V DC Standard	A	**6ES7131-4BF00-4AA0**		1	100 units	250
Digital output modules						
Order unit 5 units						
• 2 DO 24 V DC/0.5 A Standard	A	**6ES7132-4BB01-0AA0**		1	5 units	250
• 2 DO 24 V DC/0.5 A High-Feature	A	**6ES7132-4BB01-0AB0**		1	5 units	250
• 2 DO 24 V DC/2 A Standard	A	**6ES7132-4BB31-0AA0**		1	5 units	250
• 2 DO 24 V DC/2 A High-Feature	A	**6ES7132-4BB31-0AB0**		1	5 units	250
• 4 DO 24 V DC/0.5 A Standard	A	**6ES7132-4BD02-0AA0**		1	5 units	250
• 4 DO 24 V DC/0.5 A Standard SOURCE OUTPUT	A	**6ES7132-4BD50-0AA0**		1	5 units	250
• 4 DO 24 V DC/0.5 A High-Feature	A	**6ES7132-4BD00-0AB0**		1	5 units	250
• 8 DO 24 V DC/0.5 A High-Feature	A	**6ES7132-4BF00-0AB0**		1	1 unit	250
• 4 DO 24 V DC/2 A Standard	A	**6ES7132-4BD32-0AA0**		1	5 units	250
• 4 DO 24 V DC/2 A High-Feature	A	**6ES7132-4BD30-0AB0**		1	5 units	250
• 2 DO 24 ... 230 V AC/2 A	A	**6ES7132-4FB01-0AB0**		1	5 units	250
• 2 DO 24 V DC to 230 V AC/5 A relay, NO contact	A	**6ES7132-4HB01-0AB0**		1	5 units	250
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, CO contact	A	**6ES7132-4HB12-0AB0**		1	5 units	250
Order unit 1 unit						
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, CO contact, with manual operation	A	**6ES7132-4HB50-0AB0**		1	1 unit	250
• 8 DO 24 V DC/0.5 A Standard	A	**6ES7132-4BF00-0AA0**		1	1 unit	250
• 8 DO 24 V DC/0.5 A Standard SINK OUTPUT	A	**6ES7132-4BF50-0AA0**		1	1 unit	250
Order unit 100 units						
• 8 DO 24 V DC/0.5 A Standard	A	**6ES7132-4BF00-4AA0**		1	100 units	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
SIPLUS digital electronic modules (extended temperature range and medial loading)						
SIPLUS digital input modules						
Order unit 5 units						
• 4 DI 24 V DC Standard (-25 ... +60 °C)	D	**6AG1131-4BD01-2AA0**		1	5 units	473
• 4 DI 24 V DC High-Feature (-25 ... +70 °C)	D	**6AG1131-4BD01-7AB0**		1	5 units	473
• 8 DI 24 V DC Standard (-25 ... +70 °C)	D	**6AG1131-4BF00-7AA0**		1	1 unit	473
Order unit 1 unit						
• 8 DI 24 V DC Source Input (-40 ... +70 °C)	D	**6AG1131-4BF50-7AA0**		1	1 unit	473
SIPLUS digital output modules						
Order unit 5 units						
• 2 DO 24 V DC/0.5 A High-Feature (-25 ... +60 °C)	D	**6AG1132-4BB01-2AB0**		1	5 units	473
• 2 DO 24 V DC/2 A High-Feature (-25 ... +70 °C)	D	**6AG1132-4BB31-7AB0**		1	5 units	473
• 4 DO 24 V DC/0.5 A Standard (-25 ... +70 °C)	D	**6AG1132-4BD02-7AA0**		1	5 units	473
• 4 DO 24 V DC/2 A Standard (-25 ... +60 °C)	D	**6AG1132-4BD32-2AA0**		1	5 units	473
• 2 DO 24 V DC to 230 V AC/5 A relay, NO contact (-25 ... +70 °C)	D	**6AG1132-4HB01-2AB0**		1	5 units	473
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, CO contact (-25 ... +60 °C)	D	**6AG1132-4HB12-2AB0**		1	5 units	473
Order unit 1 unit						
• 8 DO 24 V DC/0.5 A Standard (-25 ... +70 °C)	D	**6AG1132-4BF00-7AA0**		1	1 unit	473
• 8 DO 24 V DC/0.5 A Standard SOURCE OUTPUT (-25 ... +70 °C)	D	**6AG1132-4BF50-7AA0**		1	1 unit	473
Accessories		See digital electronic modules				

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Illustrations are approximate

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ET 200S – I/O modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog electronic modules						
Analog input modules Order unit 1 unit						
• 2 AI U Standard	A	**6ES7134-4FB01-0AB0**		1	1 unit	250
• 2 AI U High Speed	A	**6ES7134-4FB52-0AB0**		1	1 unit	250
• 2 AI U High-Feature	A	**6ES7134-4LB02-0AB0**		1	1 unit	250
• 2 AI I Standard 2-wire	A	**6ES7134-4GB01-0AB0**		1	1 unit	250
• 2 AI I High Speed 2-wire	A	**6ES7134-4GB52-0AB0**		1	1 unit	250
• 2 AI I Standard 4-wire	A	**6ES7134-4GB11-0AB0**		1	1 unit	250
• 2 AI High Speed 4 wire	A	**6ES7134-4GB62-0AB0**		1	1 unit	250
• 2 AI I High-Feature 2/4-wire (15 bits + sign)	A	**6ES7134-4MB02-0AB0**		1	1 unit	250
• 2 AI RTD Standard	A	**6ES7134-4JB51-0AB0**		1	1 unit	250
• 2 AI TC Standard	A	**6ES7134-4JB01-0AB0**		1	1 unit	250
• 2 AI RTD High-Feature	A	**6ES7134-4NB51-0AB0**		1	1 unit	250
• 2 AI TC High-Feature	A	**6ES7134-4NB01-0AB0**		1	1 unit	250
• 4 AI Standard 2-wire	A	**6ES7134-4GD00-0AB0**		1	1 unit	250
• 4 AI TC Standard	A	**6ES7134-4JD00-0AB0**		1	1 unit	250
Analog output modules Order unit 1 unit						
• 2 AO U Standard	A	**6ES7135-4FB01-0AB0**		1	1 unit	250
• 2 AO U High Speed	A	**6ES7135-4FB52-0AB0**		1	1 unit	250
• 2 AO U High-Feature	A	**6ES7135-4LB02-0AB0**		1	1 unit	250
• 2 AO I Standard	A	**6ES7135-4GB01-0AB0**		1	1 unit	250
• 2 AO I High Speed	A	**6ES7135-4GB52-0AB0**		1	1 unit	250
• 2 AO I High-Feature	A	**6ES7135-4MB02-0AB0**		1	1 unit	250
Accessories for inscription						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Accessories for system-integrated shield connections						
Shield attachments Order unit 5 units For plugging into TM-E and TM-P	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield terminals Order unit 5 units For busbars 3 × 10 mm	A	**6ES7193-4GB00-0AA0**		1	5 units	250
Ground connection terminals For conductor cross-sections up to 25 mm^2	C	**8WA2868**		1	50 units	12W
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2842**		1	1 unit	12W
SIPLUS analog electronic modules (extended temperature range and medial loading)						
SIPLUS analog input modules						
• 2 AI U Standard (-25 ... +60 °C)	D	**6AG1134-4FB01-2AB0**		1	1 unit	473
• 2 AI I Standard 2-wire (-25 ... +60 °C)	D	**6AG1134-4GB01-2AB0**		1	1 unit	473
• 2 AI I Standard 4-wire (-25 ... +60 °C)	D	**6AG1134-4GB11-2AB0**		1	1 unit	473
• 2 AI I High-Feature 2-/4-wire (15 Bit + sign) (-25 ... +70 °C)	D	**6AG1134-4MB02-2AB0**		1	1 unit	473
• 2 AI High Speed 2-wire (-25 ... +60 °C)	D	**6AG1134-4GB52-2AB0**		1	1 unit	473
• 4 AI Standard 2-wire (-25 ... +60 °C)	D	**6AG1134-4GD00-2AB0**		1	1 unit	473
• 2 AI RTD Standard (-25 ... +70 °C)	D	**6AG1134-4JB51-7AB0**		1	1 unit	473
• 2 AI RTD High-Feature (-25 ... +60 °C)	D	**6AG1134-4NB51-2AB0**		1	1 unit	473
• 2 AI TC High-Feature (0 ... +70 °C)	D	**6AG1134-4NB01-7AB0**		1	1 unit	473
SIPLUS analog output modules						
• 2 AO U Standard (-25 ... +60 °C)	D	**6AG1135-4FB01-2AB0**		1	1 unit	473
• 2 AO U High-Feature (-25 ... +60 °C)	D	**6AG1135-4LB02-7AB0**		1	1 unit	473
• 2 AO I Standard (-25 ... +70 °C)	D	**6AG1135-4GB01-2AB0**		1	1 unit	473
Accessories		See analog electronic modules				

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SSI modules						
SSI modules For the connection of absolute encoders with SSI interface	A	**6ES7138-4DB03-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Signal cables Assembled for SSI absolute encoders 6FX2001-5, without Sub-D connector, UL/DESINA	B	**6FX5002-2CC12-....**		1	1 unit	764
2PULSE pulse generators						
2PULSE pulse generators and timer modules For ET 200S	A	**6ES7138-4DD01-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
1STEP step modules						
1STEP step modules For simple positioning tasks with stepper motor axes	A	**6ES7138-4DC01-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
SIMOSTEP stepper motors		See Catalog ST 70				
Power units for stepper motors FM STEPDRIVE		See Catalog ST 70				
1POS U positioning modules						
1POS U positioning modules Single-channel positioning module for ET 200S for positioning of adjusting and operating axes	A	**6ES7138-4DL00-0AB0**		1	1 unit	250

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ET 200S – I/O modules
Technology modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
1 COUNT 24 V/100 kHz counter modules						
1 COUNT 24 V/100 kHz counter modules For universal counting and measuring tasks with ET 200S	A	**6ES7138-4DA04-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Shield attachments For TM-P and TM-E terminal modules, as support for busbar 3 x 10 mm, 5 units	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield terminals For connection of braided shields to busbars, 5 units	A	**6ES7193-4GB00-0AA0**		1	5 units	250
SIMODRIVE sensor incremental encoders Mountable sensor, optically incremental with HTL level, operational voltage 10 ... 30 V		**6FX2001-4....** See Catalog ST 70				
Signal cables Assembled, for HTL and TTL sensors, without Sub-D connector, UL/DESINA	B	**6FX5002-2CA12-....**		1	1 unit	764
SIPLUS 1 COUNT 24 V/100 kHz counter modules (extended temperature range and medial loading)						
SIPLUS 1 COUNT 24 V/100 kHz counter modules (-25 ... +60 °C) For universal counting and measuring tasks with ET 200S	D	**6AG1138-4DA04-2AB0**		1	1 unit	473
Accessories		See 1 COUNT 24 V/100 kHz counter modules				
1 COUNT 5 V/500 kHz counter modules						
1 COUNT 5 V/500 kHz counter modules For universal counting and measuring tasks with ET 200S	A	**6ES7138-4DE02-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7193-4BH00-0AA0**		1	10 units	250
• Red	A	**6ES7193-4BD00-0AA0**		1	10 units	250
• Yellow	A	**6ES7193-4BB00-0AA0**		1	10 units	250
• Light beige	A	**6ES7193-4BA00-0AA0**		1	10 units	250
Shield attachments For TM-P and TM-E terminal modules, as support for busbar 3 x 10 mm, 5 units	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield terminals For connection of braided shields to busbars, 5 units	A	**6ES7193-4GB00-0AA0**		1	5 units	250
SIMODRIVE incremental encoders With RS 422 (TTL), operational voltage 10 ... 30 V		**6FX2001-2....** See Catalog ST 70				
Signal cables Assembled, for HTL and TTL sensors, without Sub-D connector, UL/DESINA	B	**6FX5002-2CA12-....**		1	1 unit	764
1 SI interface modules						
1 SI interface modules						
• ASCII and 3964(R) protocol	A	**6ES7138-4DF01-0AB0**		1	1 unit	250
• Modbus and USS protocol	A	**6ES7138-4DF11-0AB0**		1	1 unit	250
Accessories						
TM-E15S 26-A1 terminal modules Order unit 5 units	A	**6ES7193-4CA40-0AA0**		1	5 units	250
TM-E15C26-A1 terminal modules Order unit 5 units	A	**6ES7193-4CA50-0AA0**		1	5 units	250
TM-E15N24-A1 terminal modules Order unit 5 units	A	**6ES7193-4CA80-0AA0**		1	5 units	250
TM-E15S24-01 terminal modules Order unit 5 units	A	**6ES7193-4CB20-0AA0**		1	5 units	250
TM-E15C24-01 terminal modules Order unit 5 units	A	**6ES7193-4CB30-0AA0**		1	5 units	250
TM-E15N24-01 terminal modules Order unit 5 units	A	**6ES7193-4CB70-0AA0**		1	5 units	250
SIPLUS 1 SI interface modules (extended temperature range and medial loading)						
1 SI interface modules						
• ASCII and 3964(R) protocols (-25 ... +70 °C)	D	**6AG1138-4DF11-7AB0**		1	1 unit	473
• MODBUS and USS protocols (-25 ... +70 °C)	D	**6AG1138-4DF01-7AB0**		1	1 unit	473
Accessories		See 1 SI interface modules				

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIWAREX CS						
SIWAREX CS Weighing electronics for weighers in SIMATIC ET 200S	D	**7MH4910-0AA01**		1	1 unit	816
SIWAREX CS manuals • In various languages Free download from: www.siemens.com/weighingtechnology						
SIWAREX CS "Getting started" Sample software for a simple introduction to programming weighers in STEP 7. Free download from: www.siemens.com/weighingtechnology						
SIWAREX CS configuration package on CD-ROM for SIMATIC and TIA Portal • SIWATOOL CS software for weigher calibration (in various languages) • Manuals on CD (in various languages) • SIWAREX CD "Getting started"	C	**7MH4910-0AK02**		1	1 unit	816
SIWATOOL connection cables From SIWAREX U/CS with serial PC interface, for 9-pole PC interfaces (RS 232), length 3 m	C	**7MH4607-8CA**		1	1 unit	815
Installation materials *(essential)*						
Terminal modules TM-E 30 mm wide (required for each SIWAREX module)	A	**6ES7193-4CG20-0AA0** or compatible		1	1 unit	250
Shield attachments Contents 5 units, sufficient for 5 cables	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield connection terminals Contents: 5 units, sufficient for 5 cables Note: One shield connection terminal is required for • Weigher connection and • The TTY interface or • RS 232 interface	A	**6ES7193-4GB00-0AA0**		1	5 units	250
N busbars, galvanized 3 x 10 mm, 1 m long	A	**8WA2842**		1	1 unit	12W
Infeed terminals for N busbar	C	**8WA2868**		1	50 units	12W
Remote displays (optional) The digital remote displays can be connected directly through the TTY interface to the SIWAREX CS. Usable remote display: S102		Obtainable from the company Siebert, see Chapter 16 "Appendix" → "External Partners"				
Accessories						
SIWAREX JB junction box, aluminum housing For parallel switching of up to 4 weigh-cells and for connecting several connection boxes	C	**7MH4710-1BA**		1	1 unit	815
SIWAREX JB junction box, stainless steel housing For parallel switching of up to 4 weigh-cells	D	**7MH4710-1EA**		1	1 unit	815
Ex-Interface, type SIWAREX IS With ATEX approval, but **without UL and FM approval** For the inherently safe connection of weigh-cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC, M and CF weigher modules. Use in the EU is possible.						
• With short-circuit current < DC 199 mA	C	**7MH4710-5BA**		1	1 unit	815
• With short-circuit current < DC 137 mA	C	**7MH4710-5CA**		1	1 unit	815
Cables *(optional)*						
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color orange For connecting SIWAREX U, CS, MS, FTA, FTC, M and CF to the connection and distribution box (JB), extension box (EB) or Ex-Interface (Ex-I) and between two JBs, for local laying, occasional bending is possible, 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4702-8AG**		1	1 M	815
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color blue Connecting of connection and distribution box (JB) or extension box (EB) in hazardous areas and Ex-Interface (Ex-I), for local laying, occasional bending is possible, blue PVC insulating covering, approx. 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4702-8AF**		1	1 M	815

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIWAREX CF						
SIWAREX CF Force measuring module for DMS sensors in SIMATIC ET 200S (SIWAREX CF configuration package not required)	C	**7MH4920-0AA01**		1	1 unit	816
SIWAREX CF manuals • German, English Free download from: www.siemens.com/weighingtechnology						
SIWAREX CF "Getting started" Sample software for a simple introduction to programming in STEP 7. Free download from: www.siemens.com/weighingtechnology						
Installation materials *(essential)*						
Terminal modules TM-E 30 mm wide (required for each SIWAREX module)	A	**6ES7193-4CG20-0AA0** or compatible		1	1 unit	250
Shield attachments Contents 5 units, sufficient for 5 cables	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield connection terminals Contents: 5 units, sufficient for 5 cables One shield connection terminal is required for each sensor cable	A	**6ES7193-4GB00-0AA0**		1	5 units	250
N busbars, galvanized 3 x 10 mm, 1.5 m long	A	**8WA2842**		1	1 unit	12W
Infeed terminals for N busbar	C	**8WA2868**		1	50 units	12W
Accessories						
SIWAREX EB extension boxes For extending sensor cables	C	**7MH4710-2AA**		1	1 unit	815
Ex-Interface, type SIWAREX IS With ATEX approval, but **without UL and FM approval** For the inherently safe connection of weigh-cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC, M and CF weigher modules. Use in the EU is possible.						
• With short-circuit current < DC 199 mA	C	**7MH4710-5BA**		1	1 unit	815
• With short-circuit current < DC 137 mA	C	**7MH4710-5CA**		1	1 unit	815
Cables *(optional)*						
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color orange For connecting SIWAREX U, CS, MS, FTA, FTC, M and CF to the connection and distribution box (JB), extension box (EB) or Ex-Interface (Ex-I) and between two JBs, for local laying, occasional bending is possible, 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4702-8AG**		1	1 M	815

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for power modules and electronic modules						
TM-P terminal modules for PM-E power modules						
TM-P15S23-A1 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CC20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CC20-1AA0**		1	5 units	250
TM-P15C23-A1 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CC30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CC30-1AA0**		1	5 units	250
TM-P15N23-A1, order unit 1 unit 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CC70-0AA0**		1	1 unit	250
TM-P15S23-A0 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CD20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CD20-1AA0**		1	5 units	250
TM-P15C23-A0 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CD30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CD30-1AA0**		1	5 units	250
TM-P15N23-A0 Order unit: 1 unit 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, FastConnect	A	**6ES7193-4CD70-0AA0**		1	1 unit	250
TM-P15S22-01 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CE00-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CE00-1AA0**		1	5 units	250
TM-P15C22-01 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CE10-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CE10-1AA0**		1	5 units	250
TM-P15N22-01, order unit 1 unit 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CE60-0AA0**		1	1 unit	250
TM-P30S44-A0, order unit 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0, order unit 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7193-4CK30-0AA0**		1	1 unit	241
TM-E terminal modules for electronic modules[1)]						
TM-E15S24-A1, order unit 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CA20-0AA0**		1	5 units	250
TM-E15C24-A1, order unit 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CA30-0AA0**		1	5 units	250
TM-E15S24-01, order unit 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CB20-0AA0**		1	5 units	250
TM-E15C24-01, order unit 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CB30-0AA0**		1	5 units	250
TM-E15S23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CB00-0AA0**		1	5 units	250
TM-E15C23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CB10-0AA0**		1	5 units	250
TM-E15N23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CB60-0AA0**		1	5 units	250

[1)] Note for selecting suitable TM-E and TM-P configuration aids.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for power modules and electronic modules (continued)						
TM-E terminal modules for electronic modules[1] *(continued)*						
TM-E15N24-01 Order unit: 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CB70-0AA0**		1	5 units	250
TM-E15S26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CA40-0AA0**		1	5 units	250
TM-E15C26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CA50-0AA0**		1	5 units	250
TM-E15N24-A1 Order unit: 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CA70-0AA0**		1	5 units	250
TM-E15N26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7193-4CA80-0AA0**		1	5 units	250
TM-E30S44-01 Order unit: 1 unit 4 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CG20-0AA0**		1	1 unit	250
TM-E30C44-01 Order unit: 1 unit 4 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CG30-0AA0**		1	1 unit	250
TM-E30S46-A1 Order unit: 1 unit 4 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CF40-0AA0**		1	1 unit	250
TM-E30C46-A1 Order unit: 1 unit 4 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CF50-0AA0**		1	1 unit	250
TM-E15S24-AT Order unit: 1 unit for internal temperature compensation for 2 AI TC High-Feature, screw terminals	A	**6ES7193-4CL20-0AA0**		1	1 unit	250
TM-E15C24-AT Order unit: 1 unit for internal temperature compensation for 2 AI TC High-Feature, spring-type terminals	A	**6ES7193-4CL30-0AA0**		1	1 unit	250
Accessories for shield connection						
Shield attachments Order unit: 5 units, for plugging into TM-E and TM-P	A	**6ES7193-4GA00-0AA0**		1	5 units	250
Shield terminals Order unit: 5 units, for busbars 3 × 10 mm	A	**6ES7193-4GB00-0AA0**		1	5 units	250
Ground connection terminals For conductor cross-sections up to 25 mm^2	C	**8WA2868**		1	50 units	12W
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2842**		1	1 unit	12W
Accessories for coding						
Color coding plates Order unit: 200 units for TM-P, TM-E						
• White	A	**6ES7193-4LA20-0AA0**		1	200 units	250
• Yellow	A	**6ES7193-4LB20-0AA0**		1	200 units	250
• Yellow and green	A	**6ES7193-4LC20-0AA0**		1	200 units	250
• Red	A	**6ES7193-4LD20-0AA0**		1	200 units	250
• Blue	A	**6ES7193-4LF20-0AA0**		1	200 units	250
• Brown	A	**6ES7193-4LG20-0AA0**		1	200 units	250
• Turquoise	A	**6ES7193-4LH20-0AA0**		1	200 units	250
Inscription labels, with inscription Order unit: 1 set						
• 200 units for slot numbering (1 ... 20) 10 ×	C	**8WA8861-0AB**		100	200 units	12W
• 200 units for slot numbering (1 ... 40) 5 ×	C	**8WA8861-0AC**		100	200 units	12W
• 200 units for slot numbering (1 ... 64) 1 ×, (1 ... 68) 2 ×	C	**8WA8861-0DA**		100	200 units	12W
Inscription labels, blank 200 units for slot numbering	A	**8WA8848-2AY**		100	100 units	12W

[1] Note for selecting suitable TM-E and TM-P configuration aids.

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SIPLUS terminal modules for power modules and electronic modules (extended temperature range and medial loading)						
TM-P terminal modules for PM-E power modules						
SIPLUS ET 200S TM-P15S23-A0 (-40 ... +70 °C) Order unit: 1 unit 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals	D	**6AG1193-4CD20-2AA0**		1	1 unit	473
SIPLUS ET 200S TM-P15C23-A0 (-40 ... +70 °C) Order unit: 1 unit 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals	C	**6AG1193-4CD30-2AA0**		1	1 unit	473
SIPLUS ET 200S TM-P15C22-01 (-40 ... +70 °C) Order unit 1 unit 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CE10-2AA0**		1	1 unit	473
TM-E terminal modules for electronic modules						
SIPLUS ET 200S TM-E15C23-01 (0 ... +70 °C) Order unit 5 units 2 x 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CB10-7AA0**		1	5 units	473
SIPLUS ET 200S TM-E15N24-01 (-40 ... +70 °C) Order unit 5 units 2 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	D	**6AG1193-4CB70-7AA0**		1	5 units	473
SIPLUS ET 200S TM-E15C24-A1 (-40 ... +70 °C) Order unit 5 units 2 x 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CA30-2AA0**		1	5 units	473
SIPLUS ET 200S TM-E15C24-01 (-40 ... +70 °C) Order unit 5 units 2 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CB30-2AA0**		1	5 units	473
SIPLUS ET 200S TM-E15S26-A1 (-40 ... +70 °C) Order unit: 5 unit 2 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	D	**6AG1193-4CA40-2AA0**		1	5 units	473
SIPLUS ET 200S TM-E15C26-A1 (-40 ... +70 °C) Order unit 5 units 2 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CA50-2AA0**		1	5 units	473
SIPLUS ET 200S TM-E30C44-01 (-40 ... +70 °C) Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CG30-2AA0**		1	1 unit	473
SIPLUS ET 200S TM-E30C46-A1 (-40 ... +70 °C) Order unit 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1193-4CF50-7AA0**		1	1 unit	473
SIPLUS ET 200S TM-E15C24-AT (0 ... +70 °C) Order unit: 1 unit for internal temperature compensation for 2 AI TC High-Feature, spring-type terminals	D	**6AG1193-4CL30-7AA0**		1	1 unit	473
Accessories for shield connection		See terminal modules for power modules and electronic modules				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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ET 200S – fail-safe I/O modules

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E F PROFIsafe F power modules						
PM-E F pm PROFIsafe 24 V DC power modules For the safe disconnection of digital output modules	A	**6ES7138-4CF03-0AB0**		1	1 unit	241
PM-E F pp PROFIsafe 24 V DC power modules For the safe disconnection of digital output modules	A	**6ES7138-4CF42-0AB0**		1	1 unit	241
Accessories						
IM 151-1 HIGH-FEATURE interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochronous mode (clocked operation); connection to bus through 9-pole Sub-D including termination module	A	**6ES7151-1BA02-0AB0**		1	1 unit	250
IM 151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including termination module	A	**6ES7151-3BA23-0AB0**		1	1 unit	250
IM 151-3 PN FO interface modules For ET 200S; 2 PROFINET fiber-optic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including termination module	A	**6ES7151-3BB23-0AB0**		1	1 unit	250
Terminal modules for power modules						
TM-P30S44-A0 Order unit: 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0 Order unit: 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7193-4CK30-0AA0**		1	1 unit	241
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering Software, Runtime Software, PCS 7, SIMATIC HMI, SIMATIC NET	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
F electronic modules						
4/8 F-DI PROFIsafe 24 V DC electronic modules 30 mm width, up to Category 4 (EN 954-1)	A	**6ES7138-4FA04-0AB0**		1	1 unit	241
4 F-DO PROFIsafe 24 V DC/2 A electronic modules 30 mm width, up to Category 4 (EN 954-1)	A	**6ES7138-4FB03-0AB0**		1	1 unit	241
4 F-DI / 3 F-DO PROFIsafe 24 V DC/2 A electronic modules 30 mm width, up to Category 3 (EN 954-1) / SIL 2 (IEC 62061)	A	**6ES7138-4FC01-0AB0**		1	1 unit	241

[1] Up-to-date information and availability for download see under:
http://www.siemens.com/tia-online-software-delivery

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
F electronic modules (continued)						
Accessories						
Terminal modules for electronic modules		See F terminal modules				
IM151-1 High-Feature interface modules For ET200S; transmission rates up to 12 Mbit/s; up to 63 modules can be connected, with isochronous mode, connection to bus through 9-pole Sub-D, including termination module	A	**6ES7151-1BA02-0AB0**		1	1 unit	250
IM151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including termination module	A	**6ES7151-3BA23-0AB0**		1	1 unit	250
IM151-3 PN FO interface modules For ET 200S; 2 PROFINET fiber-optic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including termination module	A	**6ES7151-3BB23-0AB0**		1	1 unit	250
Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering Software, Runtime Software, PCS 7, SIMATIC HMI, SIMATIC NET	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
SIPLUS F electronic modules (extended temperature range and medial loading)						
4/8 F-DI PROFIsafe electronic modules 24 V DC (-25 ... +60 °C) 30 mm width, up to Category 4 (EN 954-1)	D	**6AG1138-4FA04-2AB0**		1	1 unit	473
4 F-DO PROFIsafe electronic modules 24 V DC/2 A (-25 ... +60 °C) 30 mm width, up to Category 4 (EN 954-1)	D	**6AG1138-4FB03-2AB0**		1	1 unit	473
Accessories		See F electronic modules				

[1] Up-to-date information and availability for download see under:
http://www.siemens.com/tia-online-software-delivery

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ET 200S – fail-safe I/O modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
RELAY F electronic modules						
1 F-RO electronic module 24 V DC/5 A 24 ... 230 V AC/5A	A	**6ES7138-4FR00-0AA0**		1	1 unit	241
Accessories						
Terminal modules for electronic modules		See F terminal modules				
IM 151-1 High-Feature interface modules For ET 200S; transmission rates up to 12 Mbit/s; up to 63 modules can be connected, with isochronous mode, connection to bus through 9-pole Sub-D, including termination module	A	**6ES7151-1BA02-0AB0**		1	1 unit	250
IM 151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including termination module	A	**6ES7151-3BA23-0AB0**		1	1 unit	250
IM 151-3 PN FO interface modules For ET 200S; 2 PROFINET fiber-optic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including termination module	A	**6ES7151-3BB23-0AB0**		1	1 unit	250
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
SIMATIC Manual Collection Electronic manuals on DVD, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering Software, Runtime Software, PCS 7, SIMATIC HMI, SIMATIC NET	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230

[1] Up-to-date information and availability for download see under: http://www.siemens.com/tia-online-software-delivery

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
F terminal modules						
F terminal modules for power modules						
TM-P15S23-A1 2 x 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CC20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CC20-1AA0**		1	5 units	250
TM-P15C23-A1 2 x 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CC30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CC30-1AA0**		1	5 units	250
TM-P15S23-A0 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CD20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CD20-1AA0**		1	5 units	250
TM-P15C23-A0 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CD30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CD30-1AA0**		1	5 units	250
TM-P15S22-01 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7193-4CE00-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CE00-1AA0**		1	5 units	250
TM-P15C22-01 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7193-4CE10-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7193-4CE10-1AA0**		1	5 units	250
TM-P30S44-A0 Order unit: 1 unit 7 x 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0 Order unit: 1 unit 7 x 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7193-4CK30-0AA0**		1	1 unit	241
F terminal modules for electronic modules						
TM-E30S44-01 Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CG20-0AA0**		1	1 unit	250
TM-E30C44-01 Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CG30-0AA0**		1	1 unit	250
TM-E30S46-A1 Order unit: 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7193-4CF40-0AA0**		1	1 unit	250
TM-E30C46-A1 Order unit: 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7193-4CF50-0AA0**		1	1 unit	250
Accessories						
Color coding plates Order unit: 200 units for TM-P, TM-E						
• White	A	**6ES7193-4LA20-0AA0**		1	200 units	250
• Yellow	A	**6ES7193-4LB20-0AA0**		1	200 units	250
• Yellow and green	A	**6ES7193-4LC20-0AA0**		1	200 units	250
• Red	A	**6ES7193-4LD20-0AA0**		1	200 units	250
• Blue	A	**6ES7193-4LF20-0AA0**		1	200 units	250
• Brown	A	**6ES7193-4LG20-0AA0**		1	200 units	250
• Turquoise	A	**6ES7193-4LH20-0AA0**		1	200 units	250
Ground connection terminals For conductor cross-sections up to 25 mm^2	C	**8WA2868**		1	50 units	12W
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2842**		1	1 unit	12W
Inscription labels, with inscription Order unit: 1 set						
• 200 units for slot numbering (1 ... 20) 10 ×	C	**8WA8861-0AB**		100	200 units	12W
• 200 units for slot numbering (1 ... 40) 5 ×	C	**8WA8861-0AC**		100	200 units	12W
• 200 units for slot numbering (1 ... 64) 1 ×, (1 ... 68) 2 ×	C	**8WA8861-0DA**		100	200 units	12W
Inscription labels, blank 200 units for slot numbering	A	**8WA8848-2AY**		100	100 units	12W

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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ET 200S – IO-Link master modules

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IO-Link 4SI electronic module						
IO-Link masters For integrating sensors and actuators from different manufacturers into the ET 200S I/O system; 4 ports Connection method: Screw terminals, spring-type terminals or FastConnect	A	**6ES7138-4GA50-0AB0**		1	1 unit	250
Accessories						
Universal terminal modules for ET 200S						
• TM-E15S26-A1 with screw terminals	A	**6ES7193-4CA40-0AA0**		1	5 units	250
• TM-E15C26-A1 with spring-type terminals	A	**6ES7193-4CA50-0AA0**		1	5 units	250
• TM-E15N26-A1 with FastConnect	A	**6ES7193-4CA80-0AA0**		1	5 units	250
SIRIUS 4SI electronic modules						
IO-Link masters For connecting SIRIUS controls with IO-Link to ET 200S; 4 ports Connection method: Screw terminals, spring-type terminals or FastConnect	►	**3RK1005-0LB00-0AA0**		1	1 unit	42F
Accessories						
Universal terminal modules for ET 200S						
• TM-E15S26-A1 with screw terminals	A	**6ES7193-4CA40-0AA0**		1	5 units	250
• TM-E15C26-A1 with spring-type terminals	A	**6ES7193-4CA50-0AA0**		1	5 units	250
• TM-E15N26-A1 with FastConnect	A	**6ES7193-4CA80-0AA0**		1	5 units	250
Product manual[1] "ET 200S for 4SI SIRIUS Electronic Module"						
• German	C	**3ZX1012-0LB00-0AA0**		1	1 unit	4N1

[1] This product manual is also available at:
http://support.automation.siemens.com/WW/view/en/37856470

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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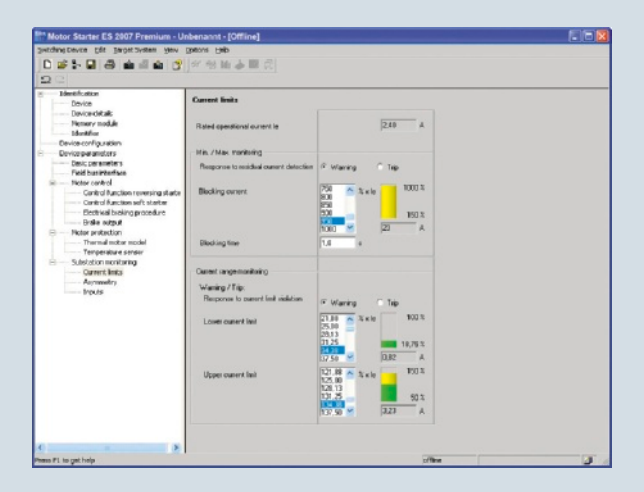
Overview

Motor Starter ES

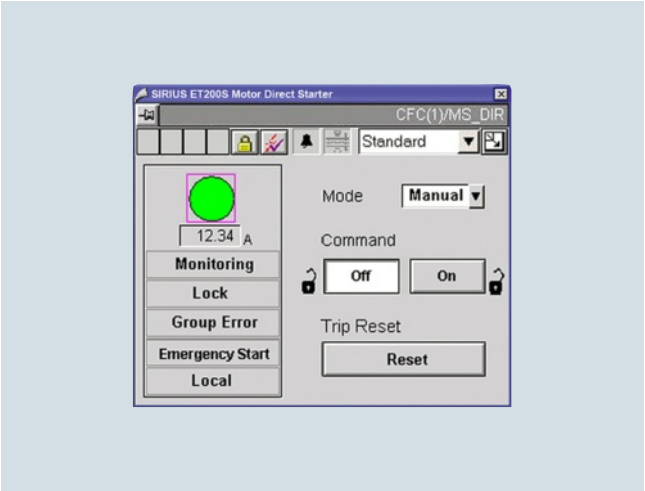


Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200S, SIMATIC ET 200pro and SIRIUS M200D product families.

Detailed information on the Motor Starter ES software see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

SIRIUS motor starter block library for SIMATIC PCS 7



Faceplate of the motor block

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S and ET 200pro motor starters can be easily and simply integrated into the SIMATIC PCS 7 process control system.

The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver blocks corresponding to the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Detailed information about the SIRIUS motor starter block library for SIMATIC PCS 7 see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

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Notes

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Motor Starters for Use in the Field, High Degree of Protection

Price groups
PG 230, 241, 250, 266, 2AP, 337, 343, 346, 41B, 42C, 42D, 42E, 572, 5K1, 5K2, 5N2, 5W1, 753

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Safety modules local
9/10 - Safety local isolator modules
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MCU motor starters, I/O controlled
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Note:
Conversion tool see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

3RK1304

3RK1315

3RK4353

3RK4320

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ET 200pro isolator modules	• With switch disconnector function for safe disconnection	**3RK1304**	9/9
Safety modules local	• Isolator module, 400 V disconnecting module	**3RK1304**	9/10
Safety modules PROFIsafe	• F-Switch PROFIsafe	**6ES7148**	9/13
Accessories for ET 200pro motor starters	• Incoming power supply, power loop-through connection on the field device, motor cable, power bus with power terminal connectors	**3RK19**	9/14
ET 200pro – interface modules	• For communication with PROFIBUS, PROFINET and IWLAN	**6ES71**	9/19
ET 200pro – I/O modules	• Digital/analog expansion modules, fail-safe expansion modules, power modules, ET 200pro pneumatic interfaces	**6ES71**	9/30
ET 200pro PS	• Stabilized power supplies	**6ES7148**	9/34
ET 200pro FC frequency converters		**6SL32**	9/35
SIRIUS M200D motor starters			
	• Distributed motor starters up to 5.5 kW		
M200D AS-i Basic motor starters		**3RK1315**	9/43
M200D AS-i Standard motor starters		**3RK1325**	9/44
M200D communication modules for PROFIBUS		**3RK1305**	9/51
M200D communication modules for PROFINET		**3RK1335**	9/51
M200D motor starter modules		**3RK1395**	9/51
Accessories	• Incoming power supply, motor cable, power bus with power terminal connectors	**3RK1911**	9/55
	• Motor control with IO communication	**3RK1902**	9/57
	• Motor control with AS-i communication	**3RK1902**	9/58
	• Motor control with PROFIBUS	**3RK1902**	9/60
	• Motor control with PROFINET	**3RK1902**	9/61
SIRIUS MCU motor starters			
MCU motor starters, locally controlled	• For autonomously controlled motors such as pumps, fans, etc.	**3RK4353**	9/65
MCU motor starters, I/O controlled	• Economical solution for controlling three-phase motors distributed in the field	**3RK4340**	9/66
MCU motor starters for AS-Interface	• Controlling and scanning through the AS-i bus		
	- Plastic enclosures, electromechanical	**3RK4320**	9/67
	- Metal enclosures, electromechanical	**3RK4320**	9/68
	- Metal enclosures, electronic	**3RK4320**	9/70
Motor starters for AS-Interface, 24 V DC			
	• For the low-end performance range up to 70 W		
	• Quick and easy connection of 24 V DC motors and related sensors directly on-site to AS-Interface		
3 versions	• Single direct-on-line starters, double direct-on-line starters, reversing starters	**3RK1400-1**	9/72
Hybrid fieldbus connections			
	• Passive and active	**3RK1911**	9/75

Flexible and cost-efficient distributed starter solutions

Be it their high degree of protection, compact design or integrated multifunctionality – our motor starters and soft starters for use in the field are ideal for realizing distributed drive solutions. The modular concepts, distributed power distribution and integrated safety technology of our portfolio for a high degree of protection consistently supports current trends in drive technology.

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Overview

ET 200pro motor starters in the ET 200pro I/O system

SIMATIC ET 200pro is a modular I/O system in the degree of protection IP65/66/67 for near-machine, cabinet-free use. ET 200pro motor starters in the high degree of protection IP65 are an integral part of ET 200pro.

ET 200pro motor starter: Isolator module, Standard starter and High-Feature starter mounted on a wide module rack

ET 200pro motor starters

- Only two versions up to 5.5 kW
- All settings can be parameterized by bus
- Comprehensive diagnostic signals
- Support for PROFIenergy
- Overload can be acknowledged by remote reset
- Current unbalance monitoring
- Stall protection
- Emergency start function in the event of overload
- Current value transmission by bus
- Current limit monitoring
- Full support of acyclic services
- Direct-on-line or reversing starters
- Power bus connection can be plugged in using Han Q4/2 plug-in connectors
- Motor feeder with Han Q8/0 connector
- Conductor cross-sections up to 6 x 4 mm^2
- 25 A per segment (power looped through using jumper plug)
- In the Standard and High-Feature versions (with 4 DI onBoard)
- Electromechanical switching and electronic switching
- Electronic starter for direct activation or with integrated soft starter function
- Supplied with 400 V AC brake contact as an option
- Provision of the motor current in PROFIenergy format to higher-level systems, motor current shutdown in dead times using PROFIenergy

ET 200pro isolator modules (see page 9/9)

The isolator module with switch disconnector function is used for safe disconnection of the 400 V operational voltage during repair work in the plant and provides an integrated group fusing function (i.e. additional group short-circuit protection for all downstream supplied motor starters).

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

Safety applications

Safety Solution local (see page 9/10)

With the Safety local modules
- Safety local isolator module and
- 400 V disconnecting module

it is possible to achieve safety level SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1) with an appropriate connection.

Safety Solution PROFIsafe (see page 9/13)

With the Safety PROFIsafe modules
- F-Switch and
- 400 V disconnecting module

it is likewise possible to achieve safety level SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1).

Functionality

With the ET 200pro motor starters, any AC loads can be protected and switched.

The ET 200pro motor starters are available both with mechanical as well as electronic contacts.

The ET 200pro electromechanical starters are offered as direct-on-line (DSe) and reversing starters (RSe) in the versions **Standard** and **High-Feature**. There are device versions with or without control for externally fed brakes with 400 V AC.

Compared to the Standard motor starter, the **High-Feature mechanical motor starter** also has:
- 4 digital inputs
- Advanced parameterization options

The ET 200pro electronic starters are offered as direct-on-line starters (sDSSte/sDSte) and reversing starters (sRSSte/sRSte) in the High-Feature version.

Compared to the High-Feature mechanical motor starter, the **High-Feature electronic motor starter** also has:
- Soft starting and smooth ramp-down function
- Deactivated soft start function as an electronic starter for applications with a high switching frequency
- Advanced parameterization options

As a result of the protection concept with electronic overload evaluation and the use of SIRIUS controls, size S00, additional advantages are realized on the Standard and High-Feature motor starters – advantages which soon make themselves positively felt particularly in manufacturing processes with high plant downtime costs:
- Configuration is made easier by the fine modular structure with ET200pro. When using the ET 200pro motor starters, the parts list per load feeder is reduced to 2 main items: the bus module and the motor starter. This makes the ET 200pro ideal for modular machine concepts or solutions for conveyor systems and in machine-tool construction.
- Expansions are easily possible through the subsequent adding of modules. The innovative plug-in technology also does away with the wiring needed up to now. Through the hot swapping function (disconnection and connection during operation) a motor starter can be replaced within seconds if necessary, without having to shut down the ET 200pro station and with it the process in the plant. The motor starters are therefore recommendable in particular for applications with special demands on availability. Storage costs are optimized in addition by the low level of variance (2 units up to 5.5 kW).

The ordering option for motor starters with a 400 V AC brake output provides the possibility of controlling motors with 400 V AC brakes. With four locally acting inputs available on the High-Feature motor starter it is possible to realize autonomous special functions which work independently of the bus and the higher-level control system, e.g. as a quick stop on gate valve controls or limit position disconnectors. In parallel with this, the states of these inputs are signaled to the control system.

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General data

Type Technology designation[1]		Standard motor starters DSe, RSe	High-Feature motor starters DSe, RSe	 sDSSte, sDSte, sRSSte, sRSte
Device functions (firmware features)				
Parameterizable rated operational current		✓		
Integrated short-circuit protection		✓		
Parameterizable current limit values		--	✓, 2 limit values	
Parameterizable response in case of current limit violation		--	✓	
Zero current monitoring		✓		
Parameterizable response in case of zero current violation		✓		
Parameterizable current unbalance limit	%	--, fixed limit value (30 x I_e)	✓, 30 ... 60 x I_e	
Parameterizable response in case of unbalance limit violation		✓		
Motor blocking monitoring		--	✓	
Parameterizable blocking current limit	%	--	✓, 150 ... 1 000 x I_e	
Parameterizable blocking time limit	s	--	✓, 1 ... 5	
Current value transmission		✓		
Group warning diagnostics		--	✓, parameterizable	
Group diagnostics		✓, parameterizable		
Emergency start		✓		
Digital inputs		--	✓, 4 inputs	
• Parameterizable input signal		--	✓, latching/non-latching	
• Parameterizable input level		--	✓, NC/NO	
• Parameterizable input signal delay	ms	--	✓, 10 ... 80	
• Parameterizable input signal extension	ms	--	✓, 0 ... 200	
• Parameterizable input control actions		--	✓, 12 different actions	
Brake output (400 V AC)		✓, order option		
Parameterizable brake enabling delay	s	✓, -2.5 ... 2.5		
Parameterizable holding time of the brake during stopping	s	✓, 0 ... 25		
Parameterizable start-up type		--		✓
Parameterizable ramp-down time		--		✓
Parameterizable starting voltage		--		✓
Parameterizable stopping voltage		--		✓
Local device interface		✓		
Firmware update		✓, by specialists		
Thermal motor model		✓		
Parameterizable trip class		--, CLASS 10 fixed	✓, CLASS 5, 10, 15, 20	
Parameterizable response in case of overload of thermal motor model		--	✓, 3 possible states	
Advance warning limit for motor heating	%	--	✓, parameterizable 0 ... 95	
Advance warning limit time-related trip reserve	s	--	✓, parameterizable 0 ... 500	
Parameterizable recovery time	min	--	✓, 1 ... 30	
Parameterizable protection against voltage failure		--, permanently integrated	✓	
Reversing start function		✓, order option		
Parameterizable interlock time for reversing starters		--, 150 ms fixed	✓, 0 ... 60 s	
Integrated logbook functions		✓, 3 device logbooks		
Integrated statistics data memory		✓		
Parameterizable response in case of CPU / master stop		✓		
PROFIenergy profile support				
• Disconnection of the motor current during idle times		✓		
• Measured motor current values		✓		
Device indications				
• Group fault		SF LED (red)		
• Switching state		STATE LED (red, yellow, green)		
• Device status		DEVICE LED (red, yellow, green)		
• Digital inputs		--	IN 1 ... IN 4, LED	

✓ Function available

-- Function not available

[1] DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct soft starter
RSS .. reversing soft starter
e ..... electronic motor protection
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

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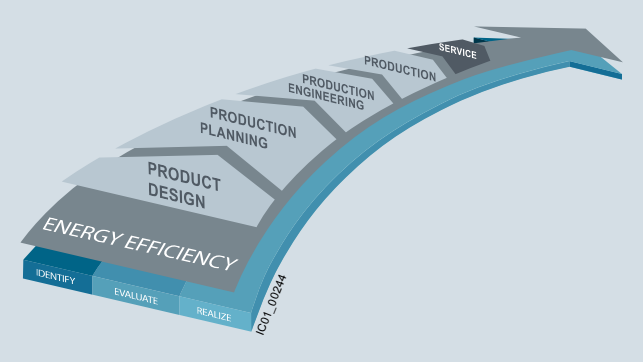
Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

SIMATIC ET 200pro motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy
- Elimination of energy consumption in dead times through disconnection using PROFIenergy
- Current management
  With solid-state soft starters, avoidance of current peaks and therefore reduction of the load on the grid and the mechanical system
- Technology-reduced inherent power loss as speed-controlled drive systems
- Solid-state modules equipped with soft start technology with bypass contactor, resulting in lower power losses than with conventional soft starters after start-up

Product advantages

ET 200pro motor starters provide the following advantages:

- High flexibility thanks to a modular and compact design
- Little variance among all motor starter versions
  (2 units up to 5.5 kW)
- Extensive parameterization using STEP 7 HW Config
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable inputs for local control functions (High-Feature)
- Cabinet-free design thanks to high degree of protection IP65

Technical specifications

Type		Standard motor starters	High-Feature motor starters	
		Mechanically switching without inputs	Mechanically switching with inputs	Mechanically switching with inputs and soft starter function
Technology designation[1]		**DSe, RSe**	**DSe, RSe**	**sDSSte, sDSte, sRSSte, sRSte**
Mechanics and environment				
Motor starters or modules that can be connected to ET 200pro With width of 110 mm		max. 8		
Mounting dimensions (W x H x D) • Direct-on-line starters and reversing starters	mm	110 x 230 x 150		110 x 230 x 160
Permissible ambient temperature • During operation • During storage	 °C °C	 -25 ... +55, from +40 with derating -40 ... +70		
Permissible mounting position		Vertical, horizontal		
Vibration resistance acc. to IEC 60068, Part 2-6	*g*	2		
Shock resistance acc. to IEC 60068 Part 2-27	*g*/ms	Half-sine 15/11		
Degree of protection		IP65		
Pollution degree		3, IEC 60664 (IEC 61131)		

[1] DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct soft starter
RSS .. reversing soft starter
e ..... electronic motor protection
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

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General data

Type		Standard motor starters	High-Feature motor starters	
		Mechanically switching without inputs	Mechanically switching with inputs	Mechanically switching with inputs and soft starter function
Technology designation[1]		DSe, RSe	DSe, RSe	sDSSte, sDSte, sRSSte, sRSte
Electrical specifications				
Power consumption at 24 V DC				
• From auxiliary circuit L+/M (U1)	mA	Approx. 40		
• From auxiliary circuit A1/A2 (U2)	mA	Approx. 200		
Rated operational current for power bus I_e	A	25		
Rated operational voltage U_e	V AC	400 (50/60 Hz)		
• Approval according to EN 60947-1, Appendix N	V AC	Up to 400 (50/60 Hz)		Up to 400 (50/60 Hz)
• Approval according to CSA and UL	V AC	Up to 600 (50/60 Hz)		Up to 480 (50/60 Hz)
Approval				
• DIN VDE 0106, Part 101	V	Up to 400		Up to 480
• CSA and UL approval	V	Up to 600		Up to 480
Conductor cross-sections				
• Incoming power supply	mm^2	Max. 6 x 4		
Touch protection		Finger-safe		
Rated impulse withstand voltage U_{imp}	kV	6		
Rated insulation voltage U_i	V	400		
Rated operational current for starters I_e				
• AC-1/2/3 at 40 °C				
- At 400 V	A	0.15 ... 2.0/1.5 ... 12.0		0.15 ... 2.0/1.5 ... 12.0[2]
- At 500 V	A	0.15 ... 2.0/1.5 ... 9.0		
• AC-4 at 40 °C				
- At 400 V	A	0.15 ... 2.0/1.5 ... 4.0		
Rated short-circuit breaking capacity	kA	100 at 400 V		
Type of coordination acc. to IEC 60947-4-1		1		
Power of three-phase motors at 400 V	kW	Max. 5.5		Max. 5.5/4[3]
Utilization categories		AC-1, AC-2, AC-3, AC-4		AC-53a[4] (max. 9 A with deactivated soft start function up to CLASS 10)
Protective separation between main and auxiliary circuits	V	400, Acc. to EN 60947-1, Appendix N		
Endurance of contactor				
• Mechanical	Operating cycles	30 million		--
• Electrical	Operating cycles	Up to 10 million; depending on the current loading (see manual[5])		--
Permissible switching frequency		Depending on the current load, motor starting time, and relative ON period (see manual[5])		
Operating times for 0.85 ... 1.1 x U_e				
• Closing delay	ms	11 ... 50		--
• Opening delay	ms	5 ... 45		--

1) DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct soft starter
RSS .. reversing soft starter
e ..... electronic motor protection
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

2) Note:
If the soft starter control function is deactivated, the permissible rated operational current is reduced to 9 A up to CLASS 10.

3) With parameterization as electronic starter max. 4 kW.

4) 8-hour operation.

5) http://support.automation.siemens.com/WW/view/en/22332388

More information

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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Overview

The functionality, device functions, and technical specifications of the Standard motor starter are described in "ET 200pro Motor Starters, General Data" (see from page 9/3).

Selection and ordering data

Version	DT[2]	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Standard motor starters, mechanical Motor protection: thermal model						
 DSe Standard	**DSe direct-on-line starters[1]**					
• Without brake output	A	**3RK1304-5□S40-4AA0**		1	1 unit	42D
• With brake output 400 V AC	A	**3RK1304-5□S40-4AA3**		1	1 unit	42D
	RSe reversing starters[1]					
• Without brake output	A	**3RK1304-5□S40-5AA0**		1	1 unit	42D
• With brake output 400 V AC	A	**3RK1304-5□S40-5AA3**		1	1 unit	42D
Setting range Rated operational current			***Additional price***			
• 0.15 ... 2.0 A		**K**	None			
• 1.5 ... 12.0 A		**L**	✓			

✓ = Additional price

1) Only functions when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro Motor Starters" on page 9/18).

2) Delivery time class A for setting range of rated operational current 0.15 ... 2.0 A

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High-Feature motor starters

Overview

The functionality, device functions, and technical specifications of the High-Feature motor starter are described in "ET 200pro motor starters, General data" (see from page 9/3).

The High-Feature motor starter differs from the Standard motor starter in having more parameters and four integrated, freely-parameterizable digital inputs.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
High-Feature motor starters, mechanical Motor protection: thermal model						
 RSe High-Feature	**DSe direct-on-line starters**[1]					
• Without brake output and with 4 inputs	A	**3RK1304-5□S40-2AA0**		1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1304-5□S40-2AA3**		1	1 unit	42D
RSe reversing starters[1]						
• Without brake output and with 4 inputs	A	**3RK1304-5□S40-3AA0**		1	1 unit	42D
• With brake output 400 V AC and 4 inputs	A	**3RK1304-5□S40-3AA3**		1	1 unit	42D
Setting range Rated operational current			***Additional price***			
• 0.15 ... 2.0 A		**K**	None			
• 1.5 ... 12.0 A		**L**	✓			
High-Feature motor starters[2], **electronic Full motor protection, comprising thermal motor protection and thermistor motor protection**						
 sRSSte High-Feature	**sDSSte/sDSte direct-on-line starters**[1][2]					
• Without brake output and with 4 inputs	A	**3RK1304-5□S70-2AA0**		1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1304-5□S70-2AA3**		1	1 unit	42D
sRSSte/sRSte reversing starters[1][2]						
• Without brake output and with 4 inputs	A	**3RK1304-5□S70-3AA0**		1	1 unit	42D
• With brake output 400 V AC and 4 inputs	A	**3RK1304-5□S70-3AA3**		1	1 unit	42D
Setting range Rated operational current			***Additional price***			
• 0.15 ... 2.0 A		**K**	None			
• 1.5 ... 12.0 A		**L**	✓			

✓ = Additional price

1) Only functions when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro Motor Starters" on page 9/18).

2) The solid-state motor starters can be used not only as solid-state motors starters with a high level of switching frequency but also as fully fledged soft starters for soft starting and stopping. The changeover from motor starter to soft starter takes place through reparameterization in HW Config. Depending on the setting, this results in the following current ranges:
- Parameterization as solid-state motor starter: 0.15 to 2 A and 1.5 to 9 A (4 kW)
- Parameterization as soft starter: 0.15 to 2 A and 1.5 to 12 A (5.5 kW).

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Overview

The isolator module with integrated group fusing function (i.e. additional group short-circuit protection for all subsequently supplied motor starters) and switch disconnector function is used for safe disconnection of the 400 V operational voltage in the plant.

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

The following properties apply to the isolator module:

- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Cabinet-free design thanks to high degree of protection IP65

The isolator module is available in addition in a safety version (see page 9/10 "Safety local Isolator Modules").

Technical specifications

Type		Isolator modules
General data		
Mounting dimensions (W x H x D)		
• Direct-on-line starters and reversing starters	mm	110 x 230 x 170
Permissible ambient temperature		
• During operation	°C	-25 ... +55
• During storage	°C	-40 ... +70
Permissible mounting position		Any
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2
Shock resistance acc. to IEC 60068 Part 2-27	*g*/ms	Half-sine 15/11
Power consumption		
• From auxiliary circuit L+/M (U1)	mA	Approx. 20
• From auxiliary circuit A1/A2 (U2)		--
Rated operational current I_e for power bus	A	25
Rated operational voltage U_e	V	400
Approvals according to		
• DIN VDE 0106, Part 101	V	Up to 500
• CSA and UL	V	Up to 600
Conductor cross-sections		
• Incoming power supply	mm^2	Max. 6 x 4

Type		Isolator modules
Degree of protection		IP65
Touch protection		Finger-safe
Pollution degree		3, IEC 60664 (IEC 61131)
Rated impulse withstand voltage U_{imp}	kV	6
Rated insulation voltage U_i	V	400
Rated operational current I_e for starters		
• AC-1/2/3 at 40 °C		
- At 400 V	A	25
- At 500 V	A	25
Rated short-circuit breaking capacity	kA	50 at 400 V
Type of coordination acc. to IEC 60947-4-1		2
Protective separation between main and auxiliary circuits	V	400, acc. to DIN VDE 0106 Part 101
Device functions		
• Group diagnostics		Yes, parameterizable
Device indications		
• Group fault		SF LED (red)

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro isolator modules, mechanical						
3RK1304-0HS00-6AA0						
Isolator modules[1] Rated operational current 25 A	A	**3RK1304-0HS00-6AA0**		1	1 unit	42D

[1] Only functions when used together with the related 110 mm backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 9/18, "Accessories for ET 200pro Motor Starters").

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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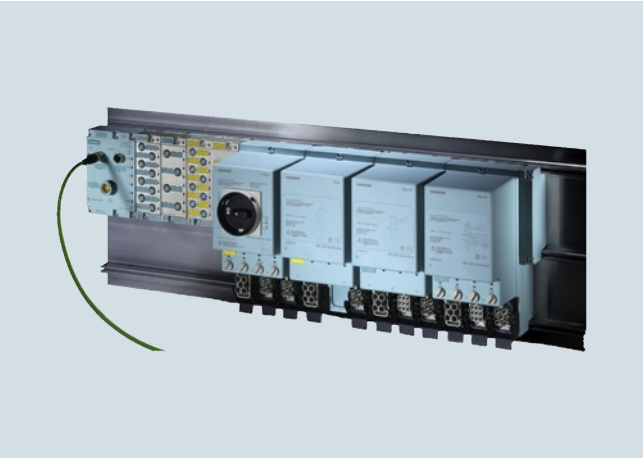
ET 200pro safety motor starters Solutions local/ PROFIsafe – Safety modules local

Overview

Safety Solution local

With the Safety local modules
- Safety local isolator module and
- 400 V disconnecting module

it is possible to achieve safety level SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1) with an appropriate connection.



ET 200pro motor starters (Safety Solution local): Safety local isolator module, disconnecting module, Standard starter and High-Feature starter mounted on a wide module rack

Safety local isolator module

The Safety local isolator module is a repair switch with integrated safety evaluation functions that can be parameterized using DIP switches.

It is used for:
- Connection of a 1- or 2-channel EMERGENCY-STOP circuit up to SIL 3/PL e (protective door or EMERGENCY-STOP pushbuttons) and parameterizable start behavior
- For controlling the 400 V disconnecting module by means of a safety rail signal

400 V disconnecting module

The 400 V disconnecting module enables the safe disconnection of an operational voltage of 400 V up to SIL 3/PL e. For operation in a Safety Solution local application, it functions only in combination with the Safety local isolator module.

For operation in a Safety PROFIsafe application it functions only in combination with the F-Switch.

Functionality

Safety local isolator module

The Safety local isolator module features the same functions as a standard isolator module with an additional local safety function.

The Safety local isolator module contains a 3TK2841 module and is equipped with M12 terminals for the connection of external safety components.

Terminals 1 and 2 can be used to connect either 1-channel or 2-channel EMERGENCY-STOP circuits or protective door circuits (IN 1, IN 2).

For monitored starts, an external START switch can be connected to terminal 3.

The required safety functions can be set using 2 slide switches located under the left M12 opening.

In the event of an EMERGENCY-STOP, the Safety local isolator module trips the downstream 400 V disconnecting module. This safely separates the 400 V circuit up to SIL 3/PL e.

In combination with the 400 V disconnecting module, the Safety local isolator module can be used for safety applications up to SIL 3/PL e.

400 V disconnecting module

The 400V disconnecting module can be used together with the Safety local isolator module for local safety applications and together with the F-Switch for PROFIsafe safety applications.

It contains two contactors connected in series for safety-related disconnection of the main circuit.

The auxiliary circuit supply of the device is over a safety power rail in the backplane bus module.

The 400 V disconnecting module can be used in conjunction with the Safety local isolator module or with the F-Switch for safety applications up to SIL 3/PL e.

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Technical specifications

Type		Safety local isolator module	400 V disconnecting module
General data			
Mounting dimensions (W x H x D) in mm			
• Direct-on-line starters and reversing starters	mm	110 x 230 x 170	110 x 230 x 150
Permissible ambient temperature			
• During operation	°C	-25 ... +55	
• During storage	°C	-40 ... +70	
Permissible mounting position		Any	
Vibration resistance acc. to IEC 60068, Part 2-6		2 *g*	
Shock resistance acc. to IEC 60068 Part 2-27		Half-wave 15 *g*/11 ms	
Power consumption			
• From auxiliary circuit L+/M (U1)	mA	Approx. 20	
• From auxiliary circuit A1/A2 (U2)		--	
Rated operational current for power bus I_e	A	25	
Rated operational voltage U_e	V	400 (50/60 Hz)	
Approval to DIN VDE 0106 Part 101	V	Up to 500	
CSA and UL approval	V	Up to 600	
Conductor cross-sections			
Incoming power supply	mm^2	Max. 6 x 4	
Degree of protection		IP65	
Touch protection		Finger-safe	
Pollution degree		3, IEC 60664 (IEC 61131)	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated insulation voltage U_i	V	400	
Rated operational current for starters I_e			
• AC-1/2/3 at 40 °C			
- At 400 V	A	16	25
- At 500 V	A	16	25
Rated short-circuit breaking capacity	kA	50 at 400 V	
Type of coordination acc. to IEC 60947-4-1		2	
Protective separation between main and auxiliary circuits	V	400, acc. to DIN VDE 0106 Part 101	
Operating times for 0.85 ... 1.1 x U_e			
• Closing delay	ms	--	25 ... 100
• Opening delay	ms	--	7 ... 10
Device functions			
• Group diagnostics		Yes, parameterizable	
Device indications			
• Group fault		SF LED (red)	

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ET 200pro safety motor starters Solutions local/ PROFIsafe – Safety modules local

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Safety modules local							
3RK1304-0HS00-7AA0	**Safety local isolator modules**[1)2)]						
	Rated operational current 16 A	C	**3RK1304-0HS00-7AA0**		1	1 unit	42D
3RK1304-0HS00-8AA0	**400 V disconnecting modules**[3)4)]						
	Rated operational current 25 A	A	**3RK1304-0HS00-8AA0**		1	1 unit	42D

1) The Safety local isolator module only functions when used together with the 400 V disconnecting module.

2) Only in combination with the special backplane bus module for the Safety local isolator module (see page 9/18, "Accessories for ET 200pro Motor Starters").

3) The 400 V disconnecting module functions only when used together with the Safety local isolator module or with the F-Switch.

4) The 400 V disconnecting module functions only when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 9/18, "Accessories for ET 200pro Motor Starters").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Safety Solution PROFIsafe

With the Safety PROFIsafe modules
- F-Switch and
- 400 V disconnecting module

it is possible to achieve safety level SIL 3 (according to IEC 62061) and PL e (according to ISO 13849-1) with an appropriate connection.

F-Switch PROFIsafe

Fail-safe digital inputs/outputs in degrees of protection IP65 to IP67 for near-machine, cabinet-free use.

Fail-safe digital inputs

- For the fail-safe reading in of sensor information (1-/2-channel)
- Including integrated discrepancy evaluation for 2v2 signals
- Internal sensor supplies (incl. testing) available

Fail-safe digital outputs

- 3 fail-safe PP-switching outputs for safe switching of the backplane busbars

The F-Switch is certified up to SIL 3 / PL e and has detailed diagnostics.

It supports PROFIsafe in PROFIBUS configurations as well as in PROFINET configurations.

Note:

Safety characteristics see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

400 V disconnecting module

See "Safety modules local", Overview page 9/10 and Technical specifications page 9/11.

Functionality

The PROFIsafe F-Switch is a fail-safe electronic module for PROFIsafe safety applications. It has two fail-safe inputs and outputs for safe switching of the 24 V supply over backplane busbars. In combination with the 400 V disconnecting module, the fail-safe disconnection of ET 200pro motor starters is possible in PROFIsafe applications up to SIL 3/PL e.

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro safety modules							
3RK1304-0HS00-8AA0	**400 V disconnecting modules**[1)2)]						
	Rated operational current 25 A	A	**3RK1304-0HS00-8AA0**		1	1 unit	42D
6ES7148-1FS00-0AB0	**F-Switch PROFIsafe**						
	24 V DC, including bus module Connection module must be ordered separately	A	**6ES7148-4FS00-0AB0**		1	1 unit	241
	Connection modules for F-Switch						
	24 V DC	A	**6ES7194-4DA00-0AA0**		1	1 unit	241

1) The 400 V disconnecting module functions only when used together with the Safety local isolator module or with the F-Switch.

2) The 400 V disconnecting module functions only when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 9/18, "Accessories for ET 200pro Motor Starters").

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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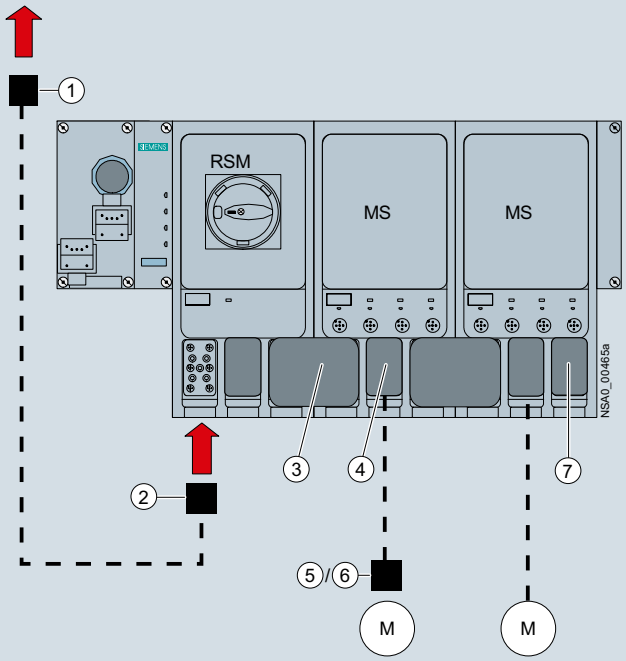
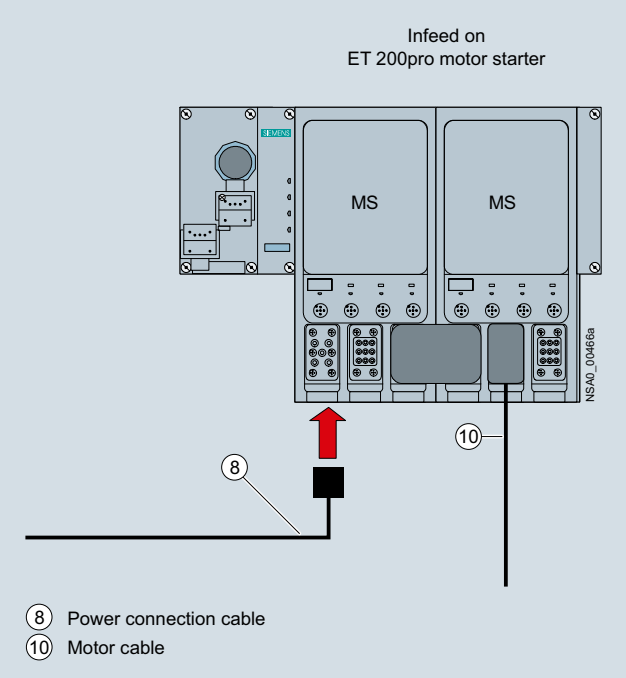
Accessories for ET 200pro motor starters

Overview



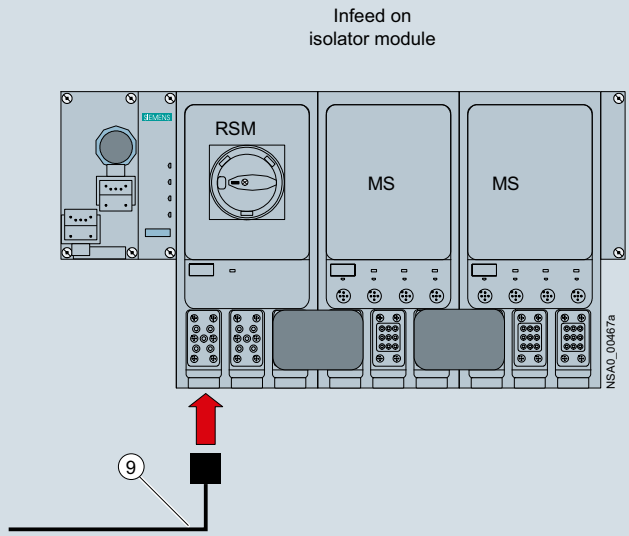
1 Power feeder plug
2 Power connection plug
3 Power jumper plug
4 Motor connection plug
5 Motor plug
6 Motor plug with EMC suppressor circuit
7 Power loop-through plug

Basic design of an ET 200pro version with (from the left) connection module for IM, interface module for communication (IM), RSM isolator module, two ET 200pro motor starters (MS), and connections for energy



8 Power connection cable
10 Motor cable

Infeed on the ET 200pro motor starter



9 Power connection cable for isolator module

Infeed on the RSM isolator module

Legend:
1 Power feeder plug (see page 9/16)
2 Power connection plug (see page 9/16)
3 Power jumper plug (see page 9/16)
4 Motor connection plug (see page 9/16)
5 Motor plug (see page 9/16)
6 Motor plug with EMC suppressor circuit (see page 9/16)
7 Power loop-through plug (see page 9/16)
8 Power connection cable (see page 9/16)
9 Power connection cable for isolator modules (see page 9/16)
10 Motor cable (see page 9/17)

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Power bus

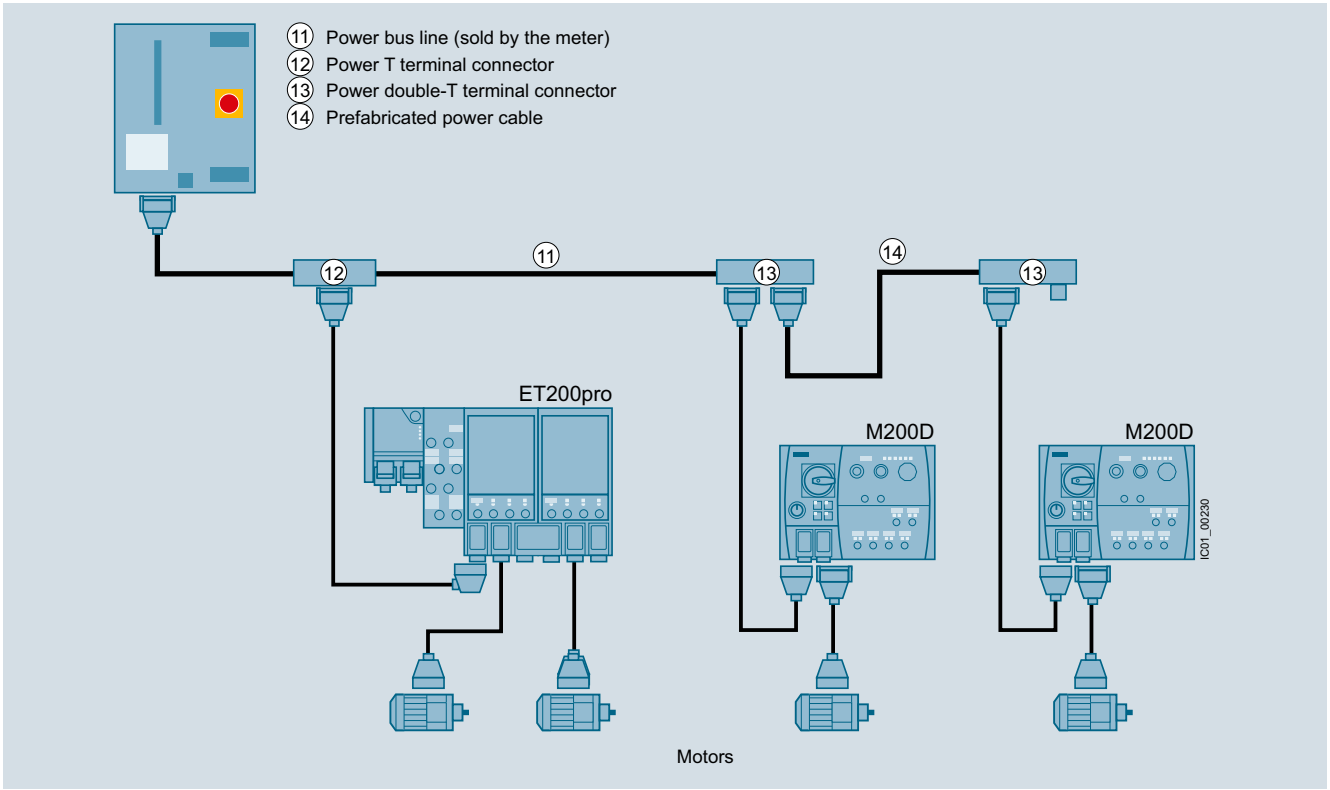
The power supply to the field devices (ET 200pro motor starters, M200D motor starters) is provided via the power bus, in which the power T terminal connectors or power double-T terminal connectors are connected by power bus cables.

Feeders

From the terminal connectors, spur lines with Han Q4/2 plugs lead to the field devices, from which the motors are supplied with power via motor connection cables.

Interruption-free thanks to power terminal connectors

In finger-safe connection technology the power T terminal connectors and power double-T terminal connectors connect the components of a feeder to the power bus. They ensure interruption-free operation, i. e. when the components are plugged in, the power bus is not interrupted.



Power supply to the motors via the power bus with power T and double-T terminal connectors linked by power bus cables, spur lines to the field devices (motor starters), and power loop-through connections to the motors via motor connection cables

Motor control via PROFIBUS

The interface modules (IM) for PROFIBUS can be combined with three different connection modules for connecting PROFIBUS DP and the power supply:

- Direct connection with cable glands
- ECOFAST connection with hybrid fieldbus cables (with two copper cores for data transmission with PROFIBUS DP, and four copper cores for the power supply), and ECOFAST connectors (HanBrid)[1)]
- M12, 7/8" connection
  - with M12 connecting cable and M12 plugs for data transmission with PROFIBUS DP
  - with 7/8" connecting cable and 7/8" plugs for the power supply[2)]

The connection modules with the relevant accessories can be found among the accessories for the ET 200pro interface modules IM 154-1 and IM 154-2 (see page 9/19).

[1)] Hybrid fieldbus connections with HanBrid sockets designed as cabinet bushings transmit data and energy from the control cabinet (IP20) to the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid fieldbus cable (see page 9/75).

[2)] On the control cabinet bushings with two M12 sockets for the PROFIBUS M12 connecting cables, (see page 9/75) the 24 V supply of the motor starters is implemented via separate 7/8" connecting cables.

Motor control via PROFINET

The connection modules with the relevant accessories can be found among the accessories for the ET 200pro interface module IM 154-4 PN (see page 9/21).

Motor control via Industrial Wireless LAN

As well as wired solutions, communication can also be made via Industrial Wireless LAN (see interface module IM 154-6 PN IWLAN, page 9/23).

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Accessories for ET 200pro motor starters

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Incoming power supply						
① **Power feeder plugs** Connector set for energy supply, e.g. for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland						
• 5 male contacts 2.5 mm^2	B	**3RK1911-2BS60**		1	1 unit	42D
• 5 male contacts 4 mm^2	B	**3RK1911-2BS20**		1	1 unit	42D
• 5 male contacts 6 mm^2	B	**3RK1911-2BS40**		1	1 unit	42D
② **Power connection plugs** Connector set for energy supply for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angular outgoing feeder, female insert for HAN Q4/2, incl. gland						
• 5 female contacts 2.5 mm^2	B	**3RK1911-2BE50**		1	1 unit	42D
• 5 female contacts 4 mm^2	B	**3RK1911-2BE10**		1	1 unit	42D
• 5 female contacts 6 mm^2	B	**3RK1911-2BE30**		1	1 unit	42D
⑧ **Power connection cables, assembled at one end** Power connection cable for ET 200pro motor starters, open at one end, for HAN Q4/2, anglular, insert turned at isolator module end, 4 x 4 mm^2						
• Length 1.5 m	B	**3RK1911-0DB13**		1	1 unit	42D
• Length 5.0 m	B	**3RK1911-0DB33**		1	1 unit	42D
⑨ **Power connection cables for isolator module, assembled at one end** Power connection cable for ET 200pro isolator modules, open at one end, for HAN Q4/2, angular, insert turned at isolator module end, 4 x 4 mm^2						
• Length 1.5 m	C	**3RK1911-0DF13**		1	1 unit	42D
• Length 5.0 m	C	**3RK1911-0DF33**		1	1 unit	42D
Power loop-through on the field device						
③ **Power jumper plugs**	A	**3RK1922-2BQ00**		1	1 unit	42D
⑦ **Power loop-through plugs** Connector set for power loop-through for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q4/2, incl. gland						
• 4 male contacts 2.5 mm^2	B	**3RK1911-2BF50**		1	1 unit	42D
• 4 male contacts 4 mm^2	B	**3RK1911-2BF10**		1	1 unit	42D
Motor cables						
④ **Motor connection plugs** Connector set for motor cable for connection to ET 200pro motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland						
• 8 male contacts 1.5 mm^2	B	**3RK1902-0CE00**		1	1 unit	42D
• 6 male contacts 2.5 mm^2	B	**3RK1902-0CC00**		1	1 unit	42D
⑤ **Motor plugs** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm^2	C	**3RK1911-2BM21**		1	1 set	42D
• 7 female contacts 2.5 mm^2	C	**3RK1911-2BM22**		1	1 set	42D
⑥ **Motor plugs with EMC suppressor circuit** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e with EMC suppressor circuit, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm^2	C	**3RK1911-2BL21**		1	1 set	42D
• 7 female contacts 2.5 mm^2	C	**3RK1911-2BL22**		1	1 set	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories for ET 200pro motor starters

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor cables (continued)						
⑩ **Motor cables, assembled at one end** Open at one end, HAN Q8, angular, length 5 m						
• Motor cable for motor without brake, for ET 200pro, 4 x 1.5 mm²	C	**3RK1911-0EB31**		1	1 unit	42D
• Motor cable for motor with brake for ET 200pro, 6 x 1.5 mm²	C	**3RK1911-0ED31**		1	1 unit	42D
Power bus						
⑫ **Power T terminal connectors** For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments						
• 2.5 mm²/4 mm²	B	**3RK1911-2BF01**		1	1 unit	42D
• 4 mm²/6 mm²	B	**3RK1911-2BF02**		1	1 unit	42D
⑬ **Power double-T terminal connectors** For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments, connection of two motor starters possible						
• 4 mm²/6 mm²	B	**3RK1911-2BG02**		1	1 unit	42D
Sealing set (comprising 2 seals) For power T/power double-T terminal connectors						
• For power cables with Ø 10 ... 13 mm	B	**3RK1911-5BA00**		1	1 unit	42D
• For power cables with Ø 13 ... 16 mm	B	**3RK1911-5BA10**		1	1 unit	42D
• For power cables with Ø 16 ... 19 mm	B	**3RK1911-5BA20**		1	1 unit	42D
• For power cables with Ø 19 ... 22 mm	B	**3RK1911-5BA30**		1	1 unit	42D
• Blanking plugs	B	**3RK1911-5BA50**		1	1 unit	42D
Further accessories for energy connections						
 3RK1902-0CW00						
Crimping tools for pins/sockets 4 mm² and 6 mm²	C	**3RK1902-0CW00**		1	1 unit	42D
Dismantling tools						
• For male and female contacts for 9-pole HAN Q4/2 inserts	C	**3RK1902-0AB00**		1	1 unit	42D
• For male and female contacts for 9-pole HAN Q8 inserts	B	**3RK1902-0AJ00**		1	1 unit	42D
Sealing caps For power socket connectors						
• 1 unit per pack	B	**3RK1902-0CK00**		1	1 unit	42D
• 10 units per pack	B	**3RK1902-0CJ00**		1	10 units	42D

More connection technology products
can be found at our "Siemens Solution Partners Automation"
under "Distributed Field Installation System" technology:
www.siemens.com/automation/partnerfinder

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Accessories for ET 200pro motor starters

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Further accessories							
	Module racks, wide[1]						
	• Length 500 mm	A	**6ES7194-4GB00-0AA0**		1	1 unit	250
	• Length 1 000 mm	A	**6ES7194-4GB60-0AA0**		1	1 unit	250
	• Length 2 000 mm	A	**6ES7194-4GB20-0AA0**		1	1 unit	250
	Module racks, wide, compact[1]						
	• Length 500 mm	A	**6ES7194-4GD00-0AA0**		1	1 unit	250
	• Length 1 000 mm	A	**6ES7194-4GD10-0AA0**		1	1 unit	250
	• Length 2 000 mm	A	**6ES7194-4GD20-0AA0**		1	1 unit	250
	Backplane bus modules 110 mm[2]	A	**3RK1922-2BA00**		1	1 unit	42D
	Backplane bus modules for Safety local isolator modules	A	**3RK1922-2BA01**		1	1 unit	42D
3RK1922-3BA00	**Handheld devices** For ET 200pro motor starters (or for ET 200S High-Feature and M200D motor starters) for local operation. The motor starter-specific serial interface cables must be ordered separately. The RS 232 interface cable 3RK1922-2BP00 is used for the MS ET 200pro.	B	**3RK1922-3BA00**		1	1 unit	42D
	RS 232 interface cable Serial data connection between ET 200pro (or M200D) motor starters and the RS232 interface of a PC/PG/laptop (with the Motor Starter ES software) or the handheld device 3RK1922-3BA00.	B	**3RK1922-2BP00**		1	1 unit	42D
	USB interface cable, 2.5 m Serial data connection between ET 200pro (or M200D) motor starters and the USB interface of a PC/PG/laptop (with the Motor Starter ES software).	B	**6SL3555-0PA00-2AA0**		1	1 unit	346
3RK1901-1KA00	**M12 sealing caps** For sealing unused M12 input or output sockets (one set contains ten sealing caps)	▶	**3RK1901-1KA00**		100	10 units	42C
Motor control with PROFIBUS							
	See page 9/19						
Motor control with PROFINET							
	See page 9/21						
Motor control via Industrial Wireless LAN							
	See page 9/23						
Documentation							
	Manual[3] SIMATIC ET 200pro Motor Starters						

1) The wide module rack can accommodate all ET 200pro motor starters and any optional modules (isolator module, Safety local isolator module and 400 V disconnecting module).

2) The backplane bus module is a prerequisite for operation of the ET 200pro motor starter and the optional module.

3) http://support.automation.siemens.com/WW/view/en/22332388

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-1 and IM 154-2 interface modules						
IM 154-1 interface modules For ET 200pro; for communication between ET 200pro and higher-level masters over PROFIBUS DP	A	**6ES7154-1AA01-0AB0**		1	1 unit	250
IM 154-2 High-Feature interface modules For ET 200pro; for communication between ET 200pro and higher-level masters over PROFIBUS DP; support of PROFIsafe	A	**6ES7154-2AA01-0AB0**		1	1 unit	250
Accessories						
CM IM DP ECOFAST connection modules For connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, two ECOFAST Cu connections	A	**6ES7194-4AA00-0AA0**		1	1 unit	250
CM IM DP Direct connection modules For direct connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, up to six M20 screwed cable glands	A	**6ES7194-4AC00-0AA0**		1	1 unit	250
CM IM DP M12 7/8" connection module for connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, 2 x M12 and 2 x 7/8"	A	**6ES7194-4AD00-0AA0**		1	1 unit	250
Accessories for CM IM DP ECOFAST						
PROFIBUS ECOFAST hybrid cables, assembled With 2 ECOFAST connectors, trailing cable With 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 1.5 m	A	**6XV1830-7BH15**		1	1 unit	5K2
• Length 3.0 m	A	**6XV1830-7BH30**		1	1 unit	5K2
• Length 5.0 m	A	**6XV1830-7BH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1830-7BN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1830-7BN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1830-7BN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1830-7BN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1830-7BN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1830-7BN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1830-7BN40**		1	1 unit	5K2
• Length 45 m	D	**6XV1830-7BN45**		1	1 unit	5K2
• Length 50 m	D	**6XV1830-7BN50**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables GP, assembled With 2 ECOFAST connectors, trailing cable With 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 1.5 m	A	**6XV1860-3PH15**		1	1 unit	5K2
• Length 3.0 m	A	**6XV1860-3PH30**		1	1 unit	5K2
• Length 5.0 m	D	**6XV1860-3PH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1860-3PN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1860-3PN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1860-3PN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1860-3PN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1860-3PN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1860-3PN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1860-3PN40**		1	1 unit	5K2
• Length 45 m	A	**6XV1860-3PN45**		1	1 unit	5K2
• Length 50 m	A	**6XV1860-3PN50**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables, non-assembled Trailing cable with 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 50 m	A	**6XV1830-7AN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1830-7AT10**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables GP, non-assembled Trailing cable with 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 50 m	B	**6XV1860-4PN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1860-4PT10**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid connectors 180 ECOFAST Cu, 2 x Cu, 4 x 1.5 mm^2, HANBRID connectors						
• With pin insert, pack of 5	A	**6GK1905-0CA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0CB00**		1	5 units	5K2
PROFIBUS ECOFAST hybrid connectors, angular ECOFAST Cu, 2 x Cu, 4 x 1.5 mm^2, HANBRID connectors						
• With pin insert, pack of 5	A	**6GK1905-0CC00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0CD00**		1	5 units	5K2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-1 and IM 154-2 interface modules (continued)						
Accessories for CM IM DP Direct						
PROFIBUS trailing cables Max. acceleration 4 m/s², at least 3 000 000 bending cycles, bending radius at least 60 mm, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-3EH10**		1	1 m	5K2
PROFIBUS FC Food bus cables With PE outer sheath for operation in the food and beverage industry, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-0GH10**		1	1 m	5K2
PROFIBUS FC Robust bus cables With PUR outer sheath for operation in environments exposed to chemicals and mechanical loads, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-0JH10**		1	1 m	5K2
Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2
Accessories for CM IM DP M12 7/8"						
PROFIBUS M12 connecting cables Preassembled with two M12 plugs, 5-pole						
• Length 1.5 m	A	**6XV1830-3DH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1830-3DH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1830-3DH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1830-3DN15**		1	1 unit	5K1
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm², trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
M12 connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1905-0EA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0EB00**		1	5 units	5K2
PROFIBUS M12 bus termination plugs With pin insert	A	**6GK1905-0EC00**		1	5 units	5K2
7/8" connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1905-0FA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0FB00**		1	5 units	5K2
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
7/8" sealing caps For protection of unused 7/8" terminals on ET 200pro; pack of 10 units per packing unit	A	**6ES7194-3JA00-0AA0**		1	10 units	250
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GB20-0AA0**		1	1 unit	250
• Wide, for I/O modules and motor starters						
- 500 mm	A	**6ES7194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7194-4GD20-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7194-4HB00-0AA0**		1	10 units	250
PROFIBUS FastConnect bus cables Standard type with special design for fast installation, 2-core, shielded, sold by the meter; delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1830-0EH10**		1	1 m	5K1

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-1 and IM 154-2 interface modules (continued)						
General accessories *(continued)*						
PROFIBUS hybrid standard cables GP Standard PROFIBUS hybrid cable with 2 power cores (1.5 mm^2) for supplying data and power to the ET 200pro	A	**6XV1860-2R**		1	1 m	5K2
Technical product specifications For CAX applications, one off license	A	**6ES7991-0CD01-0YX0**		1	1 unit	2AP
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
IM 154-4 PN interface modules						
IM 154-4 PN High-Feature interface modules For communication between ET 200pro and higher-level controller over PROFINET IO; support of PROFIsafe	A	**6ES7154-4AB10-0AB0**		1	1 unit	250
Accessories						
CM IM PN M12 connection modules, 7/8" For connection of PROFIBUS PN and 24 V power supply to PROFINET interface modules, 2 x M12 and 2 x 7/8"	A	**6ES7194-4AJ00-0AA0**		1	1 unit	250
CM IM PN 2xRJ45 connection modules For connection of PROFINET PN and 24 V power supply to PROFINET interface modules, 2 x RJ45 and 2 x push-pull power connector	A	**6ES7194-4AF00-0AA0**		1	1 unit	250
CM IM PN 2xSCRJ FO connection modules For connection of PROFINET PN and 24 V power supply to PROFINET interface modules, 2 x SCRJ FO and 2 x push-pull power connector	A	**6ES7194-4AG00-0AA0**		1	1 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
IE M12 connecting cables Preassembled with two M12 plugs, up to max. 85 m						
• Length 0.3 m	A	**6XV1870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1870-8AN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs, 5-pole, up to max. 50 m						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
7/8" sealing caps 1 pack = 10 units	A	**6ES7194-3JA00-0AA0**		1	10 units	250
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2
7/8" connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1905-0FA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0FB00**		1	5 units	5K2

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Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-4 PN interface modules (continued)						
Industrial Ethernet FastConnect installation cables						
• **IE FC TP standard cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1840-2AH10**		1	1 m	5K1
• **IE FC TP trailing cables 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1840-3AH10**		1	1 m	5K1
• **IE FC TP trailing cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2D**		1	1 m	5K2
• **IE TP torsion cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2F**		1	1 m	5K2
• **IE FC TP marine cables 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1840-4AH10**		1	1 m	5K1
IE RJ45 Plug PRO RJ45 plug-in connector for field assembly in degree of protection IP65/IP67, plastic enclosure, insulation displacement method, for SCALANCE X-200IRT PRO and ET 200pro: 1 pack = 1 unit	A	**6GK1901-1BB10-6AA0**		1	1 unit	5K2
IE SC RJ POF Plug PRO SC RJ plug-in connector for field assembly for POF fibers in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO and ET 200pro 1 pack = 1 unit	A	**6GK1900-0MB00-6AA0**		1	1 unit	5K2
IE SC RJ PCF Plug PRO SC RJ plug-in connector for field assembly for PCF fibers in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO 1 pack = 1 unit	A	**6GK1900-0NB00-6AA0**		1	1 unit	5K2
Power Plug PRO 5-pole power plug-in connector for field assembly for 2 x 24 V power supply in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO and ET 200 pro 1 pack = 1 unit	A	**6GK1907-0AB10-6AA0**		1	1 unit	5K2
IE Panel Feedthrough Control cabinet bushing for transition from M12 connection method (D-coded, IP65) to RJ45 connection method (IP20) 1 pack = 5 units	A	**6GK1901-0DM20-2AA5**		1	5 units	5K2
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1907-0AB10-6AA0**		1	1 unit	5K2
Covers for RJ45 push-pull sockets 5 units per pack	A	**6ES7194-4JD50-0AA0**		1	5 units	250
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GB20-0AA0**		1	1 unit	250
• Wide, for I/O modules and motor starters						
- 500 mm	A	**6ES7194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7194-4GD20-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7194-4HB00-0AA0**		1	10 units	250
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-6 PN IWLAN interface modules						
IM 154-6 PN HF IWLAN interface modules						
For communication between ET 200pro and higher-level controllers through industrial wireless LAN (IWLAN) networks; support of PROFIsafe						
• With diverse country approvals; see current approvals list	A	**6ES7154-6AB00-0AB0**		1	1 unit	250
• With USA country approval	A	**6ES7154-6AB50-0AB0**		1	1 unit	250
Antennas with omnidirectional characteristic						
Mounting directly on IM 154-6 PN HF IWLAN						
• ANT IM 154-6 IWLAN; 2 units	A	**6ES7194-4MA00-0AA0**		1	2 units	250
For wall or mast mounting						
• ANT 792-6MN; N-Connect Female 2.4 GHz bar antenna; 1 unit	A	**6GK5792-6MN00-0AA6**		1	1 unit	5W1
• ANT 793-6MN; N-Connect Female 5 GHz bar antenna; 1 unit	A	**6GK5793-6MN00-0AA6**		1	1 unit	5W1
For operation with the RCoax antenna system						
• ANT 792-4DN; RCoax N-Connect Female 2.4 GHz; 1 unit	A	**6GK5792-4DN00-0AA6**		1	1 unit	5W1
• ANT 793-4MN; RCoax N-Connect Female 5 GHz; 1 unit	A	**6GK5793-4MN00-0AA6**		1	1 unit	5W1
IWLAN Rcoax antenna cables; N-Connect / R-SMA						
• Length 1 m	A	**6XV1875-5CH10**		1	1 unit	5W1
• Length 2 m	A	**6XV1875-5CH20**		1	1 unit	5W1
• Length 5 m	A	**6XV1875-5CH50**		1	1 unit	5W1
• Length 10 m	A	**6XV1875-5CN10**		1	1 unit	5W1
IWLAN terminating resistor, 50 Ω, for second R-SMA antenna socket, 3 units	A	**6GK5795-1TR10-0AA6**		1	3 unit	5W1
Accessories						
7/8" connecting cables for power supply						
5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs,						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
Power cables	A	**6XV1830-8AH10**		1	1 m	5K2
5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m						
7/8" connectors	A	**6GK1905-0FB00**		1	5 units	5K2
For ET 200eco, with axial cable feeder; with female insert, pack of 5						
Twisted pair connecting cables 4x2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4x2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3RN10**		1	1 unit	5K1
IE FC RJ45 Plug 180						
180° cable feeder; for network components and CPs/CPUs with Industrial Ethernet interface						
• 1 pack = 1 unit	A	**6GK1901-1BB10-2AA0**		1	1 unit	5K1
• 1 pack = 10 units	A	**6GK1901-1BB10-2AB0**		1	10 units	5K1
IE FC RJ45 Plug 90						
90° cable feeder; e.g. for ET 200S						
• 1 pack = 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 1 pack = 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1

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Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-6 PN IWLAN interface modules (continued)						
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7194-4GB20-0AA0**		1	1 unit	250
• Wide, for I/O modules and motor starters						
- 500 mm	A	**6ES7194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7194-4GD20-0AA0**		1	1 unit	250
Spare fuses, 12.5 A quick For interface and power modules (pack of 10)	A	**6ES7194-4HB00-0AA0**		1	10 units	250
Labels 20 x 7, pastel turquoise, pack of 340	D	**3RT1900-1SB20**		100	340 units	41B
SIMATIC micro memory cards						
• 64 Kbyte	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
• 128 Kbyte	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
• 512 Kbyte	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	B	**6ES7998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7998-8XC01-8YE2**		1	1 unit	230
IM 154-8 PN/DP CPU interface modules						
IM 154-8 PN/DP CPU interface modules, V3.2 PROFINET IO controller for operating distributed I/Os on PROFINET, with integrated PLC functionality	A	**6ES7154-8AB01-0AB0**		1	1 unit	250
Accessories						
MMC 64 Kbyte[1)] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1)] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512kByte[1)] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte[1)] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 MByte[1)] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1)] For program backups	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
Connection modules For CPU IM 154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connection of PROFINET and PROFIBUS DP	A	**6ES7194-4AN00-0AA0**		1	1 unit	250
SCALANCE X-200 Industrial Ethernet switches With integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, SCALANCE X208PRO for configuring line, star and ring structures, in degree of protection IP65, with eight 10/100 Mbit/s M12 ports, including eleven M12 dust covers	B	**6GK5208-0HA00-2AA6**		1	1 unit	5N2
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB10-2AB0**		1	10 units	5K1
• 50 units	A	**6GK1901-1BB10-2AE0**		1	50 unit	5K1

[1)] For operation of the CPU, an MMC is essential.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 PN/DP CPU interface modules (continued)						
Industrial Ethernet FastConnect installation cables						
• FastConnect standard cables	A	**6XV1840-2AH10**		1	1 m	5K1
• FastConnect trailing cables	A	**6XV1840-3AH10**		1	1 m	5K1
• FastConnect marine cables	A	**6XV1840-4AH10**		1	1 m	5K1
• IE FC TP trailing cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2D**		1	1 m	5K2
• IE TP torsion cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2F**		1	1 m	5K2
Industrial Ethernet FastConnect Stripping tools	A	**6GK1901-1GA00**		1	1 unit	5K2
IE connecting cables M12-180/M12-180 Factory-fitted IE FC TP trailing cables GP 2 x 2 (PROFINET type C) with two 4-pole M12 plugs (4-pole, D-coded), degree of protection IP65/IP67						
• Length 0.3 m	A	**6XV1870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1870-8AN15**		1	1 unit	5K1
PROFINET M12 connecting cables, trailing, preassembled at both ends with M12 plugs, angular (pin)						
• Length 3.0 m	C	**3RK1902-2NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-2NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-2NC10**		1	1 unit	42D
PROFINET M12 connecting cables, trailing, preassembled at one end with M12 plugs, angular (one end with pin, one end open)						
• Length 3.0 m	C	**3RK1902-2HB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-2HB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-2HC10**		1	1 unit	42D
IE FC M12 Plug PRO PROFINET M12 plug-in connectors, D-coded with quick-connect technology, axial outgoing feeder						
• 1 unit	A	**6GK1901-0DB20-6AA0**		1	1 unit	5K1
• 8 units	A	**6GK1901-0DB20-6AA8**		1	8 units	5K1
PROFINET M12 connectors, D-coded, angular	B	**3RK1902-2DA00**		1	1 unit	42D
IE Panel Feedthrough						
Control cabinet bushing for transition from M12 connection method (D-coded, IP65/IP67) to RJ45 connection method (IP20), 1 pack = 5 units	A	**6GK1901-0DM20-2AA5**		1	5 units	5K2
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs (axial outgoing feeder), 5-pole, up to max. 50 m						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
Trailing power cables, 5 x 1.5 mm^2, preassembled at both ends with 7/8" connectors, angular (one end with socket, one end with pin)						
• Length 3.0 m	C	**3RK1902-3NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-3NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-3NC10**		1	1 unit	42D
Trailing power cables, 5 x 1.5 mm^2, preassembled at one end with 7/8" connector with female insert, angular (one end with socket, one end open)						
• Length 3.0 m	C	**3RK1902-3GB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-3GB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-3GC10**		1	1 unit	42D
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 PN/DP CPU interface modules (continued)						
7/8" connectors for ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1905-0FA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0FB00**		1	5 units	5K2
• Angular, with female insert, 1 unit	B	**3RK1902-3DA00**		1	1 unit	42D
• Angular with pin insert, 1 unit	B	**3RK1902-3BA00**		1	1 unit	42D
7/8" covers, pack of 10	A	**6ES7194-3JA00-0AA0**		1	10 units	250
Twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3RN10**		1	1 unit	5K1
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
M12 sealing caps with female thread (5 units)	A	**6ES7194-4JD60-0AA0**		1	5 units	250
PROFIBUS M12 connecting cables Preassembled with two 5-pole M12 plugs/sockets, up to max. 100 m						
• Length 1.5 m	A	**6XV1830-3DH15**		1	1 unit	5K1
• Length 2 m	A	**6XV1830-3DH20**		1	1 unit	5K1
• Length 3 m	A	**6XV1830-3DH30**		1	1 unit	5K1
• Length 5 m	A	**6XV1830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1830-3DN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
PROFIBUS M12 bus termination plugs, female inserts	A	**6GK1905-0ED00**		1	5 units	5K2
PROFIBUS M12 bus termination plugs, pin inserts	A	**6GK1905-0EC00**		1	5 units	5K2
M12 plug-in connectors, axial outgoing feeder, with pin insert	A	**6GK1905-0EA00**		1	5 units	5K2
PROFIBUS FC Standard Cable GP Standard type with special design for fast installation, 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0EH10**		1	1 m	5K1
PROFIBUS FC trailing cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-3EH10**		1	1 m	5K2
PROFIBUS FC food cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0GH10**		1	1 m	5K2
PROFIBUS FC robust cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0JH10**		1	1 m	5K2
PROFIBUS M12 connectors 5-pole, B-coded, metal enclosure, female insert, 1 pack = 5 units	A	**6GK1905-0EB00**		1	5 units	5K2

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 F PN/DP CPU interface modules						
IM 154-8 F PN/DP CPU interface modules, V3.2 Fail-safe PROFINET IO Controller for operating distributed I/Os on PROFINET, with integrated PLC functionality						
• 512 Kbyte RAM	A	**6ES7154-8FB01-0AB0**		1	1 unit	241
• 1.5 Mbyte RAM	A	**6ES7154-8FX00-0AB0**		1	1 unit	241
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7833-1FC02-0YA5**		1	1 unit	241
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FC02-0YH5**		1	1 unit	241
Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user	C	**6ES7833-1FC02-0YE5**		1	1 unit	241
STEP 7 Safety Advanced V12 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirements: STEP 7 Professional V12 SP1						
• Floating license for 1 user	B	**6ES7833-1FA12-0YA5**		1	1 unit	216
• Floating license for 1 user, license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YH5**		1	1 unit	216
STEP 7 Safety Advanced Upgrade						
• Upgrade STEP 7 Safety Advanced V11 according to STEP 7 Advanced Safety V12; floating license for 1 user	B	**6ES7833-1FA12-0YE5**		1	1 unit	216
• Upgrade STEP 7 Safety Advanced V11 according to STEP 7 Advanced Safety V12; floating license for 1 user; license key download without software and documentation[1]; email address required for delivery	A	**6ES7833-1FA12-0YK5**		1	1 unit	216
• Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user	B	**6ES7833-1FA12-0YF5**		1	1 unit	216
• Distributed Safety V5.4 SP5 und STEP 7 Safety Advanced V12 for parallel use; incl. software on CD; combo license for 1 user, license key download without software and documentation[1]; email address required for delivery	B	**6ES7833-1FA12-0YY5**		1	1 unit	216
Accessories						
MMC 64 Kbyte[2] For program backups	A	**6ES7953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[2] For program backups	A	**6ES7953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[2] For program backups	A	**6ES7953-8LJ30-0AA0**		1	1 unit	230
MMC 2 Mbyte[2] For program backups and/or the firmware update	A	**6ES7953-8LL31-0AA0**		1	1 unit	230
MMC 4 Mbyte[2] For program backups	A	**6ES7953-8LM20-0AA0**		1	1 unit	230
MMC 8 Mbyte[2] For program backups	A	**6ES7953-8LP20-0AA0**		1	1 unit	230
Connection modules For CPU IM 154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connection of PROFINET and PROFIBUS DP	A	**6ES7194-4AN00-0AA0**		1	1 unit	250
SCALANCE X-200 Industrial Ethernet switches With integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, SCALANCE X208PRO for configuring line, star and ring structures, in degree of protection IP65, with eight 10/100 Mbit/s M12 ports, including eleven M12 dust covers	B	**6GK5208-0HA00-2AA6**		1	1 unit	5N2
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB20-2AB0**		1	10 units	5K1
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1901-1BB10-2AB0**		1	10 units	5K1
• 50 units	A	**6GK1901-1BB10-2AE0**		1	50 units	5K1

1) Up-to-date information and availability for download see under: http://www.siemens.com/tia-online-software-delivery

2) For operation of the CPU, an MMC is essential.

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ET 200pro – interface modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 F PN/DP CPU interface modules (continued)						
Industrial Ethernet FastConnect installation cables						
• FastConnect standard cables	A	**6XV1840-2AH10**		1	1 m	5K1
• FastConnect trailing cables	A	**6XV1840-3AH10**		1	1 m	5K1
• FastConnect marine cables	A	**6XV1840-4AH10**		1	1 m	5K1
• IE FC TP trailing cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2D**		1	1 m	5K2
• IE TP torsion cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1870-2F**		1	1 m	5K2
Industrial Ethernet FastConnect Stripping tools	A	**6GK1901-1GA00**		1	1 unit	5K2
IE connecting cables M12-180/M12-180 Factory-fitted IE FC TP trailing cables GP 2 x 2 (PROFINET type C) with two 4-pole M12 plugs (4-pole, D-coded), degree of protection IP65/IP67						
• Length 0.3 m	A	**6XV1870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1870-8AN15**		1	1 unit	5K1
PROFINET M12 connecting cables, trailing, preassembled at both ends with M12 plugs, angular (pin)						
• Length 3.0 m	C	**3RK1902-2NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-2NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-2NC10**		1	1 unit	42D
PROFINET M12 connecting cables, trailing, preassembled at one end with M12 plugs, angular (one end with pin, one end open)						
• Length 3.0 m	C	**3RK1902-2HB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-2HB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-2HC10**		1	1 unit	42D
IE FC M12 Plug PRO PROFINET M12 plug-in connectors, D-coded with quick-connect technology, axial outgoing feeder						
• 1 unit	A	**6GK1901-0DB20-6AA0**		1	1 unit	5K1
• 8 units	A	**6GK1901-0DB20-6AA8**		1	8 units	5K1
PROFINET M12 connectors, D-coded, angular	B	**3RK1902-2DA00**		1	1 unit	42D
IE Panel Feedthrough						
Control cabinet bushing for transition from M12 connection method (D-coded, IP65/IP67) to RJ45 connection method (IP20), 1 pack = 5 units	A	**6GK1901-0DM20-2AA5**		1	5 units	5K2
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs (axial outgoing feeder), 5-pole, up to max. 50 m						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
Trailing power cables, 5 x 1.5 mm^2, preassembled at both ends with 7/8" connectors, angular (one end with socket, one end with pin)						
• Length 3.0 m	C	**3RK1902-3NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-3NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-3NC10**		1	1 unit	42D
Trailing power cables, 5 x 1.5 mm^2, preassembled at one end with 7/8" connector with female insert, angular (one end with socket, one end open)						
• Length 3.0 m	C	**3RK1902-3GB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1902-3GB50**		1	1 unit	42D
• Length 10 m	C	**3RK1902-3GC10**		1	1 unit	42D
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2
7/8" connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1905-0FA00**		1	5 units	5K2
• With female insert, pack of 5	A	**6GK1905-0FB00**		1	5 units	5K2
• Angular, with female insert, 1 unit	B	**3RK1902-3DA00**		1	1 unit	42D
• Angular with pin insert, 1 unit	B	**3RK1902-3BA00**		1	1 unit	42D
7/8" covers, pack of 10	A	**6ES7194-3JA00-0AA0**		1	10 units	250

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 F PN/DP CPU interface modules (continued)						
Twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1870-3RN10**		1	1 unit	5K1
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
M12 sealing caps with female thread 5 units	A	**6ES7194-4JD60-0AA0**		1	5 units	250
PROFIBUS M12 connecting cables Preassembled with two 5-pole M12 plugs/sockets, up to max. 100 m						
• Length 1.5 m	A	**6XV1830-3DH15**		1	1 unit	5K1
• Length 2 m	A	**6XV1830-3DH20**		1	1 unit	5K1
• Length 3 m	A	**6XV1830-3DH30**		1	1 unit	5K1
• Length 5 m	A	**6XV1830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1830-3DN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
PROFIBUS M12 bus termination plugs, female inserts	A	**6GK1905-0ED00**		1	5 units	5K2
PROFIBUS M12 bus termination plugs, pin inserts	A	**6GK1905-0EC00**		1	5 units	5K2
M12 plug-in connectors, axial outgoing feeder, with pin insert	A	**6GK1905-0EA00**		1	5 units	5K2
PROFIBUS FC Standard Cable GP Standard type with special design for fast installation, 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0EH10**		1	1 m	5K1
PROFIBUS FC trailing cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-3EH10**		1	1 m	5K2
PROFIBUS FC food cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0GH10**		1	1 m	5K2
PROFIBUS FC robust cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1830-0JH10**		1	1 m	5K2
PROFIBUS M12 connectors 5-pole, B-coded, metal enclosure, female insert 1 pack = 5 units	A	**6GK1905-0EB00**		1	5 units	5K2

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ET 200pro – I/O modules

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital expansion modules						
8 DI digital input modules 24 V DC, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7141-4BF00-0AA0**		1	1 unit	250
8 DI High-Feature digital input modules 24 V DC, with channel diagnostics, including bus module Connection module must be ordered separately.	A	**6ES7141-4BF00-0AB0**		1	1 unit	250
16 DI digital input modules 24 V DC, with module diagnostics, including bus module. 6ES7194-4CB50-0AA0 connection modules must be ordered separately.	A	**6ES7141-4BH00-0AA0**		1	1 unit	250
4 DO digital output modules 24 V DC, 2 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7142-4BD00-0AA0**		1	1 unit	250
4 DO High-Feature digital output modules 24 V DC, 2 A, with channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7142-4BD00-0AB0**		1	1 unit	250
8 DO digital output modules 24 V DC, 0.5 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7142-4BF00-0AA0**		1	1 unit	250
Digital input and output modules 4 DI/4 DO 24 V DC, 0.5 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7143-4BF50-0AA0**		1	1 unit	250
Digital input and output modules 4 DI/4 DO 24 V DC, 0.5 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7143-4BF00-0AA0**		1	1 unit	250
Accessories						
CM IO 4 x M12 connection modules 4 M12 sockets for connection of digital or analog sensors of actuators to ET 200pro	A	**6ES7194-4CA00-0AA0**		1	1 unit	250
CM IO 4 x M12 Invers connection modules 4 M12 sockets for connection of digital actuators to ET 200pro (4 DO and 4 DO HF); 2 x M12 with single assignment, 2 x M12 with double assignment	A	**6ES7194-4CA50-0AA0**		1	1 unit	250
CM IO 4 x M12 P connection modules 4 M12 sockets for connection of digital sensors or actuators to ET 200pro; plastic version	A	**6ES7194-4CA10-0AA0**		1	1 unit	250
CM IO 8 x M12 connection modules 8 M12 sockets for connection of digital sensors or actuators to ET 200pro	A	**6ES7194-4CB00-0AA0**		1	1 unit	250
CM IO 8 x M12 P connection modules 8 M12 sockets for connection of digital sensors or actuators to ET 200pro; plastic version	A	**6ES7194-4CB10-0AA0**		1	1 unit	250
CM IO 8 x M12D connection modules 8 M12 sockets for connection of digital sensors or actuators to ET 200pro	A	**6ES7194-4CB50-0AA0**		1	1 unit	250
CM IO 8 x M8 connection modules 8 M8 sockets for connection of digital sensors or actuators to ET 200pro	A	**6ES7194-4EB00-0AA0**		1	1 unit	250
CM IO 2 x M12 connection modules 2 M12 8-pole sockets; to be used with: EM 8 DI 24 V DC and 8 DO 24 V DC/0.5 A	A	**6ES7194-4FB00-0AA0**		1	1 unit	250
CM IO 1 x M23 connection modules 1 M23 socket, to be used with: EM 8 DI 24 V DC and 8 DO 24 V DC/0.5 A	A	**6ES7194-4FA00-0AA0**		1	1 unit	250
Module labeling plates For color coding of CM IOs in the colors white, red, blue and green; pack of 100	A	**6ES7194-4HA00-0AA0**		1	400 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
Labels 20 x 7, pastel turquoise, pack of 340	D	**3RT1900-1SB20**		100	340 units	41B
M12 Y-shaped coupler plugs For double connection of sensors with a single cable, 5-pole; cannot be used for F-DI4/8	A	**6ES7194-1KA01-0XA0**		1	1 unit	250
M12 Y-cables For double connection of I/Os with a single cable to ET 200, 5-pole	A	**6ES7194-6KA00-0XA0**		1	1 unit	250
M8 sealing caps For IP67 modules	A	**3RK1901-1PN00**		100	10 units	42C
Analog expansion modules						
4AI U analog input modules High-Feature, ±10 V; ±5 V; 0 ... 10 V; 1 ... 5 V, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7144-4FF00-0AB0**		1	1 unit	250
4AI I analog input modules High-Feature, ±20 mA; 0 ... 20 mA; 4 ... 20 mA, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7144-4GF00-0AB0**		1	1 unit	250

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog expansion modules (continued)						
4AI RTD analog input modules High-Feature; resistors: 150, 300, 600 and 3 000 Ω; resistance thermometers: Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500 and Ni1000; channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7144-4JF00-0AB0**		1	1 unit	250
4AI TC analog input modules High-Feature; thermocouples: Type B, E, J, K, L, N, R, S, T; voltage measurement: ±80 mV ; channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7144-4PF00-0AB0**		1	1 unit	250
4AO U analog output modules High-Feature, ±10 V; 0 ... 10 V; 1 ... 5 V, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7145-4FF00-0AB0**		1	1 unit	250
4AO I analog output modules High-Feature, ±20 mA; 0 ... 20 mA; 4 ... 20 mA, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7145-4GF00-0AB0**		1	1 unit	250
Accessories						
CM IO 4 x M12 connection modules 4 M12 sockets for connection of digital or analog sensors of actuators to ET 200pro	A	**6ES7194-4CA00-0AA0**		1	1 unit	250
M12 compensation plugs With integrated Pt100 for reference point compensation when connection thermocouples	A	**6ES7194-4AB00-0AA0**		1	1 unit	250
Module labeling plates For color coding of CM IOs in the colors white, red, blue and green; pack of 100	A	**6ES7194-4HA00-0AA0**		1	400 units	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
Fail-safe digital expansion modules						
8/16 F-DI PROFIsafe fail-safe digital input modules 24 V DC, including bus module. Connection module must be ordered separately.	A	**6ES7148-4FA00-0AB0**		1	1 unit	241
4/8 F-DI, 4 F-DO 2 A fail-safe digital input/output modules 24 V DC, including bus module. Connection module must be ordered separately.	A	**6ES7148-4FC00-0AB0**		1	1 unit	241
F-Switch PROFIsafe fail-safe solid-state modules Three fail-safe PP-switching outputs for safe switching of the backplane busbars (2L+, F0, F1); two fail-safe digital inputs, 45 mm; usable up to Cat. 4 (EN 954)/SIL3 (IEC 61508)	A	**6ES7148-4FS00-0AB0**		1	1 unit	241
Accessories						
Connection modules For F-Switch PROFIsafe fail-safe solid-state modules	A	**6ES7194-4DA00-0AA0**		1	1 unit	241
Connection modules For the 4/8 F-DI/4 -DO, 24 V DC/2 A fail-safe solid-state module	A	**6ES7194-4DC00-0AA0**		1	1 unit	241
Connection modules For the 8/16 F-DI, 24 V DC/2 A fail-safe solid-state module	A	**6ES7194-4DD00-0AA0**		1	1 unit	241
PROFIBUS DP IM 154-2 interface modules Including termination module	A	**6ES7154-2AA01-0AB0**		1	1 unit	250
PROFINET IM 154-4 PN interface modules Including termination module	A	**6ES7154-4AB10-0AB0**		1	1 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9802-0AA00**		100	10 units	42C
PM-E power modules						
PM-E power modules 24 V DC For resupply and group formation of the 24 V DC load voltage for solid-state modules within an ET 200pro station.	A	**6ES7148-4CA00-0AA0**		1	1 unit	250
Accessories						
CM PM-E ECOFAST connection modules For resupply of 24 V load voltage, one ECOFAST Cu terminal	A	**6ES7194-4BA00-0AA0**		1	1 unit	250
CM PM-E Direct connection modules For resupply of 24 V load voltage, up to two M20 screwed cable glands	A	**6ES7194-4BC00-0AA0**		1	1 unit	250
CM PM-E 7/8" connection modules For resupply of 24 V load voltage, 1 x 7/8"	A	**6ES7194-4BD00-0AA0**		1	1 unit	250
CM PM-E PP connection modules For resupply of 24 V load voltage, 2 x push-pull, with spare fuse	A	**6ES7194-4BE00-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7194-4HB00-0AA0**		1	10 units	250

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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ET 200pro – I/O modules

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules (continued)						
PROFIBUS ECOFAST hybrid cables – copper Trailing cables (PUR sheath) with two copper conductors, shielded, for PROFIBUS DP and four copper cores with 1.5 mm^2						
Non-assembled						
• Length 50 m	A	**6XV1830-7AN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1830-7AT10**		1	1 unit	5K2
Assembled With ECOFAST plug and socket						
• Length 1.5 m	A	**6XV1830-7BH15**		1	1 unit	5K2
• Length 3 m	A	**6XV1830-7BH30**		1	1 unit	5K2
• Length 5 m	A	**6XV1830-7BH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1830-7BN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1830-7BN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1830-7BN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1830-7BN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1830-7BN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1830-7BN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1830-7BN40**		1	1 unit	5K2
• Length 45 m	D	**6XV1830-7BN45**		1	1 unit	5K2
• Length 50 m	D	**6XV1830-7BN50**		1	1 unit	5K2
PROFIBUS ECOFAST Hybrid Cable GP Trailing cable with 4 x Cu and 2 x Cu, shielded with UL approval						
Non-assembled						
• Length 50 m	B	**6XV1860-4PN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1860-4PT10**		1	1 unit	5K2
Assembled With ECOFAST plug and socket						
• Length 1.5 m	A	**6XV1860-3PH15**		1	1 unit	5K2
• Length 3 m	A	**6XV1860-3PH30**		1	1 unit	5K2
• Length 5 m	D	**6XV1860-3PH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1860-3PN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1860-3PN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1860-3PN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1860-3PN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1860-3PN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1860-3PN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1860-3PN40**		1	1 unit	5K2
• Length 45 m	A	**6XV1860-3PN45**		1	1 unit	5K2
• Length 50 m	A	**6XV1860-3PN50**		1	1 unit	5K2
ECOFAST plug connectors, can be preassembled Sockets; Order unit 5 units	A	**6GK1905-0CB00**		1	5 units	5K2
PROFIBUS ECOFAST hybrid plugs, angular With 2 x Cu shielded and 4 x Cu 1.5 mm^2; 5 units; with mounting instructions; female insert	A	**6GK1905-0CD00**		1	5 units	5K2
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1907-0AB10-6AA0**		1	1 unit	5K2
Covers for push-pull sockets 5 units	A	**6ES7194-4JA50-0AA0**		1	5 units	250

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Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules (continued)						
Accessories for CM PM-E Direct						
Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2
Accessories for CM PM-E 7/8"						
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm², trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1822-5BN15**		1	1 unit	5K1
7/8" connectors with axial cable feeder						
• With female insert, pack of 5	A	**6GK1905-0FB00**		1	5 units	5K2
PM-O power module outputs						
PM-O power modules 2 x 24 V DC For tapping the 24 V load voltage 2L+ and the solid-state/sensor supply voltage 1L+ within an ET 200pro station.	A	**6ES7148-4CA60-0AA0**		1	1 unit	250
Accessories						
CM PM-O PP connection modules For tapping 24 V load voltage and solid-state/sensor supply voltage, 2 x push-pull plug-in connectors	A	**6ES7194-4BH00-0AA0**		1	1 unit	250
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1907-0AB10-6AA0**		1	1 unit	5K2
Covers for push-pull sockets 5 units	A	**6ES7194-4JA50-0AA0**		1	5 units	250
ET 200pro pneumatic interfaces						
EM 148-P pneumatic interfaces						
• DO 16 x P/CPV 10 for direct connection of the FESTO valve terminals CPV 10 16 DO x P	A	**6ES7148-4EA00-0AA0**		1	1 unit	250
• DO 16 x P/CPV 14 for direct connection of the FESTO valve terminals CPV 14 16 DO x P	A	**6ES7148-4EB00-0AA0**		1	1 unit	250
• FESTO valve terminals CPV 10 • FESTO valve terminals CPV 14		Available from the company Festo, see Chapter 16 "Appendix" → "External Partners"				
SIMATIC RF170C						
SIMATIC RF170C communication modules For connection of SIMATIC Ident systems to ET 200pro. The readers (SLGs) of all RFID systems and the MV400 code reading systems can be operated on SIMATIC RF170C.	A	**6GT2002-0HD00**		1	1 unit	572
Accessories						
Connection blocks for SIMATIC RF170C For connecting 2 readers through M12 plug-in connectors	A	**6GT2002-1HD00**		1	1 unit	572
Reader cables for MOBY U Material PUR, CMG approval, trailing						
• Length 2 m	A	**6GT2091-4FH20**		1	1 unit	572
• Length 5 m	A	**6GT2091-4FH50**		1	1 unit	572
Reader cables for MOBY D Material PUR, CMG approval, trailing, 2 m	A	**6GT2691-4FH20**		1	1 unit	572
Reader cables for SIMATIC RF200/RF300/RF600/MV400 or MOBY U/D extension cable and SIMATIC RF200/RF300/RF600/MV400, material PUR, CMG approval, trailing, straight connector						
• Length 2 m	A	**6GT2891-4FH20**		1	1 unit	572
• Length 5 m	A	**6GT2091-4FH50**		1	1 unit	572
• Length 10m	A	**6GT2891-4FN10**		1	1 unit	572
• Length 20 m	A	**6GT2891-4FN20**		1	1 unit	572
• Length 50 m	A	**6GT2891-4FN50**		1	1 unit	572
• Length 2 m, plug angular at the reader	A	**6GT2891-4JH20**		1	1 unit	572
M12 sealing caps for unused reader connections Minimum order quantity 10 units, price per 100 units	►	**3RX9802-0AA00**		100	10 units	42C
DVD "RFID Systems Software & Documentation"	A	**6GT2080-2AA20**		1	1 unit	572

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ET 200pro PS

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Stabilized power supplies						
SIMATIC ET 200pro PS Stabilized power supply in the construction and design of the distributed I/O system, with the option of looping the power to other modules; with degree of protection IP67 Input: 3 AC 400-480 V Output: 24 V DC/8 A	A	**6ES7148-4PC00-0HA0**		1	1 unit	589
Accessories						
Power connection plugs For connection to the distributed I/O system						
• For X1 (6 mm^2)	B	**3RK1911-2BE30**		1	1 unit	42D
• For X2 (6 mm^2)	B	**3RK1911-2BF10**		1	1 unit	42D
Sealing caps For 9-pole power socket connectors X2 (pack of 10)	B	**3RK1902-0CK00**		1	1 unit	42D

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Illustrations are approximate

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro FC frequency converters						
3 AC 380 ... 480 V, +10 %/-10 % 47 ... 63 Hz Overload: 150 %, 60 s, 200 %, 3 s Rating: 1.1 kW (0 ... 55 °C) 1.5 kW (0 ... 45 °C)						
• **ET 200pro FC standard frequency converters**	X	**6SL3235-0TE21-1RB0**		1	1 unit	337
• **ET 200pro FC frequency converters with integrated safety functions**	X	**6SL3235-0TE21-1SB0**		1	1 unit	337
Accessories for ET 200pro FC frequency converters						
Backplane bus modules for accommodating the frequency converter	X	**6SL3260-2TA00-0AA0**		1	1 unit	337
Connector set for energy supply, HAN Q4/2						
• 2.5 mm²	B	**3RK1911-2BE50**		1	1 unit	42D
• 4.0 mm²	B	**3RK1911-2BE10**		1	1 unit	42D
• 6.0 mm²	B	**3RK1911-2BE30**		1	1 unit	42D
Motor cables preassembled at one end for motors with brake and temperature sensor with HAN Q8 connector, shielded						
Cross-section 1 mm²						
• Length 1.5 m		**ZKT: 70018601000150**				
• Length 3 m		**ZKT: 70018601000300**				
• Length 5 m		**ZKT: 70018601000500**				
• Length 10 m		**ZKT: 70018601001000**				
		ZKT: Available from the company KnorrTec see Chapter 16 "Appendix" → "External Partners"				
Cross-section 1.5 mm²						
• Length 1.5 m		**HTG: 61 88 201 0288**				
• Length 3 m		**HTG: 61 88 201 0289**				
• Length 5 m		**HTG: 61 88 201 0290**				
• Length 10 m		**HTG: 61 88 201 0299**				
		HTG: Available from the company Harting see Chapter 16 "Appendix" → "External Partners"				

More connection technology products can be found at our "Siemens Solution Partners Automation" under "Distributed Field Installation System" technology:
www.siemens.com/automation/partnerfinder

Frequency converter plugs For motor cable, shielded, HAN Q8	A	**6ES7194-1AB01-0XA0**		1	1 unit	2AP
Power jumper plugs For 400 V power loop-through connection to the following 400 V modules	A	**3RK1922-2BQ00**		1	1 unit	42D
USB interface cable For communication with a PC (length 2.5 m)	B	**6SL3555-0PA00-2AA0**		1	1 unit	346
RS232 interface cable For parameterization of the converter with the STARTER tool via a direct point-to-point connection	B	**3RK1922-2BP00**		1	1 unit	42D
IOP Handheld For use with SINAMICS G120, SINAMICS G120C, SINAMICS G110D, SINAMICS G120D or SIMATIC ET 200pro FC Included in the scope of supply: • IOP • Handheld enclosure • Batteries (4 × AA) • Charger (international) • RS 232 connection cable (length 3 m, for SINAMICS G120 only) • USB cable (length 1 m)	B	**6SL3255-0AA00-4HA0**		1	1 unit	343
Memory card (MMC) For the ET 200pro FC parameter settings. If required there is space on the memory card (MMC) for the complete parameterization of the frequency converter. For service purposes the system is immediately ready for use after replacement of the frequency converter and acceptance of the memory card.	B	**6SL3054-4AG00-0AA0**		1	1 unit	753

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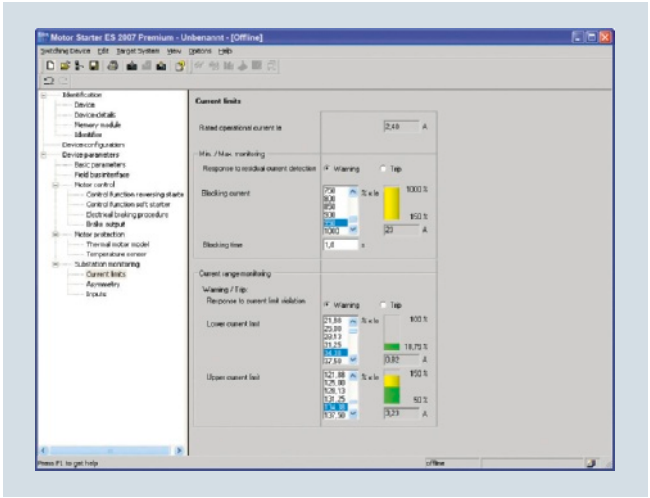
ET 200pro software
Motor Starter ES, block library for PCS 7

Overview

Motor Starter ES

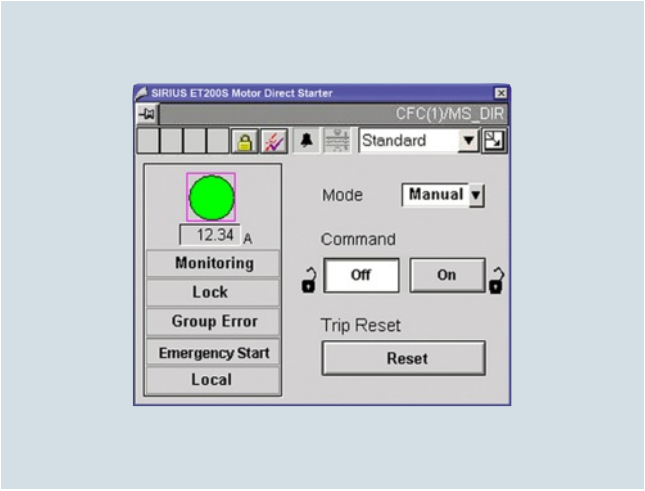


Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200pro, SIMATIC ET 200S and SIRIUS M200D product families.

Detailed information on the Motor Starter ES software see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

SIRIUS motor starter block library for SIMATIC PCS 7



Faceplate of the motor block

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S and ET 200pro motor starters can be easily and simply integrated into the SIMATIC PCS 7 process control system.

The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver blocks corresponding to the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Detailed information about the SIRIUS Motor Starter block library for SIMATIC PCS 7 see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

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Overview

SIRIUS M200D AS-i Basic motor starters with manual local operation

The intelligent, highly flexible SIRIUS M200D motor starters for distributed configurations are designed to start, monitor and protect motors and loads up to 5.5 kW.

The M200D motor starters are available in four versions:

M200D AS-i Basic	M200D AS-i Standard	M200D PROFIBUS	M200D PROFINET
Motor control with AS-i communication		PROFIBUS	PROFINET
Mechanical or electronic switching			
✓	✓	✓	✓
Electronic switching with soft starter functionality			
--	✓	✓	✓

✓ Function available
-- Function not available

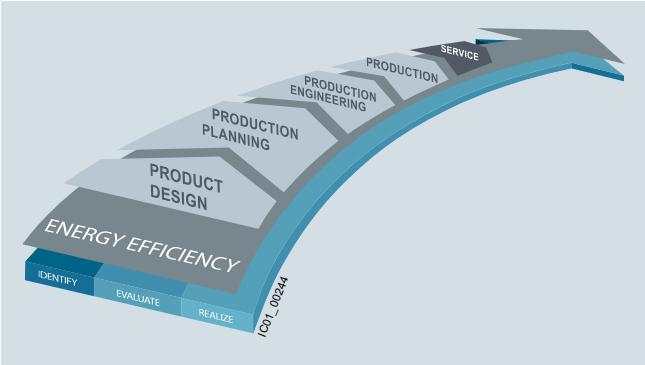
Basic functionality

All M200D motor starter versions have the following functions:

- Available as direct-on-line and reversing starters in a rugged design
- Electromechanical or electronic switching version
- Little variance – only 2 device versions up to 5.5 kW thanks to wide range setting
- All versions have the same enclosure dimensions
- Degree of protection IP65
- Quick and fail-safe wiring of system and motor cables using ISO 23570 plug-in connector technology (Q4/2 and Q8/0)
- Robust and widely used M12 connection method for digital inputs and outputs
- Integrated feeder connector monitoring
- Full motor protection through overload protection and a temperature sensor (PTC, TC)
- Short-circuit and overload protection integrated
- Integrated repair switch lockable with 3 locks (multi-level service)
- Uniform wiring to the G110D/G120D frequency inverters and to the ET200pro distributed peripherals system
- Extensive diagnostics concept using LEDs
- Optional integrated manual local control with key-operated switch (ordering option)
- Optionally available brake actuation with voltages from 180 V DC (no rectifier needed in motor) or 230/400 V AC (order versions)

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

M200D motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy (see "PROFINET M200D Motor Starters", page 9/46)
- Elimination of energy consumption in dead times through disconnection using PROFIenergy (see "PROFINET M200D Motor Starters", page 9/46)
- Current management
  With solid-state soft starters, avoidance of current peaks and therefore reduction of the load on the grid and the mechanical system
- Technology-reduced inherent power loss as speed-controlled drive systems
- Solid-state modules equipped with soft start technology with bypass contactor, resulting in lower power losses than with conventional soft starters after start-up

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General data

Product advantages

M200D motor starters provide the following advantages for customers:

- High plant availability through plug-in capability of the main circuit, communication and IOs – relevant for installing and replacing devices
- Cabinet-free construction and near-motor installation thanks to the high degree of protection IP65
- The motor starters record the actual current flow for the parameterizable electronic motor overload protection. Reliable messages concerning the overshooting or undershooting of setpoint values for comprehensive motor protection. All motor protection functions can be defined by simple parameterization
- Low stock levels and low order costs through a wide setting range for the current or a wide setting range for the electronic motor protection of 1:10 (only 2 device versions up to 5.5 kW)
- The integrated wide range for the current enables a single device to cover numerous standard motors of different sizes
- Comprehensive offering of accessories, including ready-assembled cables
- The M200D motor starters can be installed with a few manual steps. The integrated plug-in technology enables far lower wiring outlay:
  preassembled cables can be plugged directly onto the motor starter module
- Easy and user-friendly installation because all versions have the same enclosure dimensions
- Fast and user-friendly commissioning using optional manual local operation
- Increase of process speed through integrated functions such as "Quick Stop" and "Disable Quick Stop", e.g. at points and crossings
- Optional manual local control with momentary-contact and latching operation for easier start-up and easier servicing

Application

The high degree of protection IP65 makes the M200D motor starters suitable in particular for use on extensive conveying systems such as are found in mail sorting centers, airports, automotive factories and the packing industry.

For simple operating mechanism tasks, particularly in conveyor applications, the new SINAMICS G110D frequency inverter series with a performance range from 0.75 kW to 7.5 kW and degree of protection IP65 is the ideal partner for the M200D motor starters.

The SINAMICS G110D frequency inverters permit continuous speed control of three-phase asynchronous motors and meet the requirements of conveyor applications with frequency control (for more information see Catalog D 31).

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Overview

For motor control using AS-Interface there are the following M200D motor starter versions: SIRIUS M200D AS-i Basic and SIRIUS M200D AS-i Standard (basic functionality see page 9/37 "SIRIUS M200D Motor Starters" → "General Data" → "Overview").

SIRIUS M200D AS-i Basic

Functionality

- Easy and fast on-site start-up through parameterization of local setting knobs (DIP switches) and rotary coding switches for adjusting the rated operational current. The rotary coding switch has an OFF position for deactivating the overload protection with the help of the thermal motor model when using a temperature sensor.

Communications

- AS-i communication with A/B addressing according to Spec V2.1
- The AS-i bus is connected cost-effectively using an M12 connection on the device. Of the 4 digital inputs, 2 are contained in the process image and can therefore be used in the PLC program. The other 2 inputs are locally effective and permanently assigned with functions.
- The LEDs can provide comprehensive diagnostics of the device on the spot. In addition to diagnostics using the PAE process image, the device can create up to 15 different diagnostic signals per slave. The message with the highest priority can be read out through the AS-i communication. This is yet another new development which distinguishes the M200D AS-i Basic motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

SIRIUS M200D AS-i Standard

The intelligent, highly flexible M200D AS-i Standard motor starters in A/B technology are designed to start and protect motors and loads up to 5.5 kW. They are available in direct-on-line or reversing starter versions, in a mechanical version and also an electronic version (the latter with soft start function).

The M200D AS-i Standard motor starter is the most functional member of the SIRIUS motor starter family in the high degree of protection IP65 for AS-i communication. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET200pro I/O system is assured.

Functionality

- AS-i communication with A/B addressing according to Spec 3.0
- Electronic version also with soft start function
- AS-i slave profile 7AE/7A5 with process image 6E/4A
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through AS-i, providing maximum flexibility and best adaptability to the application.
- Additionally expanded diagnostics using data record through AS-i bus
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through AS-i bus with the help of data records or an expanded process image from the user program
- Control of the motor starter using a command data record from the user program
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Parameterization using Motor Starter ES at the local interface (ordering option for start-up software)
- Diagnostics with the help of Motor Starter ES (ordering option for start-up software)

Mounting and installation

The M200D motor starters can be installed with a few manual steps. The integrated plug-in technology enables far lower wiring outlay. Connecting cables can be plugged directly onto the motor starter module. Swapping of the connecting wires and malfunctions within the plant are prevented by preassembled cables. The AS-i bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

The particularly robust M200D AS-i Standard motor starter is characterized by numerous functions which can be flexibly parameterized. It enables highly flexible parameterization through the AS-i bus using data records from the user program as well as user-friendly local parameterization using the Motor Starter ES start-up software through the local point-to-point interface.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All motor protection functions, limit values and reactions can be defined by parameterization. The AS-i Standard is unique. In its 6E/4A process image the motor starter sends all 4 digital inputs and the digital output via the process image to the PLC in cyclic mode. System configuration and system documentation are facilitated not least by a number of CAX data.

Operation

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation.

All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable messages concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

The M200D sets new standards for diagnostics. In addition to diagnostics using the PAE process image and diagnostics by "parameter echo" (up to 15 different diagnostic signals per slave can be read out via AS-i communication), the possibility of reading out diagnostic data records is unique on the market.

The AS-i Standard is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) provides an in-depth view of the plant from the control room, guaranteeing the monitoring process and increasing plant availability.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D AS-i Standard motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the plant.

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M200D motor starters for AS-Interface

	SIRIUS M200D AS-i Basic	SIRIUS M200D AS-i Standard
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ AS-i	
Slave type	✓ A/B acc. to Spec 2.1	✓ A/B acc. to Spec 3.0
Profile	✓ 7.A.E	✓ 7.A.E & 7.A.5
Number of assigned AS-i addresses on the bus	✓ 1	✓ 2
Number of stations per AS-i master	✓ Max. 62 devices	✓ Max. 31 devices
AS-i master profile	✓ M3 and higher	✓ M4 and higher
Parameterization		
DIP switches	✓	--
Potentiometer for rated operational current	✓	--
Motor Starter ES	--	✓
Data records through AS-i	--	✓
Diagnostics		
Diagnostics through parameter channel	✓	
Acyclic through data records	--	✓
Expanded process image PAE 4 bytes	--	✓
Process image		
Process image	✓ 4E/3A	✓ 6E/4A
Data channels		
Local optical interface (manual local)	✓	
AS-i bus	✓	
Motor Starter ES through local interface	--	✓
Motor Starter ES through bus	--	
Data records[1] (acyclic)		
Parameterization	--	✓
Diagnostics	--	✓
Measured values	--	✓
Statistics	--	✓
Commands	--	✓
Inputs		
Number	✓ 4	
• Of these in the process image	✓ 2 through AS-i	✓ 4 through AS-i
Input action	✓ Permanently assigned functions, see manual[2]	✓ Parameterizable: flexible
Quick Stop	✓ Permanent function: latching, edge-triggered	✓ Parameterizable function: latching (edge-triggered), non-latching (level-triggered)
Outputs		
Number	✓ 1	
Output action	✓ Permanent function: assigned with group fault	✓ Parameterizable: function, see manual[3]
Brake output		
180 V DC / 230/400 V AC / none	✓	
Motor protection		
Overload protection	✓ Electronic, wide range 1:10	
Short-circuit protection	✓	
Full motor protection	✓	
Temperature sensor	✓ Parameterizable using DIP switches: PTC or Thermoclick or deactivated	✓ Parameterizable using Motor Starter ES, data record: PTC or Thermoclick or deactivated

✓ Function available
-- Function not available

1) The data records are a reduced selection compared with PROFIBUS/PROFINET.
2) http://support.automation.siemens.com/WW/view/en/35016496
3) http://support.automation.siemens.com/WW/view/en/38722160

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	SIRIUS M200D AS-i Basic	SIRIUS M200D AS-i Standard
Device functions (firmware features)		
Device functions		
Repair switch	✓	
Current limit monitoring bottom	--	✓ Parameterizable
Current limit monitoring top	--	✓ Parameterizable
Zero current detection	✓ Permanent function: disconnection, less than 18.75 % of the rated operational current I_e	✓ Parameterizable
Blocking current	✓ Permanent function: starting up of the motor: tripping limit up to 800 % of the rated operational current I_e for 10 s Active operation: threshold for tripping "blocking current" up to 400 % of the rated operational current I_e	✓ Parameterizable
Unbalance	✓ Permanent function: up to 30 % of the rated operational current I_e (only mechanical MS)	✓ Parameterizable
Load type	✓ Permanent function: 3-phase	✓ Parameterizable: 1- and 3-phase
Shutdown class	✓ Parameterizable using DIP switches: CLASS 10/deactivated	Parameterizable using Motor Starter ES, data record: CLASS 5, 10, 15, 20
Protection against voltage failure	✓	✓ Parameterizable: activated/deactivated
Soft starter control function		
Soft start function	--	✓ Only solid-state version
Bypass function	--	✓ Only solid-state version

✓ Function available
-- Function not available

Application

The M200D AS-i standard is particularly suitable for highly automated applications in conveyor systems, which require that devices and systems be monitored to prevent or limit plant downtime. The option of planning the functions of the motor starter or its interfaces also makes fine-adjustment to the function of the motor starter in the application possible and hence provides for extreme flexibility.

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M200D motor starters for AS-Interface

Technical specifications

Type		M200D motor starters			
		AS-i Basic electromechanical switching	AS-i Basic electronic switching	AS-i Standard electromechanical switching	AS-i Standard electronic switching
Technology designation[1]		DSte / RSte	sDSte / sRSte	DSte / RSte	sDSSte / sRSSte
Mechanics and environment					
Mounting dimensions (W x H x D)	mm	294 x 215 x 159			
Permissible ambient temperature					
• During operation	°C	-25 ... +55			
• During storage	°C	-40 ... +70			
Weight	g	2 880 / 3 130	3 220 / 3 420	2 880 / 3 130	3 220 / 3 420
Permissible mounting position		Vertical, horizontal, lying			
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2			
Shock resistance					
• Acc. to IEC 60068 Part 2-27	*g*/ms	12/11 half-sine			
• Without influencing the contact position	*g*/ms	9.8/5 or 5.9/10			
Degree of protection according to IEC 529		IP65			
Installation altitude					
• Up to 1 000 m		No derating			
• Up to 2 000 m		1 % per 100 m			
Cooling		Convection			
Protection class IEC 536 (VDE 0106-1)		1			
Electrical specifications					
Control circuit					
Operational voltage U_{As-i}	V DC	26.5 ... 31.6			
Control supply voltage U_{aux}	V DC	20.4 ... 28.8			
Power consumption from AS-i (incl. 200 mA sensor supply)	mA	< 300			
Power consumption from U_{aux} (without digital output)					
• Max.	mA	155	15 (direct-on-line)/ 175 (reversing)	155	15 (direct-on-line)/ 175 (reversing)
• Typ.	mA	75	10 (direct-on-line)/ 75 (reversing)	75	10 (direct-on-line)/ 75 (reversing)
Main circuit					
Maximum power of three-phase motors at 400 V AC	kW	5.5	4	5.5	5.5
Rated operational voltage U_e					
• Approval acc. to EN 60947-1	V AC	400 (50/60 Hz)			
• Approval acc. to UL and CSA	V AC	600 (50/60 Hz)	480 (50/60 Hz)	600 (50/60 Hz)	480 (50/60 Hz)
• Rated operational current range	A	0.15 ... 2 / 1.5 ... 12	--	0.15 ... 2 / 1.5 ... 12	--
• Rated operational current range for soft start	A	--			0.15 ... 2 / 1.5 ... 12
• Rated operational current range for direct start	A	--	0.15 ... 2 /1.5 ... 9	--	0.15 ... 2 /1.5 ... 9
Rated operational current for starters I_e at 400 V AC					
• 400 V at AC-1 / 2 / 3	A	12	--	12	--
• 500 V at AC-1 / 2 / 3	A	9	--	9	--
• 400 V at AC-4	A	4	--	4	--
• 400 V at AC-53a	A	--	9	--	12 for soft starting 9 for direct-on-line starting
Mechanical endurance of contactor	Operating cycles	30 million	--	30 million	--
Trip class		CLASS 10		CLASS 5, 10, 15, 20	
Type of coordination acc. to IEC 60947-4-1		1 (2 for device version 2A)	1	1 (2 for device version 2A)	1
Permissible switching frequency		See manual[3)4)]			
Rated ultimate short-circuit breaking capacity I_q					
• At 400 V AC	kA	50			
• At 500 V AC	kA	50[2)]	20[2)]	50	20[2)]
Short-circuit protection					
• At I_{emax} = 2 A		Integrated, 2 x13 I_e = 26 A			
• At I_{emax} = 9 /12 A		Integrated, 2 x13 I_e = 208 A			
Brake actuation (option)					
Operational voltage	V	230/400 AC or 180 DC			
Uninterrupted current	A	< 0.5 at 230/400 V AC, < 0.8 at 180 V DC			
Short-circuit protection		Yes, 1 A melting fuse			

1) DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct soft starter
RSS .. reversing soft starter
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

2) Only systems with grounded neutral point permitted.

3) http://support.automation.siemens.com/WW/view/en/35016496

4) http://support.automation.siemens.com/WW/view/en/38722160

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Selection and ordering data

M200D AS-i Basic without manual local operation

M200D AS-i Basic with manual local operation

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Electromechanical starters (with integrated contactor)						
	C	**3RK1315-6□S41-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			
Electronic starters (with thyristors)						
	C	**3RK1315-6□S71-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 9		**N**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			

✓ = Additional price

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

M200D AS-i Standard without manual local operation

M200D AS-i Standard with manual local operation

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Electromechanical starters (with integrated contactor)						
	C	**3RK1325-6□S41-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			
Electronic starters (with thyristors)						
	C	**3RK1325-6□S71-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			

✓ = Additional price

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The intelligent, highly flexible M200D PROFIBUS/PROFINET motor starters are the most functional motor starters of the SIRIUS motor starter family in the high degree of protection IP65 for PROFIBUS/PROFINET communication.

They start and protect motors and loads up to 5.5 kW. Direct-online and reversing starter versions are available, in a mechanical version and also an electronic version (the latter with soft start function).

The particularly robust M200D PROFIBUS/PROFINET motor starters are characterized by numerous functions which can be flexibly parameterized. Their modular design comprises a motor starter module and a communication module.

The M200D PROFINET motor starters enable TIA-integrated parameterization through PROFINET from STEP 7 – in familiar, user-friendly manner with the same look-and-feel as PROFIBUS.

Functionality

- Basic functionality see page 9/37 "M200D Motor Starters" → "General Data" → "Overview"
- Electronic version also with soft start function
- Robust and widely used M12 connection method for the digital inputs and outputs and the PROFIBUS/PROFINET bus connection
- All four digital inputs and two digital outputs exist in the cyclic process image. This provides complete transparency of the process on the control level
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through the bus, providing maximum flexibility and excellent adaptability to the application
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Extensive diagnostics concept using LEDs and through the bus with the TIA-compatible mechanisms
- Expanded diagnostics using data records
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through PROFIBUS/PROFINET bus with the help of data records from the user program
- Control of the motor starter using a command data record from the user program
- Removable modular control unit – quicker device replacement and therefore lower costs when device outages occur – since existing wiring is on the control unit and only one device needs to be replaced
- Parameterization in STEP 7 HW Config using Motor Starter ES (ordering option for start-up software)
- Start-up and diagnostics with the help of Motor Starter ES (ordering option for start-up software)
- Trace function through Motor Starter ES for optimized start-up and tracking of process and device values

Only with PROFINET:

- Just one bus system from the MES level to the devices - no routers
- More stations on the bus and possible configuration of flexible bus structures
- Automatic re-parameterization in case of device replacement thanks to proximity detection
- Wireless integration of plant segments in difficult environments using WLAN
- Easier expansion of the system thanks to a higher number of stations on the bus and elimination of terminating resistors

M200D motor starter modules for PROFIBUS/PROFINET (without communication module)

M200D communication modules for PROFIBUS

M200D communication modules for PROFINET

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M200D motor starters for PROFIBUS/PROFINET

Mounting and installation

The M200D PROFIBUS / PROFINET motor starter is comprised of a communication module and a motor starter module. Only the motor starter module has to be replaced therefore when replacing devices. This saves time and money. The communication module remains as an active station on the bus and all other system components continue running. This prevents downtimes.

The integrated plug-in technology enables far lower wiring outlay: Connecting cables can be plugged directly onto the motor starter module. The PROFINET bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

All motor protection functions, limit values and reactions can be defined by parameterization.

The user has several user-friendly options for the parameterization. In addition to parameterization directly from STEP 7, which also permits automatic re-parameterization in case of device replacement, it is possible to use the user-friendly Motor Starter ES start-up software. By connecting a programming device directly to PROFIBUS/PROFINET and the Motor Starter ES start-up software, the devices can also be conveniently programmed from a central point through the bus. Also, parameters can be changed during operation from the user program using the data record mechanism so that the function of the motor starter is adapted to the process when required. With the help of a PC and the Motor Starter ES software it is also possible to perform the parameterization through the local point-to-point interface on-site.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET 200pro I/O system is assured.

Only with the M200D PROFINET motor starter

Thanks to the integrated proximity detection, the device name does not need to be issued manually when a device is replaced. The name is issued automatically by the neighboring devices which note the "names" of the devices in their proximity. No additional start-up measures are required therefore when replacing a device.

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation. The PROFINET is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) guarantees an in-depth view of the plant from the control room and therefore increases plant availability.

Operation

The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable signals concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

Diagnostics is provided through numerous mechanisms - and can be used as the customer prefers.

The motor starter is TIA-diagnostics compatible, which means that when a fault is identified, a diagnostics alarm is distributed, which invokes the diagnostics-OB with a SIMATIC control. The fault can be evaluated as usual in the user program.

The M200D motor starter offers a large variety of diagnostics data through data records. Its functionality is without equal on the market. There are extensive options for reading out data from the motor starter for monitoring devices, systems or processes.

The motor starter is equipped internally with 3 logbooks for device faults, motor starter trips and events, which are issued with a time stamp. These logbooks can be read out of the motor starter at any time in the form of data records and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations for plant monitoring purposes. This enables process deviations to be monitored or commissioning to be optimized. The user can draw conclusions about the actual load conditions of the devices in his process and on this basis can optimize his plant maintenance intervals.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication as a basis for central device and plant monitoring.

With installation and maintenance functions (I&M), information (I&M) on modules employed is stored in the motor starter on the one hand, and on the other, data (I&M), which can be specified by the user during configuration, such as location designations. I&M functions serve for troubleshooting faults and localizing changes in hardware at a plant or checking the system configuration. Reordering a device is particularly easy as the result.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Another new feature is the integrated TRACE function with the Motor Starter ES software. It can be used to record measured values as a function of time following a trigger event. This enables process flows to be recorded and their timing optimized.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D PROFIBUS/PROFINET motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

M200D PROFINET motor starters with PROFIenergy

Increasing energy prices, far-reaching ecological problems worldwide and the threat of climate change make it necessary for you to be more conscious about your use of energy.

Active and effective energy management is possible with PROFIenergy.

PROFIenergy is a manufacturer-independent profile on PROFINET, which can be used by all manufacturers, has been standardized by PNO[1)] and supports the switching off of electrical devices during dead time and the measurement of energy flow.

[1)] In the PNO (PROFIBUS Nutzerorganisation e. V. - PROFIBUS User Organization), manufacturers and users have come together to agree on the standardized communication technologies PROFIBUS and PROFINET.

Switching off during dead times

PROFIenergy supports the targeted switching-off of loads during dead time.

These can be planned short breaks of a few minutes (such as lunch breaks), longer periods of dead time (such as nights) or unplanned dead time. Energy is always saved when no power is required.

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Measuring and visualizing the energy flow as a basis of energy management

The objective of energy management is to optimize the use of energy in a company – from the purchasing of energy through to the consumption of energy – economically and ecologically.

Analyses of energy consumption over time can be used to control energy flows, avoid energy peaks, improve ratings and thus save costs.

PROFIenergy enables consumption data to be read off from the devices in a unified form. This is recorded during operation and can be displayed on a control panel, for example, or on overlying energy management software packages. This ensures that the measured variables are in a uniform manufacturer-independent form and structure that is available to the user for further processing. These PROFIenergy functions thus provide the basis for active load and energy management during operation.

PROFIenergy in the M200D PROFINET motor starter

The M200D PROFINET motor starter supports "switching during dead time" and "current measurement values" of the motor current using PROFIenergy. These are called commands, because they trigger a reaction in the M200D motor starter.

	SIRIUS M200D PROFIBUS	SIRIUS M200D PROFINET
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ PROFIBUS to M12	✓ PROFINET to M12
Adjustable number of stations	✓ 1 ... 125	✓ 1 ... 128 with CPU 315, CPU 317 1 ... 1256 with CPU 319
Parameterization		
DIP switches	✓ For address setting and terminating resistor	--
Motor Starter ES	✓ Through bus, optical interface	
PROFIBUS/PROFINET data records	✓	
From STEP 7 / HW Config	✓	
Diagnostics		
Acyclic through data records	✓	
Support of diagnostics alarm	✓	
Process image		
Process image	✓ 2Byte PAE/ 2Byte PAA	
Data channels		
Local optical interface (manual local)	✓	
Through Motor Starter ES local interface	✓	
Using Motor Starter ES through bus	✓	
Data records (acyclic)		
Parameterization	✓ Using DS 131 (DS = data record)	
Diagnostics	✓ Device-specific DS 92	
Measured values	✓ Measured values DS 94	
Statistics	✓ Statistical data DS 95	
Commands	✓ Using DS 93	
Slave pointer	✓ Slave pointer DS 96	
Logbook	✓ Using Motor Starter ES and data records: Device faults DS 72, tripping operation DS 73, events DS 75	
Device identification	✓ Using DS 100	
I&M data	✓ Using DS 231 ... 234	✓ Using data records 0xAFF0 ... 0xAFF3
Inputs		
Number	✓ 4	
• Of these in the process image	✓ 4	
Input action	✓ Parameterizable: flexibly assignable action, see manual[1)]	
Quick Stop	✓ Parameterizable: latching, non-latching	

✓ Function available
-- Function not available

1) http://support.automation.siemens.com/WW/view/en/38823402

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M200D motor starters for PROFIBUS/PROFINET

	SIRIUS M200D PROFIBUS	SIRIUS M200D PROFINET
Device functions (firmware features)		
Outputs		
Number	✓ 2	
• Of these in the process image	✓ 2	
Output action	✓ Parameterizable: flexibly assignable action, see manual[1)]	
Brake output		
180 V DC / 230/400 V AC / none	✓	
Motor protection		
Overload protection	✓ Electronic, wide range 1:10	
Short-circuit protection	✓	
Full motor protection	✓	
Temperature sensor	✓ Parameterizable using Motor Starter ES, data record: PTC or Thermoclick or deactivated	
Device functions		
Repair switch	✓	
Current limit monitoring bottom	✓ Parameterizable	
Current limit monitoring top	✓ Parameterizable	
Zero current detection	✓ Parameterizable: tripping, warning	
Blocking current	✓ Parameterizable	
Unbalance	✓ Parameterizable	
Load type	✓ Parameterizable: 1- and 3-phase	
Shutdown class	✓ Parameterizable using Motor Starter ES, data record: CLASS 5, 10, 15, 20	
Protection against voltage failure	✓ Parameterizable: activated/deactivated	
Support for PROFIenergy profile		
Switching during dead times	--	✓
Measured motor current values	--	✓
Soft starter control function		
Soft start function	✓	
Bypass function	✓ Only solid-state version	

✓ Function available
-- Function not available
1) http://support.automation.siemens.com/WW/view/en/38823402

Benefits

M200D PROFINET motor starters with PROFIenergy

Both standards and laws are making environmental protection and energy management increasingly important, as is the desire to cut energy costs in production facilities and thus ensure a sustainable competitive advantage.

It is thus an objective within the industry to save energy and actively reduce CO_2 emissions. By the careful use of valuable resources, the manufacturer-independent PROFIenergy profile on PROFINET can make an active contribution to environmental protection.

Application

The M200D PROFIBUS/PROFINET motor starters are particularly suitable for fully TIA-integrated, highly automated conveyor applications which meet all needs with regard to the monitoring of devices and systems and preventative maintenance.

Adaptability of the motor starter functions and maximum flexibility of the device enable a broad range of application without any limits. The PROFINET-specific expansions are the best assurance of a future-proof investment.

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Technical specifications

Type		M200D motor starter modules for PROFIBUS/PROFINET	
		Electromechanical switching	Electronic switching
Technology designation[1]		DSte / RSte	sDSSte / sRSSte
Mechanics and environment			
Mounting dimensions (W x H x D)			
• Without communication module	mm	294 x 215 x 159	
• With communication module	mm	295 x 215 x 163	
Permissible ambient temperature			
• During operation	°C	-25 ... +55	
• During storage	°C	-40 ... +70	
Weight	g	2 820 / 3 080	3 160 / 3 360
Permissible mounting position		Vertical, horizontal, lying	
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2	
Shock resistance			
• Acc. to IEC 60068 Part 2-27	*g*/ms	12/11 half-sine	
• Without influencing the contact position	*g*/ms	9.8/5 or 5.9/10	
Degree of protection according to IEC 529		IP65	
Installation altitude			
• Up to 1 000 m		No derating	
• Up to 2 000 m		1 % per 100 m	
Cooling		Convection	
Protection class IEC 536 (VDE 0106-1)		1	
Electrical specifications			
Main circuit			
Maximum power of three-phase motors at 400 V AC	kW	5.5	
Rated operational voltage U_e			
• Approval acc. to EN 60947-1	V AC	400 (50/60 Hz)	
• Approval acc. to UL and CSA	V AC	600 (50/60 Hz)	480 (50/60 Hz)
• Rated operational current range	A	0.15 ... 2 / 1.5 ... 12	--
• Rated operational current range for soft start	A	--	0.15 ... 2 / 1.5 ... 12
• Rated operational current range for direct start	A	--	0.15 ... 2 /1.5 ... 9
Rated operational current for starters I_e at 400 V AC			
• 400 V at AC-1 / 2 / 3	A	12	--
• 500 V at AC-1 / 2 / 3	A	9	--
• 400 V at AC-4	A	4	--
• 400 V at AC-53a	A	--	12 for soft starting, 9 for direct-on-line starting
Mechanical endurance of contactor	Operating cycles	30 million	--
Trip class		CLASS 5, 10, 15, 20	
Permissible switching frequency		See manual[3]	
Rated ultimate short-circuit breaking capacity I_q			
• At 400 V AC	kA	50	
• At 500 V AC	kA	50	20[2]
Short-circuit protection			
• At I_{emax} = 2 A		Integrated, 2 x13 I_e = 26 A	
• At I_{emax} = 9 /12 A		Integrated, 2 x13 I_e = 208 A	
Brake actuation (option)			
Operational voltage	V	230/400 AC or 180 DC	
Uninterrupted current	A	< 0.5 at 230/400 V AC< 0.8 at 180 V DC	
Short-circuit protection		Yes, 1 A melting fuse	

1) DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct soft starter
RSS .. reversing soft starter
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

2) Only systems with grounded neutral point permitted.

3) http://support.automation.siemens.com/WW/view/en/38823402

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M200D motor starters for PROFIBUS/PROFINET

Type		M200D communication modules	
		For PROFIBUS	For PROFINET
Mechanics and environment			
Mounting dimensions (W x H x D)	mm	174 x 139 x 40	
Permissible ambient temperature			
• During operation	°C	-25 ... +55	
• During storage	°C	-40 ... +70	
Weight	g	300	
Permissible mounting position		Vertical, horizontal, lying	
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2	
Shock resistance			
• Acc. to IEC 60068 Part 2-27	*g*/ms	12/11 half-sine	
• Without influencing the contact position	*g*/ms	9.8/5 or 5.9/10	
Degree of protection according to IEC 529		IP65	
Installation altitude			
• Up to 1 000 m		No derating	
• Up to 2 000 m		1 % per 100 m	
Cooling		Convection	
Protection class IEC 536 (VDE 0106-1)		1	
Electrical specifications			
Control circuit			
Operational voltage			
• $U_{DC24V-NS}$	V DC	20.4 ... 28.8	
• $U_{DC24V-S}$	V DC	20.4 ... 28.8	
Power consumption from			
• $U_{DC24V-NS}$	mA	< 300	
• $U_{DC24V-S}$	mA	< 100	

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Selection and ordering data

M200D motor starter modules PROFIBUS/PROFINET (without communication module)

M200D PROFIBUS motor starters

M200D PROFINET motor starters

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
M200D communication modules for PROFIBUS						
Communication modules for PROFIBUS M12 connection for communication, 7/8" for 24 V power supply	C	**3RK1305-0AS01-0AA0**		1	1 unit	42D
M200D communication modules for PROFINET						
Communication modules for PROFINET M12 connection for communication, 7/8" for 24 V power supply	C	**3RK1335-0AS01-0AA0**		1	1 unit	42D
M200D motor starter modules for PROFIBUS/PROFINET						
Electromechanical starters (with integrated contactor)						
	C	**3RK1395-6□S41-□AD□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			
Solid-state starters (with thyristors)						
	C	**3RK1395-6□S71-□AD□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	✓			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	✓			
• Direct-on-line starters with manual local operation		**2**	✓			
• Reversing starters with manual local operation		**3**	✓			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	✓			
• Brake actuation (180 V DC)		**5**	✓			

✓ = Additional price

More information

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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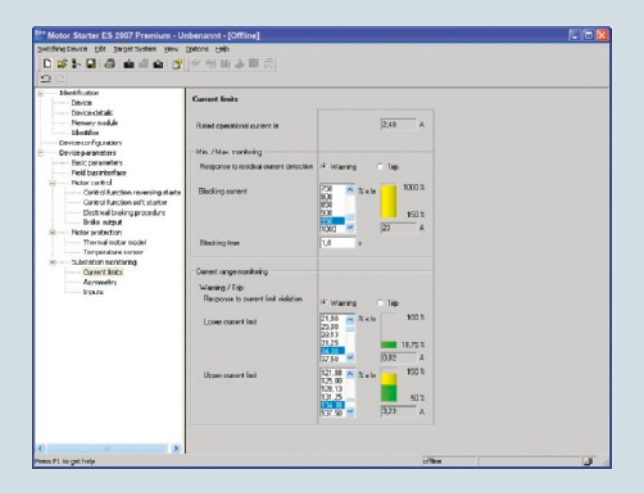
Overview

Motor Starter ES



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200pro, SIMATIC ET 200S and SIRIUS M200D product families (for versions M200D AS-i Standard, M200D PROFIBUS and M200D PROFINET).

Detailed information on the Motor Starter ES software see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

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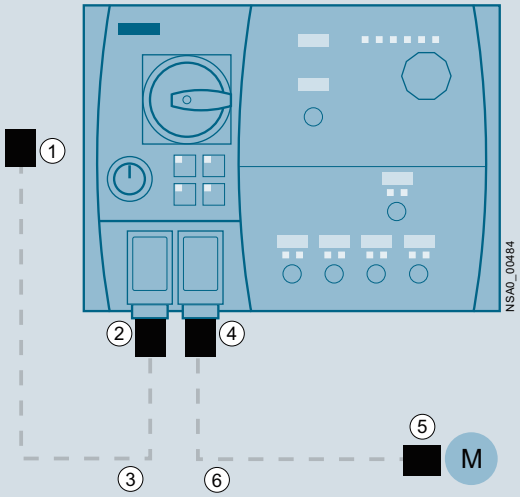
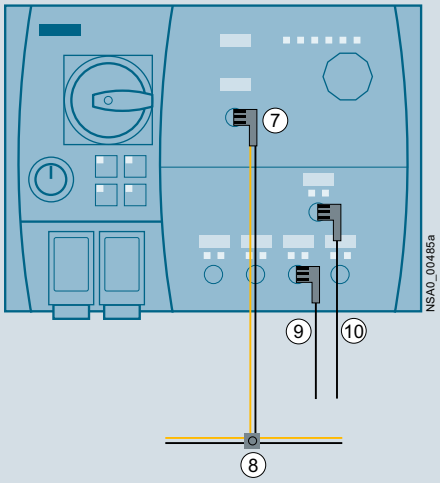
Overview



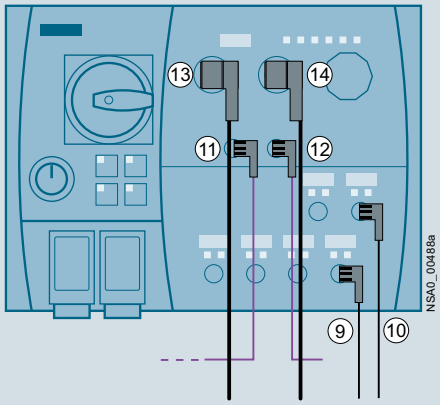
1 Power feeder plug
2 Power connection plug
3 Incoming energy supply cable
4 Motor connection plug
5 Motor plug
6 Motor cable

Power and motor connection on the M200D motor starter (in this example: M200D for AS-i)



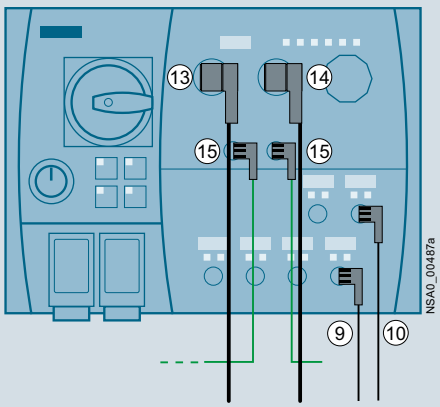
7 Connection for motor control with AS-i communication
8 AS-Interface M12 feeder
9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4 or 5-pole)

Communication connection using AS-Interface and digital inputs and outputs



9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
11 PROFIBUS connection (input)
12 PROFIBUS connection (loop)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)

Communication connection using PROFIBUS and digital inputs and outputs



9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)
15 Connection with PROFINET (input on the left, loop on the right)

Communication connection using PROFINET and digital inputs and outputs

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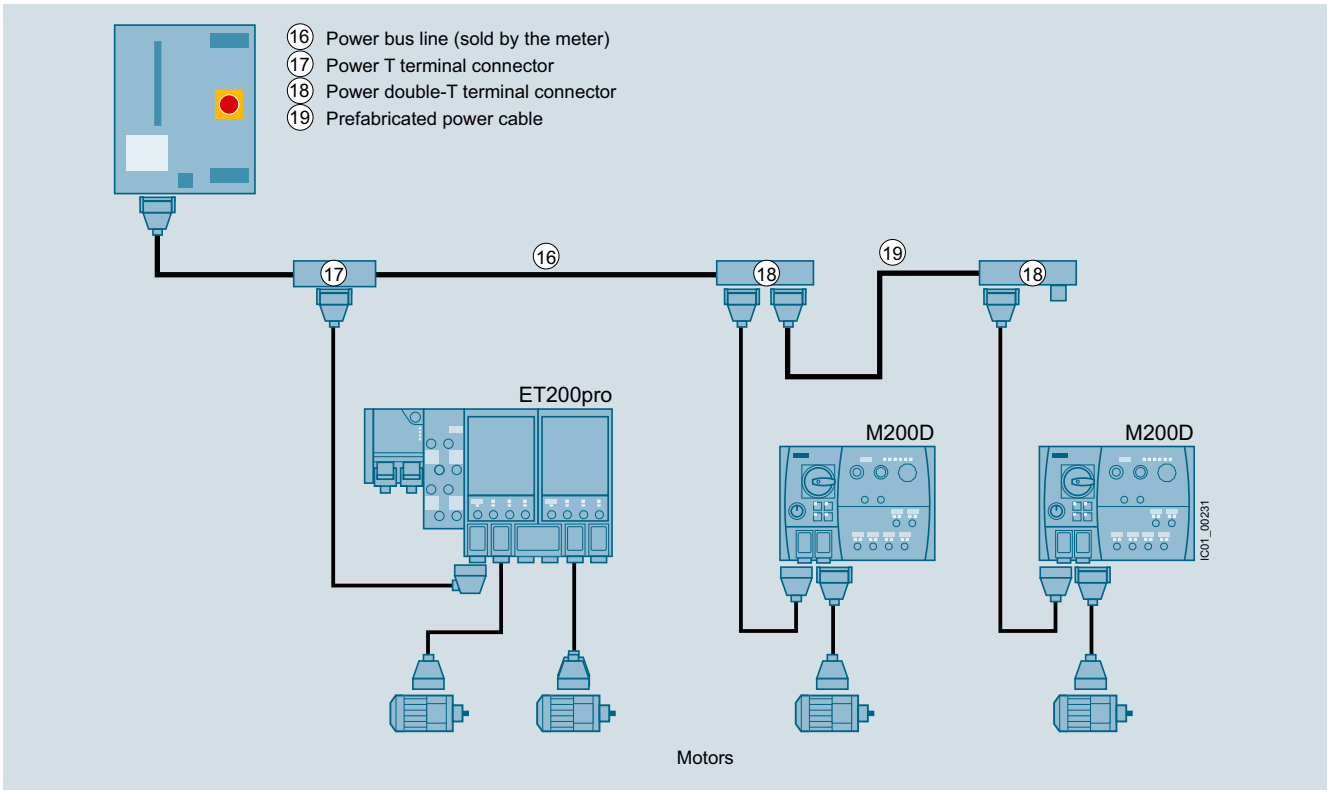
Accessories



Power supply to the motors via the power bus with power T and double-T terminal connectors linked by power bus cables, spur lines to the field devices (motor starters), and power loop-through connections to the motors via motor connection cables

Power bus

The power supply to the field devices (ET 200pro motor starters, M200D motor starters) is provided via the power bus, in which the power T terminal connectors or power double-T terminal connectors are connected by power bus cables.

Feeders

From the terminal connectors, spur lines with Han Q4/2 plugs lead to the field devices, from which the motors are supplied with power via motor connection cables.

Interruption-free thanks to power terminal connectors

In finger-safe connection technology the power T terminal connectors and power double-T terminal connectors connect the components of a feeder to the power bus. They ensure interruption-free operation, i. e. when the components are plugged in, the power bus is not interrupted.

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Selection and ordering data

The accessories listed below represent a basic selection sorted by:

- Accessories for all M200D motor starters
- Accessories for M200D motor starters for AS-interface
- Accessories for M200D motor starters for PROFIBUS
- Accessories for M200D motor starters for PROFINET

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mountable accessories						
M200D protective brackets	C	**3RK1911-3BA00**		1	1 unit	42D
Incoming power supply						
① **Power feeder plugs** Connector set for energy supply, e.g.for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland						
• 5 male contacts 2.5 mm^2	B	**3RK1911-2BS60**		1	1 unit	42D
• 5 male contacts 4 mm^2	B	**3RK1911-2BS20**		1	1 unit	42D
• 5 male contacts 6 mm^2	B	**3RK1911-2BS40**		1	1 unit	42D
② **Power connection plugs** Connector set for energy supply for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, female insert for HAN Q4/2, incl. gland						
• 5 female contacts 2.5 mm^2 2 female contacts 0.5 mm^2	B	**3RK1911-2BE50**		1	1 unit	42D
• 5 female contacts 4 mm^2 2 female contacts 0.5 mm^2	B	**3RK1911-2BE10**		1	1 unit	42D
• 5 female contacts 6 mm^2 2 female contacts 0.5 mm^2	B	**3RK1911-2BE30**		1	1 unit	42D
② + ③ **Power connection cable** Assembled at one end with "N" and jumper pin 11 and 12 for plug monitoring, with HAN Q4/2, angular; open at one end; 5 x 4 mm^2						
• Length 1.5 m	C	**3RK1911-0DC13**		1	1 unit	42D
• Length 5.0 m	C	**3RK1911-0DC33**		1	1 unit	42D
Motor cables						
④ **Motor connection plugs** Connector set for motor cable for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland						
• 8 male contacts 1.5 mm^2	B	**3RK1902-0CE00**		1	1 unit	42D
• 6 male contacts 2.5 mm^2	B	**3RK1902-0CC00**		1	1 unit	42D
⑤ **Motor plugs** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm^2	C	**3RK1911-2BM21**		1	1 set	42D
• 7 female contacts 2.5 mm^2	C	**3RK1911-2BM22**		1	1 set	42D
④ + ⑥ **Motor cables, assembled at one end** For connection to M200D motor starter, HAN Q8/0, angular, length 5 m						
• Motor cables for motor without brake, 4 x 1.5 mm^2	C	**3RK1911-0EB31**		1	1 unit	42D
• Motor cables for motor without brake with thermistor, 6 x 1.5 mm^2	C	**3RK1911-0EF31**		1	1 unit	42D
• Motor cable for motor with brake actuation, braking voltage 400 V AC or 180 V DC, 6 x 1.5 mm^2	C	**3RK1911-0ED31**		1	1 unit	42D
• Motor cable for motor with brake actuation, braking voltage 400 V AC or 180 V DC and thermistor, 8 x 1.5 mm^2	C	**3RK1911-0EG31**		1	1 unit	42D
• Motor cable for motor with brake actuation, braking voltage 230 V AC, 6 x 1.5 mm^2	C	**3RK1911-0EH31**		1	1 unit	42D
• Motor cable for motor with brake actuation, braking voltage 230 V AC and thermistor, 8 x 1.5 mm^2	C	**3RK1911-0EE31**		1	1 unit	42D

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Accessories
For all M200D motor starters

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power bus						
⑰ **Power T terminal connectors** For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments						
• 2.5 mm²/4 mm²	B	**3RK1911-2BF01**		1	1 unit	42D
• 4 mm²/6 mm²	B	**3RK1911-2BF02**		1	1 unit	42D
⑱ **Power double-T terminal connector** For 400 V AC, for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection, used with preassembled bus segments, connection of two motor starters possible						
• 4 mm²/6 mm²	B	**3RK1911-2BG02**		1	1 unit	42D
Sealing set (comprising 2 seals) For power T/power double-T terminal connectors						
• For power cables with Ø 10 ... 13 mm	B	**3RK1911-5BA00**		1	1 unit	42D
• For power cables with Ø 13 ... 16 mm	B	**3RK1911-5BA10**		1	1 unit	42D
• For power cables with Ø 16 ... 19 mm	B	**3RK1911-5BA20**		1	1 unit	42D
• For power cables with Ø 19 ... 22 mm	B	**3RK1911-5BA30**		1	1 unit	42D
• Blanking plugs	B	**3RK1911-5BA50**		1	1 unit	42D
Further accessories for energy connections						
Crimping tools for pins/sockets 4 mm² and 6 mm²	C	**3RK1902-0CW00**		1	1 unit	42D
Dismantling tools						
• For male and female contacts for 9-pole HAN Q4/2 inserts	C	**3RK1902-0AB00**		1	1 unit	42D
• For male and female contacts for 9-pole HAN Q8 inserts	B	**3RK1902-0AJ00**		1	1 unit	42D
Sealing caps For power socket connectors						
• 1 unit per pack	B	**3RK1902-0CK00**		1	1 unit	42D
• 10 units per pack	B	**3RK1902-0CJ00**		1	10 units	42D

3RK1902-0CW00

More connection technology products and accessories (e.g. crimping tools) can be found at our "Siemens Solution Partners Automation" under "Distributed Field Installation System" technology:
www.siemens.com/automation/partnerfinder

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories
For all M200D motor starters

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with IO communication							
3RK1902-4BA00-5AA0	**M12 plugs, straight** Screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4BA00-5AA0**		1	1 unit	42D
3RK1902-4DA00-5AA0	⑩ **M12 plugs, angular** Screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4DA00-5AA0**		1	1 unit	42D
3RK1902-4H...-5AA0	⑨, ⑩ **Control cables, assembled at one end** M12 plugs, angular, screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1902-4HB15-5AA0**		1	1 unit	42D
	• Cable length 5 m	C	**3RK1902-4HB50-5AA0**		1	1 unit	42D
	• Cable length 10 m	C	**3RK1902-4HC01-5AA0**		1	1 unit	42D
3RK1902-4PB15-3AA0	**Control cables, assembled at both ends** Straight M12 plug, straight M12 socket, screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D
Further accessories							
3RK1922-3BA00	**Handheld devices** For M200D motor starters (or for ET 200pro and ET 200S High-Feature motor starters) for local operation. The motor starter-specific serial interface cables must be ordered separately. The RS 232 interface cable 3RK1922-2BP00 is used for the MS M200D.	B	**3RK1922-3BA00**		1	1 unit	42D
	RS 232 interface cable Serial data connection between M200D (or ET 200pro) motor starters and the RS232 interface of a PC/PG/laptop (with the Motor Starter ES software) or the handheld device 3RK1922-3BA00.	B	**3RK1922-2BP00**		1	1 unit	42D
	USB interface cable, 2.5 m Serial data connection between M200D (or ET 200pro) motor starters and the USB interface of a PC/PG/laptop (with the Motor Starter ES software).	B	**6SL3555-0PA00-2AA0**		1	1 unit	346
3RK1901-1KA00	**M12 sealing caps** For sealing unused M12 input and output sockets – not for M12 AS-i communications interface for motor control ⑦ (one set contains 10 sealing caps)	►	**3RK1901-1KA00**		100	10 units	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories
For M200D motor starters for AS-Interface

Motor control with AS-i communication

3RK1902-4GB50-4AA0

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
⑦ **Control cables, assembled at one end** M12 socket, angular, screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
• Cable length 5 m	C	**3RK1902-4GB50-4AA0**		1	1 unit	42D

3RK1902-4CA00-4AA0

⑦ **M12 socket, angular** Screw fixing, 4-pole screw terminal, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1902-4CA00-4AA0**		1	1 unit	42D

3RK1901-1NR21

⑧ **AS-Interface M12 feeder**

For flat cable	For	Cable length	Cable end in feeder					
AS-i / U_{aux}	M12 socket	--	Not available	A	**3RK1901-1NR20**	1	1 unit	42C
AS-i / U_{aux}	M12 cable box	1 m	Not available	A	**3RK1901-1NR21**	1	1 unit	42C
AS-i / U_{aux}	M12 cable box	2 m	Not available	A	**3RK1901-1NR22**	1	1 unit	42C

3RK1901-1MN00

Cable terminating pieces For sealing of open cable ends (shaped AS-Interface cable) in IP67	►	**3RK1901-1MN00**		1	10 units	42C

Motor control with AS-i communication (continued)

3RX90..-0AA00

AS-Interface shaped cables[1)]

Material	Color	Quantity						
Rubber	Yellow (AS-Interface)	100 m roll	►	**3RX9010-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1 km drum	B	**3RX9012-0AA00**		1	1 unit	42C
	Black (24 V DC)	100 m roll	►	**3RX9020-0AA00**		1	1 unit	42C
	Black (24 V DC)	1 km drum	B	**3RX9022-0AA00**		1	1 unit	42C
TPE	Yellow (AS-Interface)	100 m roll	►	**3RX9013-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1 km drum	B	**3RX9014-0AA00**		1	1 unit	42C
	Black (24 V DC)	100 m roll	►	**3RX9023-0AA00**		1	1 unit	42C
	Black (24 V DC)	1 km drum	B	**3RX9024-0AA00**		1	1 unit	42C
TPE special version according to UL Class 2	Yellow (AS-Interface)	100 m roll	B	**3RX9017-0AA00**		1	1 unit	42C
	Black (24 V DC)	100 m roll	B	**3RX9027-0AA00**		1	1 unit	42C
PUR	Yellow (AS-Interface)	100 m roll	►	**3RX9015-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1 km drum	B	**3RX9016-0AA00**		1	1 unit	42C
	Black (24 V DC)	100 m roll	►	**3RX9025-0AA00**		1	1 unit	42C
	Black (24 V DC)	1 km drum	B	**3RX9026-0AA00**		1	1 unit	42C

[1)] See also Chapter 2 "Industrial Communication" → "Transmission media" → "AS-Interface shaped cables".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Further accessories							
3RK1904-2AB02	**AS-Interface addressing unit V 3.0** • For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5m	►	**3RK1904-2AB02**		1	1 unit	42C
3RK1902-4PB15-3AA0	**M12 addressing cables to M12** • Standard M12 cable for addressing slaves with M12 connection, e.g. K60R modules • When using the current version of the 3RK1904-2AB01 addressing unit • 1.5 m	C	**3RK1902-4PB15-3AA0**		1	1 unit	42D
Documentation							
	Manual[1)] SIRIUS M200D Motor Starter AS-Interface Basic **Manual**[2)] SIRIUS M200D Motor Starter AS-Interface Standard						

1) http://support.automation.siemens.com/WW/view/en/35016496
2) http://support.automation.siemens.com/WW/view/en/38722160

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Accessories
For M200D motor starters for PROFIBUS

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with PROFIBUS							
3RK1902-1DA00	**M12 plugs, angular** Screw fixing, 5-pole screw terminals, max. 0.75 mm², B-coded, no terminating resistor						
	• ⑪ 5 female contacts	B	**3RK1902-1DA00**		1	1 unit	42D
3RK1902-1BA00	• ⑫ 5 male contacts	B	**3RK1902-1BA00**		1	1 unit	42D
3RK1902-1G.	**Control cables, assembled at one end** M12, screw fixing, angular, B-coded, no terminating resistor						
	• ⑪ 5 female contacts, 3 m	C	**3RK1902-1GB30**		1	1 unit	42D
	• ⑪ 5 female contacts, 5 m	C	**3RK1902-1GB50**		1	1 unit	42D
	• ⑪ 5 female contacts, 10 m	C	**3RK1902-1GC10**		1	1 unit	42D
3RK1902-1N.	⑪ ⑫ **Control cables, assembled at both ends** M12, screw fixing, angular, pin/socket 5-pole, B-coded, no terminating resistor						
	• 3.0 m	C	**3RK1902-1NB30**		1	1 unit	42D
	• 5.0 m	C	**3RK1902-1NB50**		1	1 unit	42D
	• 10.0 m	C	**3RK1902-1NC10**		1	1 unit	42D
Further accessories							
	PROFIBUS trailing cables Max. acceleration 4 m/s², at least 3 000 000 bending cycles, bending radius at least 60 mm, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-3EH10**		1	1 m	5K2
	PROFIBUS FC Food bus cables With PE outer sheath for operation in the food and beverage industry, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-0GH10**		1	1 m	5K2
	PROFIBUS FC Robust bus cables With PUR outer sheath for operation in environments exposed to chemicals and mechanical loads, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-0JH10**		1	1 m	5K2
	Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2
Connection for 24 V power supply of the M200D PROFIBUS/PROFINET							
	See page 9/61						
Documentation							
	Manual[1)] SIRIUS Motor Starter M200D PROFIBUS/PROFINET						

1) http://support.automation.siemens.com/WW/view/en/38823402

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with PROFINET						
3RK1902-2H. **⑮ M12 plugs, angular** Screw fixing, 4-pole screw terminals, max. 0.75 mm², angular, D-coded						
• 4 male contacts	B	**3RK1902-2DA00**		1	1 unit	42D
⑮ Control cables, assembled at one end M12 for screw fixing, angular, 4-pole, D-coded,						
• 4 male contacts, 3 m	C	**3RK1902-2HB30**		1	1 unit	42D
• 4 male contacts, 5 m	C	**3RK1902-2HB50**		1	1 unit	42D
• 4 male contacts, 10 m	C	**3RK1902-2HC10**		1	1 unit	42D
3RK1902-2N. **⑮ Control cables, assembled at both ends** M12 for screw fixing, angular at both ends, 4-pole, D-coded, male contacts at both ends						
• 3 m	C	**3RK1902-2NB30**		1	1 unit	42D
• 5 m	C	**3RK1902-2NB50**		1	1 unit	42D
• 10 m	C	**3RK1902-2NC10**		1	1 unit	42D
Further accessories						
PROFINET IE FC TP standard cable GP 2 x 2 sold by the meter	A	**6XV1840-2AH10**		1	1 m	5K1
PROFINET IE FC TP trailing cable 2 x 2 sold by the meter	A	**6XV1840-3AH10**		1	1 m	5K1
PROFINET IE FC TP trailing cable GP 2 x 2 sold by the meter	A	**6XV1870-2D**		1	1 m	5K2
PROFINET IE FC TP torsion cable 2 x 2 sold by the meter	A	**6XV1870-2F**		1	1 m	5K2
PROFINET IE FC TP marine cable, 4-core sold by the meter	A	**6XV1840-4AH10**		1	1 m	5K1
Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1830-8AH10**		1	1 m	5K2

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection for 24 V power supply of the M200D PROFIBUS/PROFINET						
3RK1902-3DA00 **Plugs** On M200D, 7/8" for screw fixing, angular, screw terminal, 1.5 mm²						
• ⑬ 5 female contacts	B	**3RK1902-3DA00**		1	1 unit	42D
3RK1902-3BA00 • ⑭ 5 male contacts	B	**3RK1902-3BA00**		1	1 unit	42D
3RK1902-3G. **⑬ Supply lines, assembled at one end** 7/8" for screw fixing, angular, 1.5 mm²						
• 5 female contacts, 3 m	C	**3RK1902-3GB30**		1	1 unit	42D
• 5 female contacts, 5 m	C	**3RK1902-3GB50**		1	1 unit	42D
• 5 female contacts, 10 m	C	**3RK1902-3GC10**		1	1 unit	42D
3RK1902-3N. **⑬ ⑭ Supply lines, assembled at both ends** 7/8" for screw fixing, angular at both ends, 5-pole pin/socket, 1.5 mm²						
• 3 m	C	**3RK1902-3NB30**		1	1 unit	42D
• 5 m	C	**3RK1902-3NB50**		1	1 unit	42D
• 10 m	C	**3RK1902-3NC10**		1	1 unit	42D
6ES7194-3JA00-0AA0 **7/8" sealing caps** 1 pack = 10 units	A	**6ES7194-3JA00-0AA0**		1	10 units	250
Documentation						
See page 9/60						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

3RK4353-3.R58-0BA0

3RK4340-3.R51-.BA0

3RK4320-3.R51-.BA0

3RK4320-3.Q54-.BA.

3RK4320-5.Q64-.BA.

Portfolio of the SIRIUS 3RK43 MCU motor starter family

The SIRIUS MCU motor starter family (MCU = Motor Control Unit) rounds off the bottom end of the SIRIUS motor starter range.

This series of motor starters in a high degree of protection is a system solution for the cabinet-free controlling of AC loads in the field.

The MCU product range extends from I/O controlled motor starters – addressing a central sub-distribution board via I/O stations – in a plastic enclosure for simple applications to motor starters with AS-i communication in a rugged metal enclosure for demanding tasks.

The MCU motor starters are completely pre-wired inside, have a high degree of protection and are designed for switching and protecting any AC loads. They are mostly used on standard three-phase motors in direct or reversing duty up to 5.5 kW at 400/500 V AC (electromechanical switching) and 400/460 V AC (electronic switching).

The motor and short-circuit protection integrated in the MCUs consists either of an electromechanical controlgear assembly or solid-state overload protection and a motor starter protector unit for short-circuit protection.

MCUs with metal enclosure are designed for the switching of three-phase motors. Integrated control of the electrically operated motor brake with a braking voltage of 230 V AC or 400 V AC is a standard feature. The braking voltage is routed to the motor over the motor cable.

SIRIUS MCU motor starters have the following main features:

- Direct-on-line or reversing starters
- Up to 5.5 kW
- Plastic or metal enclosure
- Electromechanical or electronic switching
- With brake control 230 V AC or 400 V AC
- Integrated lockable repair switch
- Short-circuit protection with SIRIUS 3RV motor starter protector/circuit breaker
- Overload protection with thermal release (bimetal) or solid-state overload relay with wide range setting
- Power and load connection by means of an M screw
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- Robust and widely used M12 connection method for the AS-i bus connection and the digital inputs and outputs (on the MCU with metal enclosure)
- The LEDs (for AS-i bus connection) can provide comprehensive diagnostics of the device on the spot.

Locally controlled MCU motor starters in a plastic enclosure

These motor starters are designed for the autonomous operation of any AC loads – preferably three-phase motors.

Only the infeed needs to be connected (no bus connection or any other connection to a controller).

The motor is protected against short circuits (50 kA) and overloads (thermal overload release) by the integrated motor starter protector. No further measures are required for this function either (such as back-up fuses).

These motor starters have a key-operated switch "MAN-0-AUTO" for selecting Manual, 0 or Automatic mode and preventing unauthorized changes of operating mode.

In automatic mode the motor can be controlled automatically by connected sensors (level, temperature or pressure switches). The reversing starter is designed in addition with connections for 2 sensors so a reversal of direction is possible in accordance with these sensors. On the reversing starter the controls with interlock are pre-wired.

In manual mode a selector button is used by the operator for switching on, switching off and changing the direction of rotation.

I/O controlled MCU motor starters in a plastic enclosure

These motor starters offer an economical solution for controlling three-phase motors distributed in the field.

The internal controls (contactors) are operated by external control with 24 V DC.

On the reversing starter, the controls with interlock are pre-wired.

The status of the circuit breaker can be queried through its floating changeover contact. The status can adopt the following positions: activated – the contact is closed – and deactivated or tripped – the contact is open (I/O control).

MCU motor starters with AS-i bus connection in a plastic enclosure

This motor starter version offers an economical solution for controlling and monitoring conveyor belts, pumps, fans or compressors.

On this MCU the control commands and the status queries are sent over the AS-i bus. The yellow cable (bus) and the black AS-i cable for 24 V DC AUX are connected through a M12 plug.

The transparent enclosure top permits monitoring of the status LEDs. These MCUs come completely pre-wired inside.

MCU motor starters with AS-i bus connection in a metal enclosure for electromechanical or electronic switching

These MCUs with their rugged metal enclosure in degree of protection IP54 are ideal in particular for controlling and monitoring three-phase motors in harsh ambient conditions such as are often found in conveyor systems.

A special feature of this version is the manual local operation of the motor starter.

The key-operated switch "MAN-0-AUTO" for selecting Manual, 0 or Automatic mode prevents unauthorized changes of operating mode. In automatic mode the MCU is controlled through the AS-i bus.

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General data

In manual mode a selector button is used for switching on, switching off and changing the direction of rotation.

The status/diagnostics LEDs fitted to the cover indicate the current operating state of the motor starter.

Unlike the electromechanical starter, the solid-state motor starter has wear-free solid-state switching devices which guarantee a high switching frequency.

Another highlight of the electronic switching version is the solid-state overload relay for motor protection, which has a wide setting range for the motor current.

3RK4353-3.R58-0BA0

3RK4340-3.R51-.BA0

3RK4320-3.R51-.BA0

3RK4320-3.Q54-.BA.

3RK4320-5.Q64-.BA.

Type	SIRIUS MCU motor starters				
	Locally controlled Plastic enclosure Electromechanical switching	I/O controlled Plastic enclosure Electromechanical switching	For AS-Interface Plastic enclosure Electromechanical switching	For AS-Interface Metal enclosure Electromechanical switching	For AS-Interface Metal enclosure Electronic switching
Device functions (software features)					
Slave on the bus					
Fieldbus	--		✓ AS-i		
Bus connection	--		✓ M12		
Slave type	--		✓ AS-i Spec 2.0	✓ A/B acc. to Spec 2.1	
AS-i Slave Profile IO.ID.ID2	--		✓ 3.0.F	✓ 7.A.E	
Number of assigned AS-i addresses on the bus	--		✓ 1		
Number of stations	--		✓ Max. 31 devices	✓ Max. 62 devices	
Diagnostics					
LEDs	--		✓		
Process image					
Process image	--		✓ 2I/2O	✓ 4I/3O	
Data channels					
Manual local operation	✓	--		✓	
Inputs					
Number	✓ 1 on the direct-on-line starter 2 on the reversing starter	--	✓ 1	✓ 2	
• Of these in the process image	--		✓ DI1	✓ DI2 / DI3	
Connection	✓ Screw terminal, internal	--	✓ Screw terminal, internal	✓ M12 - A coded	
Input signal	✓ NO contacts	--	✓ Switching contact or 2-wire Bero	✓ Switching contact or 2/3-wire Bero	
Input level	✓ 230 V AC	--	✓ AS-i +		
Outputs					
Number	--		✓ 1 on the direct-on-line starter 0 on the reversing starter	✓ 1	
• Of these in the process image	--		✓ DO1	✓ DO2	
Connection	--		✓ Screw terminal, internal	✓ M12 - A coded	
Output level	--		✓ Relay contact, floating	✓ AUX-PWR+ (24 V DC)	
Motor protection					
Overload protection	✓ Thermal overload release				✓ Electronic overload releases Wide range
Short-circuit protection	✓				
Auto-RESET	--				✓
Temperature sensor	--			✓ TC (Thermoclick)	
Device functions					
Response when repair switch is tripped	Floating contact		✓ Signal through AS-i		
Plug monitoring	--			Possible (with plug option)	

✓ Function available -- Function not available

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General data

Benefits

- High degree of protection, namely IP55 on MCU motor starters in a plastic enclosure and IP54 on motor starters in a metal enclosure, enables distributed configurations in the field and saves space in the control cabinet
- Comprehensive motor protection thanks to integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers or integrated solid-state overload relays (solid-state starters)
- Wide range version (motor current) through solid-state overload relay
- Controlled stopping through brake control for motor brake
- Cable connection by means of economical M screw (optionally with plug-in connection)
- Simple mounting for AS-i and external auxiliary voltage (24 V DC) over an M12 connection
- Status/diagnostics displays with built-in LEDs
- Manual operation: An integrated key-operated switch "MAN-0-AUTO" and a selector button for switching on, switching off and changing the direction of rotation for control purposes during commissioning or maintenance
- Easy and user-friendly control and monitoring through AS-Interface bus communication
- Robust and widely used M12 connection method for digital inputs and outputs to connect I/O stations and the AS-i bus connection increase flexibility and prevent errors in the system configuration.

Application

Main areas of use

Controlled by I/Os and AS-i bus:

- Airports
- Automotive industry
- Intralogistics

Locally controlled

- Industrial, commercial and agricultural applications (for autonomously controlled motors such as pumps, fans, etc.)

Technical specifications

Type		SIRIUS MCU motor starters				
		Locally controlled Plastic enclosure Electromechanical switching	I/O controlled Plastic enclosure Electromechanical switching	For AS-Interface Plastic enclosure Electromechanical switching	For AS-Interface Metal enclosure Electromechanical switching	For AS-Interface Metal enclosure Electronic switching
Mechanics and environment						
Mounting dimensions (W x H x D)	mm	182 x 220 x 145			245 x 215 x 205	
Permissible ambient temperature • During operation	°C	-25 ... +35			-25 ... +50 max. +65 with reduction	
Weight	g	1 300	1 200	1 500 / 1 800	5 800	6 400
Permissible mounting position	°	On the wall 360, inclination ±30			On the wall 360, inclination ±20	
Degree of protection according to IEC 529		IP54	IP55		IP54	
Cooling		Convection				
Electrical specifications						
Control circuit						
Operational voltage U_{As-i}	V DC	--		26.5 ... 31.6		
Control supply voltage U_{aux}	V DC	--		20.4 ... 26.4	20.4 ... 28.8	
Control supply voltage	V	230 AC, from inside	20.4 ... 26.4 DC	--		
Power consumption from AS-i (incl. 200 mA sensor supply)	mA	--		≤ 250	≤ 270	
Main circuit						
Rating for three-phase motor at 400 V, 50 Hz, AC-3		See "Selection and ordering data"				
Rated operational voltage	V AC	400 (tolerance: -15%, +10%)				
Rated insulation voltage	V AC	600				
Incoming power supply		M screw				
Motor feeder		M screw				
Rated operational current for starters I_e at 400 V AC		See "Selection and ordering data"				
Trip class		CLASS 10				
Type of coordination acc. to IEC 60947-4-1		1				
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	50				
Brake version						
Operational voltage	V AC	--			400 or 230	
Uninterrupted current		--			Max. 5 % of I_e	
Short-circuit protection		--			Integrated	

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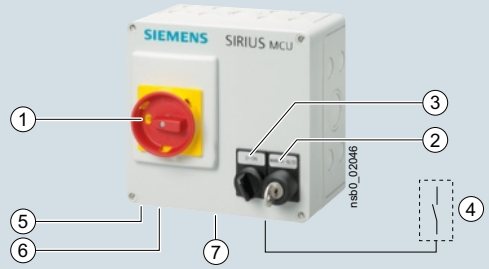
Overview

MCU, locally controlled, plastic enclosure

- For manual and automatic mode
- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Main control switch (red/yellow)
- Lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Plastic enclosure
- Degree of protection IP54
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- Key-operated switch for manual/automatic mode (MAN-0-AUTO)
- In manual mode the user can operate the motor with the knob-operated control switch using the ON function (0-ON) on the direct-on-line starter or the Forwards/Reverse function (Rev-0-For) on the reversing starter.
- Automatic mode: Through connection of one sensor on the direct-on-line starter or 2 sensors on the reversing starter for e.g. temperature, pressure, level etc., the motor can be controlled in automatic mode by the connected sensors.
- 4 x M20 glands enclosed

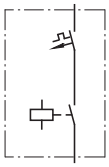
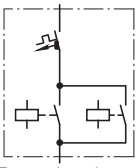


1 Main switch
2 Key-operated switch manual/automatic mode
3 Knob-operated switch manual mode
4 External sensor
5 Main energy supply by means of M screws (max. 6 mm^2)
6 Power loop-through connection possible (daisy chain)
7 Load outgoing feeder by means of M screws

(Feeder positions only examples - feeders can be laid in all directions)

MCU, locally controlled, plastic enclosure, for manual and automatic mode

Selection and ordering data

	Rated current I_e	Suitable for three-phase motors[1] with P	Setting range Thermal overload release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	1	0.25	0.7 ... 1	C	**3RK4353-3CR58-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4353-3DR58-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4353-3ER58-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4353-3FR58-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4353-3HR58-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4353-3JR58-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4353-3LR58-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4353-3MR58-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4353-3NR58-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4353-3PR58-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	1	0.25	0.7 ... 1	C	**3RK4353-3CR58-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4353-3DR58-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4353-3ER58-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4353-3FR58-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4353-3HR58-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4353-3JR58-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4353-3LR58-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4353-3MR58-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4353-3NR58-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4353-3PR58-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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Motor Starters for Use in the Field, High Degree of Protection

SIRIUS MCU Motor Starters

MCU motor starters, I/O controlled
Plastic enclosure, electromechanical switching

Overview

MCU, I/O controlled, plastic enclosure

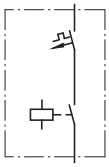
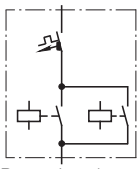
- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Plastic enclosure
- Degree of protection IP55
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- Control circuit: I/O-wiring; control inputs 24 V DC
- 4 x M20 glands enclosed

1 Main control switch / repair switch
2 Control inputs (24 V DC)
3 Load outgoing feeder through M screw
4 Main incoming power supply through M screw (max. 6 mm^2)
5 Main power loop possible (daisy chain)

(position of outgoing units as example – outgoing units are possible on all sides)

MCU, I/O controlled, plastic enclosure

Selection and ordering data

	Rated current I_e	Suitable for three-phase motors[1] with P	Setting range Thermal overload release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	0.63	0.18	0.45 ... 0.63	C	**3RK4340-3AR51-0BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4340-3BR51-0BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4340-3CR51-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4340-3DR51-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4340-3ER51-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4340-3FR51-0BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4340-3GR51-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4340-3HR51-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4340-3JR51-0BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4340-3KR51-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4340-3LR51-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4340-3MR51-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4340-3NR51-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4340-3PR51-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	0.63	0.18	0.45 ... 0.63	C	**3RK4340-3AR51-1BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4340-3BR51-1BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4340-3CR51-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4340-3DR51-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4340-3ER51-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4340-3FR51-1BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4340-3GR51-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4340-3HR51-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4340-3JR51-1BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4340-3KR51-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4340-3LR51-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4340-3MR51-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4340-3NR51-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4340-3PR51-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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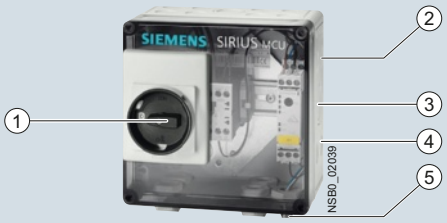
Overview

MCU for AS-i, plastic enclosure

- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Transparent plastic enclosure with LED status displays for monitoring the AS-i status
- Degree of protection IP55
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- AS-Interface through M12 plug-in terminal
- 4 x M20 glands enclosed
- Communication: AS-Interface 2I/2O (standard slaves)

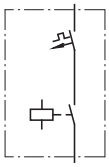
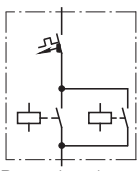


(1) Main control switch / repair switch
(2) Load outgoing feeder through M screw
(3) Main incoming power supply through M screw (max. 6 mm²)
(4) Main power loop possible (daisy chain)
(5) AS-i communication / U_{aux} (24 V DC) through M12 plug

(position of outgoing units as example – outgoing units are possible on all sides)

MCU for AS-i, plastic enclosure

Selection and ordering data

	Rated current I_e	Suitable for three-phase motors[1] with P	Setting range Thermal overload release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	0.63	0.18	0.45 ... 0.63	C	**3RK4320-3AR51-0BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4320-3BR51-0BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4320-3CR51-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4320-3DR51-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4320-3ER51-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4320-3FR51-0BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4320-3GR51-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4320-3HR51-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4320-3JR51-0BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4320-3KR51-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4320-3LR51-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4320-3MR51-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4320-3NR51-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4320-3PR51-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	0.63	0.18	0.45 ... 0.63	C	**3RK4320-3AR51-1BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4320-3BR51-1BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4320-3CR51-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4320-3DR51-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4320-3ER51-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4320-3FR51-1BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4320-3GR51-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4320-3HR51-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4320-3JR51-1BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4320-3KR51-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4320-3LR51-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4320-3MR51-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4320-3NR51-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4320-3PR51-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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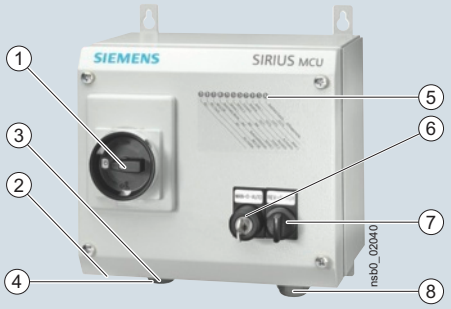
MCU motor starters for AS-Interface
Metal enclosure, electromechanical switching

Overview

MCU for AS-i, metal enclosure, electromechanical

- Direct-on-line or reversing starters up to 12 A
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers CLASS 10 with short-circuit breaking capacity I_{cu} = 50 kA at AC 400 V
- Overload protection with thermal release (bimetal)
- Manual operation and key-operated switch for operating mode selection
- LED status display of the operating states
- Metal enclosure
- Degree of protection IP54
- Switched brake control 400 V or 230 V
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- 2 x M25 glands
- 1 x M12 plug for AS-i/auxiliary voltage (24 V DC)
- 2 × M12 socket for connection of 2 sensors
- 1 × M12 socket for connection of one actuator
- Communication: AS-Interface 4I/3O (slaves in A/B technology can be addressed)



1 Main control switch / repair switch
2 Main incoming power supply (400 V AC) through M screw
3 AS-i communication / U_{aux} (24 V DC) through M12 plug
4 2 sensor inputs (M12 socket), 1 actuator output (M12 socket)
5 LED status displays of the operating states
6 Key-operated switch: Manual-0-Auto
7 Manual operation: ON/OFF or Left-0-Right (selector button)
8 Load outgoing feeder through M screw

MCU for AS-i, metal enclosure, electromechanical switching

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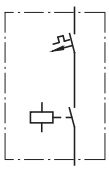
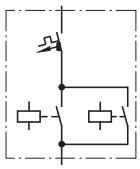
Selection and ordering data

	Rated current I_e	Suitable for three-phase motors[1] with P	Setting range Thermal overload release	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	0.63	0.18	0.45 ... 0.63	C	**3RK4320-3AQ54-0BA□**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4320-3BQ54-0BA□**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4320-3CQ54-0BA□**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4320-3DQ54-0BA□**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4320-3EQ54-0BA□**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4320-3FQ54-0BA□**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4320-3GQ54-0BA□**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4320-3HQ54-0BA□**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4320-3JQ54-0BA□**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4320-3KQ54-0BA□**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4320-3LQ54-0BA□**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4320-3MQ54-0BA□**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4320-3NQ54-0BA□**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4320-3PQ54-0BA□**		1	1 unit	42E
	Brake control / V					***Additional price***			
	• 230					**2** None			
	• 400					**3** None			
Reversing starters									
 Reversing duty	0.63	0.18	0.45 ... 0.63	C	**3RK4320-3AQ54-1BA□**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK4320-3BQ54-1BA□**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK4320-3CQ54-1BA□**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK4320-3DQ54-1BA□**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK4320-3EQ54-1BA□**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK4320-3FQ54-1BA□**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK4320-3GQ54-1BA□**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK4320-3HQ54-1BA□**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK4320-3JQ54-1BA□**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK4320-3KQ54-1BA□**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK4320-3LQ54-1BA□**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK4320-3MQ54-1BA□**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK4320-3NQ54-1BA□**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK4320-3PQ54-1BA□**		1	1 unit	42E
	Brake control / V					***Additional price***			
	• 230					**2** None			
	• 400					**3** None			

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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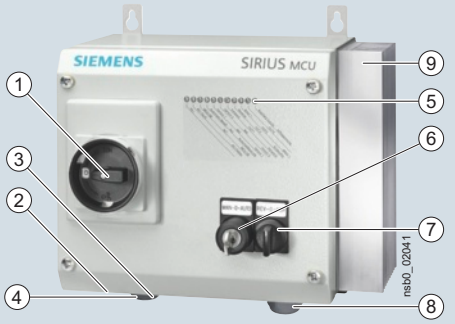
MCU motor starters for AS-Interface
Metal enclosure, electronic switching

Overview

MCU for AS-i, metal enclosure, electronic

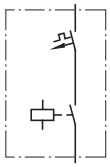
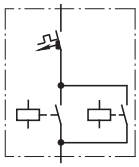
- Direct-on-line or reversing starters up to 12 A
- Switching frequency up to 3 600/h
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Short-circuit protection with SIRIUS 3RV motor starter protectors/circuit breakers
- Overload protection with solid-state overload relay
- Manual operation and key-operated switch for operating mode selection
- LED status display of the operating states
- Metal enclosure
- Degree of protection IP54
- Switched brake control 400 V or 230 V
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- 2 x M25 glands
- 1 x M12 plug for AS-i/auxiliary voltage (24 V DC)
- 2 × M12 plugs for connection of 2 sensors
- 1 × M12 socket for connection of one actuator
- Communication: AS-Interface 4I/3O (slaves in A/B technology can be addressed)



1 Main control switch / repair switch
2 Main incoming power supply (400 V AC) through M screw
3 AS-i communication / U_{aux} (24 V DC) through M12 plug
4 2 sensor inputs (M12 socket), 1 actuator output (M12 socket)
5 LED status displays of the operating states
6 Key-operated switch: Manual-0-Auto
7 Manual operation: ON/OFF or Left-0-Right (selector button)
8 Load outgoing feeder through M screw
9 Heat sink

MCU for AS-i, metal enclosure, electronic switching

Selection and ordering data

	Rating for three-phase motor Rated value[1]	Current setting value of the inverse-time delayed overload release I_e	Brake control	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	V						
Direct-on-line starters									
	0.12 … 0.37	0.32 … 1.25	230	C	**3RK4320-5DQ64-0BA2**		1	1 unit	42E
	0.55 … 1.5	1 … 4	230	C	**3RK4320-5JQ64-0BA2**		1	1 unit	42E
	1.1 … 5.5	3 … 12	230	C	**3RK4320-5PQ64-0BA2**		1	1 unit	42E
	0.12 … 0.37	0.32 … 1.25	400	C	**3RK4320-5DQ64-0BA3**		1	1 unit	42E
	0.55 … 1.5	1 … 4	400	C	**3RK4320-5JQ64-0BA3**		1	1 unit	42E
	1.1 … 5.5	3 … 12	400	C	**3RK4320-5PQ64-0BA3**		1	1 unit	42E
Direct-on-line start									
Reversing starters									
	0.12 … 0.37	0.32 … 1.25	230	C	**3RK4320-5DQ64-1BA2**		1	1 unit	42E
	0.55 … 1.5	1 … 4	230	C	**3RK4320-5JQ64-1BA2**		1	1 unit	42E
	1.1 … 5.5	3 … 12	230	C	**3RK4320-5PQ64-1BA2**		1	1 unit	42E
	0.12 … 0.37	0.32 … 1.25	400	C	**3RK4320-5DQ64-1BA3**		1	1 unit	42E
	0.55 … 1.5	1 … 4	400	C	**3RK4320-5JQ64-1BA3**		1	1 unit	42E
	1.1 … 5.5	3 … 12	400	C	**3RK4320-5PQ64-1BA3**		1	1 unit	42E
Reversing duty									

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The MCU motor starters are equipped with standardized interfaces for data and energy (option).

Connection technology products coordinated with the SIRIUS MCU motor starters can be found at "Siemens Solution Partners Automation" under "Distributed Field Installation System" technology: www.siemens.com/automation/partnerfinder

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Documentation						
Manual[1)] SIRIUS MCU Motor Starter						

1) http://support.automation.siemens.com/WW/view/en/32033334

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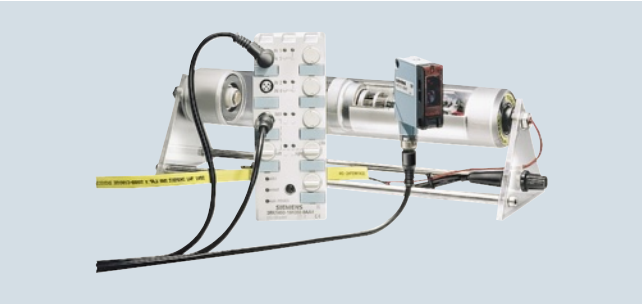
General data

Overview

AS-Interface 3RK1400-1MQ01-0AA4 double direct-on-line starter 24 V DC

With the K60 AS-Interface 24 V DC motor starters for the low-end performance range up to 70 W, it is now possible to connect 24 V DC motors and the associated sensors directly to the AS-Interface quickly and easily.



Connection of an actuator roller with integrated DC motor to an AS-Interface 24 V DC motor starter

Three different versions are available:

- Single direct-on-line starters
  (without brake and reversible quick-stop function)
- Double direct-on-line starters
  (with brake and reversible quick-stop function)
- Reversing starters
  (with brake and reversible quick-stop function)

DC motors are connected to the module using M12 plug-in connections. The sensors and the module electronics can be supplied from the yellow AS-Interface cable. An auxiliary voltage (24 V DC) is only required for supplying the outputs, which can be provided via the black AS-Interface cable.

Quick stop function

All AS-Interface 24 V DC motor starters feature a quick-stop function which can be switched on and off as required using a switch integrated into the module. The quick-stop function allows a connected motor to be disconnected immediately using an applied sensor signal (High). The switch for the quick-stop function is located alongside the input sockets and is protected by an M12 sealing cap.

Brake

The double direct-on-line starter and the single reversing starter versions feature an integrated permanently set brake function, i.e. as soon as the output signal is set to "0", the motor is braked.

Start-up using integrated buttons

Buttons integrated into the module (below the output sockets) can be used to set the motor used. The buttons are protected by an M12 sealing cap.

Note concerning double and reversing starters:

If an input with the quick-stop function receives a "High" signal, the corresponding output (e.g. quick-stop input 1 –> output 1) is switched off within the device (the motor is braked). The manual key function (Key 1/2) for local operation is only permitted to be used during "CPU Stop" in the higher-level PLC.

Note concerning single direct-on-line starters:

If an input with the quick-stop function receives a "High" signal, the corresponding output (e.g. quick-stop input 1 –> output 1) is switched off within the device (the motor runs down without being braked). The manual key function (Key 1) for local operation is only permitted to be used and defined during "CPU Stop" in the higher-level PLC.

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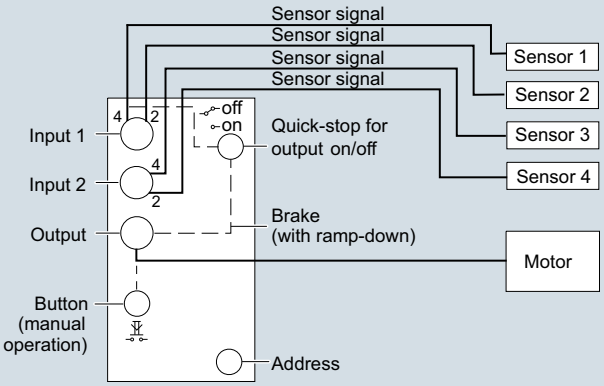
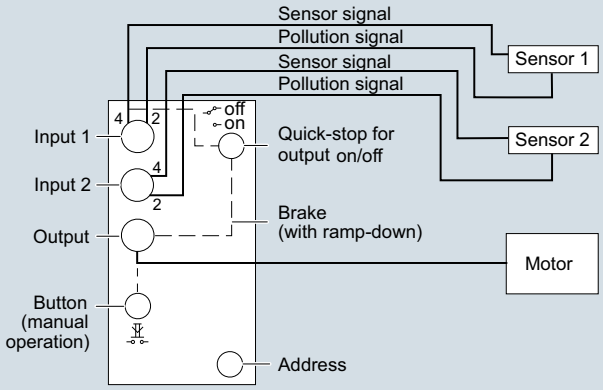
Applications

Single direct-on-line starter without brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication

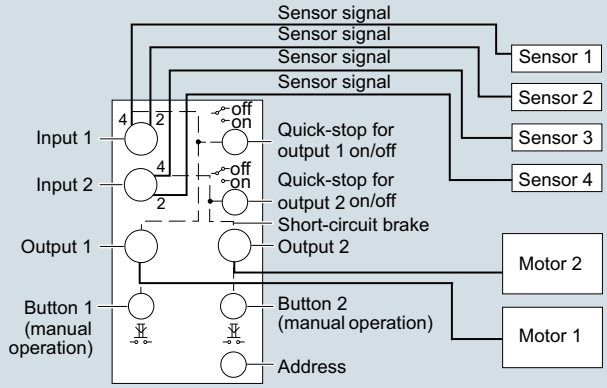


2nd possibility: Connection to a maximum of two sensors with pollution indication

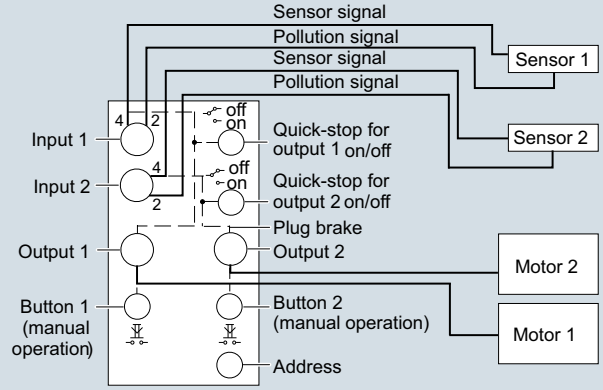


Double direct-on-line starter with brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication

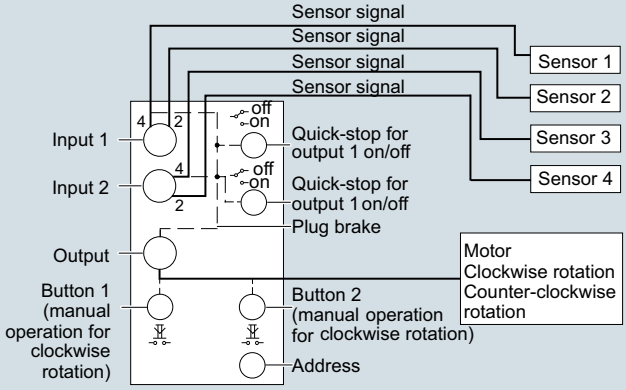


2nd possibility: Connection to a maximum of two sensors with pollution indication

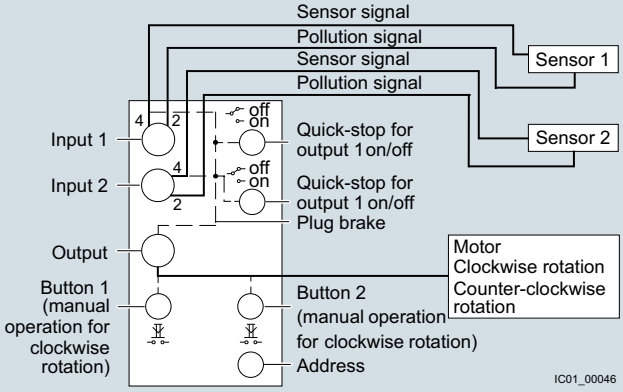


Single reversing starter with brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication



2nd possibility: Connection to a maximum of two sensors with pollution indication



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General data

Selection and ordering data

Version	Inputs/ outputs	Current carrying capacity of outputs	Slave type	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A							
Motor starters (width 60 mm)									
Single direct-on-line starters[1]	4 inputs / 1 output	2	Standard	C	**3RK1400-1NQ01-0AA4**		1	1 unit	42C
Double direct-on-line starters[1]	4 inputs / 2 outputs	1 x 3 or 2 x 2	Standard	B	**3RK1400-1MQ01-0AA4**		1	1 unit	42C
Single reversing starters[1]	4 inputs / 1 output	2.5	Standard	C	**3RK1400-1MQ03-0AA4**		1	1 unit	42C

3RK1400-1MQ01-0AA4

[1] Modules supplied without mounting plate.

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
K60 mounting plates Suitable for all K60 compact modules						
• Wall mounting	►	**3RK1901-0CA00**		1	1 unit	42C
• Standard rail mounting	►	**3RK1901-0CB01**		1	1 unit	42C
AS-Interface sealing caps M12 For free M12 sockets	►	**3RK1901-1KA00**		100	10 units	42C
AS-Interface sealing caps M12, tamper-proof For free M12 sockets	A	**3RK1901-1KA01**		100	10 units	42C
Sealing sets • For K60 mounting plate and standard distributor • Cannot be used for K45 mounting plate • Set contains one straight and one shaped seal	A	**3RK1902-0AR00**		100	5 units	42D

3RK1901-0CA00

3RK1901-1KA00

3RK1901-1KA01

3RK1902-0AR00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Hybrid fieldbus connection with two HanBrid sockets

Control cabinet bushing with two M12 sockets

Hybrid fieldbus connections with HanBrid sockets designed as cabinet bushings transmit data and energy from the control cabinet (IP20) to the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid fieldbus cable.

On the cabinet bushings with two M12 sockets for the PROFIBUS M12 connecting cables, the 24 V supply of the motor starters is implemented via separate 7/8" connecting cables.

Passive and active hybrid fieldbus connections

The hybrid fieldbus connections are available in two versions which differ in their functionality. They are:

- The passive version
- The active version with signal refresher function to considerably increase the maximum PROFIBUS cable length

Connection methods

The field side is connected using HanBrid or M12 plug-in connectors.

In the case of HanBrid, the following versions are available:

- Socket/socket for infeeding into the field
- Pin/socket for looping in the field

The M12 version is generally configured with socket/socket.

Following connections are available at the rear (cabinet side) in the case of the passive glands:

- Direct connection
- FastConnect connection

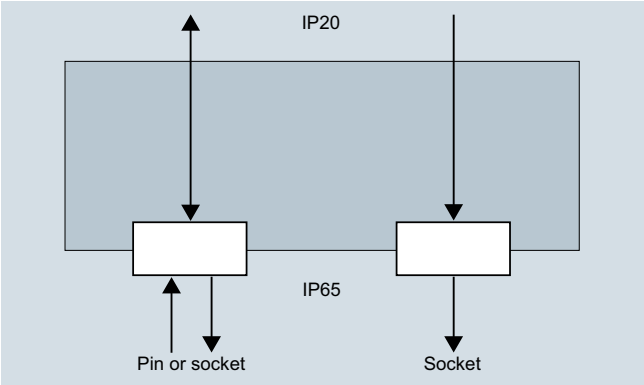
The active gland with refresher function has 9-pole Sub-D sockets for the rear connection.

Auxiliary power infeed

The HanBrid plug-in design offers the possibility of infeeding or looping through not only the Profibus signal but also 2 separate auxiliary voltages of 24 V DC (switched/unswitched) into the field. The terminal block with spring-type terminals at the rear (cabinet side) of the hybrid fieldbus connection provides a variety of interconnecting operations for these auxiliary voltages.

Passive hybrid fieldbus connections

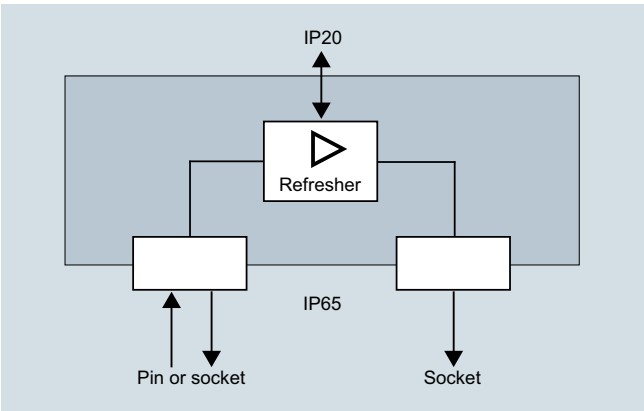
- Gland from the control cabinet (IP20) into the field (IP65)
- HanBrid plug-in design socket/socket or pin/socket
- Direct connection or FastConnect connection for PROFIBUS at the rear
- Terminal block with spring-type terminals (0.25 … 2.5 mm^2) for infeeding or looping through the auxiliary voltages



Hybrid fieldbus connection as passive cabinet bushing

Active hybrid fieldbus connections with refresher function

- Gland from the control cabinet (IP20) into the field (IP65)
- 3 independent, electrically separated PROFIBUS segments
- Signal refresher function from and to all segments
- Automatic continuous baud rate detection
- Status/diagnostics displays with LEDs
- Cascading depth of a maximum 9 hybrid fieldbus connections
- HanBrid plug-in design socket/socket and pin/socket
- M12 plug-in design socket/socket
- 9-pole Sub D socket connection for PROFIBUS at the rear
- Terminal block with spring-type terminals (0.25 … 2.5 mm^2) for infeeding or looping through the auxiliary voltages



Hybrid fieldbus connection as active control cabinet bushing with refresher function

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Hybrid Fieldbus Connections

General data

Technical specifications

Type		Passive hybrid fieldbus connections	Active hybrid fieldbus connections
Mechanics and environment			
Dimensions (W x H x D)	mm	93 x 103 x 65	
Cutout (W x H)	mm	80 x 90	
Temperature range	°C	-25 ... +60	
Degree of protection		IP20 internal / IP65 on field side	
Material/enclosure	mm	Plastic (black PC), flame retardant	
Electrical specifications			
Rated operational voltage • 24 V DC not switched (NS) • 24 V DC switched (S)	 V DC V DC	 24, ±25 % 24, ±25 %	
Max. rated current	A	10	
Power supply		--	From 24 V DC not switched (NS)
Max. power consumption	mA	--	130
Mains buffering	ms	--	> 20
Baud rate detection		--	Automatic
Maximum cascading depth		--	9 hybrid fieldbus connections
Baud rates	kbit/s	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500/1 500 / 3 000 / 6 000 /12 000	
Electrical separation	V DC	500	

Selection and ordering data

Hybrid fieldbus connection on the field side:
With socket/socket (HanBrid)

With pin/socket (HanBrid)

With socket/socket (M12)

Link type / function	Connection IP65	Connection IP20 (PROFIBUS)	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Hybrid fieldbus connections								
Passive								
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	Direct connection	B	**3RK1911-1AA22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin/socket (2 x HanBrid)	Direct connection	B	**3RK1911-1AA32**		1	1 unit	42D
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	PROFIBUS FastConnect bus connector	B	**3RK1911-1AF22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin/socket (2 x HanBrid)	PROFIBUS FastConnect bus connector	B	**3RK1911-1AF32**		1	1 unit	42D
Active (refresher)								
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	9-pole Sub D socket	B	**3RK1911-1AJ22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin/socket (2 x HanBrid)	9-pole Sub D socket	B	**3RK1911-1AJ32**		1	1 unit	42D
• Cu/Cu, for feeding into the field	Socket/socket (2 x M12)	9-pole Sub D socket	B	**3RK1911-1AK22**		1	1 unit	42D

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
 6ES7194-1JB10-0XA0	**Sealing caps for HanBrid** Protective cover for bus and power supply connection (pack of 10)	A	**6ES7194-1JB10-0XA0**		1	10 units	250

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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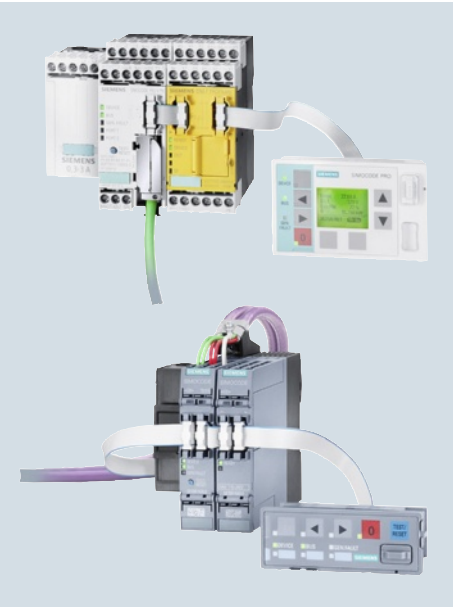
Monitoring and Control Devices



Price groups
PG 200, 2SP, 401, 470, 41B, 41F, 41H, 41L, 42C, 42J, 4N1, 5K1, 5P1

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Notes:

3RT191. function modules can be found

- in the catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool
e.g. from 3UG3 to 3UG4 see www.siemens.com/sirius/conversion-tool

[1)] See Catalog ST 70 "Products for Totally Integrated Automation".

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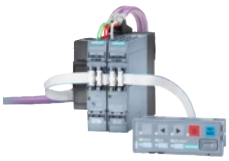
Introduction

Overview



Type	SIMOCODE pro C	SIMOCODE pro S	SIMOCODE pro V/ SIMOCODE pro V PROFINET	Page
SIMOCODE 3UF motor management and control devices				
Basic units	✓	✓	✓	10/14
Current measuring modules	✓	✓	✓	10/15
Current/voltage measuring modules	--	--	✓	10/15
Decoupling modules	--	--	✓	10/15
Operator panels	✓	✓	✓	10/15
Operator panels with display	--	--	✓	10/15
Expansion modules	--	✓	✓	10/16
Fail-safe expansion modules	--	--	✓	10/18
Current transformers	✓	✓	✓	10/28
SIMOCODE ES (TIA Portal)	✓	✓	Available soon	10/22
SIMOCODE ES 2007	✓	✓	✓	10/24
SIMOCODE pro block library for SIMATIC PCS 7	✓	Available soon	✓	10/26

✓ Available
-- Not available

Type	Basic units	Expansion modules	Software	Page
LOGO! logic modules				
LOGO! Modular basic versions	✓	--	--	10/30
SIPLUS LOGO! Modular basic versions[1)]	✓	--	--	10/31
LOGO! Modular pure versions	✓	--	--	10/32
SIPLUS LOGO! Modular pure versions[1)]	✓	--	--	10/33
LOGO! Modular expansion modules	--	✓	--	10/34
SIPLUS LOGO! Modular expansion modules[1)]	--	✓	--	10/35
LOGO! CM EIB/KNX communication modules	--	✓	--	10/36
LOGO! CSM unmanaged	--	✓	--	10/37
AS-Interface connections for LOGO!	--	✓	--	10/38
LOGO!Contact	--	✓	--	10/40
LOGO! Software	--	--	✓	10/41

✓ Corresponds to
-- Does not correspond to

[1)] Devices with extended temperature range and medial loading.

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Type Page	**3RP15** 10/51	**3RP20** 10/57	**7PV15** 10/60	**3RT19** 10/64
Timing relays				
Enclosure:				
• 17.5 mm industry and household equipment installation	--	--	✓	--
• 22.5 mm industry	✓	--	--	--
• 45 mm industry	--	✓	--	--
• For contactor sizes S0 to S12	--	--	--	✓
Monofunction	✓	✓	✓	✓
Multifunction	✓	✓	✓	--
Monovoltage	--	--	--	✓
Combination voltage	✓	✓	✓	--
Wide voltage range	✓	✓	✓	--
Application:	--	--	--	--
• Control systems and mechanical engineering	✓	✓	✓	✓
• Infrastructure	--	--	✓	--
• Mounting onto contactors	--	--	--	✓

✓ Corresponds to or possible

-- Does not correspond to or not possible

Type	**3UG451., 3UG461.**	**3UG463.**	**3RR21, 3RR22, 3UG4621, 3UG4622**	**3UG4641**	**3UG4625 with 3UL23**	**3UG458.**	**3UG4501**	**3UG4651**	**Page**
Monitoring relays									
Line monitoring	✓	--	--	--	--	--	--	--	10/87
Voltage monitoring	--	✓	--	--	--	--	--	--	10/92
Current monitoring	--	--	✓	--	--	--	--	--	10/71, 10/95
Active current monitoring	--	--	3RR22: ✓	✓	--	--	--	--	10/71, 10/98
Power factor monitoring	--	--	--	✓	--	--	--	--	10/98
Residual current monitoring	--	--	--	--	✓	--	--	--	10/101
Insulation monitoring	--	--	--	--	--	✓	--	--	10/107, 10/110
Level monitoring	--	--	--	--	--	--	✓	--	10/115
Speed monitoring	--	--	--	--	--	--	--	✓	10/119

✓ Available

-- Not available

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Introduction

Type	3UG481.	3UG4832	3RR24	3UG4822	3UG4841	3UG4825 with 3UL23	3UG4851	Page
Monitoring relays for IO-Link								
Line monitoring	✓	--	--	--	--	--	--	10/127
Voltage monitoring	--	✓	--	--	--	--	--	10/130
Current monitoring	--	--	✓	✓	--	--	--	10/79, 10/133
Power factor and active current monitoring	--	--	✓	--	✓	--	--	10/79, 10/136
Residual current monitoring	--	--	--	--	--	✓	--	10/140
Speed monitoring	--	--	--	--	--	--	✓	10/143

✓ Available
-- Not available

Type	3RS10, 3RS11, 3RS20, 3RS21	3RS14, 3RS15	3RN1	3RS17	Page
Temperature monitoring relays					
Temperature monitoring	✓	--	--	--	10/151, 10/154, 10/157
Temperature monitoring relays for IO-Link					
Temperature monitoring for IO-Link	--	✓	--	--	10/166, 10/169
Thermistor motor protection					
Thermistor motor protection	--	--	✓	--	10/172
Interface converters					
Interface converters	--	--	--	✓	10/181

✓ Available
-- Not available

10

Connection methods

The monitoring and control devices are available with screw or spring-type terminals.

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e/d according to ATEX directive 94/9/EC

The communication-capable, modularly designed SIMOCODE pro motor management system (SIRIUS Motor Management and Control Devices) protects motors of types of protection EEx e and EEx d in potentially explosive areas.

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads.

The SIRIUS SIMOCODE pro 3UF7 motor management system is certified for the protection of motors in areas subject to explosion hazard according to

- ATEX Ex I (M2); equipment group I, category M2 (mining)
- ATEX Ex II (2) GD; equipment group II, category 2 in area GD.

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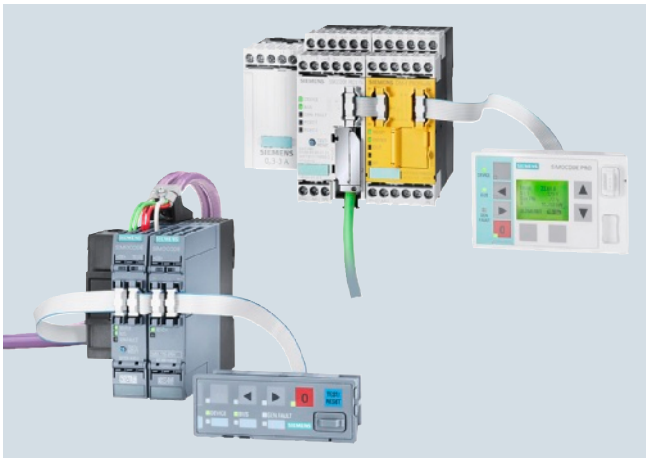
Overview



SIMOCODE pro S for efficient entry into motor management and SIMOCODE pro V for maximum functionality

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between I&C and motor feeder, increases plant availability and allows significant savings to be made for installation, commissioning, operation and maintenance of a system.

When SIMOCODE pro is installed in the low-voltage switchboard, it is the intelligent interface between the higher-level automation system and the motor feeder and includes the following:

- Multifunctional, solid-state full motor protection that is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- Detailed operating, service and diagnostics data
- Open communication through PROFIBUS DP, PROFINET and OPC UA
- Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508, IEC 62061) or PL e with Category 4 (EN ISO 13849-1)
- SIMOCODE ES is the software package for SIMOCODE pro parameterization, start-up and diagnostics.

Device series

SIMOCODE pro is structured into several functionally tiered series:

- SIMOCODE pro C, as a compact system for direct-on-line starters and reversing starters or for controlling a motor starter protector
- SIMOCODE pro S, the smart system for direct-on-line, reversing, and wye-delta starters or for controlling a motor starter protector or soft starter. Its expandability with a multifunction module provides comprehensive input/output project data volume, precise ground-fault detection via the 3UL23 residual-current transformers and temperature measurement.
- SIMOCODE pro V, as a variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules

Expansion possibilities	SIMOCODE pro C PROFIBUS	pro S PROFIBUS	pro V[3] PROFIBUS[1]	PROFINET
Operator panels	✓	✓	✓	✓
Operator panels with display	--	--	✓	✓
Current measuring modules	✓	✓	✓	✓
Current/voltage measuring modules	--	--	✓	✓
Decoupling modules	--	--	✓	✓
Expansion modules:				
• Digital modules	--	--	2	2
• Fail-safe digital modules[2]	--	--	1	1
• Analog modules	--	--	1	2
• Ground-fault modules	--	--	1	1
• Temperature modules	--	--	1	2
• Multifunction modules	--	1	--	--

✓ Available

-- Not available

1) When an operator panel with display and/or a decoupling module are used, more restrictions on the number of expansion modules connectable per basic unit must be observed, see page 10/13.

2) The fail-safe digital module can be used instead of one of the two digital modules.

3) Maximum of 5 expansion modules.

Per feeder each system always comprises one basic unit and one separate current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected as a unit (one behind the other) or separately (side by side). The motor current to be monitored is decisive only for the choice of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to the SIMOCODE pro V and SIMOCODE pro S by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit. With the DM-F Local and DM-F PROFIsafe fail-safe digital modules it is also possible to integrate the fail-safe disconnection of motors in the SIMOCODE pro V motor management system.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between the modules (e.g. between the basic unit and the current measuring module) must not exceed 2.5 m. The total length of all the connection cables per system interface of the basic unit may be up to 3 m.

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General data

Article No. scheme

Digit of the Article No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th
	□□□□	□	□	□	–	1	□	□	0	□	–	0
SIMOCODE pro motor management system	**3 U F 7**											
Type of unit/module		□										
Functional version of the unit/module			□	□								
Connection type of the current transformer							□					
Voltage version								□				
Color (0 = lightgray, 1 = titan gray)										□		
Example	**3 U F 7**	**0**	**1**	**0**	**–**	**1**	**A**	**B**	**0**	**0**	**–**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of PROFIBUS DP, PROFINET or OPC UA significantly reduces the wiring outlay between the motor feeder and PLC
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operating, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of solid-state full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service

Multifunctional, electronic full motor protection for rated motor currents up to 820 A

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Inverse-time delayed solid-state overload protection (CLASS 5 to 40)
- Thermistor motor protection
- Phase failure/unbalance protection
- Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- Ground-fault monitoring
- Temperature monitoring, e.g. over PT100/PT1000
- Monitoring of operating hours, downtime and number of starts etc.

Recording of measuring curves

SIMOCODE pro can record measuring curves and therefore is able, for example, to present the progression of motor current during motor start-up.

Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing starter); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a motor starter protector
- Soft starter actuation (also with direction reversal)

These control functions are predefined in SIMOCODE pro and can be freely assigned to the inputs and outputs of the device (including PROFIBUS/PROFINET).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation, etc.) and with the help of standard functions (power failure monitoring, emergency start, external faults, etc.), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro makes a lot of additional hardware and wiring in the control circuit unnecessary which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

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Detailed operational, service and diagnostics data

SIMOCODE pro makes different operating, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very quickly – there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase unbalance and phase sequence
- Ground-fault current
- Time to trip
- Motor temperature
- Remaining cooling time etc.

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Interval for compulsory testing of the enabling circuits
- Energy consumed
- Internal comments stored in the device etc.

Diagnostics data

- Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

Easy operation and diagnostics

Operator panel

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. It makes SIMOCODE pro or the feeder directly operable in the control cabinet. It features all the status LEDs available on the basic unit and externalizes the system interface for simple parameterization or diagnosis on a PC/PG.

Operator panel with display

As an alternative to the 3UF720 standard operator panel for SIMOCODE pro V, there is also an operator panel with display: the 3UF721 is thus able in addition to indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor. Also, when SIMOCODE pro V PROFINET is used it is possible to set parameters such as rated motor current, limit values, etc. directly via the operator panel with display.

Communications

SIMOCODE pro has either an integrated PROFIBUS DP interface (SUB-D or terminal connection) or a PROFINET interface (2 x RJ45).

Fail-safe disconnection through PROFIBUS or PROFINET with the PROFIsafe profile is also possible in conjunction with a fail-safe controller (F-CPU) and the DM-F PROFIsafe fail-safe digital module.

SIMOCODE pro for PROFIBUS

SIMOCODE pro for PROFIBUS supports for example:

- Cyclic services (DPV0) and acyclic services (DPV1)
- Extensive diagnostics and hardware interrupts
- Time stamp with high timing precision (SIMATIC S7) for SIMOCODE pro V
- DPV1 communication after the Y-Link

SIMOCODE pro for PROFINET

SIMOCODE pro for PROFINET supports for example:

- Line and ring bus topology thanks to an integrated switch
- Media redundancy via MRP protocol
- Operating, service and diagnostics data via standard web browser
- OPC UA server for open communication with visualization and control system
- NTP-synchronized time
- Interval function and measured values for power management via PROFIenergy
- Module exchange without PC memory module through proximity detection
- Extensive diagnostics and maintenance alarms

Notes on safety

For connection of an internal system to an external system, suitable protective measures must be taken to ensure safe operation of the plant (including IT security, e. g. network segmentation).

More information see www.siemens.com/industrialsecurity.

For SIMOCODE pro motor management and control devices with communication function see page 10/14 onwards.

Accessories see page 10/19 onwards.

More information see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

Autonomous operation

An essential feature of SIMOCODE pro is the autonomous execution of all protection and control functions, even when communication to the I&C system is interrupted. This means that even in the event of bus system or automation system failure, full functionality of the feeder is ensured or a specific behavior can be parametrized in case of such a fault, e.g. targeted shutdown of the feeder or execution of particular parametrized control mechanisms (such as reversal of the direction of rotation).

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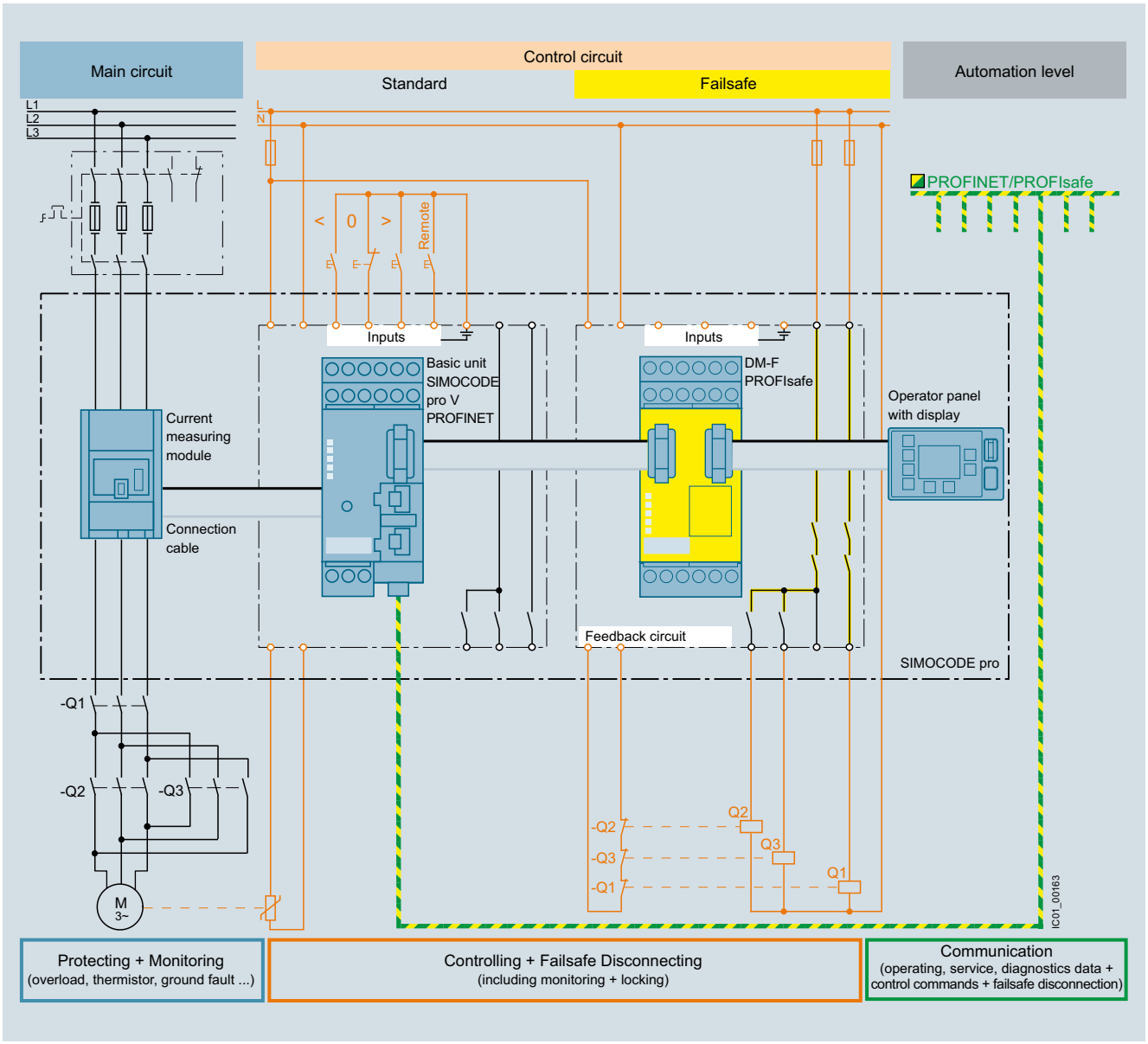
General data



SIMOCODE pro combines all essential functions, including safety functions, through PROFINET/PROFIsafe for the motor feeder

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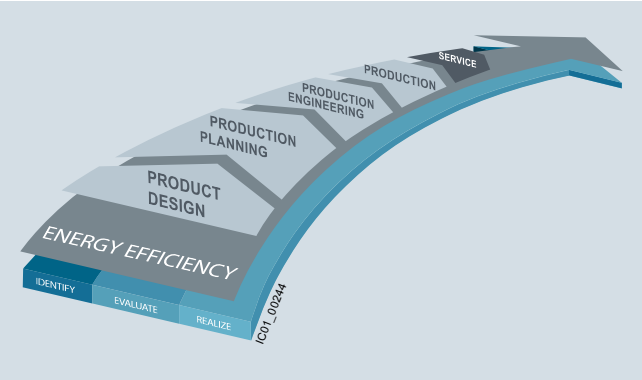
Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The SIMOCODE pro 3UF7 motor management system makes the following contribution to the energy efficiency of the plant as a whole:

- Energy consumption:
  Clear display of the energy consumption of a motor feeder or process element by means of the acquisition and transmission of all operating and consumption date, such as current, voltage, active and reactive power, energy consumption, motor temperature etc.
- Energy management:
  Evaluation of energy measured values (e. g. limit value monitoring) with exporting of local or central actions (= forwarding to higher-level)
- PROFIenergy:
  SIMOCODE pro V PROFINET supports the PROFIenergy functions. Reduced energy consumption thanks to automatic disconnection in the intervals and forwarding of the measured values for higher-level energy management systems.

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. steel or cement industry) and where it is important to prevent plant downtimes through detailed operating, service and diagnostics data or to localize the fault very quickly in the event of a fault.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers (MCCs) in the process industry and for power plant technology.

Applications

Protection and control of motors in hazardous areas for types of protection EEx e/d according to ATEX guideline 94/9/EC

- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industries, power plants)

Safety technology for SIMOCODE pro

The safe disconnection of motors in the process industry is becoming increasingly important as the result of new and revised standards and requirements in the safety technology field.

With the DM-F Local and DM-F PROFIsafe fail-safe expansion modules it is easy to integrate functions for fail-safe disconnection into the SIMOCODE pro V motor management system while retaining service-proven concepts. The strict separation of safety functions and operational functions proves particularly advantageous for planning, configuring and construction. Seamless integration in the motor management system leads to greater transparency for diagnostics and during operation of the system.

Suitable components for this purpose are the DM-F Local and DM-F PROFIsafe fail-safe expansion modules, depending on the requirements:

- the DM-F Local fail-safe digital module for when direct assignment between a fail-safe hardware shutdown signal and a motor feeder is required, or
- the DM-F PROFIsafe fail-safe digital module for when a fail-safe controller (F-CPU) creates the signal for the disconnection and transmits it in a fail-safe manner through PROFIBUS/PROFIsafe or PROFINET/PROFIsafe to the motor management system

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General data

Technical specifications

General data		
Type		**3UF7**
Permissible ambient temperature		
• During operation	°C	-25 ... +60 ; 3UF7 21: 0 ... +60
• During storage and transport	°C	-40 ... +80 ; 3UF7 21: -20 ... +70
Degree of protection (to IEC 60529)		
• Measurement modules with busbar connection		IP00
• Operator panel (front) and door adapter (front) with cover		IP54
• Other components		IP20
Shock resistance (sine pulse)	*g*/ms	15/11
Mounting position		Any
Frequency	Hz	50/60 ± 5 %
EMC interference immunity (according to IEC 60947-1)		(corresponds to degree of severity 3)
• Conducted interference, burst acc. to IEC 61000-4-4	kV	2 (power ports)
	kV	1 (signal ports)
• Conducted interference, high frequency acc. to IEC 61000-4-6	V	10
• Conducted interference, surge acc. to IEC 61000-4-5	kV	2 (line to ground); 3UF7320-1AB, 3UF7330-1AB: 1 (line to ground)
	kV	1 (line to line); 3UF7320-1AB, 3UF7330-1AB: 0.5 (line to line)
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge); 3UF7020: Only operate front side during operation
	kV	6 (contact discharge); 3UF721: 4 (contact discharge)
• Field-related interference acc. to IEC 61000-4-3	V/m	10
EMC emitted interference (according to IEC 60947-1)		
• Conducted and radiated interference emission		EN 55011/EN 55022 (CISPR 11/CISPR 22) (corresponds to degree of severity A)
Protective separation (acc. to IEC 60947-1)		All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, i.e. they are designed with doubled creepage paths and clearances. In this context, compliance with the instructions in the test report "Safe Isolation" No.2668 is required.

Basic units			
Type		**3UF7000-1AU00-0** **3UF7010-1AU00-0** **3UF7011-1AU00-0** **3UF7020-1AU01-0**	**3UF7000-1AB00-0** **3UF7010-1AB00-0** **3UF7011-1AB00-0** **3UF7020-1AB01-0**
Control circuit			
Rated control supply voltage U_s (according to IEC 61131-2)		110 ... 240 AC/DC; 50/60 Hz	24 V DC
Operating range			
• SIMOCODE pro C (3UF7000) and SIMOCODE pro V (3UF7010)		0.85 ... 1.1 x U_s	0.80 ... 1.2 × U_s
• SIMOCODE pro V PN (3UF7011) and SIMOCODE pro S (3UF7020)			
- Operation		0.85 ... 1.1 x U_s	0.80 ... 1.2 × U_s
- Start-up		0.85 ... 1.1 x U_s	0.85 ... 1.2 × U_s
Power consumption			
• SIMOCODE pro C (3UF7000) and SIMOCODE pro S (3UF7020)		7 VA/5 W	5 W
• SIMOCODE pro V (3UF7010) incl. two connected expansion modules		10 VA/7 W	7 W
• SIMOCODE pro V PN (3UF7011) incl. two connected expansion modules		11 VA/8 W	8 W
Rated insulation voltage U_i	V	300 (at pollution degree 3)	
Rated impulse withstand voltage U_{imp}	kV	4	
Relay outputs			
• Number			
- SIMOCODE pro C, SIMOCODE pro V, SIMOCODE pro V PN		3 monostable relay outputs	
- SIMOCODE pro S		2 monostable relay outputs	
• Specified short-circuit protection for auxiliary contacts (relay outputs)			
- Fuse links		6 A operational class gG; 10 A quick-response (IEC 60947-5-1)	
- Miniature circuit breaker		1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic (Ik < 500 A)	
• Rated uninterrupted current	A	6	
• Rated switching capacity			
- AC-15		6 A/24 V AC 6 A/120 V AC 3 A/230 V AC	
- DC-13		2 A/24 V DC 0.55 A/60 V DC 0.25 A/125 V DC	
Inputs (binary)		4 inputs supplied internally by the device electronics (with 24 V DC) and connected to a common potential	
Thermistor motor protection (binary PTC)			
• Summation cold resistance	kΩ	≤ 1.5	
• Response value	kΩ	3.4 ... 3.8	
• Return value	kΩ	1.5 ... 1.65	

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Current measuring modules or current/voltage measuring modules						
Type		**3UF71.0**	**3UF71.1**	**3UF71.2**	**3UF71.3**	**3UF71.4**
Main circuit						
Current setting I_e	A	0.3 ... 3	2.4 ... 25	10 ... 100	20 ... 200	63 ... 630
Rated insulation voltage U_i	V	690; 3UF7103 and 3UF7104: 1 000 (at pollution degree 3)				
Rated operational voltage U_e	V	690				
Rated impulse withstand voltage U_{imp}	kV	6; 3UF7103 and 3UF7104: 8				
Rated frequency	Hz	50/60				
Type of current		Three-phase current				
Short circuit		Additional short-circuit protection is required in the main circuit				
Accuracy of current measurement (in the range of 1 x minimum current setting I_u to 8 x max. current setting I_o)	%	±3				
Typical voltage measuring range						
• Phase-to-phase voltage/line-to-line voltage (e.g. $U_{L1\,L2}$)	V	110 ... 690				
• Phase voltage (e.g. $U_{L1\,N}$)	V	65 ... 400				
Accuracy						
• Voltage measurement (phase voltage U_L in the range 230 ... 400 V)	%	±3 (typical)				
• Power factor measurement (in the rated load range p.f. = 0.4...0.8)	%	±5 (typical)				
• Apparent power measurement (in the rated load range)	%	±5 (typical)				
Notes on voltage measurement						
• In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems		In these networks the current/voltage measuring module can be used only with an upstream decoupling module on the system interface.				
• Supply lines for voltage measurement		In the supply lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection!				

Digital modules or multifunction module				
Type		**3UF7300, 3UF7310, 3UF7600**		
Control circuit				
Rated insulation voltage U_i	V	300 (at pollution degree 3)		
Rated impulse withstand voltage U_{imp}	kV	4		
Relay outputs				
• Number		2 monostable or bistable relay outputs (depending on the version)		
• Specified short-circuit protection for auxiliary contacts (relay outputs)				
- Fuse links		6 A operational class gG; 10 A quick-response (IEC 60947-5-1)		
- Miniature circuit breaker		1.6 A, C characteristic (IEC 60947-5-1); 6 A, C characteristic (Ik < 500 A)		
• Rated uninterrupted current	A	6		
• Rated switching capacity				
- AC-15		6 A/24 V AC	6 A/120 V AC	3 A/230 V AC
- DC-13		2 A/24 V DC	0.55 A/60 V DC	0.25 A/125 V DC
Inputs (binary)		4 inputs, electrically isolated, supplied externally with 24 V DC or 110 ... 240 V AC/DC depending on the version, connected to a common potential		

Ground-fault modules or multifunction modules		
Type		**3UF7510, 3UF7600**
Control circuit		
Connectable residual-current transformers		3UL23
Type of current for monitoring		Type A (AC and pulsating DC residual currents)
Adjustable response value		30 mA ... 40 A
Relative measurement error		7.5 %

Temperature modules or multifunction modules					
Type		**3UF7600, 3UF7700**			
Sensor circuit					
Number of temperature sensors					
• 3UF7700		3 temperature sensors			
• 3UF7600		1 temperature sensor			
Typical sensor circuits					
• PT100	mA	1 (typical)			
• PT1000/KTY83/KTY84/NTC	mA	0.2 (typical)			
Open-circuit/short-circuit detection					
• Sensor type		PT100/PT1000	KTY83-110	KTY84	NTC
- Open circuit		✓	✓	✓	--
- Short circuit		✓	✓	✓	✓
- Measuring range	°C	-50 ... +500	-50 ... +175	-40 ... +300	80 ... 160
Measuring accuracy at 20 °C ambient temperature (T20)	K	< ±2			
Deviation due to ambient temperature (in % of measuring range)	%	0.05 per K deviation from T20			
Conversion time	ms	500			
Connection type		Two- or three-wire connection			

✓ Detection possible

-- Detection not possible

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General data

Analog modules		
Type		**3UF74**
Control circuit		
Inputs		
• Channels		2 (passive)
• Parameterizable measuring ranges	mA	0/4 ... 20
• Shielding		Up to 30 m shield recommended, from 30 m shield required
• Max. input current (destruction limit)	mA	40
• Accuracy	%	±1
• Input resistance	Ω	50
• Conversion time	ms	150
• Resolution	bit	12
• Open-circuit detection		With measuring range 4 ... 20 mA
Outputs		
• Channels		1
• Parameterizable output range	mA	0/4 ... 20
• Shielding		Up to 30 m shield recommended, from 30 m shield required
• Max. voltage at output	V DC	30
• Accuracy	%	±1
• Max. output load	Ω	500
• Conversion time	ms	25
• Resolution	bit	12
• Short-circuit proof		Yes
Connection type		Two-wire connection
Electrical separation of inputs/output to the device electronics		No

Fail-safe digital modules					
Type		**3UF7320-1AB00-0**	**3UF7320-1AU00-0**	**3UF7330-1AB00-0**	**3UF7330-1AU00-0**
Control circuit					
Rated control supply voltage U_s	V	24 DC	110 ... 240 AC/DC; 50/60 Hz	24 DC	110 ... 240 AC/DC; 50/60 Hz
Power consumption		3 W	9.5 VA/4.5 W	4 W	11 VA/5.5 W
Rated insulation voltage	V	300			
Rated impulse withstand voltage U_{imp}	kV	4			
Relay outputs					
• Number		2 relay enabling circuits, 2 relay outputs			
Version of the fuse link For short-circuit protection of the relay enabling circuit	A	4, operational class gG			
Rated uninterrupted current	A	5			
Rated switching capacity					
• AC-15		3 A/24 V AC	3 A/120 V AC	1.5 A/230 V AC	
• DC-13		4 A/24 V DC	0.55 A/60 V DC	0.22 A/125 V DC	
Inputs (binary)		5 (with internal power supply from the device electronics)			
Cable length					
• Between sensor/start signal and evaluation electronics	m	1 500			
• For further digital signals	m	300			
Safety data [1]					
SIL level max. according to IEC 61508		3			
Performance level PL according to EN ISO 13849-1		e			
Category according to EN ISO 13849-1		4			
Stop category according to EN 60204-1		0			
Probability of a dangerous failure (at 40 °C) for SIL 3 applications					
• Per hour (PFH_d) at a high demand rate according to IEC 62061	1/h	4.5×10^{-9}	4.6×10^{-9}	4.4×10^{-9}	4.4×10^{-9}
• On demand (PFD_{avg}) at a low demand rate according to IEC 61508		5.4×10^{-6}	5.5×10^{-6}	5.1×10^{-6}	5.2×10^{-6}
T1 value for proof-test interval or service life according to IEC 61508	a	20			

[1] More safety data see system manual "SIMOCODE pro Safety Fail-Safe Digital Modules", http://support.automation.siemens.com/WW/view/en/50564852.

More information

Configuration instructions when using an operator panel with display and/or a decoupling module with SIMOCODE pro V with PROFIBUS

If you want to use an operator panel with display and/or a decoupling module in the SIMOCODE pro V system with PROFIBUS, then the following configuration instructions concerning the type and number of connectable expansion modules must be observed.

The following tables show the maximum possible configuration of the expansion modules for the various combinations.

The DM-F Local and DM-F PROFIsafe fail-safe expansion modules behave in this connection like digital modules for standard applications.

Use of an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Only operator panel with display for SIMOCODE pro V (24 V DC or 110 ... 240 V AC/DC)				
Max. 4 expansion modules can be used				
Operator panel with display and current/voltage measurement with SIMOCODE pro V (110 ... 240 V AC/DC)				
Max. 3 expansion modules can be used or:				
--	--	✓	✓	--

✓ Available
-- Not available

Use of a decoupling module (voltage measurement in insulated networks)

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
SIMOCODE pro V (24 V DC)				
✓[1]	✓[1]	✓	✓	✓
SIMOCODE pro V (110 ... 240 V AC/DC)				
✓	✓	--	✓	✓
✓[1]	✓[1]	✓	✓	--
✓	--	✓	✓	--
✓	--	✓	--	✓

✓ Available
-- Not available
[1] No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

Use of a decoupling module (voltage measurement in insulated networks) in combination with an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
SIMOCODE pro V (24 V DC)				
✓	--	✓	✓	✓
✓	✓	--	✓	✓
SIMOCODE pro V (110 ... 240 V AC/DC)				
✓[2]	--	✓	✓	✓
✓	✓	--	--	--
✓[1]	✓[1]	✓[3]	--	--
✓	--	--	✓	✓

✓ Available
-- Not available
[1] No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).
[2] No bistable relay outputs and no more than 3 of 5 relay outputs active simultaneously (> 3 s).
[3] Analog module output is not used.

Protective separation

All circuits in SIMOCODE pro are safely isolated from each other in accordance with IEC 60947-1. That is, they are designed with double creepages and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of Test log No. 2668 must be complied with.

Types of protection EEx e and EEx d

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-proof motors to the type of protection:

- EEx d "flameproof enclosure" e.g. according to IEC 60079-1
- EEx e "increased safety" e.g. according to IEC 60079-7

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to IEC 61558-2-6.
EC type test certificate: BVS 06 ATEX F 001
Test log: BVS PP 05.2029 EG.

Selection data for type-tested assemblies/load feeders

For configuration tables according to type of coordination "1" or "2", see

- Manual "Configuring SIRIUS", Article No.: 3ZX1012-0RA21-0AB0, http://support.automation.siemens.com/WW/view/en/40625241
- Manual "Configuring SIRIUS Innovations", Article No.: 3ZX1012-0RA21-1AB0, http://support.automation.siemens.com/WW/view/en/39714188
- SIMOCODE pro PROFIBUS System Manual, Article No.: 3ZX1012-0UF70-3AA1, http://support.automation.siemens.com/WW/view/en/20017780
- SIMOCODE pro PROFINET System Manual, Article No.: 3ZX1012-0UF70-1AB1, http://support.automation.siemens.com/WW/view/en/61896631

System manual

The SIMOCODE pro system manual describes the motor management system and its functions in detail. It provides information on configuration, start-up, servicing and maintenance. A typical example of a reversing starter application is used to teach the user quickly and practically how to use the system. In addition to help on how to identify and rectify faults in the event of a malfunction, the manual also contains special information for servicing and maintenance. For selection of equipment and for configuration, it is recommended to consult the system manual.

A detailed description of the DM-F Local and DM-F PROFIsafe fail-safe expansion modules is provided in the system manual "SIMOCODE pro Safety Fail-Safe Digital Modules", which can be downloaded from the Internet.

Internet

More information see www.siemens.com/simocode.

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Basic units

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro						
 3UF7000-1A.00-0						
SIMOCODE pro C PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs Rated control supply voltage U_S:						
• 24 V DC	►	**3UF7000-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	►	**3UF7000-1AU00-0**		1	1 unit	42J
 3UF7020-1A.01-0						
SIMOCODE pro S PROFIBUS DP interface, 1.5 Mbit/s, RS 485 4 I/2 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by a multifunction module Rated control supply voltage Us:						
• 24 V DC	NEW ►	**3UF7020-1AB01-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	NEW ►	**3UF7020-1AU01-0**		1	1 unit	42J
 3UF7010-1A.00-0						
SIMOCODE pro V PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules Rated control supply voltage U_S:						
• 24 V DC	►	**3UF7010-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	►	**3UF7010-1AU00-0**		1	1 unit	42J
 3UF7011-1A.00-0						
SIMOCODE pro V PROFINET[1)] ETHERNET/PROFINET IO, OPC UA server and web server, 100 Mbit/s, 2 x connection to bus through RJ45, 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules Rated control supply voltage U_S:						
• 24 V DC	NEW ►	**3UF7011-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	NEW ►	**3UF7011-1AU00-0**		1	1 unit	42J

1) When using an operator panel with display, the product version must be E07 or higher (from 08/2012).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Current setting	Width	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	mm						
SIMOCODE pro (continued)								
Current measuring modules								
 3UF7100-1AA00-0								
• Straight-through transformers	0.3 ... 3	45	▶	**3UF7100-1AA00-0**		1	1 unit	42J
	2.4 ... 25	45	▶	**3UF7101-1AA00-0**		1	1 unit	42J
	10 ... 100	55	▶	**3UF7102-1AA00-0**		1	1 unit	42J
	20 ... 200	120	▶	**3UF7103-1AA00-0**		1	1 unit	42J
• Busbar connections	20 ... 200	120	▶	**3UF7103-1BA00-0**		1	1 unit	42J
	63 ... 630	145	▶	**3UF7104-1BA00-0**		1	1 unit	42J
Current/voltage measuring modules for SIMOCODE pro V Voltage measuring up to 690 V If required in connection with a decoupling module								
 3UF7110-1AA00-0								
• Straight-through transformers	0.3 ... 3	45	▶	**3UF7110-1AA00-0**		1	1 unit	42J
	2.4 ... 25	45	▶	**3UF7111-1AA00-0**		1	1 unit	42J
	10 ... 100	55	▶	**3UF7112-1AA00-0**		1	1 unit	42J
	20 ... 200	120	▶	**3UF7113-1AA00-0**		1	1 unit	42J
• Busbar connections	20 ... 200	120	▶	**3UF7113-1BA00-0**		1	1 unit	42J
	63 ... 630	145	▶	**3UF7114-1BA00-0**		1	1 unit	42J
Decoupling modules								
 3UF7150-1AA00-0								
For connecting upstream from a current/voltage measuring module on the system interface when using voltage detection in insulated, high-resistance or asymmetrically grounded systems and in single-phase systems			A	**3UF7150-1AA00-0**		1	1 unit	42J
Operator panels								
Installation in control cabinet door or front plate, for plugging into all SIMOCODE pro basic units, 10 LEDs for status indication and user-assignable buttons for controlling the motor								
 3UF7200-1AA00-0								
• Light gray			▶	**3UF7200-1AA00-0**		1	1 unit	42J
• Titanium gray		NEW	▶	**3UF7200-1AA01-0**		1	1 unit	42J
 3UF7200-1AA10-0								
Operator panel with display for SIMOCODE pro V								
 3UF7210-1AA00-0								
Installation in control cabinet door or front plate, for plugging into SIMOCODE pro V and SIMOCODE pro V PN, 7 LEDs for status indication and user-assignable buttons for controlling the motor, multilingual display, e.g. for indication of measured values, status information or fault messages			▶	**3UF7210-1AA00-0**		1	1 unit	42J

Notes:

System manual "SIMOCODE pro PROFIBUS" see http://support.automation.siemens.com/WW/view/en/20017780.

System manual "SIMOCODE pro V PROFINET" see http://support.automation.siemens.com/WW/view/en/61896631.

SIMOCODE pro V basic unit in a hardened version via SIPLUS extreme upon request.

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Expansion modules

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Expansion modules for SIMOCODE pro V						
With SIMOCODE pro V, it is possible to expand the type and number of inputs and outputs in steps. Each expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro V using a connection cable; through the second system interface, further expansion modules or the operator panel can be connected. The power supply for the expansion modules is provided by the connection cable through the basic unit. Note: Please order connection cable separately, see page 10/19.						
Digital modules Up to two digital modules can be used to add additional binary inputs and relay outputs to the basic unit. The input circuits of the digital modules are supplied from an external power supply. 4 binary inputs and 2 relay outputs, up to 2 digital modules can be connected						
Relay outputs: Monostable; Input voltage: 24 V DC	▶	**3UF7300-1AB00-0**		1	1 unit	42J
Relay outputs: Monostable; Input voltage: 110 ... 240 V AC/DC	▶	**3UF7300-1AU00-0**		1	1 unit	42J
Relay outputs: Bistable; Input voltage: 24 V DC	▶	**3UF7310-1AB00-0**		1	1 unit	42J
Relay outputs: Bistable; Input voltage: 110 ... 240 V AC/DC	▶	**3UF7310-1AU00-0**		1	1 unit	42J
Analog modules Basic unit can be optionally expanded with analog inputs and outputs (0/4 ... 20 mA) by means of the analog module. 2 inputs (passive) for input and 1 output for output of 0/4 ... 20 mA signals, max. 1 analog module can be connected per pro V basic unit and max. 2 analog modules per pro V PN basic unit	▶	**3UF7400-1AA00-0**		1	1 unit	42J
Ground-fault modules[1] NEW Ground-fault monitoring using 3UL23 residual-current transformers and ground-fault modules is used in cases where precise detection of the ground-fault current is required or power systems with high impedance are grounded. With the ground-fault module, it is possible to determine the precise fault current as a measured value, and to define freely selectable warning and trip limits in a wide range from 30 mA ... 40 A. 1 input for connecting a 3UL23 residual-current transformer, up to 1 ground-fault module can be connected Note: For corresponding residual-current transformers, see page 10/104.	▶	**3UF7510-1AA00-0**		1	1 unit	42J
Temperature modules Independently of the thermistor motor protection of the basic units, up to 3 analog temperature sensors can be evaluated using a temperature module. Sensor types: PT100/PT1000, KTY83/KTY84 or NTC 3 inputs for connecting up to 3 analog temperature sensors, up to 1 temperature module can be connected per pro V basic unit and max. 2 temperature modules per pro V PN basic unit	▶	**3UF7700-1AA00-0**		1	1 unit	42J

3UF7300-1AU00-0

3UF7400-1AA00-0

3UF7510-1AA00-0

3UF7700-1AA00-0

[1] Possible with pro V basic unit from product version E10 or pro V PN basic unit from product version E04.

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Illustrations are approximate

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Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Expansion modules for SIMOCODE pro S						
With SIMOCODE pro S, it is possible to expand the type and number of inputs and outputs. The expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro S using a connection cable; through the second system interface, the operator panel can be connected. The power supply for the expansion module is provided by the connection cable through the basic unit. Note: Please order connection cable separately, see page 10/19.						
 3UF7600-1AU01-0 **Multifunction modules** The multifunction module is the expansion module of the SIMOCODE pro S device series with the following functions: • Digital module function with four digital inputs and two monostable relay outputs • Ground-fault module function with an input for the connection of a 3UL23 residual-current transformer with freely selectable warning and trip limits in a wide zone of 30 mA ... 40 A • Temperature module function with an input for connecting an analog temperature sensor PT100, PT1000, KTY83, KTY84, or NTC max. 1 multifunction module can be connected per pro S basic unit Input voltage of the digital inputs:						
• 24 V DC	NEW ►	**3UF7600-1AB01-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	NEW ►	**3UF7600-1AU01-0**		1	1 unit	42J

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Fail-safe expansion modules

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fail-safe expansion modules for SIMOCODE pro V						
Thanks to the fail-safe expansion modules, SIMOCODE pro V can be expanded with the function of a safety relay for the fail-safe disconnection of motors. A maximum of 1 fail-safe digital module can be connected; it can be used instead of a digital module. The fail-safe expansion modules are equipped likewise with two system interfaces at the front for making the connection to other system components. Unlike other expansion modules, power is supplied to the modules through a separate terminal connection. Note: Please order connection cable separately, see page 10/19.						
DM-F Local fail-safe digital modules [1]						
For fail-safe disconnection using a hardware signal 2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected fail-safe; inputs for sensor circuit, start signal, cascading and feedback circuit, safety function adjustable using DIP switches Rated control supply voltage U_s:						
• 24 V DC	▶	**3UF7320-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	▶	**3UF7320-1AU00-0**		1	1 unit	42J
DM-F PROFIsafe fail-safe digital modules [1]						
For fail-safe disconnection using PROFIBUS/PROFIsafe or PROFINET/PROFIsafe 2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected fail-safe; 1 input for feedback circuit; 3 binary standard inputs Rated control supply voltage U_s:						
• 24 V DC	▶	**3UF7330-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	▶	**3UF7330-1AU00-0**		1	1 unit	42J

3UF7320-1AB00-0

3UF7330-1AB00-0

[1] Only possible with SIMOCODE pro V basic unit, product version E07 and higher (from 05/2011) or SIMOCODE pro V PN basic unit.

Note:

System manual "SIMOCODE pro Safety Fail-Safe Digital Modules" see http://support.automation.siemens.com/WW/view/en/50564852.

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Selection and ordering data

Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection cables (essential accessory)							
3UF7932-0AA00-0	**Connection cables**						
	In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules or decoupling module						
	Flat	0.025 m	▶ **3UF7930-0AA00-0**		1	1 unit	42J
	Flat	0.1 m	▶ **3UF7931-0AA00-0**		1	1 unit	42J
	Flat	0.3 m	▶ **3UF7935-0AA00-0**		1	1 unit	42J
	Flat	0.5 m	▶ **3UF7932-0AA00-0**		1	1 unit	42J
	Round	0.5 m	▶ **3UF7932-0BA00-0**		1	1 unit	42J
	Round	1.0 m	▶ **3UF7937-0BA00-0**		1	1 unit	42J
	Round	2.5 m	▶ **3UF7933-0BA00-0**		1	1 unit	42J
PC cables and adapters							
3UF7940-0AA00-0	**RS 232 PC cables**		▶ **3UF7940-0AA00-0**		1	1 unit	42J
	For connecting to the serial interface of a PC/PG, for communication with SIMOCODE pro through the system interface						
3UF7941-0AA00-0	**USB PC cables**		▶ **3UF7941-0AA00-0**		1	1 unit	42J
	For connecting to the USB interface of a PC/PG, for communication with SIMOCODE pro through the system interface						
	USB/serial adapters	B	**3UF7946-0AA00-0**		1	1 unit	42J
	To connect an RS 232 PC cable to to the USB interface of a PC, recommended for use in conjunction with SIMOCODE pro 3UF7						
Memory modules							
	This enables transmission to a new system, e.g. when a device is replaced, without the need for additional aids or detailed knowledge of the device.						
3UF7900-0AA00-0	**Memory module for SIMOCODE pro C, SIMOCODE pro S and SIMOCODE pro V**		▶ **3UF7900-0AA00-0**		1	1 unit	42J
	For saving the complete parameterization of a SIMOCODE pro C, SIMOCODE pro S or SIMOCODE pro V system						
	Memory module for SIMOCODE pro V PROFINET		▶ **3UF7901-0AA00-0**		1	1 unit	42J
	For saving the complete parameterization of a SIMOCODE pro V PROFINET system						
Interface covers							
3UF7950-0AA00-0	**Interface covers**						
	For system interface						
	• Light gray		▶ **3UF7950-0AA00-0**		1	5 units	42J
	• Titanium gray	NEW A	**3RA6936-0B**		1	5 units	42F
Addressing plugs							
3UF7910-0AA00-0	**Addressing plugs**		▶ **3UF7910-0AA00-0**		1	1 unit	42J
	For assigning the PROFIBUS address without using a PC/PG to SIMOCODE pro through the system interface						

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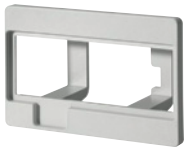
Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for motor control center						
With the draw-out technology often used in motor control centers it is possible to integrate a SIMOCODE pro initialization module in the switchboard on a permanent basis. Feeder-related parameter and address data can then be permanently assigned to this feeder.						
3UF7902-0AA00-0 **Initialization module**[1] For automatic parameterization of SIMOCODE pro S, SIMOCODE pro V and SIMOCODE pro V PROFINET, for fixed-mounted installation in switchboards	▶	**3UF7902-0AA00-0**		1	1 unit	42J
Y connection cable[1] For use in conjunction with the initialization module; connects the basic unit, current measuring module or current/voltage measuring module, and initialization module						
System interface length: 0.1 m; Open cable end: 1.0 m	▶	**3UF7931-0CA00-0**		1	1 unit	42J
System interface length: 0.5 m; Open cable end: 1.0 m	▶	**3UF7932-0CA00-0**		1	1 unit	42J
System interface length: 1.0 m; Open cable end: 1.0 m	▶	**3UF7937-0CA00-0**		1	1 unit	42J
Bus connection terminals						
3UF7960-0AA00-0 **Bus connection terminal** NEW For shield support and strain relief of the PROFIBUS cable on a SIMOCODE pro S	▶	**3UF7960-0AA00-0**		1	1 unit	42J
Door adapters						
3UF7920-0AA00-0 **Door adapters** For external connection of the system interface, e.g. outside a control cabinet	▶	**3UF7920-0AA00-0**		1	1 unit	42J
Adapters for operator panel						
 3UF7922-0AA00-0 **Adapters for operator panel** The adapter enables the smaller 3UF7200 operator panel from SIMOCODE pro to be used in a front panel cutout in which previously, e.g. after a change of system, a larger 3UF52 operator panel from SIMOCODE-DP had been used, degree of protection IP54	▶	**3UF7922-0AA00-0**		1	1 unit	42J
Labeling strips						
3UF7925-0AA02-0 **Labeling strips**						
• For pushbuttons of the 3UF720 operator panel	▶	**3UF7925-0AA00-0**		100	400 units	42J
• For pushbuttons of the 3UF721 operator panel with display	▶	**3UF7925-0AA01-0**		100	600 units	42J
• For LEDs of the 3UF720 operator panel	▶	**3UF7925-0AA02-0**		100	1 200 units	42J
Push-in lugs						
3RB2928-0B **Push-in lugs for screw fixing** e.g. on mounting plate, 2 units required per device						
• Can be used for 3UF71.0, 3UF71.1 and 3UF71.2	A	**3RV2928-0B**		100	10 units	41E
• Can be used for 3UF700, 3UF701, 3UF73, 3UF74, 3UF75 and 3UF77	B	**3RP1903**		1	10 units	41H
• Can be used for 3UF7020, 3UF7600	A	**3ZY1311-0AA00**		1	10 units	41L

[1] Possible with pro V basic unit, product version E09 (11/2012) and higher, pro S basic unit or pro V PN basic unit.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers						
3RT1956-4EA1						
Covers for cable lugs and busbar connections						
• Length 100 mm, can be used for 3UF71.3-1BA00-0	▶	**3RT1956-4EA1**		1	1 unit	41B
• Length 120 mm, can be used for 3UF71.4-1BA00-0	▶	**3RT1966-4EA1**		1	1 unit	41B
Covers for box terminals						
• Length 25 mm, can be used for 3UF71.3-1BA00-0	▶	**3RT1956-4EA2**		1	1 unit	41B
• Length 30 mm, can be used for 3UF71.4-1BA00-0	▶	**3RT1966-4EA2**		1	1 unit	41B
3RT1956-4EA2						
Covers for screw terminals						
Between contactor and current measuring module or current/voltage measuring module for direct mounting						
• Can be used for 3UF71.3-1BA00-0	▶	**3RT1956-4EA3**		1	1 unit	41B
• Can be used for 3UF71.4-1BA00-0	▶	**3RT1966-4EA3**		1	1 unit	41B
Box terminal blocks						
3RT195.-4G						
Box terminal blocks						
For round and ribbon cables						
• Up to 70 mm^2, can be used for 3UF71.3-1BA00-0	▶	**3RT1955-4G**		1	1 unit	41B
• Up to 120 mm^2, can be used for 3UF71.3-1BA00-0	▶	**3RT1956-4G**		1	1 unit	41B
• Up to 240 mm^2, can be used for 3UF71.4-1BA00-0	▶	**3RT1966-4G**		1	1 unit	41B
Bus termination modules						
3UF1900-1KA00						
Bus termination modules						
With separate control supply voltage for bus termination following the last unit on the bus line						
Supply voltage:						
• 115/230 V AC	C	**3UF1900-1KA00**		1	1 unit	42J
• 24 V DC	C	**3UF1900-1KB00**		1	1 unit	42J

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Accessories

Parameterization and service software for SIMOCODE pro 3UF7

- Delivered without PC cable

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES (TIA Portal) V12 Basic						
3ZS1312-4CC10-0YA5 **Floating License for one user** Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface)						
• License key on USB stick, Class A	NEW ▶	**3ZS1322-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	NEW ▶	**3ZS1322-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES (TIA Portal) V12 Standard						
Floating License for one user Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface parameterizing with integrated graphics editor (CFC-based)						
• License key on USB stick, Class A	NEW ▶	**3ZS1322-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	NEW ▶	**3ZS1322-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2007 Floating license for one user, engineering software, software and documentation on DVD, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), combo license for parallel use of SIMOCODE ES 2007 and SIMOCODE ES V12, for all SIMOCODE pro with PROFIBUS, online functions through the system interface, parameterizing with integrated graphics editor (CFC-based)	NEW A	**3ZS1322-5CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES V12 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through the system interface, parameterizing with integrated graphics editor (CFC-based)	NEW A	**3ZS1322-5CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on DVD, online functions through the system interface, parameterizing with integrated graphics editor (CFC-based)	NEW ▶	**3ZS1322-5CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see page 10/19.

More information see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES (TIA Portal) V12 Premium						
Floating License for one user Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)						
• License key on USB stick, Class A	NEW ►	**3ZS1322-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	NEW ►	**3ZS1322-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2007 Floating license for one user, engineering software, software and documentation on DVD, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), combo license for parallel use of SIMOCODE ES 2007 and SIMOCODE ES V12, for all SIMOCODE pro with PROFIBUS, online functions through the system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	NEW A	**3ZS1322-6CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES V12 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	NEW A	**3ZS1322-6CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on DVD, online functions through the system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	NEW ►	**3ZS1322-6CC10-0YL5**		1	1 unit	42J

Notes:

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Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Basic						
3ZS1312-4CC10-0YA5						
Floating License for one user						
Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	►	**3ZS1312-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES 2007 Standard						
Floating License for one user						
Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
• License key on USB stick, Class A	►	**3ZS1312-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later	A	**3ZS1312-5CC10-0YE5**		1	1 unit	42J
Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
Powerpack for SIMOCODE ES 2007 Basic	A	**3ZS1312-5CC10-0YD5**		1	1 unit	42J
Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface integrated graphics editor						
Software Update Service	►	**3ZS1312-5CC10-0YL5**		1	1 unit	42J
For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through system interface, integrated graphics editor						

Notes:

Please order PC cable separately, see page 10/19.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Premium						
Floating License for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager						
• License key on USB stick, Class A	►	**3ZS1312-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1312-6CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1312-6CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	►	**3ZS1312-6CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see page 10/19.

More information see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

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Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7 Version V8 with Advanced Process Library (APL)							
3ZS1632-1XX02-0YA0	**Engineering software V8** For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	NEW ►	**3ZS1632-1XX02-0YA0**	1	1 unit	42J
	Runtime license V8 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V8 within a plant Type of delivery: One license for one automation system, without software and documentation	NEW ►	**3ZS1632-2XX02-0YB0**	1	1 unit	42J
	Upgrade for PCS 7 block library SIMOCODE pro, V6.0 or V7 to version SIMOCODE pro V8 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	NEW A	**3ZS1632-1XX02-0YE0**	1	1 unit	42J

Notes:

Please order PC cable separately, see page 10/19.

More information see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7 Version 7						
3UF7982-0AA00-0						
Engineering software V7 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS7 version V7.0/V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3UF7982-0AA10-0**		1	1 unit	42J
Runtime license V7 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	►	**3UF7982-0AA11-0**		1	1 unit	42J
Upgrade for PCS 7 block library SIMOCODE pro, V6.0 or V6.1 to version SIMOCODE pro V7.0/V7.1 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS7 version V7.0 or V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	A	**3UF7982-0AA13-0**		1	1 unit	42J
Engineering software migration V7-V8 For upgrading (migrating) an existing engineering software V7 of the SIMOCODE pro block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the SIMOCODE pro block library for PCS 7 for the PCS 7 version V7.0 or V7.1 The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V8.0; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 version V8.0 Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	►	**3UF7982-0AA20-0**		1	1 unit	42J

Notes:

Please order PC cable separately, see page 10/19.

More information see Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

Programming and Operating Manual SIMOCODE pro Library for PCS 7 see http://support.automation.siemens.com/WW/view/en/49963525.

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3UF18 current transformers for overload protection

Overview

The 3UF18 current transformers are protection transformers and are used for actuating overload relays. Protection transformers are designed to ensure proportional current transfer up to a multiple of the primary rated current. The 3UF18 current transformers convert the maximum current of the corresponding operating range into the standard value of 1 A secondary.

Selection and ordering data

	Mounting type	Operating range A	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For stand-alone installation								
3UF1843	Screw fixing and snap-on mounting onto TH 35 standard mounting rail according to IEC 60715	0.25 … 2.5[1)]	C	**3UF1843-1BA00**		1	1 unit	42J
		1.25 … 12.5[1)]	C	**3UF1843-2AA00**		1	1 unit	42J
		2.5 … 25[1)]	C	**3UF1843-2BA00**		1	1 unit	42J
		12.5 … 50	C	**3UF1845-2CA00**		1	1 unit	42J
		16 … 65	C	**3UF1847-2DA00**		1	1 unit	42J
		25 … 100	C	**3UF1848-2EA00**		1	1 unit	42J
For mounting onto contactors and stand-alone installation								
3UF1868	Screw fixing	32 … 130	C	**3UF1850-3AA00**		1	1 unit	42J
		50 … 200	C	**3UF1852-3BA00**		1	1 unit	42J
		63 … 250	C	**3UF1854-3CA00**		1	1 unit	42J
		100 … 400	C	**3UF1856-3DA00**		1	1 unit	42J
		125 … 500	C	**3UF1857-3EA00**		1	1 unit	42J
		160 … 630	C	**3UF1868-3FA00**		1	1 unit	42J
		205 … 820	C	**3UF1868-3GA00**		1	1 unit	42J

[1)] The following setting ranges for the protection of EEx e motors are applicable:
3UF1843-1BA00, 0.25 ... 1.25 A;
3UF1843-2AA00, 1.25 ... 6.3 A;
3UF1843-2BA00, 2.5 ... 12.5 A.

Accessories

	For contactor type	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers							
3TX7466-0A	For transformer/contactor combinations and stand-alone installation for transformer (cover required per connection side)						
	3UF1845	D	**3TX7446-0A**		1	1 unit	41B
	3UF1848	D	**3TX7466-0A**		1	1 unit	41B
	3UF1850, 3UF1852	B	**3TX7506-0A**		1	1 unit	41B
	3UF1854 to 3UF1857	B	**3TX7536-0A**		1	2 units	41B
	3UF1868-3FA00	B	**3TX7686-0A**		1	1 unit	41B
	3UF1868-3GA00	B	**3TX7696-0A**		1	1 unit	41B
	For covering the screw terminal for direct mounting on contactor (cover required per contactor/transformer combination)						
	3UF1848	D	**3TX7466-0B**		1	1 unit	41B
	3UF1850, 3UF1852	D	**3TX7506-0B**		1	1 unit	41B
	3UF1854 to 3UF1857	D	**3TX7536-0B**		1	1 unit	41B
	3UF1868-3FA00	C	**3TX7686-0B**		1	1 unit	41B
	3UF1868-3GA00	C	**3TX7696-0B**		1	1 unit	41B

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

LOGO! logic modules

LOGO! logic modules

- The compact, user-friendly, and low-cost solution for simple control tasks
- Compact, user-friendly, can be used universally without accessories
- All in one: The display and operator panel are integrated
- 36 different functions can be linked at a press of a button or with PC software; up to 130 times in total
- Functions can be changed simply with the press of a button. no complicated rewiring

SIPLUS LOGO!

- The control system for use in the toughest ambient conditions
- With extended temperature range from -40/-25 °C to +70 °C
- Use under medial loading (corrosive gas atmosphere)
- Condensation permissible
- With the service-proven PLC technology from LOGO!
- User-friendly handling, programming, maintenance and service
- Ideal for use in vehicle manufacturing, environmental engineering, mining, chemical plants, conveyor systems, the food industry, etc.

Accessories:

- With the front panel assembly kit, mounting the logic modules is easy and safe also in front panels, with degree of protection IP65 possible.
- To ensure safe operation at a combustion engine battery it may be necessary to install a SIPLUS upmiter voltage reducer between the battery and SIPLUS LOGO!.

Information on LOGO! can be found in Catalog ST 70:

www.siemens.com/simatic/printmaterial

or at

www.siemens.com/siplus-extreme

Brochures to assist in the selection of SIMATIC products can be found at

www.siemens.com/simatic/printmaterial

Application

The LOGO! logic module is the user-friendly, low-cost solution for simple control tasks.

LOGO! is universally applicable, e.g.:

- Building installation and wiring (lighting, shutters, awnings, doors, access control, barriers, ventilation systems, etc.)
- Control cabinet installation
- Machine and device construction (pumps, small presses, compressors, hydraulic lifts, conveyors, etc.)
- Special controls for conservatories and greenhouses
- Signal preprocessing for other controllers

The LOGO! Modular logic modules can be expanded easily for each application.

Marine approvals

American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyds Register of Shipping; Polski Rejestr Statków etc.

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LOGO! Modular basic versions

Overview

LOGO! Modular basic versions

- The space-saving basic versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! -0BA6 basic versions)

LOGO! -0BA7 versions

- Ethernet interface for communication with SIMATIC controller, SIMATIC panel and PC
- Networking of up to 8 LOGO! units
- Use of standard SD card or SIMATIC memory card

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular basic versions (-0BA6)						
LOGO! logic modules 24C Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, with integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1052-1CC01-0BA6**		1	1 unit	200
LOGO! logic modules 12/24RC Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	A	**6ED1052-1MD00-0BA6**		1	1 unit	200
LOGO! logic modules 24RC Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	A	**6ED1052-1HB00-0BA6**		1	1 unit	200
LOGO! logic modules 230RC Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	A	**6ED1052-1FB00-0BA6**		1	1 unit	200
LOGO! Modular basic versions (-0BA7)						
LOGO! logic modules 12/24RCE Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 relay outputs 10 A, integrated time switch, 400 function blocks can be combined, Ethernet interface, modular expandability	A	**6ED1052-1MD00-0BA7**		1	1 unit	200
LOGO! logic modules 230RCE Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch, 400 function blocks can be combined, Ethernet interface, modular expandability	A	**6ED1052-1FB00-0BA7**		1	1 unit	200

For accessories see page 10/39.

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Illustrations are approximate

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Overview

SIPLUS LOGO! Modular basic versions

- The space-saving basic versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! -0BA6 basic versions)

SIPLUS LOGO! -2BA7 versions

- Ethernet interface for communication with SIMATIC controller, SIMATIC panel and PC
- Networking of up to 8 LOGO! units
- Use of standard SD card or SIMATIC memory card

Note:

SIPLUS extreme products are based upon Siemens Industry standard products. The content listed here was taken over from the relevant standard products. Information specific to SIPLUS extreme has been added.

Selection and ordering data

Version	DT	Screw terminals Article No.	PU (UNIT, SET, M) Price per PU	PS*	PG
SIPLUS LOGO! Modular basic versions (-2BA6) – extended temperature range and medial loading					
SIPLUS LOGO! 24 Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, with integrated time switch; 200 function blocks can be combined, modular expandability	D	**6AG1052-1CC01-2BA6**	1	1 unit	470
SIPLUS LOGO! 12/24RC Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	D	**6AG1052-1MD00-2BA6**	1	1 unit	470
SIPLUS LOGO! 24RC Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	D	**6AG1052-1HB00-2BA6**	1	1 unit	470
SIPLUS LOGO! 230RC Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch, 200 function blocks can be combined, modular expandability	D	**6AG1052-1FB00-2BA6**	1	1 unit	470
SIPLUS LOGO! Modular basic versions (-2BA7) – extended temperature range and medial loading					
SIPLUS LOGO! 12/24RCE Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; 400 function blocks can be combined, Ethernet interface, modular expandability	NEW D	**6AG1052-1MD00-2BA7**	1	1 unit	470
SIPLUS LOGO! 230RCE Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; 400 function blocks can be combined, Ethernet interface, modular expandability	NEW D	**6AG1052-1FB00-2BA7**	1	1 unit	470

For accessories see page 10/39.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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LOGO! Modular pure versions

Overview

LOGO! Modular pure versions

- The cost-optimized basic versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! -0BA6 basic versions)

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular pure versions						
LOGO! logic modules 24Co Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 digital outputs 24 V DC, 0.3 A; integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	A	**6ED1052-2CC01-0BA6**		1	1 unit	200
LOGO! logic modules 12/24RCo Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	A	**6ED1052-2MD00-0BA6**		1	1 unit	200
LOGO! logic modules 24RCo Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	A	**6ED1052-2HB00-0BA6**		1	1 unit	200
LOGO! logic modules 230RCo Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	A	**6ED1052-2FB00-0BA6**		1	1 unit	200

For accessories see page 10/39.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIPLUS LOGO! Modular pure versions

- The cost-optimized basic versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! -0BA6 basic versions)

Note:

SIPLUS extreme products are based upon Siemens Industry standard products. The content listed here was taken over from the relevant standard products. Information specific to SIPLUS extreme has been added.

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS LOGO! Modular pure versions – extended temperature range and medial loading						
SIPLUS LOGO! 24o Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 digital outputs 24 V DC, 0.3 A; integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	D	**6AG1052-2CC01-2BA6**		1	1 unit	470
SIPLUS LOGO! 12/24RCo Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 ... 10 V), 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	D	**6AG1052-2MD00-2BA6**		1	1 unit	470
SIPLUS LOGO! 24RCo Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	D	**6AG1052-2HB00-2BA6**		1	1 unit	470
SIPLUS LOGO! 230RCo Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch, without display and keyboard, 200 function blocks can be combined, modular expandability	D	**6AG1052-2FB00-2BA6**		1	1 unit	470

For accessories see page 10/39.

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Illustrations are approximate

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LOGO! Modular expansion modules

Overview

LOGO! Modular expansion modules

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs or analog outputs

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular expansion modules						
LOGO! DM8 24 Control supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	A	**6ED1055-1CB00-0BA0**		1	1 unit	200
LOGO! DM16 24 Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 digital outputs 24 V DC, 0.3 A	A	**6ED1055-1CB10-0BA0**		1	1 unit	200
LOGO! DM8 12/24R Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A	A	**6ED1055-1MB00-0BA1**		1	1 unit	200
LOGO! DM8 24R Control supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A	A	**6ED1055-1HB00-0BA0**		1	1 unit	200
LOGO! DM16 24R Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A	A	**6ED1055-1NB10-0BA0**		1	1 unit	200
LOGO! DM8 230R Control supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A	A	**6ED1055-1FB00-0BA1**		1	1 unit	200
LOGO! DM16 230R Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 8 relay outputs 5 A	A	**6ED1055-1FB10-0BA0**		1	1 unit	200
LOGO! AM2 Control supply voltage 12/24 V DC, 2 analog inputs 0 ... 10 V or 0 ... 20 mA, 10 bit resolution	A	**6ED1055-1MA00-0BA0**		1	1 unit	200
LOGO! AM2 PT 100 Control supply voltage 12/24 V DC, 2 analog inputs PT100, temperature range -50 °C ... 200 °C	A	**6ED1055-1MD00-0BA1**		1	1 unit	200
LOGO! AM2 AQ Control supply voltage 24 V DC, 2 analog outputs 0 ... 10 V, 0/4 ... 20 mA	A	**6ED1055-1MM00-0BA1**		1	1 unit	200

For accessories see page 10/39.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIPLUS LOGO! Modular expansion modules

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs or analog outputs

Note:

SIPLUS extreme products are based upon Siemens Industry standard products. The content listed here was taken over from the relevant standard products. Information specific to SIPLUS extreme has been added.

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS LOGO! Modular expansion modules – extended temperature range and medial loading						
SIPLUS LOGO! DM8 24 Control supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A, Temperature range -40 ... +70 °C	D	**6AG1055-1CB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 12/24 Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC 4 digital outputs 24 V DC, 0.3 A, Temperature range -40 ... +70 °C	D	**6AG1055-1PB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 24R Control supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A, Temperature range -40 ... +70 °C	D	**6AG1055-1HB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 12/24R Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A, temperature range -40 ... +70 °C	D	**6AG1055-1MB00-2BY1**		1	1 unit	470
SIPLUS LOGO! DM8 230R Control supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A, temperature range -40 ... +70 °C	D	**6AG1055-1FB00-2BY1**		1	1 unit	470
SIPLUS LOGO! AM2 Control supply voltage 12/24 V DC, 2 analog inputs 0 ... 10 V or 0 ... 20 mA, 10 bit resolution, temperature range -40 ... +70 °C	D	**6AG1055-1MA00-2BY0**		1	1 unit	470
SIPLUS LOGO! AM2 AQ Control supply voltage 24 V DC, 2 analog inputs 0 ... 10 V, 0/4 ... 20 mA, 10 bit resolution, temperature range -40 ... +70 °C	D	**6AG1055-1MM00-2BY1**		1	1 unit	470
SIPLUS LOGO! DM16 24R Control supply voltage 24 V DC, 8 digital outputs 24 V DC, 8 relay outputs 5 A, temperature range -25 ... +70 °C	D	**6AG1055-1NB10-2BA0**		1	1 unit	470

For accessories see page 10/39.

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LOGO! CM EIB/KNX communication modules

Overview

LOGO! CM EIB/KNX communication module

- Expansion module for the LOGO! basic versions
- For communication between the LOGO! master and external *EIB* components via *EIB*

Application

The CM EIB/KNX communication module allows communication between the LOGO! master and external *EIB* units via *EIB*. This module can be used to integrate LOGO! in an *EIB* system.

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! CM EIB KNX communication module						
For connection to *EIB*, control supply voltage 24 V DC	C	**6BK1700-0BA00-0AA2**		1	1 unit	470

For accessories see page 10/39.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

LOGO! CSM unmanaged

The module is used for the connection of a LOGO! and up to three additional nodes to an Industrial Ethernet network with 10/100 Mbit/s in an electrical line, tree or star structure.

Key features of the LOGO! CSM are:

- Unmanaged 4-port switch, of which one port on the front side is for simple diagnostics access
- Two versions for the voltage ranges 12/24 V DC or 230 V AC/DC
- It is easy to connect via four RJ45 standard plug-in connections
- Space-saving, optimized for connection to LOGO!
- Economical solution for creating small, local Ethernet networks
- Stand-alone use for networking any number of Ethernet devices

To assist in selecting the right Industrial Ethernet switches as well as in the configuration of modular variants, the SIMATIC NET Selection Tool is available at:
Online version:
www.siemens.com/snst

Offline version:
www.siemens.com/snst-download

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! CSM compact switch module						
Unmanaged switch for connection to a LOGO! (-0BA7) and up to three additional nodes to an Industrial Ethernet with 10/100 Mbit/s; 4 x RJ45 ports; LED diagnostics, LOGO! module						
LOGO! CSM 12/24 External 12 V DC or 24 V DC power supply	B	**6GK7177-1MA10-0AA0**		1	1 unit	5P1
LOGO! CSM 230 External 115 ... 240 V AC power supply	A	**6GK7177-1FA10-0AA0**		1	1 unit	5P1

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AS-Interface connections for LOGO!

Overview

Every LOGO! can now be connected to the AS-Interface system

AS-Interface connection for LOGO!

Using the AS-Interface connection for LOGO!, an intelligent slave can be integrated in the AS-Interface system. With the modular interface it becomes possible to integrate the different basic units in the system according to their functionality. Similarly, functionalities can be quickly and easily adapted to new requirements by exchanging the basic unit.

The interface module provides four inputs and four outputs on the system. These I/Os do not actually exist in hardware terms, however, but are only virtually present through the interface on the bus.

Selection and ordering data

Version	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface connections for LOGO!						
Four virtual digital inputs, four virtual digital outputs	A	**3RK1400-0CE10-0AA2**		1	1 unit	42C

For accessories see page 10/39.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! TD text displays						
LOGO! TD text displays 4-line text display, for connection to all LOGO! -0BA6 basic and pure versions, incl. connection cable	A	**6ED1055-4MH00-0BA0**		1	1 unit	200
SIPLUS LOGO! TD text displays						
SIPLUS LOGO! TD text displays (extended temperature range -10 ... +60 °C and medial loading) 4-line text display, for connection to all LOGO! basic and pure versions -0BA6 and higher, incl. connection cable	D	**6AG1055-4MH00-2BA0**		1	1 unit	470
SIPLUS voltage reducers						
SIPLUS Upmiter voltage reducers For safe operation at combustion engine batteries	D	**6AG1053-1AA00-2AA0**		1	1 unit	470
LOGO! manuals						
LOGO! Manual						
• German	B	**6ED1050-1AA00-0AE8**		1	1 unit	200
• English	X	**6ED1050-1AA00-0BE8**		1	1 unit	200
• French	C	**6ED1050-1AA00-0CE8**		1	1 unit	200
• Spanish	C	**6ED1050-1AA00-0DE8**		1	1 unit	200
• Italian	C	**6ED1050-1AA00-0EE8**		1	1 unit	200
• Chinese	C	**6ED1050-1AA00-0KE8**		1	1 unit	200
LOGO! Cards (only -0BA6)						
LOGO! memory cards Program module for copying, with know-how protection	A	**6ED1056-1DA00-0BA0**		1	1 unit	200
LOGO! battery cards Battery modules for buffering the integrated real-time clock (not LOGO! 24)	A	**6ED1056-6XA00-0BA0**		1	1 unit	200
LOGO! memory/battery cards Combined program and battery modules, with know-how protection and buffering of the integrated real-time clock (not LOGO! 24)	A	**6ED1056-7DA00-0BA0**		1	1 unit	200
LOGO! PROM Programming units for simultaneous duplication of program module contents on up to 8 program modules	D	**6AG1057-1AA01-0BA6**		1	1 unit	470
LOGO! cables						
LOGO! PC cables For transferring programs between LOGO! and PC	A	**6ED1057-1AA00-0BA0**		1	1 unit	200
LOGO! USB PC cables For transferring programs between LOGO! and the PC, incl. drivers on CD-ROM	A	**6ED1057-1AA01-0BA0**		1	1 unit	200
LOGO! modem cables Adapter cable for analog modem communication	A	**6ED1057-1CA00-0BA0**		1	1 unit	200
Front panel assembly kits						
Front panel assembly kits						
• Width: 4 MW	C	**6AG1057-1AA00-0AA0**		1	1 unit	470
• Width: 4 MW, with pushbuttons	D	**6AG1057-1AA00-0AA3**		1	1 unit	470
• Width: 8 MW	C	**6AG1057-1AA00-0AA1**		1	1 unit	470
• Width: 8 MW, with pushbuttons	D	**6AG1057-1AA00-0AA2**		1	1 unit	470
LOGO! starter kits (-0BA6)						
In TANOS box, with USB cable, LOGO!, LOGO!Soft Comfort V6						
LOGO! starter kits 12/24 V Language-neutral with LOGO! 12/24RC (-0BA6)	A	**6ED1057-3BA00-0AA6**		1	1 unit	2SP
LOGO! starter kits 230 V Language-neutral with LOGO! 230RC (-0BA6)	A	**6ED1057-3BA02-0AA6**		1	1 unit	2SP
LOGO! TD starter kits Language-neutral with LOGO! 12/24RCo (-0BA6) and LOGO! TD	A	**6ED1057-3BA10-0AA6**		1	1 unit	2SP
LOGO! starter kits (-0BA7)						
In TANOS box, with Ethernet cable, LOGO!, LOGO!Soft Comfort V7, WinCC Basic V11						
LOGO! starter kits 12/24 V Language-neutral with LOGO! 12/24RCE (-0BA7) + LOGO! Power 24 V, 1.3 A	A	**6ED1057-3BA00-0AA7**		1	1 unit	2SP
LOGO! starter kits 230 V Language-neutral with LOGO! 230RCE (-0BA7)	A	**6ED1057-3BA02-0AA7**		1	1 unit	2SP
SIMATIC NET cables						
IE TP Cord RJ45/RJ45 TP cable 4 x 2 with 2 RJ45 connectors						
• 0.5 m	A	**6XV1870-3QE50**		1	1 unit	5K1
• 1 m	A	**6XV1870-3QH10**		1	1 unit	5K1
• 2 m	A	**6XV1870-3QH20**		1	1 unit	5K1
• 6 m	A	**6XV1870-3QH60**		1	1 unit	5K1
• 10 m	A	**6XV1870-3QN10**		1	1 unit	5K1
IE FC Outlet RJ45 For connection of industrial Ethernet FC cables and TP cords; scaled pricing from 10 and 50 units	A	**6GK1901-1FC00 0AA0**		1	1 unit	5K1

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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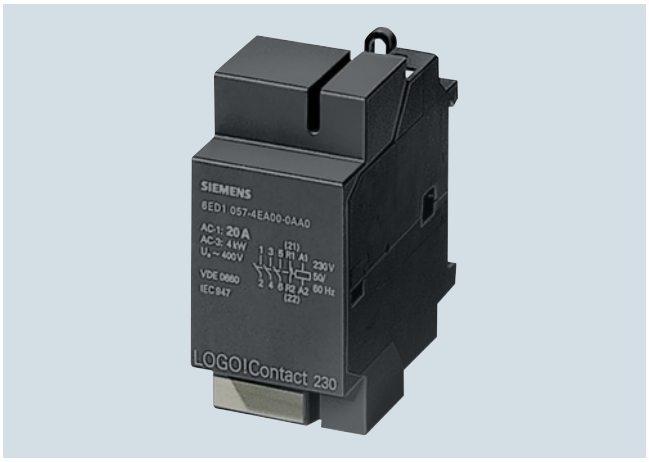
LOGO!Contact

Overview



LOGO!Contact

Switching module for switching resistive loads and motors directly

Application

LOGO!Contact is a switching module for direct switching of resistive loads (up to 20 A) and motors (up to 4 kW). LOGO!Contact operates hum-free without noise pollution.

LOGO!Contact is universally applicable:

- Buildings/electrical installations.
- Industry and commerce.

Selection and ordering data

Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
		Article No. / Price per PU			
LOGO!Contact					
Switching module for direct switching of resistive loads up to 20 A and motors up to 4 kW					
Switching voltage:					
• 24 V	A	**6ED1057-4CA00-0AA0**	1	1 unit	200
• 230 V	A	**6ED1057-4EA00-0AA0**	1	1 unit	200

For accessories see page 10/39.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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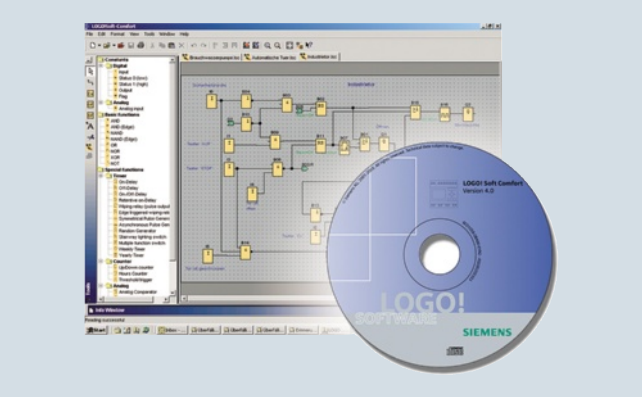
Overview



LOGO!Soft Comfort

- The user-friendly software for switching program generation on the PC
- Switching program generation for function diagrams (FBD) or contact diagrams (LAD)
- Additional testing, simulation, online testing and archiving of the switching programs
- Professional documentation with the help of various comment and print functions

The connection between LOGO! and the PC is made with the LOGO! PC cable (serial interface) or the LOGO! USB PC cable (USB interface).

With LOGO! -0BA7 the connection is made via the integrated Ethernet interface.

Minimum system requirements

Windows 98 SE, NT4.0, ME, 2000, XP (32 bit), Vista or 7 (32/64 bit)

- Pentium PC.
- 90 Mbyte free on hard disk.
- 64 Mbyte RAM.
- SVGA graphics card with minimum resolution 800x600 (256 colors).

Mac OS X

- Mac OS X 10.4 with J2SE 1.5.0
- Mac OS X 10.5 with J2SE 1.6.0
- PowerMac G3, G4, G4 Cube, iMac, PowerBook G3, G4 or iBook.

Linux

- Tested with SUSE Linux 10 SP2, Kernel 2.6.16
- Runs on all Linux releases on which Java 2 SDK Version 1.3.1 runs.
- Please consult your Linux release for hardware requirements.

Application

LOGO!Soft Comfort is the multilingual software for switching program generation with LOGO! on the PC. LOGO!Soft Comfort can be used to program all devices of the LOGO! family.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO!Soft Comfort						
LOGO!Soft Comfort V7.0 For programming on the PC in LAD/FBD; runs on Windows 7 (32/64 bit), VISTA, XP, NT 4.0, 2000, 98SE, Linux and Mac OSX; on CD-ROM	A	**6ED1058-0BA02-0YA1**		1	1 unit	200
LOGO!Soft Comfort V 7.0 Upgrade Upgrade from V1.0 to V7.0	A	**6ED1058-0CA02-0YE1**		1	1 unit	200

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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General data

Overview

7PV15, SIRIUS 3RP15 and SIRIUS 3RP20 timing relays

Solid-state timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. Their fully developed concept and space-saving, compact design make the SIRIUS 3RP timing relays ideal modules for control cabinet, switchgear and control manufacturers in the industry.

With their narrow design, the 7PV15 timing relays are ideal in particular for use in heating, ventilation and air-conditioning systems and in compressors. All 7PV15 timing relays in this enclosure version are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60175. The enclosure complies with DIN 43880.

Benefits

- Clear-cut basic range with five basic units in the case of the 7PV15 timing relays, and seven basic units in the case of the 3RP timing relays
- Logistic advantages provided by versions with wide voltage range and wire setting range
- No tools required for assembly or disassembly on standard mounting rails
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure
- Optimum price/performance ratio
- Versions with logical separation
- Low variance: One design for distribution boards and for control cabinets
- Compliance with EMC requirements for buildings
- Environmentally friendly laser inscription instead of printing containing solvents
- Hard gold-plated relay contacts for optimum interplay with electronic controls
- Timing relays suitable for the 3RT miniature contactors allow smaller tier spacing
- Positively driven relay contacts
- Versions with screw terminals or alternatively with spring-type terminals

Application

Timing relays with ON-delay

- Interference pulse suppression (gating of interference pulses)
- Gradual start-up of motors so as not to overload the power supply

Timing relays with OFF-delay

- Generation of overtravel functions following removal of voltage
- Gradual, delayed shutdown, e.g. of motors or fans, to allow a plant to be shut down selectively

Wye-delta timing relay

- Switchover of motors from wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

Multifunctional timing relays

- Maximum flexibility, with a device for every application

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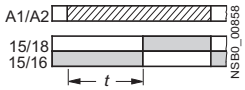
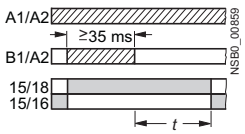
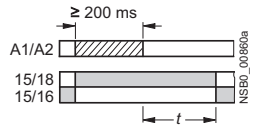
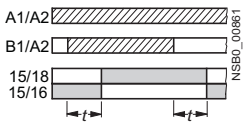
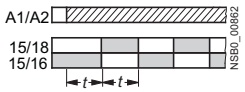
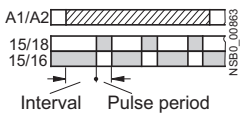
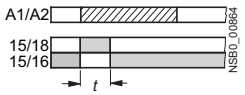
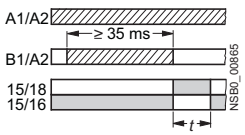
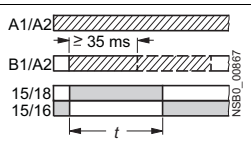
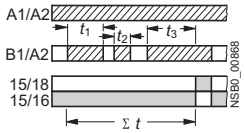
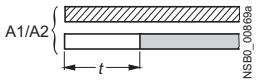
Technical specifications

3RP15 and 3RP20 function table

Function	Function chart	3RP20 timing relay and 3RP1901 label set		3RP15 timing relay and 3RP1901 label set									
	Timing relay energized Contact closed Contact open	3RP2005-.A	3RP2025	3RP1505-.A 3RP1901-0A	Identification letter	3RP151.	3RP1525	3RP1527	3RP153.	3RP1540	3RP1555	3RP157.
1 CO contact												
ON-delay		✓	✓	✓	A	✓	✓					
OFF-delay with control signal		✓		✓	B[1]				✓			
OFF-delay without control signal Observe minimum ON period for correct operation. For 3RP1540-..W31 U_s 24 to 40 V AC/DC: 400 ms and U_s > 40 to 240 V AC/DC: 200 ms.										✓		
ON-delay and OFF-delay with control signal ($t = t_{on} = t_{off}$)		✓		✓	C[1]							
Flashing, starting with interval (pulse/interval 1:1)		✓		✓	D							
Clock-pulse, starting with interval (dead time, pulse period, and time setting ranges each separately adjustable)											✓	
Passing make contact		✓		✓	E							
Passing break contact with control signal		✓		✓	F[1]							
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)		✓		✓	G[1]							
Additive ON-delay with control signal		✓		✓	H[1]							
1 NO contact (semiconductor)												
ON-delay The two-wire timing relay is connected in series with the load. Timing begins after application of the exciting voltage. The semiconductor output then becomes conducting, and the load is under power.								✓				

✓ Function available

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G and H, which are not retriggerable.

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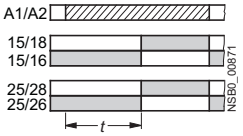
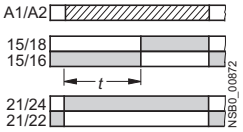
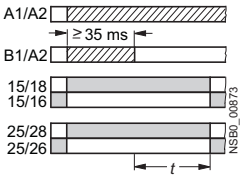
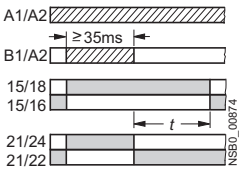
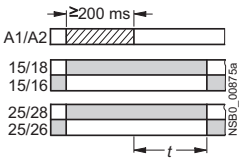
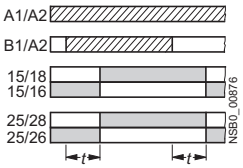
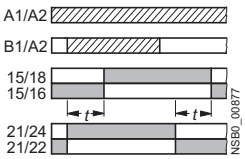
General data

Function	Function chart	3RP20 timing relay and 3RP1901 label set		3RP15 timing relay and 3RP1901 label set											
	Timing relay energized Contact closed Contact open	3RP2005-.B	3RP2025	3RP1505-.B 3RP1901-0B	3RP1505-.R 3RP1901-0A	Identification letter	3RP151.	3RP1525	3RP1527	3RP153.	3RP1540	3RP1555	3RP1560	3RP157.
2 CO contacts														
ON-delay		✓		✓	✓	A		✓						
ON-delay and instantaneous contact		✓		✓		A●								
OFF-delay with control signal		✓		✓	✓	B[1]								
OFF-delay with control signal and instantaneous contact		✓		✓		B●[1]								
OFF-delay without control signal											✓			
ON-delay and OFF-delay with control signal ($t = t_{on} = t_{off}$)		✓		✓	✓	C[1]								
ON-delay and OFF-delay with control signal and instantaneous contact ($t = t_{on} = t_{off}$)		✓		✓		C●[1]								

✓ Function available

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

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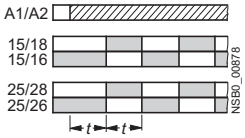
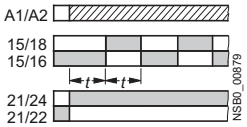
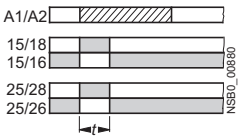
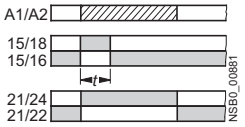
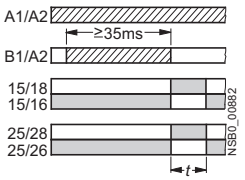
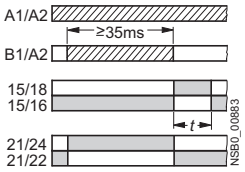
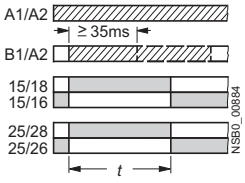
Function	Function chart	3RP20 timing relay and 3RP1901 label set		3RP15 timing relay and 3RP1901 label set										
	Timing relay energized Contact closed Contact open	3RP2005-.B	3RP2025	3RP1505-.B 3RP1901-0B	3RP1505-.R 3RP1901-0A	Identification letter	3RP151.	3RP1525	3RP1527	3RP153.	3RP1540	3RP1555	3RP1560	3RP157.
2 CO contacts (continued)														
Flashing, starting with interval (pulse/interval 1:1)		✓		✓	✓	D								
Flashing, starting with interval (pulse/interval 1:1) and instantaneous contacts		✓		✓		D●								
Passing make contact		✓		✓	✓	E								
Passing make contact and instantaneous contact		✓		✓		E●								
Passing break contact with control signal		✓		✓	✓	F[1]								
Passing break contact with control signal and instantaneous contact		✓		✓		F●[1]								
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)		✓		✓	✓	G[1]								

✓ Function available

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

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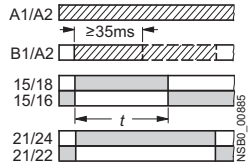
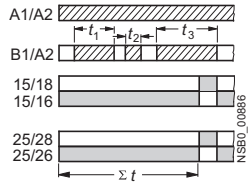
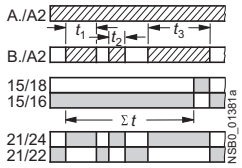
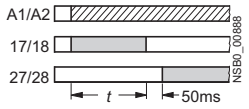
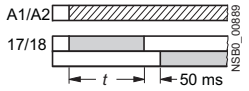
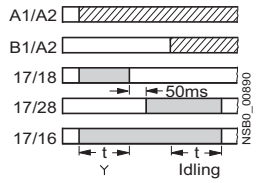
General data

Function	Function chart	3RP20 timing relay and 3RP1901 label set		3RP15 timing relay and 3RP1901 label set										
	Timing relay energized Contact closed Contact open	3RP2005-.B	3RP2025	3RP1505-.B 3RP1901-0B	3RP1505-.R 3RP1901-0A	Identification letter	3RP151.	3RP1525	3RP1527	3RP153.	3RP1540	3RP1555	3RP1560	3RP157.
2 CO contacts (continued)														
Pulse-forming with control signal and instantaneous contact) (pulse generation at the output does not depend on duration of energizing)		✓		✓		G●[1]								
Additive ON-delay with control signal					✓	H[1]								
Additive ON-delay with control signal and instantaneous contact		✓		✓		H●[1]								
Wye-delta function		✓		✓		Y Δ								
2 NO contacts														
Wye-delta function Y Δ														✓
3 NO contacts														
Wye-delta function with overtravel function[2] (idling)													✓	

✓ Function available

1) Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

2) Function charts showing the various possibilities of operation of the 3RP1560-1S.30, see page 10/50.

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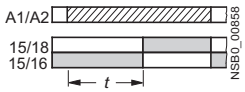
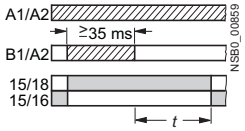
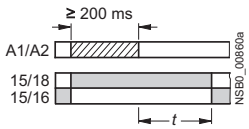
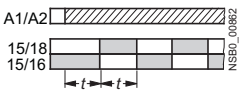
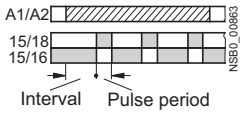
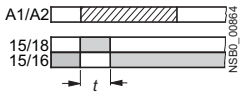
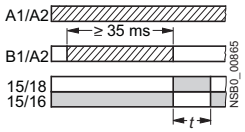
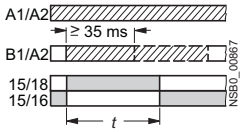
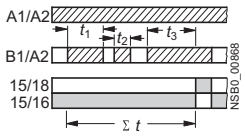
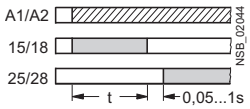
7PV15 function table

Function	Function chart	7PV15 timing relays						
	Timing relay energized Contact closed Contact open	7PV1508-1A	Identification letter	7PV1511 7PV1512 7PV1513 7PV1518	7PV1538	7PV1540	7PV1558	7PV1578
1 CO contact								
ON-delay		✓	A	✓				
OFF-delay with control signal		✓	B[1]		✓			
OFF-delay without control signal						✓		
Flashing, starting with interval (pulse/interval 1:1)		✓	C					
Clock-pulse, starting with interval (dead time, pulse period, and time setting ranges each separately adjustable)							✓	
Passing make contact		✓	D					
Passing break contact with control signal		✓	E[1]					
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)		✓	F[1]					
Additive ON-delay with control signal		✓	G[1]					
2 NO contacts								
Wye-delta function[2]								✓

✓ Function available

1) Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to E, F and G, which are not retriggerable.

2) With 7PV1578 the contacts 16 and 26 are not needed for the wye-delta function.

Note:

With the 7PV1508-1A multifunction relay the identification letters A to G are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

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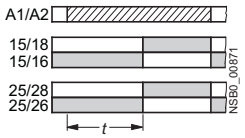
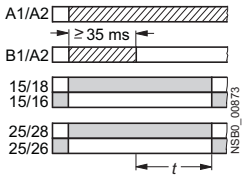
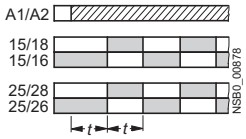
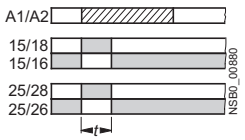
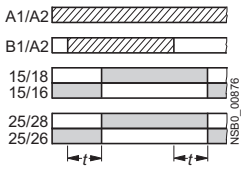
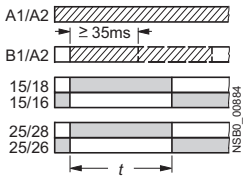
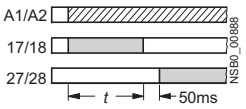
General data

Function	Function chart	7PV15 timing relays	
	Timing relay energized Contact closed Contact open	7PV1508-1B	Identification letter
2 CO contacts			
ON-delay		✓	A
OFF-delay with control signal		✓	B[1)]
Flashing, starting with interval (pulse/interval 1:1)		✓	C
Passing make contact		✓	D
ON-delay and OFF-delay with control signal		✓	H[1)]
Pulse-forming with control signal (pulse generation at the output does not depend on duration of energizing)		✓	F[1)]
Fixed pulse after ON-delay		✓	I

✓ Function available

[1)] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to F, which is not retriggerable.

Note:

With the 7PV1508-1B multifunction relay the identification letters A to D, F, H and I are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

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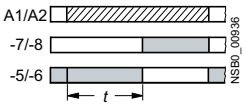
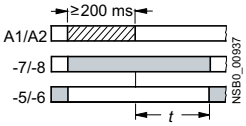
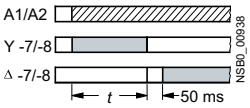
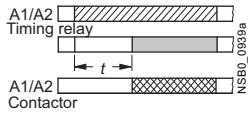
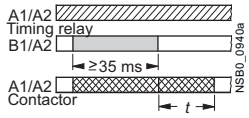
3RT1926 function table

Function	Function chart	3RT1926 timing relay				
	Timing relay energized Contact closed Contact open Contactor coil energized	3RT1926-2C	3RT1926-2D	3RT1926-2E	3RT1926-2F	3RT1926-2G
1 NO contact + 1 NC contact						
ON-delay				✓		
OFF-delay without control signal					✓	
2 NO contacts						
Wye-delta function 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)						✓
1 NO contact (semiconductor)						
ON-delay Two-wire design (varistor integrated)		✓				
OFF-delay with control signal (varistor integrated)			✓			

✓ Function available

10

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General data

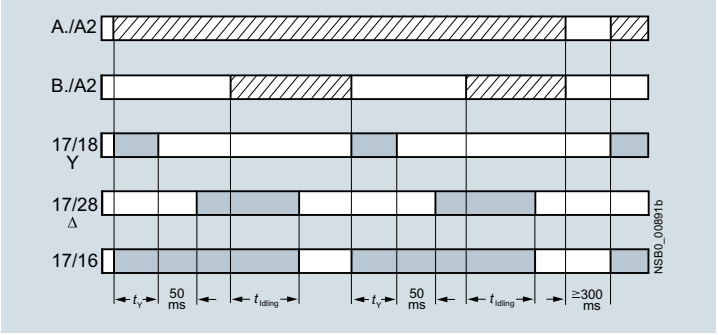
3RP15 function table

Possibilities of operation of the 3RP1560-1S.30 timing relay

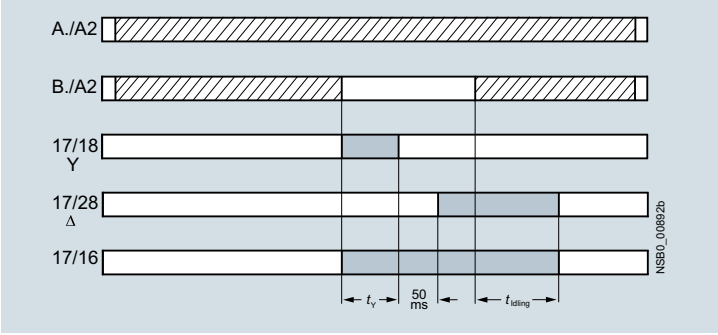
Timing relay energized
Contact closed
Contact open

t_Y = Star time 1 ... 20 s
t_{Idling} = Idling time (coasting time) 30 ... 600 s

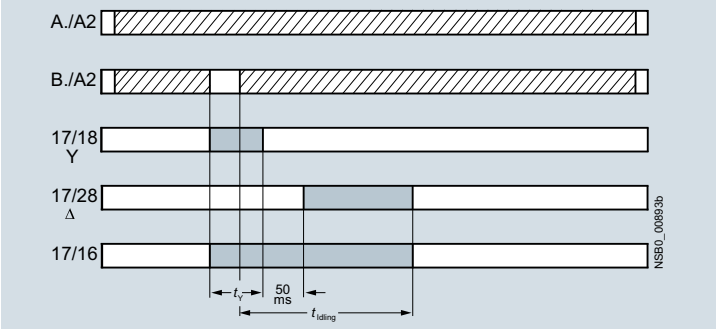
Operation 1



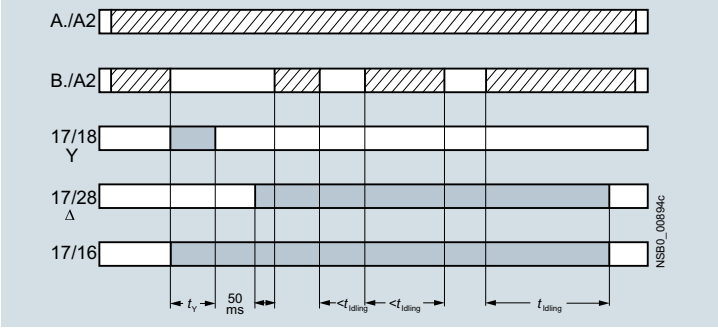
Operation 2



Operation 3



Operation 4



Note:
The following applies to all operations: The pressure switch controls the timing via B./A2.

Operation 1:
Start contact B./A2 is open when control supply voltage A./A2 is applied.

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the Y/Δ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time t_{Idling} (30 ... 600 s) has elapsed, the output relays (17/16 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Remarks:

Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.

Operation 2:
Start contact B./A2 is closed when control supply voltage A./A2 is applied.

If the control signal B./A2 is already present when the control supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.

Operation 3:
Start contact B./A2 closes while star time is running.

If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.

Operation 4:
Start contact B./A2 opens while delta time is running and is applied again.

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (coasting time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.

Application example based on standard operation (operation 1): For example, use of 3RP1560 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode, i.e. in no-load operation for a specific time which can be set from 30 ... 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2.

The control supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the control supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters Y/Δ operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (coasting time) is started, and the compressor enters no-load operation for the set period of time from 30 ... 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

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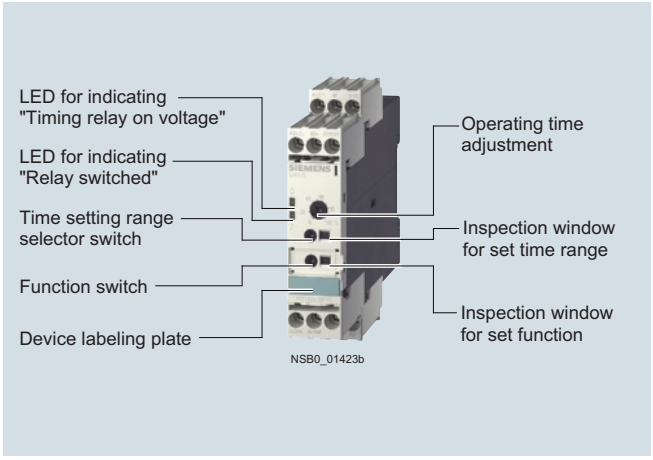
Overview

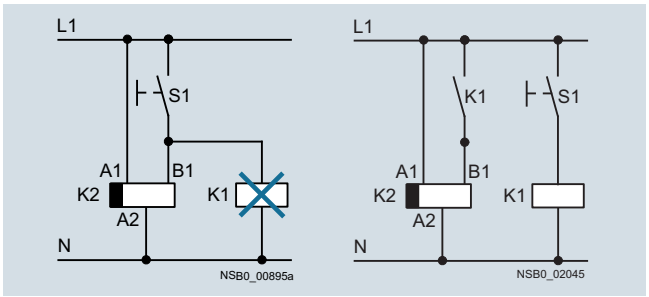


SIRIUS 3RP15 timing relays

Standards

The timing relays comply with:

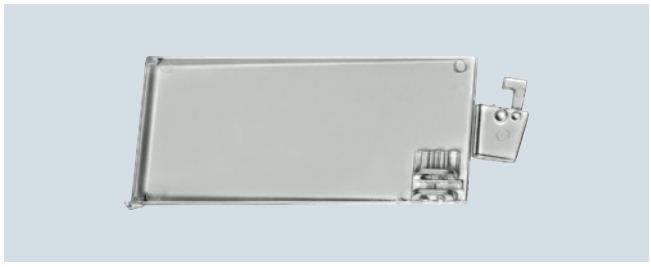
- IEC 60721-3-3 "Ambient conditions"
- IEC 61812-1 "Specified time relays for industrial use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"



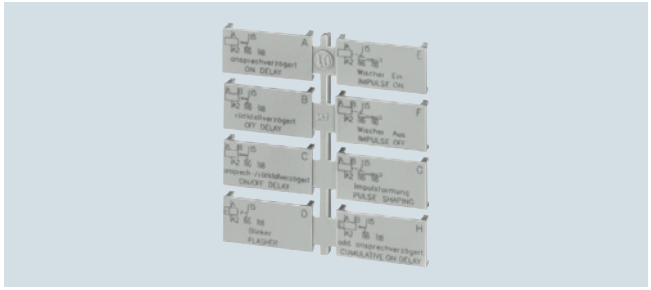
Diagrams

Accessories

Push-in lugs for screw fixing



Sealable covers



Label set for marking the multifunction relay

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
Timing relays in industrial enclosure, 22.5 mm	**3 R P 1 5**								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	**3 R P 1 5**	**0**	**5**	**–**	**1**	**A**	**A**	**4**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

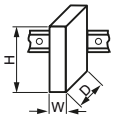
Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Enclosure version

All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing.

Technical specifications

Type			3RP1505, 3RP151., 3RP1525, 3RP153., 3RP154., 3RP155., 3RP156., 3RP157.	3RP1527
Dimensions (W x H x D)				
• For 2 terminal blocks				
- Screw terminals		mm	22.5 x 83 x 90	
- Spring-type terminals		mm	22.5 x 84 x 90	
• For 4 terminal blocks				
- Screw terminals		mm	22.5 x 102 x 110	
- Spring-type terminals		mm	22.5 x 103 x 110	
Rated insulation voltage		V AC	300;	
Pollution degree 3, overvoltage category III			500 at 3RP1505-1BT20, 3RP157.-.NM20	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Operating range at excitation[1]			0.85 ... 1.1 x U_s at V AC/DC, 50/60 Hz 0.8 ... 1.25 x U_s 24 V DC 0.95 ... 1.05 times the rated frequency	
Rated operational current I_e				
• Load current		A	--	0.01 ... 0.6
• AC-15 at 24 ... 400 V, 50 Hz		A	3[2]	--
• DC-13 at				
- 24 V		A	1	--
- 125 V		A	0.2	--
- 250 V		A	0.1	--
Uninterrupted thermal current I_{th}		A	5	--
Mechanical endurance	Operating cycles		30 x 10^6	100 x 10^6
Electrical endurance	Operating cycles at I_e		1 x 10^5	100 x 10^6
Connection type			**Screw terminals**	
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)	
• Tightening torque		Nm	0.8 ... 1.2	
Connection type			**Spring-type terminals**	
• Solid		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded		mm^2	2 x (0.25 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)	

[1] If nothing else is stated.

[2] For 3RP1505-.R: NC contact → I_e = 1 A.

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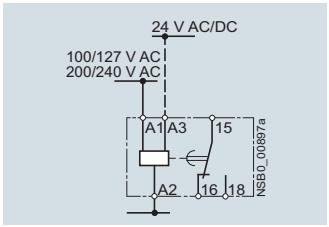
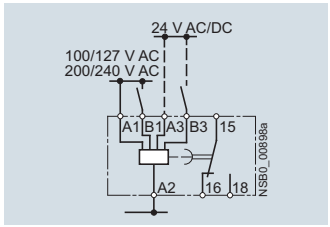
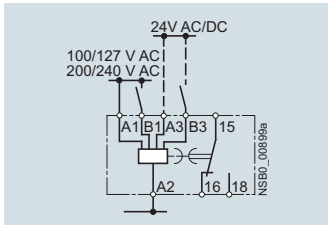
3RP15 internal circuit diagrams (terminal designation according to DIN 46199-5)



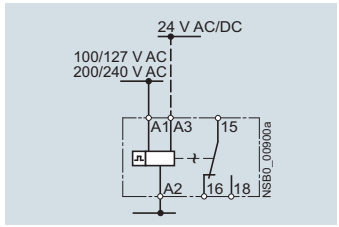
3RP1505-.A, 3RP151., 3RP1525-.A
ON-delay



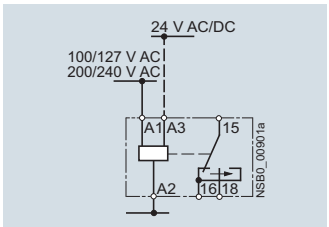
3RP1505-.A, 3RP153.-.A
OFF-delay
with control signal



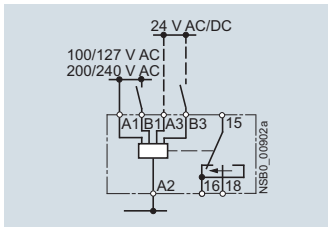
3RP1505-.A
ON-delay and OFF-delay
with control signal



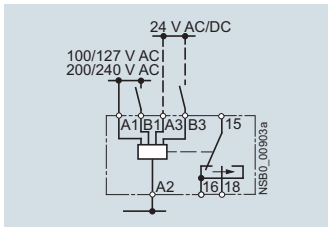
3RP1505-.A
Flashing



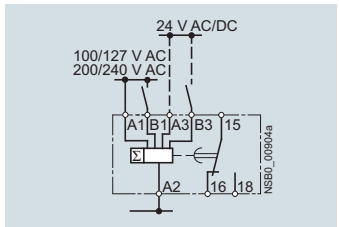
3RP1505-.A
Passing make contact



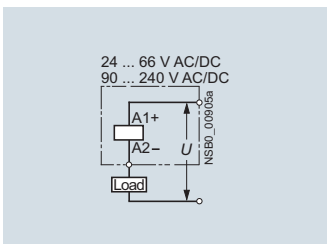
3RP1505-.A
Passing break contact
with control signal



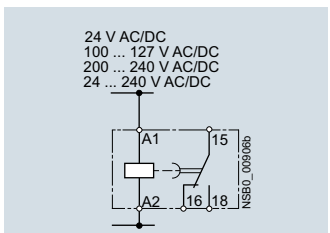
3RP1505-.A
Pulse-forming
with control signal



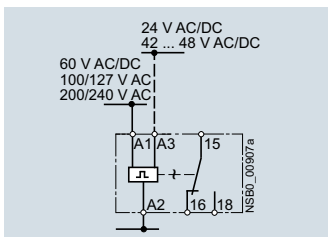
3RP1505-.A
Additive ON-delay
with control signal



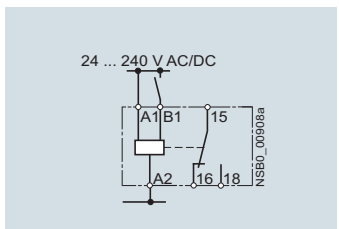
3RP1527
24 ... 66 V AC/DC, 90 ... 240 V AC/DC
ON-delay,
two-wire design



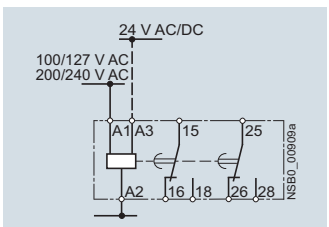
3RP1540-.A
OFF-delay
without control signal



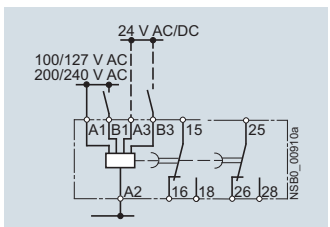
3RP1555
Clock-pulse relay



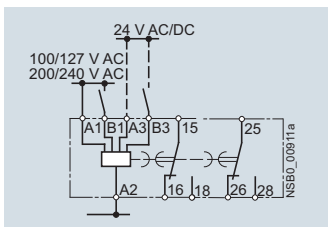
3RP1505-.AW30
Multifunction relay
(same functions as 3RP1505-1A)



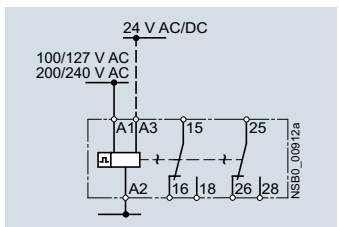
3RP1505-.B, 3RP1525-1B
ON-delay, 3RP1525-1B
also for 42 ... 48/60 V AC/DC
(see page 10/54, 3RP1525-1BR30)



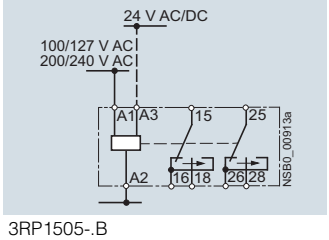
3RP1505-.B
OFF-delay with control signal



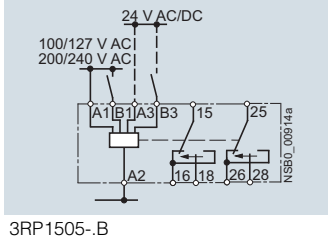
3RP1505-.B
ON-delay and OFF-delay
with control signal



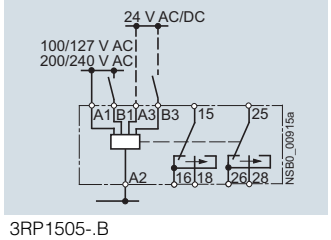
3RP1505-.B
Flashing



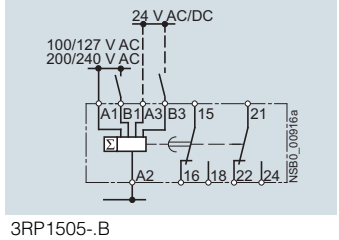
3RP1505-.B
Passing make contact



3RP1505-.B
Passing break contact
with control signal



3RP1505-.B
Pulse-forming
with control signal



3RP1505-.B
Additive ON-delay
with control signal and
instantaneous contact

10

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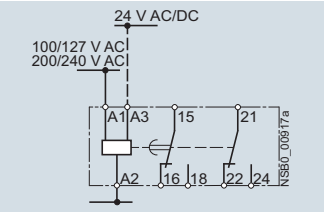
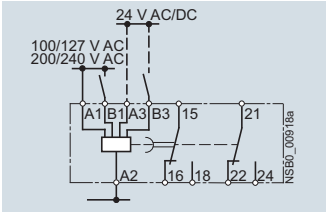
SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

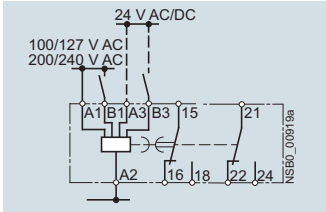
3RP15 internal circuit diagrams (terminal designation according to DIN 46199-5) continued



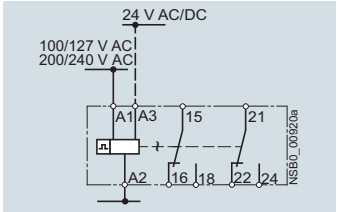
3RP1505-.B
ON-delay
and instantaneous contact



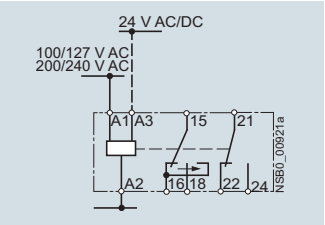
3RP1505-.B
OFF-delay
with control signal
and instantaneous contact



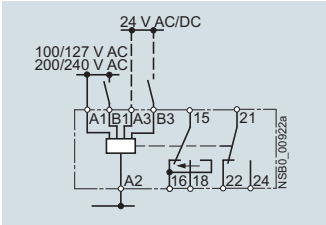
3RP1505-.B
ON-delay and OFF-delay
with control signal
and instantaneous contact



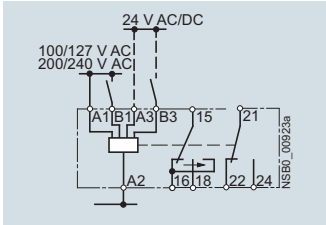
3RP1505-.B
Flashing
and instantaneous contact



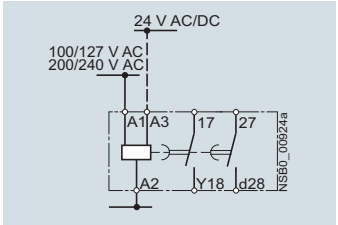
3RP1505-.B
Passing make contact
and instantaneous contact



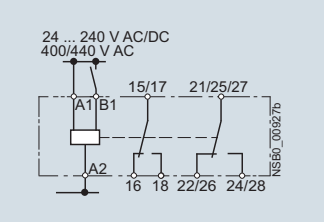
3RP1505-.B
Passing break contact
with control signal
and instantaneous contact



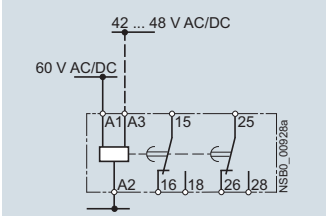
3RP1505-.B
Pulse-forming
with control signal
and instantaneous contact



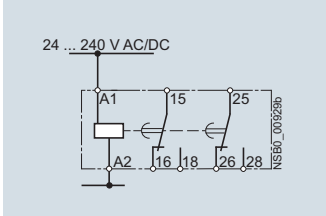
3RP1505-.B
Wye-delta function



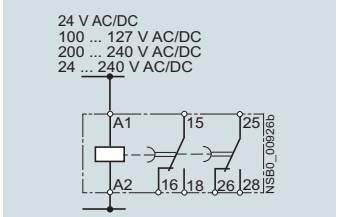
3RP1505-.BW30/-1BT20/-.RW30
Multifunction relay
(functions see function table)



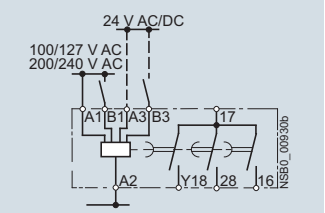
3RP1525-. BR30
ON-delay



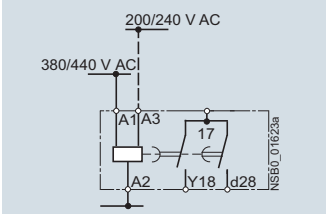
3RP1525-. BW30
ON-delay



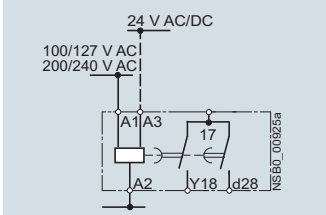
3RP1540-.B
OFF-delay
without control signal



3RP1560-. S
Wye-delta timing relay
with overtravel function (idling)



3RP157.-.M20
Wye-delta timing relay



3RP1574, 3RP1576
Wye-delta timing relay

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Selection and ordering data

Solid-state timing relays for general use in control systems and mechanical engineering with:
- 1 or 2 CO contacts
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RP1505-1BP30

3RP1511-1AP30

3RP1525-1BW30

3RP1527-1EM30

3RP1505-2BP30

3RP1511-2AP30

3RP1525-2BW30

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Article No.	Screw terminals Price per PU	DT	Spring-type terminals Article No.	Spring-type terminals Price per PU
3RP1505 timing relays, multifunction, 15 time setting ranges									
The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP1505 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B. For functions see 3RP1901 label set, page 10/67.									
With LED and:									
1 CO contact, 8 functions	0.05 ... 1 s	--	12	A	**3RP1505-1AA40**			**--**	
	0.15 ... 3 s	24/100 ... 127	24	▶	**3RP1505-1AQ30**		C	**3RP1505-2AQ30**	
	0.5 ... 10 s	24/200 ... 240	24	▶	**3RP1505-1AP30**		A	**3RP1505-2AP30**	
	1.5 ... 30 s	24 ... 240[5]	24 ... 240[2]	▶	**3RP1505-1AW30**		A	**3RP1505-2AW30**	
2 CO contacts, 16 functions	0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min	24/100 ... 127	24	▶	**3RP1505-1BQ30**		A	**3RP1505-2BQ30**	
		24/200 ... 240	24	▶	**3RP1505-1BP30**		A	**3RP1505-2BP30**	
		24 ... 240[5]	24 ... 240[2]	▶	**3RP1505-1BW30**		A	**3RP1505-2BW30**	
		400 ... 440	--	A	**3RP1505-1BT20**			**--**	
2 CO contacts, positively driven and hard gold-plated. 8 functions[3][4]	0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	24 ... 240	24 ... 240	▶	**3RP1505-1RW30**		A	**3RP1505-2RW30**	
3RP151. timing relays, ON-delay, 1 time setting range									
With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127	24	▶	**3RP1511-1AQ30**		C	**3RP1511-2AQ30**	
		24/200 ... 240	24	▶	**3RP1511-1AP30**		A	**3RP1511-2AP30**	
	1.5 ... 30 s	24/100 ... 127	24	▶	**3RP1512-1AQ30**		C	**3RP1512-2AQ30**	
		24/200 ... 240	24	▶	**3RP1512-1AP30**		A	**3RP1512-2AP30**	
	5 ... 100 s	24/100 ... 127	24	▶	**3RP1513-1AQ30**		C	**3RP1513-2AQ30**	
		24/200 ... 240	24	▶	**3RP1513-1AP30**		A	**3RP1513-2AP30**	
3RP1525 timing relays, ON-delay, 15 time setting ranges									
With LED and:									
1 CO contact	0.05 ... 1 s	24/100 ... 127	24	▶	**3RP1525-1AQ30**		B	**3RP1525-2AQ30**	
	0.15 ... 3 s	24/200 ... 240	24	▶	**3RP1525-1AP30**		A	**3RP1525-2AP30**	
2 CO contacts	0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	42 ... 48/60	42 ... 48/60[5]	A	**3RP1525-1BR30**			**--**	
		24/100 ... 127	24	▶	**3RP1525-1BQ30**		C	**3RP1525-2BQ30**	
		24/200 ... 240	24	▶	**3RP1525-1BP30**		A	**3RP1525-2BP30**	
		24 ... 240[5]	24 ... 240[2]	▶	**3RP1525-1BW30**		A	**3RP1525-2BW30**	
3RP1527 timing relays, ON-delay, two-wire design, 4 time setting ranges									
1 NO contact (semiconductor)	0.05 ... 1 s 0.2 ... 4 s 1.5 ... 30 s 12 ... 240 s	24 ... 66	24 ... 66[5]	A	**3RP1527-1EC30**		C	**3RP1527-2EC30**	
		90 ... 240	90 ... 240[5]	▶	**3RP1527-1EM30**		C	**3RP1527-2EM30**	

[1] With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

[2] Operating range 0.7 to 1.1 x U_s.

[3] Positively driven: NO and NC contacts are never closed simultaneously; contact gap ≥ 0.5 mm is ensured, minimum make-break capacity 12 V, 3 mA.

[4] The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).

[5] Operating range 0.8 to 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

PU (UNIT, SET, M) = 1, PS* = 1 unit, PG = 41H ,

3RP1533-1AP30

3RP1540-1BB31

3RP1555-1AP30

3RP1560-1SP30

3RP1576-2NP30

3RP1533-2AP30

3RP1540-2BB31

Version	Time setting range *t* adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Article No.	Screw terminals Price per PU	DT	Spring-type terminals Article No.	Spring-type terminals Price per PU
3RP153. timing relays, OFF-delay, with control signal, 1 time setting range									
With LED and 1 CO contact The same potential must be applied to terminals A and B	0.5 ... 10 s	24/100 ... 127	24	A	**3RP1531-1AQ30**		B	**3RP1531-2AQ30**	
		24/200 ... 240	24	▶	**3RP1531-1AP30**		B	**3RP1531-2AP30**	
	1.5 ... 30 s	24/100 ... 127	24	A	**3RP1532-1AQ30**		C	**3RP1532-2AQ30**	
		24/200 ... 240	24	▶	**3RP1532-1AP30**		A	**3RP1532-2AP30**	
	5 ... 100 s	24/100 ... 127	24	A	**3RP1533-1AQ30**		B	**3RP1533-2AQ30**	
		24/200 ... 240	24	▶	**3RP1533-1AP30**		B	**3RP1533-2AP30**	
3RP1540 timing relays, OFF-delay, without control signal, 9 time setting ranges[1]									
With LED and:									
1 CO contact	0.05 ... 1 s 0.15 ... 3 s 0.3 ... 6 s 0.5 ... 10 s 1.5 ... 30 s 3 ... 60 s 5 ... 100 s 15 ... 300 s 30 ... 600 s	24	24[2]	▶	**3RP1540-1AB31**		A	**3RP1540-2AB31**	
		100 ... 127	100 ... 127	▶	**3RP1540-1AJ31**		A	**3RP1540-2AJ31**	
		200 ... 240	200 ... 240	▶	**3RP1540-1AN31**		A	**3RP1540-2AN31**	
		24 ... 240	24 ... 240	▶	**3RP1540-1AW31**		C	**3RP1540-2AW31**	
2 CO contacts		24	24[2]	▶	**3RP1540-1BB31**		A	**3RP1540-2BB31**	
		100 ... 127	100 ... 127	A	**3RP1540-1BJ31**		C	**3RP1540-2BJ31**	
		200 ... 240	200 ... 240	▶	**3RP1540-1BN31**		B	**3RP1540-2BN31**	
		24 ... 240	24 ... 40	▶	**3RP1540-1BW31**		A	**3RP1540-2BW31**	
3RP1555 timing relays, clock-pulse relay, 15 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [3]	42 ... 48/60	42...48/60[4]	C	**3RP1555-1AR30**		C	**3RP1555-2AR30**	
		24/100 ... 127	24	▶	**3RP1555-1AQ30**		C	**3RP1555-2AQ30**	
		24/200 ... 240	24	▶	**3RP1555-1AP30**		A	**3RP1555-2AP30**	
3RP1560 timing relays, wye-delta function, dead interval 50 ms and coasting time, 1 time setting range									
3 NO contacts (common contact root connecting terminal 17)	Wye-delta 1 ... 20 s , coasting time (idling) 30 ... 600 s	24/100 ... 127	24	A	**3RP1560-1SQ30**			--	
		24/200 ... 240	24	▶	**3RP1560-1SP30**		C	**3RP1560-2SP30**	
3RP157. timing relays, wye-delta function[5], dead interval 50 ms, 1 time setting range									
1 NO contact instantaneous and 1 NO contact delayed (common contact root connecting terminal 17)	1 ... 20 s	24/100 ... 127	24	▶	**3RP1574-1NQ30**		C	**3RP1574-2NQ30**	
		24/200 ... 240	24	▶	**3RP1574-1NP30**		A	**3RP1574-2NP30**	
		200 ... 240/ 380 ... 440	--	B	**3RP1574-1NM20**		C	**3RP1574-2NM20**	
	3 ... 60 s	24/100 ... 127	24	▶	**3RP1576-1NQ30**		A	**3RP1576-2NQ30**	
		24/200 ... 240	24	▶	**3RP1576-1NP30**		A	**3RP1576-2NP30**	
		200 ... 240/ 380 ... 440	--	C	**3RP1576-1NM20**		C	**3RP1576-2NM20**	

For accessories see page 10/67.

1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

2) Operating range 0.7 to 1.25 x U_s.

3) With switch position ∞ no timing. For test purposes (ON/OFF function) on site. For dead time "infinite", the relay is always off. For pulse time "infinite", the relay is always on.

4) Operating range 0.8 to 1.1 x U_s.

5) Example circuits see Reference Manual for "Monitoring and Control Devices", http://support.automation.siemens.com/WW/view/en/35846532.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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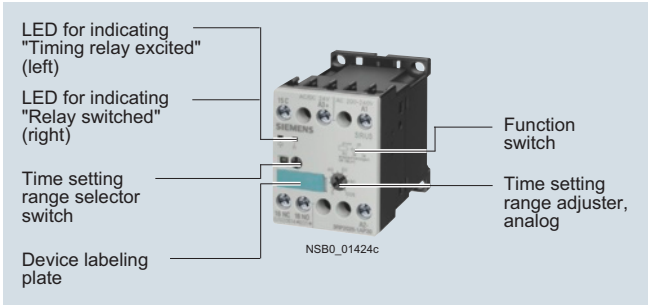
Overview



SIRIUS 3RP20 timing relays

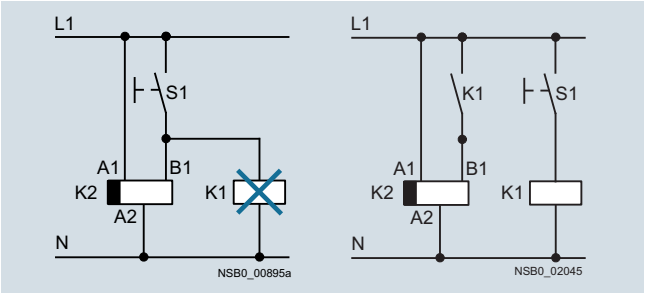
Standards

The timing relays comply with:

- IEC 60721-3-3 "Ambient conditions"
- IEC 61812-1 "Specified time relays for industrial use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- IEC 61140 "Electrical protective separation"

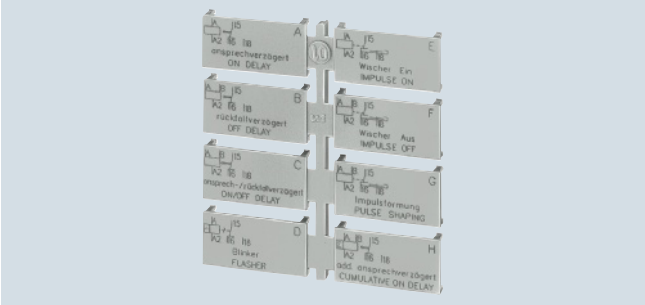
Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).



Diagrams

Accessories



Label set for marking the multifunction relay

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
SIRIUS timing relays, enclosure 45 mm	**3 R P 2 0**								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	**3 R P 2 0**	**0**	**5**	**–**	**1**	**A**	**P**	**3**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

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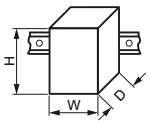
SIRIUS 3RP20 timing relays, 45 mm

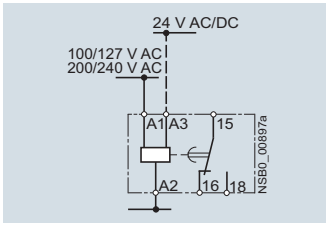
Technical specifications

Type			3RP2005, 3RP2025
Dimensions (W x H x D)		mm	45 x 57 x 73
Rated insulation voltage Pollution degree 3 Overvoltage category III		V AC	300
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
Operating range at excitation[1]			0.85 ... 1.1 x U_s at AC; 0.8 ... 1.25 x U_s at DC; 0.95 ... 1.05 times the rated frequency
Mechanical endurance	Operating cycles		30 x 10^6
Electrical endurance	Operating cycles at I_e		1 x 10^5
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• Stranded		AWG	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• AWG cables		AWG	2 x (18 ... 14)
• Tightening torque		Nm	0.8 … 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 14)
• Max. external diameter of the conductor insulation		mm	3.6

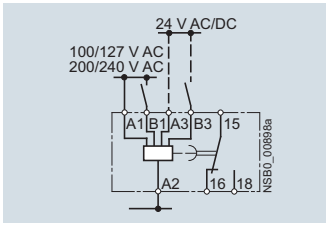
1) If nothing else is stated.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

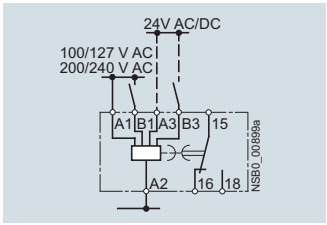
3RP20 internal circuit diagrams (terminal designation according to DIN 46199-5)



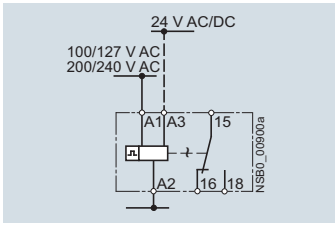
3RP2005, 3RP2025
ON-delay



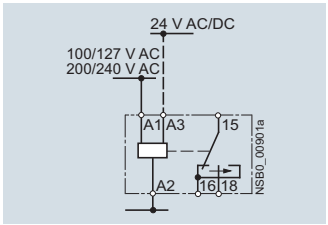
3RP2005
OFF-delay
with control signal



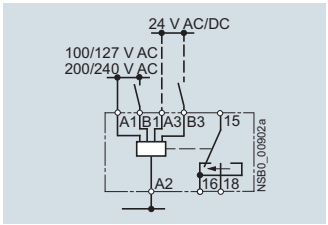
3RP2005
ON-delay and OFF-delay
with control signal



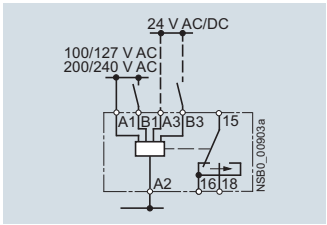
3RP2005
Flashing



3RP2005
Passing make contact



3RP2005
Passing break contact
with control signal



3RP2005
Pulse-forming
with control signal

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Selection and ordering data

Multifunction

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP2005 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

For functions see 3RP1901 label set, page10/67.

3RP2005-1BW30

3RP2025-1AP30

3RP2005-2BW30

3RP2025-2AP30

Version	Time setting range t	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Article No.	Screw terminals Price per PU	DT	Spring-type terminals Article No.	Spring-type terminals Price per PU
3RP2005 timing relays, multifunction, 15 time setting ranges									
With LED and 1 CO contact, 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP2005-1AQ30** **3RP2005-1AP30**		A ▶	**3RP2005-2AQ30** **3RP2005-2AP30**	
With LED and 2 CO contacts, 16 functions[1]		24 ... 240[3]	24 ... 240[4]	▶	**3RP2005-1BW30**		A	**3RP2005-2BW30**	
3RP2025. timing relays, ON-delay, 15 time setting ranges									
With LED and 1 CO contact[1]	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP2025-1AQ30** **3RP2025-1AP30**		▶ ▶	**3RP2025-2AQ30** **3RP2025-2AP30**	

For accessories see page 10/67.

1) Units with electrical protective separation.

2) With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

3) Operating range 0.8 to 1.1 x U_s.

4) Operating range 0.7 to 1.1 x U_s.

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7PV15 timing relays in enclosure, 17.5 mm

Overview

7PV15 timing relay

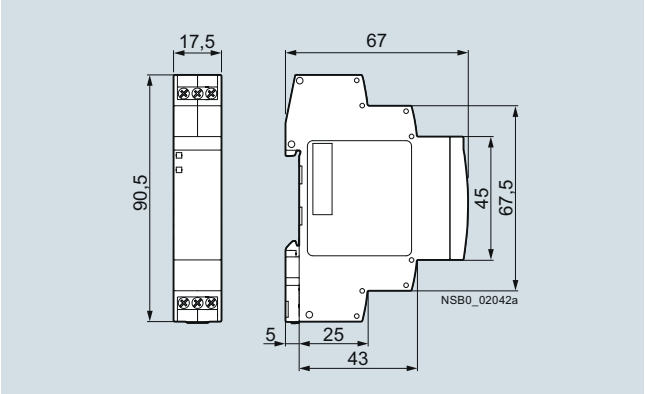
Standards

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Time relays for industrial and residential use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- DIN 43880 "Built-in equipment for electrical installations; overall dimensions and related mounting dimensions"

Enclosure version

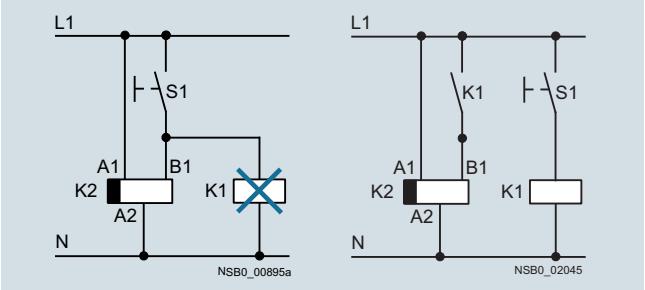
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715. The enclosure complies with DIN 43880, 1 MW.



Dimensions

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).



Diagrams

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
Timing relays in industrial enclosure, 17.5 mm	7 P V 1 5								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	7 P V 1 5	0	8	–	1	A	W	3	0

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

- Wide voltage range 12 to 240 V AC/DC
- High switching capacity, e.g. AC-15 at 230 V, 3 A
- Combination voltage, e.g. 24 V AC/DC and 200 to 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

Application

Timing relays are used in control, starting and protective circuits for all switching operations involving time delays, e.g. in non-residential buildings, airports, industrial buildings etc.

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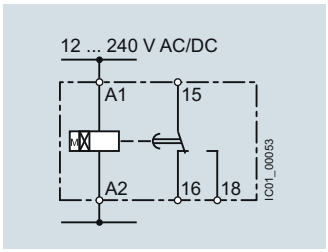
Technical specifications

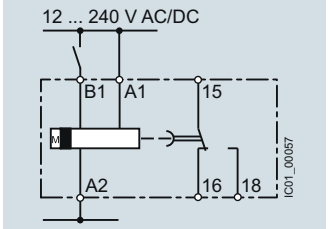
Type			7PV15
Rated insulation voltage Pollution degree 2, overvoltage category III		V AC	300
Permissible ambient temperature • During operation • During storage		 °C °C	 -25 ... +55 -40 ... +70
Operating range at excitation[1]			0.85 ... 1.1 x U_s at V AC/DC, 50/60 Hz 0.8 ... 1.25 x U_s 24 V DC 0.95 ... 1.05 times the rated frequency
Rated operational current I_e • AC-15 at 24 ... 240 V, 50 Hz • DC-13 at - 24 V - 125 V		 A A A	 3 1 0.2
Uninterrupted thermal current I_{th}		A	5
Mechanical endurance	Operating cycles		1 x 10^6
Electrical endurance	Operating cycles at I_e		1 x 10^5
Connection type			**Screw terminals**
• Terminal screw • Solid • Finely stranded with end sleeve • Finely stranded without end sleeve • AWG cables, solid or stranded • Tightening torque		 mm^2 mm^2 mm^2 AWG Nm	M3 (for standard screwdriver, size 2 and Pozidriv 2) 1 x (0.2 ... 2.5) 1 x (0.25 ... 1.5) 1 x (0.2 ... 1.5) 1 x (24 ... 14) 0.4 … 0.5

[1] If nothing else is stated.

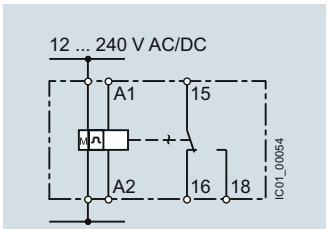
7PV15 internal circuit diagrams (terminal designation according to DIN 46199-5)



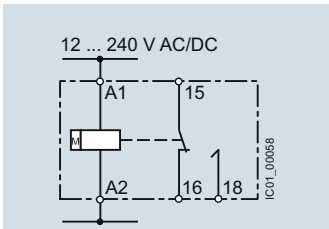
7PV1508-1AW30
ON-delay



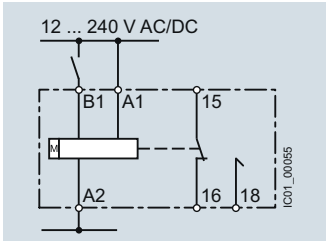
7PV1508-1AW30
OFF-delay



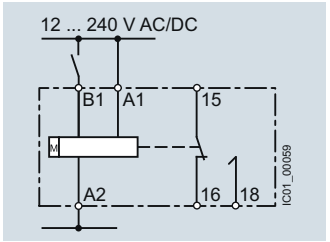
7PV1508-1AW30
Flashing, starting with interval



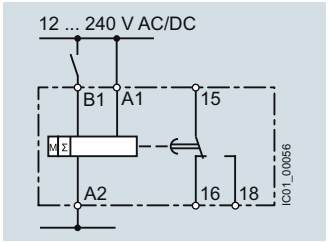
7PV1508-1AW30
Passing make contact



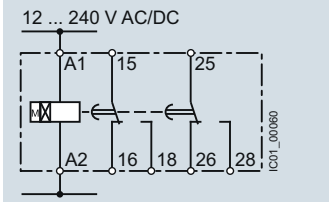
7PV1508-1AW30
Passing break contact
with control signal



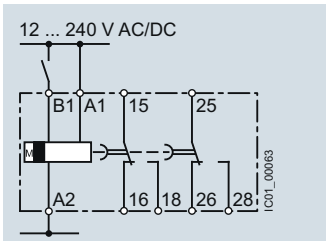
7PV1508-1AW30
Pulse-forming
with control signal



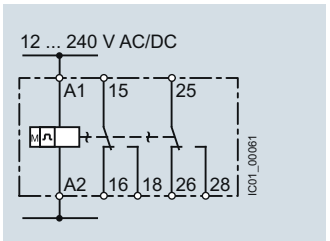
7PV1508-1AW30
Additive ON-delay,
with control signal



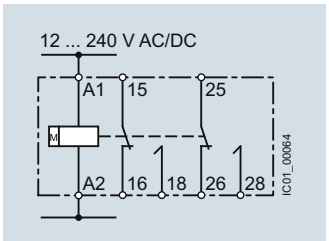
7PV1508-1BW30
ON-delay



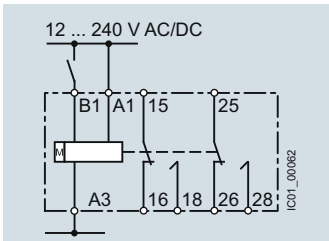
7PV1508-1BW30
OFF-delay
with control signal



7PV1508-1BW30
Flashing,
starting with interval



7PV1508-1BW30
Passing make contact



7PV1508-1BW30
Pulse-forming
with control signal

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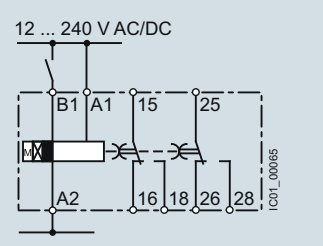
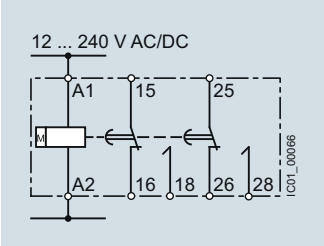
7PV15 timing relays in enclosure, 17.5 mm

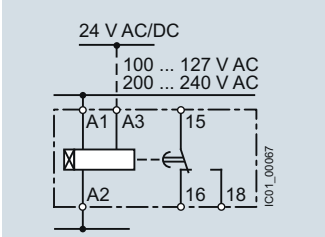
7PV15 internal circuit diagrams (terminal designation according to DIN 46199-5) continued



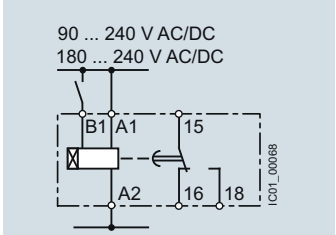
7PV1508-1BW30
ON and OFF-delay



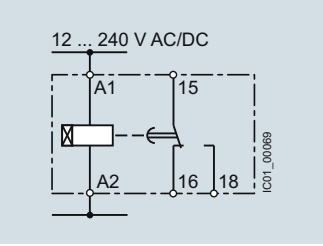
7PV1508-1BW30
Fixed pulse
after ON-delay



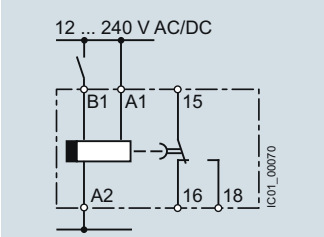
7PV151.-1AQ30, 7PV151.-1AP30
ON-delay



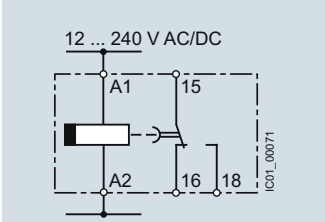
7PV1518-1AJ30, 7PV1518-1AN30
ON-delay



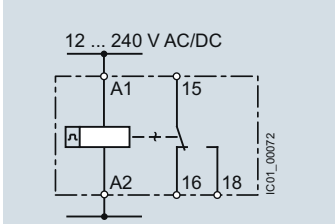
7PV1518-1AW30
ON-delay



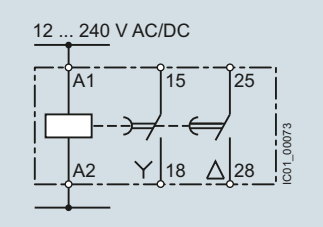
7PV1538-1AW30
OFF-delay
with control signal



7PV1540-1AW30
OFF-delay
without control signal



7PV1558-1AW30
Clock-pulse relay



7PV1578-1BW30
Wye-delta

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7PV15 timing relays in enclosure, 17.5 mm

Selection and ordering data

Solid-state timing relays for general use and in control systems, mechanical engineering and infrastructure with:

- 1 or 2 CO contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

7PV1508-1AW30

7PV1512-1AP30

7PV1518-1AW30

7PV1538-1AW30

7PV1540-1AW30

7PV1558-1AW30

7PV1578-1BW30

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
7PV1508 timing relays, multifunction, 7 time setting ranges									
The functions can be adjusted by means of rotary switches. The same potential must be applied to terminals A. and B.									
With LED and 1 CO contact, 7 functions	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	►	**7PV1508-1AW30**		1	1 unit	41H
With LED and 2 CO contacts, 7 functions		12 ... 240	12 ... 240	►	**7PV1508-1BW30**		1	1 unit	41H
7PV151. timing relays, ON-delay, 1 time setting range									
With LED and 1 CO contact	0.05 ... 1 s	24/200 ... 240	24	►	**7PV1511-1AP30**		1	1 unit	41H
	0.5 ... 10 s	24/100 ... 127	24	►	**7PV1512-1AQ30**		1	1 unit	41H
		24/200 ... 240	24	►	**7PV1512-1AP30**		1	1 unit	41H
	5 ... 100 s	24/100 ... 127	24	►	**7PV1513-1AQ30**		1	1 unit	41H
		24/200 ... 240	24	►	**7PV1513-1AP30**		1	1 unit	41H
7PV1518 timing relays, ON-delay, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	►	**7PV1518-1AW30**		1	1 unit	41H
		90 ... 127	90 ... 127	►	**7PV1518-1AJ30**		1	1 unit	41H
		180 ... 240	180 ... 240	►	**7PV1518-1AN30**		1	1 unit	41H
7PV1538 timing relays, OFF-delay, with control signal, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	►	**7PV1538-1AW30**		1	1 unit	41H
7PV1540 timing relays, OFF-delay, without control signal, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3s 0.3 ... 6 s 0.5 ... 10 s 1.5 ... 30 s 3 ... 60 s 5 ... 100 s	12 ... 240	12 ... 240	►	**7PV1540-1AW30**		1	1 unit	41H
7PV1558 timing relays, clock-pulse relay, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	►	**7PV1558-1AW30**		1	1 unit	41H
7PV1578 timing relays, wye-delta function, 7 time setting ranges									
With LED and 2 NO contacts, dead interval 0.05 ... 1 s adjustable	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	►	**7PV1578-1BW30**		1	1 unit	41H

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT19 timing relays for mounting onto 3RT1 contactors

Overview

SIRIUS 3RT19 timing relay

Simply by being plugged in place, the SIRIUS 3RT19 timing relays enable different functionalities required for the assembly of starters to be realized in the feeder. At the same time the timing relays for mounting onto contactors reduce the wiring work required within the feeder and save space in the control cabinet.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two plug-in contacts to actuate the contactor underneath by means of a semiconductor after the set time has elapsed.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A1/A2.

The switching state feedback is performed by a mechanical switching state indicator (plunger).

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	□
Time module and contactor control units	3 R T 1 9								
Size		□	□						
Type of accessories and spare parts					□				
Version						□			
Rated control supply voltage							□		
Time setting ranges								□	
Connection type									□
Example	**3 R T 1 9**	**2**	**6**	**–**	**2**	**E**	**J**	**1**	**1**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Technical specifications

According to IEC 61812-1/DIN VDE 0435-2021

Type			Solid-state timing relay blocks with semiconductor output 3RT19.6-2C 3RT19.6-2D	Solid-state time-delay auxiliary switch blocks 3RT19.6-2E 3RT19.6-2F 3RT19.6-2G
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to DIN VDE 0110		V AC	300	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Operating range of excitation			0.8 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency	0.85 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency
Rated operational currents I_e				
• Load current		A	0.3 for 3RT1916; 0.5 for 3RT1926	--
• AC-15, 24 ... 400 V, 50 Hz		A	--	3
• DC-13, 24 V		A	--	1
• DC-13, 125 V		A	--	0.2
• DC-13, 250 V		A	--	0.1
Mechanical endurance	Operating cycles		100 x 10^6	10 x 10^6
Electrical endurance at I_e	Operating cycles		100 x 10^6	1 x 10^5
Connection type			**Screw terminals**	
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)	
• Tightening torque		Nm	0.8 ... 1.2	

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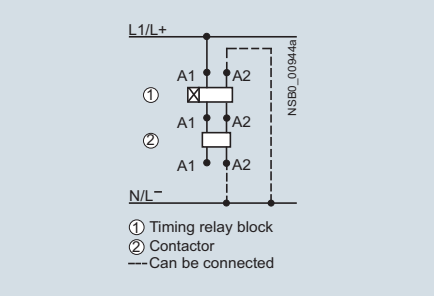
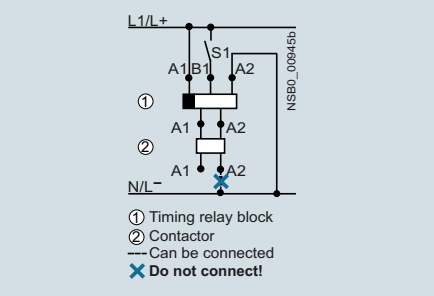
3RT19 internal circuit diagrams (terminal designation according to DIN 46199-5)

Solid-state timing relay blocks

For 3RT10 contactors in sizes S0 to S3 and
3RH11 contactor relays

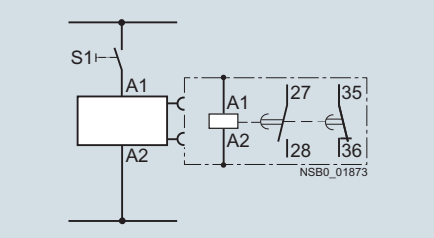


3RT1926-2C
ON-delay

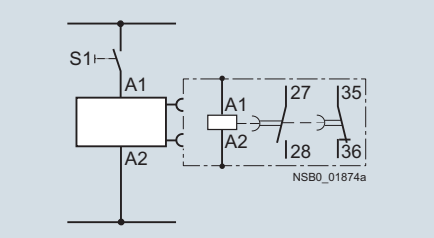


3RT1926-2D
With OFF-delay
(with control signal)

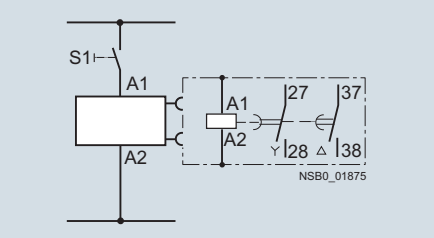
Solid-state time-delay auxiliary switch blocks



3RT1926-2E
ON-delay



3RT1926-2F
OFF-delay
(without control signal)



3RT1926-2G
Wye-delta function

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SIRIUS 3RT19 timing relays for mounting onto 3RT1 contactors

Selection and ordering data

For contactors	Version	Time setting range t	Rated control supply voltage U_s	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		s	V						
For sizes S0 to S12[1]									
3RT102, 3RT103, 3RT104	**Terminal designations acc. to EN 46199-5**								
	• ON-delay								
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	C	**3RT1926-2EJ11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2EJ21**		1	1 unit	41H
		5 ... 100		A	**3RT1926-2EJ31**		1	1 unit	41H
		0.05 ... 1	100 ... 127 AC	C	**3RT1926-2EC11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2EC21**		1	1 unit	41H
		5 ... 100		C	**3RT1926-2EC31**		1	1 unit	41H
		0.05 ... 1	200 ... 240 AC	B	**3RT1926-2ED11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2ED21**		1	1 unit	41H
		5 ... 100		B	**3RT1926-2ED31**		1	1 unit	41H
	• OFF-delay without control signal[2]								
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	**3RT1926-2FJ11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2FJ21**		1	1 unit	41H
		5 ... 100		▶	**3RT1926-2FJ31**		1	1 unit	41H
		0.05 ... 1	100 ... 127 AC	B	**3RT1926-2FK11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2FK21**		1	1 unit	41H
		5 ... 100		B	**3RT1926-2FK31**		1	1 unit	41H
		0.05 ... 1	200 ... 240 AC	B	**3RT1926-2FL11**		1	1 unit	41H
		0.5 ... 10		A	**3RT1926-2FL21**		1	1 unit	41H
		5 ... 100		A	**3RT1926-2FL31**		1	1 unit	41H
	• Wye-delta function (varistor integrated)								
	1 NO delayed + 1 NO instantaneous, dead time 50 ms	1.5 ... 30	24 AC/DC	▶	**3RT1926-2GJ51**		1	1 unit	41H
			100 ... 127 AC	▶	**3RT1926-2GC51**		1	1 unit	41H
			200 ... 240 AC	▶	**3RT1926-2GD51**		1	1 unit	41H
For sizes S0 to S3, with semiconductor output									
3RT102, 3RT103, 3RT104[2]	**For mounting onto coil terminals on top of the contactors** The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the timing relay block to coil terminals A1/A2 on top of the contactor.								
	• ON-delay, two-wire design (varistor integrated)								
		0.05 ... 1	24 ... 66 AC/DC	B	**3RT1926-2CG11**		1	1 unit	41H
		0.5 ... 10		B	**3RT1926-2CG21**		1	1 unit	41H
		5 ... 100		B	**3RT1926-2CG31**		1	1 unit	41H
		0.05 ... 1	90 … 240 AC/DC	▶	**3RT1926-2CH11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT1926-2CH21**		1	1 unit	41H
		5 ... 100		▶	**3RT1926-2CH31**		1	1 unit	41H
	• OFF-delay with control signal (varistor integrated)								
		0.05 ... 1	24 ... 66 AC/DC	C	**3RT1926-2DG11**		1	1 unit	41H
		0.5 ... 10		B	**3RT1926-2DG21**		1	1 unit	41H
		5 ... 100		D	**3RT1926-2DG31**		1	1 unit	41H
		0.05 ... 1	90 … 240 AC/DC	B	**3RT1926-2DH11**		1	1 unit	41H
		0.5 ... 10		B	**3RT1926-2DH21**		1	1 unit	41H
		5 ... 100		C	**3RT1926-2DH31**		1	1 unit	41H

3RT1926-2...

3RT1926-2C...

3RT1926-2D...

1) The terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch block must be connected to the corresponding contactor by connecting cables.

2) Not for 3RT104 contactor with 24 to 42 V rated control supply voltage.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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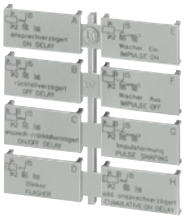
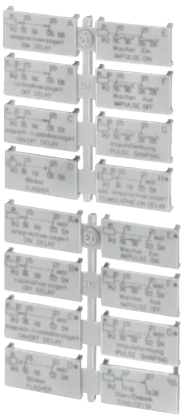
Selection and ordering data

Accessories for 3RP15 and 3RP20

	Version	Function	Identification letter	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Label sets for 3RP15 and 3RP20										
	Accessory for 3RP1505 and 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German.									
 3RP1901-0A	1 label set (1 unit) with 8 functions	ON-delay	A	For devices with 1 CO contact and 3RP1505-.RW30	C	**3RP1901-0A**		1	5 units	41H
		OFF-delay with control signal	B							
		ON-delay and OFF-delay with control signal	C							
		Flashing, starting with interval	D							
		Passing make contact	E							
		Passing break contact with control signal	F							
		Pulse-forming with control signal	G							
		Additive ON-delay with control signal	H							
 3RP1901-0B	1 label set (1 unit) with 16 functions	ON-delay	A	For devices with 2 CO contacts	C	**3RP1901-0B**		1	5 units	41H
		OFF-delay with control signal	B							
		ON-delay and OFF-delay with control signal	C							
		Flashing, starting with interval	D							
		Passing make contact	E							
		Passing break contact with control signal	F							
		Pulse-forming with control signal	G							
		Additive ON-delay with control signal and instantaneous contact	H•							
		ON-delay and instantaneous contact	A•							
		OFF-delay with control signal and instantaneous contact	B•							
		ON-delay and OFF-delay with control signal and instantaneous contact	C•							
		Flashing, starting with interval, and instantaneous contact	D•							
		Passing make contact and instantaneous contact	E•							
		Passing break contact with control signal and instantaneous contact	F•							
		Pulse-forming with control signal and instantaneous contact	G•							
		Wye-delta function	Y∆							
Blank labels for 3RP15 and 3RP20										
	Blank labels, 20 mm x 7 mm, pastel turquoise[1)]			For 3RP15, 3RP20	D	**3RT1900-1SB20**		100	340 units	41B
Covers and push-in lugs for 3RP15										
3RP1903	**Push-in lugs** For screw fixing, 2 units are required for each device			For 3RP15 with 1 or 2 CO contacts	B	**3RP1903**		1	10 units	41H
3RP1902	**Sealable covers** For securing against unauthorized adjustment of setting knobs			For 3RP15 with 1 or 2 CO contacts	B	**3RP1902**		1	5 units	41H

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" → "External Partners".

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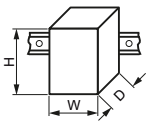
SIRIUS 3RR21, 3RR22 Monitoring Relays for Mounting onto 3RT2 Contactors

General data

Overview

Features		3RR21	3RR22	Benefits
General data				
Sizes Dimensions in mm (W x H x D) • Screw terminals • Spring-type terminals		S00, S0 S00: 45 x 79 x 80, S0: 45 x 87 x 91 S00: 45 x 90 x 80, S0: 45 x 109 x 92	S00, S0 S00: 45 x 79 x 80, S0: 45 x 87 x 91 S00: 45 x 90 x 80, S0: 45 x 109 x 92	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, soft starters, etc.) • Permit the mounting of slim and compact load feeders in widths of 45 mm (S00 and S0) • Simplify configuration
Current range		S00: 1.6 ... 16 A S0: 4 ... 40 A	S00: 1.6 ... 16 A S0: 4 ... 40 A	• Is adapted to the other devices in the SIRIUS modular system • Just a single version per size with a wide setting range enables easy configuration
Permissible ambient temperature				
During operation		-25 ... +60 °C	-25 ... +60 °C	• Suitable for applications in the control cabinet, worldwide
Monitoring functions				
Current overshoot		✓ (Two-phase)	✓ (Three-phase)	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload • Enables detection of filter blockages or pumping against closed gate valves • Enables drawing conclusions about wear, poor lubrication or other maintenance-relevant phenomena
Current undershoot		✓ (Two-phase)	✓ (Three-phase)	• Enables detection of overload due to a slipping or torn belt • Guarantees protection of pumps against dry running • Facilitates monitoring of the functions of resistive loads such as heaters • Permits energy savings through monitoring of no-load operation
Apparent current monitoring		✓	✓ (Selectable)	• Precision current monitoring especially in a motor's rated and upper torque range
Active current monitoring		--	✓ (Selectable)	• Optimum current monitoring over a motor's entire torque range through the patented combination of power factor and apparent current monitoring
Range monitoring		✓ (Two-phase)	✓ (Three-phase)	• Simultaneous monitoring of current overshoot and undershoot with a singe device
Phase failure, open circuit		✓ (Two-phase)	✓ (Three-phase)	• Minimizes heating of three-phase motors during phase failure through immediate disconnection • Prevents operation of hoisting equipment with reduced load carrying capacity
Phase sequence monitoring		--	✓ (Selectable)	• Prevents starting of motors, pumps or compressors in the wrong direction of rotation
Internal ground-fault detection (residual current monitoring)		--	✓ (Selectable)	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring overhead and costs
Blocking current monitoring		--	✓ (Selectable)	• Minimizes heating of three-phase motors when blocked during operation through immediate disconnection • Minimizes mechanical loading of the system by acting as an electronic shear pin

✓ Available
-- Not available

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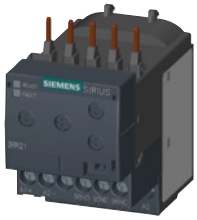
SIRIUS 3RR21, 3RR22 Monitoring Relays for Mounting onto 3RT2 Contactors



Features	3RR21	3RR22	Benefits
Features			
RESET function	✓	✓	• Allows manual or automatic resetting of the relay • Resetting directly on the device or by switching the control supply voltage off and on (remote RESET)
ON-delay time	0 ... 60 s	0 ... 99 s	• Enables motor starting without evaluation of the starting current • Can be used for monitoring motors with lengthy start-up
Tripping delay time	0 ... 30 s	0 ... 30 s	• Permits brief threshold value violations during operation • Prevents frequent warnings and disconnections with currents near the threshold values
Operating and indicating elements	LEDs and rotary potentiometers	Displays and buttons	• For setting the threshold values and delay times • For selectable functions • For quick and selective diagnostics • Displays for permanent display of measured values
Integrated contacts	1 CO contact	1 CO, 1 semiconductor output	• Enable disconnection of the system or process when there is an irregularity • Can be used to output signals
Design of load feeders			
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT2 contactors	✓	✓	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Spring-type terminals for main circuit and auxiliary circuits	✓ (optional)	✓ (optional)	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Other features			
Suitable for single- and three-phase loads	✓	✓	• Enables the monitoring of single-phase systems through parallel infeed at the contactor or looping the current through the three phase connections
Wide setting ranges	✓	✓	• Reduce the number of variants • Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Wide voltage supply range	✓ (optional)	✓ (optional)	• Reduces the number of versions • Minimizes the configuring overhead and costs • Minimizes storage overhead, storage costs, tied-up capital

✓ Available

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SIRIUS 3RR21, 3RR22 Monitoring Relays for Mounting onto 3RT2 Contactors

General data

Possible combinations of 3RR21/3RR22 monitoring relays with 3RT2 contactors

Monitoring relays	Current range	**Contactors** (type, size, rating)	
		3RT201	**3RT202**
		S00	S0
Type	A	3/4/5.5/7.5 kW	5.5/7.5/11/15/18.5 kW
3RR2141	1.6 ... 16	✓	With stand-alone installation support
3RR2241	1.6 ... 16	✓	With stand-alone installation support
3RR2142	4 ... 40	With stand-alone installation support	✓
3RR2242	4 ... 40	With stand-alone installation support	✓

✓ Available

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	**0**
Monitoring relays	**3 R R**										
SIRIUS 2nd generation		**2**									
Type of setting			□								
Type of monitoring relay				□							
Size					□						
Connection methods							□				
Number and type of outputs								□			
Signal type of the control supply voltage									□	□	
Example	**3 R R**	**2**	**1**	**4**	**1**	**–**	**1**	**A**	**A**	**3**	**0**

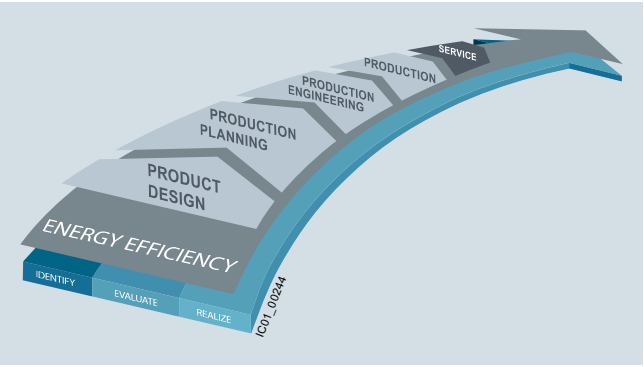
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3RR2 monitoring relays contribute to the energy efficiency throughout the plant as follows:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Load shedding of predefined loads in the event of current overshoots

More information

Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" see http://support.automation.siemens.com/WW/view/en/39714188.

System Manual "Industrial Controls – SIRIUS Innovations" see http://support.automation.siemens.com/WW/view/en/39740306.

Manual "3UG45/3UG46 and 3RR21/3RR22 Monitoring Relays", see http://support.automation.siemens.com/WW/view/en/54397927.

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SIRIUS 3RR21, 3RR22 Monitoring Relays for Mounting onto 3RT2 Contactors

Overview

SIRIUS 3RR2242 and 3RR2142 current monitoring relays

The SIRIUS 3RR2 current monitoring relays are suitable for the load monitoring of motors or other loads. In two or three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR2 current monitoring relays can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

Versions

Basic versions

The basic versions with two-phase apparent current monitoring, a CO contact output and analog adjustability provide a high level of monitoring reliability especially in the rated and overload range.

Standard versions

The standard versions monitor the current in three phases with selectable active current monitoring. They have additional diagnostics options such as residual current monitoring and phase sequence monitoring, and they are also suitable for monitoring motors below the rated torque. These devices have an additional independent semiconductor output, an actual value indicator, and are digitally adjustable.

Both versions are available optionally with screw or spring-type terminals, in each case for sizes S00 and S0.

Note:

In addition to the features of the standard versions, 3RR24 monitoring relays for mounting onto 3RT2 contactors for IO-Link also offer the possibility of transmitting the measured values and diagnostics data to a controller via an IO-Link. Furthermore, the devices can be parameterized on the devices themselves or via IO-Link.

For more information, see page 10/76.

Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw terminals or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for broken cables, phase failure, phase sequence, residual current and motor blocking.

Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on conveyor belts or cranes due to an excessive load
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture

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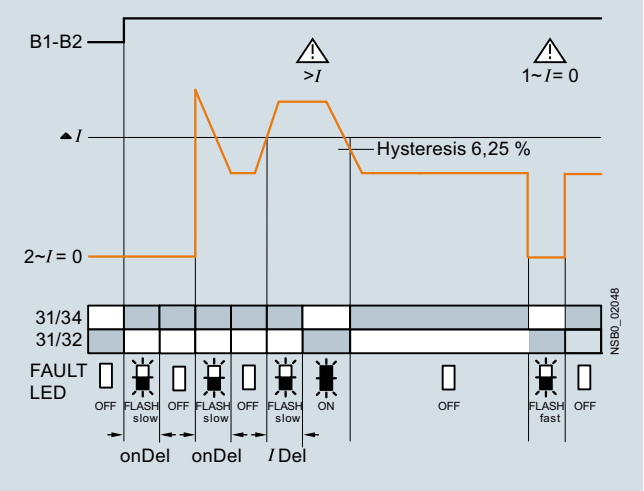
Current and active current monitoring

Technical specifications

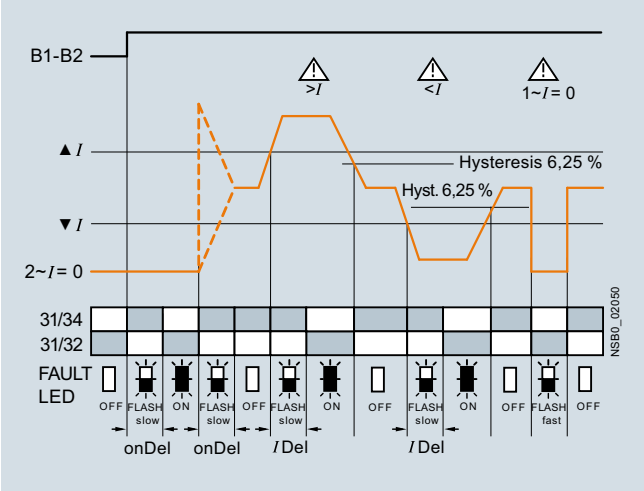
Function charts of 3RR214.-.A.30 basic variants, analogically adjustable

Closed-circuit principle upon application of the control supply voltage

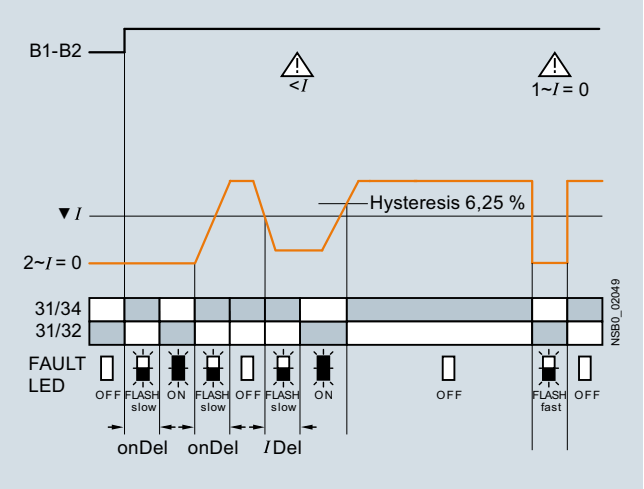
Current overshoot



Range monitoring



Current undershoot



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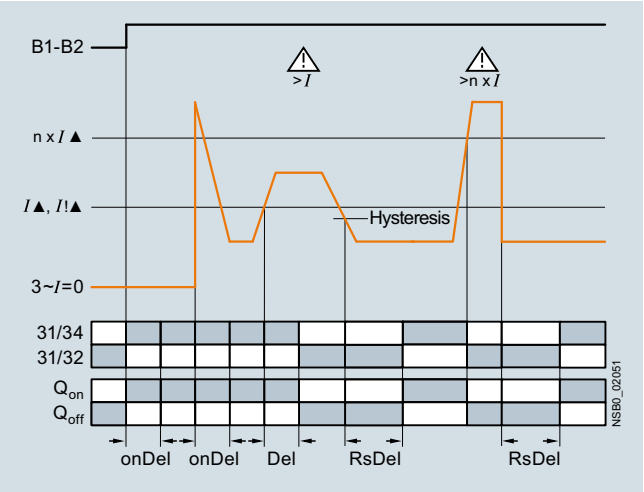
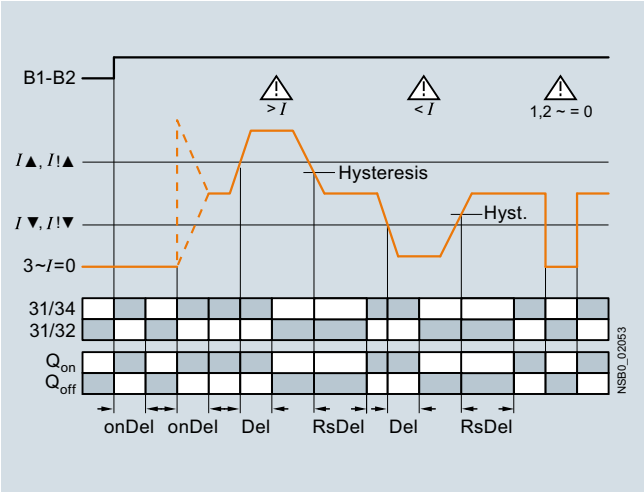
Function charts of 3RR224.-.F.30 standard versions, digitally adjustable

With the closed-circuit principle selected upon application of the control supply voltage

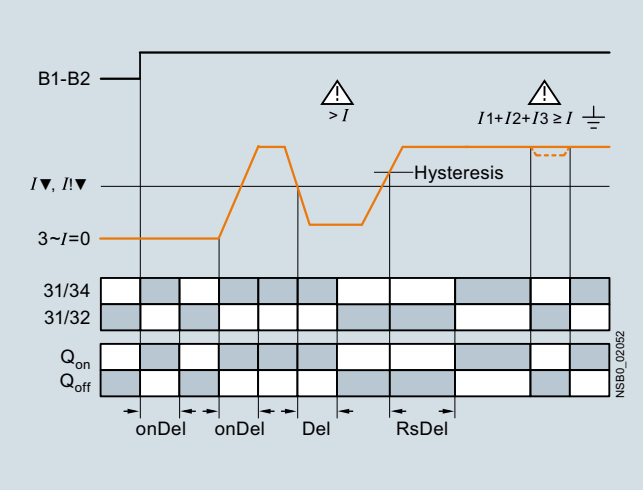
Current overshoot



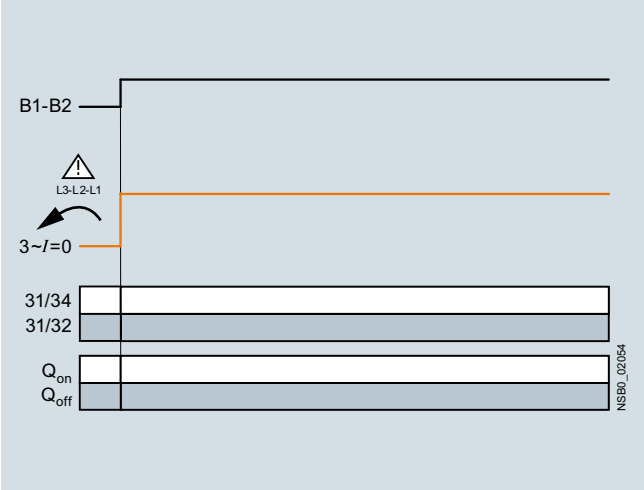
Range monitoring



Current undershoot with residual current monitoring



Phase sequence monitoring



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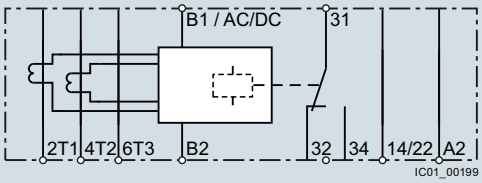
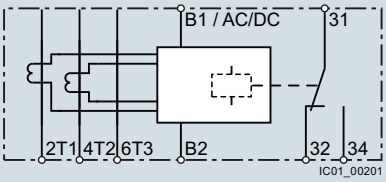
SIRIUS 3RR21, 3RR22 Monitoring Relays for Mounting onto 3RT2 Contactors

Current and active current monitoring

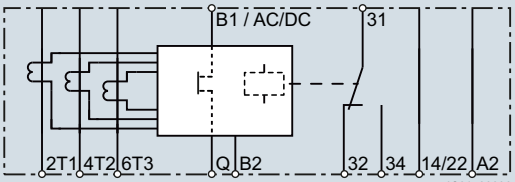
Circuit diagrams



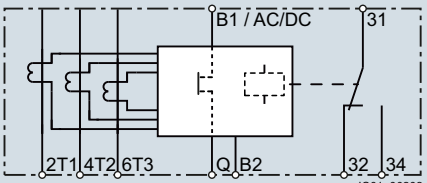
3RR2141-1A.30



3RR2141-2A.30, 3RR2142-.A.30



3RR2241-1F.30



3RR2241-2F.30, 3RR2242-.F.30

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

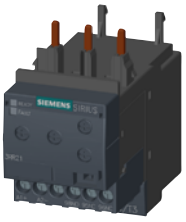
Selection and ordering data

SIRIUS 3RR21/3RR22 current monitoring relays

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
- Starting and tripping delay can be adjusted separately
- Tripping delay 0 to 30 s
- Auto or Manual RESET

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RR2141-1AW30



3RR2142-1AW30

3RR2241-1FW30

3RR2242-1FW30

3RR2141-2AA30

3RR2241-2FA30

Size	Measuring range	Hysteresis	Control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
					Article No. / Price per PU		Article No. / Price per PU
	A	A	V				
Basic versions							
Analogically adjustable, closed-circuit principle, 1 CO, 2-phase current monitoring, apparent current monitoring, start-up delay 0 ... 60 s							
S00	1.6 ... 16	6.25 % of threshold value	24 AC/DC	A	**3RR2141-1AA30**	A	**3RR2141-2AA30**
			24 ... 240 AC/DC	A	**3RR2141-1AW30**	A	**3RR2141-2AW30**
S0	4 ... 40	6.25 % of threshold value	24 AC/DC	A	**3RR2142-1AA30**	A	**3RR2142-2AA30**
			24 ... 240 AC/DC	A	**3RR2142-1AW30**	A	**3RR2142-2AW30**
Standard versions							
Digitally adjustable, LCD, open-circuit or closed-circuit principle, 1 CO, 1 semiconductor output, 3-phase current monitoring, active current or apparent current monitoring, phase sequence monitoring, residual current monitoring, blocking current monitoring, reclosing delay time 0 ... 300 min, start-up delay 0 ... 99 s, separate settings for warning and alarm thresholds							
S00	1.6 ... 16	0.1 ... 3	24 AC/DC	A	**3RR2241-1FA30**	A	**3RR2241-2FA30**
			24 ... 240 AC/DC	A	**3RR2241-1FW30**	A	**3RR2241-2FW30**
S0	4 ... 40	0.1 ... 8	24 AC/DC	A	**3RR2242-1FA30**	A	**3RR2242-2FA30**
			24 ... 240 AC/DC	A	**3RR2242-1FW30**	A	**3RR2242-2FW30**

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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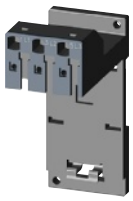
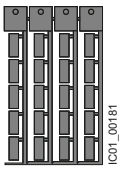
Accessories

Use	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal supports for stand-alone installation[1]								
3RU2916-3AA01	For 3RR21, 3RR22	For separate mounting of the overload relays or monitoring relays; screw and snap-on mounting onto TH 35 standard mounting rail according to IEC 60715						
		Screw terminals						
	• Screw connection	S00	▶	**3RU2916-3AA01**		1	1 unit	41F
		S0	▶	**3RU2926-3AA01**		1	1 unit	41F
 3RU2926-3AC01		**Spring-type terminals**						
	• Spring-type connection	S00	B	**3RU2916-3AC01**		1	1 unit	41F
		S0	B	**3RU2926-3AC01**		1	1 unit	41F
Blank labels								
 3RT2900-1SB20	For 3RR21, 3RR22	**Unit labeling plates**[2] For SIRIUS devices						
		20 mm x 7 mm, titanium gray	D	**3RT2900-1SB20**		100	340 units	41B
Sealable covers								
3RR2940	For 3RR21, 3RR22	**Sealable covers** For securing against unintentional or unauthorized adjustment of settings	A	**3RR2940**		1	5 units	41H
	For 3RR21	**Sealing foil** For securing against unauthorized adjustment of setting knobs	▶	**3TK2820-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B

[1] The accessories are identical to those of the 3RU21 thermal overload relays and the 3RB3 solid-state overload relays see Chapter 7 "Protection Equipment".

[2] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH see Chapter 16, "Appendix" → "External Partners".

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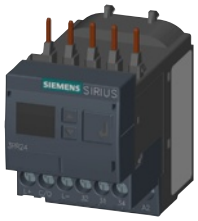
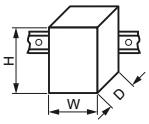
SIRIUS 3RR24 Monitoring Relays for Mounting onto 3RT2 Contactors for IO-Link

General data

Overview



Features	3RR24	Benefits
General data		
Sizes Dimensions in mm (W x H x D) • Screw terminals • Spring-type terminals	 S00, S0 S00: 45 x 79 x 80, S0: 45 x 87 x 91 S00: 45 x 90 x 80, S0: 45 x 109 x 92	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, soft starters, etc.) • Permit the mounting of slim and compact load feeders in widths of 45 mm (S00 and S0) • Simplify configuration
Current range	S00: 1.6 ... 16 A S0: 4 ... 40 A	• Is adapted to the other devices in the SIRIUS modular system • Just a single version per size with a wide setting range enables easy configuration
Permissible ambient temperature		
During operation	-25 ... +60 °C	• Suitable for applications in the control cabinet, worldwide
Monitoring functions		
Current overshoot	✓ (Three-phase)	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload • Enables detection of filter blockages or pumping against closed gate valves • Enables drawing conclusions about wear, poor lubrication or other maintenance-relevant phenomena
Current undershoot	✓ (Three-phase)	• Enables detection of overload due to a slipping or torn belt • Guarantees protection of pumps against dry running • Facilitates monitoring of the functions of resistive loads such as heaters • Permits energy savings through monitoring of no-load operation
Apparent current monitoring	✓ (Selectable)	• Precision current monitoring especially in a motor's rated and upper torque range
Active current monitoring	✓ (Selectable)	• Optimum current monitoring over a motor's entire torque range through the patented combination of power factor and apparent current monitoring
Range monitoring	✓ (Three-phase)	• Simultaneous monitoring of current overshoot and undershoot with a singe device
Phase failure, open circuit	✓ (Three-phase)	• Minimizes heating of three-phase motors during phase failure through immediate disconnection • Prevents operation of hoisting equipment with reduced load carrying capacity
Phase sequence monitoring	✓ (Selectable)	• Prevents starting of motors, pumps or compressors in the wrong direction of rotation
Internal ground-fault detection (residual current monitoring)	✓ (Selectable)	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring overhead and costs
Blocking current monitoring	✓ (Selectable)	• Minimizes heating of three-phase motors when blocked during operation through immediate disconnection • Minimizes mechanical loading of the system by acting as an electronic shear pin
Operating hours counter	✓	• gives the time during which there was a measurable current in at least 2 current paths • as an indicator for upcoming maintenance or replacement of machine and system components
Operating cycles counter	✓	• is incremented by one each time a breaking operation is detected, in other words a transition from three-phase current flow to no measurable current flow • as an indicator for upcoming maintenance or replacement of contact blocks

✓ Available

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SIRIUS 3RR24 Monitoring Relays for Mounting onto 3RT2 Contactors for IO-Link

Features	3RR24	Benefits
Features		
RESET function	✓	• Allows manual or automatic resetting of the relay • Resetting directly on the device, by switching the control supply voltage off and on or via IO-Link (remote RESET)
ON-delay time	0 ... 999.9 s	• Enables motor starting without evaluation of the starting current • Can be used for monitoring motors with lengthy start-up
Tripping delay time	0 … 999.9 s	• Permits brief threshold value violations during operation • Prevents frequent warnings and disconnections with currents near the threshold values
Operating and indicating elements	Displays and buttons	• For setting the threshold values and delay times • For selectable functions • For quick and selective diagnostics • Displays for permanent display of measured values
Integrated contacts	1 CO contact, 1 semiconductor output (in SIO mode)	• Enable disconnection of the system or process when there is an irregularity • Can be used to output signals
Design of load feeders		
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT2 contactors	✓	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Spring-type terminals for main circuit and auxiliary circuits	✓ (Optional)	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Other features		
Suitable for single- and three-phase loads	✓	• Enables the monitoring of single-phase systems through parallel infeed at the contactor or looping the current through the three phase connections
Wide setting ranges	✓	• Reduce the number of variants • Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Power supply	24 V DC	• Direct via IO-Link master or via an external auxiliary voltage independent of the IO-Link • Minimizes the configuring overhead and costs

✓ Available

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SIRIUS 3RR24 Monitoring Relays for Mounting onto 3RT2 Contactors for IO-Link

General data

Possible combinations of 3RR24 monitoring relays with 3RT2 contactors for IO-Link

Monitoring relays	Current range	**Contactors** (type, size, rating)	
		3RT201	**3RT202**
		S00	S0
Type	A	3/4/5.5/7.5 kW	5.5/7.5/11/15/18.5 kW
3RR2441	1.6 ... 16	✓	With stand-alone installation support
3RR2442	4 ... 40	With stand-alone installation support	✓

✓ Available

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	**0**
Monitoring relays	**3 R R**										
SIRIUS 2nd generation		**2**									
Type of setting			□								
Type of monitoring relay				□							
Size					□						
Connection methods							□				
Number and type of outputs								□			
Signal type of the control supply voltage									□	□	
Example	**3 R R**	**2**	**4**	**4**	**1**	**–**	**1**	**A**	**A**	**4**	**0**

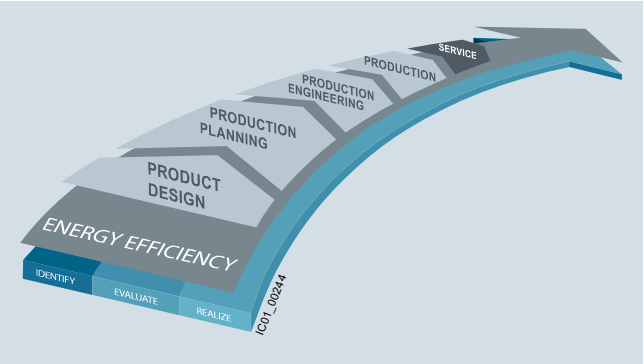
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3RR2 monitoring relays contribute to the energy efficiency throughout the plant as follows:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Load shedding of predefined loads in the event of current overshoots

More information

Configuration Manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders" see http://support.automation.siemens.com/WW/view/en/39714188.

System Manual "Industrial Controls – SIRIUS Innovations" see http://support.automation.siemens.com/WW/view/en/39740306.

Manual "3UG48/3RR24 Monitoring Relays for IO-Link" see http://support.automation.siemens.com/WW/view/en/54375430.

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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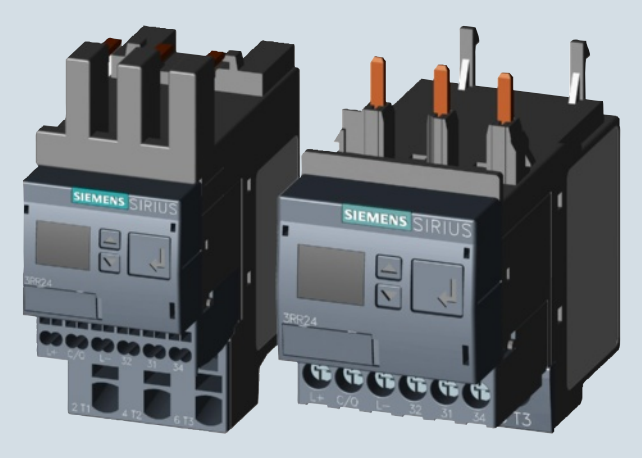
Overview



SIRIUS 3RR2441 and 3RR2442 current monitoring relay

The SIRIUS 3RR24 current monitoring relays for IO-Link are suitable for the load monitoring of motors or other loads. In three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option, which is also selectable, can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR24 current monitoring relays for IO-Link can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal supports for stand-alone installation are available for separate standard rail mounting.

The SIRIUS 3RR24 current monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the conventional SIRIUS 3RR2 monitoring relays:

- Measured value transmission to a controller, including resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flags to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data record
- Remote parameterization is also possible, in addition to or instead of local parameterization
- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission by upload to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V 1.1 and higher is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start-up after voltage failure and to make sure diagnostics data is not lost
- By integration into the automation level the option exists of parameterizing the monitoring relay at any time via a display unit or displaying the measured values in a control room or locally at the machine/control cabinet.

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller.
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present.
- If the monitoring relays are operated without the controller, the 3RR24 monitoring relays for IO-Link have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded.

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since only the controller can fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

For further information on the IO-Link communication system see Chapter 2 "Industrial Communication".

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SIRIUS 3RR24 Monitoring Relays for Mounting onto 3RT2 Contactors for IO-Link

Current and active current monitoring

Benefits

- Can be mounted directly on 3RT2 contactors and 3RA23 reversing contactor assemblies, in other words, there is no need for additional wiring in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for current unbalance, broken cables, phase failure, phase sequence, residual current and motor blocking.
- Integrated counter for operating cycles and operating hours to support requirements-based maintenance of the monitored machine or application
- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on pumps due to a dirty filter system
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-impedance faults to ground, e.g. caused by damaged insulation or moisture

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plant in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of AI and IO modules allows the width of the controller to be reduced despite significantly expanded functionality.

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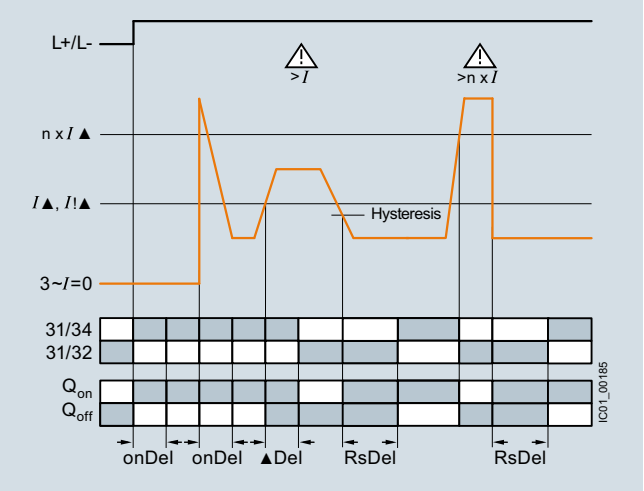
Technical specifications

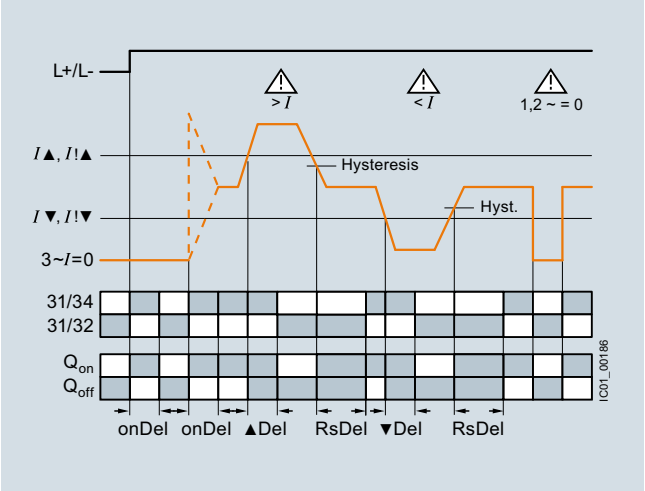
Function charts of 3RR24 for IO-Link, digitally adjustable

With the closed-circuit principle selected upon application of the control supply voltage

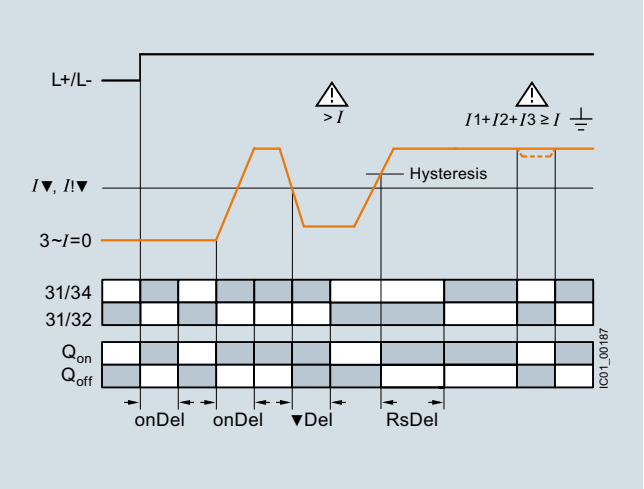
Current overshoot



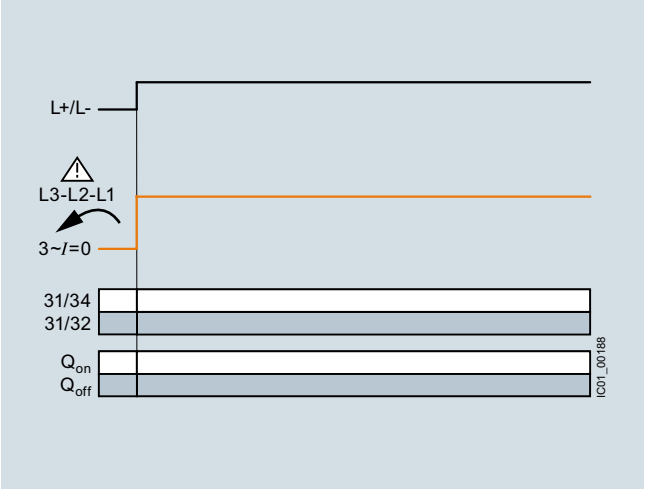
Range monitoring



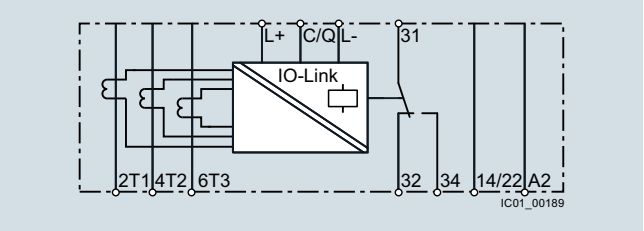
Current undershoot with residual current monitoring



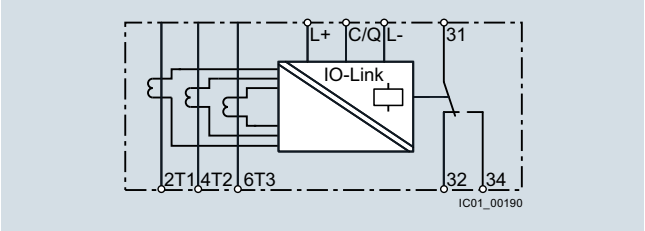
Phase sequence monitoring



Circuit diagrams



3RR2441-1AA40



3RR2441-2AA40, 3RR2442-.AA40

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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SIRIUS 3RR24 Monitoring Relays for Mounting onto 3RT2 Contactors for IO-Link

Current and active current monitoring

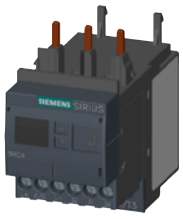
Selection and ordering data

SIRIUS 3RR24 current monitoring relays for IO-Link

- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
- Starting and tripping delay can be adjusted separately
- Tripping delay 0 to 999.9 s
- Auto or Manual RESET

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RR2441-1AA40



3RR2442-1AA40

3RR2441-2AA40

3RR2442-2AA40

Size	Measuring range	Hysteresis	Control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals**
					Article No. / Price per PU		Article No. / Price per PU
	A	A	V				
Digitally adjustable, LCD, open-circuit or closed-circuit principle, 1 CO, 1 semiconductor output (in SIO mode), 3-phase current monitoring, active current or apparent current monitoring, current unbalance monitoring, phase sequence monitoring, residual current monitoring, blocking current monitoring, operating hours counter, operating cycles counter, reclosing delay time 0 ... 999.9 min, start-up delay 0 ... 999.9 s, separate settings for warning and alarm thresholds							
S00	1.6 ... 16	0.1 ... 3	24 DC	A	**3RR2441-1AA40**	A	**3RR2441-2AA40**
S0	4 ... 40	0.1 ... 8	24 DC	A	**3RR2442-1AA40**	A	**3RR2442-2AA40**

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports the IO-Link (e.g. ET 200S with CPU or S7-300 plus ET 200S distributed I/O), see Catalog ST 70 "SIMATIC Products for Totally Integrated Automation"
- IO-Link master (IO-Link master 4SI IO-Link or 4SI SIRIUS interface module, which can connect all SIRIUS IO-Link devices to a controller, see Chapter 2 "Industrial Communication")

Each monitoring relay requires an IO-Link channel.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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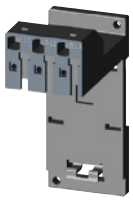
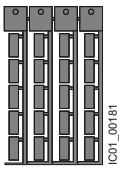
Accessories

	Use	Version	Size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal supports for stand-alone installation[1]									
3RU2916-3AA01	For 3RR24	For separate mounting of the overload relays or monitoring relays; screw and snap-on mounting onto TH 35 standard mounting rail according to IEC 60715			**Screw terminals**				
		• Screw connection	S00	▶	**3RU2916-3AA01**		1	1 unit	41F
			S0	▶	**3RU2926-3AA01**		1	1 unit	41F
 3RU2926-3AC01					**Spring-type terminals**				
		• Spring-type connection	S00	B	**3RU2916-3AC01**		1	1 unit	41F
			S0	B	**3RU2926-3AC01**		1	1 unit	41F
Blank labels									
 3RT2900-1SB20	For 3RR24	**Unit labeling plates[2]** For SIRIUS devices							
		20 mm x 7 mm, titanium gray		D	**3RT2900-1SB20**		100	340 units	41B
Sealable covers									
3RR2940	For 3RR24	**Sealable covers** For securing against unintentional or unauthorized adjustment of settings		A	**3RR2940**		1	5 units	41H
Tools for opening spring-type terminals									
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated		A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B

1) The accessories are identical to those of the 3RU21 thermal overload relays and the 3RB3 solid-state overload relays see Chapter 7 "Protection Equipment".

2) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH see Chapter 16, "Appendix" → "External Partners".

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

General data

Overview

SIRIUS 3UG4 monitoring relay

The field-proven SIRIUS monitoring relays for electrical and mechanical variables enable constant monitoring of all important characteristic quantities that provide information about the functional capability of a plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected. Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components as well as alerting (e.g. by switching a warning lamp). Thanks to adjustable delay times the monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes. This avoids unnecessary alarms and disconnections while enhancing plant availability.

The individual 3UG4 monitoring relays offer the following functions in various combinations:

- Undershooting and/or overshooting of liquid levels
- Phase sequence
- Phase failure, neutral conductor failure
- Phase asymmetry
- Undershooting and/or overshooting of limit values for voltage
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of limit values for power factor
- Monitoring of the active current or the apparent current
- Monitoring of the residual current
- Monitoring of the insulation resistance
- Undershooting and/or overshooting of limit values for speed

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Monitoring relays	**3 U G**										
Generation		□									
Type of setting			□								
Functions				□	□						
Connection methods							□				
Contacts								□			
Supply voltage									□		
Signal type of the control supply voltage										□	
Special version											□
Example	**3 U G**	**4**	**5**	**1**	**1**	**–**	**1**	**A**	**N**	**2**	**0**

Notes:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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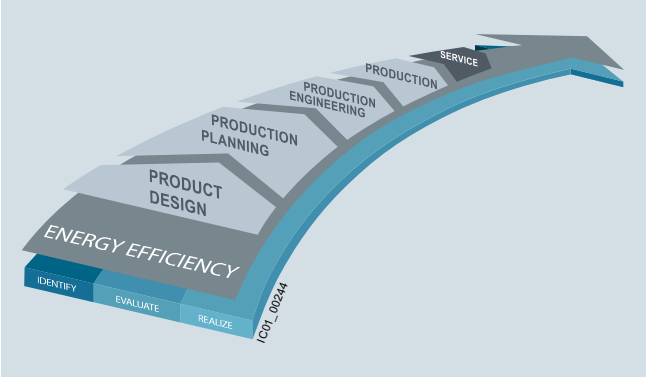
Benefits

- Customary screw and spring-type terminals for quick and reliable wiring
- Fast commissioning thanks to menu-guided parameterization and actual value display for limit value determination
- Reduced space requirement in the control cabinet thanks to a consistent width of 22.5 mm
- Parameterizable monitoring functions, delay times, reset response, etc.
- Reduced stockkeeping thanks to minimized variance and large measuring ranges
- Wide-voltage power supply units for global applicability
- Device replacement without renewed wiring thanks to removable terminals
- Reliable system diagnostics thanks to actual value display and connectable fault memory
- Rapid diagnostics thanks to unambiguous error messages on the display

Advantages through energy efficiency



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The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3UG4 monitoring relays contribute to energy efficiency throughout the plant as follows:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Reactive-power compensation by means of power factor monitoring
- Load shedding of predefined loads in the event of current overshoots

Application

The SIRIUS 3UG4 monitoring relays monitor the most diverse electrical and mechanical quantities in the feeder, and provide reliable protection against damage in the plant. For this purpose, they offer freely parameterizable limit values and diverse options for adapting to the respective task, and in the event of a fault, they provide clear diagnostics information.

The digitally adjustable products also display the current measured values direct on the device. This not only facilitates the display of valuable plant status information during operation, it also enables adjustment of the monitored limit values in accordance with the actual conditions.

The positive result: More selective avoidance of production faults – sustained increases in availability and productivity.

The 3UG4 monitoring relays are available for the following applications:

- Line and single-phase voltage monitoring
- Single-phase current monitoring or power factor and active current monitoring
- Residual current monitoring
- Insulation monitoring
- Level monitoring
- Speed monitoring

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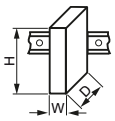
General data

Technical specifications

Type			3UG
General data			
Dimensions (W x H x D)			
• For 2 terminal blocks			
- Screw terminals		mm	22.5 x 83 x 91
- Spring-type terminals		mm	22.5 x 84 x 91
• For 3 terminal blocks			
- Screw terminals		mm	22.5 x 92 x 91
- Spring-type terminals		mm	22.5 x 94 x 91
• For 4 terminal blocks			
- Screw terminals		mm	22.5 x 103 x 91
- Spring-type terminals		mm	22.5 x 103 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

More information

Manual "3UG45/3UG46 and 3RR21/3RR22 Monitoring Relays"
see
http://support.automation.siemens.com/WW/view/en/54397927.

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Overview

SIRIUS 3UG4615 monitoring relay

Solid-state line monitoring relays provide maximum protection for mobile machines and plants or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

Depending on the version, the relays monitor phase sequence, phase failure with and without N conductor monitoring, phase asymmetry, undervoltage or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exists when at least one phase voltage deviates by 20 % from the set rated system voltage or the directly set limit values are overshot or undershot. The rms value of the voltage is measured.

With the 3UG4617 or 3UG4618 relay, a wrong direction of rotation can also be corrected automatically.

Benefits

- Can be used without auxiliary voltage in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Permanent display of ACTUAL value and network fault type on the digital versions
- Automatic correction of the direction of rotation by distinguishing between power system faults and wrong phase sequence
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

Function	Application
Phase sequence	• Direction of rotation of the drive
Phase failure	• A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase asymmetry	• Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	• Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	• Protection of a plant against destruction due to overvoltage

Technical specifications

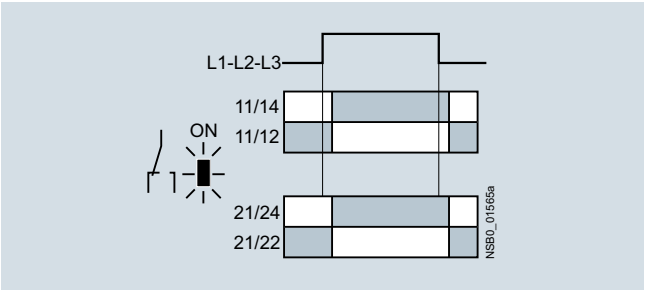
3UG4511 monitoring relays

The 3UG4511 phase sequenced relay monitors the phase sequence in a three-phase network. No adjustments are required for operation. The device has an internal power supply and works using the closed-circuit principle. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up after the delay time has elapsed and the LED is lit. If the phase sequence is wrong, the output relay remains in its rest position.

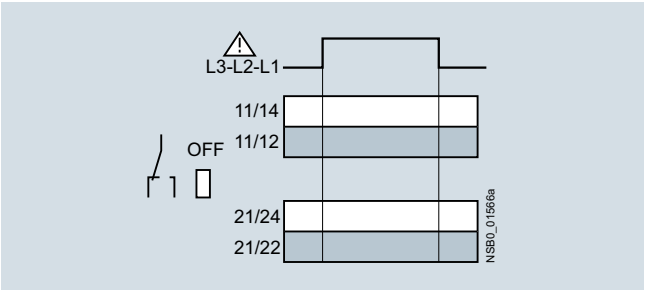
Note:

When one phase fails, connected loads (motor windings, lamps, transformers, coils, etc.) create a feedback voltage at the terminal of the failed phase due to the network coupling. Because the 3UG4511 relays are not resistant to voltage feedback, such a phase failure is not detected. Should this be required, then the 3UG4512 monitoring relay must be used.

Correct phase sequence



Wrong phase sequence



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Line monitoring

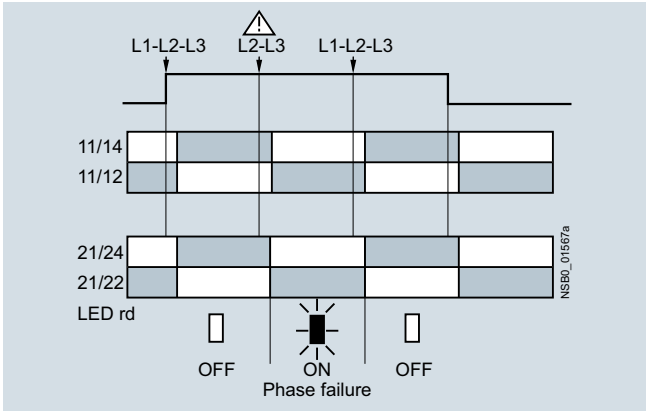
3UG4512 monitoring relays

The 3UG4512 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure and phase unbalance of 10 %. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 90 %. The device has an internal power supply and works using the closed-circuit principle. No adjustments are required. When the mains voltage is switched on, the green LED is lit. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

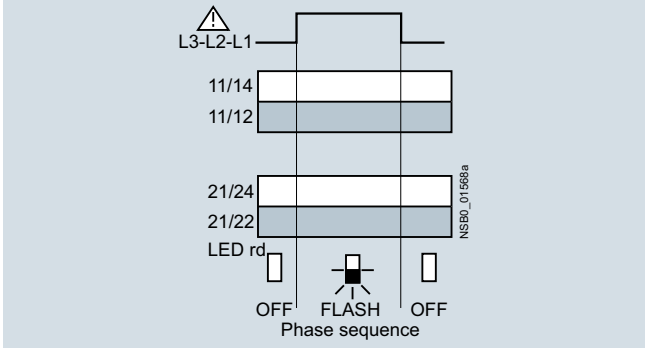
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG4512 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure



Wrong phase sequence



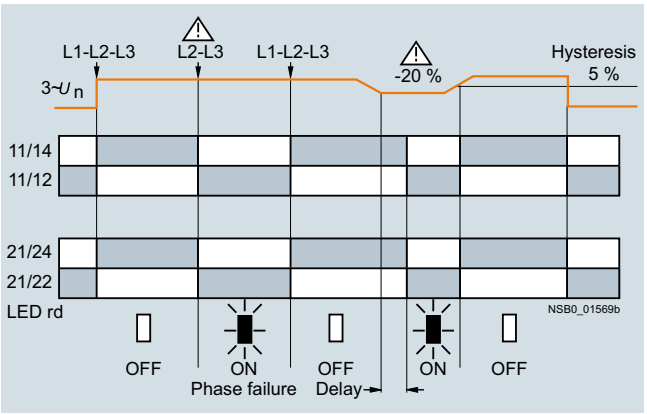
3UG4513 monitoring relays

The 3UG4513 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry and undervoltage of 20 %. The device has an internal power supply and works using the closed-circuit principle. The hysteresis is 5 %. The integrated response delay time is adjustable from 0 to 20 s and responds to undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80 %. When the mains voltage is switched on, the green LED is lit. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

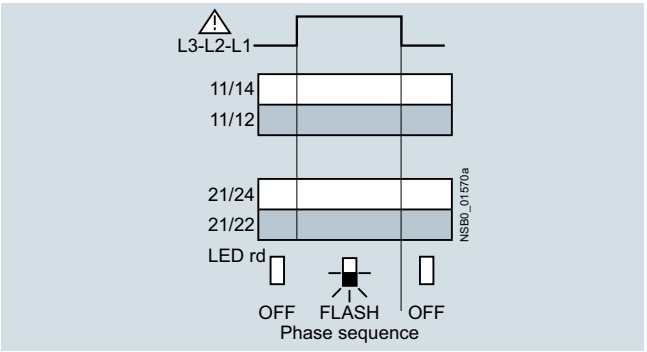
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG4513 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure and undervoltage



Wrong phase sequence



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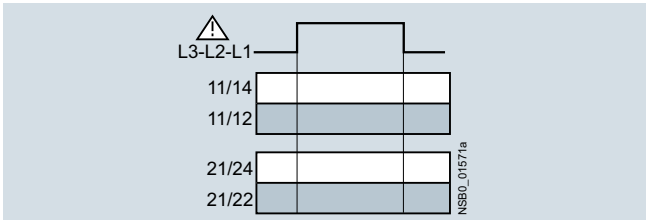
3UG4614 monitoring relays

The 3UG4614 line monitoring relay has a wide voltage range input and an internal power supply. The device is equipped with a display and is parameterized using three buttons. The unit monitors three-phase networks with regard to phase asymmetry from 5 to 20 %, phase failure, undervoltage and phase sequence. The hysteresis is adjustable from 1 to 20 V. In addition the device has a response delay and ON-delay from 0 to 20 s in each case. The integrated response delay time responds to phase asymmetry and undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80 %.

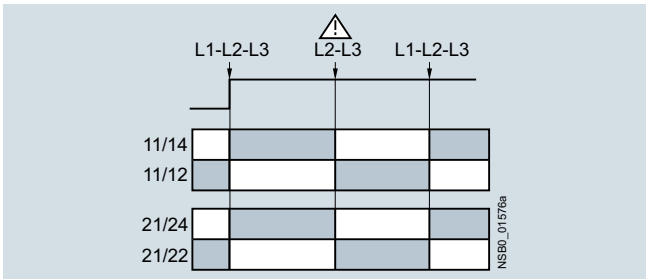
The 3UG4614 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET.

With the closed-circuit principle selected

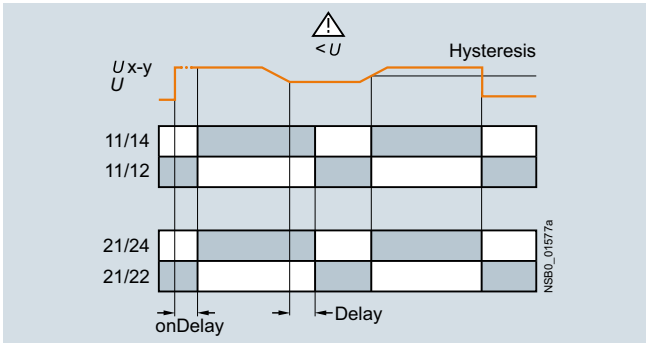
Wrong phase sequence



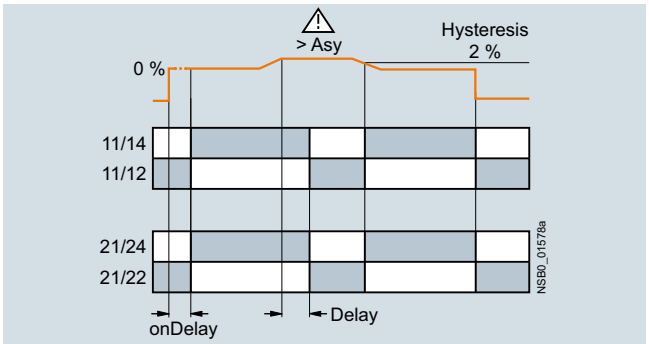
Phase failure



Undervoltage



Unbalance



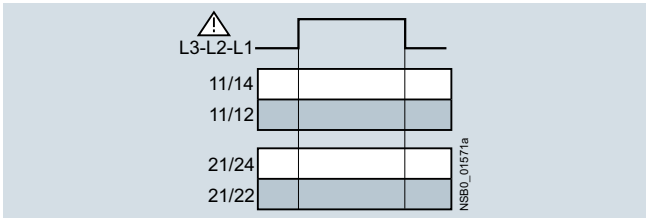
3UG4615/3UG4616 monitoring relays

The 3UG4615/3UG4616 line monitoring relay has a wide voltage range input and an internal power supply. The device is equipped with a display and is parameterized using three buttons. The 3UG4615 device monitors three-phase networks with regard to phase failure, undervoltage, overvoltage and phase sequence. The 3UG4616 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has two separately adjustable delay times for overvoltage and undervoltage from 0 to 20 s in each case. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80 %.

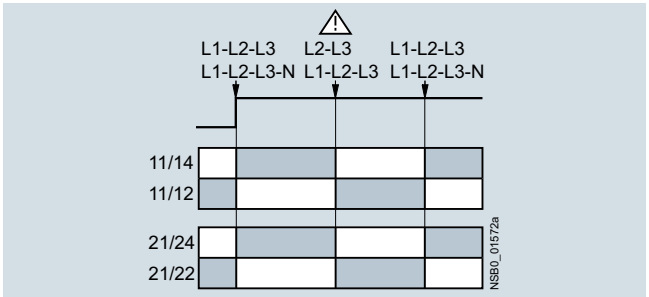
The 3UG4615/3UG4616 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET.

With the closed-circuit principle selected

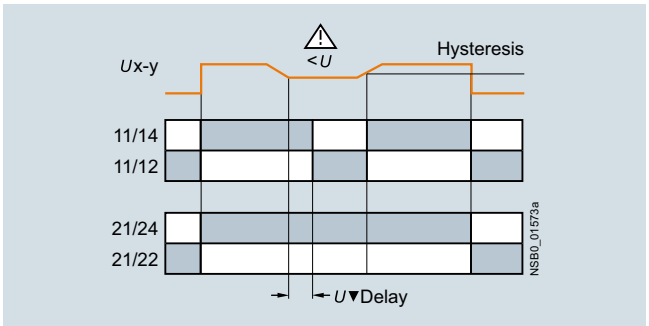
Wrong phase sequence



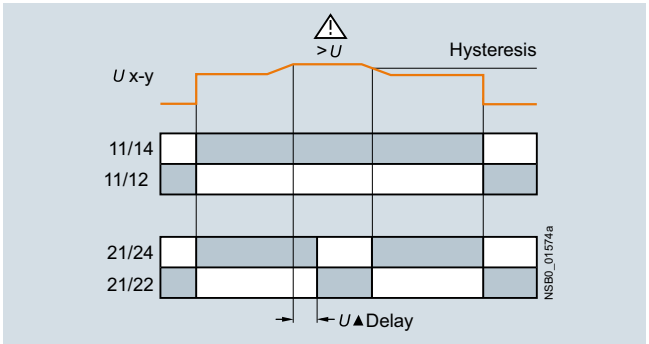
Phase failure



Undervoltage



Overvoltage



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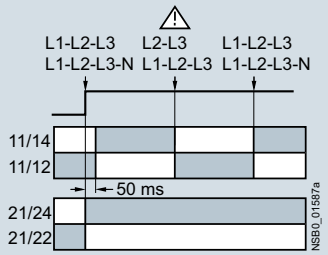
Line monitoring

3UG4617/3UG4618 monitoring relays

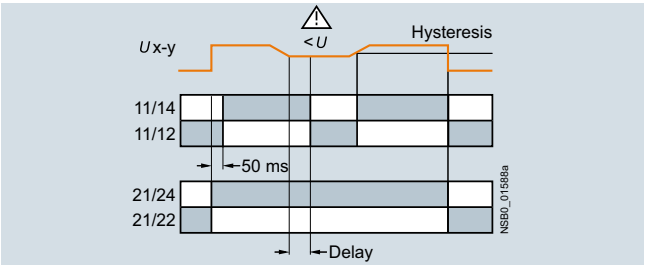
The 3UG4617/3UG4618 line monitoring relay has an internal power supply and can automatically correct a wrong direction of rotation. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 80 %. The device is equipped with a display and is parameterized using three buttons. The 3UG4617 line monitoring relay unit monitors three-phase networks with regard to phase sequence, phase failure, phase unbalance, undervoltage and overvoltage. The 3UG4618 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has delay times from 0 to 20 s in each case for overvoltage, undervoltage, phase failure and phase unbalance. The 3UG4617/3UG4618 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET. The one changeover contact is used for warning or disconnection in the event of power system faults (voltage, unbalance), the other responds only to a wrong phase sequence. In conjunction with a contactor reversing assembly it is thus possible to change the direction automatically.

With the closed-circuit principle selected

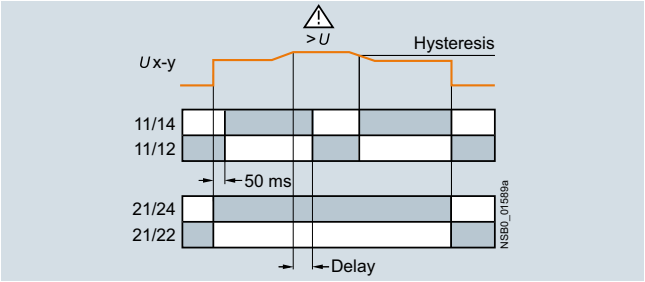
Phase failure



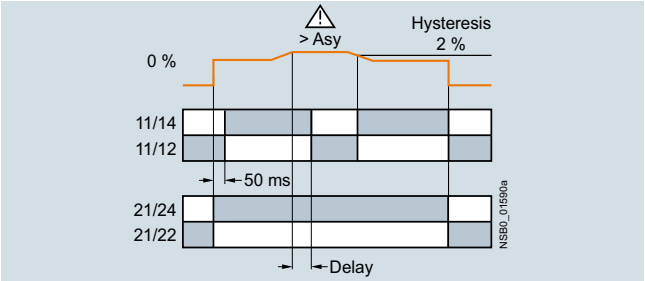
Undervoltage



Overvoltage

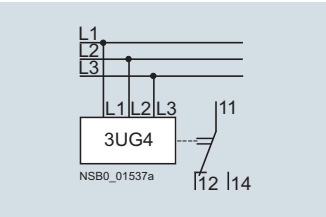


Unbalance

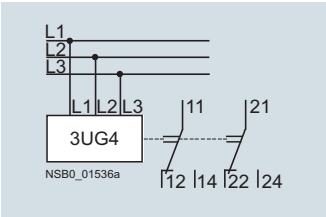


Type			3UG4511 ... 3UG4513, 3UG4614 ... 3UG4618
General data			
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to VDE 0110		V	690
Rated impulse withstand voltage U_{imp}		kV	6
Control circuit			
Load capacity of the output relay • Conventional thermal current I_{th}		A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V		A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC		mA	5
Electrical endurance AC-15	Million operating cycles		0.1
Mechanical endurance	Million operating cycles		10

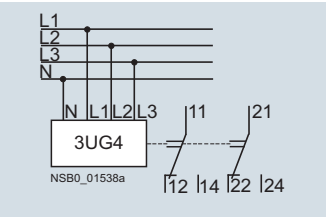
Circuit diagrams



3UG4511-.A,
3UG4512-.A



3UG4511-.B, 3UG4512-.B,
3UG4513, 3UG4614,
3UG4615, 3UG4617



3UG4616,
3UG4618

Note:

It is not necessary to protect the measuring circuit for device protection.
The protective device for line protection depends on the cross-section used.

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Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4511-1AP20

3UG4615-1CR20

3UG4616-1CR20

3UG4617-1CR20

3UG4618-1CR20

3UG4511-2BP20

3UG4512-2BR20

Adjustable hysteresis	Under-voltage detec-tion	Over-voltage detec-tion	Stabiliza-tion time adjustable stDEL	Tripping delay time adjustable Del	Version of auxiliary contacts	Measurable mains voltage[1]	DT	**Screw terminals**	DT	**Spring-type terminals**
			s	s	CO con-tact	V		Article No. Price per PU		Article No. Price per PU
Monitoring of phase sequence										
Auto RESET										
--	--	--	--	--	1	160 … 260 AC	A	**3UG4511-1AN20**	A	**3UG4511-2AN20**
					2		A	**3UG4511-1BN20**	A	**3UG4511-2BN20**
					1	320 … 500 AC	A	**3UG4511-1AP20**	A	**3UG4511-2AP20**
					2		A	**3UG4511-1BP20**	A	**3UG4511-2BP20**
					1	420 … 690 AC	A	**3UG4511-1AQ20**	A	**3UG4511-2AQ20**
					2		A	**3UG4511-1BQ20**	A	**3UG4511-2BQ20**
Monitoring of phase sequence, phase failure and phase unbalance										
Auto RESET, closed-circuit principle, unbalance threshold permanently 10 %										
--	--	--	--	--	1	160 … 690 AC	A	**3UG4512-1AR20**	A	**3UG4512-2AR20**
					2		A	**3UG4512-1BR20**	A	**3UG4512-2BR20**
Monitoring of phase sequence, phase failure, unbalance and undervoltage										
Analogically adjustable, Auto RESET, closed-circuit principle, unbalance and undervoltage threshold permanently 20 %										
5 % of set value	✓	--	--	0.1 … 20	2	160 … 690 AC	A	**3UG4513-1BR20**	A	**3UG4513-2BR20**
Digitally adjustable, Auto or Manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	--	0.1 ... 20	0.1 … 20	2	160 … 690 AC	A	**3UG4614-1BR20**	A	**3UG4614-2BR20**
Monitoring of phase sequence, phase failure, overvoltage and undervoltage										
Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20[2]	2[2]	160 … 690 AC	A	**3UG4615-1CR20**	A	**3UG4615-2CR20**
Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage										
Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20[2]	2[2]	90… 400 AC against N	A	**3UG4616-1CR20**	A	**3UG4616-2CR20**
Automatic direction correction in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage										
Digitally adjustable, Auto or Manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2[3]	160 … 690 AC	A	**3UG4617-1CR20**	A	**3UG4617-2CR20**
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage										
Digitally adjustable, Auto or Manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2[3]	90 … 400 AC against N	A	**3UG4618-1CR20**	A	**3UG4618-2CR20**

✓ Function available
-- Function not available

For accessories see page 10/122.

[1] Absolute limit values.
[2] 1 CO contact each and 1 tripping delay time each for U_{min} and U_{max}.
[3] 1 CO contact each for power system fault and phase sequence correction.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Voltage monitoring

Overview

SIRIUS 3UG4631 monitoring relay

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set threshold value for overshoot and undershoot. The devices differ with regard to their power supply (internal or external).

Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 to 10 V

Technical specifications

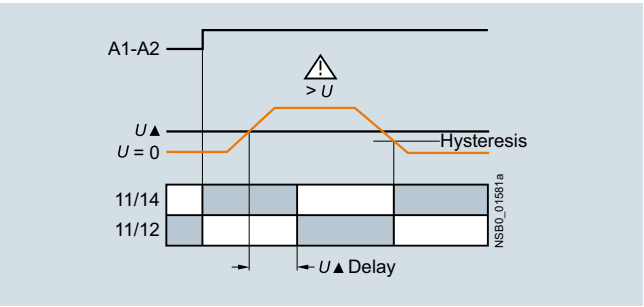
3UG4631/3UG4632 monitoring relays

The 3UG4631/3UG4632 voltage monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

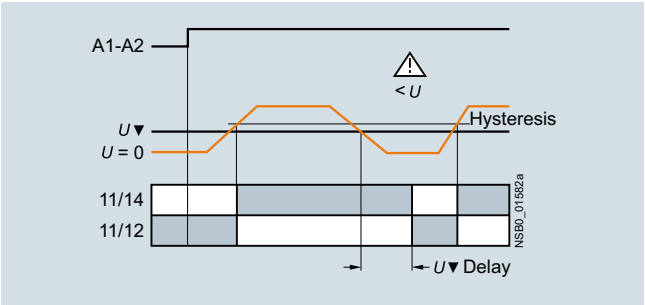
The measuring range extends from 0.1 to 60 V or 10 to 600 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This delay time U_{Del} can be set from 0.1 to 20 s. The hysteresis can be set from 0.1 to 30 V or 0.1 to 300 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

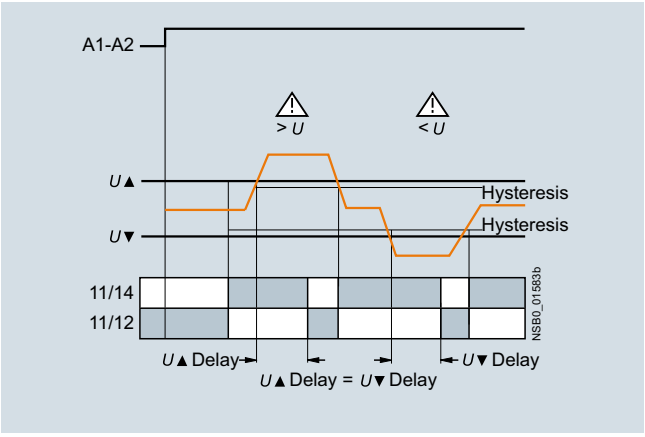
Overvoltage



Undervoltage



Range monitoring



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3UG4633 monitoring relays

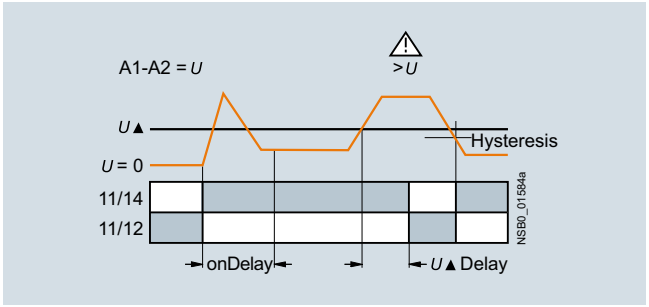
The 3UG4633 voltage monitoring relay has an internal power supply and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

The operating and measuring range extends from 17 to 275 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time has elapsed. This delay time U_{Del} can be set from 0.1 to 20 s like the ON-delay time on_{Del}.

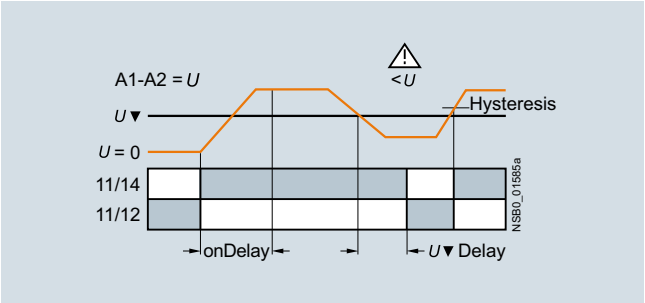
The hysteresis is adjustable from 0.1 to 150 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET. One output change-over contact is available as signaling contact.

With the closed-circuit principle selected

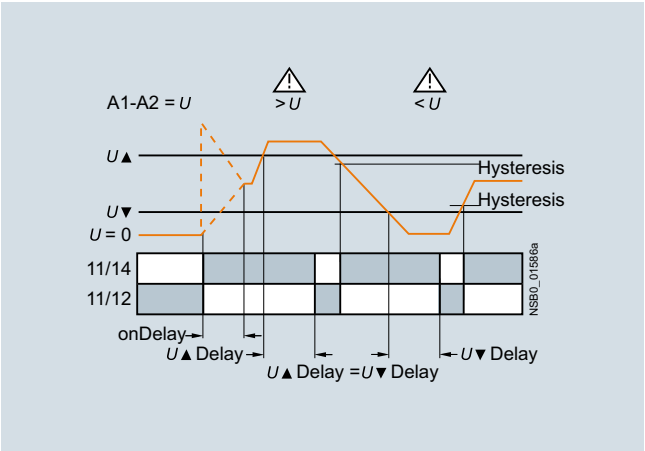
Overvoltage



Undervoltage

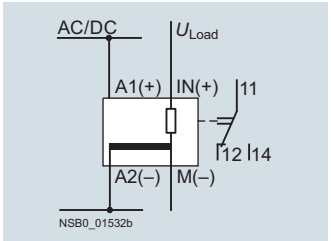


Range monitoring

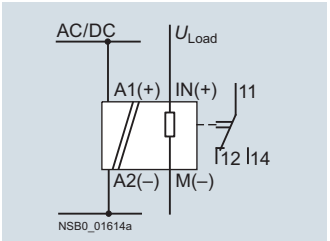


Type		3UG4631	3UG4632	3UG4633
General data				
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III according to VDE 0110	V	690		
Rated impulse withstand voltage U_{imp}	kV	6		
Measuring circuit				
Permissible measuring range single-phase AC/DC voltage	V	0.1 … 68	10 … 650	17 … 275
Setting range single-phase voltage	V	0.1 ... 60	10 ... 600	17 ... 275
Measuring frequency	Hz	40 ... 500		
Control circuit				
Load capacity of the output relay • Conventional thermal current I_{th}	A	5		
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	A A A A	3 1 0.2 0.1		
Minimum contact load at 17 V DC	mA	5		

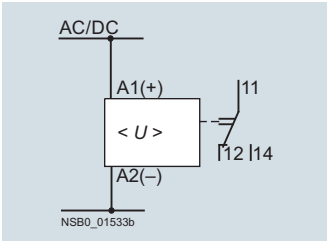
Circuit diagrams



3UG4631-.AA30,
3UG4632-.AA30



3UG4631-.AW30,
3UG4632-.AW30



3UG4633

Note:
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Voltage monitoring

Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4631-1AA30

3UG4633-2AL30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
				Article No.	Price per PU		Article No.	Price per PU
V	V	V						
Internal power supply without auxiliary voltage, ON-delay and tripping delay times can be adjusted separately 0.1 ... 20 s								
17 … 275 AC/DC	0.1 ... 150	17 … 275 AC/DC[1]	A	**3UG4633-1AL30**		A	**3UG4633-2AL30**	
Supplied from an external auxiliary voltage, tripping delay time adjustable 0.1 ... 20 s								
0.1 … 60 AC/DC	0.1 ... 30	24 AC/DC	A	**3UG4631-1AA30**		A	**3UG4631-2AA30**	
10 … 600 AC/DC	0.1 ... 300		A	**3UG4632-1AA30**		A	**3UG4632-2AA30**	
0.1 … 60 AC/DC	0.1 ... 30	24 … 240 AC/DC	A	**3UG4631-1AW30**		A	**3UG4631-2AW30**	
10 … 600 AC/DC	0.1 ... 300		A	**3UG4632-1AW30**		A	**3UG4632-2AW30**	

[1] Absolute limit values.

For accessories see page 10/122.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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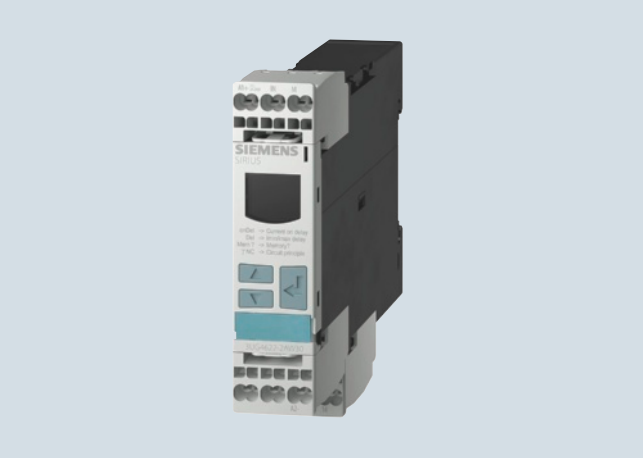
SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Overview



SIRIUS 3UG4622 monitoring relay

The relays monitor single-phase AC currents (rms value) and DC currents against the set threshold value for overshoot and undershoot. They differ with regard to their measuring ranges and control supply voltage types.

Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for analog signals from 4 to 20 mA

Technical specifications

3UG4621/3UG4622 monitoring relays

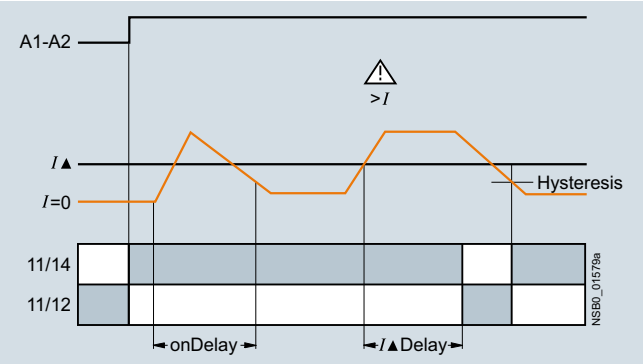
The 3UG4621 or 3UG4622 current monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the current depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

The measuring range extends from 3 to 500 mA or 0.05 to 10 A. The rms value of the current is measured. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time I_{Del} has elapsed. This time and the ON-delay time on_{Del} are adjustable from 0.1 to 20 s.

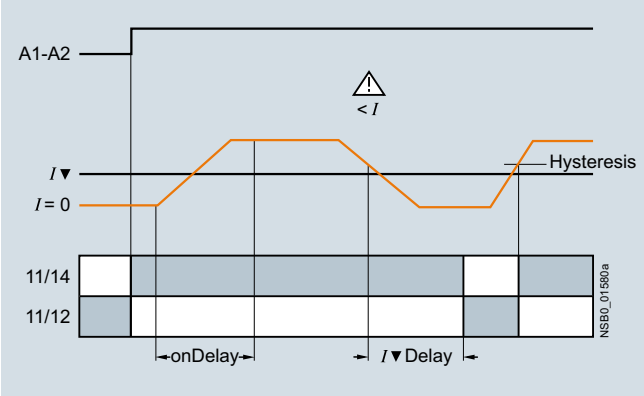
The hysteresis is adjustable from 0.1 to 250 mA or 0.01 to 5 A. The device can be operated with manual or Auto RESET and on the basis of either the open-circuit or closed-circuit principle. Following options are available: Response of the output relay when the control supply voltage U_s = ON is applied or not until the lower measuring range limit of the measuring current (I > 3 mA/50 mA) is reached. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected
upon application of the control supply voltage

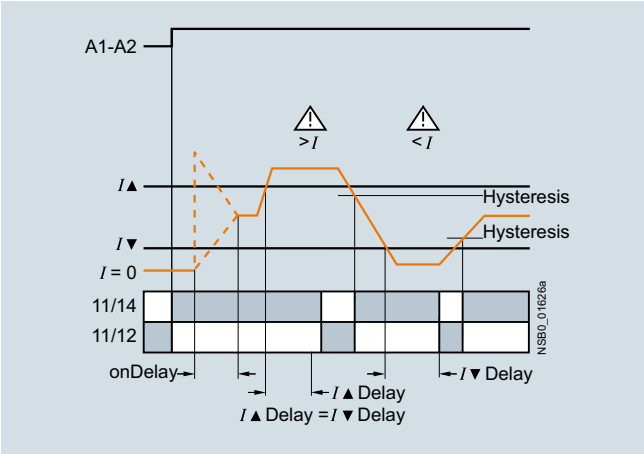
Current overshoot



Current undershoot



Range monitoring



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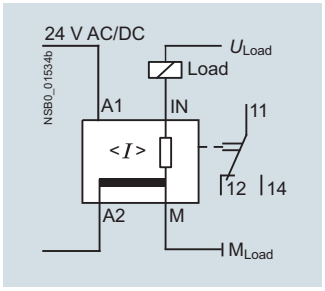
Current monitoring

Type		3UG4621-.AA	3UG4621-.AW	3UG4622-.AA	3UG4622-.AW
General data					
Rated insulation voltage U_i Pollution degree 3; overvoltage category III according to VDE 0110	V	690			
Rated impulse withstand voltage U_{imp}	kV	6			
Measuring circuit					
Measuring range single-phase AC/DC current	A	0.003 … 0.6		0.05 … 15	
Setting range for single-phase current	A	0.003 ... 0.5		0.05 ... 10	
Load supply voltage	V	24	Max. 300[1)] Max. 500[2)]	24	Max. 300[1)] Max. 500[2)]
Control circuit					
Load capacity of the output relay • Conventional thermal current I_{th}	A	5			
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1			
Minimum contact load at 17 V DC	mA	5			

1) With protective separation.

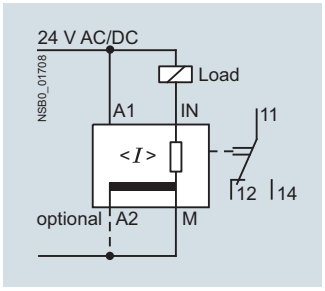
2) With simple separation.

Circuit diagrams



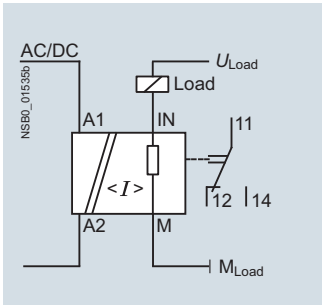
3UG4621-.AA30,
3UG4622-.AA30

Operation with separate control circuit and load circuit



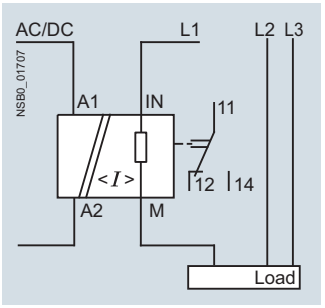
3UG4621-.AA30,
3UG4622-.AA30

Operation with joint control circuit and load circuit



3UG4621-.AW30,
3UG4622-.AW30

Single-phase operation

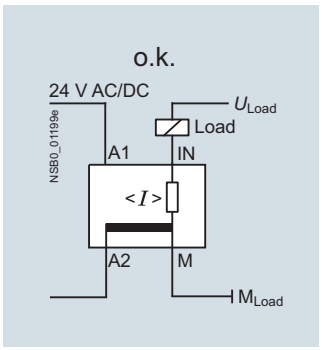


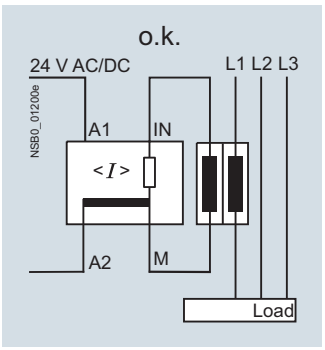
3UG4621-.AW30,
3UG4622-.AW30

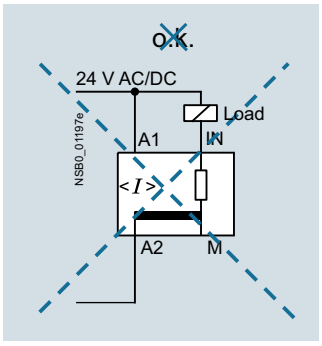
Three-phase operation

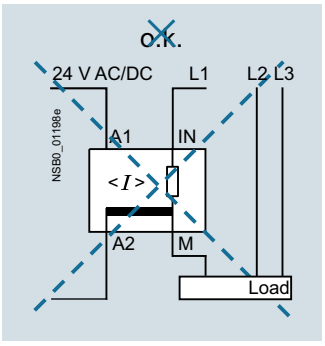
Connection diagram for 24 V AC/DC (only 3UG462.-.AA30)

From the following circuit diagrams it is clear that loads in measuring circuits have to be in the current flow upstream from the monitoring relay. Otherwise, the monitoring relay could be destroyed and the short-circuit current could cause damage to the plant.









Configuring note:

A2 and M are electrically connected internally.

For applications in which the load to be monitored and the monitoring relay are supplied from the same power supply, there is no need for connection A2.

The load current must always flow through M or the monitoring relay may be destroyed.

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Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4621-1AA30

3UG4622-2AW30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals**
		V		Article No. / Price per PU		Article No. / Price per PU
Monitoring of undercurrent and overcurrent, start-up delay and tripping delay times can be adjusted separately 0.1 ... 20 s						
3 … 500 mA AC/DC 0.05 … 10 A AC/DC	0.1 ... 250 mA 0.01 ... 5 A	24 AC/DC[1]	A A	**3UG4621-1AA30** **3UG4622-1AA30**	A A	**3UG4621-2AA30** **3UG4622-2AA30**
3 … 500 mA AC/DC 0.05 … 10 A AC/DC	0.1 ... 250 mA 0.01 ... 5 A	24 … 240 AC/DC[2]	A A	**3UG4621-1AW30** **3UG4622-1AW30**	A A	**3UG4621-2AW30** **3UG4622-2AW30**

1) No electrical separation. Load supply voltage 24 V.

2) Electrical separation between control circuit and measuring circuit. Load supply voltage for protective separation max. 300 V, for simple isolation max. 500 V.

For accessories see page 10/122.

With AC currents I > 10 A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Power factor and active current monitoring

Overview

SIRIUS 3UG4641 monitoring relay

The 3UG4641 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Benefits

- Can be used worldwide thanks to wide voltage range from 90 to 690 V (absolute limit values)
- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor or I_{res} (active current) can be selected as measurement principle
- Width 22.5 mm
- All versions with removable terminals

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Simple power factor monitoring in power systems for control of compensation equipment
- Broken cable between control cabinet and motor

Technical specifications

3UG4641 monitoring relays

The 3UG4641 monitoring relay is self-powered and serves the single-phase monitoring of the p.f. or performs overshoot, undershoot or range monitoring of the active current depending on how it is parameterized. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0.1 to 0.99 and for the active current I_{res} 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show I < 0.2 and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON-delay time begins. During this time, if the set limit values are undershot or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the p.f. value falls below or exceeds the respective set threshold value, the spike delay begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flash. If the monitoring of active current undershooting is deactivated (I_{res}▼= OFF) and the load current drops below the lower measuring range threshold (0.2 A), then the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measuring range threshold (0.2 A) will result in a response of the CO contacts.

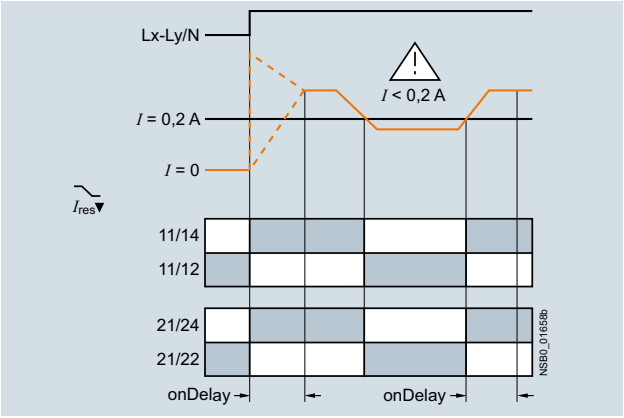
The relay operates either according to the open-circuit or closed-circuit principle. If the device is set to Auto RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by pressing the UP▲ or DOWN▼ key simultaneously for 2 seconds, or by switching the supply voltage off and back on again.

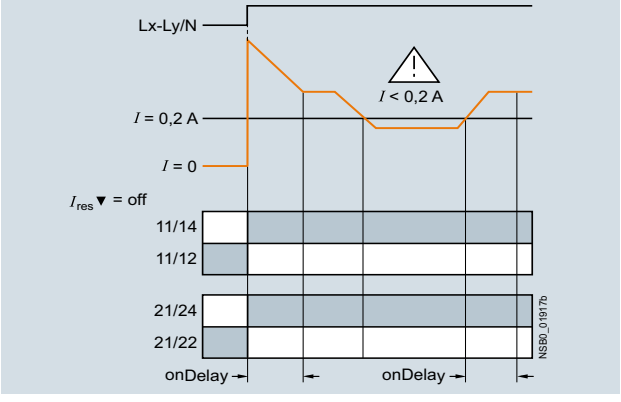
<u>With the closed-circuit principle selected</u>

Response in the event of undershooting the measuring range limit

- With activated monitoring of I_{res}▼



- With deactivated monitoring of active current undershooting



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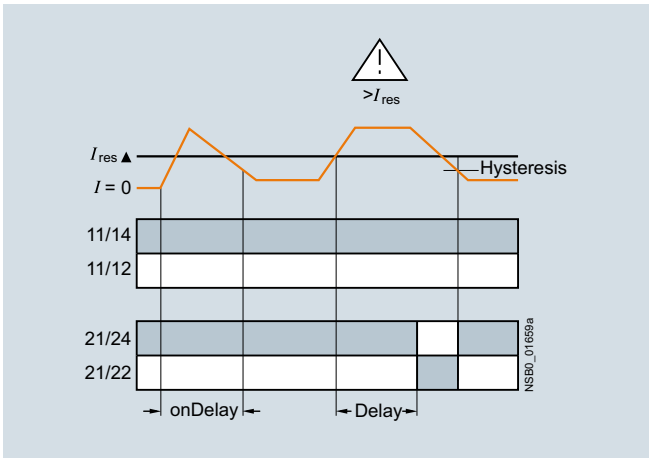
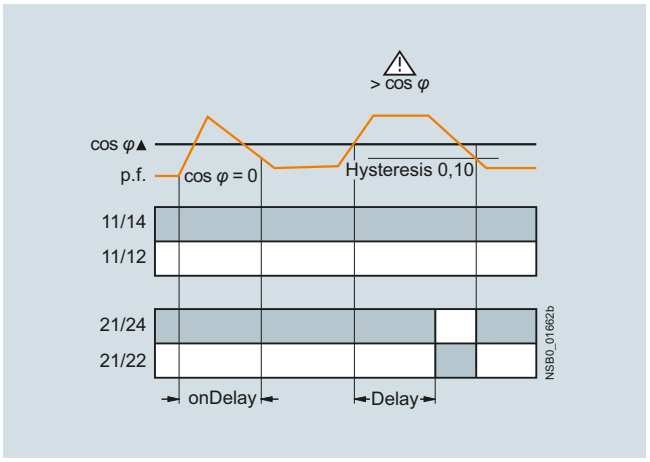
Power factor and active current monitoring

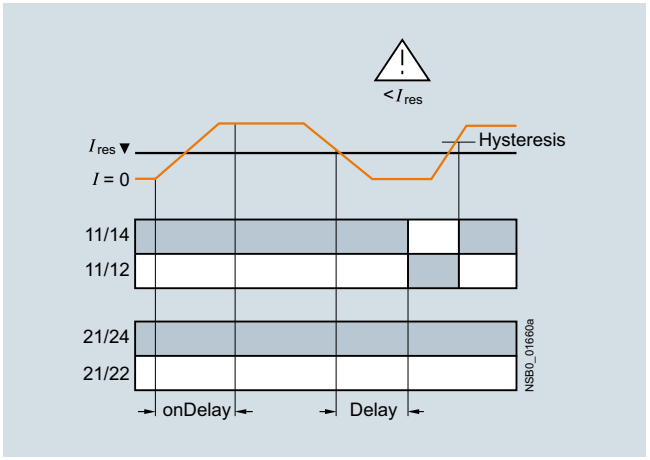
Overshooting of active current



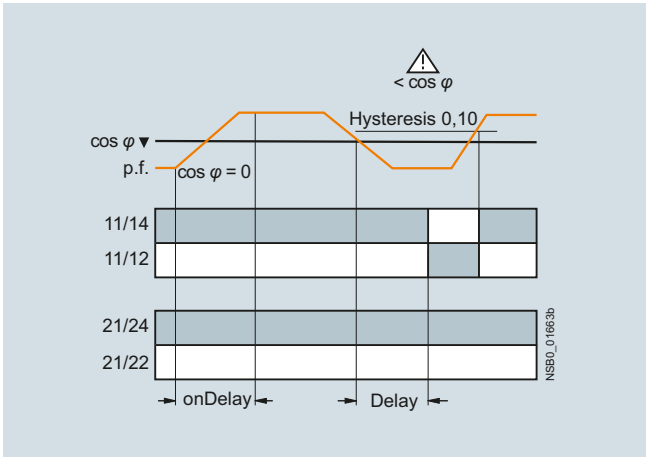
Overshooting of power factor



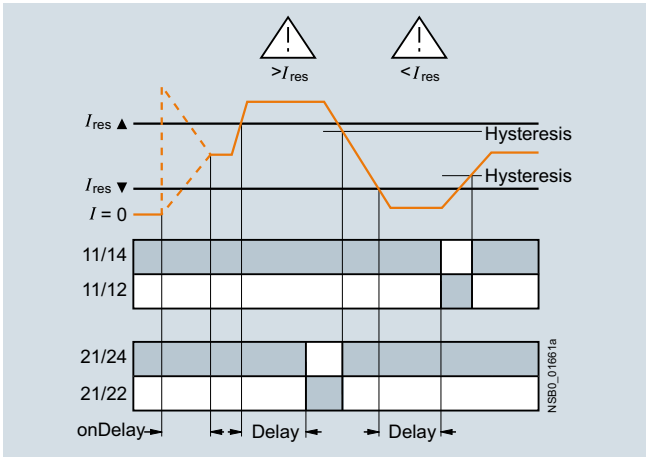
Undershooting of active current



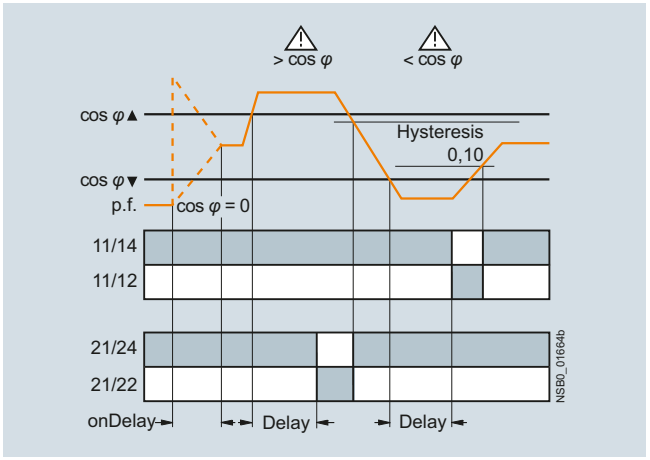
Undershooting of power factor



Range monitoring of active current



Range monitoring of power factor



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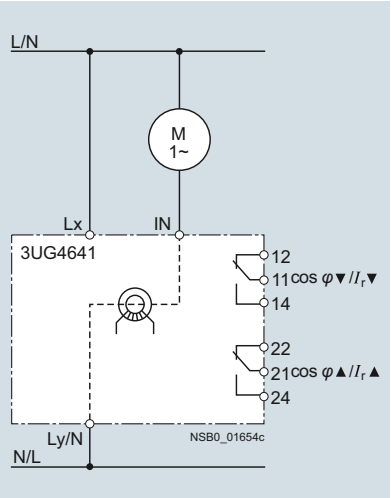
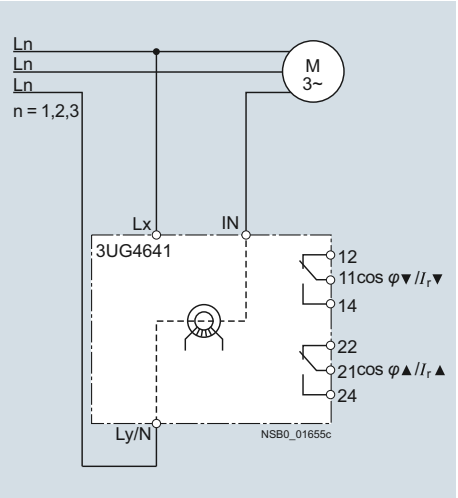
Power factor and active current monitoring

Type		3UG4641
General data		
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

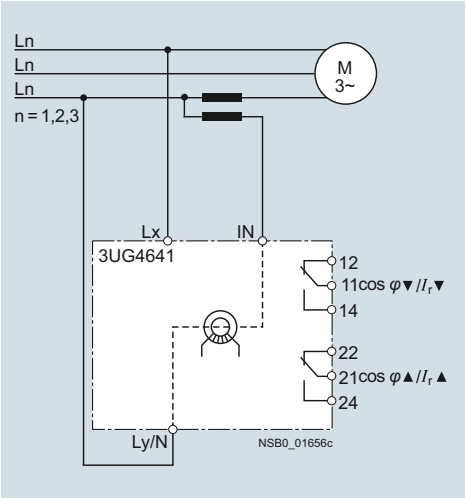
Circuit diagrams



Single-phase motors



Three-phase motors



Three-phase motors with transformers for currents > 10 A

10

Selection and ordering data

- For monitoring the power factor and the active current I_{res} (p.f. x I)
- Suitable for single- and three-phase currents
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower threshold value can be adjusted separately
- Permanent display of actual value and tripping state
- 1 changeover contact each for undershoot/overshoot

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Measuring range		Adjustable hysteresis		ON-delay time adjustable onDel	Tripping delay time adjustable I▲Del/ I▼Del, φ▲Del/ φ▼Del	Rated control supply voltage U_s [1] 50/60 Hz AC	DT	Screw terminals		DT	Spring-type terminals	
For power factor	For active current I_{res}	For power factor	For active current I_{res}					Article No.	Price per PU		Article No.	Price per PU
P.f.	A	P.f.	A	s	s	V						
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	A	**3UG4641-1CS20**		A	**3UG4641-2CS20**	

[1] Absolute limit values.

For accessories see page 10/122.

With AC active currents I_{res} > 10 A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3UG4625 monitoring relay

The 3UG4625 residual-current monitoring relays are used in conjunction with the 3UL23 residual-current transformers for monitoring plants in which higher residual currents are increasingly expected due to ambient conditions. Monitoring encompasses pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

Benefits

- Worldwide use thanks to wide voltage range from 24 to 240 V AC/DC
- High measuring accuracy ± 7.5%
- Permanent self-monitoring
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Permanent display of the actual value and fault diagnostics via the display
- High level of flexibility and space saving through installation of the transformer inside or outside the control cabinet
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads, or capacitive residual currents

Technical specifications

3UG4625 monitoring relays

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the annular ring core of a residual-current transformer. A secondary winding is placed around this annular strip-wound core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs downstream of the residual current operated circuit breaker, the sum of the inflowing currents is greater than that of the outward currents. The differential current - the residual current - induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the associated relay symbol flashes. On expiry of this time, the associated changeover contact changes the switching state.

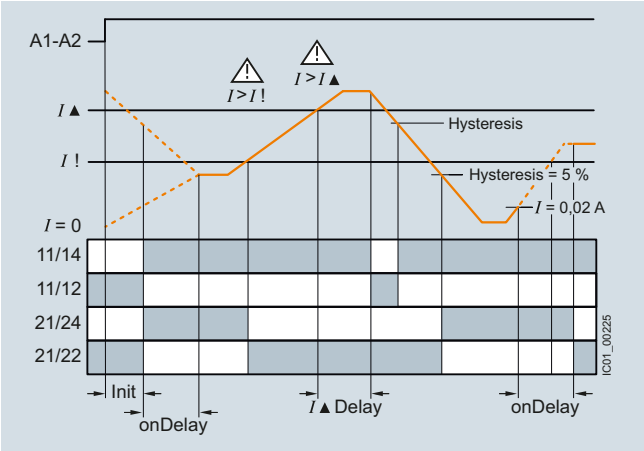
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshot during this period.

With the closed-circuit principle selected

Residual current monitoring with Auto RESET (Memory = no)



If the device is set to Auto RESET, the relay switches back to the OK state for the tripping value once the value falls below the set hysteresis threshold and the display stops flashing.

The associated relay changes its switching state if the value falls below the fixed hysteresis value of 5 % of the set warning value.

Any overshoots are therefore not stored.

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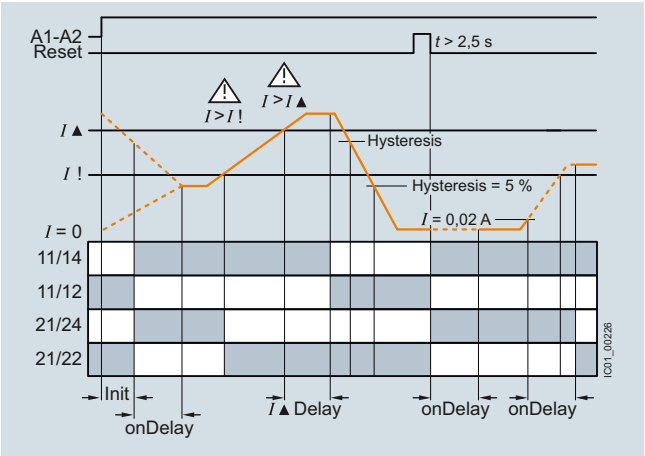
Residual current monitoring: Residual-current monitoring relays

Residual current monitoring with Manual RESET (Memory = yes)



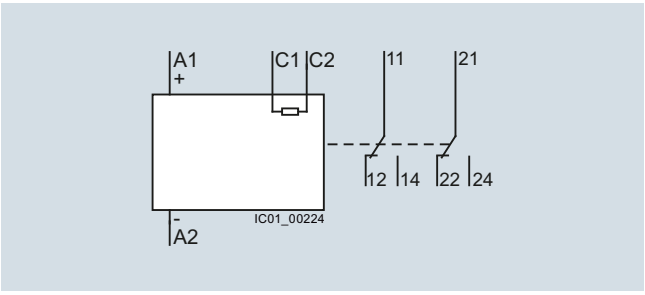
If Manual RESET is selected in the menu, the output relays remain in their current switching state and the current measured value and the symbol for overshooting continues to flash, even when the measured residual current returns to a permissible value. This stored fault status can be reset by pressing the UP▲ or DOWN▼ key simultaneously for > 2 seconds, or by switching the supply voltage off and back on again.

Note:

The neutral conductor must not be grounded downstream of the residual-current transformer as this may impair the function of the residual current monitoring device.

Type		3UG4625-1CW30, 3UG4625-2CW30
General data		
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value	V	300
Impulse withstand voltage rated value U_{imp}	kV	4
Control circuit		
Number of CO contacts for auxiliary contacts		2
Thermal current of the non-solid-state contact blocks maximum	A	5
Current carrying capacity of the output relay		
• At AC-15 at 250 V at 50/60 Hz	A	3
• At DC-13		
- At 24 V	A	1
- At 125 V	A	0.2
- At 250 V	A	0.1
Operational current at 17 V minimum	mA	5

Circuit diagram



3UG4625

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- For monitoring residual currents from 0.03 to 40 A, from 16 to 400 Hz
- For 3UL23 residual-current transformers with feed-through opening from 35 to 210 mm
- Permanent self-monitoring
- Certified in accordance with IEC 60947, functionality corresponds to IEC 62020
- Digitally adjustable, with illuminated LCD
- Permanent display of actual value and tripping state
- Separately adjustable limit value and warning threshold
- 1 changeover contact each for warning threshold and tripping threshold

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4625-1CW30

3UG4625-2CW30

Measurable current	Adjustable response value current	Switching hysteresis	Adjustable ON-delay time	Control supply voltage			DT	Screw terminals		DT	Spring-type terminals	
				At 50 Hz at AC rated value	At 60 Hz at AC rated value	At DC rated value		Article No.	Price per PU		Article No.	Price per PU
A	A	%	s	V	V	V						
0.01 ... 43	0.03 ... 40	0 to 50	0 ... 20	24 ... 240	24 ... 240	24 ... 240	A	**3UG4625-1CW30**		A	**3UG4625-2CW30**	

For accessories see page 10/122.

3UL23 residual-current transformers see page 10/104.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Residual current monitoring: Residual-current transformers

Overview

SIRIUS 3UL23 residual-current transformer

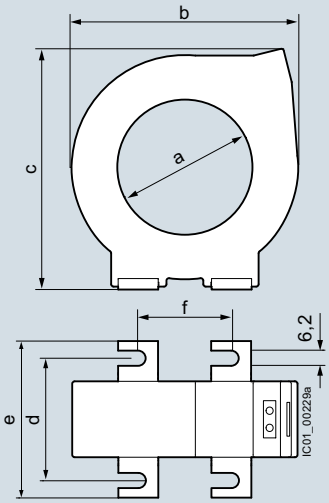
The 3UL23 residual-current transformers detect residual currents in machines and plants. They are suitable for pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

Together with the 3UG4625, 3UG4825 residual-current monitoring relays for IO-Link or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

The 3UL2302-1A and 3UL2303-1A residual-current transformers with a feed-through opening from 35 to 55 mm can be mounted in conjunction with the 3UL2900 accessories on a TH 35 standard mounting rail according to IEC 60715.

Technical specifications

Dimension drawing



Type	a	b	c	d	e	f
3UL2302-1A	35	70	75,5	50	64	--
3UL2303-1A	55	92	98	50	64	38
3UL2304-1A	80	124,5	130	50	64	60
3UL2305-1A	110	163	169	50	64	84,5
3UL2306-1A	140	201	207,5	50	64	110
3UL2307-1A	210	300	286	46	62	161

Selection and ordering data

Diameter of the bushing opening	Connectable cross-section of the connecting terminal	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
mm	mm^2		Article No.	Price per PU			
Residual-current transformer (essential accessory for 3UG4625, 3UG4825 or SIMOCODE 3UF)							
35	2.5	B	**3UL2302-1A**		1	1 unit	41H
55	2.5	B	**3UL2303-1A**		1	1 unit	41H
80	2.5	B	**3UL2304-1A**		1	1 unit	41H
110	2.5	B	**3UL2305-1A**		1	1 unit	41H
140	2.5	B	**3UL2306-1A**		1	1 unit	41H
210	4	B	**3UL2307-1A**		1	1 unit	41H

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Adapters							
3UL2900	**Adapters** For mounting onto standard rail for 3UL23 to diameter 55 mm	A	**3UL2900**		1	2 units	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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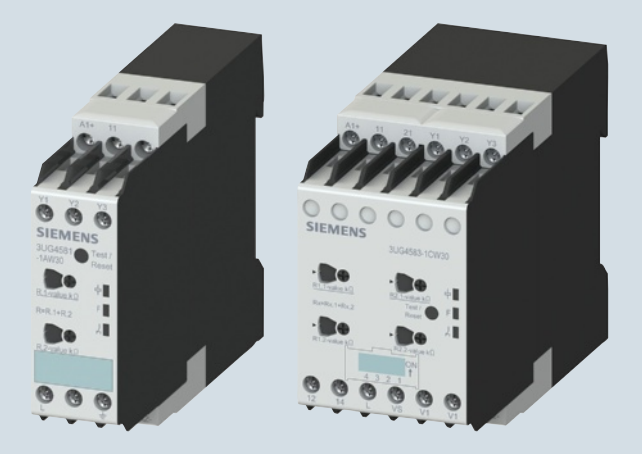
Overview



SIRIUS 3UG458. insulation monitor

Insulation monitoring relays are used for monitoring the insulation resistance between ungrounded single or three-phase AC supplies and a protective conductor.

Ungrounded, i.e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e.g. emergency lighting systems. IT systems are supplied via an isolating transformer or by power supply sources such as batteries or a generator. While an initial insulation fault between a phase conductor and the ground effectively grounds the conductor, as a result no circuit has been closed, so it is possible to continue work in safety (single-fault safety). However, the fault must be rectified as quickly as possible before a second insulation fault occurs (e.g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used, which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value so that either a controlled shutdown can be performed or the fault can be rectified without interrupting the power supply.

Two series

- 3UG4581 insulation monitoring relays for ungrounded AC networks
- 3UG4582 and 3UG4583 insulation monitoring relays for ungrounded DC and AC networks

Benefits

- Devices for AC and DC systems
- All devices have a wide control supply voltage range
- Direct connection to networks with mains voltages of up to 690 V AC and 1 000 V DC by means of a voltage reducer module
- For AC supply systems: Frequency range 15 to 400 Hz
- Monitoring of broken conductors
- Monitoring of setting errors
- Safety in use thanks to integrated system test after start-up
- Option of resetting and testing (by means of button on front or using control contact)
- New predictive measurement principle allows very fast response times

Application

IT networks are used for example:

- In emergency power supplies
- In safety lighting systems
- In industrial production facilities with high availability requirements (chemical industry, automobile manufacturing, printing plants)
- In shipping and railways
- For mobile generators (aircraft)
- For renewable energies, such as wind energy and photovoltaic power plants
- In the mining industry

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Insulation monitoring: General data

Technical specifications

Type		3UG4581-1AW30	3UG4582-1AW30	3UG4583-1CW30
General data				
Setting range for the setpoint response values				
• 1 ... 100 kΩ		✓	✓	✓
• 2 ... 200 kΩ		--	--	✓
Rated voltage of the network being monitored				
• 0 ... 250 V AC		--	✓	--
• 0 ... 440 V AC		✓	--	✓
• 0 ... 690 V AC		--	--	✓ 1)
• 0 … 300 V DC		--	✓	--
• 0 … 600 V DC		--	--	✓
• 0 ... 1 000 V DC		--	--	✓ 1)
Max. leakage capacitance of the system				
• 10 µF		✓	✓	--
• 20 µF		--	--	✓
Output contacts				
• 1 CO		✓	✓	--
• 2 CO or 1 CO + 1 CO, adjustable		--	--	✓
Number of limit values				
• 1		✓	✓	--
• 1 or 2, adjustable		--	--	✓
Principle of operation		Closed-circuit principle	Closed-circuit principle	Open-circuit/closed-circuit principle, adjustable
Rated control supply voltage				
• 24 ... 240 V AC/DC		✓	✓	✓
Rated frequency				
• 15 ... 400 Hz		--	✓	✓
• 50/60 Hz		✓	--	--
Auto or Manual RESET		✓ Adjustable	✓ Adjustable	✓ Adjustable
Remote RESET		✓ Via control input	✓ Via control input	✓ Via control input
Non-volatile error memory		--	--	✓ Adjustable
Broken wire detection		--	--	✓ Adjustable
Replacement for				
Rated control supply voltage U_s	Voltage range of the network being monitored			
3UG3081-1AK20 110 ... 130/220 ... 240 V AC/DC	3 x 230/400 V AC	✓	--	--
3UG3081-1AW30 24 ... 240 V AC/DC	3 x 230/400 V AC	✓	--	--
3UG3082-1AW30 24 ... 240 V AC/DC	24 ... 240 V DC	--	✓	--

✓ Available

-- Not available

1) With voltage reducer module.

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Overview

SIRIUS 3UG4581 insulation monitor

The 3UG4581 insulation monitoring relays are used to monitor insulation resistance according to IEC 61557-8 in ungrounded AC networks with rated voltages of up to 400 V.

These devices can monitor control circuits (single-phase) and main circuits (three-phase).

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status.

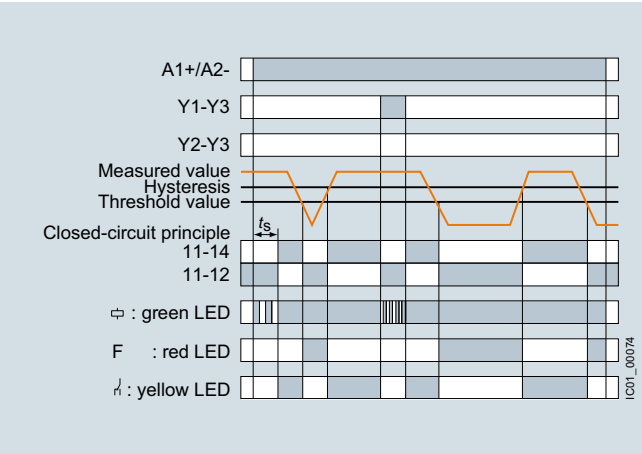
In the case of 3UG4581 a higher-level DC measuring signal is used. The higher-level DC measuring signal and the resulting current are used to determine the value of the insulation resistance of the network which is to be measured.

Technical specifications

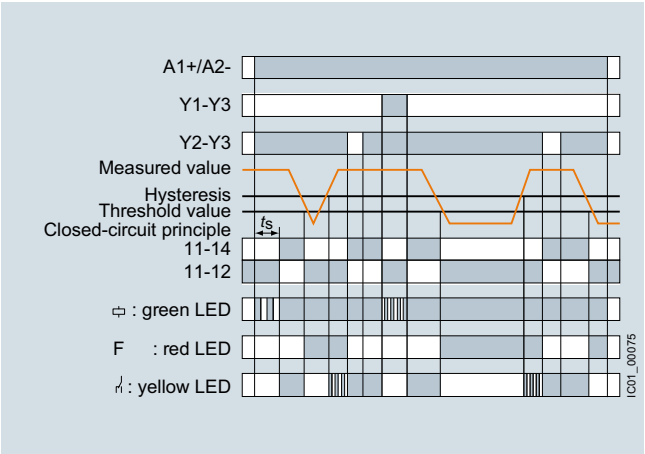
3UG4581 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



Insulation resistance monitoring with fault storage and Manual RESET



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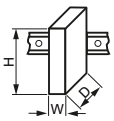
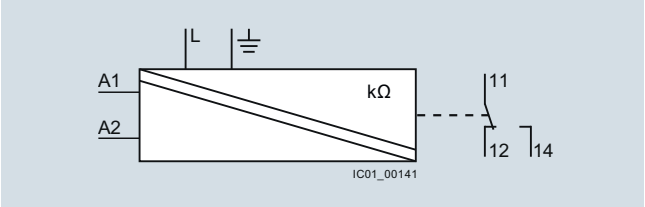
Insulation monitoring for ungrounded AC networks

Type			3UG4581
Dimensions (W x H x D)		mm	22.5 x 100 x 100
Connection type			**Screw terminals**
• Solid		mm^2	2 x (0.5 ... 4)
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 2.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
General data			
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to IEC 60664		V	400 supply circuit/measuring circuit 300 supply circuit/output circuit
Rated impulse withstand voltage U_{imp}		kV	6
Rated control supply voltage		V	24 ... 240 AC/DC
Rated frequency		Hz	15 ... 400
Measuring circuit			
Rated mains voltage of the network being monitored		V	0 ... 400
Rated frequency of the network being monitored		Hz	50 ... 60
Setting range for insulation resistance		kΩ	1 ... 100
Control circuit			
Load capacity of the output relay • Conventional thermal current I_{th}		A	4
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V		A A	3 2
Minimum contact load at 24 V DC		mA	10

Circuit diagram



3UG4581

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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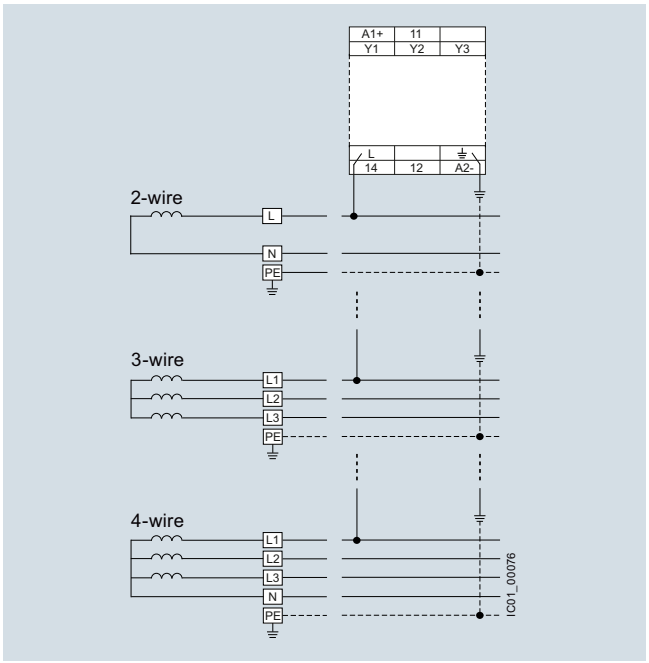
Connection diagrams for networks up to 400 V AC



Selection and ordering data

- Auto or Manual RESET
- Closed-circuit principle
- 1 CO contact
- Fault memory adjustable using control input (Y2-Y3)
- Reset by means of button on front or using control input (Y2-Y3)
- Test by means of button on front or using control input (Y1-Y3)

Rated mains voltage U_n	Measuring range U_e	Rated control supply voltage U_s	System leakage capacitance	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
V AC	kΩ	V	µF		Article No. / Price per PU			
Insulation monitors for ungrounded AC networks								
0 ... 400	1 ... 100	24 ... 240 AC/DC	max. 10	B	**3UG4581-1AW30**	1	1 unit	41H

3UG4581-1AW30

For accessories see page 10/122.

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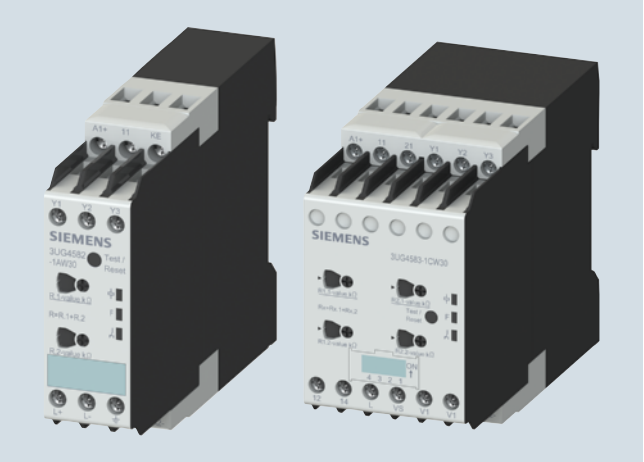
SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

Overview



SIRIUS 3UG4582 and 3UG4583 insulation monitors

The 3UG4582 and 3UG4583 insulation monitoring relays are used to monitor insulation resistance in ungrounded IT AC or DC networks according to IEC 61557-8.

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status. With these devices, which are suitable for both AC and DC networks, a pulsed test signal is fed into the network to be monitored and the isolation resistance is determined.

The pulsed test signal changes its form according to insulation resistance and network loss capacitance. The changed form is used to predict the changed insulation resistance.

If the predicted insulation resistance matches the insulation resistance calculated in the next measurement cycle, and is lower than the threshold value, the output relays are activated or deactivated, depending on the device configuration. This measurement principle is also suitable for identifying symmetrical insulation faults.

3UG4983 voltage reducer module

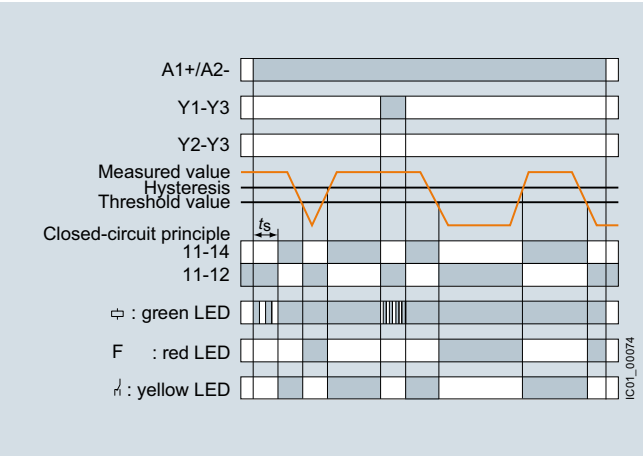
The 3UG4983 passive voltage reducer module can be used to allow the 3UG4583 insulation monitoring relay to be used for insulation monitoring of IT networks with rated voltages of up to 690 V AC and 1 000 V DC.

Technical specifications

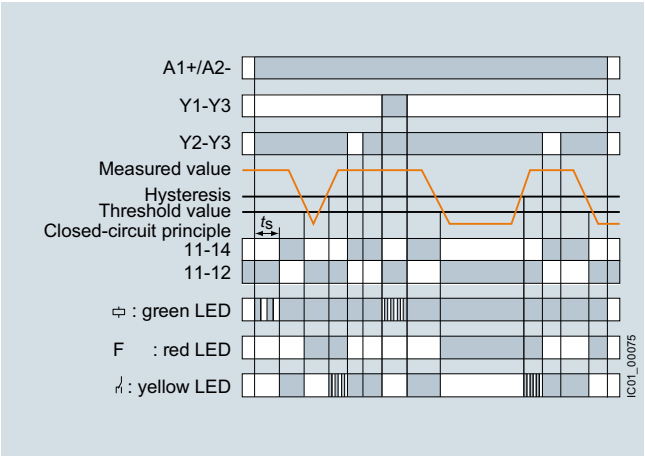
3UG4582 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



Insulation resistance monitoring with fault storage and Manual RESET



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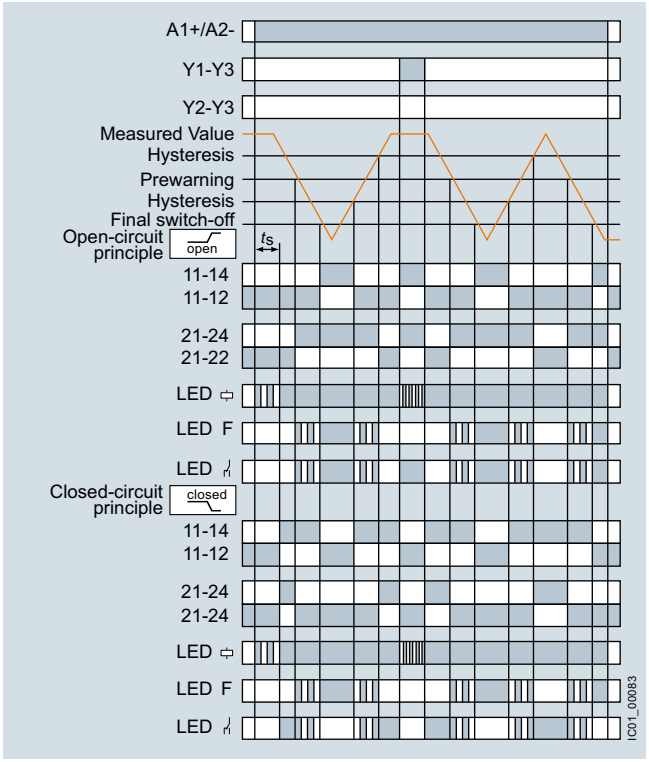
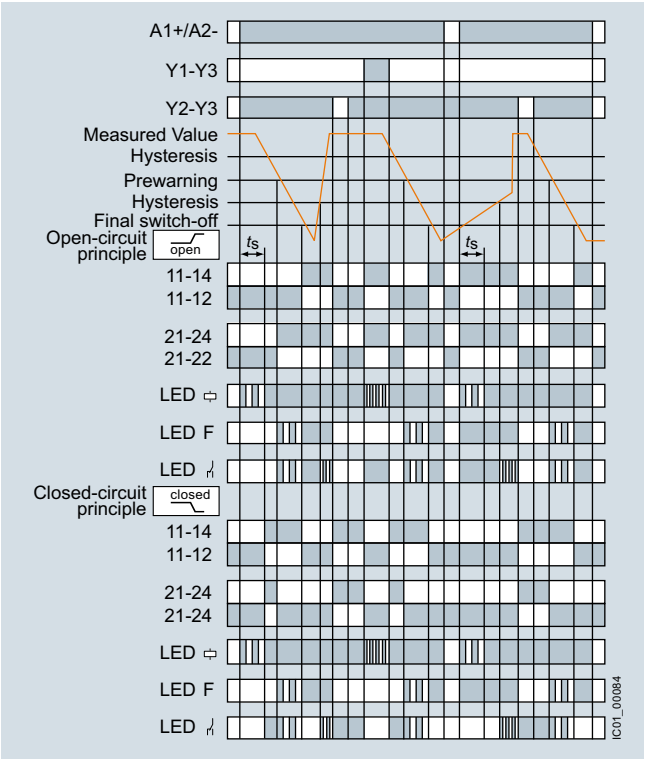
3UG4583 monitoring relays

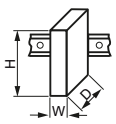
With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



Insulation resistance monitoring with fault storage and Manual RESET



Type			3UG4582	3UG4583
Dimensions (W x H x D)		mm	22.5 x 100 x 100	45 x 100 x 100
Connection type			Screw terminals	
• Solid • Finely stranded with end sleeve • AWG cables, solid or stranded		mm^2 mm^2 AWG	2 x (0.5 ... 4) 2 x (0.75 ... 2.5) 2 x (20 ... 14)	
General data				
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to IEC 60664		V	400 supply circuit/measuring circuit, 300 supply circuit/output circuit	400 supply circuit/measuring circuit 300 supply circuit/output circuit, 300 output circuit 1/output circuit 2
Rated impulse withstand voltage U_{imp}		kV	6	
Rated control supply voltage		V AC/DC	24 ... 240	
Rated frequency		Hz	15 ... 400	
Measuring circuit				
Rated mains voltage of the network being monitored		V V	0 ... 250 AC, 0 ... 300 DC	0 ... 300 AC, 0 ... 690 AC with 3UG4983 0 ... 600 DC, 0 ... 1 000 DC with 3UG4983
Rated frequency of the network being monitored		Hz	DC or 15 ... 400	
Setting range for insulation resistance		kΩ	1 ... 100	1 ... 100 2 ... 200 for 2nd limit value (disconnectable)
Control circuit				
Number of CO contacts for auxiliary contacts			1	2 or 1 + 1, adjustable
Load capacity of the output relay • Conventional thermal current I_{th}		A	4	
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V		A A	3 2	
Minimum contact load at 24 V DC		mA	10	

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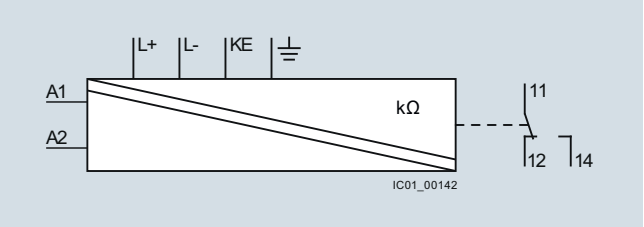
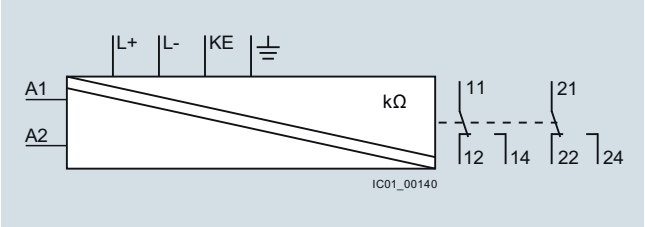
Insulation monitoring for ungrounded DC and AC networks

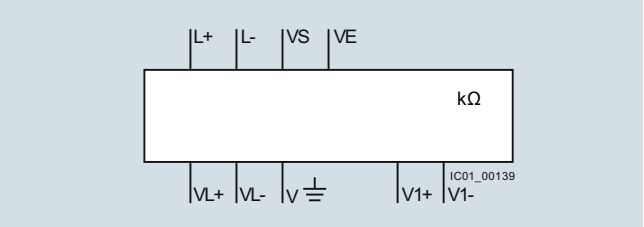
Circuit diagrams



3UG4582



3UG4583



3UG4983

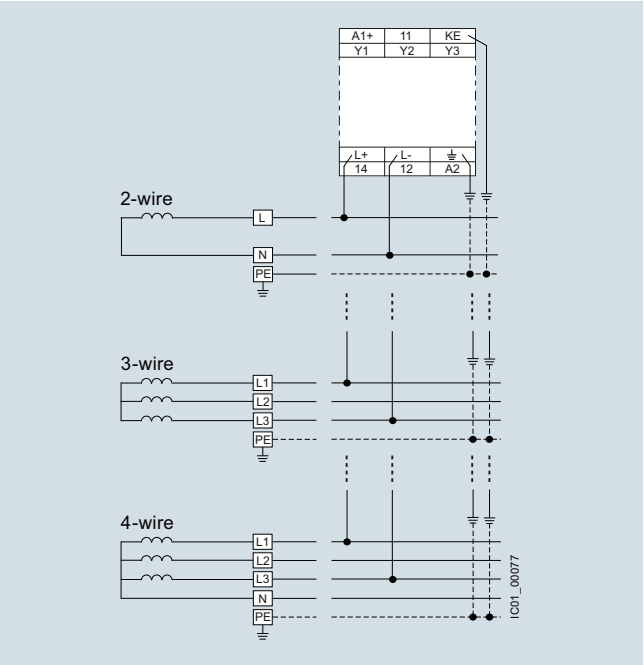
Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

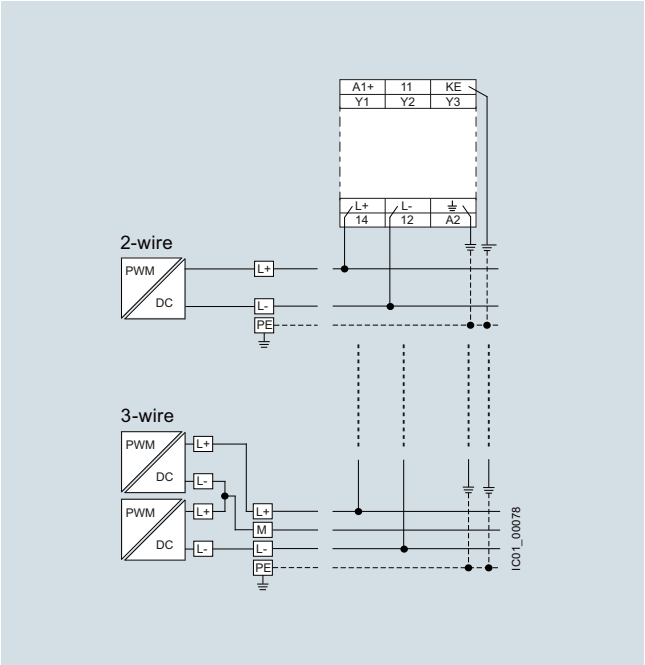
Connection diagrams

3UG4582

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



Note:

L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 250$ V AC or 300 V DC.

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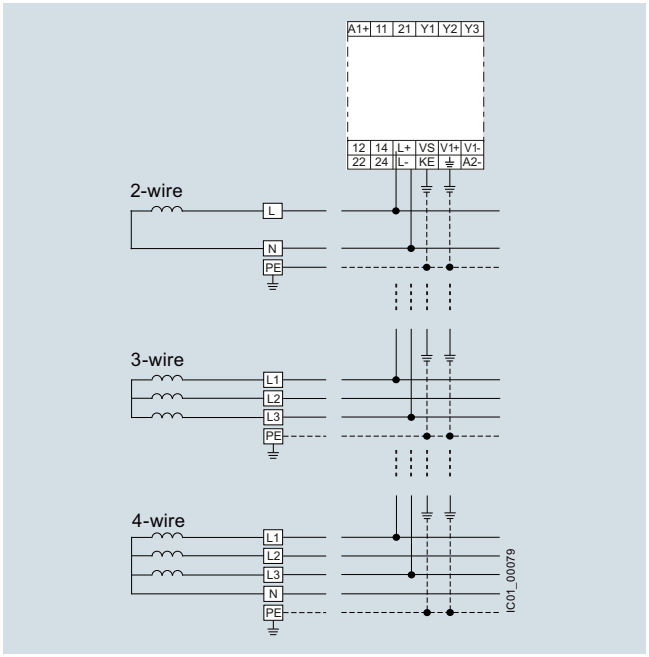
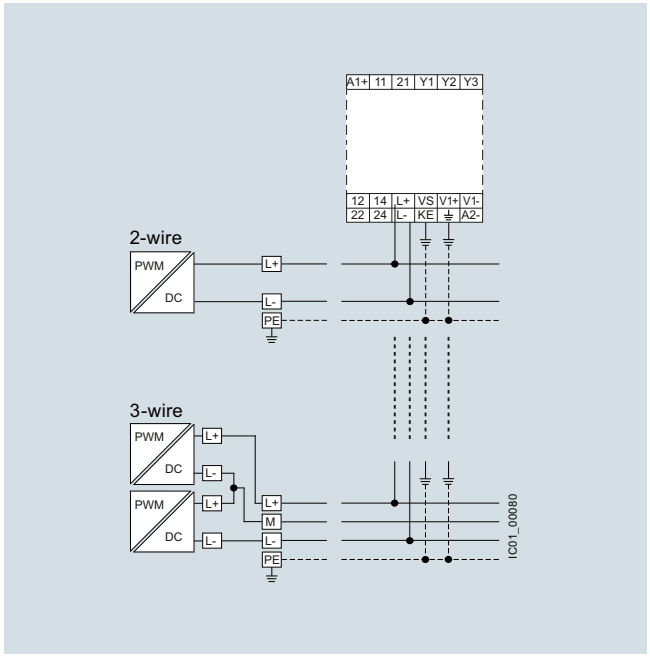
3UG4583

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire

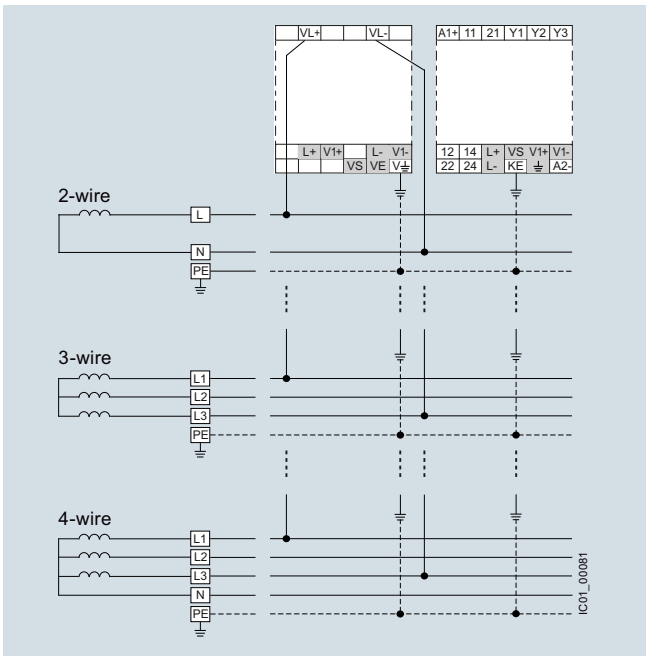


Note:

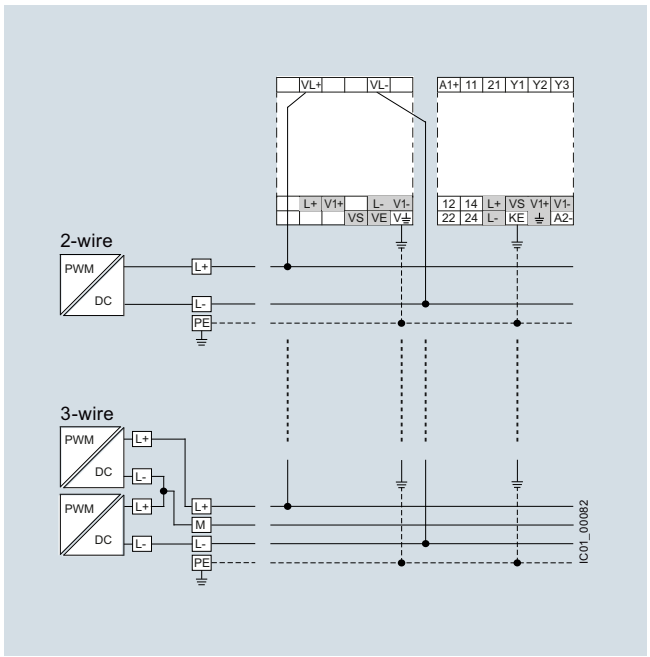
L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 400$ V AC or 600 V DC.
Use a voltage reducer module to monitor systems with higher voltages.

3UG4983 voltage reducer module

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



Note:

L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 400$ V AC or 600 V DC.
Use a voltage reducer module to monitor systems with higher voltages.

10

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

Selection and ordering data

- Auto or Manual RESET
- Rated control supply voltage U_s 24...240 V AC/DC
- 3UG4582: Closed-circuit principle
  3UG4583: Open-circuit or closed-circuit principle, adjustable
- 1 or 2 CO contacts
- Fault memory adjustable using control input (Y2-Y3)
- Reset by means of button on front or using control input (Y2-Y3)
- Test by means of button on front or using control input (Y1-Y3)
- 3UG4583: Non-volatile fault storage can be configured
- 3UG4583: 2 separate limit values (e.g. for warning and disconnection) or 2 CO contacts for one limit value (e.g. for a local alarm and signaling to the PLC via separate circuits) can be configured

Note:

With the 3UG4983-1A coupling unit, connection to networks with a voltage of up to 690 V AC and 1 000 V DC is possible, see below.

	Rated system voltage U_n	System leakage capacitance	Output relays	Measuring range U_e	Broken wire detection in the measuring range	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
							Article No.	Price per PU			
	V	µF		kΩ							
3UG4582 insulation monitors											
3UG4582-1AW30	0 ... 250 AC, 0 ... 300 DC	max. 10	1 CO	1 ... 100	✓	B	**3UG4582-1AW30**		1	1 unit	41H
3UG4583 insulation monitors											
3UG4583-1CW30	0 ... 400 AC, 0 ... 600 DC [1]	max. 20	2 CO or 1 CO + 1 CO, adjustable	1 ... 100, 2 ... 200 for 2nd limit value, adjustable	✓ Adjustable	B	**3UG4583-1CW30**		1	1 unit	41H
	Voltage reducer module for 3UG4583										
3UG4983-1A	For extending the mains voltage range to max. 690 V AC and 1 000 V DC					B	**3UG4983-1A**		1	1 unit	41H

✓ Available

[1] With 3UG4983-1A voltage reducer module suitable also for the insulation monitoring of IT networks up to 690 V AC and 1 000 V DC.

For accessories see page 10/122.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3UG4501 monitoring relay

The 3UG4501 level monitoring relay is used in combination with 2- or 3-pole sensors to monitor the levels of conductive liquids.

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- Individually shortenable 2 and 3-pole wire electrodes for easy mounting from above/below
- Bow electrodes for installation from the side, for larger filling levels and minimum space requirements
- Can be flexibly adapted to different conductive liquids through analog setting of the sensitivity from 2 to 200 kΩ
- Compensation for wave movements through tripping delay times from 0.1 to 10 s
- Upstream or downstream function selectable
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry run protection
- Leak monitoring

Technical specifications

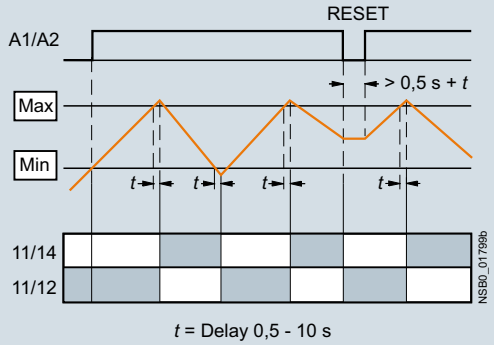
3UG4501 monitoring relays

The principle of operation of the 3UG4501 level monitoring relay is based on measuring the electrical resistance of the liquid between two immersion sensors and a reference terminal. If the measured value is lower than the sensitivity set at the front, the output relay changes its switching state. In order to exclude electrolytic phenomena in the liquid, the sensors are supplied with alternating current.

Two-point control

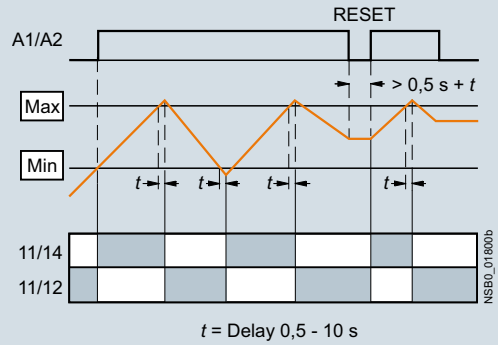
The output relay changes its switching state as soon as the liquid level reaches the maximum sensor, while the minimum sensor is submerged. The relay returns to its original switching state as soon as the minimum sensor no longer has contact with the liquid.

OVER, two-point control



t = Delay 0,5 - 10 s

UNDER, two-point control



t = Delay 0,5 - 10 s

Note:

It is also possible to connect other resistance sensors to the Min and Max terminals in the range 2 to 200 kW, e.g. photoresistors, temperature sensors, encoders based on resistance, etc. The monitoring relay can therefore also be used for other applications as well as for monitoring the levels of liquids.

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SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Level monitoring: Level monitoring relays

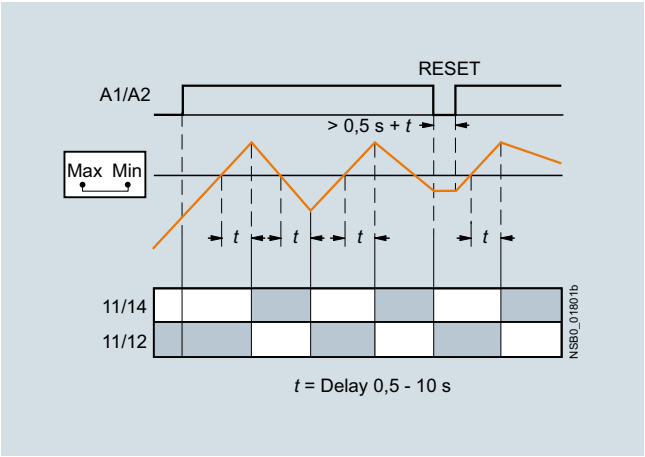
Single-point control

If only one level is being controlled, the terminals for Min and Max on the monitoring relay are bridged. The output relay changes its switching state as soon as the liquid level is reached and returns to its original switching state once the sensor no longer has contact with the liquid.

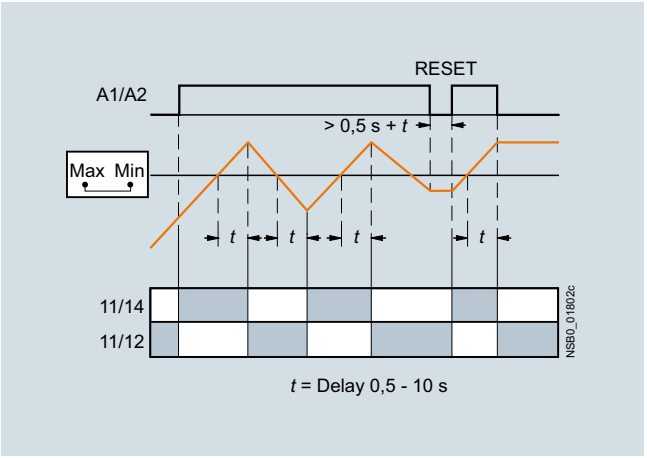
In order to prevent premature tripping of the switching function caused by wave motion or frothing, even though the set level has not been reached, it is possible to delay this function by 0.5 ... 10 s.

For safe resetting, the control supply voltage must be interrupted for at least the set delay time of +0.5 s.

OVER, single-point control



UNDER, single-point control



Type		3UG4501
General data		
Rated insulation voltage U_i Pollution degree 3, Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Measuring circuit		
Electrode current, max. (typ. 70 Hz)	mA	1
Electrode voltage, max. (typ. 70 Hz)	V	15
Sensor feeder cable	m	Max. 100
Conductor capacity of sensor cable[1]	nF	Max. 10
Control circuit		
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

[1] The sensor cable does not necessarily have to be shielded, but we do not recommend installing this cable parallel to the power supply lines. It is also possible to use a shielded cable, whereby the shield has to be connected to the M terminal.

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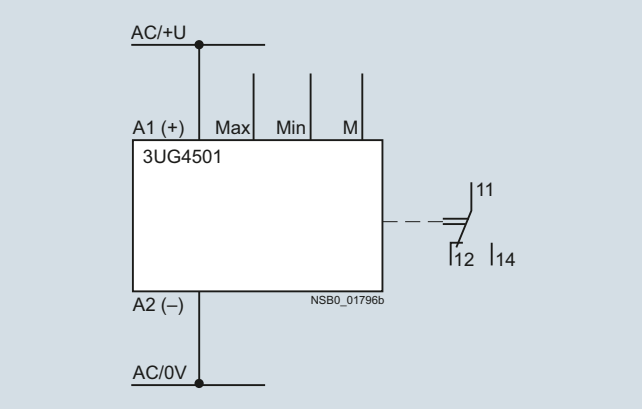
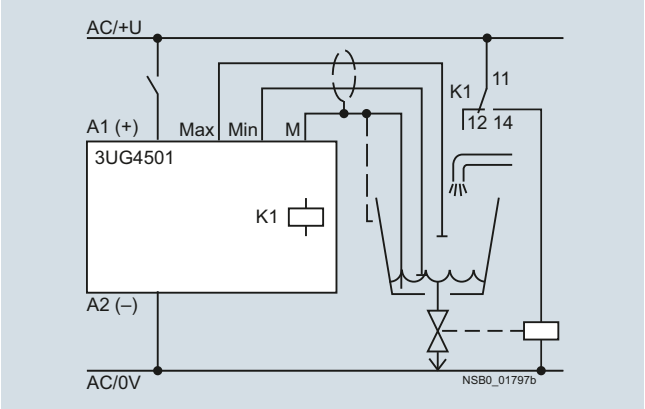
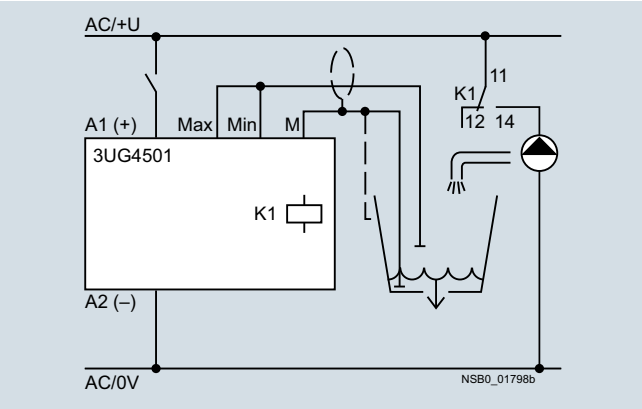
Circuit diagrams



Schematic circuit diagram



Circuit example of two-point control with outlet monitoring



Circuit example of single-point control with inlet monitoring

Selection and ordering data

- For level monitoring of electrically conductive liquids
- Control principle: inlet or sequence control adjustable per rotary switch
- Single-point and two-point control possible
- Analogically adjustable sensitivity (specific resistance of the liquid)
- Analogically adjustable tripping delay time
- 1 yellow LED for displaying the relay state
- 1 green LED for displaying the applied control supply voltage
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Sensitivity	Tripping delay time	Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
				Article No. / Price per PU		Article No. / Price per PU
kΩ	s	V AC/DC				
2 ... 200	0.5 ... 10	24[1)]	A	**3UG4501-1AA30**	A	**3UG4501-2AA30**
		24 ... 240	A	**3UG4501-1AW30**	A	**3UG4501-2AW30**

[1)] The rated control supply voltage and the measuring circuit are not electrically separated.

For accessories see page 10/122.

For level monitoring sensors see page 10/118.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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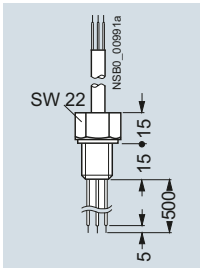
SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Level monitoring: Level monitoring sensors

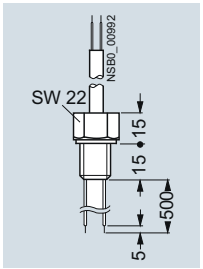
Technical specifications

Type		3UG3207-3A three-pole	3UG3207-2A two-pole	3UG3207-2B two-pole	3UG3207-1B single-pole	3UG3207-1C single-pole
Length	mm	500		--		
Insulation Teflon insulation (PTFE)		Yes			--	Yes
Installation		Vertical		Lateral		
Screw-in gland width A/F		22				
Thread	inch	R 3/8				
Connecting cable	mm^2	3 x 0.5, 2 m long				
Operating temperature	°C	90				
Operating pressure	bar	10				
Cable/electrode assignment						
• Cable brown		Center electrode	Not assignable	Gland		
• Cable white		Not assignable			Electrode	
• Cable green		Not assignable	--	Not assignable	--	

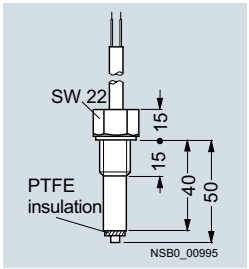
Dimensional drawings



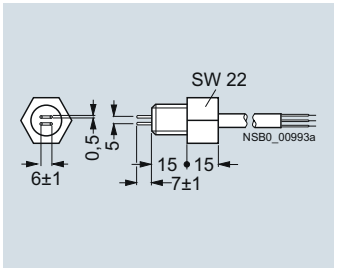
3UG3207-3A



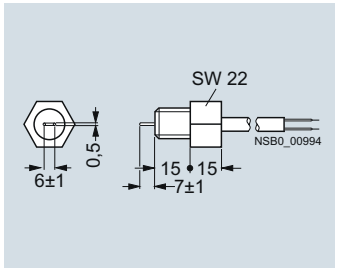
3UG3207-2A



3UG3207-1C



3UG3207-2B



3UG3207-1B

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Level monitoring sensors (essential accessory)							
	The wire electrodes can be cut or bent to the required length before or after installation. The Teflon insulation must be removed over a length of approx. 5 mm.						
3UG3207-3A	**Three-pole wire electrodes, 500 mm long** For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	A	**3UG3207-3A**		1	1 unit	41H
3UG3207-2A	**Two-pole wire electrodes, 500 mm long** For alarm indication in the event of overflow or low level and for 2-point liquid level control, when the conductive tank is used as the reference electrode.	A	**3UG3207-2A**		1	1 unit	41H
3UG3207-2B	**Two-pole bow electrodes** Thanks to the small space requirements due to lateral fitting, ideal for use in small containers and pipes, as a leak monitor and level monitor or for warning of water entering an enclosure.	A	**3UG3207-2B**		1	1 unit	41H
3UG3207-1B	**Single-pole bow electrodes for lateral fitting** As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	A	**3UG3207-1B**		1	1 unit	41H
3UG3207-1C	**Single-pole rod electrodes for lateral fitting** For high flow velocities or for intensively sparkling fluids.	A	**3UG3207-1C**		1	1 unit	41H

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3UG4651 monitoring relay

The 3UG4651 monitoring relay is used in combination with a sensor to monitor motor drives for overspeed and/or underspeed.

Furthermore, the monitoring relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Permanent display of actual value and fault type
- Use of up to 10 sensors per revolution on motors rotating extremely slowly
- 2- or 3-wire sensors and sensors with a mechanical switching output or solid-state-output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Technical specifications

3UG4651 monitoring relays

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto RESET (Memory = no)

If the device is set to Auto RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 0.1 ... 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continue to flash, even when the speed returns to a permissible value. This stored fault status can be reset by pressing the UP▲ and DOWN▼ buttons simultaneously for > 2 s, by connecting the RESET device terminal to 24 V DC or by switching the control supply voltage off and back on again.

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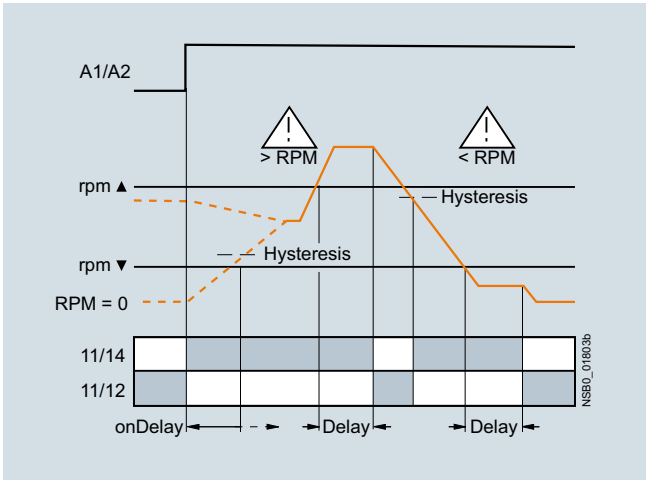
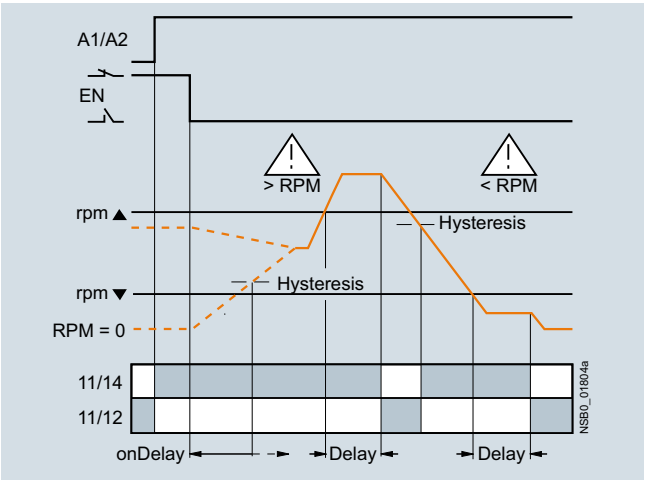
Speed monitoring

With the closed-circuit principle selected

Range monitoring without enable input



Range monitoring with enable input



Type		3UG4651
General data		
Rated insulation voltage U_i Pollution degree 3, Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Measuring circuit		
Sensor supply		
• For three-wire sensor (24 V/0 V)	mA	Max. 50
• For 2-wire NAMUR sensor (8V2)	mA	Max. 8.2
Signal input		
• IN1	kΩ	16, three-wire sensor, pnp operation
• IN2	kΩ	1, floating contact, 2-wire NAMUR sensor
Voltage level		
• For level 1 at IN1	V	4.5 ... 30
• For level 0 at IN1	V	0 ... 1
Current level		
• For level 1 at IN2	mA	> 2.1
• For level 0 at IN2	mA	< 1.2
Minimum pulse duration of signal	ms	5
Minimum interval between 2 pulses	ms	5
Control circuit		
Number of CO contacts for auxiliary contacts		1
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at		
• AC-15/24 ... 400 V	A	3
• DC-13/24 V	A	1
• DC-13/125 V	A	0.2
• DC-13/250 V	A	0.1
Minimum contact load at 17 V DC	mA	5

10

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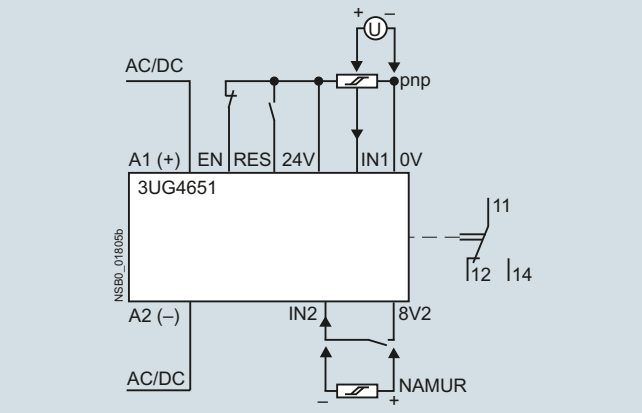
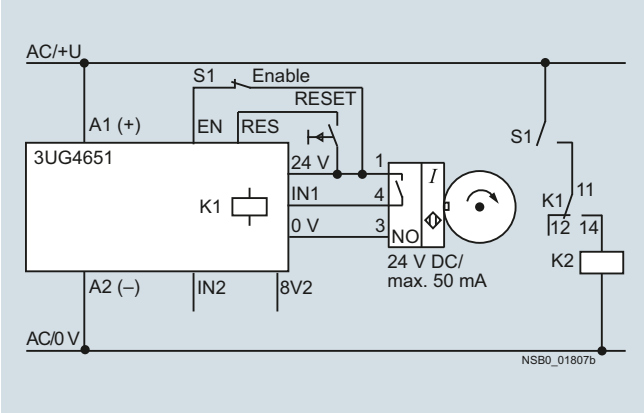
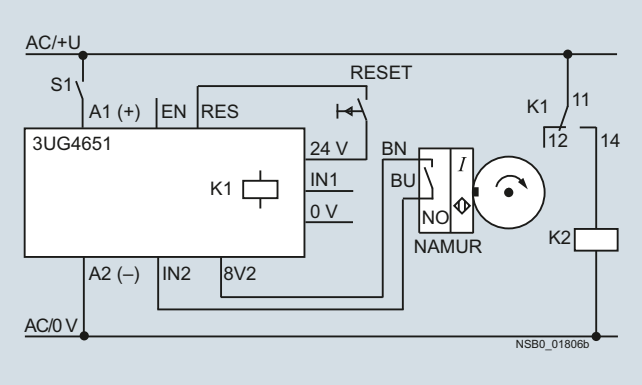
Circuit diagrams



Schematic circuit diagram



Circuit example with enable input



Circuit example without enable input

Selection and ordering data

- For speed monitoring in revolutions per minute (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2 200 pulses rpm (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower threshold value can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revolution	Rated control supply voltage U_s AC/DC	DT	Screw terminals	DT	Spring-type terminals
							Article No. / Price per PU		Article No. / Price per PU
rpm	rpm	s	s		V				
0.1 ... 2 200	OFF 0.1 ... 99.9	0 ... 900	0.1 ... 99.9	1 ... 10	24 [1]	A	**3UG4651-1AA30**	A	**3UG4651-2AA30**
					24 ... 240	A	**3UG4651-1AW30**	A	**3UG4651-2AW30**

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

For accessories see page 10/122.

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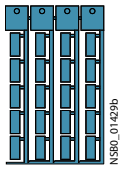
Accessories

Selection and ordering data

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT1900-1SB20	For 3UG4	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1]	D	**3RT1900-1SB20**		100	340 units	41B
	For 3UG4	**Adhesive labels** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
		19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
3RP1903	For 3UG4	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
3RP1902	For 3UG4	**Sealable covers** For securing against unauthorized adjustment of setting knobs	B	**3RP1902**		1	5 units	41H
	For 3UG45	**Sealing foil** For securing against unauthorized adjustment of setting knobs	▶	**3TK2820-0AA00**		1	1 unit	41L
Covers for insulation monitoring relays								
		Sealable, transparent covers						
3UG4981-0C	For 3UG4581 and 3UG4582		B	**3UG4981-0C**		1	1 unit	41H
3UG4983-0C	For 3UG4583		B	**3UG4983-0C**		1	1 unit	41H
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" → "External Partners".

Notes:

Products for mechanical monitoring of bearings See Chapter 15 "Products for Specific Requirements" → "Condition Monitoring Systems"

For more information see www.siemens.com/siplus-cms.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3UG48 monitoring relays

The SIRIUS 3UG4 monitoring relays for electronic and mechanical variables monitor all important characteristics that allow conclusions to be drawn about the functionality of a plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected.

Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components as well as alerting e.g. by triggering a warning light. Thanks to adjustable delay times the 3UG4 monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes and can thus avoid unnecessary alarms and disconnections and increase system availability.

3UG48 monitoring relays for IO-Link

The SIRIUS 3UG48 monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the tried-and-tested SIRIUS 3UG4 monitoring relays:

- Measured value transmission to a controller, including resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flags to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data record
- Remote parameterization is also possible, in addition to or instead of local parameterization
- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission by upload to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V 1.1 and higher is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start-up after voltage failure and to make sure diagnostics data is not lost
- Integration into the automation level provides the option of parameterizing the monitoring relays at any time via a display unit, or displaying the measured values in a control room or locally at the machine/control cabinet.

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller.
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present.
- If the monitoring relays are operated without the controller, the 3UG48 monitoring relays have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded.

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since only the controller can fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

The individual 3UG48 monitoring relays for IO-Link offer the following functions in different combinations:

- Phase sequence
- Phase failure, neutral conductor failure
- Phase asymmetry
- Undershooting and/or overshooting of limit values for voltage
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of power factor limit values
- Monitoring of the active current or the apparent current
- Monitoring of the residual current
- Undershooting and/or overshooting of limit values for speed

Note:

Further information on the IO-Link bus systems see Chapter 2 "Industrial Communication".

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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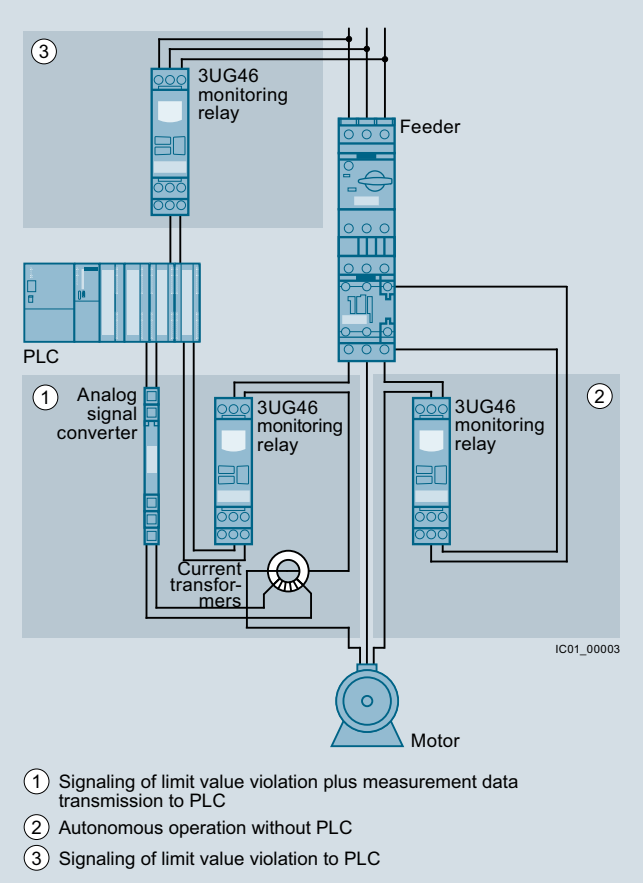
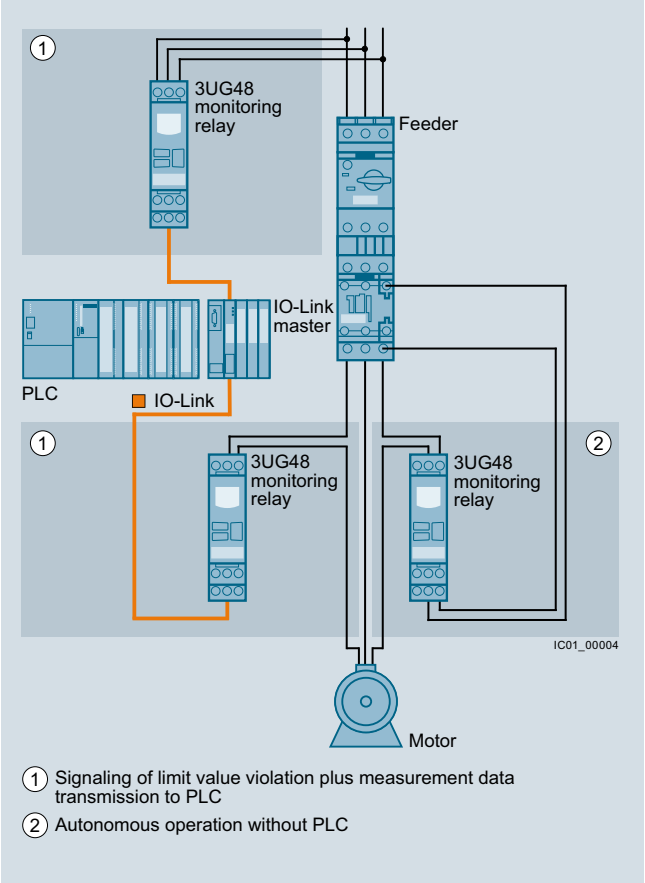
SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

General data



Use of conventional monitoring relays



Monitoring relays for IO-Link

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports the IO-Link (e.g. ET 200S with CPU or S7-300 plus ET 200S distributed I/O, see Catalog ST 70 "SIMATIC Products for Totally Integrated Automation")
- IO-Link master (IO-Link master 4SI IO-Link or 4SI SIRIUS interface module, which can connect all SIRIUS IO-Link devices to a controller, see Chapter 2 "Industrial Communication")

Each monitoring relay requires an IO-Link channel.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Monitoring relays	**3 U G**										
Generation		□									
Type of setting			□								
Functions				□	□						
Connection methods							□				
Contacts								□			
Supply voltage									□		
Signal type of the control supply voltage										□	
Special version											□
Example	**3 U G**	**4**	**8**	**1**	**5**	**–**	**1**	**A**	**A**	**4**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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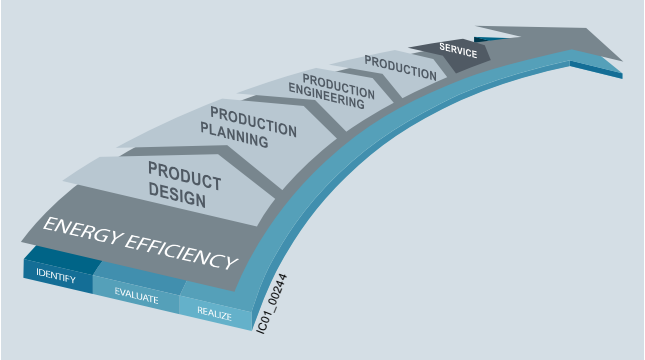
Benefits

- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3UG48 monitoring relays for IO-Link contribute to the energy efficiency throughout the plant as follows:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Reactive-power compensation by means of power factor monitoring
- Load shedding of predefined loads in the event of current overshoots

Application

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plant in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of AI and IO modules allows the width of the controller to be reduced despite significantly expanded functionality.

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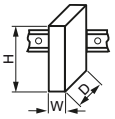
SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

General data

Technical specifications

Type			3UG48
General technical specifications			
Dimensions (W x H x D)			
• For 3 terminal blocks			
- Screw terminals		mm	22.5 x 92 x 91
- Spring-type terminals		mm	22.5 x 94 x 91
• For 4 terminal blocks			
- Screw terminals		mm	22.5 x 103 x 91
- Spring-type terminals		mm	22.5 x 103 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
• Tightening torque		Nm	0.8 … 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

More information

Manual "3UG48/3RR24 Monitoring Relays for IO-Link" see http://support.automation.siemens.com/WW/view/en/54375430.

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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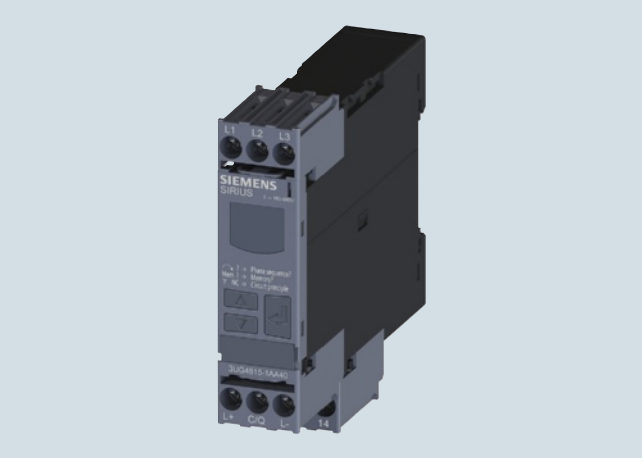
Overview



SIRIUS 3UG4815 monitoring relay

Solid-state line monitoring relays provide maximum protection for mobile machines, plants and hoisting equipment or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

The line monitoring relays with IO-Link monitor phase sequence, phase failure (with or without N conductor monitoring), phase asymmetry and undervoltage and/or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exist if the set limit values for at least one phase voltage are overshot or undershot. The rms value of the voltage is measured.

Benefits

- Can be used in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and network fault type to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

Function	Application
Phase sequence	• Direction of rotation of the drive
Phase failure	• A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase asymmetry	• Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	• Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	• Protection of a plant against destruction due to overvoltage

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Technical specifications

3UG4815/3UG4816 monitoring relays

The 3UG4815 and 3UG4816 line monitoring relays have a wide voltage range input and are supplied with power through IO-Link or from an external 24 V DC source.

The device is equipped with a display and is parameterized using three buttons. The 3UG4815 monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry, undervoltage and overvoltage. The 3UG4816 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V.

The device has two separately adjustable delay times for overvoltage and undervoltage and for line stabilization. If the direction of rotation is incorrect or a phase fails, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from and potentially high feedback through the load.

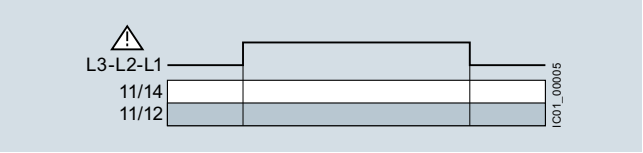
The 3UG4815 and 3UG4816 monitoring relays can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 s.

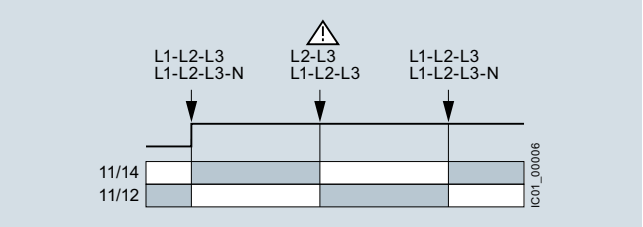
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

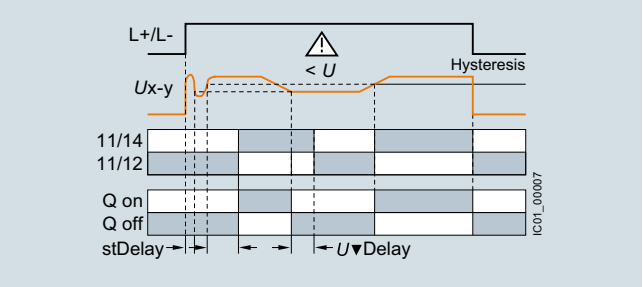
Wrong phase sequence



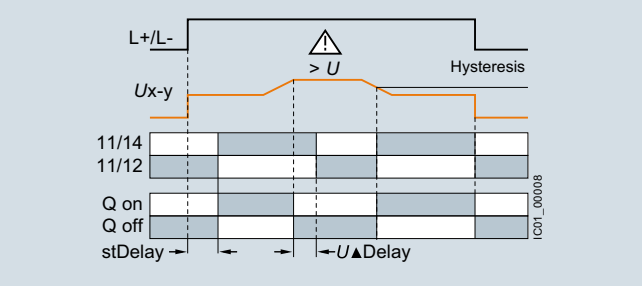
Phase failure



Undervoltage



Overvoltage



Type			3UG4815, 3UG4816
General technical specifications			
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110		V	690
Rated impulse withstand voltage U_{imp}		kV	6
Control circuit			
Load capacity of the output relay • Conventional thermal current I_{th}		A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V		A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC		mA	5
Electrical endurance AC-15	Million operating cycles		0.1
Mechanical endurance	Million operating cycles		10

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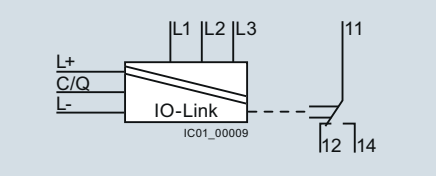
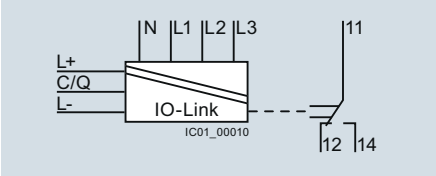
Circuit diagrams



3UG4815



3UG4816

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4815-1AA40

3UG4816-1AA40

3UG4815-2AA40

3UG4816-2AA40

Adjustable hysteresis	Under-voltage detection	Over-voltage detection	Stabilization time adjustable stDEL	Tripping delay time adjustable Del	Version of auxiliary contacts	Measurable mains voltage[1]	DT	Screw terminals	DT	Spring-type terminals
								Article No. / Price per PU		Article No. / Price per PU
V			s	s		V AC				
Monitoring of phase sequence, phase failure, phase asymmetry, overvoltage and undervoltage										
1 ... 20	✓	✓	0.1 … 999.9	0.1 … 999.9	1 CO + 1 Q[2]	160 … 690	A	**3UG4815-1AA40**	A	**3UG4815-2AA40**
Monitoring of phase sequence, phase and N conductor failure, phase asymmetry, overvoltage and undervoltage										
1 ... 20	✓	✓	0.1 … 999.9	0.1 … 999.9	1 CO + 1 Q[2]	90 … 400 against N	A	**3UG4816-1AA40**	A	**3UG4816-2AA40**

✓ Function available

[1] Absolute limit values.

[2] In SIO mode.

For accessories see page 10/146.

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Voltage monitoring

Overview

SIRIUS 3UG4832 monitoring relays

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set limit value for overshoot and undershoot.

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power

Technical specifications

3UG4832 monitoring relay

The 3UG4832 voltage monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the voltage depending on parameterization. The devices are equipped with a display and are parameterized by means of three buttons or through IO-Link.

The measuring range extends from 10 to 600 V AC/DC. The limit values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This tripping delay time *U*▲Del/*U*▼Del can be set from 0 to 999.9 s like the ON-delay time. The hysteresis is adjustable from 0.1 to 300 V.

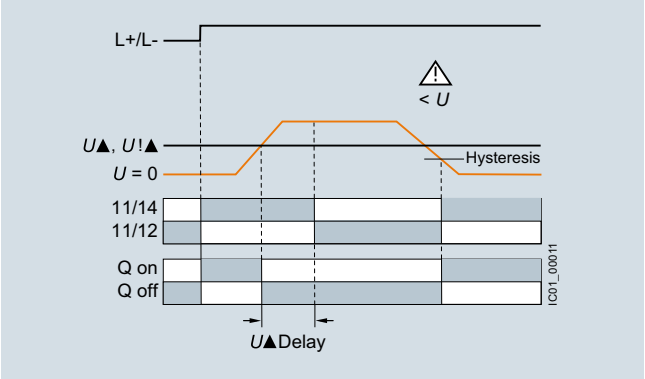
The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as a signaling contact, and a semiconductor output is available in addition in SIO mode.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 s.

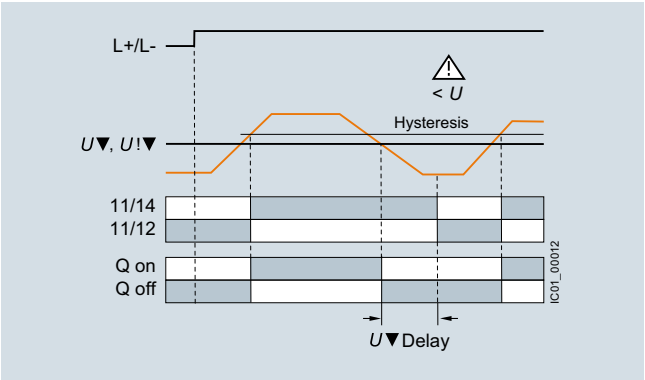
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

Overvoltage



Undervoltage



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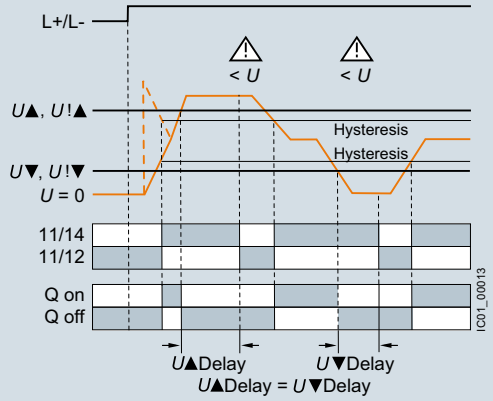
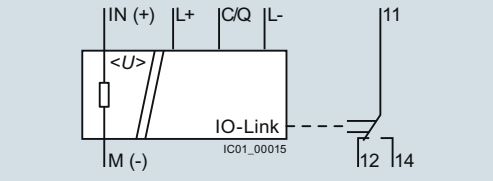
With the closed-circuit principle selected

Range monitoring



Type		3UG4832
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Measuring circuit		
Permissible measuring range single-phase AC/DC voltage	V	10 … 690
Setting range single-phase voltage	V	10 ... 600
Measuring frequency	Hz	40 ... 500
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG4832

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Voltage monitoring

Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4832-1AA40

3UG4832-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable *U*▲Del/*U*▼Del	DT	**Screw terminals**	DT	**Spring-type terminals**
					Article No. / Price per PU		Article No. / Price per PU
V AC/DC	V	s	s				
Monitoring of voltage for overshoot and undershoot							
10 … 600	0.1 ... 300	0 … 999.9	0 … 999.9	A	**3UG4832-1AA40**	A	**3UG4832-2AA40**

For accessories see page 10/146.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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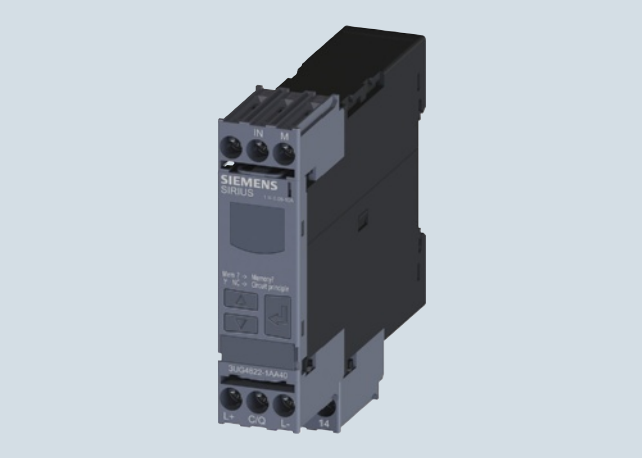
Overview



SIRIUS 3UG4822 monitoring relays

The relays monitor single-phase AC (rms value) and DC currents against the set limit value for overshoot and undershoot.

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Monitoring for broken conductors

Technical specifications

3UG4822 monitoring relays

The 3UG4822 current monitoring relays are supplied with power through IO-Link or with an external voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the current depending on the parameterization. The devices are equipped with a display and are parameterized using three buttons.

The measuring range extends from 0.05 to 10 A. For larger AC currents the measuring range can be extended by using commercially available current transformers. Using the adjustable transformer factor, the display of the measured primary currents up to 750 A instead of the secondary currents (max. 1 A or 5 A) is possible.

The rms value of the current is measured. The limit values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time *I*▲Del/*I*▼Del has elapsed. This time and the ON-delay time onDel are adjustable from 0 to 999.9 s.

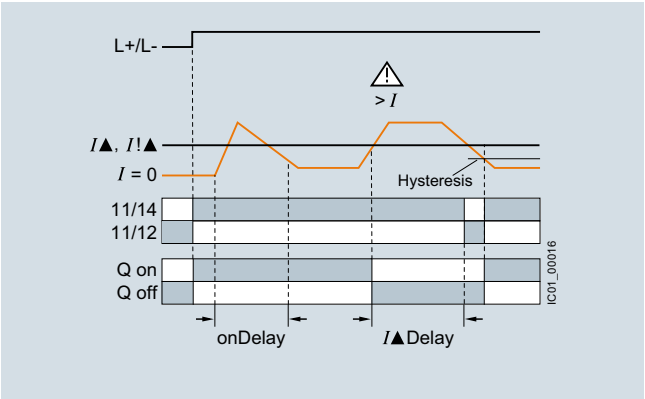
The hysteresis is adjustable from 0.01 to 5 A. The device can be operated with Manual or Auto RESET and on the basis of either the open-circuit or closed-circuit principle. Following options are available: Response of the output relay when the control supply voltage U_S = ON is applied or not until the lower measuring range limit of the measuring current (*I* > 50 mA) is reached. One output changeover contact is available as a signaling contact, and a semiconductor output is available in addition in SIO mode.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 s.

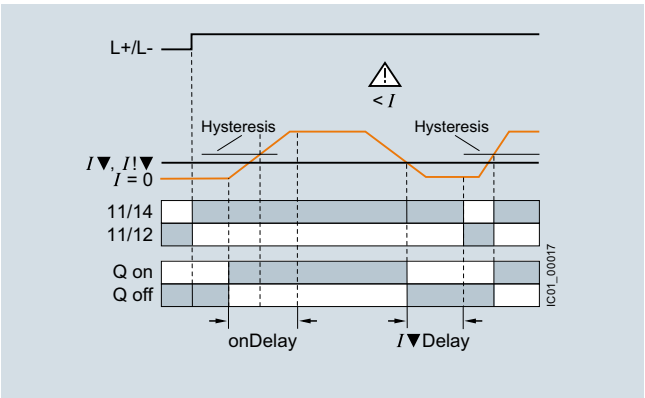
With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected upon application of the control supply voltage

Current overshoot



Current undershoot



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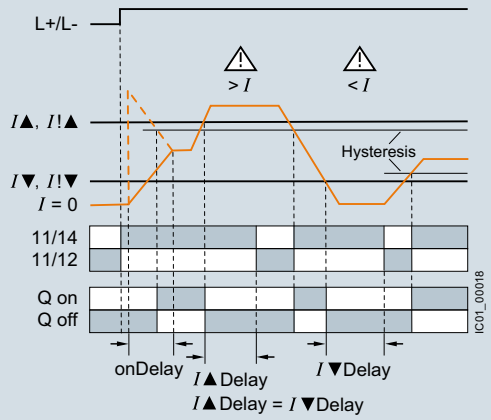
SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Current monitoring

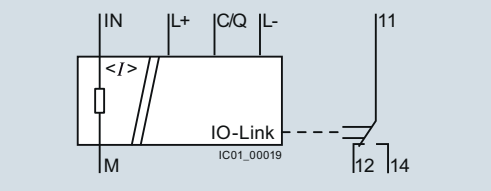
With the closed-circuit principle selected
upon application of the control supply voltage

Range monitoring



Type		3UG4822
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Measuring circuit		
Measuring range single-phase AC/DC current	A	0.05 … 15
Setting range for single-phase current	A	0.05 ... 10
Load supply voltage	V	Max. 300 (with protective separation) Max. 500 (with simple separation)
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG4822

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Adjustable converter factor to display the measured primary current when an external current transformer is used
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4822-1AA40

3UG4822-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable I▲Del/I▼Del	DT	Screw terminals		DT	Spring-type terminals	
					Article No.	Price per PU		Article No.	Price per PU
AC/DC A	A	s	s						
Monitoring of current for overshooting and undershooting									
0.05 … 10	0.01 ... 5	0.1 … 999.9	0.1 … 999.9	A	**3UG4822-1AA40**		A	**3UG4822-2AA40**	

For accessories see page 10/146.

For AC currents I > 10 A it is possible to use commercially available current transformers, e.g. the Siemens 4NC current transformer, as accessories, see Catalog LV 10, "Low-Voltage Power Distribution and Electrical Installation Technology".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Power factor and active current monitoring

Overview

SIRIUS 3UG4841 monitoring relay

The 3UG4841 power factor and active current monitoring devices enable the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Benefits

- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor and/or I_{res} (active current) can be selected as the measurement principle
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

Technical specifications

3UG4841 monitoring relays

The 3UG4841 monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and are used for performing overshoot, undershoot or range monitoring of the power factor and/or the resulting active current, depending on parameterization. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0 to 0.99 and for the active current I_{res} 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show I < 0.2 and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON-delay time onDel begins. During this time, if the set limit values are undershot or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the p.f. value falls below or exceeds the respective set threshold value, the tripping delay time begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flash. If the monitoring of active current undershooting is deactivated (I_{res}▼= OFF) and the load current drops below the lower measuring range threshold (0.2 A), then the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measuring range threshold (0.2 A) will result in a response of the CO contacts.

The relay operates either according to the open-circuit or closed-circuit principle.

If the device is set to Auto RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If Manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 s.

With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

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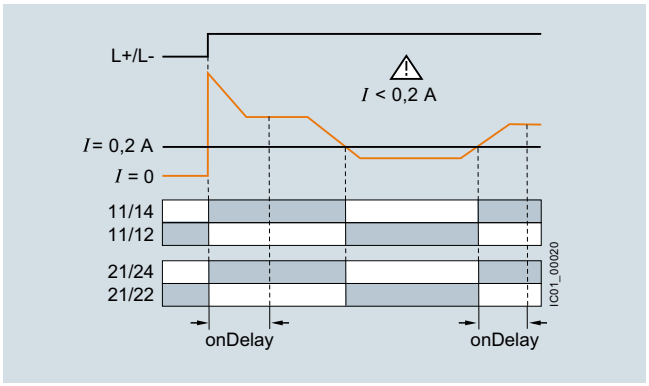
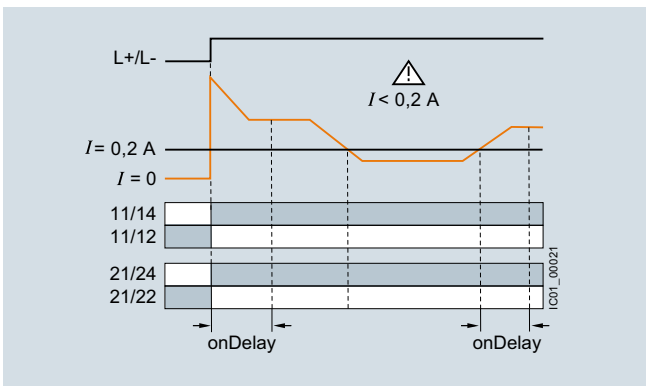
With the closed-circuit principle selected

Response in the event of undershooting the measuring range limit

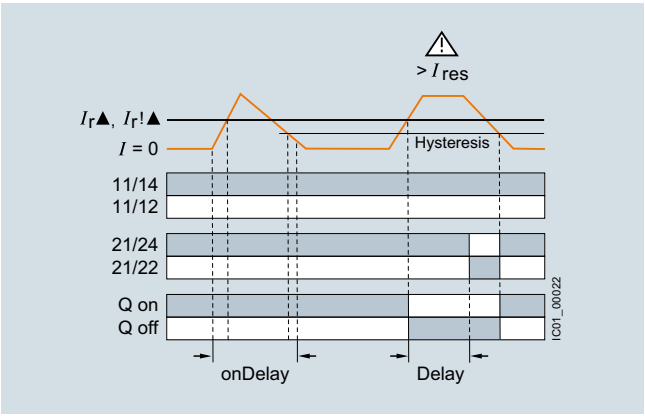
- With activated monitoring of I_{res}▼



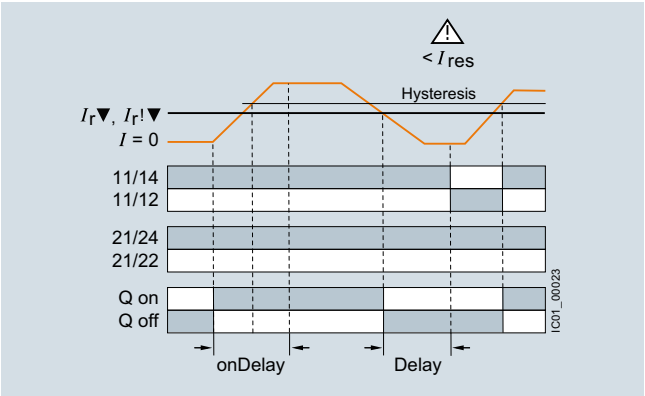
- With deactivated monitoring of active current undershooting



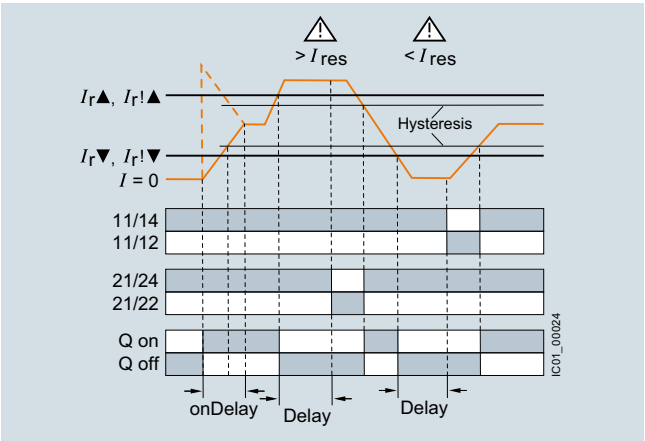
Overshooting of active current



Undershooting of active current



Range monitoring of active current



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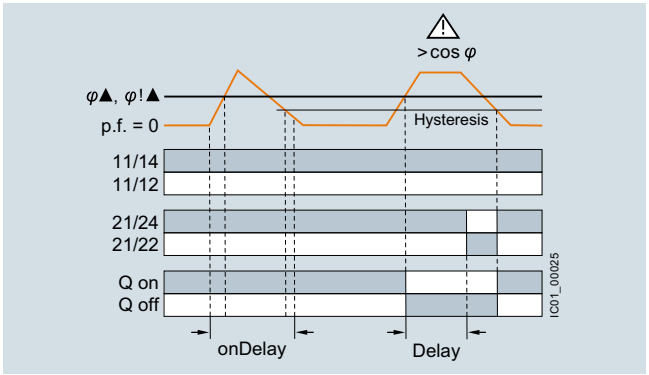
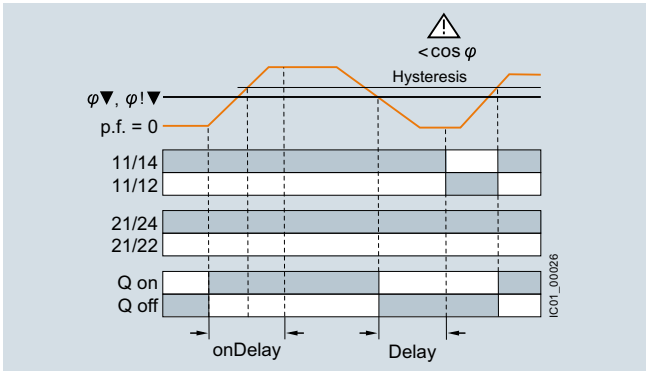
Power factor and active current monitoring

With the closed-circuit principle selected

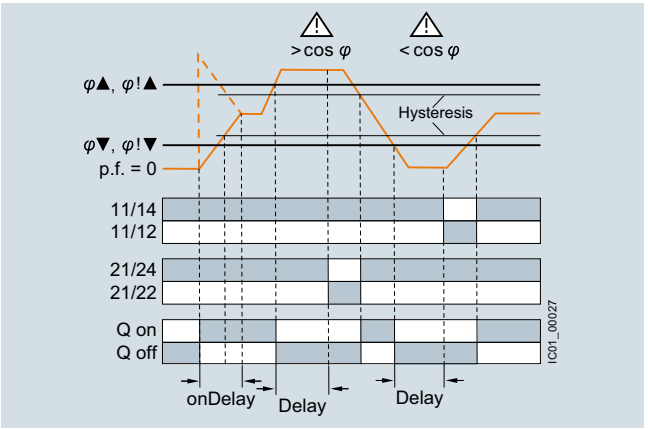
Overshooting of power factor



Undershooting of power factor

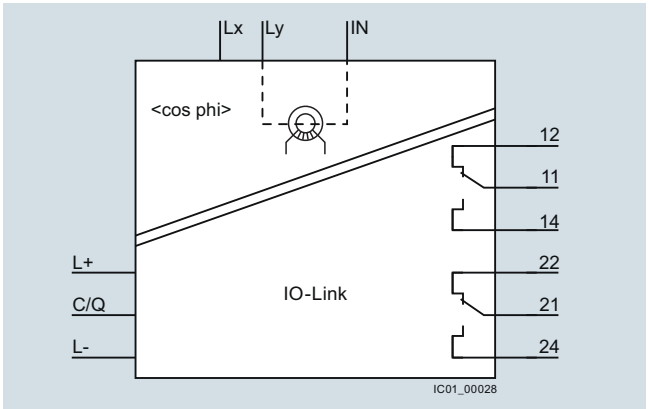


Range monitoring of power factor



Type		3UG4841
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG4841

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- For monitoring the power factor and the active current I_{res} (p.f. x I)
- Suitable for single- and three-phase currents
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower limit values can be adjusted separately
- Permanent display of actual value and tripping state
- 1 CO contact each for undershoot and overshoot, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4841-1CA40

3UG4841-2CA40

Measuring range		Voltage range of the measuring voltage[1]	Hysteresis		ON-delay time adjustable onDel	Tripping delay time separately adjustable U▲Del/ U▼Del, φ▲Del/ φ▼Del	DT	Screw terminals		DT	Spring-type terminals	
For power factor	For active current I_{res}	50/60 Hz AC	Adjustable for power factor	Adjustable for active current I_{res}				Article No.	Price per PU		Article No.	Price per PU
P.f.	A	V	P.f.	A	s	s						
Monitoring of power factor and active current for overshooting and undershooting												
0.1 ... 0.99	0.2 ... 10	90 ... 690	0.1 ... 0.2	0.1 ... 3	0 ... 999.9	0 ... 999.9	A	**3UG4841-1CA40**		A	**3UG4841-2CA40**	

[1] Absolute limit values.

For accessories see page 10/146.

For AC active currents I_{res}> 10 A it is possible to use commercially available current transformers, e.g. Siemens 4NC current converter, as accessories, see Catalog LV 10 "Low-voltage power distribution and electrical installation technology".

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Residual current monitoring: Residual-current monitoring relays

Overview

SIRIUS 3UG4825 monitoring relay

The 3UG4825 residual-current monitoring relays are used in conjunction with the 3UL23 residual current transformers for monitoring plants in which higher residual currents are increasingly expected due to ambient conditions. Monitoring encompasses pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A in accordance with DIN VDE 0100-530/IEC TR 60755).

Benefits

- High measuring accuracy ± 7.5 %
- Permanent self-monitoring
- Parameterization of the devices locally or via IO-Link possible
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Display and transmission of actual value and status messages to controller
- High level of flexibility and space saving through installation of the transformer inside or outside the control cabinet
- Width 22.5 m
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads, or capacitive residual currents

Technical specifications

3UG4825 monitoring relays

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the annular ring core of a residual-current transformer. A secondary winding is placed around this annular strip-wound core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs downstream of the residual current operated circuit breaker, the sum of the inflowing currents is greater than that of the outward currents. The differential current - the residual current - induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the associated relay symbol flashes. On expiry of this time, the associated changeover contact changes the switching state.

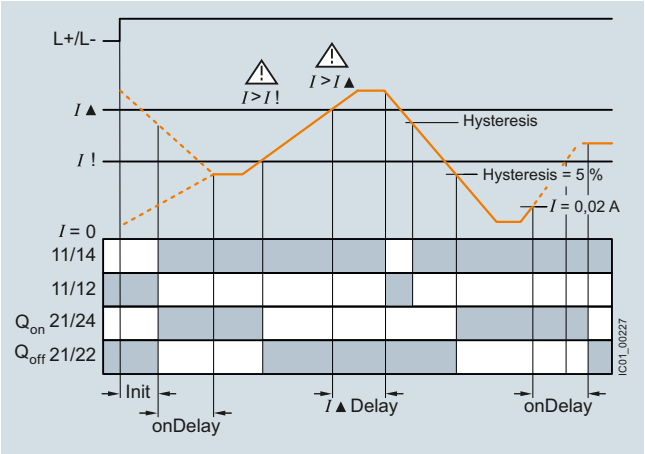
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshot during this period.

With the closed-circuit principle selected

Residual current monitoring with Auto RESET (Memory = no)



If the device is set to Auto RESET, the relay switches back to the OK state for the tripping value once the value falls below the set hysteresis threshold and the display stops flashing.

The associated relay changes its switching state if the value falls below the fixed hysteresis value of 5 % of the warning value.

Any overshoots are therefore not stored.

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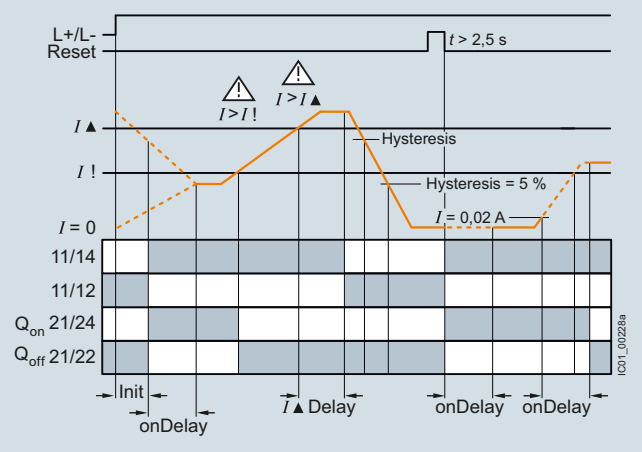
Residual current monitoring with Manual RESET (Memory = yes)



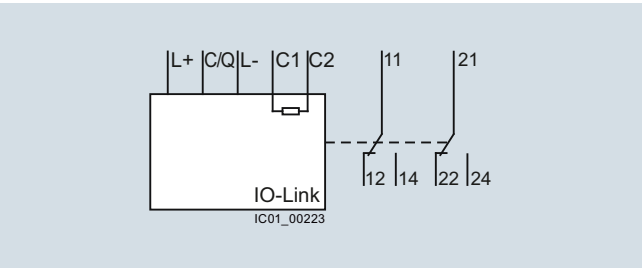
If Manual RESET is selected in the menu, the output relays remain in their current switching state and the current measured value and the symbol for overshooting continues to flash, even when the measured residual current returns to a permissible value. This stored fault status can be reset by pressing the UP▲ or DOWN▼ key simultaneously for > 2 seconds, or by switching the supply voltage off and back on again.

Note:

The neutral conductor must not be grounded downstream of the summation current transformer as this may impair the function of the residual current monitoring device.

Type		3UG4825-1CA40, 3UG4825-2CA40
General data		
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value	V	300
Impulse withstand voltage rated value U_{imp}	kV	4
Control circuit		
Number of CO contacts for auxiliary contacts		2
Thermal current of the non-solid-state contact blocks maximum	A	5
Current carrying capacity of the output relay		
• At AC-15 at 250 V at 50/60 Hz	A	3
• At DC-13		
- At 24 V	A	1
- At 125 V	A	0.2
- At 250 V	A	0.1
Operational current at 17 V minimum	mA	5

Circuit diagram



3UG4825

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Residual current monitoring: Residual-current monitoring relays

Selection and ordering data

- For monitoring residual currents from 0.03 to 40 A, from 16 to 400 Hz
- For 3UL23 residual-current transformers with feed-through opening from 35 to 210 mm
- Permanent self-monitoring
- Certified in accordance with IEC 60947, functionality corresponds to IEC 62020
- Digitally adjustable, with illuminated LCD
- Permanent display of actual value and tripping state
- Separately adjustable limit value and warning threshold
- 1 changeover contact each for warning threshold and tripping threshold

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4825-1CA40

3UG4825-2CA40

Measurable current	Adjustable response value current	Switching hysteresis	Adjustable ON-delay time	Control supply voltage At DC rated value	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
A	A	%	s	V						
0.01 ... 43	0.03 ... 40	0 ... 50	0 ... 999.9	24	A	**3UG4825-1CA40**		B	**3UG4825-2CA40**	

For accessories see page 10/146.

3UL23 residual-current transformers and accessories for 3UL23 see page 10/104.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3UG4851 monitoring relay

3UG4851 monitoring relays are used in combination with a sensor to monitor drives for overspeed and/or underspeed.

Furthermore, the monitoring relays are ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display and transmission of actual value and fault type to controller
- Use of up to 10 sensors per rotation for extremely slowly rotating motors
- 2- or 3-wire sensors and sensors with a mechanical switching output or solid-state-output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Technical specifications

3UG4851 monitoring relays

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto RESET (Memory = no)

If the device is set to Auto RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 1 ... 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continue to flash, even when the speed returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for > 2.5 s or by connecting the RESET device terminal to 24 V DC.

With Manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

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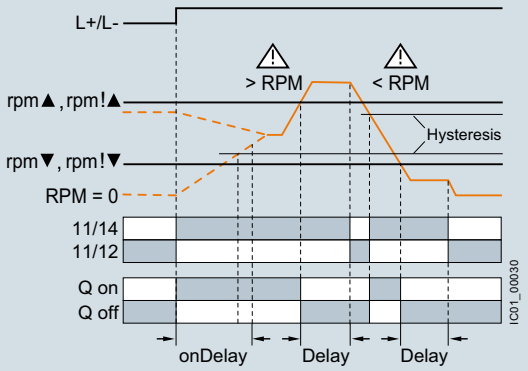
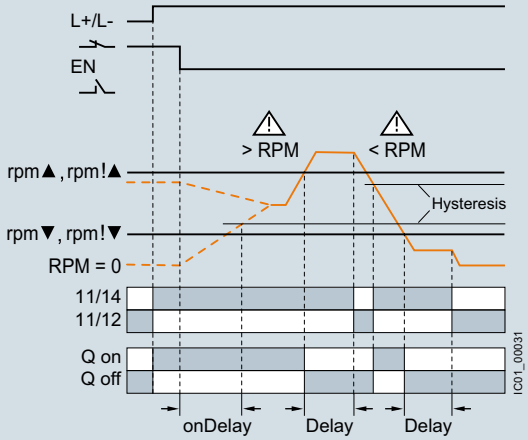
Speed monitoring

With the closed-circuit principle selected

Range monitoring without enable input

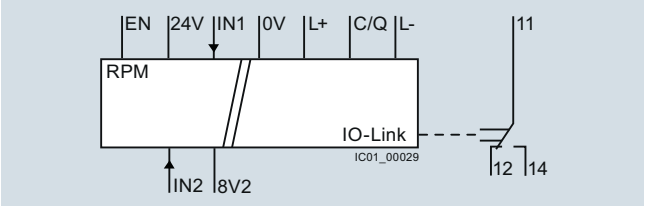


Range monitoring with enable input



Type		3UG4851
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Measuring circuit		
Sensor supply		
• For three-wire sensor (24 V/0 V)	mA	Max. 50
• For 2-wire NAMUR sensor (8V2)	mA	Max. 8.2
Signal input		
• IN1	kΩ	16, three-wire sensor, pnp operation
• IN2	kΩ	1, floating contact, 2-wire NAMUR sensor
Voltage level		
• For level 1 at IN1	V	4.5 ... 30
• For level 0 at IN1	V	0 ... 1
Current level		
• For level 1 at IN2	mA	> 2.1
• For level 0 at IN2	mA	< 1.2
Minimum pulse duration of signal	ms	5
Minimum interval between 2 pulses	ms	5
Control circuit		
Number of CO contacts for auxiliary contacts		1
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at		
• AC-15/24 ... 250 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 250 V	A	0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG4851

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- For speed monitoring in revolutions per minute (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2 200 pulses per minute (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower limit values can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3UG4851-1AA40

3UG4851-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable rpm▲Del/ rpm▼Del	Pulses per revolution	DT	Screw terminals	DT	Spring-type terminals
						Article No. / Price per PU		Article No. / Price per PU
rpm	rpm	s	s					
Speed monitoring for overshooting and undershooting								
0.1 ... 2 200	OFF 1 ... 99.9	0 ... 999.9	0 ... 999.9	1 ... 10	A	**3UG4851-1AA40**	A	**3UG4851-2AA40**

For accessories see page 10/146.

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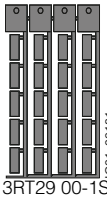
Accessories

Selection and ordering data

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT29 00-1SB20	For 3UG48	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, titanium gray[1]	D	**3RT29 00-1SB20**		100	340 units	41B
	For 3UG48	**Adhesive labels** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
		19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
3RP1903	For 3UG48	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
3RP1902	For 3UG48	**Sealable covers** For securing against unauthorized adjustment of setting knobs	B	**3RP1902**		1	5 units	41H
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
		3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" → "External Partners".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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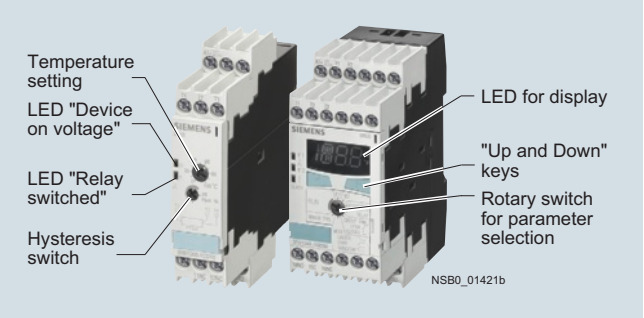
Overview



SIRIUS 3RS temperature monitoring relay

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function).

The range comprises adjustable analog units with one or two threshold values, digital units for 1 sensor, which are also a good alternative to temperature controllers for the low-end range, and digital units for up to 3 sensors which have been optimized for monitoring large motors.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Temperature monitoring relays	**3 R S**										
Device type		□	□								
Version and type of sensor				□	□						
Connection methods							□				
Number and type of outputs								□			
Control supply voltage									□		
Measuring range										□	
Special versions											□
Example	**3 R S**	**1**	**0**	**0**	**0**	**–**	**1**	**C**	**D**	**0**	**0**

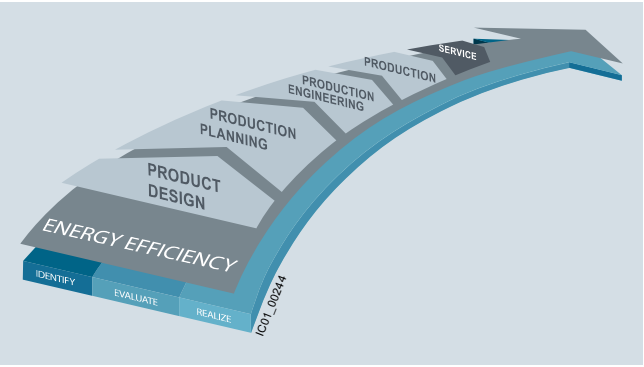
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays make the following contribution to the energy efficiency of the plant as a whole:

- Demand-based control of heating and ventilation in the process and in the control cabinet

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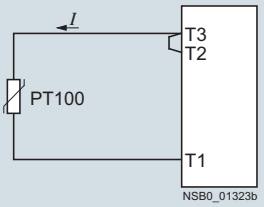
General data

Technical specifications

Connection of resistance-type thermometers

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the signal evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.



Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 Kelvin/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

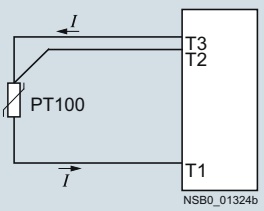
Temperature drift dependent on the length and cross-section of the cable with PT100 sensors and an ambient temperature of 20 °C, in K:

Cable length in m	Cross-section mm²			
	0.5	0.75	1	1.5
	Temperature drift in K:			
0	0	0	0	0
10	1.8	1.2	0.9	0.6
25	4.5	3.0	2.3	1.5
50	9.0	6.0	4.5	3.0
75	13.6	9.0	6.8	4.5
100	18.1	12.1	9.0	6.0
200	36.3	24.2	18.1	12.1
500	91.6	60.8	45.5	30.2

Example: On a PT100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm^2 the temperature drift equals 0.9 K.

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The signal evaluation unit can then automatically calculate the line resistance and take it into account.



Connection of thermoelements

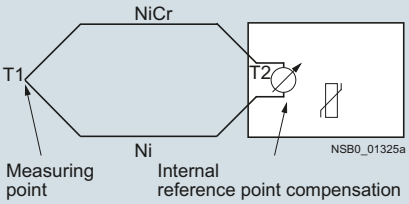
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the signal evaluation unit.

This principle assumes that the signal evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS11 temperature monitoring relay has an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must be insulated therefore.

The absolute temperature is therefore calculated from the ambient temperature of the signal evaluation unit and the temperature difference measured by the thermoelement.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the signal evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermoelement. If a different type of conductor is used, an error will result in the measurement.



For more information, see

www.feldgeraete.de/76/produkte/fuw.html

www.ephy-mess.de

or from

EPHY-MESS GmbH, see Chapter 16 "Appendix" → "External Partners"

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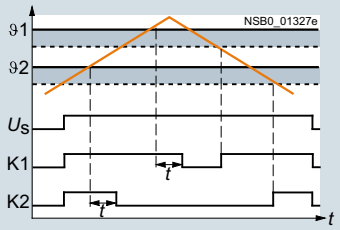
Principle of operation

Once the temperature has reached the set threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time *t* has elapsed (K2 responds in the same manner to ϑ2). The delay time can only be adjusted with digital units (on analog units *t* = 0).

The relays return to their original state as soon as the temperature reaches the set hysteresis value.

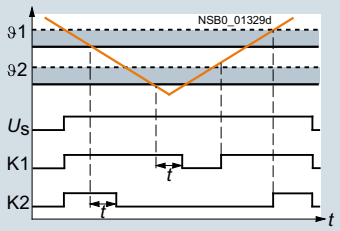
Temperature overshoot

Closed-circuit principle



Temperature undershoot

Closed-circuit principle

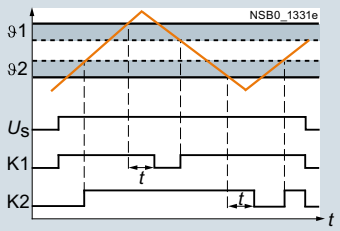


Range monitoring (digital units only)

Once the temperature has reached the upper threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time *t* has elapsed. The relay returns to its original state as soon as the temperature reaches the set hysteresis value.

K2 responds in the same manner to the lower threshold value of ϑ2.

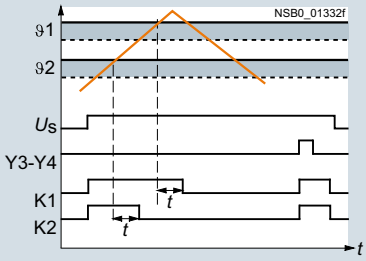
Closed-circuit principle



Principle of operation with memory function (3RS1042, 3RS1142) based on the example of temperature overshoot

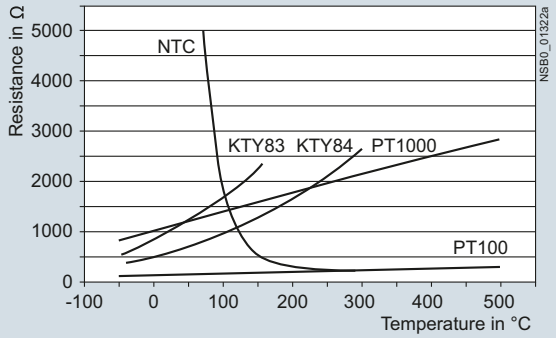
Once the temperature has reached the set threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time t has elapsed (K2 responds in the same manner to ϑ2). The relays only return to the original state when the temperature falls below the set hysteresis value and when terminals Y3 and Y4 have been briefly jumpered.

Closed-circuit principle



Characteristic curves

For resistance sensors



The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

Measuring ranges in °C for resistance sensors

Sensor type	Short circuit	Open circuit	3RS1040/ 3RS1041 Measuring range in °C	3RS1042 Measuring range in °C
PT100	✓	✓	–50 ... +500	–50 ... +750
PT1000	✓	✓	–50 ... +500	–50 ... +500
KTY83-110	✓	✓	–50 ... +175	–50 ... +175
KTY84	✓	✓	–40 ... +300	–40 ... +300
NTC[1)]	✓	--	80 ... 160	80 ... 160

✓ Detection possible
-- Detection not possible

[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

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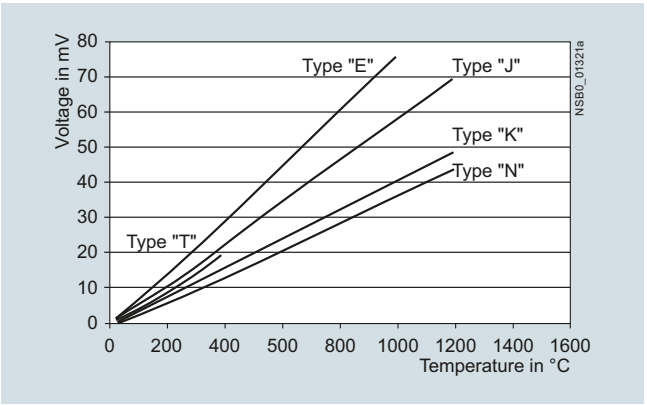
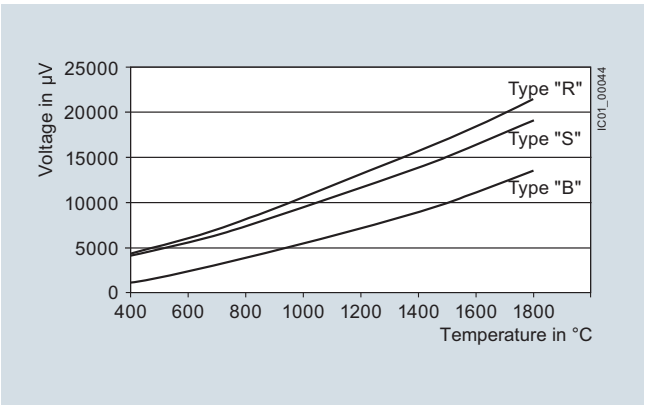
General data

Characteristic curves

For thermoelements



Characteristic curves for sensor types J, K, T, E, N



Characteristic curves for sensor types S, R and B

Measuring range in °C for thermoelements

Sensor type	Short circuit	Open circuit	3RS1140 Measuring range in °C	3RS1142 Measuring range in °C
J	--	✓	-99 ... +999	-99 ... +1200
K	--	✓	-99 ... +999	-99 ... +1350
T	--	✓	-99 ... +400	-99 ... +400
E	--	✓	-99 ... +999	-99 ... +999
N	--	✓	-99 ... +999	-99 ... +999
S	--	✓	--	0 ... 1750
R	--	✓	--	0 ... 1750
B	--	✓	--	400 ... 1800

✓ Detection possible
-- Detection not possible

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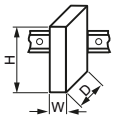
Type			3RS10, 3RS11 analog	3RS10, 3RS11, 3RS20, 3RS21 digital
General technical specifications				
Dimensions (W x H x D)				
• Screw terminals		mm	22.5 x 102 x 91	45 x 106 x 91
• Spring-type terminals		mm	22.5 x 103 x 91	45 x 108 x 91
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
Connection type			**Screw terminals**	
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)	
Connection type			**Spring-type terminals**	
• Solid		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded		mm^2	2 x (0.25 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)	

More information

For "3RS1/3RS2 Temperature Monitoring Relays" manual, see http://support.automation.siemens.com/WW/view/en/54999309.

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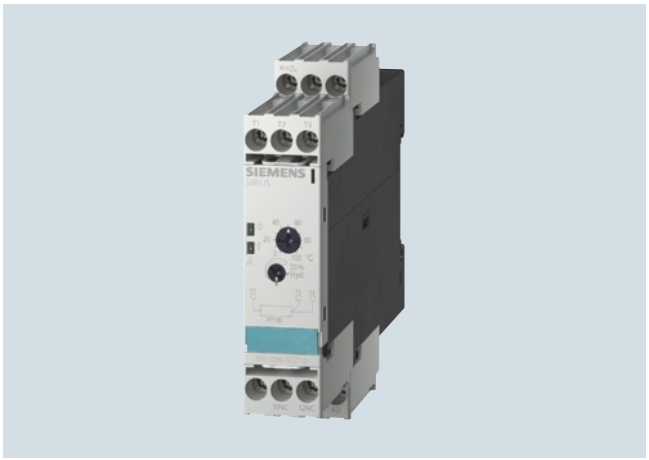
Overview



SIRIUS 3RS analog temperature monitoring relays for 1 sensor

The 3RS10, 3RS11 analog temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensors in the medium, evaluated by the device and monitored for overshoot or undershoot. When the threshold values are reached, the output relay switches on or off depending on the parameterization.

Benefits

- All devices except for 24 V AC/DC feature electrical separation
- Extremely easy operation using a rotary potentiometer
- Adjustable hysteresis
- Adjustable working principle for devices with 2 threshold values
- All versions with removable terminals
- All versions with screw terminals, many versions alternatively with spring-type terminals

Application

The analogically adjustable SIRIUS 3RS10, 3RS11 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Motor and system protection
- Control cabinet temperature monitoring
- Freeze monitoring
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS1000, 3RS1010	3RS1100, 3RS1101	3RS1020, 3RS1030	3RS1120, 3RS1121
Auxiliary circuit					
Rated operational currents I_e					
• AC-15/24 ... 250 V	A	3			
• DC-13 at					
- 24 V	A	1			
- 125 V	A	0.2			
- 240 V	A	0.1			
Measuring accuracy at 20 °C ambient temperature (T20)		Typically < ±5 % from upper limit of scale			
Reference point accuracy	K	--	< ±5	--	< ±5
Deviations due to ambient temperature In % of the measuring range		< 2	< 3	< 2	< 3
Hysteresis settings					
• for temperature 1	%	2 ... 20 from upper limit of scale			
• for temperature 2	%	5 from upper limit of scale			
Sensor circuit					
Typical sensor circuits					
• PT100	mA	Typically 1	--	Typically 1	--
Open-circuit detection		No			
Short-circuit detection		No			
Three-wire conductor connection[1)]		Yes	--	Yes	--
Enclosure					
Rated insulation voltage U_i (pollution degree 3)	V	300			

1) Two-wire connection of resistance sensors with wire jumper between T2 and T3.

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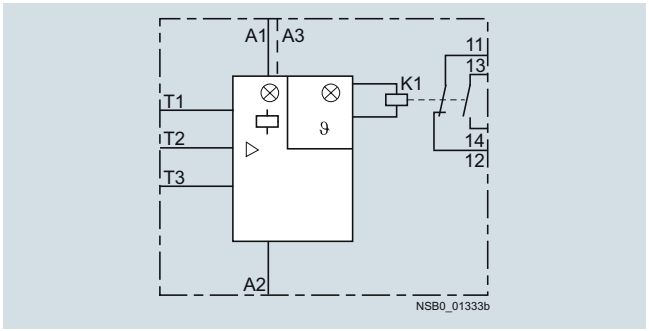
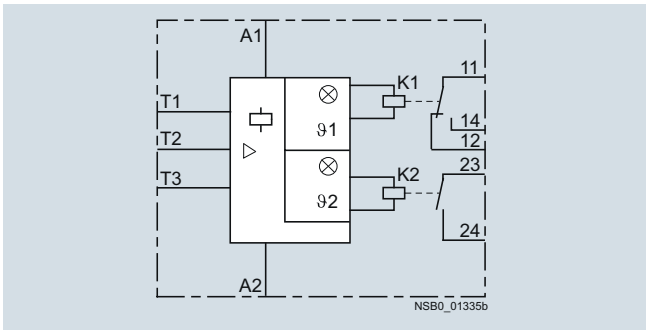
Relays, analogically adjustable for 1 sensor

Circuit examples

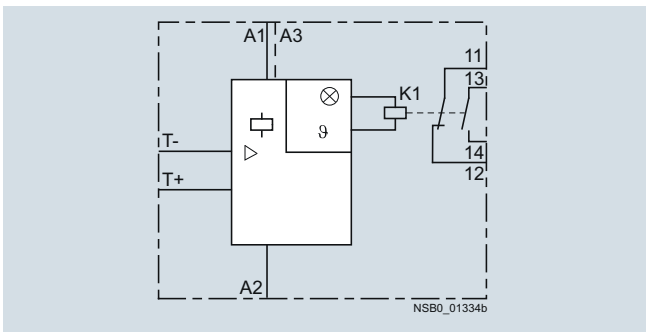
3RS1000, 3RS1010



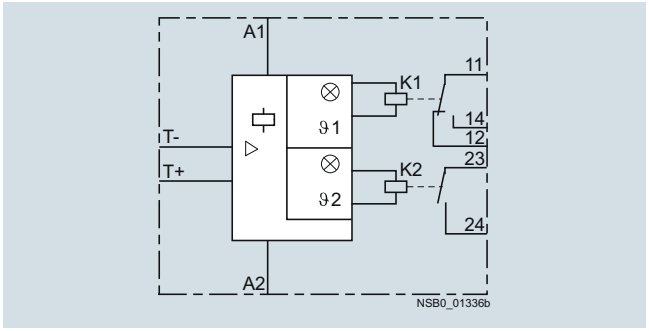
3RS1020, 3RS1030



3RS1100, 3RS1101



3RS1120, 3RS1121



Legend
A1 = 24 V AC/DC, 230 V AC, 24 to 240 V AC/DC
A3 = 110 V AC
A2= M
K1, K2 = output relays
⊟ = LED: "Device connected to voltage"

ϑ1 = LED: "Relay 1 tripped"
ϑ2 = LED: "Relay 2 tripped"
T1 to T3 = Sensor connection for resistance sensor
T+/T- = Sensor connection for thermoelements

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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Selection and ordering data

- For temperature monitoring with resistance sensors or thermo-elements
- Temperature range -55 °C to +1 000 °C, depending on the sensor type
- Wide voltage range versions are electrically separated
- Analogically adjustable, setting accuracy ±5 %
- Versions with 2 separately adjustable threshold values and adjustable open/closed-circuit principle
- Hysteresis for threshold value 1 is adjustable (2 to 20 %), hysteresis for threshold 2 is non-adjustable (5 %)
- 1 NC + 1 NO for versions with one threshold value
- 1 CO for threshold value 1 and 1 NO for threshold value 2

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

	Sensors	Function	Measuring range	Rated control supply voltage U_s 50/60 Hz AC	DT	Screw terminals	DT	Spring-type terminals
						Article No. / Price per PU		Article No. / Price per PU
			°C	V				
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC								
3RS1000-1CD10	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS1000-1CD00**	C	**3RS1000-2CD00**
				110/230 AC	A	**3RS1000-1CK00**	C	**3RS1000-2CK00**
			0 … + 100	24 AC/DC	C	**3RS1000-1CD10**	C	**3RS1000-2CD10**
				110/230 AC	A	**3RS1000-1CK10**	C	**3RS1000-2CK10**
			0 … + 200	24 AC/DC	C	**3RS1000-1CD20**	C	**3RS1000-2CD20**
				110/230 AC	A	**3RS1000-1CK20**	C	**3RS1000-2CK20**
		Undershoot	- 50 … + 50	24 AC/DC	C	**3RS1010-1CD00**		--
				110/230 AC	A	**3RS1010-1CK00**		--
			0 … + 100	24 AC/DC	C	**3RS1010-1CD10**		--
				110/230 AC	C	**3RS1010-1CK10**		--
			0 … + 200	24 AC/DC	C	**3RS1010-1CD20**		--
				110/230 AC	C	**3RS1010-1CK20**		--
3RS1000-2CD10	Type J (thermo-element)	Overshoot	0 … + 200	24 AC/DC	A	**3RS1100-1CD20**	C	**3RS1100-2CD20**
				110/230 AC	C	**3RS1100-1CK20**		--
			0 … + 600	24 AC/DC	C	**3RS1100-1CD30**		--
				110/230 AC	C	**3RS1100-1CK30**		--
	Type K (thermo-element)	Overshoot	0 … + 200	24 AC/DC	C	**3RS1101-1CD20**		--
				110/230 AC	C	**3RS1101-1CK20**		--
			0 … + 600	24 AC/DC	C	**3RS1101-1CD30**		--
				110/230 AC	C	**3RS1101-1CK30**		--
			+ 500 … + 1 000	24 AC/DC	C	**3RS1101-1CD40**		--
				110/230 AC	C	**3RS1101-1CK40**		--
Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO								
3RS1020-1DD00	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS1020-1DD00**		--
				24 … 240 AC/DC	C	**3RS1020-1DW00**		--
			0 … + 100	24 AC/DC	C	**3RS1020-1DD10**		--
				24 … 240 AC/DC	C	**3RS1020-1DW10**		--
			0 … + 200	24 AC/DC	C	**3RS1020-1DD20**		--
				24 … 240 AC/DC	A	**3RS1020-1DW20**	C	**3RS1020-2DW20**
		Undershoot	-50 … + 50	24 AC/DC	C	**3RS1030-1DD00**		--
				24 … 240 AC/DC	C	**3RS1030-1DW00**		--
			0 … + 100	24 AC/DC	C	**3RS1030-1DD10**		--
				24 … 240 AC/DC	C	**3RS1030-1DW10**		--
3RS1120-2DD20			0 … + 200	24 AC/DC	C	**3RS1030-1DD20**	C	**3RS1030-2DD20**
				24 … 240 AC/DC	C	**3RS1030-1DW20**		--
	Type J (thermo-element)	Overshoot	0 … + 200	24 AC/DC	C	**3RS1120-1DD20**	C	**3RS1120-2DD20**
				24 … 240 AC/DC	C	**3RS1120-1DW20**		--
			0 … + 600	24 AC/DC	C	**3RS1120-1DD30**		--
				24 … 240 AC/DC	C	**3RS1120-1DW30**		--
	Type K (thermo-element)	Overshoot	0 … + 200	24 … 240 AC/DC	C	**3RS1121-1DW20**		--
			0 … + 600	24 … 240 AC/DC	C	**3RS1121-1DW30**		--
			+ 500 … + 1 000	24 AC/DC	C	**3RS1121-1DD40**		--

For accessories see page 10/159.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RS10, 3RS11, 3RS20, 3RS21 Temperature Monitoring Relays

Relays, digitally adjustable, for 1 sensor

Overview

SIRIUS 3RS digital temperature monitoring relays for 1 sensor

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function). The 3RS10 and 3RS11 unit indicate the measured temperature in °C, the 3RS20 and 3RS21 unit in °F.

The units are also an excellent alternative to temperature controllers in the low-end performance range (two-or three-point control).

Benefits

- Very simple operation without complicated menu selections
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS1040, 3RS1042, 3RS2040	3RS1140, 3RS2140	3RS1142
Auxiliary circuit				
Rated operational currents I_e				
• AC-15/24 ... 250 V	A	3		
• DC-13 at:				
- 24 V	A	1		
- 125 V	A	0.2		
- 240 V	A	0.1		
Evaluation unit				
Measuring accuracy at 20 °C ambient temperature (T20)		< ± 2 K, ± 1 digit	< ± 5 K, ± 1 digit	< ± 7 K, ± 1 digit
Reference point accuracy		--	< ± 5 K	
Deviations due to ambient temperature In % of measuring range	%	0.05 °C per K deviation from T20		
Measuring cycle	ms	500		
Hysteresis settings for temperature	K	1 ... 99, for both values		
Adjustable delay time	s	0 ... 999		
Sensor circuit				
Typical sensor circuits				
• PT100	mA	Typically 1	--	--
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2	--	--
Open-circuit detection		Yes[1]	Yes	Yes
Short-circuit detection		Yes	No	No
Three-wire conductor connection		Yes[2]	--	--
Enclosure				
Rated insulation voltage U_i (pollution degree 3)	V AC	300		

[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

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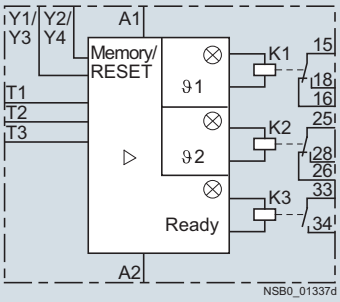
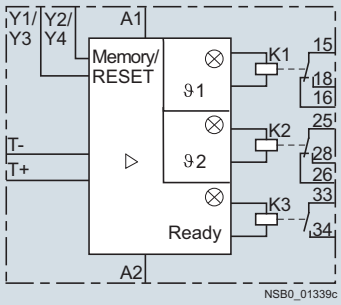
Circuit examples

3RS1040, 3RS1042, 3RS2040



3RS1140, 3RS1142, 3RS2140



Legend

A1, A2, A3 = terminals for rated control supply voltage

K1, K2, K3 = output relays

ϑ1 = LED: "Relay 1 tripped"

ϑ2 = LED: "Relay 2 tripped"

Ready = LED: "Device is ready for operation"

T1 to T3 = Sensor connection for resistance sensor

T+/T- = Sensor connection for thermoelements

Y1/Y2 = Connection for memory jumper for 3RS1040, 3RS1140, 3RS2040, 3RS2140

Y3/Y4 = RESET input for 3RS1042, 3RS1142

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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Relays, digitally adjustable, for 1 sensor

Selection and ordering data

- For temperature monitoring with resistance sensors or thermoelements
- Temperature range dependent on sensor type
  - for 3RS10, 3RS11: -99 to +1 800 °C
  - for 3RS20, 3RS21: -99 to +1 830 °F
- Wide voltage range versions are electrically separated
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type can be set
- 2 separately adjustable threshold values
- 1 hysteresis applies to both thresholds (0 to 99 K)
- 1 delay time applies to both thresholds (0 to 999 s)
- Adjustable open/closed-circuit principle
- Adjustable manual/remote RESET
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Sensors	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s 50/60 Hz AC	DT	Screw terminals	DT	Spring-type terminals
		V		Article No. / Price per PU		Article No. / Price per PU
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm, 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile						
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 500 °C	24 AC/DC	A	**3RS1040-1GD50**	A	**3RS1040-2GD50**
		24 … 240 AC/DC	A	**3RS1040-1GW50**	A	**3RS1040-2GW50**
	- 58 … + 932 °F	24 AC/DC	C	**3RS2040-1GD50**	C	**3RS2040-2GD50**
		24 … 240 AC/DC	C	**3RS2040-1GW50**	C	**3RS2040-2GW50**
TYPE J, K, T, E, N (thermoelement)	- 99 … + 999 °C	24 AC/DC	A	**3RS1140-1GD60**	C	**3RS1140-2GD60**
		24 … 240 AC/DC	A	**3RS1140-1GW60**	C	**3RS1140-2GW60**
	- 99 … + 1 830 °F	24 AC/DC	C	**3RS2140-1GD60**	C	**3RS2140-2GD60**
		24 … 240 AC/DC	C	**3RS2140-1GW60**	C	**3RS2140-2GW60**
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile						
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 750 °C	24 AC/DC	A	**3RS1042-1GD70**	C	**3RS1042-2GD70**
		24 … 240 AC/DC	A	**3RS1042-1GW70**	C	**3RS1042-2GW70**
TYPE J, K, T, E, N, R, S, B (thermoelement)	- 99 … +1 800 °C	24 AC/DC	C	**3RS1142-1GD80**	C	**3RS1142-2GD80**
		24 … 240 AC/DC	A	**3RS1142-1GW80**	C	**3RS1142-2GW80**

3RS1040-1GD50

3RS1040-2GW50

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For accessories see page 10/159.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RS10, 3RS11, 3RS20, 3RS21 Temperature Monitoring Relays

Relays, digitally adjustable for up to 3 sensors

Overview

SIRIUS 3RS digital temperature monitoring relay for up to 3 sensors

The 3RS10, 3RS20 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function). The 3RS10 units indicate the measured temperature in °C, the 3RS20 units in °F. The evaluation unit can evaluate up to 3 resistance sensors at the same time and is specially designed for monitoring motor windings and bearings.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The 3RS10, 3RS20 temperature monitoring relays can be used in almost any application in which several temperatures have to be monitored simultaneously for overshoot or undershoot or within a range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS1041, 3RS2041
Auxiliary circuit		
Rated operational currents I_e		
• AC-15/24 ... 250 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 240 V	A	0.1
DIAZED fuse protection		
• Operational class gG	A	4
Evaluation unit		
Measuring accuracy at 20 °C ambient temperature (T20)		< ±2 K, ±1 digit
Deviations due to ambient temperature In % of measuring range	%	0.05 per K deviation from T20
Measuring cycle	ms	500
Hysteresis settings for temperature 1		1 ... 99 K, for both values
Adjustable delay time	s	0 ... 999
Sensor circuit		
Typical sensor circuits		
• PT100	mA	Typically 1
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2
Open-circuit detection		Yes[1]
Short-circuit detection		Yes
Three-wire conductor connection		Yes[2]
Enclosure		
Rated insulation voltage U_i (pollution degree 3)	V AC	300

[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

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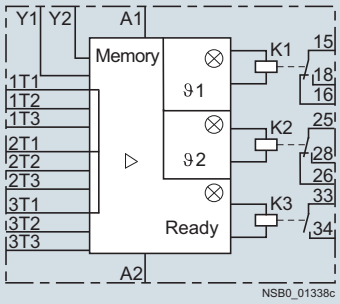
Relays, digitally adjustable for up to 3 sensors

Circuit example

3RS1041, 3RS2041



Legend
A1, A2, A3 = Terminals for rated control supply voltage
K1, K2, K3 = Output relays
ϑ1 = LED: "Relay 1 tripped"
ϑ2 = LED: "Relay 2 tripped"
Ready = LED: "Device is ready for operation"
1T1 to 1T3 = Sensor connection for resistance sensor 1
2T1 to 2T3 = Sensor connection for resistance sensor 2
3T1 to 3T3 = Sensor connection for resistance sensor 3
Y1/Y2 = Connection for memory jumper

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

Selection and ordering data

- For temperature monitoring of solids, liquids, and gases
- For two- and three-conductor resistance sensors or thermoelements
- Temperature range independent of sensor type
  - for 3RS10: -50 to +500 °C
  - for 3RS20: -58 to +932 °F
- Wide voltage range versions are electrically separated
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digitally adjustable, with illuminated LCD
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type and number of sensors can be set
- 2 separately adjustable threshold values
- 1 hysteresis; applies to both thresholds (0 to 99 K)
- 1 delay time; applies to both thresholds (0 to 999 s)
- Adjustable open/closed-circuit principle
- With connectable and disconnectable error memory
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Sensors	Number of sensors	Measuring range (limit of measuring range dependent on sensor)	Rated control supply voltage U_S	DT	Screw terminals	DT	Spring-type terminals
			V		Article No. / Price per PU		Article No. / Price per PU
Motor monitoring relays, digitally adjustable for up to 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO							
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	1 ... 3 sensors	-50 ... +500 °C	24 ...240 AC/DC	A	**3RS1041-1GW50**	A	**3RS1041-2GW50**
		-58 ... +932 °F	24 ...240 AC/DC	C	**3RS2041-1GW50**	C	**3RS2041-2GW50**

3RS1041-1GW50

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For accessories see page 10/159.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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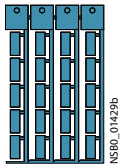
Selection and ordering data

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT1900-1SB20	For 3RS10, 3RS11, 3RS20, 3RS21	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1]	D	**3RT1900-1SB20**		100	340 units	41B
	For 3RS10, 3RS11, 3RS20, 3RS21	**Adhesive labels** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
		19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
3RP1903	For 3RS10, 3RS11, 3RS20, 3RS21	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
3RP1902	For 22.5 mm wide 3RS10, 3RS11, 3RS20, 3RS21	**Sealable covers** For securing against unauthorized adjustment of setting knobs	B	**3RP1902**		1	5 units	41H
	For 3RS10, 3RS11, 3RS20, 3RS21	**Sealing foil** For securing against unauthorized adjustment of setting knobs	▶	**3TK2820-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" → "External Partners".

Matching sensors see www.siemens.com/temperature.

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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

General data

Overview

SIRIUS 3RS14, 3RS15 temperature monitoring relay

The temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media.

The temperature is calculated using a sensor in the medium, evaluated by the device and monitored up to two limit values for overshooting or undershooting a working range (window function).

In addition to warnings and disconnection in case of temperature deviations, the devices can also be used as a temperature controller (one-point, two-point or three-point control).

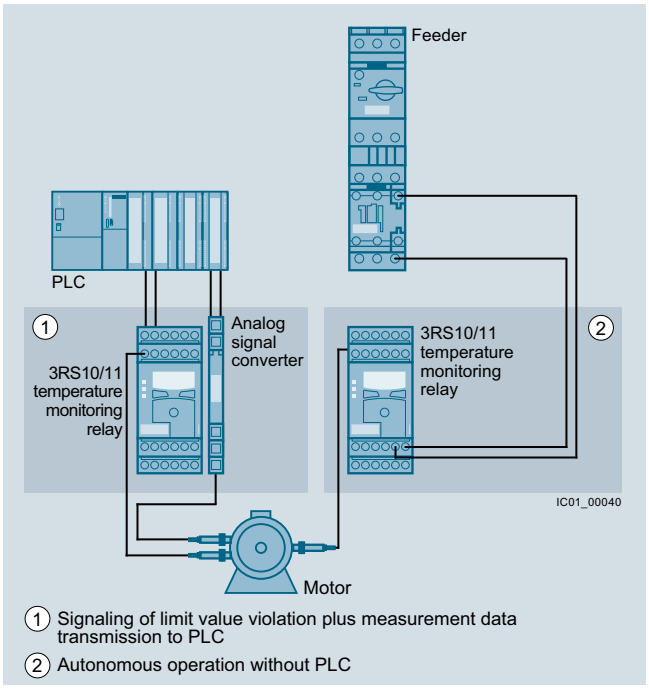
The devices differ from one another in terms of the type and number of connectable temperature sensors.

- 3RS14: Connection for resistance sensor
- 3RS15: Connection for thermoelements

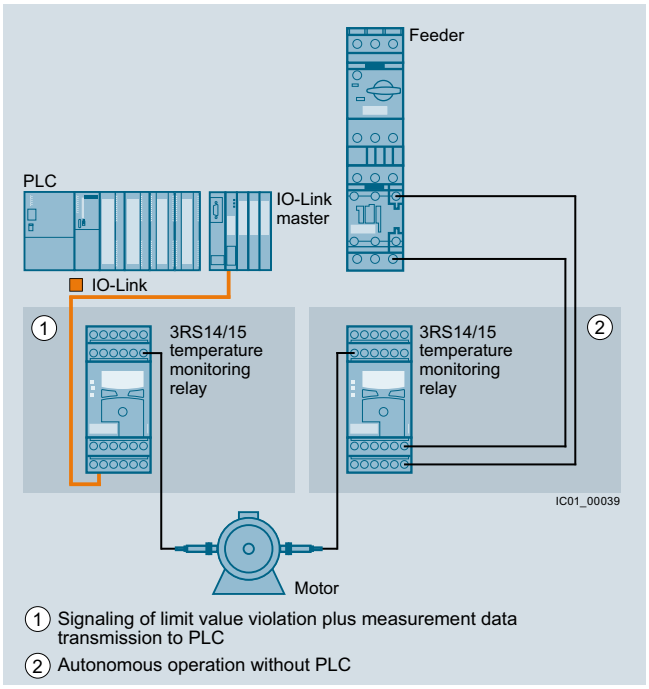
Function	Temperature monitoring relays		
	3RS1440	3RS1441	3RS1540
Connectable sensor type			
Number of sensors monitored	1	3	1
Resistance sensor	✓	✓	--
Thermoelements	--	--	✓
Temperature monitoring			
Temperature monitoring - overshoot	✓	✓	✓
Temperature monitoring - undershoot	✓	✓	✓
Number of adjustable limit values	2	2	2

✓ Function supported

-- Function not supported



Conventional temperature monitoring relays



Temperature monitoring relays for IO-Link

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports the IO-Link (e.g. ET 200S with CPU or S7-300 plus ET 200S distributed I/O, see Catalog ST 70 "SIMATIC Products for Totally Integrated Automation")
- IO-Link master (IO-Link master 4SI IO-Link or 4SI SIRIUS interface module, which can connect all SIRIUS IO-Link devices to a controller, see Chapter 2 "Industrial Communication")

Each monitoring relay requires an IO-Link channel.

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Temperature monitoring relays	**3 R S**										
Device type		□	□								
Version and type of sensor				□	□						
Connection methods							□				
Number and type of outputs								□			
Control supply voltage									□		
Measuring range										□	
Special versions											□
Example	**3 R S**	**1**	**4**	**4**	**0**	**–**	**1**	**H**	**B**	**5**	**0**

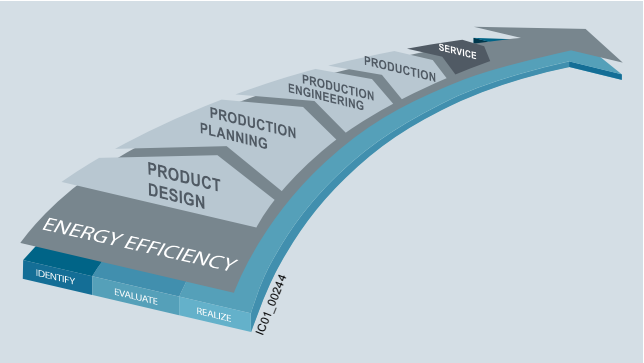
Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative SIRIUS industrial controls products can also make a major contribution to the energy efficiency of a plant (www.siemens.com/sirius/energysaving).

The 3RS14 and 3RS15 monitoring relays for IO-Link make the following contribution to the energy efficiency of the plant as a whole:

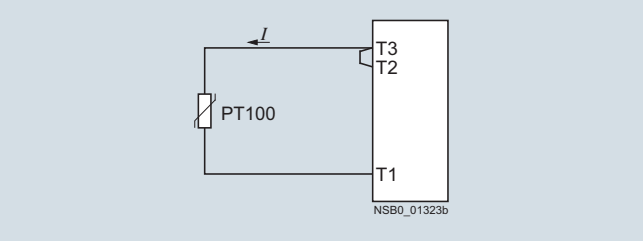
- Demand-based control of heating and ventilation in the process and in the control cabinet

Technical specifications

Connection for resistance sensors

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the signal evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.



Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 Kelvin/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

Temperature drift dependent on the length and cross-section of the cable with PT100 sensors and an ambient temperature of 20 °C, in K:

Cable length in m	Cross-section mm²			
	0.5	0.75	1	1.5
	Temperature drift in K:			
0	0	0	0	0
10	1.8	1.2	0.9	0.6
25	4.5	3.0	2.3	1.5
50	9.0	6.0	4.5	3.0
75	13.6	9.0	6.8	4.5
100	18.1	12.1	9.0	6.0
200	36.3	24.2	18.1	12.1
500	91.6	60.8	45.5	30.2

Example: On a PT100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm² the temperature drift equals 0.9 K.

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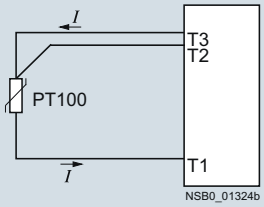
General data

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The signal evaluation unit can then automatically calculate the line resistance and take it into account.



Connection of thermoelements

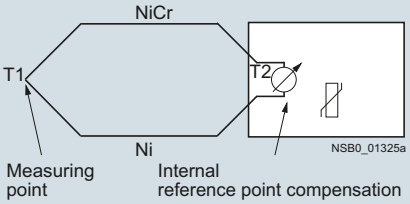
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the signal evaluation unit.

This principle assumes that the signal evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS15 temperature monitoring relay has an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must be insulated therefore.

The absolute temperature is therefore calculated from the ambient temperature of the signal evaluation unit and the temperature difference measured by the thermoelement.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the signal evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermoelement. If a different type of conductor is used, an error will result in the measurement.



For more information, see

www.feldgeraete.de/76/produkte/fuw.html

www.ephy-mess.de

or from

EPHY-MESS GmbH, see Chapter 16 "Appendix" → "External Partners".

Principle of operation

When the temperature has reached the set upper limit value ϑ1, the K1 output relay changes its switching state after the configured time *t* has expired. The delay time can be adjusted. The K2 output relay responds in the same manner to the lower limit value of ϑ2.

The output relays return immediately to their original state (the RESET response is configured at Auto RESET) once the temperature reaches the respective hysteresis value.

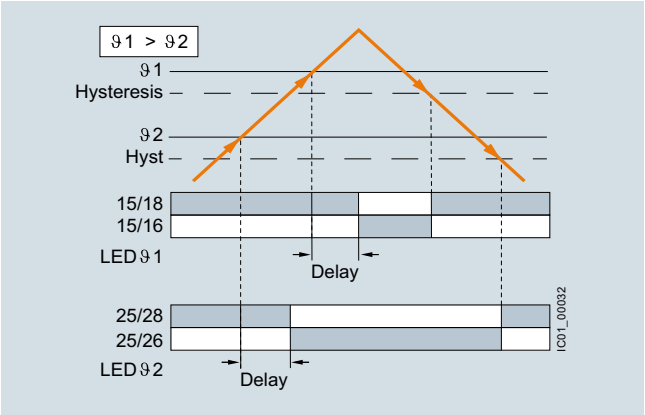
Both limit values ϑ1 and ϑ2 can be parameterized for overshooting or undershooting. This makes it possible to use a limit value for issuing an alarm signal to announce that a limit value is about to be overshot or undershot. The other limit value can be used for disconnection or to implement two-point or three-point control.

Note:

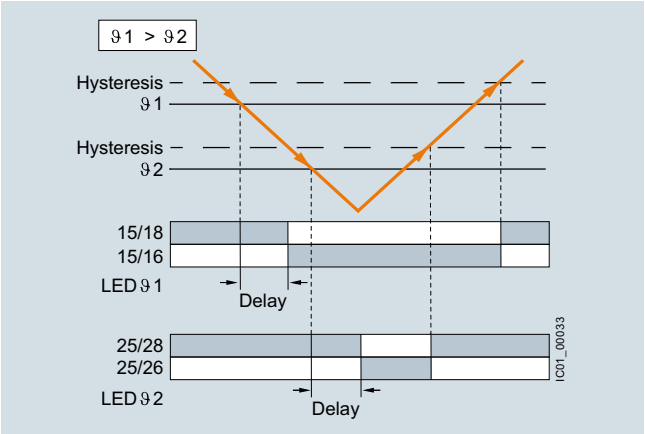
The "Temperature monitoring mode" parameter can be used to set the desired type of monitoring (monitoring for overshooting or undershooting or range monitoring).

With the closed-circuit principle selected

Temperature overshoot



Temperature undershoot



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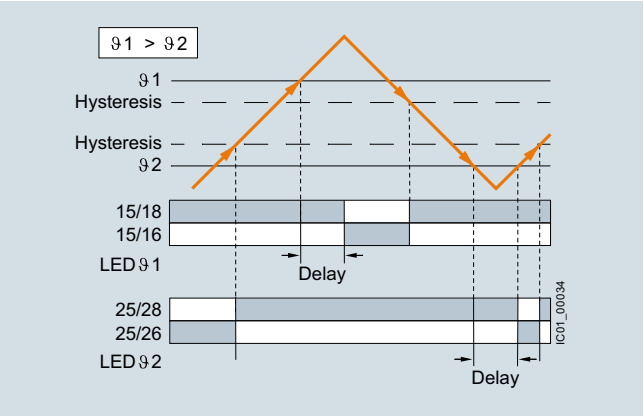
With the closed-circuit principle selected

Range monitoring



Storage function

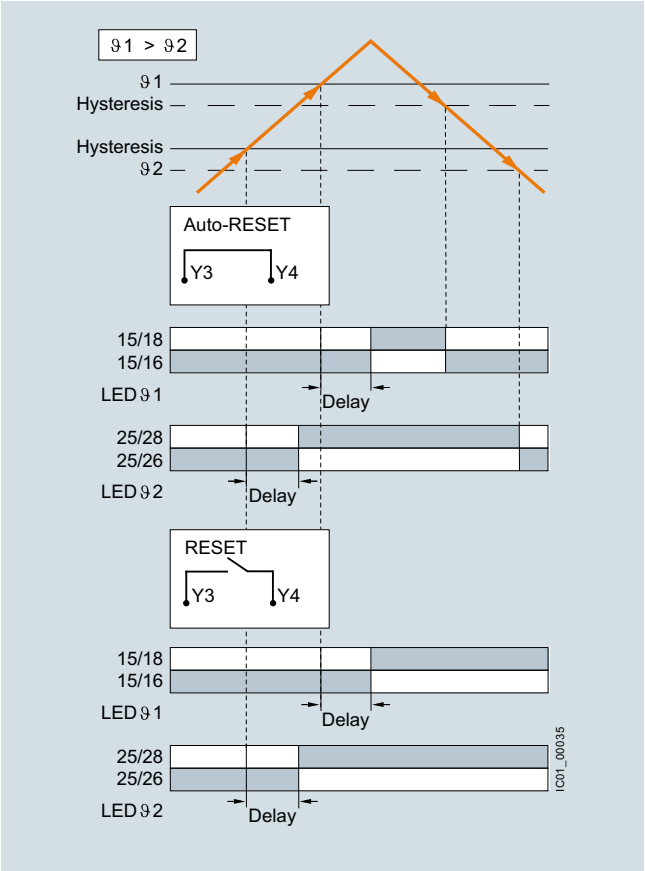
The digitally adjustable temperature monitoring relays for IO-Link have a memory function. The memory function is illustrated below by the example of a temperature overshoot.

When the temperature has reached the ϑ1 limit value, the K1 output relay changes its switching state after the configured time *t* has expired (output relay K2 reacts similarly at ϑ2).

The temperature monitoring relays for IO-Link respond as described below:

- With temperature monitoring relays for IO-Link the memory function is activated as standard (RESET). The output relays only return to the original state when the temperature falls below the set hysteresis value and when one of the following steps is performed:
  - Brief jumpering of the Y3/Y4 terminals
  - Set the rotary knob to "RUN" position and press the right-hand arrow key
  - Perform a RESET through IO-Link
- If the Y3/Y4 terminals are permanently jumpered, the memory function is deactivated (Auto RESET). The output relays return immediately to their original state once a previously occurred fault has been rectified and the temperature falls below the respective hysteresis value.

With the closed-circuit principle selected



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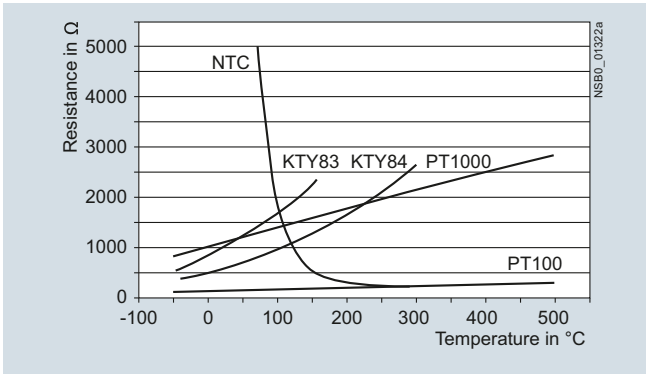
General data

Characteristic curves

For resistance sensor



The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

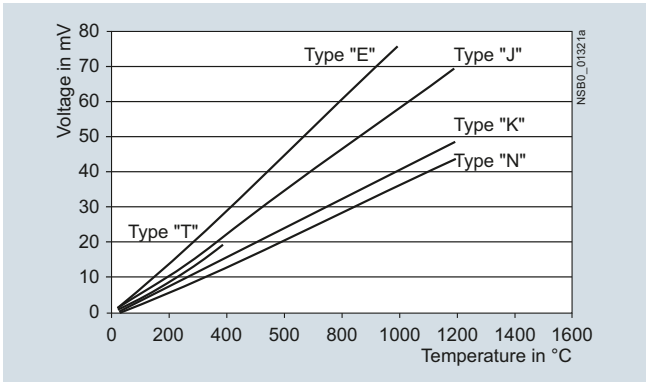
Measuring ranges for resistance sensors

Sensor type	Short circuit	Open circuit	3RS1440, 3RS1441	
			Measuring range in °C	Measuring range in °F
PT100	✓	✓	–50 ... +750	–58 ... +1 382
PT1000	✓	✓	–50 ... +500	–58 ... +932
KTY83-110	✓	✓	–50 ... +175	–58 ... +347
KTY84	✓	✓	–40 ... +300	–40 ... +572
NTC[1)]	✓	--	+80 ... +160	+176 ... +320

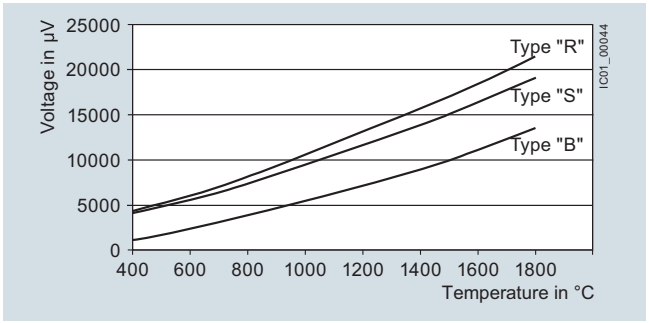
✓ Detection possible
-- Detection not possible

[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For thermoelements



Characteristic curves for sensor types K, N, J, E and T



Characteristic curves for sensor types S, R and B

Measuring ranges for thermoelements

Sensor type	Short circuit	Open circuit	3RS1540	
			Measuring range in °C	Measuring range in °F
K	--	✓	-99 ... +1 350	-146.2 ... +2 462
N	--	✓	-99 ... +1 300	-146.2 ... +2 372
J	--	✓	-99 ... +1 200	-146.2 ... +2 192
E	--	✓	-99 ... +999	-146.2 ... +1 830.2
T	--	✓	-99 ... +400	-146.2 ... +752
S	--	✓	0 ... 1 750	32 ... 3 182
R	--	✓	0 ... 1 750	32 ... 3 182
B	--	✓	400 ... 1 800	752 ... 3 272

✓ Detection possible
-- Detection not possible

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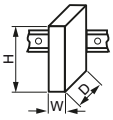
Type			3RS14, 3RS15
General technical specifications			
Dimensions (W x H x D)			
• Screw terminals		mm	45 x 106 x 91
• Spring-type terminals		mm	45 x 108 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
• Tightening torque		Nm	0.8 … 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

More information

For the manual "3RS14/3RS15 Temperature Monitoring Relays for IO-Link", see http://support.automation.siemens.com/WW/view/en/54375463.

Notes on safety

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.

More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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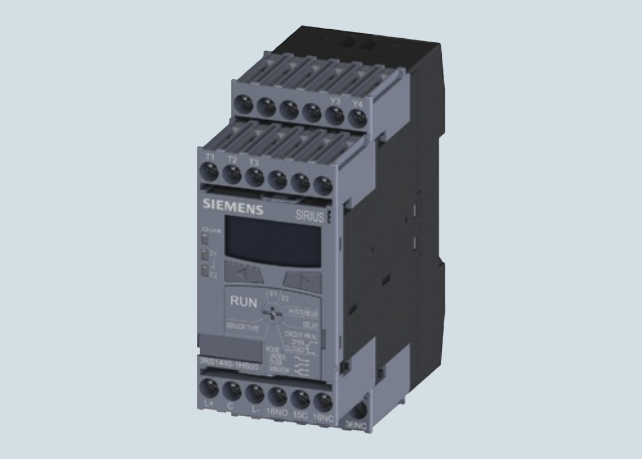
SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for 1 sensor

Overview



SIRIUS 3RS1440 digital monitoring relay for 1 sensor

The 3RS14 and 3RS15 temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media. The temperature is calculated using a sensor in the medium, evaluated by the device and monitored for overshooting or undershooting a working range (window function). The digital temperature monitoring relays have two separately adjustable limit values, are non-volatile and can be operated as desired using the open- or closed-circuit principle.

The devices differ in terms of the number of temperature sensors which can be evaluated. The 3RS1440 and 3RS1540 for IO-Link temperature monitoring relays can be digitally adjusted for one sensor and represent an alternative to temperature controllers in the low-end range (two-point or three-point control).

The devices with two-point control can, for example, be used as a thermostat. The devices with three-point control can, for example, independently switch between heating and cooling.

The 3RS1441 temperature monitoring relays for IO-Link can be digitally adjusted to evaluate up to three resistance sensors at one time. The devices were designed specifically for monitoring motor windings and positions.

The temperature monitoring relays are powered through the control supply voltages IO-Link (L+) and ground (L-) or via an external 24 V DC power supply.

Monitoring

When the temperature has reached the $\vartheta 1$ limit value, the K1 output relay changes its switching state after the configured time *t* has expired (output relay K2 reacts accordingly at $\vartheta 2$). The delay time can be adjusted.

The output relays return immediately to their original state once the temperature reaches the respective hysteresis value.

When the temperature has reached the top $\vartheta 1$ limit value, the K1 output relay changes its switching state after the configured time *t* has expired. The output relay returns immediately to its original state once the temperature reaches the respective hysteresis value.

The K2 output relay reacts in the same way at the $\vartheta 2$ lower threshold. Both limit values $\vartheta 1$ and $\vartheta 2$ can be parameterized for overshooting or undershooting the thresholds. This makes it possible to use a limit value for issuing an alarm signal to announce that a limit value is about to be overshot or undershot.

Note:

The "Temperature monitoring mode" parameter can be used to set the desired type of monitoring (monitoring for overshooting or undershooting or range monitoring).

Benefits

- Very simple operation without complicated menu selections
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

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Technical specifications

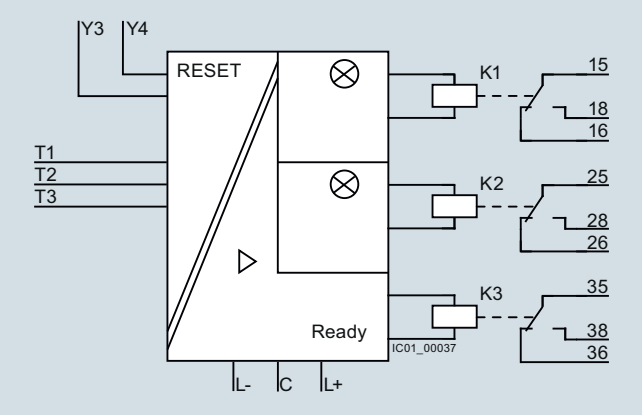
Type		3RS1440	3RS1540
Auxiliary circuit			
Rated operational currents I_e			
• AC-15/24 ... 250 V	A	3	
• DC-13 at			
- 24 V	A	1	
- 125 V	A	0.2	
- 250 V	A	0.1	
Evaluation unit			
Measuring accuracy at 20 °C ambient temperature (T20)		< ± 2 K, ± 1 digit	< ± 5 K, ± 1 digit
Reference point accuracy		--	<± 5 K
Deviations due to ambient temperature In % of measuring range	%	0.05 °C per K deviation from T20	
Measuring cycle	ms	500	
Hysteresis settings for temperature	K	1 ... 99, for both values	
Adjustable delay time	s	0 ... 999.9	
Sensor circuit			
Typical sensor circuits			
• PT100	mA	Typically 1	--
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2	--
Open-circuit detection		✓ [1]	3
Short-circuit detection		3	--
Three-wire conductor connection		✓ [2]	--
Enclosure			
Rated insulation voltage U_i pollution degree 2	V AC	300	

✓ Available
-- Not available

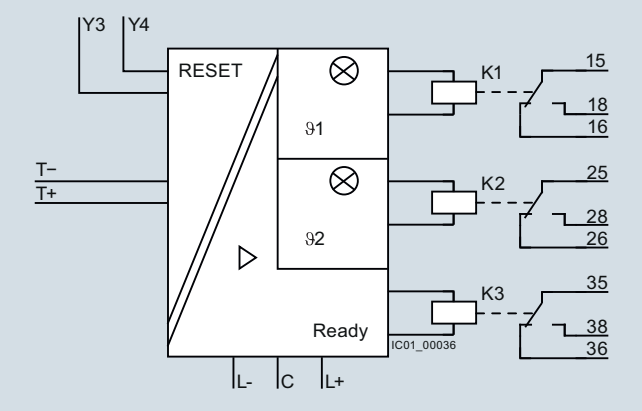
[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).
[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

Circuit examples

3RS1440



3RS1540



Legend
L+ = IO-Link control supply voltage
C = Communication signal
L- = IO-Link ground
K1 = Output relay for temperature limit value ϑ1
K2 = Output relay for temperature limit value ϑ2
K3 = Output relay for "device is ready for operation"
ϑ1 = LED: "Relay K1 tripped"
ϑ2 = LED: "Relay K2 tripped"
T1 to T3 = Sensor connection for 3RS14 resistance sensor
T+/T- = Sensor connection for 3RS15 thermoelements
Y3/Y4 = RESET input

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for 1 sensor

Selection and ordering data

- To monitor temperatures with a resistance sensor or thermoelement
- Temperature range dependent on sensor type -99 to +1 800 °C or -146.2 to +3 272 °F
- Short-circuit and open-circuit detection in sensor circuit
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type can be set
- 2 limit values, can be adjusted separately
- Adjustable open/closed-circuit principle
- Can be adjusted by hand or remote RESET (via an external contact)
- Actual value, tripping state for control displayed and conveyed, adjustable in °C or °F
- 1 CO contact per limit value
- 1 CO contact for monitoring sensors and devices

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RS1440-1HB50

3RS1540-1HB80

3RS1440-2HB50

3RS1540-2HB80

Sensors	Measuring range (limit of measuring range dependent on sensor)	Hysteresis can be adjusted for $\vartheta 1$ and $\vartheta 2$	Tripping delay time can be adjusted for $\vartheta 1$ and $\vartheta 2$ DELAY	Control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
		K	s	V DC		Article No. / Price per PU		Article No. / Price per PU
Temperature monitoring relay, digitally adjustable for a sensor, non-volatile fault storage can be selected								
PT100/PT1000, KTY83/KTY84, NTC (resistance sensor)[1]	-50 … +750 °C or -58 … +1 382 °F	0 ... 99	0 ... + 999.9	24	A	**3RS1440-1HB50**	A	**3RS1440-2HB50**
Type B, E, J, K, N, R, S, T (thermoelements)	- 99 … + 1 800 °C or - 146.2 … + 3 272 °F	0 ... 99	0 ... + 999.9	24	A	**3RS1540-1HB80**	A	**3RS1540-2HB80**

[1] NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For accessories see page 10/171.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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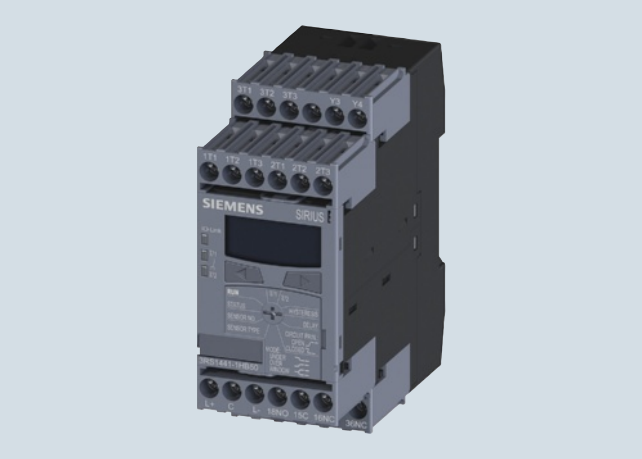
Relays, digitally adjustable for up to 3 sensors

Overview



SIRIUS 3RS1441 digital temperature monitoring relays for up to 3 sensors

The 3RS14 temperature monitoring relays can be used to measure temperatures in solid, liquid and gas media. The temperature is calculated using a sensor in the medium, evaluated by the device and monitored for overshooting or undershooting a working range (window function). The devices can be parameterized to indicate the measured temperature in °C or °F. The 3RS1441 evaluation unit can evaluate up to 3 resistance sensors at the same time.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The 3RS1441 temperature monitoring relays can be used almost anywhere where several temperatures must be monitored at one time for overshooting, undershooting or staying within a certain range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS1441
Auxiliary circuit		
Rated operational currents I_e		
• AC-15/24 ... 250 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 250 V	A	0.1
DIAZED fuse protection		
• Operational class gG	A	4
Evaluation unit		
Measuring accuracy at 20 °C ambient temperature (T20)		< ±2 K, ±1 digit
Deviations due to ambient temperature In % of measuring range	%	0.05 per K deviation from T20
Measuring cycle	ms	500
Hysteresis settings for temperature 1	K	1 ... 99, for both values
Adjustable delay time	s	0 ... 999.9
Sensor circuit		
Typical sensor circuits		
• PT100	mA	Typically 1
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2
Open-circuit detection		✓ [1]
Short-circuit detection		3
Three-wire conductor connection		✓ [2]
Enclosure		
Rated insulation voltage U_i pollution degree 2	V AC	300

✓ Available

[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

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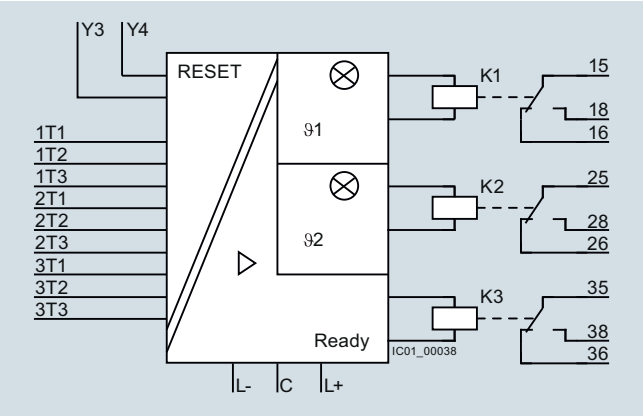
SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for up to 3 sensors

Circuit example

3RS1441



Legend

L+ = IO-Link control supply voltage
C = Communication signal
L- = IO-Link ground
K1 = Output relay for temperature limit value ϑ1
K2 = Output relay for temperature limit value ϑ2
K3 = Output relay for "device is ready for operation"
ϑ1 = LED: "Relay K1 tripped"
ϑ2 = LED: "Relay K2 tripped"
Y3/Y4 = RESET input for 3RS14, 3RS15
1T1 to 1T3 = Sensor connection for resistance sensor 1
2T1 to 2T3 = Sensor connection for resistance sensor 2
3T1 to 3T3 = Sensor connection for resistance sensor 3
Y3/Y4 = RESET input for 3RS14

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

Selection and ordering data

- For temperature monitoring with up to 3 resistance sensors
- Temperature range dependent on sensor type -50 to +750 °C or -58 to +1 382 °F
- Short-circuit and open-circuit detection in sensor circuit
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type and number of sensors can be set
- 2 limit values, can be adjusted separately
- Adjustable open/closed-circuit principle
- Can be adjusted by hand or remote RESET (via an external contact)
- Actual value, tripping state for control displayed and conveyed, adjustable in °C or °F
- 1 CO contact per limit value
- 1 CO contact for monitoring sensors and devices

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RS1441-1HB50

3RS1441-2HB50

Sensors	Number of sensors that can be set	Measuring range (limit of measuring range dependent on sensor)	Hysteresis can be adjusted for ϑ1 and ϑ2	Tripping delay time can be adjusted for ϑ1 and ϑ2 DELAY	Control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals**
			K	s	V DC		Article No. / Price per PU		Article No. / Price per PU
Temperature monitoring relay, digitally adjustable for up to 3 sensors, non-volatile fault storage can be selected									
PT100/PT1000, KTY83/KTY84, NTC (resistance sensor)[1]	1 ... 3 sensors	- 50 ... +750 °C or -58 ... +1 382 °F	0 ... 99	0 ... + 999.9	24	A	**3RS1441-1HB50**	A	**3RS1441-2HB50**

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For accessories see page 10/171.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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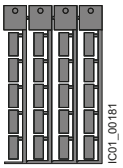
Selection and ordering data

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT2900-1SB20	For 3RS14 and 3RS15	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, titanium gray[1]	D	**3RT2900-1SB20**		100	340 units	41B
	For 3RS14 and 3RS15	**Adhesive labels** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
		19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
3RP1903	For 3RS14 and 3RS15	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
	For 3RS14 and 3RS15	**Sealing foil** For securing against unauthorized adjustment of setting knobs	▶	**3TK2820-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
		3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**3RA2908-1A**		1	1 unit	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" → "External Partners".

Matching sensors see www.siemens.com/temperature.

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SIRIUS 3RN1 Thermistor Motor Protection

For PTC sensors

Overview

SIRIUS 3RN1 thermistor motor protection

Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their temperature limit.

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	□
Thermistor motor protection	**3 R N 1 0**								
Number and version of the sensor circuits		□							
RESET response			□						
Connection type					□				
Type and number of outputs						□			
Control supply voltage							□		
Protective separation								□	
Behavior in the event of voltage failure									□
Example	**3 R N 1 0**	**0**	**0**	**–**	**1**	**A**	**B**	**0**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No settings on the device are necessary
- Solid-state compatible output thanks to versions with hard gold-plated contacts
- Rapid error diagnosis thanks to versions that indicate open and short circuits in the sensor circuit
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

Direct motor protection through temperature monitoring of the motor winding offers 100 % motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Direct motor protection

- At increased ambient temperatures
- When switching frequency is too high
- When start-up and braking procedures are too long
- Used together with frequency converters (low speeds)

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads.

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Motor protection using current- and temperature-dependent protective devices

EN 60204 and IEC 60204 stipulate that motors must be protected from overheating at a rating of 0.5 kW and higher. The protection can take the form of overload protection, overtemperature protection or current limiting.

For motors with frequent starting and braking and in environments where cooling may be impaired (e. g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN1 thermistor motor protection devices.

On rotor-critical motors, overtemperature detection in the stator windings can lead to delayed and hence inadequate protection. In this case the standards stipulate additional protection, e. g. by means of an overload relay.

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs the stall protection, and the 3RN1 thermistor motor protection device monitors the temperature of the motor windings.

Application	Motor protection		
	Only current-dependent, e.g. with overload relay	Only temperature-dependent, e.g. with thermistor motor protection relay	Current- and temperature-dependent
Motor protection in case of			
Overloading in uninterrupted duty	✓	✓	✓
Long start-up and braking operations	❍	✓	✓
Irregular intermittent duty	❍	✓	✓
Excessively high switching frequency	❍	✓	✓
Single-phase operation and current unbalance	✓	✓	✓
Voltage and frequency fluctuations	✓	✓	✓
Stalling of the rotor	✓	✓	✓
Switching on a stalled rotor of a stator-critical motor	✓	✓	✓
Switching on a stalled rotor of a rotor-critical motor	✓	❍	✓
Elevated ambient temperature	--	✓	✓
Impeded cooling	--	✓	✓

✓ Full protection
❍ Conditional protection
-- No protection

Technical specifications

The 3RN1 evaluation units are suitable for use in any climate and finger-safe according to EN 50274.

They comply with:

- IEC 60947-8. Low-voltage switchgear and controlgear - Part 8: "Control units for built-in thermal protection (PTC) for rotating electrical machines"
- IEC 61000-6-2 and IEC 61000-6-4 "Electromagnetic compatibility of I&C equipment in industrial process engineering"

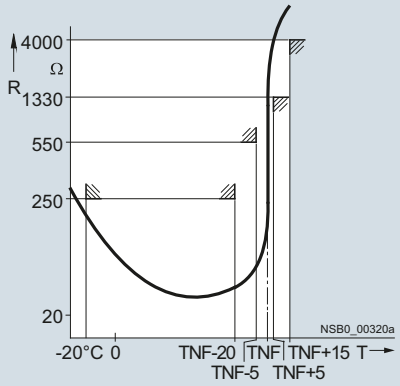
The terminals of the auxiliary contacts are designated in accordance with EN 60947-1.

The 3RN1 evaluation units are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing using an adapter (Accessories).

Any mounting position is possible.

For devices with the "Manual RESET" function, the test function can be activated and a trip simulated by pressing the blue Test/RESET button for > 2 seconds.

If a Type A temperature sensor is connected to a Type A evaluation unit, compliance with the operating temperatures is assured (on pick-up and reset) according to IEC 60947-8.



Characteristic curve of the 3RN1 evaluation unit

The characteristic curves of the Type A temperature sensors are described in IEC 60947-8, DIN 44081 and EN 44082 standards.

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For PTC sensors

Use in areas subject to explosion hazard for gases

All devices are approved for Equipment Group II, Category (2) in Area "G" (areas that contain explosive gases, vapor, spray and air mixtures).

With PTB 01 ATEX 3218 ex II (2) G, compliance with directive 94/9 EC Appendix II is confirmed. The safety devices must be selected with suitable settings for the safe operation of motors of the "Increased safety" (EEx e) and "Flameproof enclosure" (EEx d) types of protection and are used outside the area subject to explosion hazard.

PTB 01 ATEX 3218 ex II (2) G

The increased danger in areas subject to explosion hazard demands careful analysis of the operating manual, the safety and commissioning instructions and the standard (EN 60079-14/ VDE 0165) for electronic equipment in areas subject to gas explosion hazards.

A risk analysis must be performed for the complete plant or machine. If this risk analysis results in a minimal potential for danger (Safety Category 1), all 3RN1 TMS evaluation units can be implemented taking into account the safety notes. In the case of plants or machines with a high potential risk, device versions with integrated short-circuit detection in the sensor circuit are necessary.

Use in areas subject to explosion hazard for dust

PTB 01 ATEX 3218 ex II (2) GD

3RN1011-.B/-.G, 3RN1012-.B/-.G and 3RN1013-...0 evaluation units can be used as protective devices for motors in areas subject to gas explosion hazard for protection against impermissible overheating due to overload. If the ATEX identification has the extension "D:=Dust", these units can also be used as protective devices for motors in areas subject to dust explosion hazard (IEC 61241-14).

Additional information is provided in the EC type test certificate which can be obtained from the Internet. The units comply with the requirements of the following classes:

Device	Class
3RN1000, 3RN1010, 3RN1011-.C, 3RN1012-.C, 3RN1022, 3RN1062	EN ISO 13849-1: Category 1
3RN1011-.B, 3RN1011-.G, 3RN1012-.B, 3RN1012-.G, 3RN1013	EN ISO 13849-1: Category 2

The measuring circuit leads must be routed as separate control cables. It is not permitted to use cores from the supply line of the motor or any other main supply cables. If extreme inductive or capacitive interference is expected as a result of power lines routed in parallel, shielded control cables must be used.

Cable routing

Maximum cable length for sensor circuit cables

Cable cross-section	Cable length for evaluation units	
	Without short-circuit detection 3RN1000, 3RN1010, 3RN1011-.C, 3RN1012-.C, 3RN1022, 3RN1062	With short-circuit detection [1] 3RN1011-.B/-.G, 3RN1012-.B/-.G, 3RN1013
mm^2	m	m
2.5	2 x 2 800	2 x 250
1.5	2 x 1 500	2 x 150
0.5	2 x 500	2 x 50

[1] A short circuit in the sensor circuit will be detected up to this maximum cable length.

Notes:

Tripping of the thermistor motor protection relay even in combination with a converter must directly result in disconnection. This must be implemented with circuitry.

Mounting and installation must only be performed by qualified personnel who observe the applicable regulations!
For mounting, use the mounting instructions
Article No.: 3ZX1012-0RN10-1AA1.

The 3RN10 is not intended for installation in hazardous areas. For installation in areas subject to explosion hazards, the 3RN10 must be enclosed in a flameproof casing.

For evaluation units with a 24 V AC/DC control voltage, electrical separation must be secured with a battery network or a safety transformer.

When evaluation units with Auto RESET function are used, resetting is performed automatically after the cooling time has expired. It must be ensured by means of an external interlock (latching with a separate ON and OFF button) that the machine to be monitored does not start up again spontaneously.

Units with the "Auto RESET" function must not be used in applications in which the unexpected restart can lead to personal injury or property damage.

In the case of evaluation units without short-circuit detection, during commissioning or after modifications or maintenance work (assembly, disassembly) on the equipment, the sensor resistance must be measured using a suitable measuring device. For resistances of < 50 W the sensor circuit must be checked for a short circuit.

If 3RN1000 units are used to protect EEx e motors, separate monitoring of the control voltage is recommended because there is no Ready LED to indicate connection to the supply voltage.

If 3RN1013-.BW01 unit are used to protect EEx e motors, separate monitoring of the control voltage is recommended because the switching state of the auxiliary contacts does not change if the control voltage fails (use of a bistable relay is recommended).

Before commissioning, the effectiveness of the protection function must be checked.

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Principle of operation

The 3RN1 evaluation units operate in accordance with the closed-circuit principle and therefore monitor themselves for open circuit (except: warning output in the case of 3RN1022). A momentary voltage failure of less than 50 ms does not change the status of the auxiliary contacts. The 3RN1011, 3RN1012 and 3RN1013 units with 2 changeover contacts are also equipped with short-circuit detection in the sensor circuit. The unit will trip in the event of a short circuit in the sensor circuit (resistance in sensor circuit < 20 Ω).

All evaluation units (except for 24 V AC/DC) feature electrical separation between the control circuit and the sensor circuit.

3RN1000 compact evaluation unit

The compact unit is equipped with a red LED (TRIPPED) for the tripped indicator and a changeover contact.

After the unit has tripped, it is automatically reset once the thermistors have cooled down. The root of the changeover contact is connected to the control voltage (95 is connected to terminal A1).

This unit is particularly suitable in circuits in which the control circuit and signaling circuit have the same potential, e.g. in local control cabinets.

3RN1010, 3RN1011, 3RN1012, 3RN1013 standard evaluation units

The standard units are equipped with two LEDs (READY and TRIPPED) for an operating and tripped display and are available with either 1 NO + 1 NC or with 2 CO contacts. They are available depending on the version with Auto RESET (3RN1010), Manual/Remote RESET (3RN1011) or Manual/Auto and Remote RESET (3RN1012 and 3RN1013). Remote RESET can be achieved by connecting an external pushbutton with a normally-open function to terminals Y1 and Y2. If terminals Y1 and Y2 are bridged, tripping will be followed by an Auto RESET.

The 3RN1011, 3RN1012 and 3RN1013 units with 2 CO contacts also have short-circuit monitoring in the sensor circuit.

The 3RN1012 and the 3RN1013 are non-volatile. This means that even if the control supply voltage fails, a trip preceding it will be saved.

In the case of the 3RN1013 evaluation unit, tripping due to a short circuit in the sensor circuit will be indicated by a flashing red LED. The monostable version also indicates open circuit in the sensor circuit by flashing of the red LED.

3RN1022 "Warning and disconnection" evaluation units

Two sensor circuits can be connected to one 3RN1022 evaluation unit that acts on one output relay with 1 NO contact for warning and 1 CO contact for disconnection. Temperature sensors with different rated response temperatures TNF are used to implement the "Warning" and "Disconnection" functions. When the "Warning" sensor circuit responds, a yellow LED is lit and when the "Disconnection" circuit responds, a red LED is lit.

The sensor circuits have a different reset response and operating behavior:

- "Warning" (terminals 2T1, T2) only features Auto RESET and uses the open-circuit principle.
- "Disconnection" (terminals 1T1, T2) can be changed from Manual RESET to Auto RESET by linking terminals Y1 and Y2. Remote RESET is implemented by connecting an external pushbutton with a normally-open function.

3RN1062 multiple motor protection evaluation units

Up to 6 sensor circuits can be connected to the 3RN1062 evaluation unit, all of which act on one output relay. The simultaneous protection of several motors (up to 6) is an advantage for multi-motor drives (e.g. if one motor is overloaded, all the other motors of the drive will be shut down). Apart from the red LED "TRIPPED", which signals the switching state of the evaluation unit, an LED is assigned to each sensor circuit which indicates the sensor circuit that has responded during tripping. Unused sensor circuits must be short-circuited.

The reset response of the 3RN1062 evaluation units can be changed from Manual RESET to Auto RESET by linking terminals Y1 and Y2. Remote RESET is implemented by connecting an external pushbutton with a normally-open function.

Response of the evaluation units in the event of control voltage failure

Behavior	Monostable 3RN1000, 3RN1010, 3RN1011	Non-volatile, monostable 3RN1012, 3RN1013-....0, 3RN1022, 3RN1062	Bistable 3RN1013-...01
In case of failure of the control voltage	Device trips	Device trips	No change in switching state of the auxiliary contacts
In case of return of the control voltage without a preceding tripping operation	Device resets	Device resets	No change in switching state of the auxiliary contacts
In case of return of the control voltage after a preceding tripping operation	Device resets	The device remains tripped	No change in switching state of the auxiliary contacts

Protective separation

All circuits (outputs, control circuits, sensors and RESET circuits) of the multifunction evaluation units 3RN1013-1BW10 and 3RN1013-1GW10 (wide voltage range, monostable output relay and screw connection) are safely isolated from each other up to a rated voltage of 300 V according to IEC 60947-1.

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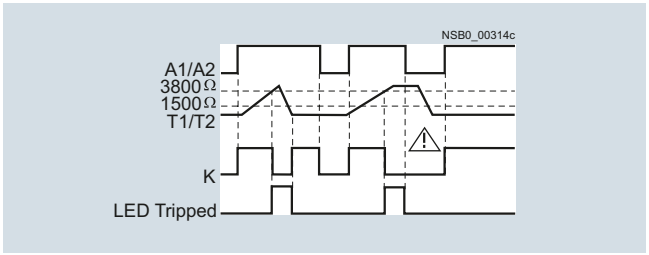
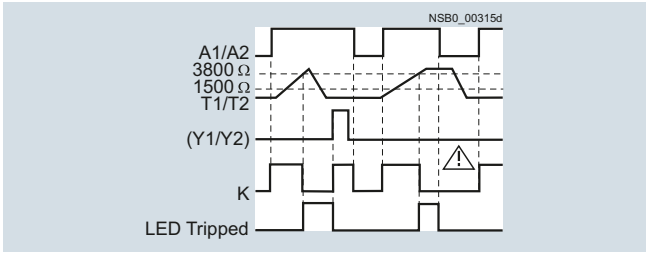
For PTC sensors

Function diagrams

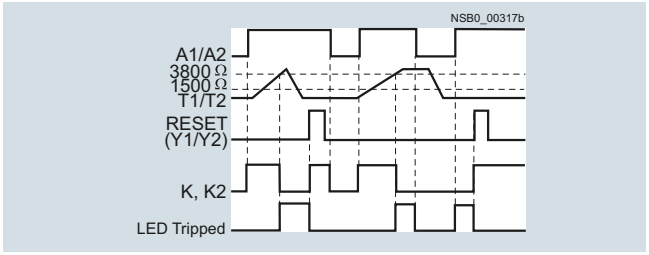
3RN1000, 3RN1010 (Auto RESET)



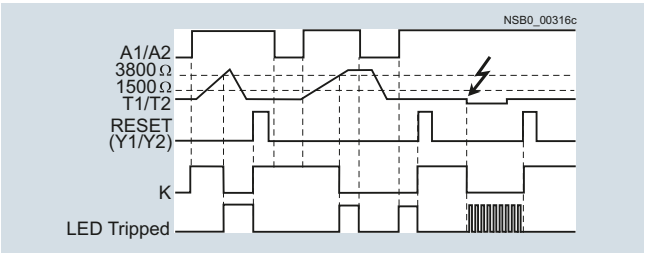
3RN1011[1)]



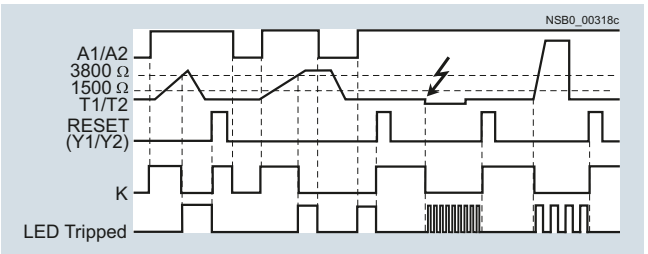
3RN1012/3RN1022/3RN1062[1)]



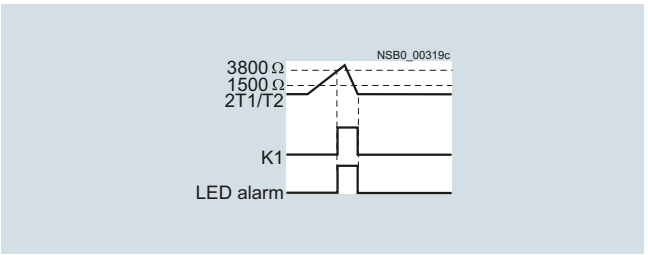
3RN1013-.BW01



3RN1013-...00



3RN1022 only



[1)] For versions with 2 CO contacts and short-circuit detection in the sensor circuit see function diagram 3RN1013.

10

Type			Compact units	Standard devices			Multifunc-tion units	Warning + disconnec-tion	Multiple motor protection
			3RN1000	3RN1010	3RN1011	3RN1012	3RN1013	3RN1022	3RN1062
General data									
Dimensions (W x H x D)									
• For 2 terminal blocks									
- Screw terminals		mm	22.5 x 83 x 91						45 x 83 x 91
- Spring-type terminals		mm	22.5 x 84 x 91						45 x 84 x 91
• For 3 terminal blocks									
- Screw terminals		mm	22.5 x 92 x 91						--
- Spring-type terminals		mm	22.5 x 94 x 91						--
• For 4 terminal blocks									
- Screw terminals		mm	22.5 x 102 x 91						45 x 106 x 91
- Spring-type terminals		mm	22.5 x 103 x 91						45 x 108 x 91
Number of connectable sensor circuits			1					2	6
Response in the event of control voltage failure			See page 10/175						
Manual RESET			--	✓					
Auto RESET			✓	--	✓				
Remote RESET			--	✓[1)]	✓				
TEST button			--	✓					
Short-circuit detection for sensor circuit			--	✓ (for 2-CO units)			✓	--	
Short-circuit and open-circuit display			--				✓[2)]	--	
Warning and disconnection in one unit			--					✓	--
Permissible ambient temperature									
• During operation		°C	-25 ... +60						

✓ Function available
-- Function not available

[1)] Remote RESET possible by disconnecting control voltage.

[2)] Open circuits are only indicated by monostable versions (3RN1013-....0).

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Type		Compact units	Standard devices			Multifunction units	Warning + disconnection	Multiple motor protection
		3RN1000	3RN1010	3RN1011	3RN1012	3RN1013	3RN1022	3RN1062
Evaluation unit								
Rated insulation voltage U_i (pollution degree 3)	V	300						
Rated impulse withstand voltage U_{imp}	kV	4						
Connection type		**Screw terminals**						
• Terminal screw		M3 (for standard screwdriver, size 2 and Pozidriv 2)						
• Solid	mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)						
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)						
Connection type		**Spring-type terminals**						
• Solid	mm^2	2 x (0.25 ... 1.5)						
• Finely stranded, with end sleeves acc. to DIN 46228	mm^2	2 x (0.25 ... 1.5)						
• Finely stranded	mm^2	2 x (0.25 ... 1.5)						
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)						
Sensor circuit								
Measuring circuit load at $R_F \leq 1.5$ mΩ	mW	≤ 5						
Voltage in sensor circuit at $R_F \leq 1.5$ mΩ	V	≤ 2						
Response temperature (depends on sensor)	°C	60 ... 180						
Coupling time (depends on sensor)	s	About 5						
Summation PTC resistance R_F (per sensor loop)	kΩ	≤ 1.5; response value 3.4 ... 3.8; return value 1.5 ... 1.65						
Response tolerance	°C	±6						
Control circuit								
Rated control supply voltage U_s		see page 10/179 and 10/180						
Operating range								
• 110/230 V AC		0.85 ... 1.1 x U_s						
• 24 ... 240 V AC/DC		0.85 ... 1.1 x U_s						
• 24 V AC/DC		0.85 ... 1.2 x U_s for DC operation, 0.85 ... 1.1 x U_s for AC operation						
Rated power AC/DC	W	< 2						
Auxiliary circuit								
Conventional thermal current I_{th}	A	5						
Rated operational current I_e								
• AC-15/24 ... 250 V	A	3						
• DC-13 at								
- 24 V	A	1						
- 125 V	A	0.2						
- 240 V	A	0.1						
DIAZED fuse protection	A	6[1)]						
CSA and UL rated data, control circuit								
Rated control voltage 50/60 Hz								
• AC	V	300						
• DC	V	300						
Switching capacity		R 300/B 300						
Protective separation up to 300 V acc. to IEC 60947-1		--				✓ 3RN1013-1BW10, 3RN1013-1GW10	--	

✓ Function available
-- Function not available

1) I_n > 1 kA weld-free according to IEC 60947-5-1.

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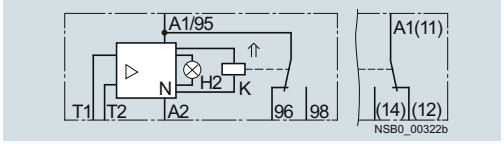
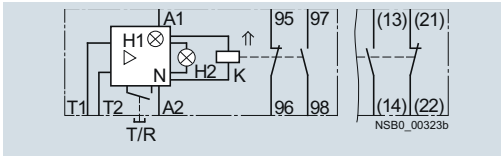
For PTC sensors

Circuit diagrams

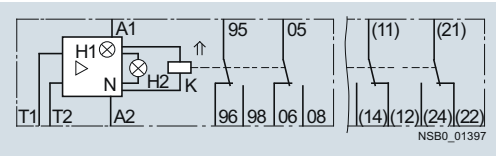
Illustrated with control voltage applied | **Illustrated with control voltage not applied**



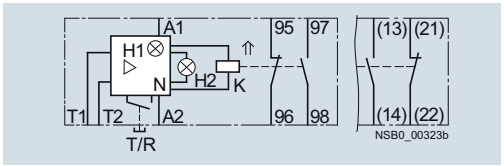
3RN1000, 1 CO



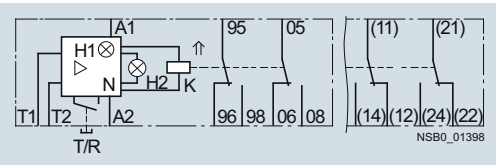
3RN1010, 1 NO + 1 NC



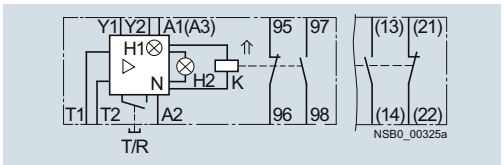
3RN1010, 2 CO



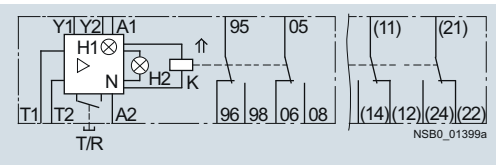
3RN1011[1], 1 NO + 1 NC



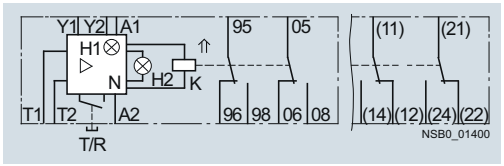
3RN1011, 2 CO



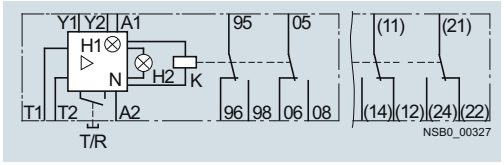
3RN1012[1], 1 NO + 1 NC



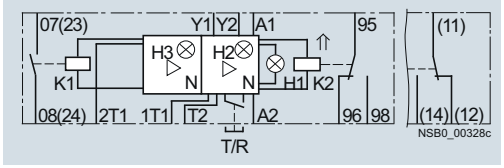
3RN1012, 2 CO



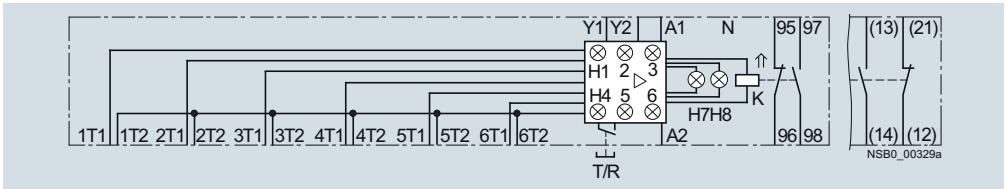
3RN1013-...0 (monostable)



3RN1013-...1 (bistable)



3RN1022



3RN1062

[1] For units with combination voltages 230/110 V AC (3RN1011-.CK00 and 3RN1012-.CK00) A1 and A2 apply: 230 V AC, A3 and A2: 110 V AC.

General legend

A1, A2 , A3	Terminals of the control voltage
N	Amplifier
T/R	TEST/RESET button
Y1, Y2	Terminals for Remote RESET (jumpered = Auto RESET)
⇑	The double arrow indicates an operating state of the contact according to EN 60617-7 which deviates from the norm (here: Position of the contacts when control voltage is applied to terminals A1 and A2)
H1	LED "READY"
H2	LED "TRIPPED"
K	Output relay
T1, T2	Connections of the sensor loop

Legend for 3RN1022

H1	LED "READY"
H2	LED "TRIPPED"
H3	LED "ALARM"
K1	Output relay for warning threshold (LED "ALARM")
K2	Output relay for disconnect (LED "TRIPPED")
1T1 and T2	Terminals of the
2T1 and T2	sensor loop

⚠ *Important!*

Close unconnected sensor circuits.

Legend for 3RN1062

H1 to H6	LED of the tripped sensor loop
H7	LED "READY"
H8	LED "TRIPPED"
K	Output relay
1T1, 1T2 to 6T1, 6T2	Terminals of the 1st sensor loop / Terminals of the 6th sensor loop

⚠ *Important!*

Close unconnected sensor circuits.

10

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Selection and ordering data

- For monitoring the motor winding temperature using temperature-dependent resistors (PTCs, type A) that are directly installed in the motor winding by the manufacturer
- Monostable versions with closed-circuit principle, i.e. relays respond in the event of control supply voltage failure
- 3RN1013-.BW01: Bistable version, does not trigger in the event of control supply voltage failure
- All devices have PTB01 ATEX approval for dust or gas
- All devices except for 24 V AC/DC feature electrical separation
- Versions with safe isolation up to 300 V according to IEC 60947-1
- Non-volatile versions
- Versions with short-circuit and open-circuit detection in sensor circuit
- Versions with solid-state compatible, hard gold-plated contacts
- Versions for up to 6 sensor circuits
- Versions with Manual RESET, Remote RESET, Auto RESET and test button
- Terminal labeling according to EN 60947-1
- All terminals are removable
- Width 22.5 mm (45 mm on version for several sensor circuits)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals
		V		Article No. / Price per PU		Article No. / Price per PU
Compact signal evaluation units, width 22.5 mm, 1 LED						
Terminal A1 is jumpered with the root of the changeover contact						
Auto	1 CO	24 AC/DC	▶	**3RN1000-1AB00**	A	**3RN1000-2AB00**
		110 AC	A	**3RN1000-1AG00**	A	**3RN1000-2AG00**
		230 AC	▶	**3RN1000-1AM00**	A	**3RN1000-2AM00**
Standard evaluation units, width 22.5 mm, 2 LEDs						
Auto	1 NO + 1 NC	24 AC/DC	▶	**3RN1010-1CB00**	▶	**3RN1010-2CB00**
		110 AC	▶	**3RN1010-1CG00**	A	**3RN1010-2CG00**
		230 AC	▶	**3RN1010-1CM00**	A	**3RN1010-2CM00**
		24 … 240 AC/DC	▶	**3RN1010-1CW00**	A	**3RN1010-2CW00**
	2 CO	24 AC/DC	A	**3RN1010-1BB00**	A	**3RN1010-2BB00**
		110 AC	A	**3RN1010-1BG00**	C	**3RN1010-2BG00**
		230 AC	A	**3RN1010-1BM00**	A	**3RN1010-2BM00**
	2 CO, hard gold-plated	24 AC/DC	A	**3RN1010-1GB00**	C	**3RN1010-2GB00**
Manual/ Remote[1]	1 NO + 1 NC	24 AC/DC	▶	**3RN1011-1CB00**	A	**3RN1011-2CB00**
		110/230 AC	▶	**3RN1011-1CK00**	A	**3RN1011-2CK00**
Short-circuit detection for sensor circuit						
Manual/ Remote[1]	2 CO	24 AC/DC	A	**3RN1011-1BB00**	A	**3RN1011-2BB00**
		110 AC	A	**3RN1011-1BG00**	C	**3RN1011-2BG00**
		230 AC	A	**3RN1011-1BM00**	A	**3RN1011-2BM00**
	2 CO, hard gold-plated	24 AC/DC	A	**3RN1011-1GB00**	A	**3RN1011-2GB00**
Non-volatile[2]						
Manual/ Auto/ Remote	1 NO + 1 NC	24 AC/DC	▶	**3RN1012-1CB00**	A	**3RN1012-2CB00**
		110/230 AC	▶	**3RN1012-1CK00**	A	**3RN1012-2CK00**
Non-volatile[2], short-circuit detection in sensor circuit						
Manual/ Auto/ Remote	2 CO	24 AC/DC	A	**3RN1012-1BB00**	C	**3RN1012-2BB00**
		110 AC	A	**3RN1012-1BG00**	C	**3RN1012-2BG00**
		230 AC	A	**3RN1012-1BM00**	C	**3RN1012-2BM00**
	2 CO, hard gold-plated	24 AC/DC	A	**3RN1012-1GB00**	C	**3RN1012-2GB00**
Non-volatile[2], short-circuit and open-circuit detection and display in sensor circuit; wide voltage range versions with screw terminal with safe isolation						
Manual/ Auto/ Remote	2 CO	24 AC/DC	▶	**3RN1013-1BB00**	A	**3RN1013-2BB00**
		24 … 240 AC/DC	▶	**3RN1013-1BW10**	A	**3RN1013-2BW00**
	2 CO, hard gold-plated	24 … 240 AC/DC	A	**3RN1013-1GW10**	C	**3RN1013-2GW00**
For bimetal sensors, without short-circuit detection						
Manual/ Remote	2 CO	230 V AC	C	**3RN1014-1BM00**		--
Bistable evaluation units, width 22.5 mm						
Test/RESET button, non-volatile[2], short-circuit and open-circuit detection and display in sensor circuit						
Manual/ Auto/ Remote	2 CO	24 … 240 AC/DC	▶	**3RN1013-1BW01**	A	**3RN1013-2BW01**

3RN1011-1BB00

3RN1012-2CK00

3RN1013-1BB00

[1] The unit can be reset with the RESET button or by disconnecting the control supply voltage.

[2] Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RN1 Thermistor Motor Protection

For PTC sensors

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

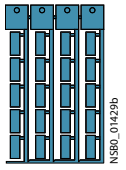
RESET	Contacts	Rated control supply voltage U_s 50/60 Hz V	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs								
Test/RESET button, non-volatile[1] Manual/Auto/Remote	1 NO + 1 CO	24 … 240 AC/DC	►	**3RN1022-1DW00**		A	**3RN1022-2DW00**	
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs								
Test/RESET button, non-volatile[1] Manual/Auto/Remote	1 NO + 1 NC	24 … 240 AC/DC	►	**3RN1062-1CW00**		A	**3RN1062-2CW00**	

3RN1062-1CW00

[1] Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

Accessories

Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels							
For 3RN1	**Unit labeling plates** For SIRIUS devices						
	20 mm x 7 mm, pastel turquoise[1]	D	**3RT1900-1SB20**		100	340 units	41B
For 3RN1	**Adhesive labels** For SIRIUS devices						
	19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
	19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs							
For 3RN1	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
Tools for opening spring-type terminals							
For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B



3RT1900-1SB20

3RP1903

3RA2908-1A

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16, "Appendix" ➞ "External Partners".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3RS17 interface converters

Interface converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. Electrical separation is then needed as a result of the different power supplies. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic disturbance and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS17 interface converters are safe up to a voltage of DC 30 V and protected against switching poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to
- IEC 61000-6-4 (basic standard for emitted interference)
- IEC 61000-6-2 (basic standard for interference immunity)

The analog signals comply with
- IEC 60381-1/2

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
Interface converters	**3 R S 1 7**								
Type of input signal		□	□						
Connection methods					□				
Type of output signal						□			
Current type and type of isolation							□		
Measuring range								□	
Example	**3 R S 1 7**	**0**	**0**	**–**	**1**	**A**	**E**	**0**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Application

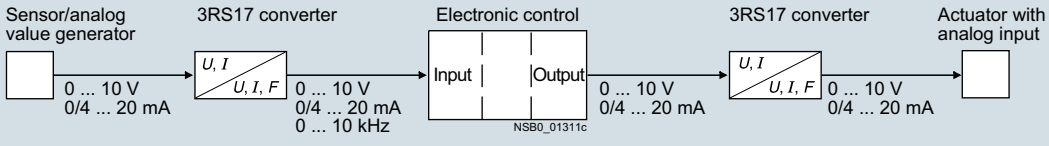
Converters are used in analog signal processing for
- Electrical separation
- Conversion of normalized and non-normalized signals
- Amplification and impedance adaptation
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs
- Potential duplication

3RS1725 manual/automatic converter

For special applications in which analog signals have to be simulated, or during plant commissioning when the actual process value is not yet available, the 3RS1725 devices feature an adjustable potentiometer for manual setpoint selection and a manual/automatic switch.

The adjustable potentiometer for the 3RS1725 devices is used to simulate analog output signals when the selector switch is set to "manual mode" and the control supply voltage is applied, without the need for an analog input signal; and the scale ranges from 0 to 100 %.

Example: When it is set for an output of 4 to 20 mA, the 0 % scale value on the potentiometer represents an output current of 4 mA and the 100 % scale value represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer setting.



Application example: Interface converter in analog signal evaluation

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Technical specifications

Active interface converters

Active interface converters provide maximum flexibility for the application by the use of an external control supply voltage. Configuration with active interface converters is extremely easy because input and output resistances and voltage drops are compensated by the auxiliary supply. They support electrical separation as well as conversion from one signal type to another or reinforcement. The load of the measured value transmitter is negligible.

Passive interface converters

Passive interface converters do not require an external control supply voltage. This advantage can only be used by current signals that are converted 1:1. Reinforcement or conversion is not possible. The converters are used for complete electrical separation of current signals and to protect the inputs and outputs. Passive separators do not operate reaction-free, i.e. any load on the output produces an equal load on the input signal. When the passive converter is to be used, the output power of the sensor and the input resistance of the analog input must be analyzed. This technique is being increasingly implemented in the case of pure current signals.

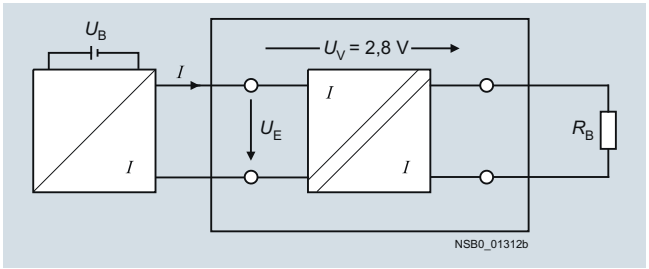
Calculation guide for passive converters

Important: Please note the following when using passive separators:

The current-driving voltage of the measuring transducer U_E must be sufficient to drive the maximum current of 20 mA over the passive separators with a voltage loss of U_V = 2.8 V and the load R_B.

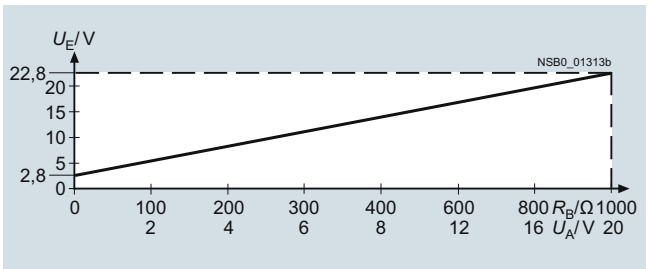
This means that:

$U_B \geq U_E = 2.8\ V + 20\ mA \times R_B$



Distribution of the voltages in the case of passive separators

The following figure shows the input voltage U_E as a function of the load R_B taking into account the voltage loss U_V. If the load is known, the y-axis shows the minimum voltage that has to be supplied by the current source in order to drive the maximum current of 20 mA over the passive separator and load.



Input voltage depending on the load at I_a = 20 mA

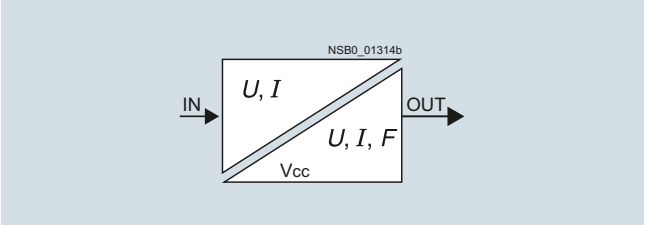
Load rating of the outputs

A maximum output load is specified for current signals. This resistance value specifies how large the input resistance of the next device connected in series can be as a result of the power of the converter.

For voltage signals, the maximum current that can be drawn from the output is the decisive factor.

2-way separation

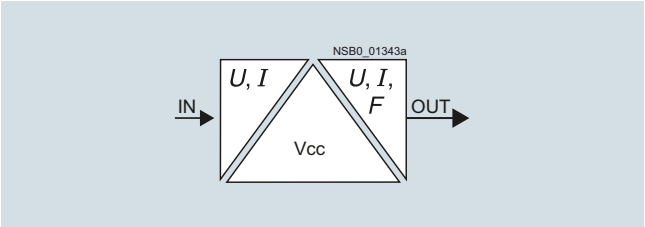
In the case of 2-way separation, the input is electrically separated from the output. The "zero potential" of the control supply voltage is the same as the reference potential for the analog output signal.



2-way separation

3-way separation

For the 3-way separation, each circuit is electrically separated from the other circuits, i. e. input, output, and control supply voltage do not have equipotential bonding.



3-way separation

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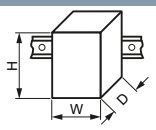
Type 3RS17			24 V AC/DC	24 ... 240 V AC/DC
General data				
Dimensions (W x H x D) • 3RS1700, 3RS1702, 3RS1703, 3RS1705-.FD, 3RS1705-.FE, 3RS1705-.KD, 3RS1720 • 3RS170.-..E00 • 3RS1705-.FW, 3RS1705-.KW, 3RS1706, 3RS1725 • 3RS1721, 3RS1722		mm mm mm mm	6.2 x 80 x 84 6.2 x 90 x 92.5 17.5 x 80 x 84 12.5 x 80 x 84	
Electrical separation of input/output			Active disconnector: 1500 V, 50 Hz, 1 min; Passive disconnector: 500 V, 50 Hz, 1 min	4000 V, 50 Hz, 1 min
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to DIN VDE 0100		V	50	300
Permissible ambient temperature • During operation		°C	-25 ... +60	
Connection type			**Screw terminals**	
• Terminal screw • Solid • Finely stranded with end sleeve		 mm^2 mm^2	M3 0.5 ... 2.5 (AWG 20 ... 14) 0.5 ... 2.5 (AWG 20 ... 14); at 3RS170.-1.E00: 0.5 ... 1.5 (AWG 20 ... 16)	
Connection type			**Spring-type terminals**	
• Solid • Finely stranded, with end sleeves acc. to DIN 46228 • Finely stranded	Enclosures IEC 529 Terminals IEC 529	mm^2 mm^2 mm^2	0.5 ... 2.5 (AWG 20 ... 14) 0.5 ... 2.5 (AWG 20 ... 14) 0.5 ... 1.5 (AWG 20 ... 16)	
Inputs				
Impedance	Voltage inputs Current inputs, active	kΩ Ω	330 100	
Input voltage max.	Voltage inputs Current inputs, active	V V	30 AC/DC 30 AC/DC	
Operating currents	Current inputs, passive	µA	100/250 (6.2 mm width)	
Voltage drop	Current inputs, passive	V	2.7 at 20 mA	
Outputs				
Internal resistance	Voltage output, 0 ... 10 V	Ω	55	
Output load	Current 0/4 ... 20 mA active, max. Current 0 ... 20 mA passive, max. Frequency, min.	Ω Ω Ω	400 1 000 at 20 mA 2 400	
Output voltage	Frequency	V	20.9	
Output current	Voltage output, 0 ... 10 V, max. Frequency, max.	mA mA	21; note the terminating resistor (> 500 Ω)! 10	
Short-circuit current	Voltage output, 0 ... 10 V Current output, 0 ... 20 mA, passive Frequency	mA mA mA	40 Corresponds to the input current 15	
Protection of the outputs			Short-circuit proof	
Max. overvoltage at output		V	30	

10

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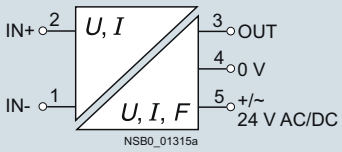
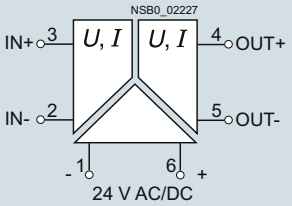
SIRIUS 3RS17 interface converters

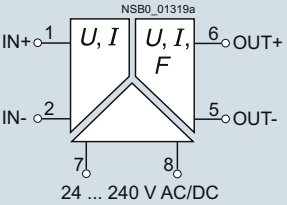
Circuit diagrams



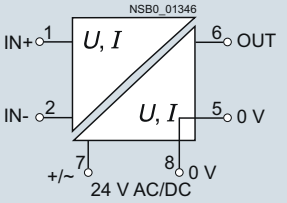
3RS1700-..D.. , 3RS1702-..D.. ,
3RS1703-..D.. , 3RS1705-..D..



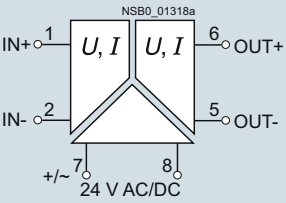
3RS1700-..E00, 3RS1702-..E00,
3RS1703-..E00, 3RS1705-..E00



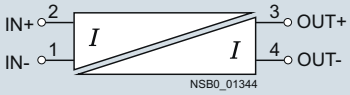
3RS170.-..W00



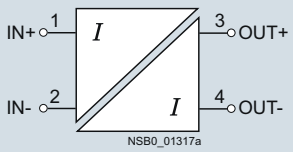
3RS1706- . FD00



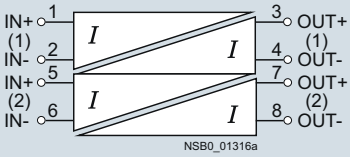
3RS1706-.FE00



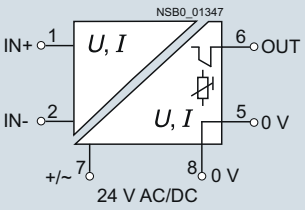
3RS1720-.ET00



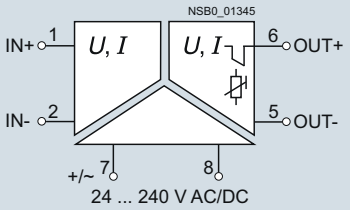
3RS1721-.ET00



3RS1722-.ET00



3RS1725-.FD00



3RS1725-.FW00

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Selection and ordering data

All transformers except the passive single interface converters have a yellow LED for displaying "Power on".

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

3RS1706-1FD00

3RS1720-1ET00

3RS1705-2FD00

3RS1705-2FE00

3RS1725-2FD00

Inputs	Outputs	Width	Rated control supply voltage U_s	Electrical separation	DT	Screw terminals	DT	Spring-type terminals
						Article No. / Price per PU		Article No. / Price per PU
		mm	V					
Single interface converters, active								
0 ... 10 V	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS1700-1AD00**	A	**3RS1700-2AD00**
				3 paths	A	**3RS1700-1AE00**	A	**3RS1700-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1700-1CD00**	A	**3RS1700-2CD00**
				3 paths	A	**3RS1700-1CE00**	A	**3RS1700-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1700-1DD00**	A	**3RS1700-2DD00**
				3 paths	A	**3RS1700-1DE00**	A	**3RS1700-2DE00**
0 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS1702-1AD00**	A	**3RS1702-2AD00**
				3 paths	A	**3RS1702-1AE00**	A	**3RS1702-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1702-1CD00**	A	**3RS1702-2CD00**
				3 paths	A	**3RS1702-1CE00**	A	**3RS1702-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1702-1DD00**	A	**3RS1702-2DD00**
				3 paths	A	**3RS1702-1DE00**	A	**3RS1702-2DE00**
4 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS1703-1AD00**	A	**3RS1703-2AD00**
				3 paths	A	**3RS1703-1AE00**	A	**3RS1703-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1703-1CD00**	A	**3RS1703-2CD00**
				3 paths	A	**3RS1703-1CE00**	A	**3RS1703-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS1703-1DD00**	A	**3RS1703-2DD00**
				3 paths	A	**3RS1703-1DE00**	A	**3RS1703-2DE00**
Switchable multi-range converters, active								
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	6.2	24 AC/DC	2 paths	A	**3RS1705-1FD00**	A	**3RS1705-2FD00**
				3 paths	A	**3RS1705-1FE00**	A	**3RS1705-2FE00**
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS1705-1FW00**	A	**3RS1705-2FW00**
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 50 Hz, 0 ... 100 Hz, 0 ... 1 kHz, 0 ... 10 kHz, selectable	6.2	24 AC/DC	2 paths	A	**3RS1705-1KD00**	A	**3RS1705-2KD00**
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS1705-1KW00**	A	**3RS1705-2KW00**
Switchable universal converters, active, with 16 input ranges and 3 output ranges								
0 ... 60 mV, 0 ... 100 mV, 0 ... 300 mV, 0 ... 500 mV, 0 ... 1 V, 0 ... 2 V, 0 ... 5 V, 0 ... 10 V, 0 ... 20 V, 2 ... 10 V, 0 ... 5 mA, 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, +/-5 mA, +/-20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS1706-1FD00**	A	**3RS1706-2FD00**
				3 paths	A	**3RS1706-1FE00**	A	**3RS1706-2FE00**
			24 ... 240 AC/DC	3 paths	A	**3RS1706-1FW00**	A	**3RS1706-2FW00**
Switchable multi-range converters, active, with manual/automatic switch and single potentiometer as manual analog signal transmitter								
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS1725-1FD00**	A	**3RS1725-2FD00**
			24 ... 240 AC/DC	3 paths	A	**3RS1725-1FW00**	A	**3RS1725-2FW00**

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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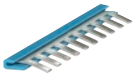
SIRIUS 3RS17 interface converters

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Inputs	Outputs	Width	Number of channels	Electrical separation	DT	Screw terminals		DT	Spring-type terminals	
						Article No.	Price per PU		Article No.	Price per PU
		mm								
Single interface converters, passive										
0/4 ... 20 mA	0/4 ... 20 mA	6.2	1	2 paths	A	**3RS1720-1ET00**		A	**3RS1720-2ET00**	
		12.5	1	2 paths	A	**3RS1721-1ET00**		A	**3RS1721-2ET00**	
			2	2 paths	A	**3RS1722-1ET00**		A	**3RS1722-2ET00**	

Accessories

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals								
3RA2908-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B
Connecting combs, blue								
 3TX7014-7AA00	For 3RS17..-..E00	**Connecting combs** For linking the same potentials, 16 terminals, current carrying capacity for infeed max. 6 A	A	**3TX7014-7AA00**		1	5 units	41H
Galvanic isolation plates								
3TX7014-7CE00	For 3RS17..-..E00	**Galvanic isolation plates**	A	**3TX7014-7CE00**		1	10 units	41H

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Safety Technology

Price groups
PG 41B, 41H, 41L, 42B, 42C, 42J, 4N1

11/2 **Introduction to safety technology**

SIRIUS 3SK1 safety relays NEW

11/10 General data

Basic units

11/16 - Standard basic units

11/17 - Advanced basic units

Expansion units

11/18 - Output expansions

11/19 - Input expansions

11/20 Accessories

SIRIUS 3TK28 safety relays

11/22 With relay enabling circuits

11/25 With electronic enabling circuits

11/28 With special functions

11/30 Accessories

SIRIUS 3RK3 Modular Safety System

11/31 General data

11/39 3RK31 central units NEW

11/40 3RK32, 3RK33 expansion modules

11/40 3RK35 interface modules

11/40 3RK36 operating and monitoring modules

11/41 Accessories

Notes:

More 3TK28 safety relays can be found

- in the Catalog Add-On IC 10 AO · 2014 in the DVD box IC 01
- in the Catalog Add-On IC 10 AO · 2014 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

Conversion tool
e.g. from 3TK28 to 3SK1 see www.siemens.com/sirius/conversion-tool

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Introduction

Overview

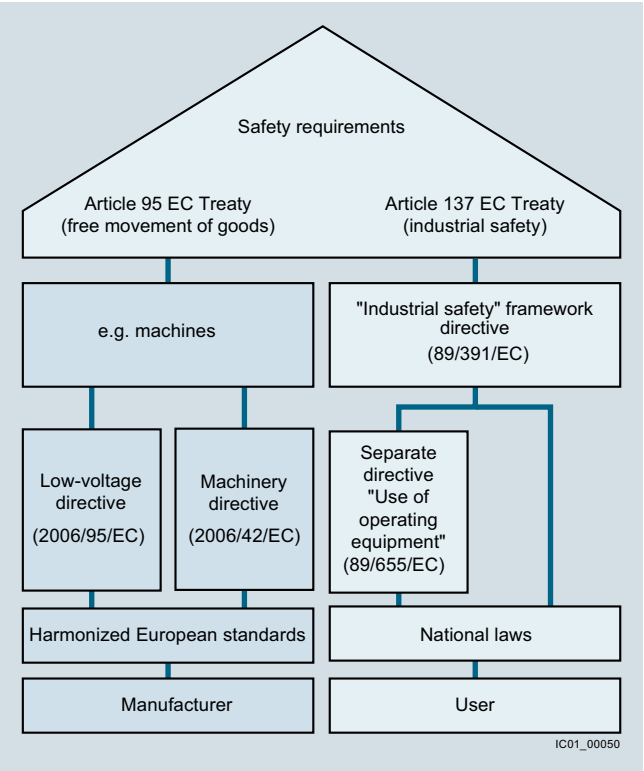
Functional safety of machines and plants – Basic safety requirements in the manufacturing industry

In order to protect people and the environment in many industrial applications in the manufacturing and process industries, machines and plants must meet the fundamental safety requirements of the EU Directives, particularly the Machinery Directive. In addition to design solutions, automation systems and components are also expected to perform safety-related tasks. This means that the life and health of people and the physical integrity of capital goods and the environment depend on the proper operation of these systems and components, on "functional safety".

With the introduction of the uniform European Single Market, national standards and regulations affecting the technical realization of machines were consistently harmonized. This involved defining basic safety requirements which address, on the one hand, machine manufacturers in terms of the free movement of goods (Article 95) and, on the other hand, machine operators in terms of industrial safety (Article 137).

The EU directives:

- define requirements which must be met by plants and their operating companies in order to protect the health of people and the quality of the environment
- include standards for health & safety at work (minimum requirements)
- define product requirements (e. g. for machines) to protect the health and safety of consumers
- differentiate between the requirements which must be met by the implementation of products in order to ensure the free movement of goods and the requirements which must be met for the use of products



Safety requirements imposed on machines and plants

Objective of the standards

It is the objective of safety technology to minimize as far as possible the hazards from technical facilities for people and the environment while restricting no more than absolutely necessary the scope of industrial production, the use of machines or the production of chemical products.

Production automation is governed in particular by the following standards:

- IEC 61508 or IEC 62061 and
- EN ISO 13849-1

The IEC 62061 standard

The IEC 62061 standard "Safety of machines - Functional safety of electrical, electronic and programmable electronic control systems" defines comprehensive requirements. It includes recommendations for the development, integration and validation of safety-related electrical, electronic and programmable electronic control systems (SRECS) for machines. With the implementation of EN 62061, for the first time, one standard covers the entire safety chain, from the sensor to the actuator. The Safety Integrity Level, or SIL for short, is defined as the application parameter for this standard.

Requirements placed on the capacity of non-electrical – e. g. hydraulic, pneumatic, or electromechanical – safety-related control elements for machines are not specified by the standard.

Safety of machines

Standard EN ISO 13849-1

EN ISO 13849-1 "Safety of machines - Safety-related components of controls - Part 1: General principles" replaced EN 954-1 at the end of 2011. It considers the complete range of safety functions with all the devices which are involved in their performance. EN ISO 13849-1 also makes a quantitative analysis of the safety functions. The standard describes how to determine the performance level (PL) for safety-relevant parts of control systems on the basis of architectures specified for the intended service life.

When several safety-relevant parts are combined to form a single complete system, the standard explains how to determine the resulting PL. It can be applied to safety-related parts of control systems (SRP/CS) and all types of machines, regardless of the technology and energy used, e.g. electrical, hydraulic, pneumatic or mechanical.

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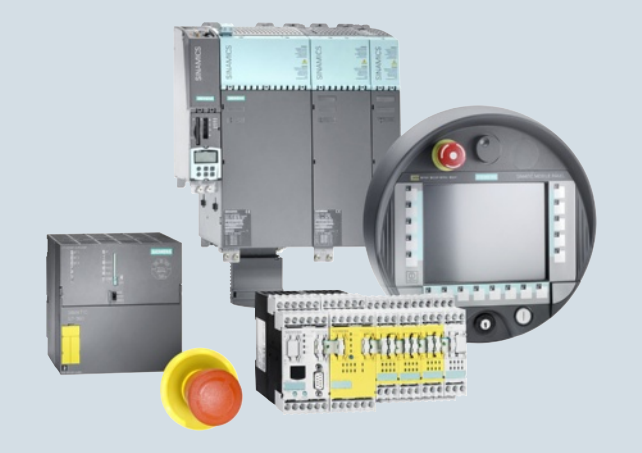
Introduction

Safety Integrated – integrated safety technology from a single source



Safety Integrated

The following applies equally for machine manufacturers and the companies which operate their machines: Maximum possible safety for personnel and machines. The solution: our Safety Integrated concept based on Totally Integrated Automation. Whether for simple safety functions or highly complex tasks – our product range offers you maximum safety.

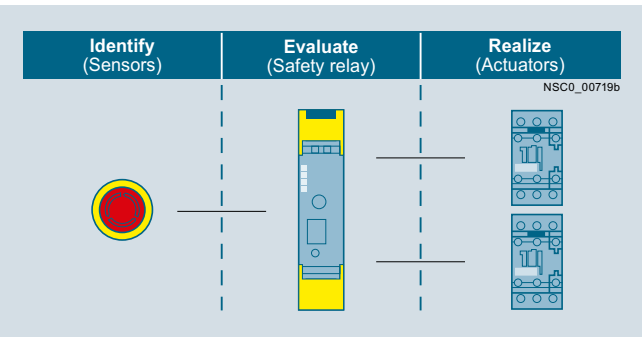
Safety Integrated is a unique, complete and consistent range of safety products covering all safety-related tasks – from detecting and evaluating to reacting, from switches and control systems to operating mechanisms (see graphic on page 11/4). Our products meet the safety requirements in force in industry, including IEC, ISO, NFPA and UL, and are certified in accordance with the latest safety standards.

All Safety Integrated products or systems can be seamlessly integrated in the standard automation environment. They are therefore particularly flexible and economical, reduce engineering time, increase plant availability and enable practice-related machine operation.

Design of a safety function

A safety chain normally comprises the following functions: identify, evaluate and realize. In detail this means:

- Identify = the detection of a safety requirement, e.g. when an EMERGENCY-STOP is actuated or someone enters a hazardous area which is protected by sensors such as light arrays or laser scanners.
- Evaluate = the detection of a safety requirement and the reliable initiation of a reaction, e.g. shutting down the enabling circuits.
- Realize = responding to a hazard, e. g. shutting down a power supply via the downstream contactors.



Design of a safety function

Our offering

As a partner for all safety requirements, we not only support you with the respective safety-related products and systems, but also consistently provide you with the most current know-how on international standards and regulations. Machine manufacturers and plant managers are offered a comprehensive training portfolio as well as services for the entire lifecycle of safety-related systems and machines.

- A uniform, certified product range
- Courses on CE marking, risk assessment and standards see www.siemens.com/sitrain-safetyintegrated
- Worldwide service and support see http://support.automation.siemens.com
- More information see www.siemens.com/safety-integrated

Safety Evaluation Tool

Safety Evaluation Tool

The Safety Evaluation Tool for the standards IEC 62061 and EN ISO 13849-1 guides you quickly and safely through all the calculation steps in implementing safety functions on a machine, from definition of the safety system structure through to selection of the components. all the way to determination of the achieved safety integrity level (SIL/PL). You receive the results as a standards-compliant report that can be integrated in the documentation as proof of safety.

Benefits of the Safety Evaluation Tool to you:

- Less time needed to evaluate the safety functions
- Calculation in accordance with current standards
- User-friendly archiving: Projects can be saved and called up again as required
- Fast and easy handling: comprehensive, predefined libraries of examples
- Fast access to product data
- Selection aids for determining variables and specifying the system design
- Helpful documents which can be downloaded as PDFs
- The online tool can be used free of charge – you pay only the usual costs for accessing the Internet

For more information, see www.siemens.com/safety-evaluation-tool.

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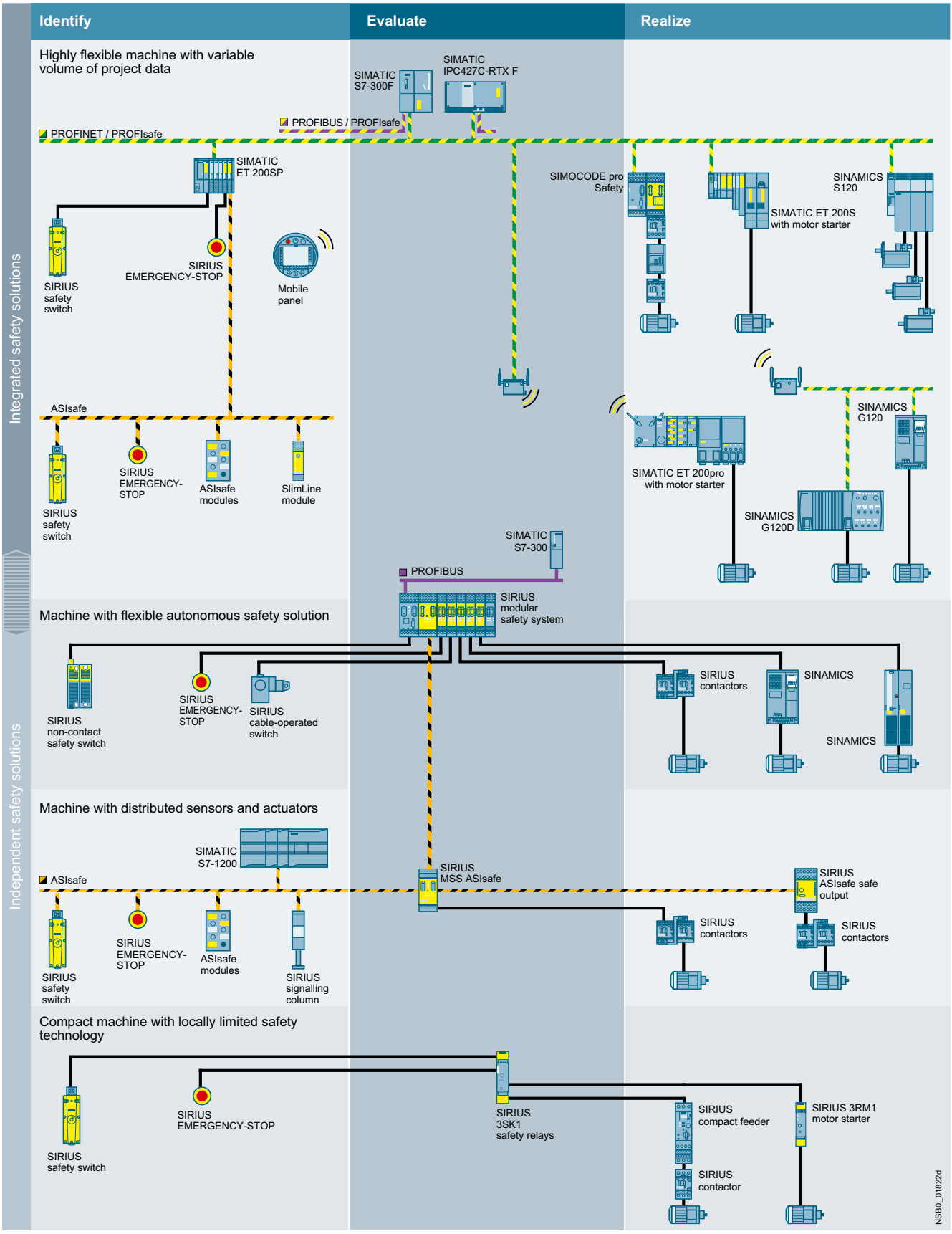
Introduction



Safety Integrated

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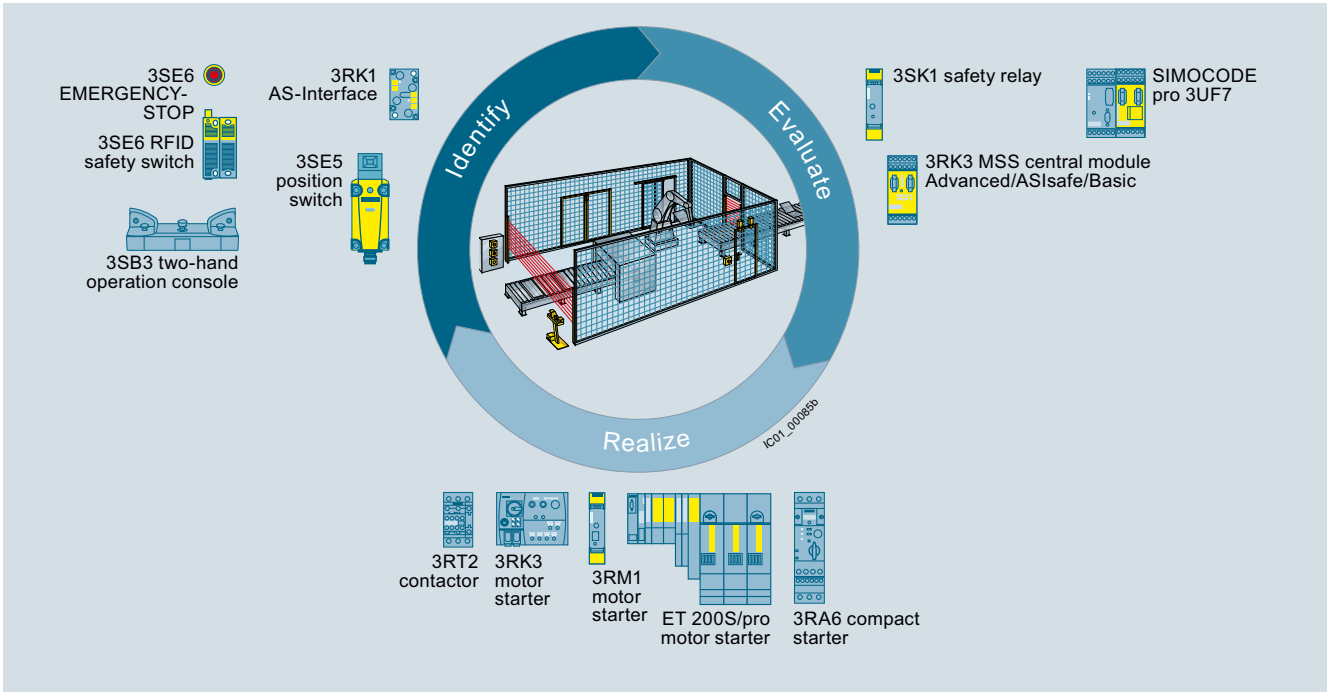
SIRIUS Safety Integrated

Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept. Whether for fail-safe identifying, commanding and signaling, monitoring and evaluating or starting and reliable shutting down - our SIRIUS Safety Integrated controls are experts at performing safety tasks in your plant.

SIRIUS Safety Integrated uses fail-safe communication using standard fieldbus systems, e.g. ASIsafe via AS-Interface and PROFIsafe via PROFIBUS and PROFINET, to solve even networked safety tasks of greater complexity. This opens the door for flexible safety solutions for compact machines or large-scale plants.



SIRIUS Safety Integrated

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Introduction

		Article No.	Page
SIRIUS Safety Integrated			
3SK111.	**3SK1 safety relays** • Key modules of a consistent and cost-effective safety chain • Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508) • Suitable for use all over the world through compliance with all globally established certifications		
	Standard basic units • Simple, compact devices for all important requirements for monitoring safety sensors and actuators	**3SK111**	11/16
3SK112.	Advanced basic units • Multi-functional series of safety relays with relay enabling circuits, semiconductor outputs, or time-delayed outputs for: - EMERGENCY-STOP monitoring - Protective door monitoring - Monitoring of non-floating sensors such as light arrays, laser scanners, etc. - Monitoring of two-hand operation consoles - Monitoring of equivalent (NC/NC) and antivalent (NO/NC) sensors • Setting by means of DIP switch	**3SK112**	11/17
3SK121.	Expansion units • The 3RO and 4RO output expansions can be used for Standard and Advanced basic units • Input expansion for Advanced basic units • Power supply for Advanced basic units • Integration of 3RM1 motor starters possible and simple integration of a main circuit component in a system configuration of the safety relays. There is no need for complex wiring between the safety evaluation unit and the actuator. • Expansion of the Standard device series by means of wiring • Expansion of the Advanced device series by means of wiring or without wiring outlay by means of 3ZY12 device connectors	**3SK121, 3SK122, 3SK123**	11/18, 11/19
3TK2826-2BB40	**3TK28 safety relays** • Key modules of a consistent and cost-effective safety chain • Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508) • Suitable for use all over the world through compliance with all globally established certifications		
	Safety relays with relay enabling circuits	**3TK2826**	11/22
	• Different voltages can be switched through the floating contacts • Inductive currents up to 5 A can be switched with relay contacts	**3TK2827, 3TK2828, 3TK283**	IC 10 AO
3TK2845-1HB40	Safety relays with electronic enabling circuits	**3TK2845**	11/25
	• Wear-free • Suitable for operation in fast switching applications • Insensitive to vibrations and dirt • Good electrical endurance	**3TK2840, 3TK2841, 3TK2842**	IC 10 AO
	Safety relays with contactor relay enabling circuits • Different voltages can be switched through the floating contacts • Inductive currents up to 10 A can be switched with contactor relay enabling circuits • High mechanical and electrical endurance	**3TK285**	IC 10 AO
3TK2810-1BA41	Safety relays with special functions Safe standstill monitoring with 3TK2810-0 • Monitoring without external sensors • Universal use in applications possible Safe speed monitoring with 3TK2810-1 • Monitoring of speed with encoders and proximity switches possible • Easy diagnostics options via display • Integrated monitoring of a spring-type interlocking protective door	**3TK2810**	11/28

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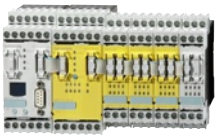
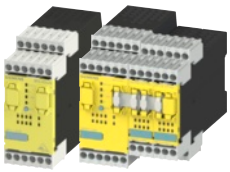
		Article No.	Page
SIRIUS Safety Integrated (continued)			
 3RK3	**3RK3 Modular Safety System (MSS)** • Freely configurable modular safety relays • Safety-related applications up to PL e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be implemented • High flexibility and planning reliability thanks to a modular design • More space in the control cabinet and lower costs thanks to highly modular project data • More functionality and time savings thanks to a software-configurable system • Comprehensive diagnostics on-site with the MSS ES software • Improved plant diagnostics and higher plant availability thanks to exchange of data using PROFIBUS • Automatic creation of plant documentation with regard to MSS and software parameterization • Up to 9 expansion modules can be plugged in for standard I/Os and fail-safe I/Os – optionally electronic or relay-based fail-safe outputs • Graphic parameterization of the logic, online diagnostics, and automatic creation of documentation using MSS ES • Consistent further development of the safety monitors with the Advanced and ASIsafe central units of the SIRIUS 3RK3 Modular Safety System (MSS) Additionally with AS-Interface (ASIsafe): • Modularly expandable and freely configurable safety monitor • With MSS Advanced/ASIsafe up to 50 two-channel, fail-safe outputs (38 central outputs and 12 outputs via AS-i) • Safety-related and standard communication between multiple MSS devices and/or safety monitors • Distributed detection of sensors and disconnection of actuators through AS-Interface • Much more space is available without wiring outlay using AS-Interface • Ready-to-use function blocks (e.g. muting or protective door with tumbler) can also be used on AS-i	**3RK3**	11/31
 3RK3 MSS ASIsafe			
ASi F-Link	**AS-i F-Link** • Monitoring the inputs of safety-related digital AS-i slaves (ASIsafe slaves) and forwarding of data through PROFIsafe • Supports all AS-Interface master functions according to the AS-Interface Specification V3.0 • Local diagnostics using LEDs and display with control keys • Programming with Distributed Safety Version V5.4 SP1 or higher for SIMATIC S7-300F/416F • Programming with SAFETY INTEGRATED "SI-Basic" or "SI-COMFORT NCU" for SINUMERIK 840D pl/sl	**3RK3**	Ch. 2
K45F	**AS-Interface safety modules** • Complete portfolio of ASIsafe modules • Up to four safe inputs per module • Up to one safe output per module Advantage: Easy integration of safe signals in the control cabinet or in the field up to Category 4, PI e, SIL 3	**3RK1**	Ch. 2
3RM1	**3RM1 motor starters** • Motor starters for safety-related shutdown as 3RM11 direct-on-line starters or 3RM13 reversing starters • Compact devices with 22.5 mm width comprising combinations of relay contacts and power semiconductors (hybrid technology) and a electronic overload relay • For switching three-phase motors up to 3 kW (at 400 V) and resistive loads up to max. 10 A at AC voltages up to 500 V under normal operating conditions • Safety-related shutdown according to PL e or SIL 3 by shutting down the control supply voltage possible without additional devices in the main circuit • Combination with 3SK1 safety relay through conventional wiring or 3ZY12 device connectors • Simple wiring and collective shutdown with device connectors in assemblies; there is no further need for complex looping of the connecting cables.	**3RM1**	Ch. 8

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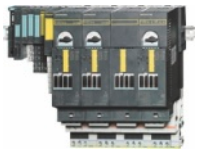
		Article No.	Page
SIRIUS Safety Integrated (continued)			
 ET 200S Safety	**ET 200S Safety Motor Starter Solutions** The ET 200S Safety Motor Starter Solutions comprise: • Safety modules • Standard motor starters • High Feature motor starters • Fail-safe motor starters ET 200S Safety Motor Starter Solutions Local Safety Motor Starter Solutions Local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system. ET 200S Safety Motor Starter Solutions PROFIsafe Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.	**3RK1**	Ch. 8
ET 200pro Safety	**ET 200pro Safety Motor Starter Solutions** The ET 200pro Safety Motor Starter Solutions comprise: • PROFIsafe modules • Safety repair switch modules • Disconnecting modules • Standard motor starters • High Feature motor starters ET 200pro Safety Motor Starter Solutions Local Safety Motor Starter Solutions Local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system. ET 200pro Safety Motor Starter Solutions PROFIsafe Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.	**3RK1**	Ch. 9
3UF7	**SIMOCODE pro motor management and control devices** • Flexible, modular motor management system for motors with constant speeds in the low-voltage range • Provides an intelligent interface between the higher-level automation system and the motor feeder • Multi-functional, electronic full motor protection which is independent of the automation system • Integrated control functions for the motor control • Detailed operating, service and diagnostics data • Open communication through PROFIBUS DP and PROFINET • Safety relay function for the fail-safe disconnection of motors up to SIL 3 (IEC 61508/IEC 62061) or PL e with Category 4 (EN ISO 13849-1) Fail-safe digital modules • DM-F Local for direct assignment between a fail-safe hardware shutdown signal and a motor feeder • DM-F PROFIsafe for when a fail-safe controller (F-CPU) creates the fail-safe signal for the disconnection	**3UF7**	Ch. 10
3SE63	**Non-contact RFID safety switches** • Long service life due to non-contact switching • Only one switch required for the maximum safety level PL e or SIL 3 according to EN ISO 13849-1 and IEC 61508 • Safety circuits connected in series, with up to 31 devices • Tamper protection better than with mechanical safety switches thanks to switches and actuators with individual coding • Version with optional 18 N magnetic catch • LED status indication including threshold indication for door displacement • Degree of protection up to IP69 K and resistance to cleaning products • Larger switching displacement than mechanical switches; offers better mounting tolerance and sagging tolerance of the protective door • No time-consuming mechanical installation needed, resulting in shorter installation and adjustment times and reduced maintenance	**3SE63**	Ch. 12

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		Article No.	Page
SIRIUS Safety Integrated (continued)			
3SE51	**Mechanical position switches** • Easy assembly thanks to modular design • Solid, rugged design • Special versions are easily generated and quickly available, also in combination with standard modules • With a 3SE51/3SE52 position switch it is possible to achieve Category 2 according to EN ISO 13849-1 or SIL 1 according to IEC 61508 • Categories 3 and 4 can be achieved by using a second 3SE5 1/3SE5 3 position switch	**3SE51, 3SE52**	Ch. 12
3SE53	**Mechanical safety switches** • With separate actuator, hinge switch, or separate actuator and tumbler • With a position switch it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508 • Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using a second 3SE51 or 3SE52 position switch • Version in various sizes made of metal or plastic • Integrated ASIsafe electronics for all enclosure designs	**3SE51, 3SE52, 3SE53**	Ch.12
3SB3/3SF5 3SB3	**Command devices** • Using a special F adapter, EMERGENCY-STOP devices according to ISO 13850 can be directly connected through the standard AS-Interface with safety-related communication. This F adapter is snapped from the rear onto the EMERGENCY-STOP device, enabling maximum performance level "e" according to EN ISO 13849-1 or SIL 3 according to IEC 62061 to be achieved. • EMERGENCY-STOP devices for disconnecting plants in an emergency situation • With positive latching function according to EN ISO 13850 and performance level "e" according to EN ISO 13849-1 or SIL 3 according to IEC 62061 • Various mushroom diameters, with lock, in plastic/metal, as individual or complete units and in combination with 3SB3 enclosure or two-hand operation console	**3SF5** **3SB3**	Ch. 13 Ch. 13
3SE7	**Cable-operated switches** • Control functions and EMERGENCY-STOP always within reach • More safety over long distances of up to 2 x 75 m length • Easy release • Fail-safe applications with SIRIUS Safety Integrated • Status display directly on the switch • Signal display for long distances in innovative LED technology with visibility over 50 m • Cable-operated switches with latching according to ISO 13850 (EN 418) and full EMERGENCY-STOP function with positive-opening contacts • Quick and safe mounting using uniform mounting accessories • Versions with 1 NO/2 NC with yellow lid	**3SE7**	Ch. 13

Connection methods

The safety relays and the Modular Safety System are available with screw or spring-type terminals.

	Screw terminals
	Spring-type terminals (push-in)
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Push-in connection method

Push-in connections are a form of spring-type terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-type terminals, a screwdriver (with 3.0 x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire fine-stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

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General data

Overview

SIRIUS 3SK1 safety relays

SIRIUS 3SK1 safety relays are the key elements of a consistent, cost-effective safety chain. Whether you need EMERGENCY-STOP disconnection, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – with SIRIUS safety relays of width 22.5 mm every safety application can be implemented to optimum effect in terms of engineering and price.

The following safety-related functions are available:

- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct device function of the safety relay
- Monitoring the actuators in the shutdown circuit
- Safety-related disconnection when dangers arise

SIRIUS 3SK1 safety relays are permitted for applications up to SIL 3 (IEC 61508/IEC 62061) or PL e (EN ISO 13849-1).

SIRIUS 3SK1 safety relays stand out on account of their flexibility in both parameterization and system configurations with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- Standard basic units
- Advanced basic units
- Output expansions
- Input expansions
- Accessories

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

However, the 3SK1 Advanced basic units also offer the following:

- Universal application possibilities thanks to multifunctionality
- Time-delayed outputs
- Expansion of inputs and outputs

In the case of Advanced basic units, the 3ZY1 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.

The 3SK1 Standard and Advanced series are a high-quality replacement for the 3TK28 safety relays. In their narrower design, and equipped with greater functionality, they can replace every 3TK28 device. The only exceptions are devices with special functions, such as 3TK2826, 3TK2845 and the 3TK2810 devices.

Note:

Conversion table from 3TK28 to 3SK1 see page 11/12 or conversion tool e.g. from 3TK28 to 3SK1 see www.siemens.com/sirius/conversion-tool.

Overview of functions of the 3SK1 series

Type	Standard basic units		Advanced basic units	
	Relay enabling circuits	Electronic enabling circuits	Relay enabling circuits	Electronic enabling circuits
Sensors				
• Mechanical	✓	✓	✓	✓
• Single-ended	✓[2]	✓	✓	✓
• Antivalent	--	--	✓	✓
• Expandable	--	✓ by means of cascading	✓	✓
Parameters				
• Start (auto/monitored)	✓	✓	✓	✓
• Sensor connection 2 x 1-channel/ 1 x 2-channel	✓ by means of wiring	✓	✓	✓
• Cross-circuit detection	✓ by means of wiring	✓	✓	✓
• Start test ON/OFF	--	✓	✓	✓
• Monitoring of two-hand operation consoles	--	--	✓	✓
Enabling circuits				
• Instantaneous	✓	✓	✓	✓
• Time-delayed	--	--	✓	✓
• Expandable with relay enabling circuits	✓ by means of wiring	✓ by means of wiring	✓	✓
• Device connectors	--	--	✓	✓
Rated control supply voltage				
• 24 V DC	✓[3]	✓	✓	✓
• 115 ... 240 V AC/DC	✓	--	✓[1]	✓[1]

✓ Available

-- Not available

[1] Possible using 3SK1230 power supply via device connector.

[2] 24 V basic units only.

[3] 24 V AC/DC

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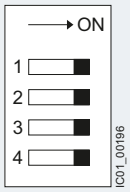
3SK112 and 3SK1112 safety relays with DIP switches

The 3SK112 and 3SK1112 safety relays are configurable safety relays. They are used as evaluation units for typical safety chains (identify, evaluate, realize). A number of functions can be set using the DIP switches on the front. 3SK112 and 3SK1112 are therefore universally applicable.

OFF	Schematic	DIP switch No.	ON
Sensor input Autostart		1	Sensor input Monitored start
Without crossover monitoring		2	With crossover monitoring
2 x 1-channel sensor connection		3	1 x 2-channel sensor connection
With start test		4	Without start test

Number of safe outputs

	Type and number of enabling circuits				Signaling circuits	Rear panel connection
	Relays		Electronic			
	Instantaneous	Time-delayed	Instantaneous	Time-delayed		
3SK1 Standard basic units						
3SK1111-.A..0	3	--	--	--	1	--
3SK1112-.BB40	--	--	2	--	1	--
3SK1 Advanced basic units						
3SK1120-.AB40	--	--	1	--	--	✓
3SK1121-.AB40	3	--	--	--	1	✓
3SK1121-.CB4.	2	2	--	--	--	✓
3SK1122-.AB40	--	--	3	--	1	✓
3SK1122-.CB4.	--	--	2	2	--	✓
3SK1 output expansions						
• 4RO						
3SK1211	4	--	--	--	1[2]	✓[1]
• 3RO						
3SK1213	3	--	--	--	1[2]	✓[1]

✓ Available

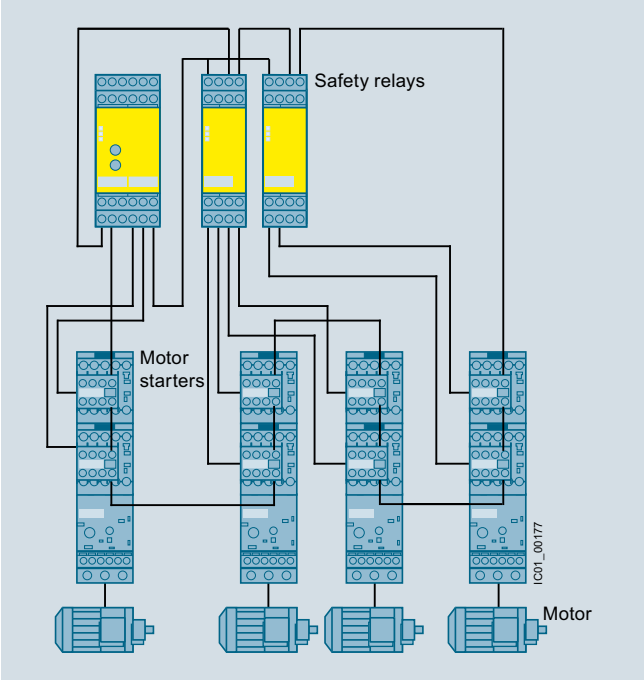
-- Not available

[1] For 24 V DC.

[2] Feedback circuit

Can be expanded by adding the 3RM1 motor starter

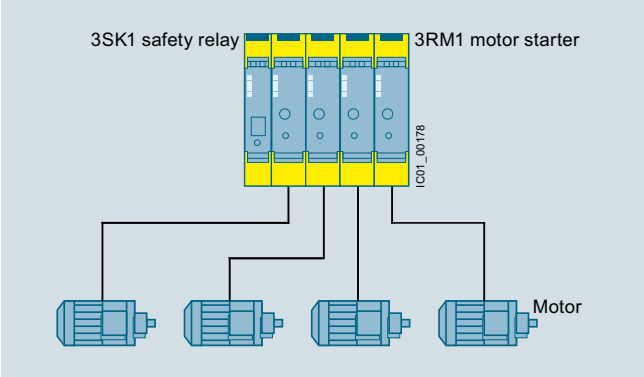
With previous safety relay and motor starter designs, a huge amount of wiring was required to monitor the motor starters in safety applications.



Traditional system design

With the integration of the SIRIUS 3RM1 motor starter into the SIRIUS 3SK1 safety relay system family, this wiring has been minimized for the first time.

Motors up to 3 kW can be easily integrated into the safety relay system using SIRIUS 3ZY1 device connectors, without having to run a cable between the evaluation unit and the motor starter.



System design using 3SK1 and 3RM1

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General data

Code conversion table

The table below lists the existing 3TK28 article numbers with the corresponding 3SK1 article numbers.

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2820		
3TK2820-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2820-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2820-1CB30	3SK1111-1AB30	3SK1121-1AB40
3TK2820-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2820-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2820-2CB30	3SK1111-2AB30	3SK1121-2AB40
3TK2821		
3TK2821-1CB30	3SK1111-1AB30	3SK1121-1AB40
3TK2821-2CB30	3SK1111-2AB30	3SK1121-2AB40
3TK2822		
3TK2822-1CB30	3SK1111-1AB30	3SK1121-1AB40
3TK2822-2CB30	3SK1111-2AB30	3SK1121-2AB40
3TK2823		
3TK2823-1CB30	3SK1111-1AB30	3SK1121-1AB40
3TK2823-2CB30	3SK1111-2AB30	3SK1121-2AB40
3TK2824		
3TK2824-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2824-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2824-1BB40	3SK1111-1AB30	3SK1121-1AB40
3TK2824-1CB30	3SK1111-1AB30	3SK1121-1AB40
3TK2824-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2824-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2824-2BB40	3SK1111-2AB30	3SK1121-2AB40
3TK2824-2CB30	3SK1111-2AB30	3SK1121-2AB40
3TK2825		
3TK2825-1AB20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2825-1AJ20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2825-1AL20	3SK1111-1AW20	3SK1121-1AB40 + 3SK1230-1AW20
3TK2825-1BB40	3SK1111-1AB30	3SK1121-1AB40
3TK2825-2AB20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2825-2AJ20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2825-2AL20	3SK1111-2AW20	3SK1121-2AB40 + 3SK1230-2AW20
3TK2825-2BB40	3SK1111-2AB30	3SK1121-2AB40
3TK2827		
3TK2827-1AB20	--	--
3TK2827-1AB21	--	--
3TK2827-1AJ20	--	3SK1121-1CB42 + 3SK1230-1AW20
3TK2827-1AJ21	--	3SK1121-1CB41 + 3SK1230-1AW20
3TK2827-1AL20	--	3SK1121-1CB42 + 3SK1230-1AW20
3TK2827-1AL21	--	3SK1121-1CB41 + 3SK1230-1AW20
3TK2827-1BB40	--	3SK1121-1CB42
3TK2827-1BB41	--	3SK1121-1CB41
3TK2827-2AB20	--	--
3TK2827-2AB21	--	--
3TK2827-2AJ20	--	3SK1121-2CB42 + 3SK1230-2AW20
3TK2827-2AJ21	--	3SK1121-2CB41 + 3SK1230-2AW20
3TK2827-2AL20	--	3SK1121-2CB42 + 3SK1230-2AW20
3TK2827-2AL21	--	3SK1121-2CB41 + 3SK1230-2AW20
3TK2827-2BB40	--	3SK1121-2CB42
3TK2827-2BB41	--	3SK1121-2CB41

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2828		
3TK2828-1AB20	--	--
3TK2828-1AB21	--	--
3TK2828-1AJ20	--	3SK1121-1CB42 + 3SK1230-1AW20
3TK2828-1AJ21	--	3SK1121-1CB41 + 3SK1230-1AW20
3TK2828-1AL20	--	3SK1121-1CB42 + 3SK1230-1AW20
3TK2828-1AL21	--	3SK1121-1CB41 + 3SK1230-1AW20
3TK2828-1BB40	--	3SK1121-1CB42
3TK2828-1BB41	--	3SK1121-1CB41
3TK2828-2AB20	--	--
3TK2828-2AB21	--	--
3TK2828-2AJ20	--	3SK1121-2CB42 + 3SK1230-2AW20
3TK2828-2AJ21	--	3SK1121-2CB41 + 3SK1230-2AW20
3TK2828-2AL20	--	3SK1121-2CB42 + 3SK1230-2AW20
3TK2828-2AL21	--	3SK1121-2CB41 + 3SK1230-2AW20
3TK2828-2BB40	--	3SK1121-2CB42
3TK2830		
3TK2830-1AJ20	3SK1211-1BW20	3SK1211-1BB40
3TK2830-1AL20	3SK1211-1BW20	3SK1211-1BB40
3TK2830-1CB30	3SK1211-1BB40	3SK1211-1BB40
3TK2830-2AJ20	3SK1211-2BW20	3SK1211-2BB40
3TK2830-2AL20	3SK1211-2BW20	3SK1211-2BB40
3TK2830-2CB30	3SK1211-2BB40	3SK1211-2BB40
3TK2834		
3TK2834-1AB20	--	--
3TK2834-1AJ20	--	3SK1121-1AB40 + 3SK1230-1AW20
3TK2834-1AL20	--	3SK1121-1AB40 + 3SK1230-1AW20
3TK2834-1BB40	--	3SK1121-1AB40
3TK2834-2AB20	--	--
3TK2834-2AJ20	--	3SK1121-2AB40 + 3SK1230-2AW20
3TK2834-2AL20	--	3SK1121-2AB40 + 3SK1230-2AW20
3TK2834-2BB40	--	3SK1121-2AB40
3TK2840		
3TK2840-1BB40	3SK1112-1BB40	3SK1122-1AB40
3TK2840-2BB40	3SK1112-2BB40	3SK1122-2AB40
3TK2841		
3TK2841-1BB40	3SK1112-1BB40	3SK1122-1AB40
3TK2841-2BB40	3SK1112-2BB40	3SK1122-2AB40
3TK2842		
3TK2842-1BB41	--	3SK1122-1CB41
3TK2842-1BB42	--	3SK1122-1CB42
3TK2842-1BB44	--	3SK1122-1CB44
3TK2842-2BB41	--	3SK1122-2CB41
3TK2842-2BB42	--	3SK1122-2CB42
3TK2842-2BB44	--	3SK1122-2CB44
3TK2850		
3TK2850-1AJ20	3SK1111-1AW20 + 3SK1213-1AJ20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2850-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2850-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1220-1AB40 + 3SK1213-1AB40
3TK2850-2AJ20	3SK1111-2AW20 + 3SK1213-2AJ20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2850-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2850-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40

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Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2851		
3TK2851-1AJ20	3SK1111-1AW20 + 3SK1213-1AJ20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2851-2AJ20	3SK1111-2AW20 + 3SK1213-2AJ20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2851-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2851-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40
3TK2852		
3TK2852-1AL20	3SK1111-1AW20 + 3SK1213-1AL20	3SK1120-1AB40 + 3SK1213-1AB40
3TK2852-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2852-2AL20	3SK1111-2AW20 + 3SK1213-2AL20	3SK1120-2AB40 + 3SK1213-2AB40
3TK2852-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40

Article number 3TK28 basic units	Article number 3SK1 Standard basic units	Article number 3SK1 Advanced basic units
3TK2853		
3TK2853-1BB40	3SK1111-1AB30 + 3SK1213-1AB40	3SK1120-1AB40 + 3SK1213-1AB40
3TK2853-2BB40	3SK1111-2AB30 + 3SK1213-2AB40	3SK1120-2AB40 + 3SK1213-2AB40
3TK2856		
3TK2856-1BB40	3SK1213-1AB40	3SK1213-1AB40
3TK2856-2BB40	3SK1213-2AB40	3SK1213-2AB40
3TK2857		
3TK2857-1BB41	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-1BB42	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-1BB44	--	3SK1213-1AB40 (delay as for basic unit)
3TK2857-2BB41	--	3SK1213-2AB40 (delay as for basic unit)
3TK2857-2BB42	--	3SK1213-2AB40 (delay as for basic unit)
3TK2857-2BB44	--	3SK1213-2AB40 (delay as for basic unit)

Note:

Conversion tool e.g. 3TK28 to 3SK1 see www.siemens.com/sirius/conversion-tool.

Article No. scheme

Digit of the article No.	1st - 3rd ❒❒❒	4th ❒	5th ❒	6th ❒	7th ❒	–	8th ❒	9th A	10th ❒	11th ❒	12th ❒
Safety relays	**3SK**										
Generation		❒									
Device version			❒								
Device series				❒							
Type of outputs					❒						
Connection type							❒				
Rated control supply voltage									❒		
Type of rated control supply voltage										❒	
Time delay											❒
Example	**3SK**	**1**	**1**	**2**	**1**	**–**	**1**	**A**	**B**	**4**	**0**

Note:

The article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

General

- Approved for all safety applications because of its compliance with the highest safety requirements (SIL 3 and PL e)
- Universally usable thanks to adjustable parameters
- Usable worldwide thanks to globally valid certificates
- Compact SIRIUS design
- Device connectors with standard rail mounting for flexible connectability and expandability
- Removable terminals for greater plant availability
- Yellow terminal covers clearly identify the device as a safety component
- Sensor cable length up to 2 000 m allows it to be used in large-scale plants

Relay outputs

- Different voltages can be switched through the floating contacts
- Higher currents can be switched with relay contacts

Electronic outputs

- Wear-free
- Suitable for operation in fast switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

Power outputs (3SK1213 output expansion)

- Different voltages can be switched through the floating contacts
- The power relay contacts allow currents of up to 10 A AC-15/DC-13 to be connected.
- High mechanical and electrical endurance
- Protective separation between enabling circuits and between enabling circuits and electronics

Can be expanded by adding the 3RM1 motor starter

SIRIUS 3SK1 safety relays are ideal for combining with the 3RM1 motor starters.

Combinations are made by means of

- SIRIUS device connectors (3SK1 Advanced) or
- conventional wiring (3SK1 Standard and Advanced).

This makes collective shutdown very easy in assemblies. The wiring, and ultimately the shutting down of the control supply voltage for the expansion components in EMERGENCY-STOP situations, is performed via the device connector. There is no further need for complex looping of the connecting cables between the safety relay and the motor starters.

The 3RM1 motor starter combines the benefits of semiconductor technology and relay technology. This combination is also known as hybrid technology.

The hybrid technology in the motor starter is characterized by the following features:

- The inrush current in the case of motorized loads is conducted briefly via the semiconductors. Advantages include protection of the relay contacts and a long service life due to low wear.
- The uninterrupted current is conducted via relay contacts. Advantages include lower heat losses compared with the semiconductor.
- Shutdown is implemented again via the semiconductor. The contacts are only slightly exposed to arcs, and this results in a longer service life.
- Integrated overload protection

Note:

SIRIUS 3RM1 motor starters, see Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet"→ "SIRIUS 3RM1 motor starters".

3ZY1 device connectors

Using 3ZY1 device connectors to combine devices reduces the time required to configure and wire the components. At the same time errors are avoided during wiring, and this considerably reduces the testing required for the fully-assembled application.

Microprocessor systems

- Flexible use thanks to many different integrated functions
- Easy parameterization using DIP switches on the front
- High functional reliability based on extensive monitoring functions
- Operated by the machine control system
- Also connection of non-contact sensors (light arrays, light barriers etc.)

Configuration and stock keeping

Variable setting options by means of DIP switches, a wide voltage range and a special power supply unit reduce the cost of keeping stocks and the considerations involved in configuration where the evaluation units to be selected are concerned.

Spring-type terminal with push-in functionality

Push-in connections are a form of spring-type terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-type terminals, a screwdriver (with 3.0 mm x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire fine-stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-type terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

Application

SIRIUS 3SK1 safety relays are used mainly in autonomous safety applications which are not connected to a safety-related bus system. Their function here is to evaluate the sensors and the safety-related shutdown of hazards. Also they check and monitor the sensors, actuators and safety-related functions of the safety relay.

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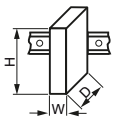
Technical specifications

Type			3SK1111, 3SK1211	3SK1112	3SK1120	3SK1121	3SK1122	3SK1213	3SK1220
Dimensions • Width • Height • Depth		 mm mm mm	 22.5 100 121.6	 22.5 100 91.6	 17.5 100 121.6	 22.5 100 121.6	 22.5 100 121.6	 90 100 121.6	 17.5 100 121.6
General data									
Ambient temperature • During operation • During storage		 °C °C	 -25 … +60 -40 … +80						
Installation altitude at height above sea level maximum		m	2 000						
Air pressure According to SN 31205		hPa	900 … 1 060						
Shock resistance			10 g/11 ms					5 g/10 ms	10 g/11 ms
Vibration resistance acc. to IEC 60068-2-6			5 ... 500 Hz: 0.75 mm						
IP degree of protection of the enclosure			IP20						
Touch protection against electric shock			Finger-safe						
Insulation voltage rated value		V	300	50		300	50	300	50
Rated impulse withstand voltage		V	4 000	500		4 000	500	4 000	800
Safety integrity level (SIL) According to IEC 61508			SIL 3						
Performance level(PL) According to ISO 13849-1			e						
T1 value for proof test interval or service duration According to IEC 61508		a	20						
Electromagnetic compatibility (EMC) EMC emitted interference			IEC 60947-5-1, class B	IEC 60947-5-1, class A				IEC 60947-5-1, class B	IEC 60947-5-1, class A
Certificate of suitability • UL certification • TÜV approval			 Yes Yes						

Type			3SK1111, 3SK1121-.AB40, 3SK1211	3SK1112, 3SK1122	3SK1120	3SK1121-.CB4.	3SK1213
Switching capacity							
Switching capacity current of the NO contacts of the relay outputs • At DC-13 at 24 V • At AC-15 at 230 V		 A A	 5 5	 -- --		 3 3	 6 10
Switching capacity current of the semiconductor outputs • At DC-13 at 24 V		A	--	2	0.5	--	

Notes:

3SK1230 technical specifications see manual "3SK1 safety relays", http://support.automation.siemens.com/WW/view/en/67585885.

PFHd value of all 3SK1 devices < 4 x 10^{-9}.

PFD value of all 3SK1 devices < 7 x 10^{-6}.

To view the exact values, see manual "3SK1 safety relays", http://support.automation.siemens.com/WW/view/en/67585885.

More information

Manual "3SK1 safety relays" see http://support.automation.siemens.com/WW/view/en/67585885

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Standard basic units

Overview

3SK111 Standard basic units

The 3SK111 Standard basic units are characterized by simple, variable functionality. These devices are recommended for safety functions requiring only a few sensors and a small number of outputs on the safety relay.

Note:

Overview of the number of enabling and signaling circuits see table "Number of safe outputs" page 11/11.

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 UNIT
PG = 41L

3SK1111-1AB30

3SK1112-1BB40

Rated control supply voltage U_s		DT	Screw terminals		DT	Spring-type terminals (push-in)	
At 50 Hz At AC	At DC		Article No.	Price per PU		Article No.	Price per PU
V	V						
Standard basic units with 3 relay enabling circuits							
24	24	►	**3SK1111-1AB30**		►	**3SK1111-2AB30**	
110 … 240	110 … 240	A	**3SK1111-1AW20**		►	**3SK1111-2AW20**	
Standard basic units with 2 safety-related semiconductor outputs							
--	24	A	**3SK1112-1BB40**		A	**3SK1112-2BB40**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

3SK112 Advanced basic units

The 3SK112 Advanced basic units form an innovative system landscape which allows even complex safety functions with large numbers of sensors and outputs to be configured using the device connectors. It is possible to increase both the number of inputs for sensors and the number of enabling circuits of the basic unit without the need for wiring between the devices.

Note:

Overview of the number of enabling and signaling circuits see table "Number of safe outputs" page 11/11.

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 UNIT
PG = 41L

3SK1121-1AB40

3SK1122-1AB40

3SK1122-1CB41

Rated control supply voltage U_s at DC	Adjustable OFF-delay time	Number of outputs as contacting contact blocks		Number of outputs as contactless semiconductor contact block		DT	Screw terminals	DT	Spring-type terminals (push-in)
		instantaneous switching	delayed switching	instantaneous switching	delayed switching		Article No. / Price per PU		Article No. / Price per PU
V	s								
Advanced basic units with relay outputs									
24	--	3	--	--	--	▶	**3SK1121-1AB40**	▶	**3SK1121-2AB40**
24	0.05 … 3	2	2	--	--	A	**3SK1121-1CB41**	B	**3SK1121-2CB41**
24	0.5 … 30	2	2	--	--	▶	**3SK1121-1CB42**	A	**3SK1121-2CB42**
24	5 … 300	2	2	--	--	B	**3SK1121-1CB44**	B	**3SK1121-2CB44**
Advanced basic units with semiconductor outputs									
24	--	--	--	1	--	A	**3SK1120-1AB40**	A	**3SK1120-2AB40**
24	--	--	--	3	--	A	**3SK1122-1AB40**	A	**3SK1122-2AB40**
24	0.05 … 3	--	--	2	2	B	**3SK1122-1CB41**	B	**3SK1122-2CB41**
24	0.5 … 30	--	--	2	2	A	**3SK1122-1CB42**	A	**3SK1122-2CB42**
24	5 … 300	--	--	2	2	B	**3SK1122-1CB44**	B	**3SK1122-2CB44**

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Illustrations are approximate

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Output expansions

Overview

3SK121 output expansion

The 3SK121 output expansions can be used for Standard and Advanced basic units.

3SK1211 output expansion

The 3SK1211 output expansion is used to expand the enabling circuits of a basic unit by adding another four enabling circuits. These enabling circuits have a switching capacity of AC-15 5 A at a switching voltage of 230 V. The devices can be connected to any 3SK1 basic unit by means of wiring. In addition, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced basic units by means of the 3ZY12 device connector.

3SK1213 output expansion

The 3SK1213 output expansion is used to expand the enabling circuits of a basic unit by adding three enabling circuits with high switching capacity. These enabling circuits have a switching capacity of AC-15 10 A at a switching voltage of 230 V. The devices can be connected to any 3SK1 basic unit by means of wiring. As with 3SK1211, it is also possible to use the version with a control supply voltage of 24 V DC on the 3ZY12 device connector.

Notes:

It is only possible to expand the Standard basic units by means of wiring. Advanced basic units can be expanded using the 3ZY12 device connector.

Overview of the number of enabling and signaling circuits see table "Number of safe outputs" page 11/11.

Benefits

- Perfect adaptation of the number of inputs
- Simple expansion of instantaneous and time-delayed outputs of Advanced basic units by means of a device connector and slide switch on an expansion module
- Expansion with power contacts for high AC-15/DC-13 currents in the control circuit
- No enabling circuit required in the evaluation unit to control the expansion modules
- No wiring of the feedback circuit to the expansion units
- Shorter installation times
- Less configuring and testing required

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 UNIT
PG = 41L

3SK1211-1BB00

3SK1213-1AB40

Rated control supply voltage U_s		Number of outputs, switching instantaneously	Suitability for use 3ZY12 device connector	DT	Screw terminals	DT	Spring-type terminals (push-in)
At 50 Hz At AC	At DC				Article No. / Price per PU		Article No. / Price per PU
V	V						
4RO output expansions							
24	--	4	--	B	**3SK1211-1BB00**	B	**3SK1211-2BB00**
--	24	4	✓	▶	**3SK1211-1BB40**	A	**3SK1211-2BB40**
110 ... 240	110 ... 240	4	--	A	**3SK1211-1BW20**	B	**3SK1211-2BW20**
3RO output expansions							
--	24	3	✓	A	**3SK1213-1AB40**	A	**3SK1213-2AB40**
115	--	3	--	B	**3SK1213-1AJ20**	B	**3SK1213-2AJ20**
230	--	3	--	B	**3SK1213-1AL20**	B	**3SK1213-2AL20**

✓ Available
-- Not available

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Illustrations are approximate

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Overview

3SK1220 sensor expansion

With the input expansions

- 3SK1220 sensor expansion
- 3SK1230 power supply

the Advanced basic units can be made more flexible.

3SK1220 input expansion

The 3SK1220 input expansion allows additional sensors to be integrated easily and flexibly. The device monitors two single-channel sensors or one 2-channel sensor, whatever their output technology (floating/single-ended).

Note:

The 3SK1220 sensor expansion can only be connected to the Advanced basic units by means of the 3ZY12 device connector.

3SK1230 power supply

The 3SK1230 power supply makes the 3SK1 devices universally applicable, whatever control supply voltage is to be used.

Both devices can be combined with the 3SK112 basic units in the Advanced series without the need for wiring.

Note:

Alongside the 3ZY12 device connector, the 3SK1230 power supply can also be wired to act as a power supply for 3SK1 devices.

Benefits

- A wide voltage range of 110 ... 240 V AC/DC allows the devices to be used worldwide
- Low stock keeping due to little variance
- Flexible expansion of the number of sensors without the need for additional wiring between the devices
- Perfect adaptation of the number of inputs to suit the application
- Universally applicable thanks to the wide range of adjustable parameters for sensor expansion (parameters as for Advanced basic units)

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 UNIT
PG = 41L

3SK1220-1AB40

3SK1230-1AW20

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals (push-in) Article No.	Price per PU
3SK1220 input expansions						
Sensor expansions For safety-related expansion of the Advanced basic units by adding a further two-channel sensor or two single-channel sensors Note: Can only be used in conjunction with 3ZY12 device connectors, see page 11/20.	A	**3SK1220-1AB40**		A	**3SK1220-2AB40**	
3SK1230 power supplies						
Power supplies For supplying Advanced basic units via 3ZY12 device connectors at voltages of 110 ... 240 V AC/DC	A	**3SK1230-1AW20**		A	**3SK1230-2AW20**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

Overview

The following accessories are available for SIRIUS 3SK1 safety relays:

- Device connectors
- Terminals
- Sealing covers
- Push-in lugs
- Coding pins
- Inscription labels
- Tools

Device connectors for 3SK112. and 3SK12..

The device connector allows several safety relays to be interconnected. The last device in a series is placed on a device termination connector. This closes the circuits that were configured with the connectors.

Device connectors are available in various versions specifically for the 3SK1 safety relays:

For type	Device connectors		Device termination connectors	
	3ZY1212-1BA00 (for 3SK1, width 17.5 mm)	**3ZY1212-2BA00** (for 3SK1, width 22.5 mm)	**3ZY1212-2DA00** (for 3SK1, width 22.5 mm)	**3ZY1212-0FA01** (for 3SK1, set for enclosure > 45 mm)
3SK1 Advanced basic units				
3SK1120	✓	--	--	--
3SK1121	--	✓	✓	--
3SK1122	--	✓	✓	--
Output expansions				
3SK1211	--	✓	✓	--
3SK1213	--	--	--	✓
Input expansions				
3SK1220	✓	--	--	--
3SK1230	--	✓	--	--

✓ Available

-- Not available

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure						
3ZY1212-1BA00						
Device connectors						
• For 3SK1, width 17.5 mm	A	**3ZY1212-1BA00**		1	1 unit	41L
• For 3SK1, width 22.5 mm	A	**3ZY1212-2BA00**		1	1 unit	41L
3ZY1212-2DA00						
Device terminating connectors For 3SK1, width 22.5 mm Note: Observe positions of the slide switch, see manual "3SK1 safety relays", http://support.automation.siemens.com/WW/view/en/67585885	A	**3ZY1212-2DA00**		1	1 unit	41L
Device terminating connector set For 3SK1213, width > 45 mm, comprising 3ZY1212-2FA00 and 3ZY1210-2AA00	A	**3ZY1212-0FA01**		1	1 unit	41L
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure						
3ZY1121-1BA00						
Removable terminals						
• 2-pole, screw terminals up to 2 x 1.5 mm² or 1 x 2.5 mm²	A	**3ZY1121-1BA00**		1	6 unit	41L
• 3-pole, screw terminals up to max. 2 x 1.5 mm² or 1 x 2.5 mm²	A	**3ZY1131-1BA00**		1	6 unit	41L
• 2-pole, push-in terminals up to max. 2 x 1.5 mm²	A	**3ZY1121-2BA00**		1	6 unit	41L
• 3-pole, push-in terminals up to max. 2 x 1.5 mm²	A	**3ZY1131-2BA00**		1	6 unit	41L

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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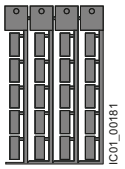
	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for enclosures							
3ZY1321-2AA00	**Sealing covers**						
	• 17.5 mm (for 3SK1120 and 3SK1220)	A	**3ZY1321-1AA00**		1	5 units	41L
	• 22.5 mm (for all 3SK1 devices except 3SK1120 and 3SK1220)	A	**3ZY1321-2AA00**		1	5 units	41L
3ZY1311-0AA00	**Push-in lugs** For wall mounting	A	**3ZY1311-0AA00**		1	10 units	41L
3ZY1440-0AA00	**Coding pins** For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals	A	**3ZY1440-1AA00**		1	12 units	41L
Blank labels							
 3RT2900-1SB20	**Unit labeling plates** For SIRIUS devices 20 mm x 7 mm, titanium gray[1)]	D	**3RT2900-1SB20**		100	340 units	41B
Tools for opening spring-type terminals							
3RA2908-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B

[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
see Chapter 16 "Appendix" ⟶ "External Partners".

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With relay enabling circuits

Overview

SIRIUS 3TK282. safety relay

Safety relays with relay enabling circuits – safety with floating contacts

SIRIUS safety relays with relay enabling circuits are not only extremely space-saving thanks to their compact design, they also offer extra safety with positively driven NO and feedback contacts in pairs. If one of the contact welds, the other assumes the disconnection of the circuit. A positively driven feedback contact (NC) then performs the fault detection of the faulty NO contact.

For two-hand operation consoles in press control systems, the 3TK2834 press control device serves as a safe evaluation unit, see IC 10 AO.

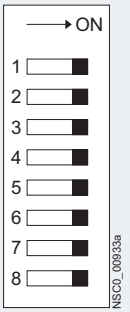
3SK121. expansion units are available to increase the number of enabling circuits, see page11/18.

3TK2826 safety relays

The 3TK2826 is a parameterizable safety relay. It is used as an evaluation unit for typical safety chains (identify, evaluate, realize). A number of functions can be set using the DIP switches on the front. The 3TK2826 is therefore universally applicable.

Safety sensors (e.g. EMERGENCY-STOP device) are connected at the input side while contactors or valves for disconnecting the "hazardous function" are connected at the output side. The 3TK2826 performs the monitoring of the sensor and actuator functions as well as the safe disconnection of the outputs (enabling circuits).

3TK2826 with DIP switch:

OFF	Schematic	DIP switch No.	ON
Without crossover monitoring		1	Switching mat operation
NC/NO evaluation		2	NC/NC evaluation
2 x 1-channel		3	1 x 2-channel
Debounce time for sensor inputs ≈50 ms		4	Debounce time for sensor inputs ≈ 10 ms
Sensor input Autostart		5	Sensor input Monitored start
Cascading input Autostart		6	Cascading input Monitored start
With start test		7	Without start test
Automatic start after mains failure (not permitted in connection with a start test)		8	Without automatic start after mains failure

Benefits

General

- Compact design
- Floating safe outputs
- 3TK2834 safety relay also suitable for press and punch controls, see IC 10 AO
- Can be used up to an ambient temperature of max. 70 °C

3TK2826 safety relays

- Connection for all common sensor types
- Many functions available in just one device
- Status displays
- Extended diagnostic capabilities
- Approvals (EN ISO 13849-1, IEC 61508, UL/CSA)
- Reporting of trip faults in the actuator circuit
- Floating outputs
- Wide-range device
- Sensor condition saved in the event of voltage failure

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Selection and ordering data

Type	Basic units 3TK2826			
	24 V DC	Wide voltage range	24 V DC t_v	Wide voltage range t_v
Sensors				
• Inputs	1	1	1	1
• Electronic	✓	--	✓	--
• With contacts	✓	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓
Safety mats	✓	✓	✓	✓
Start				
• Auto	✓	✓	✓	✓
• Monitored	✓	✓	✓	✓
Cascading input 24 V DC	✓	✓	✓	✓
Key-operated switch	--	--	--	--
Enabling circuit, floating				
• Stop category 0	4 NO	4 NO	2 NO	2 NO
• Stop category 1	--	--	2 NO	2 NO
Enabling circuit, electronic				
• Stop category 0	--	--	--	--
• Stop category 1	--	--	--	--
Signaling outputs				
• Floating	1 NC	1 NO + 1 NC	2 NC	1 NO + 2 NC
• Electronic	2	--	2	--
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA
SIL level max. according to IEC 61508	3	3	3	3
Performance level PL according to ISO 13849-1	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h	7.8×10^{-9} 1/h
Rated control supply voltage				
• 24 V DC	✓	--	✓	--
• 24 V AC/DC	--	--	--	--
• 24 V AC	--	--	--	--
• 115 V AC	--	--	--	--
• 230 V AC	--	--	--	--
• 24 ... 240 V AC/DC	--	✓	--	✓

✓ Available
-- Not available

1) Only possible for instantaneous enabling contacts, otherwise Category 3.
2) For expansion of Siemens safety products.
3) Only possible for instantaneous enabling contacts, otherwise SIL level 2 or Performance level PL d.

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With relay enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L

3TK2826-1BB40

3TK2826-2BB40

Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals	DT	Spring-type terminals
V		s		Article No. / Price per PU		Article No. / Price per PU
Basic units						
With floating enabling circuits						
3TK2826						
• 24 DC	Auto/monitored	--	A	**3TK2826-1BB40**	A	**3TK2826-2BB40**
• 24 ... 240 AC/DC	Auto/monitored	--	A	**3TK2826-1CW30**	C	**3TK2826-2CW30**
With time-delayed enabling circuits						
3TK2826 t_v						
• 24 DC	Auto/monitored	0.05 ... 3	C	**3TK2826-1BB41**	C	**3TK2826-2BB41**
• 24 ... 240 AC/DC	Auto/monitored	0.05 ... 3	C	**3TK2826-1CW31**	C	**3TK2826-2CW31**
• 24 DC	Auto/monitored	0.5 ... 30	A	**3TK2826-1BB42**	C	**3TK2826-2BB42**
• 24 ... 240 AC/DC	Auto/monitored	0.5 ... 30	C	**3TK2826-1CW32**	C	**3TK2826-2CW32**
• 24 DC	Auto/monitored	5 ... 300	C	**3TK2826-1BB44**	C	**3TK2826-2BB44**
• 24 ... 240 AC/DC	Auto/monitored	5 ... 300	C	**3TK2826-1CW34**	C	**3TK2826-2CW34**

Note:

For additional 3TK28 safety relays see Catalog Add-On IC 10 AO · 2014.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3TK284. safety relay

Fast, safe and wear-free switching

Evaluation units with electronic components are becoming increasingly established in safety applications, as a considerably higher number of starting operations and electrical life of the devices is achieved with permanent functional checks and consistently wear-free operation. The compact and light devices also permit series connection or normal operational switching, e. g. through a PLC.

If several enabling circuits or floating enabling circuits are required in one application, the units can be expanded with expansion units from the 3SK121. series, see page 11/18.

3TK2845 multi-function units

Up to now, standard combinations of safety applications such as EMERGENCY-STOP and protective door monitoring were possible only by using several individual safety relays. 3TK2845 combines several functions in a single unit. Two electronic and two relay enabling circuits ensure safe disconnection – in just a few actions, quickly and cheaply.

Benefits

- Permanent function checking
- No wear because switched electronically
- High switching frequency
- Long electrical endurance
- Evaluation of electronic sensors
- Sensor lead up to max. 2 000 m
- Cascading possible
- Insensitive to vibrations and dirt
- Compact design, low weight
- Approved for the world market

3TK2845 safety relays

- Two sensor inputs (e. g. EMERGENCY-STOP, protective door)
- Also suitable for protective door interlocking and OK button
- Two electronic and two relay enabling circuits

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With electronic enabling circuits

Selection and ordering data

Type	Multi-function units 3TK2845							
	"Automatic and monitored start"	"Automatic and monitored start" t_v	"Monitored start"	"Monitored start" t_v	OK button	OK button t_v	"Spring-type interlocking" t_v	"Magnet-locked interlocking" t_v
Sensors								
• Inputs	2	2	2	2	2	2	2	2
• Electronic	✓	✓	✓	✓	✓	✓	✓	✓
• With contacts	✓	✓	✓	✓	✓	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓	✓	✓	✓	✓
Safety mats	✓	✓	✓	✓	--	--	--	--
Start								
• Auto	1	1	--	--	1	1	--	--
• Monitored	1	1	2	2	1	1	2	2
Cascading input 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓
Key-operated switch	✓	✓	✓	✓	✓	✓	✓	✓
Enabling circuit, floating								
• Stop category 0	2 NO	1 NO	2 NO	1 NO	2 NO	1 NO	1 NO	1 NO
• Stop category 1	--	1 NO	--	1 NO	--	1 NO	1 NO	1 NO
Enabling circuit, electronic								
• Stop category 0	2	1	2	1	2	1	1	1
• Stop category 1	--	1	--	1	--	1	1	1
Signaling outputs								
• Floating	--	--	--	--	--	--	--	--
• Electronic	1	1	1	1	1	1	1	1
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508
Test certificates								
SIL level max. according to IEC 61508	3	3	3	3	3	3	3	3
Performance level PL according to EN ISO 13849-1	e	e	e	e	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h	6.9 x 10^{-9} 1/h
Rated control supply voltage 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓

✓ Available
-- Not available

[1] The outputs are only safe when an external contactor is used.

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With electronic enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L

3TK2845-1HB40

3TK2845-1HB41

3TK2845-2DB40

Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals	DT	Spring-type terminals
				Article No. / Price per PU		Article No. / Price per PU
V		s				
Multi-function units						
3TK2845 "Automatic and monitored start"						
• 24 DC	1/1	--	C	**3TK2845-1HB40**	C	**3TK2845-2HB40**
3TK2845 t_v "Automatic and monitored start"						
• 24 DC	1/1	0.05 ... 3	C	**3TK2845-1HB41**	C	**3TK2845-2HB41**
	1/1	0.5 ... 30	C	**3TK2845-1HB42**	C	**3TK2845-2HB42**
	1/1	5 ... 300	C	**3TK2845-1HB44**	C	**3TK2845-2HB44**
3TK2845 "Monitored start"						
• 24 DC	--/2	--	C	**3TK2845-1DB40**	C	**3TK2845-2DB40**
3TK2845 t_v "Monitored start"						
• 24 DC	--/2	0.05 ... 3	C	**3TK2845-1DB41**	C	**3TK2845-2DB41**
	--/2	0.5 ... 30	C	**3TK2845-1DB42**	C	**3TK2845-2DB42**
	--/2	5 ... 300	C	**3TK2845-1DB44**	C	**3TK2845-2DB44**
3TK2845 "OK button"						
• 24 DC	1/1	--	C	**3TK2845-1EB40**	C	**3TK2845-2EB40**
3TK2845 t_v "OK button"						
• 24 DC	1/1	0.05 ... 3	C	**3TK2845-1EB41**	C	**3TK2845-2EB41**
	1/1	0.5 ... 30	C	**3TK2845-1EB42**	C	**3TK2845-2EB42**
	1/1	5 ... 300	C	**3TK2845-1EB44**	C	**3TK2845-2EB44**
3TK2845 t_v "Spring-type interlocking"						
• 24 DC	--/2	0.05 ... 3	C	**3TK2845-1FB41**	C	**3TK2845-2FB41**
	--/2	0.5 ... 30	C	**3TK2845-1FB42**	C	**3TK2845-2FB42**
	--/2	5 ... 300	C	**3TK2845-1FB44**	C	**3TK2845-2FB44**
3TK2845 t_v "Solenoid interlocking"						
• 24 DC	--/2	0.05 ... 3	C	**3TK2845-1GB41**	C	**3TK2845-2GB41**
	--/2	0.5 ... 30	C	**3TK2845-1GB42**	C	**3TK2845-2GB42**
	--/2	5 ... 300	C	**3TK2845-1GB44**	C	**3TK2845-2GB44**

Note:

For additional 3TK28 safety relays see Catalog Add-On IC 10 AO · 2014.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With special functions

Overview

SIRIUS 3TK2810 safety relays

3TK2810-0 standstill monitors

The standstill monitor increases safety in hazardous areas. Without a sensor, it detects motor stoppage from the residual magnetization of the rotating motor. When an adjustable threshold value is undershot, it uses its outputs to allow access to hazardous areas, for example by unlocking a protective door.

3TK2810-1 speed monitors

The speed monitor combines two safety functions in one unit by continuously monitoring machines and plants for standstill and speed.

Through simple parameterization and permanent diagnosis on the display, faults can be quickly remedied at any time – often before they cause plant downtimes.

In addition to standstill and speed monitoring, the unit also features an integrated monitoring function of a protective door with spring-type interlocking. Therefore, an additional evaluation unit is not needed.

Benefits

3TK2810-0 standstill monitors

- No additional sensors required
- Signaling of faults with diagnostics display
- Standstill time can be set
- Unit can be used with frequency converters

3TK2810-1 speed monitors

- Menu-prompted, easy parameterization
- Direct diagnosis on the display means shorter downtimes thanks to early fault detection
- Integrated protective door monitoring means greater safety because access to the plant is allowed only in the safe state
- Suitable for all standard sensors, i.e. high flexibility

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Selection and ordering data

Type	Standstill monitors 3TK2810-0	Speed monitors 3TK2810-1
Sensors		
• Inputs	3	4
• Electronic	--	3
• With contacts	--	1
• Without sensors (measuring inputs)	3	--
• Magnetically operated switch (Reed contacts)	--	--
Safety mats	--	--
Start		
• Auto	✓	✓
• Monitored	--	✓
Cascading input 24 V DC	--	--
Key-operated switch	--	--
Enabling circuit, floating		
• Stop category 0	3 NO + 1 NC	2
• Stop category 1	--	--
Enabling circuit, electronic		
• Stop category 0	--	--
• Stop category 1	--	--

Type	Standstill monitors 3TK2810-0	Speed monitors 3TK2810-1
Signaling outputs		
• Floating	1 CO	--
• Electronic	2	2
Standards	IEC 60204-1, EN ISO 12100, EN ISO 13849-1, IEC 61508	IEC 60947-5-1, EN ISO 13849-1, IEC 60204-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA
SIL level max. according to IEC 61508	3	3
Performance level PL according to ISO 13849-1	e	e
Probability of a dangerous failure per hour (PFH_d)	1.5×10^{-8} 1/h	3.38×10^{-9} 1/h
Rated control supply voltage		
• 24 V DC	✓	✓
• 230 V AC	✓	--
• 400 V AC	✓	--
• 120 ... 240 V AC/DC	--	✓

✓ Available
-- Not available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L

3TK2810-0BA01

3TK2810-0GA02

3TK2810-1BA41

Rated control supply voltage U_s	OFF-delay t_v	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
V	s						
Standstill monitors							
3TK2810-0							
• 24 DC	0.2 ... 6	B	**3TK2810-0BA01**		C	**3TK2810-0BA02**	
• 230 AC	0.2 ... 6	C	**3TK2810-0GA01**		C	**3TK2810-0GA02**	
• 400 AC	0.2 ... 6	C	**3TK2810-0JA01**		C	**3TK2810-0JA02**	
Speed monitors							
3TK2810-1 for NPN/PNP proximity switches and encoders							
• 24 DC	0 ... 600	A	**3TK2810-1BA41**		A	**3TK2810-1BA42**	
• 120 ... 240 AC/DC	0 ... 600	B	**3TK2810-1KA41**		B	**3TK2810-1KA42**	
3TK2810-1 for NAMUR proximity switches and encoders							
• 24 DC	0 ... 600	B	**3TK2810-1BA41-0AA0**		B	**3TK2810-1BA42-0AA0**	
• 120 ... 240 AC/DC	0 ... 600	B	**3TK2810-1KA41-0AA0**		B	**3TK2810-1KA42-0AA0**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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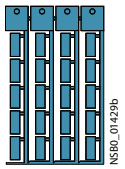
Accessories

Accessories

	Use	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT1900-1SB20	For 3TK28	**Unit labeling plates** For SIRIUS devices 20 mm x 7 mm, pastel turquoise[1)]	D	**3RT1900-1SB20**		100	340 units	41B
	For 3TK28	**Adhesive labels** For SIRIUS devices						
		• 19 mm x 6 mm, pastel turquoise	C	**3RT1900-1SB60**		100	3 060 units	41B
		• 19 mm x 6 mm, zinc yellow	C	**3RT1900-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
3RP1903	For 3TK28	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP1903**		1	10 units	41H
	For 3TK2826	**Sealable covers** For securing against unauthorized adjustment of setting knobs	A	**3TK2826-0DA00-0HA0**		1	5 units	41L
	For 3TK28	**Sealing foils** For securing against unauthorized adjustment of setting knobs	▶	**3TK2820-0AA00**		1	1 unit	41L
Adapters and connection cables for speed monitors								
	For 3TK2810-1	**Adapters** For connecting encoders of type Siemens/Heidenhain						
3TK2810-1A		• 15-pole	A	**3TK2810-1A**		1	1 unit	41L
3TK2810-1B		• 25-pole	A	**3TK2810-1B**		1	1 unit	41L
3TK2810-0A	For 3TK2810-1	**Connection cables** For connecting the speed monitor to the 3TK2810-1A or 3TK2810-1B adapter	C	**3TK2810-0A**		1	1 unit	41L
Tools for opening spring-type terminals								
3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA2908-1A**		1	1 unit	41B

[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH see Chapter 16, "Appendix" → "External Partners".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIRIUS 3RK3 Modular Safety System

The 3RK3 Modular Safety System (MSS) is a freely parameterizable modular safety relay. Depending on the external circuit version, safety-related applications up to Performance Level e according to EN ISO 13849-1 or SIL 3 according to IEC 62061 can be realized.

The modular safety relay enables the interconnection of several safety applications.

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

The MSS comprises the following system components:

- Central units
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

Central units

MSS Basic

The 3RK3 Basic central unit is used wherever more than three safety functions need to be evaluated and the wiring parameterization of safety relays would involve great cost and effort. It reads in inputs, controls outputs and communicates through an interface module with higher-level control systems. An application's entire safety program is processed in the central unit. The 3RK3 Basic central unit is the lowest expansion level and fully functional on its own, without the optional expansion modules.

MSS Advanced

The 3RK3 Advanced central unit is the consistent expansion of the Basic central unit with the functionality of an AS-i safety monitor. In addition to having a larger volume of project data and scope of functionality it can be integrated in AS-Interface and therefore make use of the many different possibilities offered by this bus system. The function can be optionally activated in the central unit.

The service-proven insulation piercing method of AS-Interface enables not only the distributed expansion of the project data volume using safe AS-i outputs, safe AS-i sensors and other MSS Advanced or safety monitors (F cross traffic) but also a highly flexible adaptation of the application, e.g. very fast connection of AS-i outputs such as LV HRC command devices, position switches with and without interlock, or light curtains.

Safety-related disconnection using MSS or by distributed means using safe AS-i outputs and the formation of switch-off groups can be realized very easily. The same applies for any subsequent modifications. They are now easily possible by re-addressing, i.e. re-wiring is no longer necessary.

The AS-i bus is connected directly to the central unit.

MSS ASIsafe

The MSS ASIsafe basic and MSS ASIsafe extended central units are a logical development of the AS-i safety monitors based on the 3RK3 Modular Safety System.

Like MSS Advanced, MSS ASIsafe detects – in a comparable way to the safety monitors – safe sensor technology on the AS-i bus and switches actuators off in a safety-related manner via a configurable safety logic. It stands out by virtue of its greater project data volume, wider range of functions and the possibility of increasing the integrated I/O project data volume by means of expansion modules from the MSS system family. In this case the range of functions, such as the number and type of the logic elements that can be interconnected, is equivalent to that of MSS Advanced.

Expansion modules

With the optional expansion modules, both safety-related and standard, the system is flexibly adapted to the required safety applications.

Interface modules

The DP interface module is used for transferring diagnostics data and device status data to a higher-level PROFIBUS network, e.g. for purposes of visualization using HMI. When using the Basic central unit, 32-bit cyclic data can be exchanged with the control system. If an Advanced/ASIsafe central unit is used, the number is doubled to 64-bit cycle data. The acyclic calling of diagnostics data is possible with both central units.

Diagnostics modules

Faults, e.g. crossover, are indicated directly on the diagnostics display. The fault is diagnosed directly in plain text by the detailed alarm message. The device is fully functional upon delivery. No programming is required.

Parameterization software

Using the MSS ES graphical parameterization tool it is very easy to create the safety functions as well as their logical links on the PC. You can define disconnection ranges, ON-delays, OFF-delays and other dependencies for example.

MSS ES also offers comprehensive functions for diagnostics and commissioning. Documentation of the MSS hardware configuration and the parameterized logic is created automatically.

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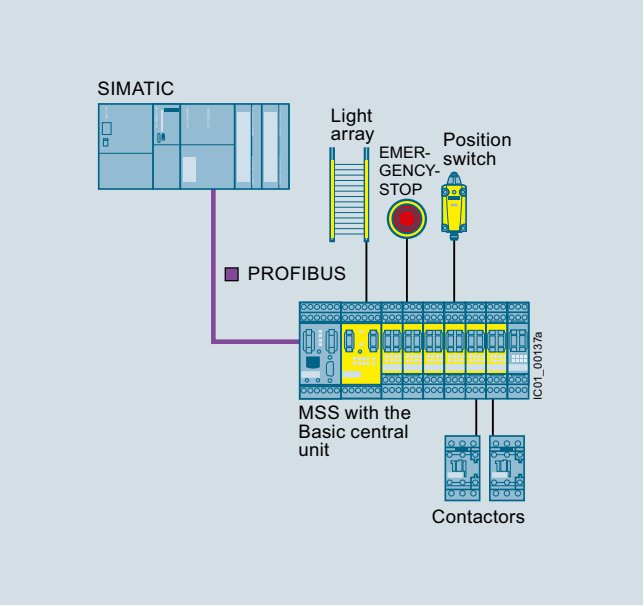
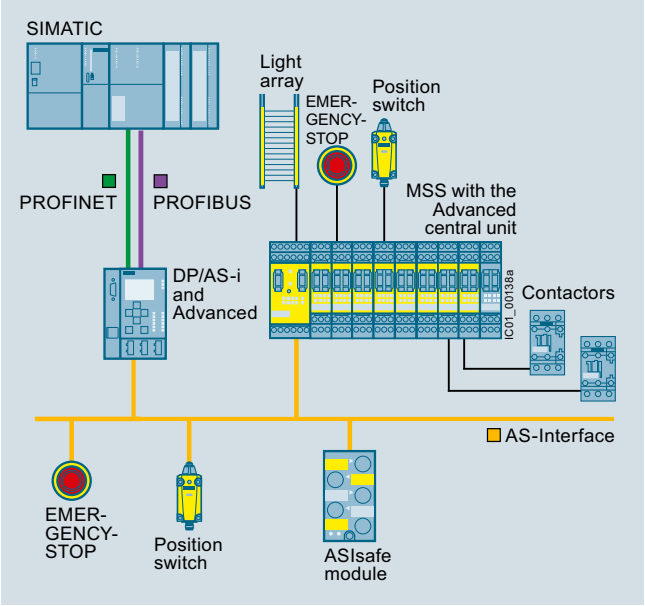
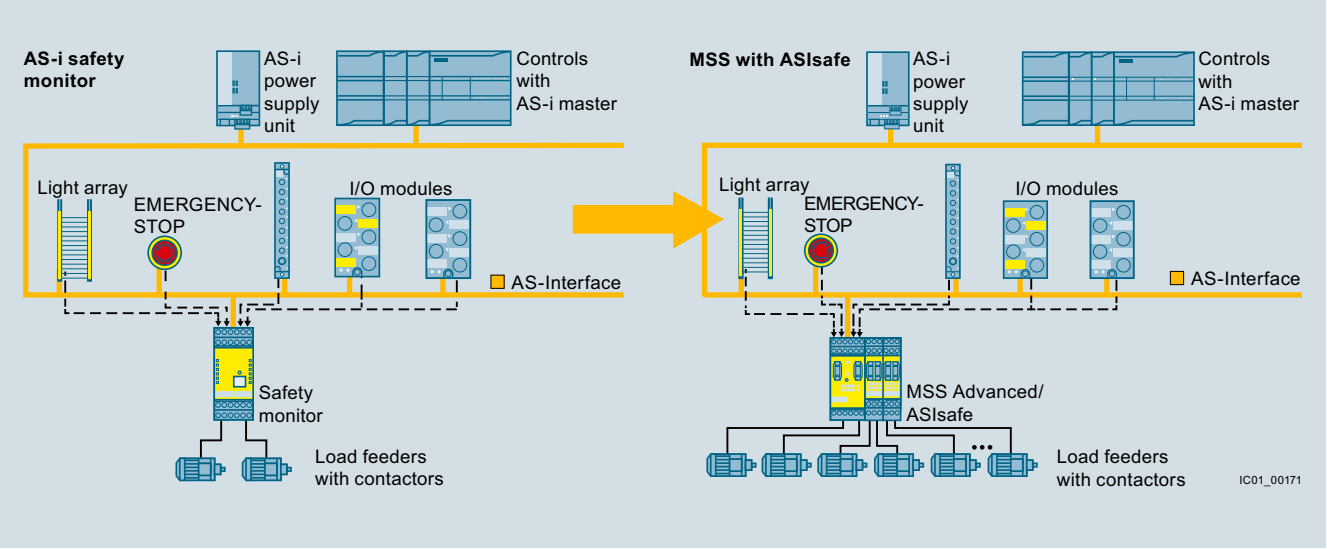
General data



System configuration with the Basic central unit



System configuration with the Advanced central unit



Further development of the system design: from the safety monitor to MSS Advanced/MSS ASIsafe

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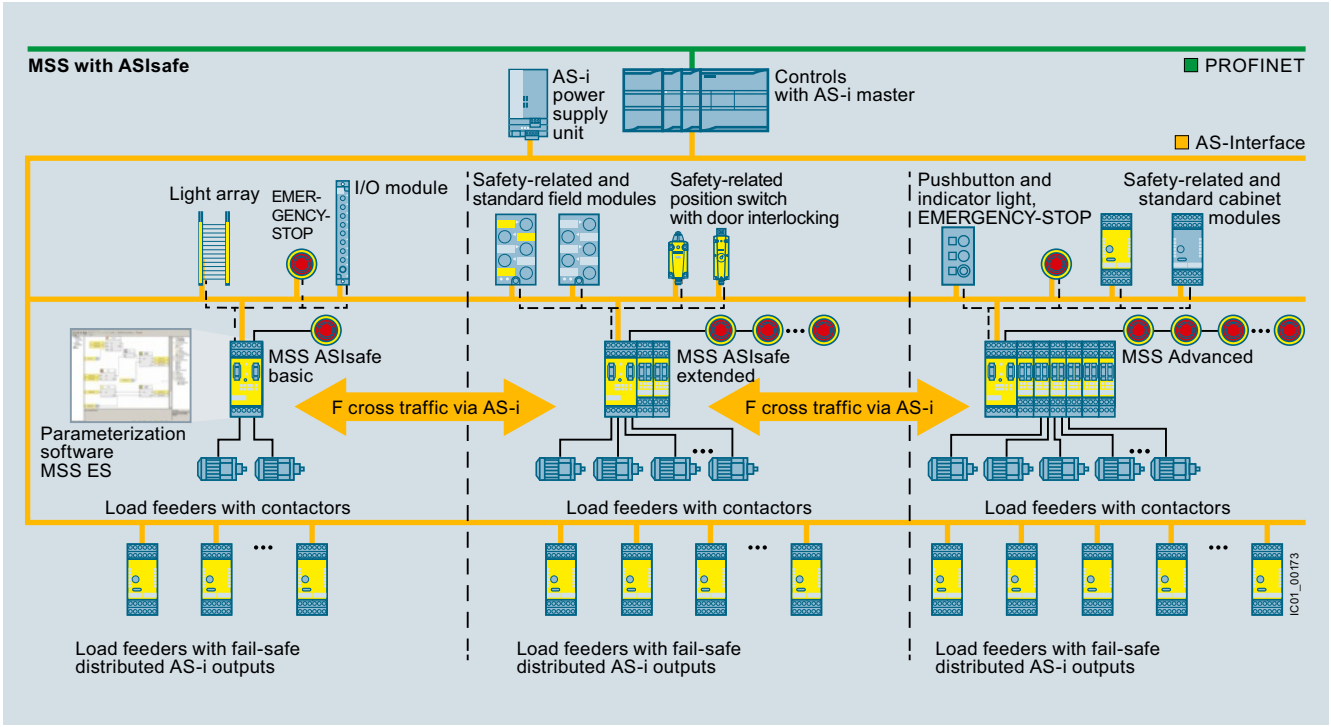

MSS with ASIsafe

Article No. scheme

Digit of the article No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□□	□	□	□	–	□	□	□	□	□
Modular safety system	**3 R K 3**									
Device type		□								
Device type			□	□						
Connection type						□				
Communications							□	□	□	
Version										□
Example	**3 R K 3**	**1**	**1**	**1**	**–**	**1**	**A**	**A**	**1**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

- More functionality and flexibility through freely configurable safety logic
- Suitable for all safety applications thanks to compliance with the highest safety standards in production automation
- For use all over the world through compliance with all product-relevant, globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability
- Distributed collection from sensors and disconnection of actuators through AS-Interface
- All MSS ES logic functions are also usable for AS-Interface, e. g. muting, interlocking protective door
- Up to 12 independent safe switch-off groups on the AS-i bus
- Volume of project data can be greatly increased by means of AS-Interface
- Up to 50 two-channel enabling circuits per system

Communication through PROFIBUS

The 3RK3 Modular Safety System can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

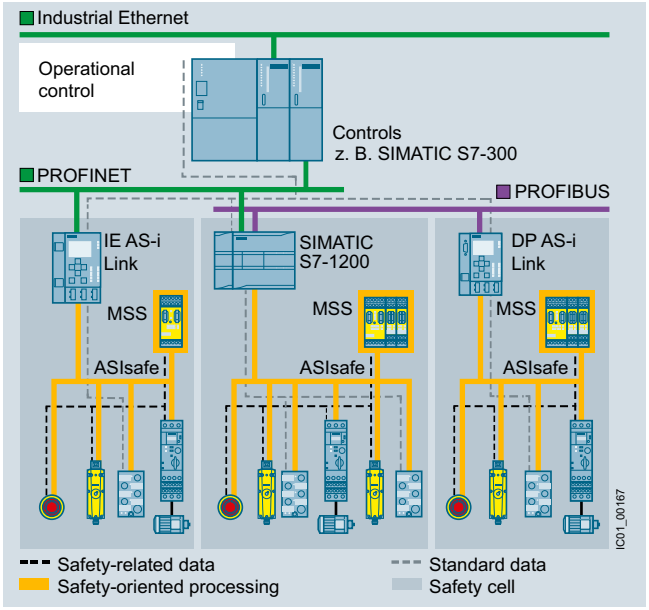
The MSS supports among other things:

- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data with MSS Basic or 64-bit cyclic data with MSS Advanced/MSS ASIsafe
- Diagnostics using data record invocations

AS-Interface communication

Using the Advanced and ASIsafe central units, the 3RK3 Modular Safety System can be integrated in AS-Interface.

- MSS can read in up to 31 AS-i sensors
- Up to 12 preprocessed signals per MSS can be placed on the AS-i bus, e.g. for F cross traffic or for disconnecting safe AS-i outputs
- Safe cross traffic between MSS Advanced and MSS ASIsafe or between other AS-i safety monitors
- Standard signals, e.g. for acknowledgment, can also be applied to the bus



Integration of MSS into AS-Interface as ASIsafe Solution local

MSS with communication function see page 11/39 onwards.

Accessories see page 11/41 onwards.

More information on AS-Interface with ASIsafe see also Chapter 2, "Industrial Communication".

More information on MSS ES see also Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

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Application

The 3RK3 Modular Safety System can be used for all safety-related requirements in the manufacturing industry and offers the following safety functions:

	Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
Monitoring functions			
Universal monitoring Evaluation of any binary signals from single-channel and two-channel sensors		--	✓
EMERGENCY-STOP Evaluation of EMERGENCY-STOP devices with positive-opening contacts		✓	✓
Switching mats Evaluation of safety shutdown mats with NC contacts and/or crossover detection		✓	✓
Protective door monitoring Evaluation of protective door signals and/or protective flap signals		✓	✓
Protective door interlocking Evaluation of protective doors with interlock and of the actuation/release of this interlock		--	✓
OK buttons Evaluation of OK buttons with NO contact		✓	✓
Two-hand operator controls Evaluation of two-hand operator controls		✓	✓
ESPE monitoring Evaluation of non-contact protective devices, e.g. light curtains and laser scanners		✓	✓
Muting Temporary bridging of non-contact protective devices, 2/4 sensors in parallel, 4 sensors in sequence		--	✓
Operating mode selector switches Evaluation of operating mode selector switches with NO contacts		✓	✓
Monitoring AS-i (AS-i 2F-DI) Logic element for monitoring of AS-i input slaves		--	✓

	Symbol	MSS Basic	MSS Advanced, MSS ASIsafe
Logic operation functions			
AND		✓	✓
OR		✓	✓
XOR		✓	✓
NAND		✓	✓
NOR		✓	✓
Negation		✓	✓
Flip-flop		✓	✓
Counting functions			
Counter 0 -> 1		✓	✓
Counter 1 -> 0		✓	✓
Counter 0 -> 1/1 -> 0		✓	✓
Timer functions			
With ON-delay		✓	✓
Passing make contact		✓	✓
With OFF-delay		✓	✓
Clock-pulsing		✓	✓
Start functions			
Monitored start		✓	✓
Manual start		✓	✓
Output functions			
Standard output		✓	✓
F output		✓	✓
AS-i output function		--	✓
Status functions			
Element status		--	✓

✓ Available

-- Not available

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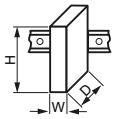
General data

Technical specifications

Central units and expansion modules

Type		Central units				Expansion modules						
		Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO
Dimensions (W x H x D)												
												
• Screw terminals	mm	45 x 111 x 124				22.5 x 111 x 124			45 x 111 x 124	22.5 x 111 x 124		
• Spring-type terminals	mm	45 x 113 x 124				22.5 x 113 x 124			45 x 113 x 124	22.5 x 113 x 124		
Device data												
Shock resistance (sine pulse)	*g*/ms	15/11										
Touch protection acc. to EN 50274 or IEC 60529		IP20										
Permissible mounting position		Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature										
Minimum distances		For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom)										
Permissible ambient temperature												
• During operation	°C	-20 ... +60										
• During storage and transport	°C	-40 ... +85										
Number of sensor inputs (1-channel)												
• Fail-safe		8	8	2	4	8	4	4	--	--	--	--
• Not fail-safe		--	--	6	4	--	--	--	--	--	8	--
Number of test outputs		2	2	2	2	2	2	2	--	--	--	--
Number of outputs												
• Relay outputs												
- Single-channel		--	--	--	--	--	2	--	8	--	--	--
- Two-channel		1	1	1	1	--	--	--	--	--	--	--
• Electronic outputs												
- Single-channel		--	--	--	--	--	--	--	--	--	--	8
- Two-channel		1	1	1	1	--	--	2	--	4	--	--
Weight	g	300	300	300	300	160	160	160	400	135	125	160
Installation altitude above sea level	m	2 000										
Environmental data												
EMC interference immunity		IEC 60947-5-1										
Vibrations												
• Frequency	Hz	5 ... 500										
• Amplitude	mm	0.75										
Climatic withstand capability		IEC 60068-2-78										
Electrical specifications												
Rated control supply voltage U_s According to IEC 61131-2	V	24 DC ±15 %[1]										
Operating range		0.85 ... 1.15 x U_s										
Rated insulation voltage U_i	V	300	300	300	300	50	300	50	300	50	50	50
Rated impulse voltage U_{imp}	kV	4	4	4	4	500	4	500	4	500	500	500
Total current input	mA	185	185	185	185	60	85	85	140	8	78	60
Rated power at U_s	W	4.5	4.5	4.5	4.5	1.5	2	2	3	4.8	1.9	1.5
Utilization category according to IEC 60947-5-1 (relay outputs)												
• AC-15 at 230 V	A	2	2	2	2	--	2	--	2	--	--	--
• DC-13 at 24 V	A	1	1	1	1	--	1	--	1	--	--	--
(semiconductor outputs)												
• DC-13 at 24 V	A	1.5	1.5	1.5	1.5	--	--	1	--	2	--	0.5
Mechanical endurance during rated operation	Operating cycles (relay)	10 x 10^6	10 x 10^6	10 x 10^6	10 x 10^6	--	10 x 10^6	--	10 x 10^6	--	--	--

[1] Device current supply through a power supply unit according to IEC 60536 protection class III (SELV or PELV).

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Type		Central units				Expansion modules						
		Basic	Advanced	ASIsafe basic	ASIsafe extended	4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO
Electrical specifications (cont.)												
Switching frequency z at rated operational current	1/h	1 000	1 000	1 000	1 000	--	1 000	1 000	360	1 000	--	1 000
Conventional thermal current I_{th}	A	2/1.5	2/1.5	2/1.5	2/1.5	--	1	1	3	2	--	0.5
Protection for output contacts Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE												
• Ooperational class gG	A	4	4	4	4	--	4	--	4	--	--	--
• Operational class quick	A	6	6	6	6	--	6	--	6	--	--	--
Safety specifications												
Probability of a dangerous failure												
• Per hour (PFH_d)	1/h	5.14×10^{-9}	3.8×10^{-9} with AS-i, 2.8×10^{-9} without AS-i	3.8×10^{-9} with AS-i, 2.8×10^{-9} without AS-i	3.8×10^{-9} with AS-i, 2.8×10^{-9} without AS-i	1.89×10^{-9}	3.79×10^{-9}	2.7×10^{-9}	7.15×10^{-9}	3.18×10^{-9}	--	--
• On demand (PFD)		1.28×10^{-5}	1.7×10^{-4}	1.7×10^{-4}	1.7×10^{-4}	4.29×10^{-6}	5.85×10^{-6}	8.34×10^{-6}	4.36×10^{-5}	2.2×10^{-5}	--	--
Parameters for cables												
Line resistance	Ω	100	100	100	100	100	100	100	--	--	100	--
Cable length from terminal to terminal With Cu 1.5 mm^2 and 150 nF/km	m	1 000	1 000	1 000	1 000	1 000	1 000	1 000	--	--	1 000	--
Conductor capacity	nF	330	330	330	330	330	330	330	--	--	330	--

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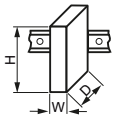
General data

Interface and diagnostics modules

Type		Interface modules	Diagnostics modules
Dimensions (W x H x D)			
			
• Screw terminals	mm	45 x 111 x 124	96 x 60 x 44
• Spring-type terminals	mm	45 x 113 x 124	--
Device data			
Shock resistance (sine pulse)	*g*/ms	15/11	
Touch protection acc. to EN 50274 or IEC 60529		IP20	
Permissible mounting position		Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature	
Minimum distances		For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom)	
Permissible ambient temperature			
• During operation	°C	-20 ... +60	
• During storage and transport	°C	-40 ... +85	
Weight	g	270	90
Installation altitude above sea level	m	2 000	
Environmental data			
EMC interference immunity		IEC 60947-5-1	
Vibrations			
• Frequency	Hz	5 ... 500	
• Amplitude	mm	0.75	
Climatic withstand capability		IEC 60068-2-78	
Electrical specifications			
Rated control supply voltage U_s According to IEC 61131-2	V	24 DC ±15 %	24 DC ±15 % via connecting cable to the central unit
Operating range		0.85 ... 1.15 x U_s	
Rated insulation voltage U_i	V	50	
Rated impulse voltage U_{imp}	kV	500	
Total current input	mA	--	24
Rated power at U_s	W	--	0.6

More information

System manual "3RK3 Modular Safety System" see http://support.automation.siemens.com/WW/view/en/26493228.

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Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42B

3RK3111-1AA10

3RK3121-1AC00
3RK3122-1AC00
3RK3131-1AC10

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Central units						
3RK3 Basic Central unit with safety-related inputs and outputs • 8 fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output Max. 7 expansion modules can be connected Note: Memory module 3RK3931-0AA00 is included in the scope of supply.	A	**3RK3111-1AA10**		A	**3RK3111-2AA10**	
3RK3 Advanced Central units for connecting to AS-Interface with safety-related inputs and outputs and extended scope of functions • 8 fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output Max. 9 expansion modules can be connected Note: Memory module 3RK3931-0AA00 is included in the scope of supply.	A	**3RK3131-1AC10**		A	**3RK3131-2AC10**	
3RK3 ASIsafe basic Central units for connecting to AS-Interface with safety-related inputs and outputs and extended scope of functions • 2 fail-safe inputs • 6 non-fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output No expansion modules can be connected Note: Memory module 3RK3931-0AA00 is included in the scope of supply.	NEW A	**3RK3121-1AC00**		A	**3RK3121-2AC00**	
3RK3 ASIsafe extended Central units for connecting to AS-Interface with safety-related inputs and outputs and extended scope of functions • 4 fail-safe inputs • 4 non-fail-safe inputs • 1 two-channel relay output • 1 two-channel electronic output Max. 2 expansion modules can be connected Note: Memory module 3RK3931-0AA00 is included in the scope of supply.	NEW A	**3RK3122-1AC00**		A	**3RK3122-2AC00**	

Notes:

More information on MSS see www.siemens.com/sirius-mss.

More information on AS-Interface see Chapter 2 "Industrial Communication".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Expansion modules, interface modules, operating and monitoring modules

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42B

3RK3211-1AA10
3RK3221-1AA10
3RK3231-1AA10
3RK3242-1AA10

3RK3251-1AA10

3RK3311-1AA10
3RK3321-1AA10

3RK3511-1BA10

3RK3611-3AA00

Version	DT	Screw terminals Article No.	Price per PU	DT	Spring-type terminals Article No.	Price per PU
Expansion modules						
4/8 F-DI Safety-related input modules • 8 inputs	A	**3RK3211-1AA10**		A	**3RK3211-2AA10**	
2/4 F-DI 1/2 F-RO Safety-related input/output modules • 4 inputs • 2 single-channel relay outputs	A	**3RK3221-1AA10**		A	**3RK3221-2AA10**	
2/4 F-DI 2F-DO Safety-related input/output modules • 4 inputs • 2 two-channel electronic outputs	A	**3RK3231-1AA10**		A	**3RK3231-2AA10**	
4/8 F-RO Safety-related output modules • 8 single-channel relay outputs	A	**3RK3251-1AA10**		A	**3RK3251-2AA10**	
4 F-DO Safety-related output modules • 4 two-channel electronic outputs	A	**3RK3242-1AA10**		A	**3RK3242-2AA10**	
8 DI Standard input module • 8 inputs	A	**3RK3321-1AA10**		A	**3RK3321-2AA10**	
8 DO Standard output module • 8 electronic outputs	A	**3RK3311-1AA10**		A	**3RK3311-2AA10**	
Interface modules						
DP interface PROFIBUS DP interface, 12 Mbit/s, RS 485, 32-bit cyclic data exchange with Basic central unit or 64-bit with Advanced central unit, acyclic exchange of diagnostics data	A	**3RK3511-1BA10**		A	**3RK3511-2BA10**	
Operating and monitoring modules						
Diagnostics module	A	**3RK3611-3AA00**			**--**	

Notes:

Connection cable required, see page 11/41.

More information on MSS see www.siemens.com/sirius-mss.

More information on AS-Interface see Chapter 2 "Industrial Communication"

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version			DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection cables (essential accessory)								
Connection cable For connection of								
Central units with expansion modules or interface module	Diagnostics modules with central unit or interface module							
✓	✓	• Length 0.025 m (flat)	►	**3UF7930-0AA00-0**		1	1 unit	42J
--	✓	• Length 0.1 m (flat)	►	**3UF7931-0AA00-0**		1	1 unit	42J
--	✓	• Length 0.3 m (flat)	►	**3UF7935-0AA00-0**		1	1 unit	42J
--	✓	• Length 0.5 m (flat)	►	**3UF7932-0AA00-0**		1	1 unit	42J
--	✓	• Length 0.5 m (round)	►	**3UF7932-0BA00-0**		1	1 unit	42J
--	✓	• Length 1.0 m (round)	►	**3UF7937-0BA00-0**		1	1 unit	42J
--	✓	• Length 2.5 m (round)	►	**3UF7933-0BA00-0**		1	1 unit	42J
PC cables and adapters								
RS 232 PC cables For connecting to the serial interface of a PC/PG, for communication with 3RK3 through the system interface			►	**3UF7940-0AA00-0**		1	1 unit	42J
USB PC cables For connecting to the USB interface of a PC/PG, for communication with 3RK3 through the system interface, recommended for use in connection with 3RK3			►	**3UF7941-0AA00-0**		1	1 unit	42J
USB/serial adapters For connecting a RS 232 PC cable to the USB interface of a PC			B	**3UF7946-0AA00-0**		1	1 unit	42J
Interface covers								
Interface covers For system interface			►	**3UF7950-0AA00-0**		1	5 units	42J
Memory modules								
Memory modules For backing up the complete parameterization of the 3RK3 Modular Safety System without a PC/PG through the system interface			A	**3RK3931-0AA00**		1	1 unit	42C
Door adapters								
Door adapters For external connection of the system interface, e.g. outside a control cabinet			►	**3UF7920-0AA00-0**		1	1 unit	42J
Push-in lugs								
Push-in lugs for screw fixing e.g. on mounting plate, 2 units required per device Can be used for 3RK3			B	**3RP1903**		1	10 units	41H

3UF7932-0AA00-0

3UF7940-0AA00-0

3UF7941-0AA00-0

3UF7950-0AA00-0

3RK3931-0AA00

3UF7920-0AA00-0

3RP1903

✓ Available

-- Not available

Note:

More accessories and components that can be combined with MSS see Chapter 2 "Industrial Communication".

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Accessories

Parameterization, start-up and diagnostics software for 3RK3

- Runs under Windows XP Professional (Service Pack 2 or 3), Windows 7 32/64 Bit Professional/Ultimate/Enterprise (Service Pack 1)
- Delivered without PC cable (please order separately, see page 11/41)

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modular Safety System ES 2008 Basic						
3ZS1314-4CC10-0YA5						
Floating license for one user Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through the system interface						
• License key on USB stick, Class A	A	**3ZS1314-4CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1314-4CE10-0YB5**		1	1 unit	42B
Modular Safety System ES 2008 Standard						
3ZS1314-5CC10-0YA5						
Floating License for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	B	**3ZS1314-5CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1314-5CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Basic to Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	A	**3ZS1314-5CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	►	**3ZS1314-5CC10-0YL5**		1	1 unit	42B
Modular Safety System ES 2008 Premium						
3ZS1314-6CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros						
• License key on USB stick, Class A	NEW B	**3ZS1314-6CC10-0YA5**		1	1 unit	42B
• License key download, Class A	NEW ►	**3ZS1314-6CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	NEW A	**3ZS1314-6CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	NEW ►	**3ZS1314-6CC10-0YL5**		1	1 unit	42B

Note:

Description of the software versions see Chapter 14 "Planning, Configuration and Visualization for SIRIUS".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Position and Safety Switches

Price groups
PG 41K, 42A

12/2 **Introduction**

SIRIUS 3SE5 mechanical position switches
12/4 General data
3SE5, plastic enclosures
12/14 - Enclosure width 31 mm according to EN 50047; Control cabinet type IP40 NEW
12/20 - Enclosure width 40 mm according to EN 50041
12/24 - Enclosure width 50 mm
12/28 - Ambient temperature up to -40 °C
3SE5, metal enclosures
12/32 - Enclosure width 31 mm according to EN 50047
12/36 - Enclosure width 40 mm according to EN 50041
12/40 - Enclosure width 56 mm
12/44 - Enclosure width 56 mm, XL
12/47 - Ambient temperature up to -40 °C
12/52 - Compact design
12/54 3SE5, open-type design
12/55 Accessories and spare parts

SIRIUS 3SE5, 3SE2 mechanical safety switches
With separate actuator
12/58 General data
12/63 3SE5, plastic enclosures
12/65 3SE5, metal enclosures
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12/96 Metal enclosures
Hinge switches
12/97 Plastic enclosures
12/98 Metal enclosures

SIRIUS 3SE6 non-contact safety switches
Magnet
12/99 3SE66, 3SE67 magnetically operated switches
RFID
12/101 3SE63 RFID safety switches NEW

Note:
Conversion tool,
e.g. from 3SE2 to 3SE5 see
www.siemens.com/sirius/conversion-tool

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Introduction

Overview

3SE523., 3SE521. 3SF12.4

3SE524., 3SF1244

3SE513., 3SE511., 3SF1114

3SE512., 3SF1124

3SE516.

3SE5232, 3SE5212, 3SF12.4

3SE5132, 3SE5112, 3SF11.4

	Position switches, standard					Safety hinge switches	
Enclosure							
Plastic	✓	✓	✓	--	--	✓	✓
Metal	✓	--	✓	✓	✓	✓	✓
Dimensions (W x H x D) in mm	31 × 68 × 33	50 × 53 × 33	40 × 78 × 38	56 × 78 × 38	56 × 100 × 38	31 × 68 × 33	40 × 78 × 38
Degree of protection	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP65, IP66/IP67	IP66/IP67
Standards							
IEC 60947-5-1	Mounting and operating points acc. to EN 50047	Operating points acc. to EN 50047	Mounting and operating points acc. to EN 50041	Operating points acc. to EN 50041	Operating points acc. to EN 50047	Mounting and operating points acc. to EN 50047	Mounting and operating points acc. to EN 50041
Approvals	CE, UL, CSA, CCC		CE, UL, CSA, CCC			CE, UL, CSA, CCC	
Contact blocks							
2 slow-action contacts	1 NO + 1 NC, 2 NC		1 NO + 1 NC, 2 NC		2 × (1 NO + 1 NC)	--	
2 snap-action contacts	1 NO + 1 NC		1 NO + 1 NC		2 × (1 NO + 1 NC)	1 NO + 1 NC	
• Short stroke	1 NO + 1 NC		✓		--	--	
• With 2 × 2 mm contact gap	1 NO + 1 NC		✓		--	--	
3 slow-action contacts	1 NO + 2 NC; 2 NO + 1 NC		1 NO + 2 NC; 2 NO + 1 NC		--	--	
• With make-before-break	1 NO + 2 NC		1 NO + 2 NC		2 × (1 NO + 2 NC)	--	
3 snap-action contacts	1 NO + 2 NC		1 NO + 2 NC		--	1 NO + 2 NC	
Special features							
LED status display	✓		✓		--	✓	
Increased corrosion protection	✓		✓		✓	✓	
ASIsafe integrated	✓		✓		--	✓	
Electrical specifications							
Insulation voltage U_i	400 V		400 V			400 V	
Conventional thermal current I_{the}	6 A/10 A (3-/2-pole)		6 A/10 A (3-/2-pole)			6 A/10 A (3-/2-pole)	
Connections							
Cable entry	1 × M20 × 1.5	2 × M20 × 1.5	1 × M20 × 1.5	3 × M20 × 1.5	3 × M20 × 1.5	1 × M20 × 1.5	1 × M20 × 1.5
M12 connector socket, 4-, 5- or 8-pole	✓	✓	✓	✓	✓	✓	✓
Connector socket, 6-pole + PE	--	--	✓	✓	--	--	--
Actuators							
Rounded plungers and roller plungers	✓		✓		✓	--	
Roller levers and angular roller levers	✓		✓		✓	--	
Spring rod	✓		✓		--	--	
Twist levers and rod actuators	✓		✓		✓	--	
Fork lever	--		✓		--	--	
Hinge switches	--		--		--	✓	
Page							
Complete units	12/14, 12/32	12/24	12/20, 12/36	12/40	12/44	12/78	12/79
Modular system	12/18, 12/34	12/26	12/22, 12/38	12/42	12/45	--	--
Ambient temperature –40 °C	12/28, 12/48	12/28	12/31, 12/49	12/50	12/50	--	--
ASIsafe	12/84, 12/86	12/84	12/88	12/88	--	12/97	12/98

✓ Available -- Not available

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3SE5413, 3SE5423

3SE5250

3SE5232, 3SE5242, 3SF12.4

3SE5112, 3SE5122, 3SF11.4

3SE5322, 3SE5312, 3SF13.4

3SE63

	Compact design	Open-type	Safety switches with separate actuator		Safety switches with solenoid interlocking	RFID safety switches
Enclosure						
Plastic	--	✓	✓	✓	✓	✓
Metal	✓		✓	✓	✓	--
Dimensions (W x H x D) in mm	30 × .. × .., 40 × .. × ..	30 × 48.5 × 20	31 × 68 × 33, 50 × 53 × 33	40 × 78 × 38, 56 × 78 × 38	54 × 185 × 44	25 × 91 × 22
Degree of protection	IP66/IP67	IP10 or IP20	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP69K
Standards IEC 60947-5-1	--	Mounting and operating points acc. to EN 50047	Mounting acc. to EN 50047	Mounting acc. to EN 50041	EN 1088	Category 4 acc. to ISO 13849-1, PL e acc. to ISO 13849-1, SIL 3 acc. to IEC 61508
Approvals	CE, UL, CSA, CCC	--	CE, TÜV, UL, CSA, CCC		CE, TÜV, UL, CSA, CCC	CE, TÜV, UL, CSA[1]
Contact blocks / outputs						
2 slow-action contacts	--	1 NO + 1 NC	1 NO + 1 NC, 2 NC		--	--
2 snap-action contacts	1 NO + 1 NC	1 NO + 1 NC	--		--	--
• Short stroke	--	✓				
• With 2 × 2 mm contact gap	--	✓				
3 slow-action contacts	--	1 NO + 2 NC; 2 NO + 1 NC	1 NO + 2 NC		2 × (1 NO + 2 NC)	--
• With make-before-break	--	1 NO + 2 NC				
3 snap-action contacts	--	1 NO + 2 NC	--		--	--
Electron. safety outputs	--	--	--		--	2
Special features						
LED status display	--	--	✓		✓	✓
Increased corrosion protection	--	--	✓		✓	✓
ASIsafe integrated	--	--	✓		✓	--
Electrical specifications						
Insulation voltage U_i	400 V	400 V	400 V		400 V	--
Conventional thermal current I_{the}	6 A	6 A	6 A		6 A	--
Connections						
Cable entry	--	--	1 × M20 × 1.5, 2 × M20 × 1.5	1 × M20 × 1.5, 3 × M20 × 1.5	3 × M20 × 1.5	--
M12 connector socket, 4-, 5- or 8-pole	✓	--	✓	✓	✓	✓
Molded cables	✓	--	--	--	--	--
AS-Interface	--	--	✓	✓	✓	--
Actuators						
Plungers, twist levers	✓	✓	--		--	--
Separate actuators	--	--	✓		✓	--
Page						
Complete units	12/52	12/54	12/63, 12/65	12/64, 12/66	12/73, 12/74	--
Modular system	--	--	--	--	--	12/101
ASIsafe	--	--	12/91	12/92	12/95, 12/96	--

✓ Available
-- Not available
[1] CCC not required for voltages < 36 V.

Note:

Safety characteristics see Chapter 16, "Appendix" → "Standards and Approvals".

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General data

Overview

The innovative SIRIUS 3SE5 position switches are modern in design, compact, modular and simple to connect. They save time and increase flexibility during installation of a whole range of switch variants. In principle it is possible to combine any enclosure with any operating mechanism, paying due consideration to the EN 50041 and EN 50047 standards where necessary.

Complete units

Popular versions of the position switches in standard enclosures are available as complete units.

3SE5 position switches with plastic and metal enclosures

Modular system

The 3SE5 series features a new modular system comprising different sizes of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the user can select the right solution for his application from numerous versions and install it himself in a very short time.

An easy plug-in method enables fast replacement of the actuator heads.

Examples of selection options in the modular system

Design

All enclosure variants have an integrated chlorinated rubber diaphragm (high functional safety in cold and aggressive environments).

Enclosure sizes

The 3SE5 switches are available in five different enclosure sizes with 2 or 3 contacts and with the XL enclosure:

- Open-type position switch IP20 or IP10
- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries
- XL metal enclosures with 4 to 6 contacts, 56 mm wide, IP66/IP67, 3 cable entries

Enclosure variants

Various basic switches can be selected for the enclosures of the 3SE5 series:

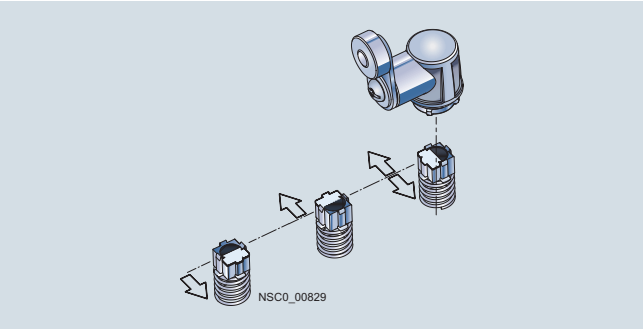
- With contact blocks with two or three contacts (screw terminals) designed as slow-action or snap-action contacts; the slow-action contacts also with make-before-break
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Versions with increased corrosion protection
- Versions for operating temperature up to –40 °C
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/82)

Actuator variants

All operating mechanisms can be rotated around the axis in increments of 22.5°. The following actuator variants are available:

- Standard, rounded and roller plungers
- Roller levers and angular roller levers
- Spring rod
- Twist levers and rod actuators with twist actuator
- Fork levers with twist actuator

The actuator rollers are available with various materials and diameters.



Twist actuator for twist levers and rod levers,
with setting of switching direction to right, left or right/left
(standard for all twist actuators except fork levers)

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Optional LED indicators

LED indicators
available for all enclosure sizes except for XL.

The enclosures are supplied with an LED signaling indicator (1 × green + 1 × yellow). This is the first time that optical signaling equipment is also available for small standard enclosures according to EN 50047. The LED signaling indicators are implemented in 24 V DC and 230 V AC.

Many different contact types

Exchangeable two and three-pole contact blocks
for all enclosure sizes

The three-pole contact block with snap-action or slow-action contacts is regularly available for all enclosure forms. The same installation space is required as for a two-pole block. The version with 1 NO + 2 NC offers for example more safety through redundant shutdowns (2 NC contacts) with simultaneous signaling (NO contact). The three-pole blocks are also available with make-before-break and with 2 NO + 1 NC.

Contact reliability

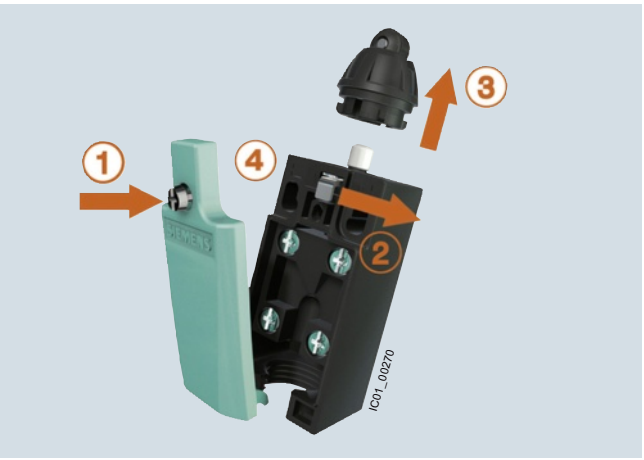
The contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

Positive opening ➔

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

Mounting

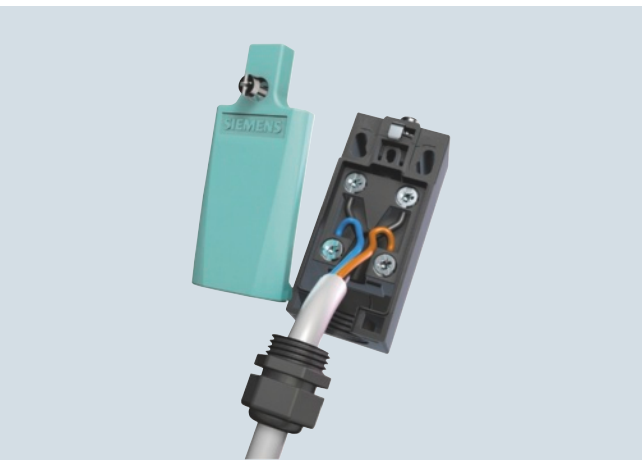
Easy plug-in method
for fast replacement of the actuator heads



Open the cover (1)
Actuate the locking lever (2)
Replace the head (turnable by 16 x 22.5°) (3)
Lock and close the cover (4)

Quick-connect technology

For plastic enclosures with a width of 31 mm



These position switches can be wired quickly and easily as an added customer benefit. The connecting cable is first connected to the terminals of the contact block and then guided through a slit into the cable gland opening. The time saved through this new connection method is approx. 20 to 25 %.

A cable gland with seal must be used with the quick-connect method.

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General data

Benefits

The 3SE5 position switches differ from the previous series through the following new characteristics:

- The modular design of the product range allows a number of versions with a smaller number of bearing types for enclosures and operating mechanisms.
- All actuators can be turned around the axis in increments of 22.5° (see picture, page 12/5).
- Rounded and roller plungers according to EN 50041 with 3 mm overtravel (total travel 9 mm) for greater tolerance when switching.
- All enclosure sizes – now also including the small enclosure 31 mm wide – are optionally available with an LED signaling indicator (see picture, page 12/5).
- All enclosure variants have an integrated chlorinated rubber diaphragm (high functional safety in cold and aggressive environments).
- All contact blocks are replaceable (see page 12/56).
- The three-pole contact blocks are available for all enclosure sizes (see picture, page 12/5).
- Elements with 1 NO + 2 NC slow-action contacts with make-before-break and 2 NO + 1 NC.
- The short-stroke contact block 1 NO + 1 NC improves the precision of the switching operation through a reduced actuation path.
- The contact block with 1 NO + 1 NC snap-action contacts with 2 x 2 mm contact opening is suitable for simultaneous disconnection and signaling, particularly in the elevator industry.
- XL metal enclosures for accommodating two 2- or 3-pole contact blocks.
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture, page 12/5).
- The ASIsafe electronic component is integrated in the enclosure for the versions with AS-Interface connection (see page 12/82); an additional adapter is not required.

Application

With the standard position switches, mechanical positions of moving machine parts are converted into electrical signals. Through their modular and uniform design and large number of variants, the devices can comply with practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. And many different actuator variants are available to match the mechanical configuration of the moving machined parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol ⊖.

Category 2 according to EN ISO 13849-1 can be attained with 3SE5 position switches with ⊖, and category 3 or 4 when using an additional position switch, if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK1 or 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges. The operating mechanisms (actuators) must also be connected to the enclosure by keyed techniques. The corresponding operating mechanisms are marked in the catalog with ⊖.

Contacts for each application

- Snap-action contacts: NC and NO contacts switch simultaneously – regardless of the actuating speed (v_{min} = 0.01 m/s) and contact erosion.
- Slow-action contacts: Difference in travel between "NC contact opens" and "NO contact closes"; the switching speed is the same as or proportional to the actuating speed (v_{min} = 0.4 m/s).
- Slow-action contacts with make-before-break: e.g. suitable for adding a second function to a sequence control.

Operating mechanisms for each application

Standard, rounded and roller plungers

- Operation in direction of the plunger axis or in case of roller plunger with bar at right angles to the plunger axis.
- The roller plunger is recommended for lateral actuation and relatively long overtravel.

Roller levers and angular roller levers

- For actuators made of finely ground steel in the form of cams, straight-edges (approach angle 30°) or cam disks

Spring rod

- Can be used for undefined actuations and changing starting conditions
- Starting from any direction is possible

Twist levers and rod actuators

- For a high starting speed (v = 1.5 m/s)
- Variety of starting options
- Insensitive to oil, grinding dust and coarse-grained material
- Adjustment of the lever in increments of 10°
- Can be adjusted with left or right switching

Fork lever

- Switchable in two directions
- Latching actuator
- For reciprocating movements

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Technical specifications

Type		3SE51.., 3SE52..		3SE541.	3SE542.
General data					
Standards		IEC 60947-5-1, EN 60947-5-1			
Rated insulation voltage U_i	V	400[1]		400	
Pollution degree acc. to IEC 60664-1		Class 3		Class 3	
Rated impulse withstand voltage U_{imp}	kV	6		4	
Rated operational voltage U_e	V	400 V AC, over 300 V AC only for equal potential[2]		300 AC	
Conventional thermal current I_{th}	A	10	6	10	
Rated operational current I_e		2-pole	3-pole	2-pole	
• With alternating current 50/60 Hz		I_e/AC-15	I_e/AC-15	I_e/AC-15	
- At 24 V	A	6	6	6	
- At 120 V	A	6	3	6	
- At 240 V	A	3	1.5	3	
• For direct current		I_e/DC-13	I_e/DC-13	I_e/DC-13	
- At 24 V	A	3	3	3	
- At 125 V	A	0.55	0.55	0.55	
- At 250 V	A	0.27	0.27	0.27	
Short-circuit protection[3]					
• With DIAZED fuse links, operational class gG	A	6		10	
• With miniature circuit breaker, Char. C	A	1		3	
Mechanical endurance					
• Basic switch		15×10^6 operating cycles		30×10^6 operating cycles	30×10^6 operating cycles
• With spring rod, 3SE5...-..R..		10×10^6 operating cycles		--	--
• With fork lever, 3SE51..-..T..		1×10^6 operating cycles		--	--
Electrical endurance					
• With 3RH.1, 3RT contactors in size S00, S0		10×10^6 operating cycles		10×10^6 operating cycles	5×10^6 operating cycles
• For utilization category AC-15 when switching off I_e/AC-15 at 240 V		0.1×10^6 operating cycles		--	--
• With utilization category DC-12/DC-13		For direct current depending on the loading of the switch			
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6 000 operating cycles/h		1 800 operating cycles/h	
Switching accuracy For repeated switching, measured at the plunger of the contact block	mm	0.05		0.05	
• With twist actuators		1°		1°	
Rated data according to CE, UL and CSA					
• Rated voltage	V	300		300	
• Uninterrupted current	A	6		10	
• Switching capacity		Heavy duty, A 300 / B 300 / Q 300		A 300 / Q 300	

[1] For slow-action contacts 1 NO + 2 NC with make-before-break ("M") and 2 NO + 1 NC ("P") the following applies: 250 V.

[2] For slow-action contacts 1 NO + 2 NC with make-before-break ("M") and 2 NO + 1 NC ("P") the following applies: over 250 V AC only equal potential.

[3] Without any welds according to IEC 60947-5-1.

Type		3SE523.	3SE513.	3SE524.	3SE521.	3SE511.	3SE512., 3SE516.	3SE54..	3SE525.
Enclosure									
Enclosure									
• Material		Ultramid A3X2G7			Zinc diecasting GD Zn Al4 Cu1			Zn/Al	--
• Width	mm	31	40	50	31	40	56	30 / 40	30
Degree of protection acc. to IEC 60529		IP65	IP66/IP67[1]					IP67	IP20, IP10
Ambient temperature									
• During operation	°C	–25 ... +85						–25 ... +85	–25 ... +85
• In operation, switch with LEDs	°C	–25 ... +60						--	--
• Storage, transport	°C	–40 ... +90						–40 ... +90	–40 ... +90
Mounting position		Any							
Connection									
Cable entry		1 x (M20 x 1.5)		2 x (M20 x 1.5)	1 x (M20 x 1.5)		3 x (M20 x 1.5)	--	--
Conductor cross-sections									
• Solid	mm^2	1 x (0.5 ... 1.5), 2 x (0.5 ... 0.75)							
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 1.5), 2 x (0.5 ... 0.75)							
• AWG cables	AWG	1 x (AWG 20 ... 16), 2 x (AWG 20 ... 19)							
Tightening torque, contact block	Nm	0.8 ... 1.0							
Protective conductor connection inside enclosure		--			M3.5			--	--

[1] For twist actuators with spring rod and rod actuators: IP65/IP67.

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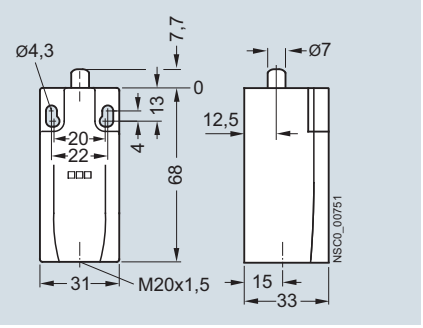
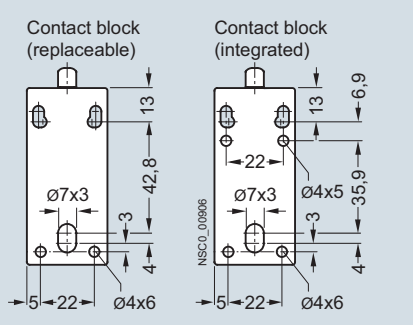
General data

Dimensions of the basic switches

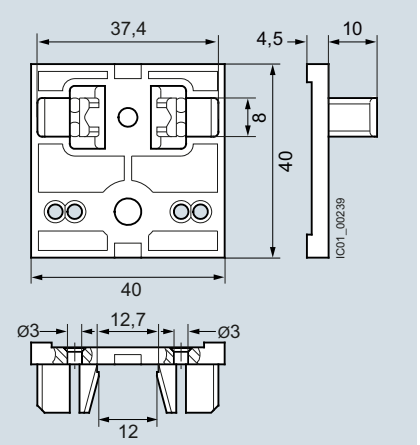
Enclosure width 31 mm, EN 50047, with M20 × 1.53/7 connecting thread 3SE5232, 3SE5212



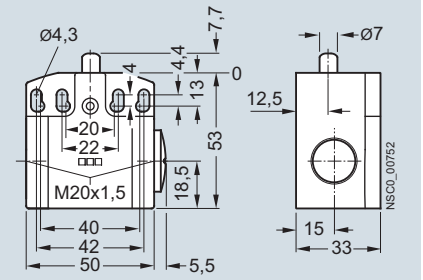
Enclosure width 31 mm, EN 50047, rear with fixing holes 3SE5232, 3SE5212



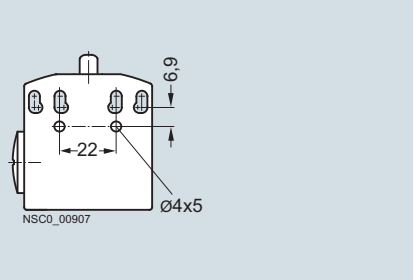
Mounting plate for 3SE5232, 3SE5212 position switch 3SX5100-1A



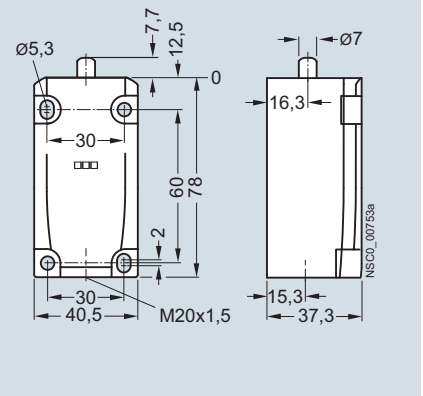
Enclosure width 50 mm, with M20 × 1.5 connecting thread 3SE5242



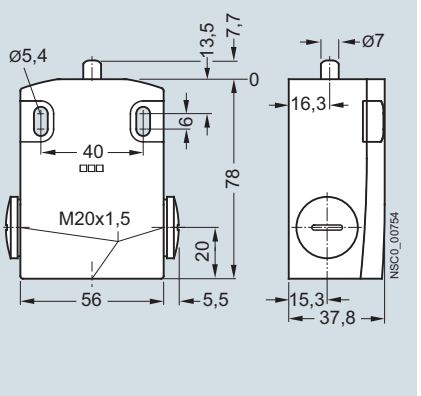
Enclosure width 50 mm, rear with fixing holes 3SE5242



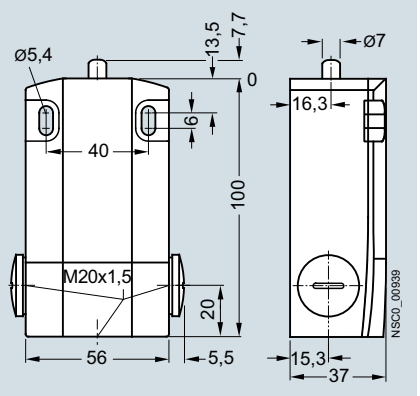
Enclosure width 40 mm, EN 50041, with M20 × 1.5 connecting thread 3SE5112, 3SE5132



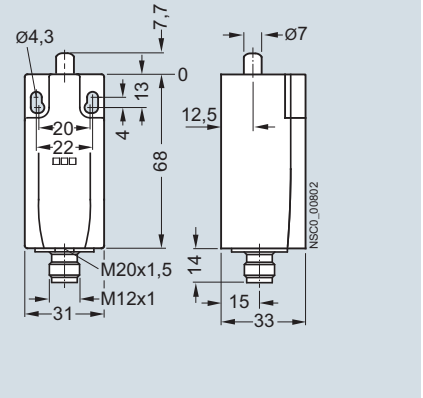
Enclosure width 56 mm, with M20 × 1.5 connecting thread 3SE5122



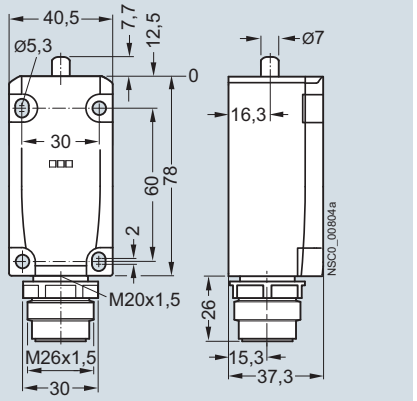
XL enclosure, width 56 mm, with M20 × 1.5 connecting thread 3SE5162



Enclosure width 31 mm, EN 50047, with M12 connector socket 3SE5234, 3SE5214



Enclosure width 40 mm, EN 50041, with 6-pole connector socket 3SE5115



Operating mechanisms for basic switches, see pages 12/9 and 12/10.

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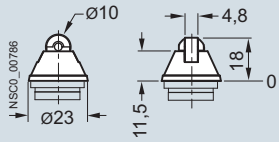
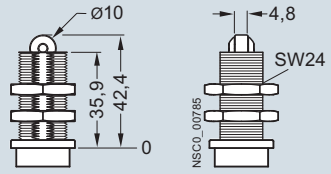
Operating mechanisms for enclosure width 31 mm and 50 mm

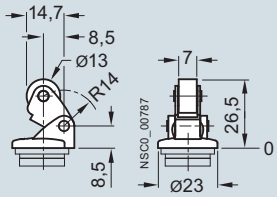
Roller plungers, type C acc. to EN 50047



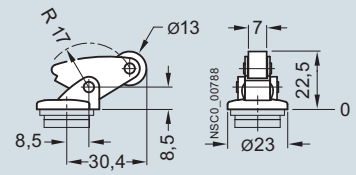
Roller plunger with central fixing



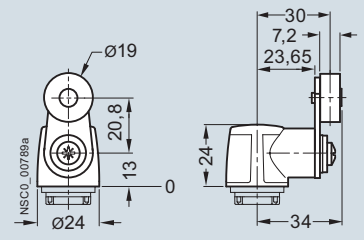
Roller levers, type E acc. to EN 50047



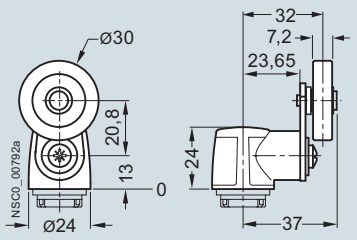
Angular roller lever



Twist levers, type A acc. to EN 50047

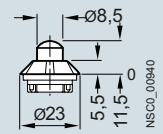


Twist lever, roller 30 mm

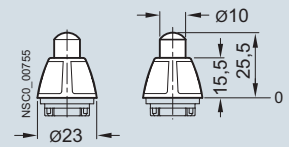


Operating mechanisms for enclosure width 40 mm and 56 mm

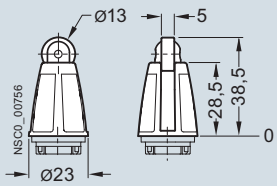
Plain plunger



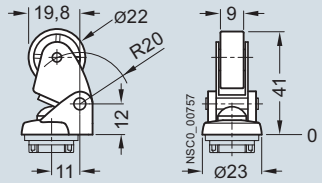
Rounded plungers, type B acc. to EN 50041



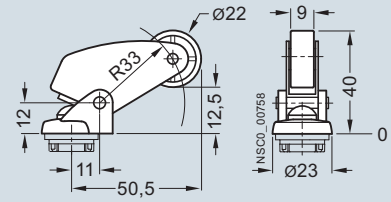
Roller plungers, type C acc. to EN 50041



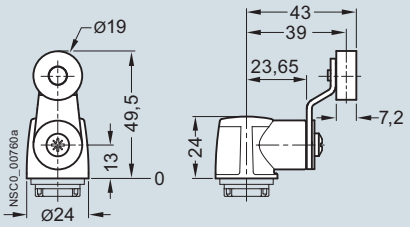
Roller lever



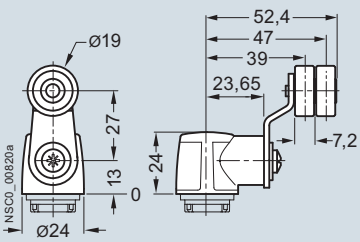
Angular roller lever



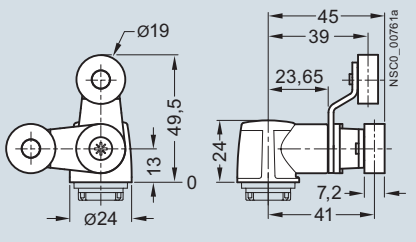
Twist levers, type A acc. to EN 50041



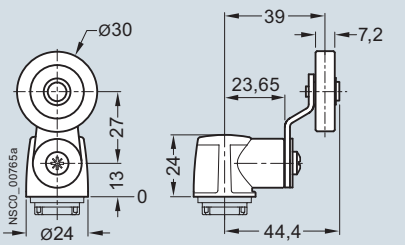
Twist lever, 2 rollers 19 mm



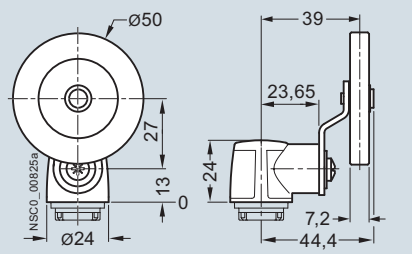
Fork lever, roller 19 mm



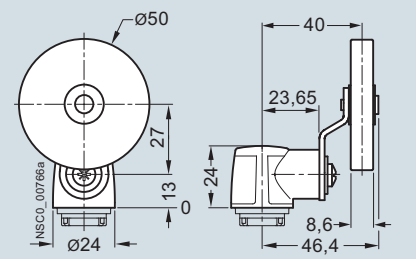
Twist lever, roller 30 mm



Twist lever, roller 50 mm



Twist lever, rubber roller 50 mm



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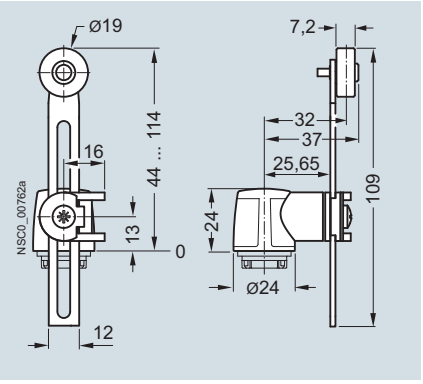
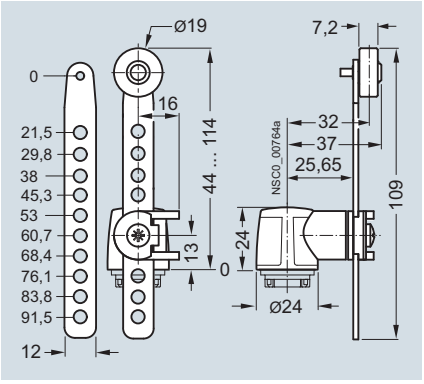
General data

Operating mechanisms for all enclosure widths

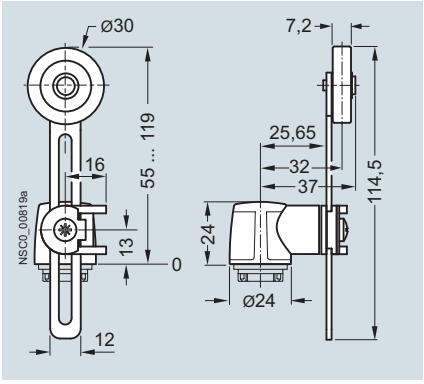
Twist lever, adjustable length, roller 19 mm



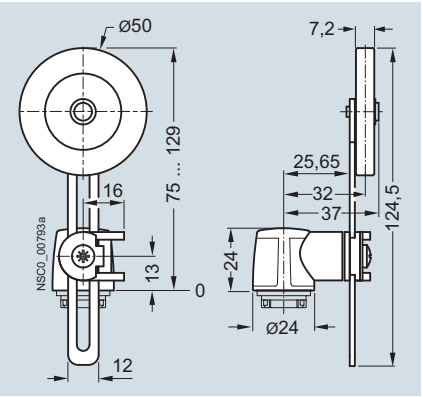
Twist lever, adjustable length, with grid hole, roller 19 mm



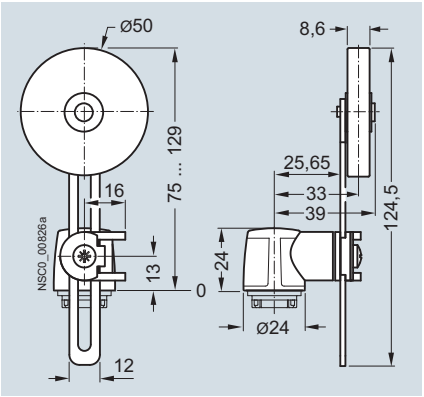
Twist lever, adjustable length, roller 30 mm



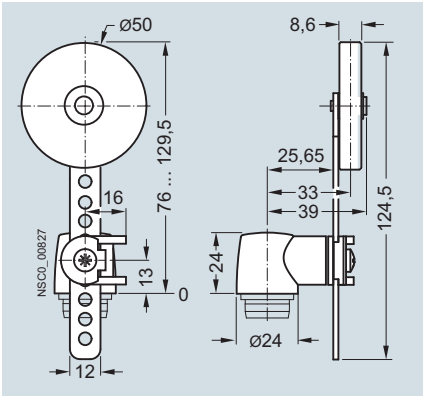
Twist lever, adjustable length, roller 50 mm



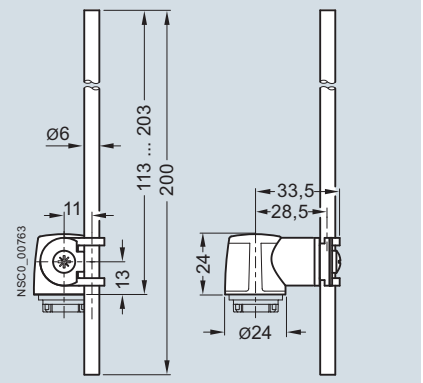
Twist lever, adjustable length, rubber roller 50 mm



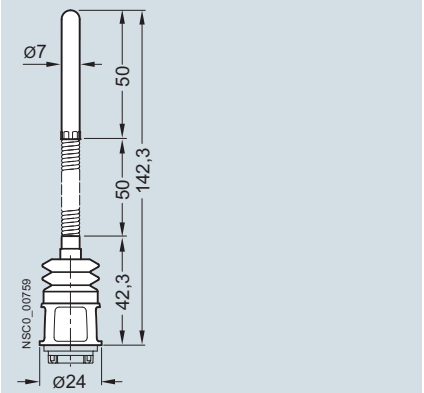
Twist lever, adjustable length, with grid hole, rubber roller 50 mm



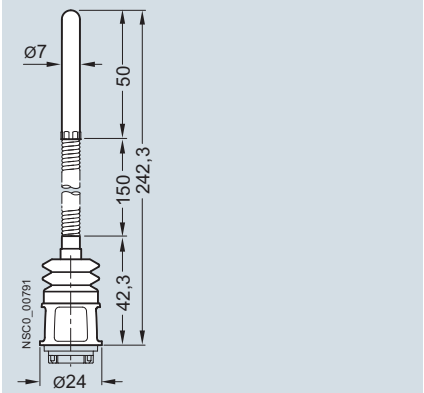
Rod actuator



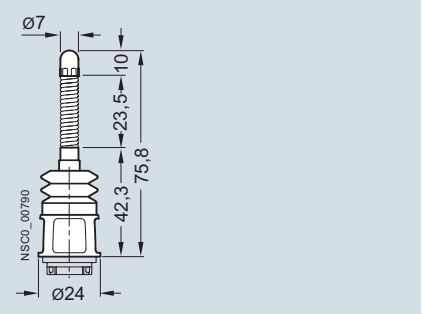
Spring rod, length 142.5 mm



Spring rod, length 242.5 mm



Spring rod, length 76 mm



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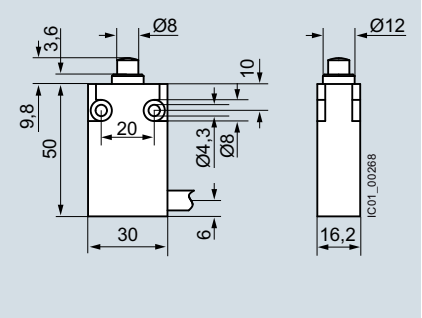
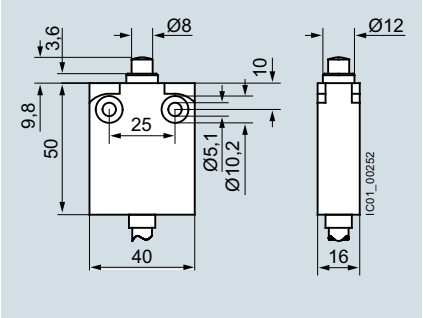
Dimensions of the switches in compact design

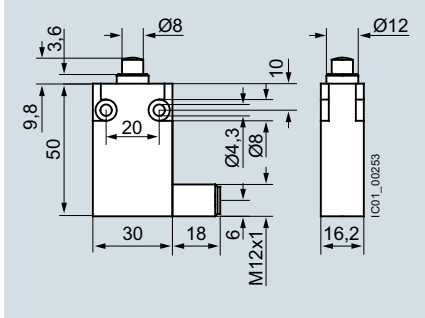
Rounded plunger, enclosure width 30 mm, with connecting cable
3SE5413-0CC20-1EA2



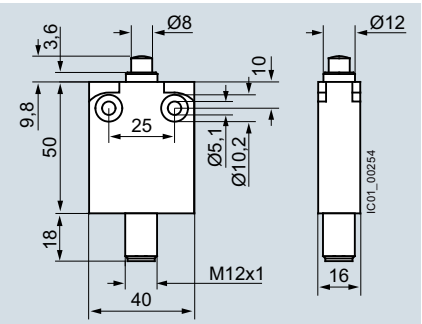
Rounded plunger, enclosure width 40 mm, with connecting cable
3SE5423-0CC20-1EA2



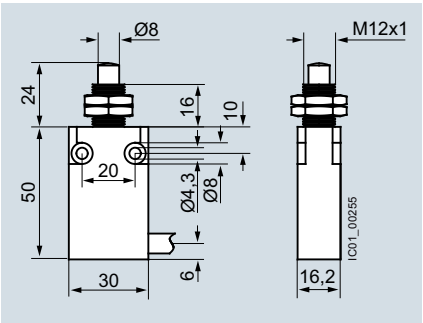
Rounded plunger, enclosure width 30 mm, with M12 connector socket
3SE5413-0CC20-1EB1



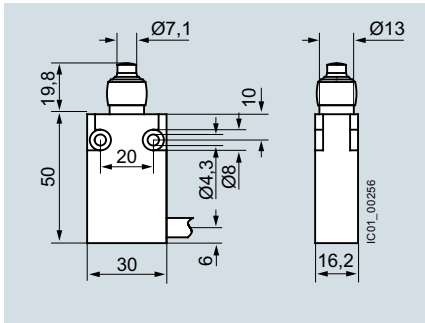
Rounded plunger, enclosure width 40 mm, with M12 connector socket
3SE5423-0CC20-1EB1



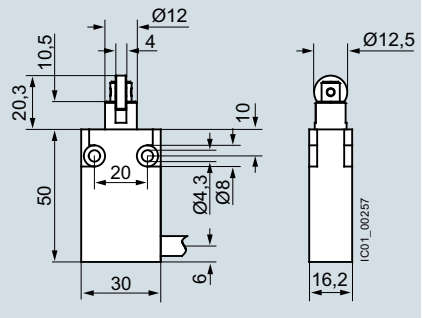
Rounded plunger, enclosure width 30 mm, with central fixing
3SE5413-0CC21-1EA2



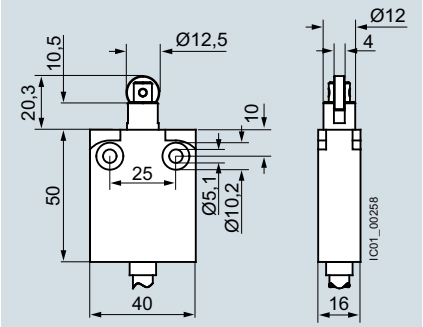
Rounded plunger, enclosure width 30 mm, with external seal
3SE5413-0CC22-1EA2



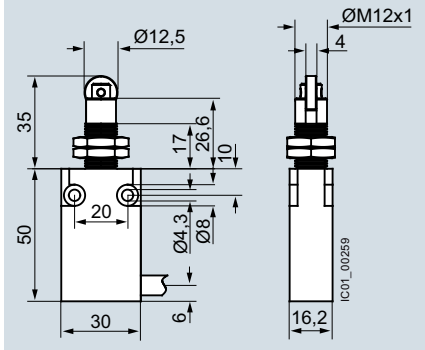
Roller plunger, enclosure width 30 mm, with connecting cable
3SE5413-0CD20-1EA2



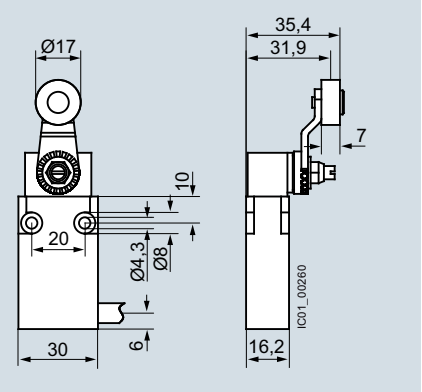
Roller plunger, enclosure width 40 mm, with connecting cable
3SE5423-0CD20-1EA2



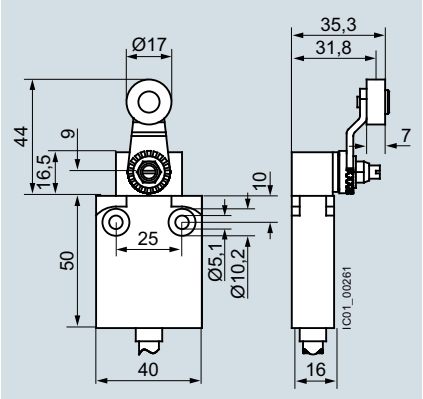
Roller plunger, enclosure width 30 mm, with central fixing
3SE5413-0CD21-1EA2



Twist lever, enclosure width 30 mm, with connecting cable
3SE5413-0CN20-1EA2



Twist lever, enclosure width 40 mm, with connecting cable
3SE5423-0CN20-1EA2



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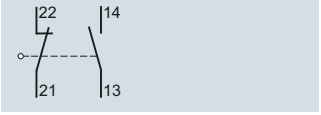
General data

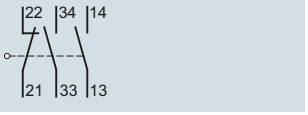
Circuit diagrams

Enclosure widths 31, 40, 50 and 56 mm

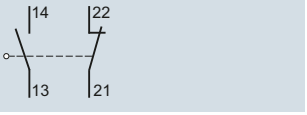
Slow-action contacts
1 NO + 1 NC
3SE5...-.B..., -.R...



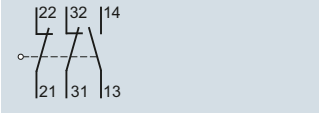
Slow-action contacts
2 NO + 1 NC
3SE5...-.P...



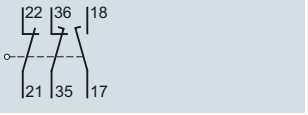
Snap-action contacts
1 NO + 1 NC
3SE5...-.C..., -.F..., -.G..., -.H..., -.N...



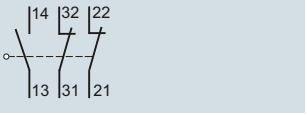
Slow-action contacts
1 NO + 2 NC
3SE5...-.K..., -.Q...



Slow-action contacts
1 NO + 2 NC with make-before-break, 3SE5...-.M...

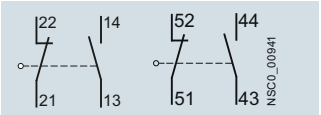


Snap-action contacts
1 NO + 2 NC
3SE5...-.L...

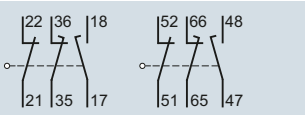


XL enclosures, width 56 mm

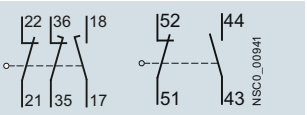
Slow-action contacts
2 x (1 NO + 1 NC)
3SE5162-0B...



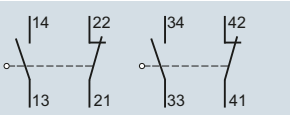
Slow-action contacts
2 x (1 NO + 2 NC) with make-before-break, 3SE5162-0D...



Slow-action contacts
1 NO + 2 NC with make-before-break, 1 NO + 1 NC, 3SE5162-0E...

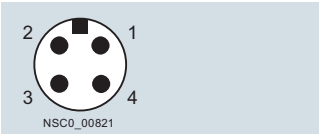


Snap-action contacts
2 x (1 NO + 1 NC)
3SE5162-0C...

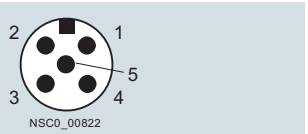


3SE5 connector assignment

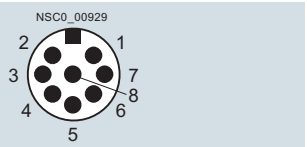
M12 connector socket, 4-pole
3SY3127



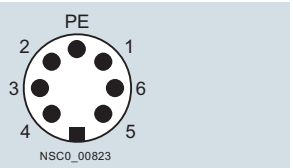
M12 connector socket, 5-pole
3SY3128



M12 connector socket, 8-pole
3SY3134



Connector sockets, 6-pole + PE
3SY3131



Article No.	Connector sockets	Contacts	LEDs	Connections								
	Type	Version	Version	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PE
M12 connector sockets (4-, 5- or 8-pole)												
3SE5..4-0....-1AC4	3SY3127	1 NO + 1 NC	--	21	22	13	14	--	--	--	--	--
3SE5..4-0....-1AC5	3SY3128	1 NO + 1 NC	--	21	22	13	14	PE	--	--	--	--
3SE5..4-0....-1AE0	3SY3127	2 NC	--	21	22	31	32	--	--	--	--	--
3SE5..4-0....-1AE1	3SY3128	2 NC	--	21	22	31	32	PE	--	--	--	--
3SE5..4-1C...-1AF3	3SY3128	1 NO + 1 NC snap-action	2 LEDs	21	22	13 / LED gn	14 / LED ye	Ground LED	--	--	--	--
3SE5..4-1B...-1AF3	3SY3128	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	Ground LED	--	--	--	--
3SE5..4-1L...-1AD4	3SY3134	1 NO + 2 NC snap-action	2 LEDs	21	22	13 / LED gn	14 / LED ye	31	32	Ground LED	PE	--
3SE5..4-1K...-1AD4	3SY3134	1 NO + 2 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	31	32	Ground LED	PE	--
Connector sockets, 6-pole + PE												
3SE5..5-0....-1AD0	3SY3131	1 NO + 1 NC	--	21	22	13	14	--	--	--	--	✓
3SE5..5-0....-1AD1	3SY3131	1 NO + 2 NC	--	21	22	13	14	31	32	--	--	✓
3SE5..5-.C...-1AF2	3SY3131	1 NO + 1 NC snap-action	2 LEDs	21	22	13 / LED gn	14 / LED ye	--	Ground LED	--	--	✓
3SE5..5-.B...-1AF2	3SY3131	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13 / LED ye	--	Ground LED	--	--	✓
3SE5..5-.L...-1AD2	3SY3131	2 NC snap-action	2 LEDs	21	22	31	32	13 / LED gn	Ground LED	--	--	✓
3SE5..5-.K...-1AD2	3SY3131	2 NC slow-action	2 LEDs	21	22	31	32	14 / LED gn	Ground LED	--	--	✓

gn Green
ye Yellow

✓ Connected
-- Not available

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Options

On the following pages you will find selection tables for complete units as well as components of the modular system.

☐	Complete units
⧄	Modular system
	The differences between the units are indicated in the selection and ordering data by the symbols shown on orange backgrounds.

Using the modular system you can assemble switch variants which are not available as complete units. Each complete unit can also be supplied as a module.

A basic switch for the modular system comprises an enclosure with a contact block and a cover. Among the basic switches the following versions, for example, can be selected:

- Basic enclosure with teflon plunger
- Version with increased corrosion protection
- Version with M12 connector socket and/or with 2 LEDs
- Version with M12 connector socket or 6-pole + PE

Support function

The 3SE5/3SF1 position and safety switches can also be ordered using an online configurator.

⚙	Configurator available in the Industry Mall
	The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

This also enables a complete documentation to be prepared:

- Product data sheets
- Dimensional drawings
- Operating travel diagrams
- CAD data in 2D and 3D model images
- Ordering data
- Product photos

For more information, see www.siemens.com/sirius/configurators.

Complete units

Ordering example

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered:

Version	Complete units ☐
	Article No.
Complete units • Enclosure width 31 mm	
Angular roller lever **With metal lever and plastic roller 13 mm** Slow-action contacts 1 NO + 1 NC	**3SE5232-0BF10**

Modular system

Ordering example 1

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered separately:

Version	Modular system ⧄
	Article No.
Basic switches • Enclosure width 31 mm	
With teflon plunger Slow-action contacts 1 NO + 1 NC	**3SE5232-0BC05**
+	
Operating mechanisms	
Angular roller lever Metal lever, plastic roller	**3SE5000-0AF10**

Ordering example 2

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Twist levers, high-grade steel lever and plastic roller

To be ordered separately:

Version	Modular system ⧄
	Article No.
Basic switches • Enclosure width 31 mm	
With teflon plunger Slow-action contacts 1 NO + 1 NC	**3SE5232-0BC05**
+	
Twist actuators	
Twist actuator	**3SE5000-0AK00**
Twist levers High-grade steel lever, plastic roller	**3SE5000-0AA31**

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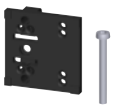
3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

Selection and ordering data

Complete units for installation in control cabinets

2 contacts · Degree of protection IP40 · Cable entry by means of a locking plug with ∅ 6 mm

	Version	Contacts	LEDs	DT	Complete units Article No.	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm								
	Control cabinet type, IP40, rounded plungers, type B, acc. to EN 50047							
Rounded plunger, flat cover	**Flat cover** Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5232-0HC05-1AB1**	1	1 unit	41K
Rounded plungers, flat cover, mounting plate	**Flat cover** with mounting plate and screws for attachment profile Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5232-0HC05-1AB2**	1	1 unit	41K
Rounded plungers, standard cover	**Standard cover** Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5232-0HC05-1AB3**	1	1 unit	41K
Rounded plungers, standard cover, mounting plate	**Standard cover** with mounting plate and screws for attachment profile Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5232-0HC05-1AB4**	1	1 unit	41K
Accessories								
 Mounting plate	**Mounting plate** Suitable for 3SE523. and 3SE521. position switches with a width of 31 mm	--	--	B	**3SX5100-1A**	1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) The control cabinet types are not basic switches for the modular system.

2) Subsequent replacement of contact blocks is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

Complete units

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm								
Rounded plungers, type B, according to EN 50047								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ ►	**3SE5232-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ►	**3SE5232-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5232-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5232-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ ►	**3SE5232-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ ►	**3SE5232-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5232-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5232-0PC05**		1	1 unit	41K
With increased corrosion protection								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5232-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5232-0PC05-1CA0**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5234-0BC05-1AC4**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5234-0HC05-1AC4**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5234-0KC05-1AE0**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ A	**3SE5234-0LC05-1AE0**		1	1 unit	41K
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5232-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5232-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5232-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5232-3LC05**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5234-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5234-1CC05-1AF3**		1	1 unit	41K

Rounded plungers

With increased corrosion protection

With 2 LEDs

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

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3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm							
Roller plungers							
Roller plungers, type C, acc. to EN 50047							
With plastic roller 10 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0BD03**	1	1 unit	41K
Snap-action contacts • Integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5232-0HD03**	1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5232-0FD03**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KD03**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LD03**	1	1 unit	41K
Actuator head rotated by 90°							
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LD03-1AH0**	1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)							
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5234-0HD03-1AC4**	1	1 unit	41K
Roller plunger with central fixing							
Roller plungers with central fixing							
With plastic roller 10 mm							
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5232-0HD10**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KD10**	1	1 unit	41K
Roller lever							
Roller levers, type E acc. to EN 50047							
With metal lever and plastic roller 13 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5232-0BE10**	1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5232-0HE10**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KE10**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LE10**	1	1 unit	41K
With increased corrosion protection (ICP), with high-grade steel lever and plastic roller 13 mm							
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CE12-1CA0**	1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)							
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5234-0HE10-1AC4**	1	1 unit	41K
With high-grade steel lever and plastic roller 13 mm							
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LE12**	1	1 unit	41K
Angular roller lever							
Angular roller lever							
With metal lever and plastic roller 13 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0BF10**	1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5232-0HF10**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KF10**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LF10**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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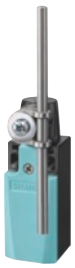
3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm								
Spring rod								
Spring rod								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	A	**3SE5232-0HR01**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5234-0HR01-1AC4**		1	1 unit	41K
Twist levers								
Twist levers, type A acc. to EN 50047								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊕ A	**3SE5232-0BK21**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊕ B	**3SE5232-0HK21**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊕ B	**3SE5232-0KK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊕ B	**3SE5232-0LK21**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊕ B	**3SE5234-0HK21-1AC4**		1	1 unit	41K
With metal lever 35 mm and plastic roller 19 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊕ B	**3SE5232-0HK15**		1	1 unit	41K
Twist levers, adjustable length, with grid hole								
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊕ A	**3SE5232-0HK60**		1	1 unit	41K
Twist levers, adjustable length								
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5232-0BK50**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	►	**3SE5232-0HK50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5232-0LK50**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5234-0HK50-1AC4**		1	1 unit	41K
 Rod actuator								
Rod actuators								
With aluminum rod, length 200 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5232-0HK80**		1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5232-0HK82**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5234-0HK82-1AC4**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/18.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

Modular system

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1)])								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ ▶	**3SE5232-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5232-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5232-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5232-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5232-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5232-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5232-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5232-0PC05**		1	1 unit	41K
With increased corrosion protection[4)]								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5232-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5232-0PC05-1CA0**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5234-0BC05-1AC4**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5234-0HC05-1AC4**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5234-0KC05-1AE0**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ A	**3SE5234-0LC05-1AE0**		1	1 unit	41K
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5232-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5232-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5232-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5232-3LC05**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A)**, and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5234-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5234-1CC05-1AF3**		1	1 unit	41K

Basic switch

With increased corrosion protection

With M12 plug

With 2 LEDs

With M12 plug and 2 LEDs

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) A cable gland with seal must be used with the quick-connect method.

2) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

3) Subsequent replacement of contact blocks is not possible.

4) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 31 mm according to EN 50047

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Roller plunger	**Roller plungers, type C acc. to EN 50047**						
	Plastic rollers	10	⊖ A	**3SE5000-0AD03**	1	1 unit	41K
	High-grade steel rollers	10	⊖ B	**3SE5000-0AD04**	1	1 unit	41K
With central fixing	**Roller plungers with central fixing**						
	Plastic rollers	10	⊖ B	**3SE5000-0AD10**	1	1 unit	41K
	High-grade steel rollers	10	⊖ B	**3SE5000-0AD11**	1	1 unit	41K
Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AE10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ B	**3SE5000-0AE12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE13**	1	1 unit	41K
Ang. roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AF10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ A	**3SE5000-0AF12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF13**	1	1 unit	41K
Spring rod	**Spring rods** (for switches with snap-action contacts only)						
	Plunger made of plastic, spring of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**	1	1 unit	41K
	Plunger and spring made of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right and/or left, adjustable		⊖ A	**3SE5000-0AK00**	1	1 unit	41K
	Levers						
Twist levers	**Twist levers 21 mm, straight, type A according to EN 50047**						
	Metal lever, plastic roller	19	⊖ A	**3SE5000-0AA21**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA22**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊖ B	**3SE5000-0AA23**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA25**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA31**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA32**	1	1 unit	41K
Twist lever, adjust. length	**Twist levers 30 mm, straight**[1)]						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K
Rod actuator	**Twist levers, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**	1	1 unit	41K
	Rod actuators						
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**	1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

[1)] Can be clinch mounted (turned through 180°, rear of lever).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
Plain plunger								
Plain plungers								
With high-grade steel plunger								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5132-0BB01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5132-0CB01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5132-0KB01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LB01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5132-0PB01**		1	1 unit	41K
Rounded plungers								
Rounded plungers, type B according to EN 50041								
With plastic plunger								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5132-0BC03**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CC03**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5132-0KC03**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LC03**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5132-0PC03**		1	1 unit	41K
Roller plungers								
Roller plungers, type C acc. to EN 50041								
With plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5132-0BD05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CD05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5132-0KD05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LD05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5132-0PD05**		1	1 unit	41K
Roller lever								
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5132-0BE05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CE05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5132-0KE05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LE05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5132-0PE05**		1	1 unit	41K
Angular roller lever								
Angular roller lever								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5132-0BF05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5132-0CF05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LF05**		1	1 unit	41K
Spring rod								
Spring rod								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5132-0CR01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LR01**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
Twist levers, type A acc. to EN 50041								
With metal lever 27 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5132-0BJ01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CJ01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5132-0KJ01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LJ01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5132-0PJ01**		1	1 unit	41K
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5132-0CJ60**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LJ60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CJ50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5132-0LJ50**		1	1 unit	41K
Rod actuators, type D, acc. to EN 50041								
With aluminum rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5132-0CJ80**		1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5132-0CJ82**		1	1 unit	41K

Twist levers

Twist levers, adjustable length, with grid hole

Twist levers, adjustable length

Rod actuator

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/22.

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
Basic switch	**With M20 × 1.5 connecting thread**							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5132-0BA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5132-0CA00**	1	1 unit	41K
	• Gold-plated contacts			➔ B	**3SE5132-0CA00-1AC1**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0LA00**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ B	**3SE5132-0MA00**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	➔ B	**3SE5132-0PA00**	1	1 unit	41K
With increased corrosion protection	**With increased corrosion protection**[1]							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5132-0BA00-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5132-0CA00-1CA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0KA00-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0LA00-1CA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ B	**3SE5132-0MA00-1CA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	➔ B	**3SE5132-0PA00-1CA0**	1	1 unit	41K
With M12 plug	**With M12 connector socket, 4-pole** (250 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5134-0BA00-1AC4**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5134-0CA00-1AC4**	1	1 unit	41K
	Slow-action contacts	2 NC	--	➔ B	**3SE5134-0KA00-1AE0**	1	1 unit	41K
	Snap-action contacts	2 NC	--	➔ B	**3SE5134-0LA00-1AE0**	1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	➔ C	**3SE5132-1KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	24 V DC	➔ C	**3SE5132-1LA00**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	➔ C	**3SE5132-3KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	230 V AC	➔ C	**3SE5132-3LA00**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Plain plunger	**Plain plungers**						
	High-grade steel plungers	10	⊕ A	**3SE5000-0AB01**	1	1 unit	41K
Plunger	**Rounded plungers, type B according to EN 50041**						
	Plastic plungers	10	⊕ B	**3SE5000-0AC03**	1	1 unit	41K
	Roller plungers, type C acc. to EN 50041						
	Plastic plunger, plastic roller	13	⊕ B	**3SE5000-0AD05**	1	1 unit	41K
	Plastic plunger, high-grade steel roller	13	⊕ B	**3SE5000-0AD06**	1	1 unit	41K
Roller lever	**Roller levers**						
	Metal lever with plastic roller, plastic base	22	⊕ B	**3SE5000-0AE05**	1	1 unit	41K
Ang. roller lever	**Angular roller levers**						
	Metal lever with plastic roller, plastic base	22	⊕ B	**3SE5000-0AF05**	1	1 unit	41K
Spring rod	**Spring rods** (for switches with snap-action contacts only)						
	Plunger made of plastic, spring of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**	1	1 unit	41K
	Plunger and spring made of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, plastic (without lever)						
	• For twist levers and rod actuators, switching right and/or left, adjustable		⊕ B	**3SE5000-0AJ00**	1	1 unit	41K
	Levers						
	Twist levers, offset, type A according to EN 50041						
Twist lever	Metal lever 27 mm, plastic roller	19	⊕ A	**3SE5000-0AA01**	1	1 unit	41K
	Metal lever 27 mm, high-grade steel roller	19	⊕ A	**3SE5000-0AA02**	1	1 unit	41K
	Metal lever 27 mm, high-grade steel roller with ball bearing	19	⊕ B	**3SE5000-0AA03**	1	1 unit	41K
	Metal lever 27 mm, 2 plastic rollers	19	⊕ B	**3SE5000-0AA04**	1	1 unit	41K
	Metal lever 27 mm, plastic roller	30	⊕ B	**3SE5000-0AA05**	1	1 unit	41K
	Metal lever 27 mm, rubber roller	50	⊕ B	**3SE5000-0AA08**	1	1 unit	41K
	High-grade steel lever 27 mm, plastic roller	19	⊕ B	**3SE5000-0AA11**	1	1 unit	41K
	High-grade steel lever 27 mm, high-gr. steel roller	19	⊕ B	**3SE5000-0AA12**	1	1 unit	41K
	Metal lever 35 mm, plastic roller	19	⊕ B	**3SE5000-0AA15**	1	1 unit	41K
	High-grade steel lever 35 mm, plastic roller	19	⊕ B	**3SE5000-0AA16**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]						
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, rubber roller	50	⊕ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA63**	1	1 unit	41K
Rod actuator	**Twist lever, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**	1	1 unit	41K
	Rod actuators, type D according to EN 50041						
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**	1	1 unit	41K

⊕ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 50 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 50 mm								
Rounded plunger	***Rounded plungers***							
	With teflon plunger							
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5242-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ ▶	**3SE5242-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5242-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5242-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5242-0PC05**		1	1 unit	41K
With increased corrosion protection	**With increased corrosion protection**							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5242-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5242-0PC05-1CA0**		1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**							
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5242-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5242-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5242-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5242-3LC05**		1	1 unit	41K
Roller plunger	***Roller plungers***							
	With plastic roller 10 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0BD03**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HD03**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LD03**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 50 mm								
Roller levers								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0BE10**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ A	**3SE5242-0HE10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LE10**		1	1 unit	41K
With M12 connector socket, 4-pole right (250 V, 4 A)								
Snap-action contacts	2 NC	--	⊖ B	**3SE5244-0LE10-1AE0**		1	1 unit	41K
Twist levers								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0BK21**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LK21**		1	1 unit	41K
Twist levers, adjustable length								
With metal lever and plastic roller 19 mm								
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	B	**3SE5242-0HK50**		1	1 unit	41K

Roller lever

Twist lever

Twist lever, adjustable length

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/26.

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3SE5, plastic enclosures
Enclosure width 50 mm

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 50 mm (with rounded plunger[1])								
Basic switch								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5242-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ ▶	**3SE5242-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5242-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5242-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5242-0PC05**		1	1 unit	41K
With increased corrosion protection								
With increased corrosion protection[3]								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5242-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5242-0PC05-1CA0**		1	1 unit	41K
With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5242-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5242-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5242-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5242-3LC05**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

3) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

Version	Diameter mm	DT	Modular system / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Roller plunger							
Roller plungers, type C acc. to EN 50047							
Plastic rollers	10	⊖ A	**3SE5000-0AD03**		1	1 unit	41K
High-grade steel rollers	10	⊖ B	**3SE5000-0AD04**		1	1 unit	41K
With central fixing							
Roller plungers with central fixing							
Plastic rollers	10	⊖ B	**3SE5000-0AD10**		1	1 unit	41K
High-grade steel rollers	10	⊖ B	**3SE5000-0AD11**		1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

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3SE5, plastic enclosures
Enclosure width 50 mm

	Version	Diameter	DT	Modular system ◇ Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	⊕ A	**3SE5000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊕ B	**3SE5000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊕ B	**3SE5000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊕ B	**3SE5000-0AE13**		1	1 unit	41K
Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	⊕ A	**3SE5000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊕ B	**3SE5000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊕ A	**3SE5000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊕ B	**3SE5000-0AF13**		1	1 unit	41K
Spring rod	**Spring rods** (for switches with snap-action contacts only)							
	Plunger made of plastic, spring of high-grade steel:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**		1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**		1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**		1	1 unit	41K
	Plunger and spring made of high-grade steel:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**		1	1 unit	41K
Twist actuators								
Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right and/or left, adjustable		⊕ A	**3SE5000-0AK00**		1	1 unit	41K
	Levers							
	Twist levers 21 mm, straight, type A according to EN 50047							
Twist lever	Metal lever, plastic roller	19	⊕ A	**3SE5000-0AA21**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA22**		1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊕ B	**3SE5000-0AA23**		1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5000-0AA25**		1	1 unit	41K
Twist lever, adjustable length	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA31**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA32**		1	1 unit	41K
	Twist levers 30 mm, straight[1]							
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	⊕ B	**3SE5000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	⊕ B	**3SE5000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA63**		1	1 unit	41K
Rod actuator	**Twist lever, adjustable length**							
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**		1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**		1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5000-0AA57**		1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**		1	1 unit	41K
	Rod actuators							
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**		1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**		1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**		1	1 unit	41K

⊕ Positively driven actuator, necessary in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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3SE5, plastic enclosures
Ambient temperature up to –40 °C

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5

	Version	Contacts	LEDs	DT	Complete units / Article No.	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm								
Roller plunger	***Roller plungers, type C, acc. to EN 50047*** **With plastic roller 10 mm,** **With M12 connector socket, 4-pole** (250 V, 4 A)							
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5234-0CD03-1AJ1**	1	1 unit	41K
Roller plunger with central fixing	***Roller plungers with central fixing***							
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0CD10-1AJ0**	1	1 unit	41K
Twist lever	***Twist levers, type A acc. to EN 50047*** **With high-grade steel lever 21 mm and plastic roller 19 mm**							
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5232-0CK31-1AJ0**	1	1 unit	41K
Twist levers, adjustable length, with grid hole	***Twist levers, adjustable length*** **With high-grade steel lever with grid hole and plastic roller 19 mm**							
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5232-0CK62-1AJ0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0LK62-1AJ0**	1	1 unit	41K
Complete units[1] • Enclosure width 50 mm								
Twist levers, adjustable length, with grid hole	***Twist lever*** **With metal lever 21 mm and plastic roller 19 mm**							
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HK21-1AJ0**	1	1 unit	41K
	Twist levers, adjustable length **With high-grade steel lever with grid hole and plastic roller 19 mm**							
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5242-0HK62-1AJ0**	1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/29.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Ambient temperature up to –40 °C

Modular system

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
Basic switch								
With teflon plunger								
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5232-0CC05-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5232-0KC05-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5232-0LC05-1AJ0**		1	1 unit	41K
Basic switches • Enclosure width 50 mm (with rounded plunger[1])								
Basic switch								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5242-0BC05-1AJ0**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	➔ B	**3SE5242-0HC05-1AJ0**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 and 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

Note:

Selection aid see page 12/13.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, plastic enclosures
Ambient temperature up to –40 °C

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Roller plunger	**Roller plungers, type C acc. to EN 50047**						
	Plastic rollers	10	➔ B	**3SE5000-0AD03-1AJ0**	1	1 unit	41K
Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	➔ B	**3SE5000-0AE10-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5000-0AE12-1AJ0**	1	1 unit	41K
Angular roller lever	**Angular roller lever**						
	Metal lever, plastic roller	13	➔ B	**3SE5000-0AF10-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5000-0AF12-1AJ0**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right and/or left, adjustable		➔ B	**3SE5000-0AK00-1AJ0**	1	1 unit	41K
Twist lever	***Levers***						
	Twist levers straight, 21 mm, type A acc. to EN 50047						
	Metal lever, plastic roller	19	➔ B	**3SE5000-0AA21-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA31-1AJ0**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	➔ B	**3SE5000-0AA60-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA62-1AJ0**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Ambient temperature up to –40 °C

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG	Price per PU
Basic switches • Enclosure width 40 mm								
With M20 × 1.5 connecting thread								
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5132-0CA00-1AJ0**	1	1 unit	41K	
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0KA00-1AJ0**	1	1 unit	41K	
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0LA00-1AJ0**	1	1 unit	41K	

Basic switch

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

Selection aid see page 12/13.

Version	Diameter	DT	Modular system / Article No.	PU (UNIT, SET, M)	PS*	PG	Price per PU
	mm						
Operating mechanisms							
Rounded plungers, type B according to EN 50041							
Plastic plungers	10	➔ B	**3SE5000-0AC03-1AJ0**	1	1 unit	41K	
Roller plungers, type C acc. to EN 50041							
Plastic plunger, plastic roller	13	➔ B	**3SE5000-0AD05-1AJ0**	1	1 unit	41K	
Roller levers							
Metal lever with plastic roller, plastic base	22	➔ B	**3SE5000-0AE05-1AJ0**	1	1 unit	41K	
Twist actuators							
Twist actuators, plastic (without lever) • For twist levers and rod actuators, switching right and/or left, adjustable		➔ B	**3SE5000-0AJ00-1AJ0**	1	1 unit	41K	
Levers							
Twist levers, type A acc. to EN 50041							
Metal lever, plastic roller	19	➔ B	**3SE5000-0AA01-1AJ0**	1	1 unit	41K	
High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA11-1AJ0**	1	1 unit	41K	
Twist levers, adjustable length, with grid hole							
Metal lever, plastic roller	19	➔ B	**3SE5000-0AA60-1AJ0**	1	1 unit	41K	
High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA62-1AJ0**	1	1 unit	41K	

Rounded plunger

Roller plunger

Roller lever

Twist actuator

Twist lever

Twist lever, adjustable length

➔ Positively driven actuator, necessary in safety circuits.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm								
Rounded plunger	***Rounded plungers, type B, according to EN 50047***							
	With plunger							
	Slow-action contacts	1 NO + 1 NC	--	➔ A	**3SE5212-0BC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ A	**3SE5212-0CC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ A	**3SE5212-0KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ A	**3SE5212-0LC05**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ A	**3SE5212-0MC05**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	➔ A	**3SE5212-0PC05**	1	1 unit	41K
With increased corrosion protection	**With increased corrosion protection**							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0BC05-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0CC05-1CA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0KC05-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0LC05-1CA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ B	**3SE5212-0MC05-1CA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	➔ B	**3SE5212-0PC05-1CA0**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5214-0BC05-1AC5**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5214-0CC05-1AC5**	1	1 unit	41K
	Slow-action contacts	2 NC	--	➔ B	**3SE5214-0KC05-1AE1**	1	1 unit	41K
	Snap-action contacts	2 NC	--	➔ B	**3SE5214-0LC05-1AE1**	1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	➔ B	**3SE5212-1KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	24 V DC	➔ A	**3SE5212-1LC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5212-3KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5212-3LC05**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**							
	Slow-action contacts	1 NO + 1 NC	24 V DC	➔ B	**3SE5214-1BC05-1AF3**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	24 V DC	➔ B	**3SE5214-1CC05-1AF3**	1	1 unit	41K
Plain plunger	***Plain plungers***							
	With high-grade steel plunger							
	Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0BB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0CB01**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0KB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0LB01**	1	1 unit	41K
Roller plunger	***Roller plungers, type C, acc. to EN 50047***							
	With plastic roller 10 mm							
	Slow-action contacts	1 NO + 1 NC	--	➔ A	**3SE5212-0BD03**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0CD03**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	➔ A	**3SE5212-0KD03**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0LD03**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm								
Roller plungers with central fixing								
With plastic roller 10 mm								
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KD10**		1	1 unit	41K
Roller levers, type E acc. to EN 50047								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5212-0BE10**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0CE10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KE10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0LE10**		1	1 unit	41K
Angular roller levers								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0BF10**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0CF10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KF10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0LF10**		1	1 unit	41K
Twist levers, type A acc. to EN 50047								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0BK21**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0CK21**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0LK21**		1	1 unit	41K
Twist lever, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0CK60**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KK60**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0LK60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5212-0BK50**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5212-0CK50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5212-0LK50**		1	1 unit	41K

Roller plunger with central fixing

Roller lever

Angular roller lever

Twist lever

Twist levers, adjustable length, with grid hole

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/34.

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
Basic switch								
With plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5212-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5212-0CC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5212-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5212-0LC05**		1	1 unit	41K
Slow-action cont. with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5212-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5212-0PC05**		1	1 unit	41K
With increased corrosion protection								
With increased corrosion protection[2]								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5212-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0LC05-1CA0**		1	1 unit	41K
Slow-action cont. with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5212-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5212-0PC05-1CA0**		1	1 unit	41K
With M12 plug								
With M12 connector socket, 5-pole (125 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5214-0BC05-1AC5**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5214-0CC05-1AC5**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5214-0KC05-1AE1**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ B	**3SE5214-0LC05-1AE1**		1	1 unit	41K
With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5212-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ A	**3SE5212-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5212-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5212-3LC05**		1	1 unit	41K
With M12 plug and 2 LEDs								
With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5214-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5214-1CC05-1AF3**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

2) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

Version	Diameter mm	DT	Modular system / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Plain plunger							
Plain plunger							
High-grade steel plungers	10	⊖ A	**3SE5000-0AB01**		1	1 unit	41K
Roller plunger							
Roller plunger, type C acc. to EN 50047							
Plastic roller	10	⊖ A	**3SE5000-0AD03**		1	1 unit	41K
High-grade steel rollers	10	⊖ B	**3SE5000-0AD04**		1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
With central fixing	**Roller plungers with central fixing**						
	Plastic roller	10	⊖ B	**3SE5000-0AD10**	1	1 unit	41K
	High-grade steel rollers	10	⊖ B	**3SE5000-0AD11**	1	1 unit	41K
Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AE10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ B	**3SE5000-0AE12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE13**	1	1 unit	41K
Ang. roller levers	**Angular roller lever**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AF10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ A	**3SE5000-0AF12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF13**	1	1 unit	41K
Spring rod	**Spring rods** (for switches with snap-action contacts only)						
	Plunger made of plastic, spring of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**	1	1 unit	41K
	Plunger and spring made of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right and/or left, adjustable		⊖ A	**3SE5000-0AK00**	1	1 unit	41K
	Levers						
	Twist levers, straight, type A according to EN 50047						
Twist lever	Metal lever 21 mm, plastic roller	19	⊖ A	**3SE5000-0AA21**	1	1 unit	41K
	Metal lever 21 mm, high-grade steel roller	19	⊖ B	**3SE5000-0AA22**	1	1 unit	41K
	Metal lever 21 mm, high-grade steel roller with ball bearing	19	⊖ B	**3SE5000-0AA23**	1	1 unit	41K
	Metal lever 21 mm, plastic roller	30	⊖ B	**3SE5000-0AA25**	1	1 unit	41K
	High-grade steel lever 21 mm, plastic roller	19	⊖ B	**3SE5000-0AA31**	1	1 unit	41K
	High-grade steel lever 21 mm, high-grade steel roller	19	⊖ B	**3SE5000-0AA32**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K
Rod actuator	**Twist lever, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**	1	1 unit	41K
	Rod actuators, type D according to EN 50041						
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**	1	1 unit	41K
	Plastic rod, length 330 mm	6	B	**3SE5000-0AA83**	1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm according to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Contacts	LEDs	DT	Complete units / Article No.	PU (UNIT, SET, M)	PS*	PG
	Complete units[1] • Enclosure width 40 mm							
Plain plunger	***Plain plunger***							
	With high-grade steel plunger							
	Slow-action contacts	1 NO + 1 NC	--	A	**3SE5112-0BB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	A	**3SE5112-0CB01**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5112-0KB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LB01**	1	1 unit	41K
Rounded plunger	***Rounded plungers, type B according to EN 50041***							
	With high-grade steel plungers, with 3 mm overtravel							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BC02**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	Ⓔ	**3SE5112-0CC02**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5112-0KC02**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LC02**	1	1 unit	41K
Roller plunger	***Roller plungers, type C acc. to EN 50041***							
	With high-grade steel roller 13 mm, with 3 mm overtravel							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BD02**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5112-0CD02**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5112-0KD02**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LD02**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**							
	Snap-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5114-1CD02-1AF3**	1	1 unit	41K
Roller lever	***Roller levers***							
	With metal lever and plastic roller 22 mm							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BE01**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5112-0CE01**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5112-0KE01**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LE01**	1	1 unit	41K
Ang. roller lever	***Angular roller lever***							
	With metal lever and plastic roller 22 mm							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BF01**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	A	**3SE5112-0CF01**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LF01**	1	1 unit	41K
Spring rod	***Spring rod***							
	Length 142.5 mm, with plastic plunger 50 mm							
	Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5112-0CR01**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm according to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
Twist levers, type A acc. to EN 50041								
With metal lever 27 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	➔	B	**3SE5112-0BH01**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔	Ⓔ	**3SE5112-0CH01**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔	B	**3SE5112-0KH01**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔	B	**3SE5112-0LH01**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A)								
Snap-action contacts	1 NO + 1 NC	--	➔	A	**3SE5114-0CH01-1AC5**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
Snap-action contacts	1 NO + 1 NC	24 V DC	➔	B	**3SE5114-1CH01-1AF3**	1	1 unit	41K
With metal lever 27 mm and high-grade steel roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	➔	B	**3SE5112-0BH02**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔	A	**3SE5112-0CH02**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
Snap-action contacts	1 NO + 1 NC	--	➔	B	**3SE5114-1CH02-1AF3**	1	1 unit	41K
With metal lever 30 mm and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	➔	▶	**3SE5112-0CH24**	1	1 unit	41K
Twist lever, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	➔	B	**3SE5112-0BH60**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔	▶	**3SE5112-0CH60**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔	B	**3SE5112-0LH60**	1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--		B	**3SE5112-0BH50**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--		▶	**3SE5112-0CH50**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--		B	**3SE5112-0LH50**	1	1 unit	41K
With M12 connector socket, 8-pole (30 V, 2 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 2 NC	24 V DC		B	**3SE5114-1LH50-1AD4**	1	1 unit	41K
With metal lever and high-grade steel roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--		B	**3SE5112-0CH51**	1	1 unit	41K
Fork levers, latching								
With metal lever and 2 plastic rollers 19 mm								
Snap-action contacts	1 NO + 1 NC	--	➔	B	**3SE5112-0CT11**	1	1 unit	41K
Rod actuators, type D, acc. to EN 50041								
With aluminum rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--		▶	**3SE5112-0CH80**	1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--		B	**3SE5112-0CH82**	1	1 unit	41K

Twist lever

Twist levers, adjustable length, with grid hole

Twist lever, adjustable length

Fork lever

Rod actuator

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/38.

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3SE5, metal enclosures
Enclosure width 40 mm according to EN 50041

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
With M20 × 1.5 connecting thread								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BA00**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5112-0CA00**		1	1 unit	41K
• Gold-plated contacts			B	**3SE5112-0CA00-1AC1**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	A	**3SE5112-0KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	A	**3SE5112-0LA00**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	A	**3SE5112-0MA00**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	A	**3SE5112-0PA00**		1	1 unit	41K
With increased corrosion protection[1]								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5112-0BA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5112-0CA00-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5112-0KA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5112-0LA00-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	B	**3SE5112-0MA00-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5112-0PA00-1CA0**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5114-0BA00-1AC5**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5114-0CA00-1AC5**		1	1 unit	41K
Slow-action contacts	2 NC	--	B	**3SE5114-0KA00-1AE1**		1	1 unit	41K
Snap-action contacts	2 NC	--	B	**3SE5114-0LA00-1AE1**		1	1 unit	41K
With connector socket, 6-pole + PE (250 V, 10 A)								
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5115-0KA00-1AD1**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5115-0LA00-1AD1**		1	1 unit	41K
With connector socket, 6-pole + PE (250 V, 10 A) **and quick-release device**								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5115-0CA00-1AD0**		1	1 unit	41K
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5112-1KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5112-1LA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5112-3KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5112-3LA00**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5114-1BA00-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5114-1CA00-1AF3**		1	1 unit	41K
With M12 connector socket, 8-pole (30 V, 2 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5114-1LA00-1AD4**		1	1 unit	41K
With connector socket, 6-pole + PE (10 A), **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5115-1BA00-1AF2**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5115-1CA00-1AF2**		1	1 unit	41K
Snap-action contacts	2 NC	24 V DC	B	**3SE5115-1LA00-1AD2**		1	1 unit	41K

Basic switch

With increased corrosion protection

With M12 plug

With plug, 6-pole + PE

With 2 LEDs

With M12 plug and 2 LEDs

With plug, 6-pole PE, and 2 LEDs

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

[1] Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm according to EN 50041

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Plunger	**Plain plunger**						
	High-grade steel plunger	10	⊖ A	**3SE5000-0AB01**	1	1 unit	41K
	Rounded plungers, type B according to EN 50041						
	High-grade steel plungers, with 3 mm overtravel	10	⊖ B	**3SE5000-0AC02**	1	1 unit	41K
	Roller plungers, type C acc. to EN 50041						
	High-grade steel roller, with 3 mm overtravel	13	⊖ B	**3SE5000-0AD02**	1	1 unit	41K
Roller lever	**Roller lever**						
	Metal lever, plastic roller	22	⊖ A	**3SE5000-0AE01**	1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5000-0AE02**	1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5000-0AE03**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5000-0AE04**	1	1 unit	41K
Ang. roller lever	**Angular roller lever**						
	Metal lever, plastic roller	22	⊖ A	**3SE5000-0AF01**	1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5000-0AF02**	1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5000-0AF03**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5000-0AF04**	1	1 unit	41K
Spring rod	**Spring rods** (for switches with snap-action contacts only)						
	Plunger made of plastic, spring of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**	1	1 unit	41K
	Plunger and spring made of high-grade steel:	7					
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, metal (without lever)						
	• For twist levers and rod actuators, switching right and/or left, adjustable		⊖ A	**3SE5000-0AH00**	1	1 unit	41K
	• For fork levers, latching		⊖ B	**3SE5000-0AT10**	1	1 unit	41K
	Levers						
Twist lever	**Twist levers, offset, type A according to EN 50041**						
	Metal lever 27 mm, plastic roller	19	⊖ A	**3SE5000-0AA01**	1	1 unit	41K
	Metal lever 27 mm, high-grade steel roller	19	⊖ A	**3SE5000-0AA02**	1	1 unit	41K
	Metal lever 27 mm, high-gr. steel roller with ball bearing	19	⊖ B	**3SE5000-0AA03**	1	1 unit	41K
	Metal lever 27 mm, 2 plastic rollers	19	⊖ B	**3SE5000-0AA04**	1	1 unit	41K
	Metal lever 27 mm, plastic roller	30	⊖ B	**3SE5000-0AA05**	1	1 unit	41K
	Metal lever 27 mm, rubber roller	50	⊖ B	**3SE5000-0AA08**	1	1 unit	41K
	High-grade steel lever 27 mm, plastic roller	19	⊖ B	**3SE5000-0AA11**	1	1 unit	41K
	High-grade steel lever 27 mm, high-grade steel roller	19	⊖ B	**3SE5000-0AA12**	1	1 unit	41K
	Metal lever 35 mm, plastic roller	19	⊖ B	**3SE5000-0AA15**	1	1 unit	41K
	High-grade steel lever 35 mm, plastic roller	19	⊖ B	**3SE5000-0AA16**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K
Fork lever	**Twist lever, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**	1	1 unit	41K
Rod actuator	**Fork levers** (for switches with snap-action contacts only)						
	2 metal levers, 2 plastic rollers	19	⊖ B	**3SE5000-0AT01**	1	1 unit	41K
	2 metal levers, 2 high-grade steel rollers	19	⊖ B	**3SE5000-0AT02**	1	1 unit	41K
	2 high-grade steel levers, 2 plastic rollers	19	⊖ B	**3SE5000-0AT03**	1	1 unit	41K
	Rod actuators, type D according to EN 50041						
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**	1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm								
Plain plungers								
With high-grade steel plunger								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BB01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CB01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5122-0KB01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5122-0LB01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5122-0PB01**		1	1 unit	41K
Rounded plungers								
With high-grade steel plungers, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BC02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5122-0CC02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5122-0KC02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5122-0LC02**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5122-0PC02**		1	1 unit	41K
Roller plungers								
With high-grade steel roller 13 mm, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BD02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5122-0CD02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5122-0KD02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5122-0LD02**		1	1 unit	41K
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BE01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5122-0CE01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5122-0KE01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5122-0LE01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5122-0PE01**		1	1 unit	41K
With metal lever and high-grade steel roller 22 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CE02**		1	1 unit	41K
Angular roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BF01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CF01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5122-0PF01**		1	1 unit	41K

Plain plunger

Rounded plunger

Roller plunger

Roller lever

Angular roller lever

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm							
Spring rods							
Length 142.5 mm, with plastic plunger 50 mm							
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CR01**	1	1 unit	41K
Twist levers							
With metal lever 27 mm and plastic roller 19 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5122-0BH01**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5122-0CH01**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0KH01**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0LH01**	1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5122-0PH01**	1	1 unit	41K
With metal lever 27 mm and high-grade steel roller 19 mm							
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5122-0CH02**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0LH02**	1	1 unit	41K
Twist lever, adjustable length							
With metal lever with grid hole and plastic roller 19 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5122-0BH60**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5122-0CH60**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0LH60**	1	1 unit	41K
With metal lever and plastic roller 19 mm							
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5122-0BH50**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5122-0CH50**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5122-0LH50**	1	1 unit	41K
Fork levers, latching							
With metal lever and 2 plastic rollers 19 mm							
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5122-0CT11**	1	1 unit	41K
Rod actuators							
With aluminum rod, length 200 mm							
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CH80**	1	1 unit	41K
With plastic rod, length 200 mm							
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5122-0CH82**	1	1 unit	41K

Spring rod

Twist lever

Twist levers, adjustable length, with grid hole

Fork lever

Rod actuator

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/42.

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3SE5, metal enclosures
Enclosure width 56 mm

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 56 mm								
Basic switch								
With 3 x M20 x 1.5 connecting thread								
Slow-action contacts	1 NO + 1 NC	--	➔ A	**3SE5122-0BA00**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔ A	**3SE5122-0CA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5122-0KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ A	**3SE5122-0LA00**		1	1 unit	41K
Slow-action cont. with make-before-break	1 NO + 2 NC	--	➔ A	**3SE5122-0MA00**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	➔ A	**3SE5122-0PA00**		1	1 unit	41K
With increased corrosion protect.								
With increased corrosion protection[1]								
Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5122-0BA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5122-0CA00-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5122-0KA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5122-0LA00-1CA0**		1	1 unit	41K
Slow-action cont. with make-before-break	1 NO + 2 NC	--	➔ B	**3SE5122-0MA00-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	➔ B	**3SE5122-0PA00-1CA0**		1	1 unit	41K
With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	➔ B	**3SE5122-1KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	➔ B	**3SE5122-1LA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5122-3KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5122-3LA00**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

Version	Diameter	DT	Modular system / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm						
Operating mechanisms							
Rounded plungers, roller plungers							
Plain plunger							
High-grade steel plunger	10	➔ A	**3SE5000-0AB01**		1	1 unit	41K
Rounded plungers, type B according to EN 50041							
High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5000-0AC02**		1	1 unit	41K
Roller plungers, type C acc. to EN 50041							
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5000-0AD02**		1	1 unit	41K
Roller lever							
Roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5000-0AE01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5000-0AE02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5000-0AE03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5000-0AE04**		1	1 unit	41K
Ang. roller lever							
Angular roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5000-0AF01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5000-0AF02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5000-0AF03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5000-0AF04**		1	1 unit	41K
Spring rod							
Spring rods (for switches with snap-action contacts only)							
Plunger made of plastic, spring of high-grade steel:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**		1	1 unit	41K
• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**		1	1 unit	41K
• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**		1	1 unit	41K
Plunger and spring made of high-grade steel:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**		1	1 unit	41K

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
	mm		Article No.	Price per PU		
Twist actuators						
Twist actuator	**Twist actuators**, metal (without lever)					
	• For twist levers and rod actuators, switching right and/or left, adjustable	⊕ A	**3SE5000-0AH00**	1	1 unit	41K
	• For fork levers, latching	⊕ B	**3SE5000-0AT10**	1	1 unit	41K
	Levers					
Twist levers	**Twist levers 27 mm, offset, type A according to EN 50041**					
	Metal lever, plastic roller	19 ⊕ A	**3SE5000-0AA01**	1	1 unit	41K
	Metal lever, high-grade steel roller	19 ⊕ A	**3SE5000-0AA02**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19 ⊕ B	**3SE5000-0AA03**	1	1 unit	41K
	Metal lever, 2 plastic rollers	19 ⊕ B	**3SE5000-0AA04**	1	1 unit	41K
	Metal lever, plastic roller	30 ⊕ B	**3SE5000-0AA05**	1	1 unit	41K
	Metal lever, plastic roller	50 ⊕ B	**3SE5000-0AA07**	1	1 unit	41K
	Metal lever, rubber roller	50 ⊕ B	**3SE5000-0AA08**	1	1 unit	41K
	High-grade steel lever, plastic roller	19 ⊕ B	**3SE5000-0AA11**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19 ⊕ B	**3SE5000-0AA12**	1	1 unit	41K
	Twist levers 35 mm, offset					
	Metal lever, plastic roller	19 ⊕ B	**3SE5000-0AA15**	1	1 unit	41K
	High-grade steel lever, plastic roller	19 ⊕ B	**3SE5000-0AA16**	1	1 unit	41K
	Twist levers 30 mm, straight[1]					
	Metal lever, plastic roller	19 ⊕ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30 ⊕ B	**3SE5000-0AA26**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**					
	Metal lever, plastic roller	19 ⊕ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19 ⊕ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50 ⊕ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50 ⊕ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19 ⊕ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19 ⊕ B	**3SE5000-0AA63**	1	1 unit	41K
	Twist lever, adjustable length					
	Metal lever, plastic roller	19 A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19 B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30 B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50 B	**3SE5000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50 B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19 B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19 B	**3SE5000-0AA53**	1	1 unit	41K
Fork lever	**Fork levers** (for switches with snap-action contacts only)					
	2 metal levers, 2 plastic rollers	19 ⊕ B	**3SE5000-0AT01**	1	1 unit	41K
	2 metal levers, 2 high-grade steel rollers	19 ⊕ B	**3SE5000-0AT02**	1	1 unit	41K
	2 high-grade steel levers, 2 plastic rollers	19 ⊕ B	**3SE5000-0AT03**	1	1 unit	41K
	2 high-grade steel levers, 2 high-grade steel rollers	19 ⊕ B	**3SE5000-0AT04**	1	1 unit	41K
Rod actuator	**Rod actuators, type D according to EN 50041**					
	Aluminum rod, length 200 mm	6 B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6 B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6 B	**3SE5000-0AA82**	1	1 unit	41K

⊕ Positively driven actuator, necessary in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 56 mm, XL

Selection and ordering data

Complete units

4 or 5 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm, XL								
Plain plunger								
Plain plungers								
With high-grade steel plunger								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ B	**3SE5162-0CB01**		1	1 unit	41K
Rounded plungers								
Rounded plungers								
With high-grade steel plungers, with 3 mm overtravel								
Slow-action contacts Slow-action contacts with make-before-break 2 mm travel difference	1 NO + 1 NC and 1 NO +2 NC	--	⊖ B	**3SE5162-0EC02**		1	1 unit	41K
Roller plungers								
Roller plungers								
With high-grade steel roller 13 mm, with 3 mm overtravel								
Slow-action contacts	2 × (1 NO + 1 NC)	--	⊖ B	**3SE5162-0BD02**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ A	**3SE5162-0CD02**		1	1 unit	41K
Roller lever								
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	2 × (1 NO + 1 NC)	--	⊖ B	**3SE5162-0BE01**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ A	**3SE5162-0CE01**		1	1 unit	41K
With metal lever and high-grade steel roller 22 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ B	**3SE5162-0CE02**		1	1 unit	41K
Angular roller lever								
Angular roller lever								
With metal lever and plastic roller 22 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ B	**3SE5162-0CF01**		1	1 unit	41K
Twist levers								
Twist levers								
With metal lever 27 mm and plastic roller 19 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⊖ A	**3SE5162-0CH01**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/45.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Modular system

4 or 6 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 56 mm, XL							
Basic switch							
With 3 x M20 x 1.5 connecting thread							
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ A	**3SE5162-0BA00**	1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ A	**3SE5162-0CA00**	1	1 unit	41K
Slow-action contacts with make-before-break	2 × (1 NO + 2 NC)	--	➔ A	**3SE5162-0DA00**	1	1 unit	41K
With increased corrosion protection[1]							
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5162-0BA00-1CA0**	1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5162-0CA00-1CA0**	1	1 unit	41K
Slow-action contacts with make-before-break	2 × (1 NO + 2 NC)	--	➔ B	**3SE5162-0DA00-1CA0**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/13.

Version	Diameter	DT	Modular system / Article No.	PU (UNIT, SET, M)	PS*	PG
	mm					
Operating mechanisms						
Plain plunger						
Plain plunger						
High-grade steel plunger	10	➔ A	**3SE5000-0AB01**	1	1 unit	41K
Rounded plunger						
Rounded plungers, type B according to EN 50041						
High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5000-0AC02**	1	1 unit	41K
Roller plungers						
Roller plungers, type C acc. to EN 50041						
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5000-0AD02**	1	1 unit	41K
Roller lever						
Roller levers						
Metal lever, plastic roller	22	➔ A	**3SE5000-0AE01**	1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5000-0AE02**	1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5000-0AE03**	1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5000-0AE04**	1	1 unit	41K
Angular roller lever						
Angular roller lever						
Metal lever, plastic roller	22	➔ A	**3SE5000-0AF01**	1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5000-0AF02**	1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5000-0AF03**	1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5000-0AF04**	1	1 unit	41K
Spring rod						
Spring rods (for switches with snap-action contacts only)						
Plunger made of plastic, spring of high-grade steel:	7					
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR01**	1	1 unit	41K
• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5000-0AR03**	1	1 unit	41K
• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5000-0AR04**	1	1 unit	41K
Plunger and spring made of high-grade steel:	7					
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5000-0AR02**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

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Metal enclosures
Enclosure width 56 mm, XL

Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
	mm		Article No.	Price per PU		
Twist actuators						
Twist actuator	**Twist actuators**, metal (without lever)					
	• For twist levers and rod actuators, switching right and/or left, adjustable	⊕ A	**3SE5000-0AH00**	1	1 unit	41K
	• For fork levers, latching	⊕ B	**3SE5000-0AT10**	1	1 unit	41K
	Levers					
Twist levers	**Twist levers 27 mm, offset, type A according to EN 50041**					
	Metal lever, plastic roller	19	⊕ A	**3SE5000-0AA01**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ A	**3SE5000-0AA02**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊕ B	**3SE5000-0AA03**	1	1 unit	41K
	Metal lever, 2 plastic rollers	19	⊕ B	**3SE5000-0AA04**	1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5000-0AA05**	1	1 unit	41K
	Metal lever, plastic roller	50	⊕ B	**3SE5000-0AA07**	1	1 unit	41K
	Metal lever, rubber roller	50	⊕ B	**3SE5000-0AA08**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA11**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA12**	1	1 unit	41K
	Twist levers 35 mm, offset						
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA15**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA16**	1	1 unit	41K
	Twist levers 30 mm, straight[1]						
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5000-0AA26**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	⊕ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊕ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊕ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5000-0AA63**	1	1 unit	41K
	Twist lever, adjustable length						
	Metal lever, plastic roller	19	A	**3SE5000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5000-0AA53**	1	1 unit	41K
Fork lever	**Fork levers** (for switches with snap-action contacts only)						
	2 metal levers, 2 plastic rollers	19	⊕ B	**3SE5000-0AT01**	1	1 unit	41K
	2 metal levers, 2 high-grade steel rollers	19	⊕ B	**3SE5000-0AT02**	1	1 unit	41K
	2 high-grade steel levers, 2 plastic rollers	19	⊕ B	**3SE5000-0AT03**	1	1 unit	41K
	2 high-grade steel levers, 2 high-grade steel rollers	19	⊕ B	**3SE5000-0AT04**	1	1 unit	41K
Rod actuator	**Rod actuators, type D according to EN 50041**						
	Aluminum rod, length 200 mm	6	B	**3SE5000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5000-0AA82**	1	1 unit	41K
	Plastic rod, length 330 mm	6	B	**3SE5000-0AA83**	1	1 unit	41K

⊕ Positively driven actuator, necessary in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
Complete units • Enclosure width 31 mm							
Rounded plungers, type B, according to EN 50047							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0CC05-1AJ0**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0KC05-1AJ0**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5212-0LC05-1AJ0**	1	1 unit	41K
Twist levers, type A acc. to EN 50047							
With metal lever 21 mm and high-grade steel roller 19 mm, twist actuator in metal version							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5212-0CH22-1AJ0**	1	1 unit	41K

Rounded plungers

Twist levers

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see "Modular system".

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature up to –40 °C

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
Basic switch								
With plunger								
Snap-action contacts	1 NO + 1 NC	--	⇒ B	**3SE5212-0CC05-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⇒ B	**3SE5212-0KC05-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⇒ B	**3SE5212-0LC05-1AJ0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⇒ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:

Selection aid see page 12/13.

Version	Diameter mm	DT	Modular system / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Roller plungers							
Roller plungers, type C acc. to EN 50047							
Plastic roller	10	⇒ B	**3SE5000-0AD03-1AJ0**		1	1 unit	41K
Roller lever							
Roller levers, type E acc. to EN 50047							
Metal lever, plastic roller	13	⇒ B	**3SE5000-0AE10-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	13	⇒ B	**3SE5000-0AE12-1AJ0**		1	1 unit	41K
Angular roller lever							
Angular roller lever							
Metal lever, plastic roller	13	⇒ B	**3SE5000-0AF10-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	13	⇒ B	**3SE5000-0AF12-1AJ0**		1	1 unit	41K
Twist actuators							
Twist actuator							
Twist actuators, plastic (without lever)							
Switching right and/or left, adjustable		⇒ B	**3SE5000-0AK00-1AJ0**		1	1 unit	41K
Levers							
Twist levers							
Twist levers straight, 21 mm, type A acc. to EN 50047							
Metal lever, plastic roller	19	⇒ B	**3SE5000-0AA21-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	⇒ B	**3SE5000-0AA31-1AJ0**		1	1 unit	41K
Twist lever, adjustable length							
Twist levers, adjustable length, with grid hole							
Metal lever, plastic roller	19	⇒ B	**3SE5000-0AA60-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	⇒ B	**3SE5000-0AA62-1AJ0**		1	1 unit	41K

⇒ Positively driven actuator, necessary in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature up to –40 °C

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units • Enclosure width 40 mm									
Rounded plungers	***Rounded plungers, type B according to EN 50041*** **With high-grade steel plungers, with 3 mm overtravel**								
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5112-0CC02-1AJ0**		1	1 unit	41K
Twist lever	***Twist levers, type A acc. to EN 50041*** **With high-grade steel lever 27 mm and plastic roller 19 mm**								
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5112-0LH11-1AJ0**		1	1 unit	41K
Twist levers, adjustable length, with grid hole	***Twist lever, adjustable length*** **With high-grade steel lever with grid hole and plastic roller 19 mm**								
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5112-0CH62-1AJ0**		1	1 unit	41K
Complete units • Enclosure width 56 mm, XL									
Twist levers, adjustable length, with grid hole	***Twist lever, adjustable length*** **With metal lever with grid hole and plastic roller 19 mm**								
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5162-0CH60-1AJ0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see "Modular system".

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature up to –40 °C

Modular system

2, 3 or 4 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
Basic switch	**With M20 × 1.5 connecting thread**							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5112-0CA00-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5112-0KA00-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5112-0LA00-1AJ0**		1	1 unit	41K
Basic switches • Enclosure width 56 mm								
Basic switch	**With 3 x M20 x 1.5 connecting thread**							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5122-0CA00-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5122-0KA00-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5122-0LA00-1AJ0**		1	1 unit	41K
Basic switches • Enclosure width 56 mm, XL								
Basic switch	**With 3 x M20 x 1.5 connecting thread**							
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5162-0BA00-1AJ0**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5162-0CA00-1AJ0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature up to –40 °C

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Rounded plungers	**Rounded plungers, type B according to EN 50041**						
	High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5000-0AC02-1AJ0**	1	1 unit	41K
Roller plungers	**Roller plungers, type C acc. to EN 50041**						
	High-grade steel roller, with 3 mm overtravel	10	➔ B	**3SE5000-0AD02-1AJ0**	1	1 unit	41K
Roller lever	**Roller levers**						
	Metal lever, plastic roller	13	➔ B	**3SE5000-0AE01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5000-0AE03-1AJ0**	1	1 unit	41K
Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	➔ B	**3SE5000-0AF01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5000-0AF03-1AJ0**	1	1 unit	41K
Twist actuators							
Twist actuator	**Twist actuators**, metal (without lever)						
	Switching right and/or left, adjustable		➔ B	**3SE5000-0AH00-1AJ0**	1	1 unit	41K
	Levers						
Twist lever	**Twist levers, type A acc. to EN 50041**						
	Metal lever, plastic roller	19	➔ B	**3SE5000-0AA01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA11-1AJ0**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	➔ B	**3SE5000-0AA60-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5000-0AA62-1AJ0**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

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3SE5, metal enclosures
Compact design

Overview

Compact design in width 30 mm

Particularly in harsh environments or on equipment with limited space, the small 3SE54 position switches in compact design with a depth of 16 mm and a weight of only 80 g (without cable) are ideal. Above all the versions with molded cable can be mounted in the most confined spaces.

3SE54 compact position switches are available in two different widths as complete units:

- The 3SE5413 series complies with the EU standard and features a 30 mm wide enclosure with drilled holes at a distance of 20 mm.
- The 3SE5423 series meets the requirements of the US market and features a 40 mm wide enclosure with drilled holes at a spacing of 25 mm.

Both the enclosure and the actuator head are made of metal and comply with the high IP67 degree of protection. Following actuators are available:

- Rounded plungers
- Rounded plungers with central fixing
- Rounded plungers with external seal
- Roller plungers
- Roller plungers with central fixing
- Twist levers

The contact block is designed with snap-action contacts 1 NO + 1 NC. The NC contact complies with the requirements for positive opening acc. to IEC 60947-5-1.

Use in safety circuits up to Category 4 according to EN ISO 13849-1.

Connection:
- With molded cable, 2 m or 5 m long
- With M12 connector socket

Benefits

- Very compact yet with the same rating as the 3SE51 standard switches, for notable space savings in confined installation conditions
- Various actuator versions available
- Roller plungers can be rotated through 90°
- Twist lever can be rotated through 180°;
  Twist lever can be adjusted in 15° increments
- Time is saved when mounting the fully assembled unit
- With metal enclosure of degree of protection IP67, ideal for use in rough industrial environments
- Insensitive to electromagnetic interference

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Selection and ordering data

2 snap-action contacts 1 NO + 1 NC · Degree of protection IP67 · With connecting cable or M12 connector socket

	Operating mechanism	Enclosure width	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Complete units • Enclosure width 30 or 40 mm								
	Rounded plungers							
Rounded plungers	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CC20-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CC20-1EA2**		1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ B	**3SE5413-0CC20-1EA5**		1	1 unit	41K
	- With M12 connector socket, 5-pole	30	⊖ A	**3SE5413-0CC20-1EB1**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CC20-1EB1**		1	1 unit	41K
With central fixing	• With central fixing M12 x 1							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CC21-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CC21-1EA2**		1	1 unit	41K
With external seal	• With external seal							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CC22-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CC22-1EA2**		1	1 unit	41K
	Roller plungers							
Roller plunger	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CD20-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CD20-1EA2**		1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ B	**3SE5413-0CD20-1EA5**		1	1 unit	41K
	- With M12 connector socket, 5-pole	30	⊖ A	**3SE5413-0CD20-1EB1**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CD20-1EB1**		1	1 unit	41K
With plug	• With central fixing M12 x 1							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CD21-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CD21-1EA2**		1	1 unit	41K
With plug, enclosure width 40 mm	• Actuator head rotated 90°							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CD23-1EA2**		1	1 unit	41K
	Twist levers							
Twist lever	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CN20-1EA2**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CN20-1EA2**		1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CN20-1EA5**		1	1 unit	41K
	- With M12 connector socket, 5-pole	30	⊖ A	**3SE5413-0CN20-1EB1**		1	1 unit	41K
		40	⊖ A	**3SE5423-0CN20-1EB1**		1	1 unit	41K
	• Twist levers with a smaller mounting depth and lower height							
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5413-0CP20-1EA2**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

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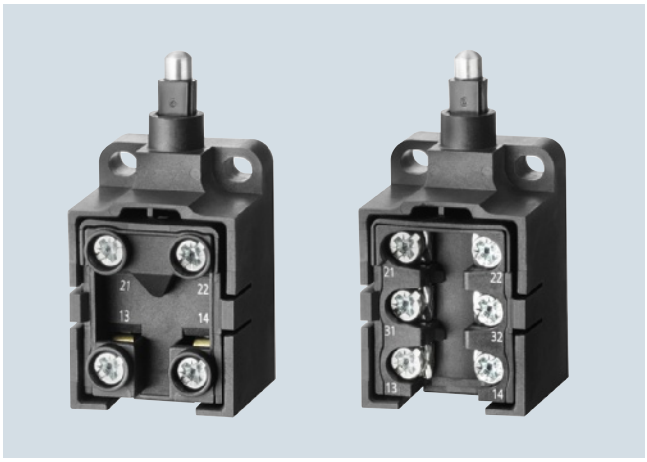
3SE5, open-type design

Overview



Open-type design

Their compact design makes these switches particularly suitable for use in confined conditions. The fixing dimensions and operating points are according to EN 50047.

The switches are equipped with two or three contacts in snap-action, slow-action or slow-action with make-before-break versions. The stroke is 6 mm.

The empty enclosure can be equipped with all contact block versions (see page 12/56).

Improved version

NEW: The switches now have a robust metal plunger with increased abrasion resistance (instead of the teflon plunger). This enables the switch to be approached from a 30° angle.

Selection and ordering data

2 or 3 contacts · Degree of protection IP20 (2 contacts), IP10 (3 contacts)

	Version	Contacts	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures • Enclosure width 30 mm								
	With metal plunger, Ø 6 mm							
2 contacts	Slow-action contacts	1 NO + 1 NC	⊖ A	**3SE5250-0BC05**		1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	⊖ ▶	**3SE5250-0CC05**		1	1 unit	41K
3 contacts	Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5250-0KC05**		1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	⊖ ▶	**3SE5250-0LC05**		1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	⊖ A	**3SE5250-0MC05**		1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	⊖ A	**3SE5250-0PC05**		1	1 unit	41K
Empty enclosure	Empty enclosures without contact block	--	⊖ B	**3SE5250-0AC05**		1	1 unit	41K
2 contacts	**Contact blocks with 2 contacts** for open-type design[1]							
	• Slow-action contacts	1 NO + 1 NC	⊖ B	**3SE5050-0BA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 1 NC						
	- Standard		⊖ B	**3SE5050-0CA00**		1	1 unit	41K
	- 2 × 2 mm switching interval		⊖ B	**3SE5050-0GA00**		1	1 unit	41K
	- Short stroke		⊖ B	**3SE5050-0NA00**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Contact blocks with 3 contacts see page 12/56.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

The quick-release devices and plug-in connections are used for fast installation and replacement of position switches.

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Quick-release devices for enclosure width 40 mm							
3SY3110 3SY3027	**Adapter plates with screws**	B	**3SY3110**		1	1 unit	41K
	Base plates with locking lever	B	**3SY3027**		1	1 unit	41K
Plug-in connections for M20 × 1.5 connecting threads							
3SY3131 3SY3136	**Connector sockets (6-pole + PE), for M20 × 1.5** For max. 250 V, 10 A With 0.75 mm² connecting cable, plastic, degree of protection IP65, ambient temperature –40 to +90 °C	C	**3SY3131**		1	1 unit	41K
	Cable boxes (6-pole + PE)[1] With terminal compartment, can be pre-assembled, plastic, degree of protection IP65	A	**3SY3136**		1	1 unit	41K
3SY3127 3SY3134	**Connector sockets (4-pole), M12, for M20 × 1.5, fixed** For max 250 V, 4 A, U_{imp} = 2500 V With four 0.25 mm² connecting cables, plastic, degree of protection IP67, ambient temperature -40 to +85 °C	B	**3SY3127**		1	1 unit	41K
	Connector sockets (5-pole), M12, for M20 × 1.5, fixed For max. 125 V, 4 A, U_{imp} = 1500 V With five 0.25 mm² connecting cables, plastic, degree of protection IP67, ambient temperature -40 to +85 °C	B	**3SY3128**		1	1 unit	41K
	Connector sockets (8-pole), M12, for M20 × 1.5, fixed, metal version For max. 30 V, 2 A, U_{imp} = 800 V With eight 0.25 mm² connecting cables, metal, degree of protection IP67, ambient temperature -25 to +85 °C	C	**3SY3134**		1	1 unit	41K
3RK1902-4CA00-4AA0	**M12 socket, angled, 4-pole,** For AS-Interface, max 4 A with cabling box, max. 0.75 mm²	C	**3RK1902-4CA00-4AA0**		1	1 unit	42D
Adapters and cable glands for M20 × 1.5 connecting threads							
3SX9917 3SX9918	**Adapters acc. to** ⓒ, Ⓤ **and** ⓒ For cable entry from M20 × 1.5 to NPT1/2						
	• Metal	B	**3SX9917**		1	1 unit	41K
	• Plastic	D	**3SX9918**		1	1 unit	41K
3SX9926	**Cable glands M20 × 1.5** Plastic	A	**3SX9926**		1	1 unit	41K

[1] For wiring, a crimping tool is necessary, max. conductor cross-section 1 mm².

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Accessories and spare parts

	Version	Color/ contacts		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Manuals for 3SE5, 3SF1									
	Configuration Manual SIRIUS 3SE5/3SF1 Position Switches[1]								
Optional accessories for 3SE51, 3SE52									
Protective cap	**Protective caps, rubber** For rounded plungers acc. to EN 50047, 3SE5...-..C05	Black		A	**3SE5000-0AC30**		1	1 unit	41K
Adapter	**Adapters** with screw[2] For an increase in the mounting depth on the 3SE5000-0AH00 twist actuator, in combination with twist lever with adjustable length or rod actuator			B	**3SX5100-3B**		1	1 unit	41K
Spare parts for 3SE51, 3SE52									
Enclosure width 31 mm	**Empty enclosures, plastic**	Turquoise							
	Enclosure width 31 mm			B	**3SE5232-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5232-0AC05-1CA0**		1	1 unit	41K
	Enclosure width 40 mm			B	**3SE5132-0AA00**		1	1 unit	41K
	Enclosure width 50 mm			B	**3SE5242-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5242-0AC05-1CA0**		1	1 unit	41K
Enclosure width 40 mm	**Empty enclosures, metal**	Turquoise							
	Enclosure width 31 mm			B	**3SE5212-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5212-0AC05-1CA0**		1	1 unit	41K
	Enclosure width 40 mm			B	**3SE5112-0AA00**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5112-0AA00-1CA0**		1	1 unit	41K
	Enclosure width 56 mm			B	**3SE5122-0AA00**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5122-0AA00-1CA0**		1	1 unit	41K
	Enclosure width 56 mm, XL[2]			B	**3SE5162-0AA00**		1	1 unit	41K
2 contacts	**Contact blocks with 2 contacts**[3]								
	• Slow-action contacts	1 NO + 1 NC	⊖	B	**3SE5000-0BA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 1 NC							
	- Standard		⊖	C	**3SE5000-0CA00**		1	1 unit	41K
	- Gold-plated contacts		⊖	B	**3SE5000-0CA00-1AC1**		1	1 unit	41K
	- 2 × 2 mm switching interval		⊖	B	**3SE5000-0GA00**		1	1 unit	41K
	- Short stroke		⊖	B	**3SE5000-0NA00**		1	1 unit	41K
3 contacts	**Contact blocks with 3 contacts**								
	• Slow-action contacts	1 NO + 2 NC	⊖	B	**3SE5000-0KA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 2 NC	⊖	B	**3SE5000-0LA00**		1	1 unit	41K
	• Slow-action contacts with make-before-break	1 NO + 2 NC	⊖	A	**3SE5000-0MA00**		1	1 unit	41K
	• Slow-action contacts	2 NO + 1 NC	⊖	A	**3SE5000-0PA00**		1	1 unit	41K
2 contacts	**Contact blocks for enclosure XL**[4]								
	• Slow-action contacts	1 NO + 1 NC	⊖	B	**3SE5060-0BA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 1 NC	⊖	B	**3SE5060-0CA00**		1	1 unit	41K
	• Slow-action contacts with make-before-break	1 NO + 2 NC	⊖	B	**3SE5060-0MA00**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Download of the Configuration Manual see http://support.automation.siemens.com/WW/view/en/43920150

2) Possibly required for the conversion from 3SE21 to 3SE51.

3) Unsuitable for open-type position switches; see page 12/54.

4) Equip XL enclosures only with contact combinations according to pages 12/12, 12/44 and 12/45.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Rated voltage LED	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V						
Spare parts for 3SE51, 3SE52								
31 mm, turquoise with LED	**Covers for plastic enclosures, width 31 mm**							
	• Turquoise with LED	24 DC	B	**3SE5230-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5230-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5230-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5230-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5230-3AA00-1AG0**		1	1 unit	41K
40 mm, yellow with LED	**Covers for plastic enclosures, width 40 mm**							
	• Turquoise with LED	24 DC	B	**3SE5130-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5130-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5130-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5130-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5130-3AA00-1AG0**		1	1 unit	41K
50 mm, turquoise with LED	**Covers for plastic enclosures, width 50 mm**							
	• Turquoise with LED	24 DC	B	**3SE5240-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5240-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5240-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5240-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5240-3AA00-1AG0**		1	1 unit	41K
31 mm, turquoise with LED	**Covers for metal enclosures, width 31 mm**							
	• Turquoise with LED	24 DC	B	**3SE5210-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5210-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5210-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5210-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5210-3AA00-1AG0**		1	1 unit	41K
40 mm, yellow with LED	**Covers for metal enclosures, width 40 mm**							
	• Turquoise with LED	24 DC	B	**3SE5110-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5110-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5110-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5110-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5110-3AA00-1AG0**		1	1 unit	41K
56 mm, yellow with LED	**Covers for metal enclosures, width 56 mm**							
	• Turquoise with LED	24 DC	B	**3SE5120-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5120-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5120-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5120-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5120-3AA00-1AG0**		1	1 unit	41K
	Covers for XL metal enclosures, width 56 mm							
	• Yellow	--	B	**3SE5160-0AA00-1AG0**		1	1 unit	41K

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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General data

Overview

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

3SE5 safety switches with separate actuator have the same enclosures as the 3SE5 position switches (modular system).

3SE5 safety switches with head for separate actuator

Design

Enclosure sizes

The 3SE5 safety switches are available in four different enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries

Also available are safety switches in the 3SE2 series which have been developed in this form according to general market requirements:

- Molded-plastic enclosures outside of the standards, enclosure width 52 mm, IP67

Enclosure versions

Various basic versions can be selected for the enclosures of the 3SE5 series:

- Available with two- or three-pole contact blocks designed as slow-action contacts
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Similarly with a combination of connector socket and LED indicators
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/90)

For a description of the basic switches, see page 12/4.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuator heads of the 3SE2243 and 3SE2257 switches with special enclosures cannot be changed. The switches can be approached from the two broad sides and from above.

The actuators are not included in the scope of supply of the safety switches and must be ordered separately from a choice of different versions to suit the application (see page 12/67).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The safety switches with radius actuators are particularly suitable for rotary protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety (see page 12/67).

Blocking inserts with padlock

Dust protection

A rubber cap to protect the actuator entry of the actuator head from contamination is available for operation in dusty environments (see page 12/67).

Contact reliability

The contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

Positive opening ⊖

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

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Benefits

The 3SE5 safety switches with separate actuator differ from the previous series through the following new characteristics:

- All enclosure sizes with increased corrosion protection
- All enclosure sizes are optionally available with an LED signaling indicator.
- The three-pole contact block 1 NO + 2 NC is available for all enclosure sizes.
- The plastic enclosure has simple and fast wiring equipment which makes it possible to save approx. 20 to 25 % of the time when connecting.
- The ASIsafe electronic component is integrated in the enclosure for the versions with AS-Interface connection (see page 12/90); an additional adapter is not required.

Application

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

The safety switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions, fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards. The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol ➔.

Category 3 according to EN ISO 13849-1 can be attained with a safety switch with separate actuator if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK1 or 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional 3SE5 safety switch.

Technical specifications

Type		3SE51..-..V.., 3SE52..-..V..		3SE2257-.XX..		3SE2243-.XX..	
General data							
Standards		IEC 60947-5-1, EN 60947-5-1					
Rated insulation voltage U_i	V	400		500			
Pollution degree acc. to IEC 60664-1		Class 3		Class 3			
Rated impulse withstand voltage U_{imp}	kV	6					
Rated operational voltage U_e	V	AC 400; over 300 V AC only equal potential		AC 500; over 380 V AC only equal potential			
Conventional thermal current I_{th}	A	6		10			
Rated operational current I_e		2-pole	3-pole	1-pole		3-pole	
• With alternating current 50/60 Hz		I_e/AC-15	I_e/AC-15	I_e/AC-12	I_e/AC-15	I_e/AC-12	I_e/AC-15
- At 24 V	A	6	6	10	10	10	10
- At 120 V	A	6	3	10	10	10	10
- At 240 V	A	3	1.5	10	6	10	4
- At 400 V	A	--	--	10	4	10	4
- At 500 V	A	--	--	10	3	10	3
• For direct current		I_e/DC-13	I_e/DC-13	I_e/DC-12	I_e/DC-13	I_e/DC-12	I_e/DC-13
- At 24 V	A	3	3	10	10	10	10
- At 125 V	A	0.55	0.55	--	--	--	--
- At 250 V	A	0.27	0.27	--	--	--	--
- At 110 V	A	--	--	4	1	4	1
- At 220 V	A	--	--	1	0.4	1	0.4
- At 440 V	A	--	--	0.5	0.2	0.5	0.2
Short-circuit protection [1]							
• With DIAZED fuse links, operational class gG	A	6		6			
• With fuse links, quick	A	--		10			
• With miniature circuit breaker, Char. C	A	1		--			
• With miniature circuit breaker, Char. B	A	2		--			
Mechanical endurance		1×10^6 operating cycles					
Electrical endurance							
• With 3RH.1, 3RT contactors in size S00, S0		10×10^6 operating cycles		$> 1 \times 10^6$ operating cycles			
• For utilization category AC-15 when switching off I_e/AC-15 at 240 V		0.1×10^6 operating cycles		0.5×10^6 operating cycles			
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operating cycles/h					
Minimum pull-out force for positive opening	N	20		10		30	

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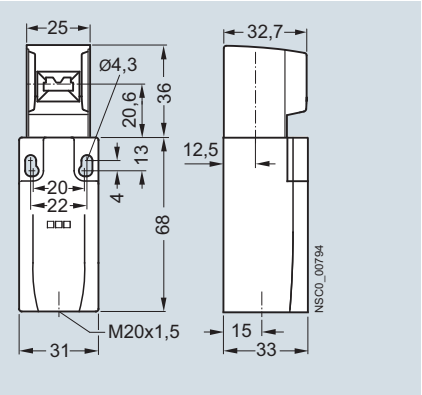
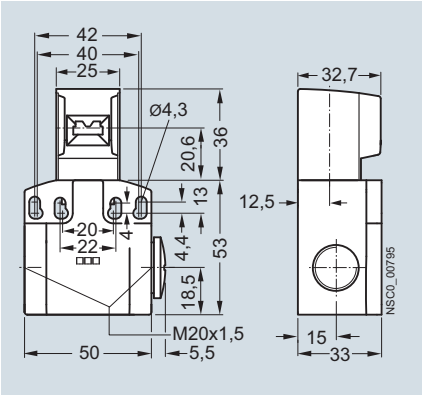
General data

3SE51, 3SE52 configuration

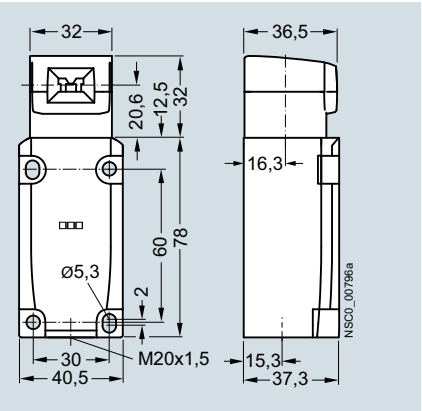
Enclosure width 31 mm
3SE523.-.QV40, 3SE523.-.RV40



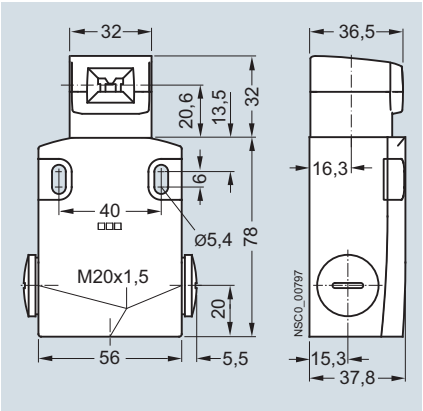
Enclosure width 50 mm
3SE524.-.QV40, 3SE524.-.RV40



Enclosure width 40 mm
3SE511.--.QV10, 3SE511.-.RV10

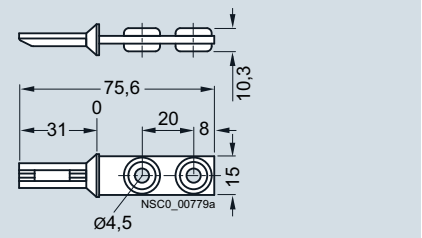


Enclosure width 56 mm
3SE512.-.QV10, 3SE512.-.RV10

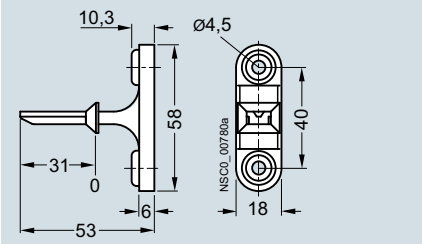


Actuators

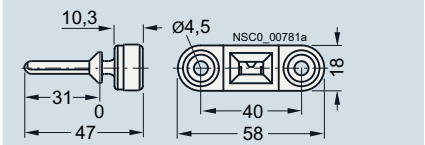
Standard actuator
3SE5000-0AV01



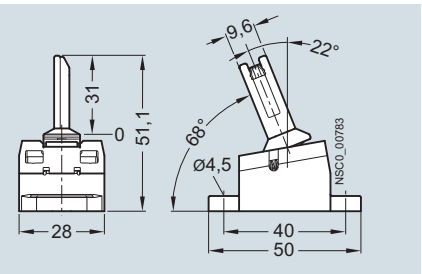
Actuator with vertical fixing
3SE5000-0AV02



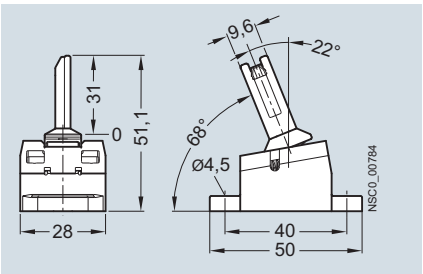
Actuator with horizontal fixing
3SE5000-0AV03



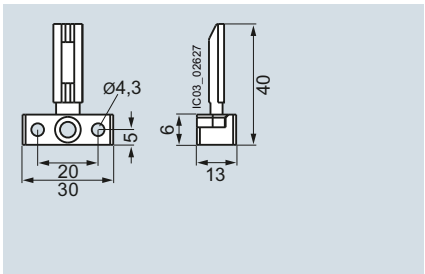
Radius actuator, approach from left
3SE5000-0AV04



Radius actuator, approach from right
3SE5000-0AV06



Actuator with horizontal fixing
3SE5000-0AW11



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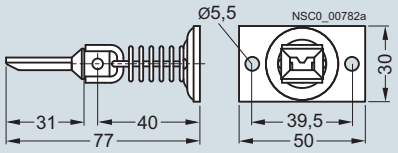
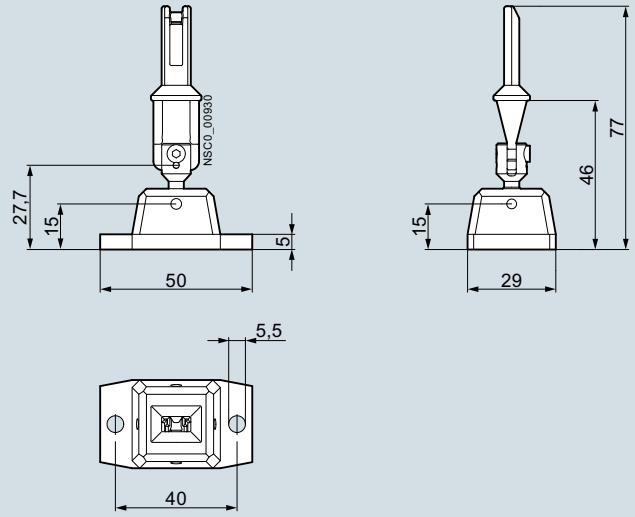
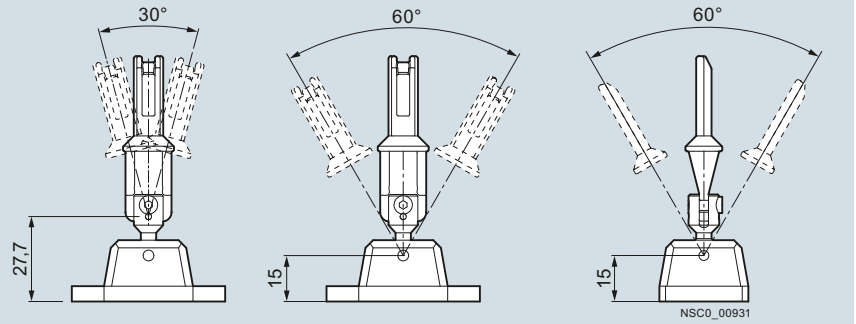
Universal radius actuator
3SE5000-0AV05



Universal radius actuator, heavy duty
3SE5000-0AV07



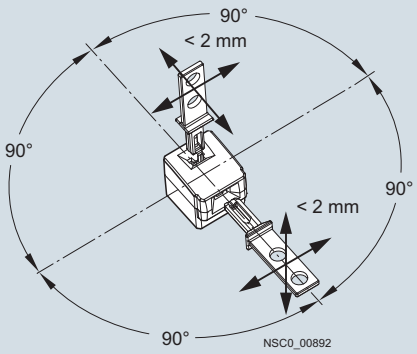
Flexible lateral and vertical approach



Actuation and travel

Standard actuators

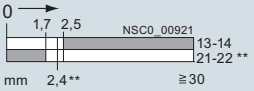
Axial and lateral actuation (4 × 90°)



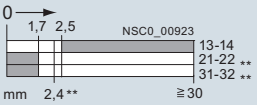
Lateral actuation (4 × 90°)

Slow-action contacts

1 NO + 1 NC, Ident. No. **11**



1 NO + 2 NC, Ident. No. **12**



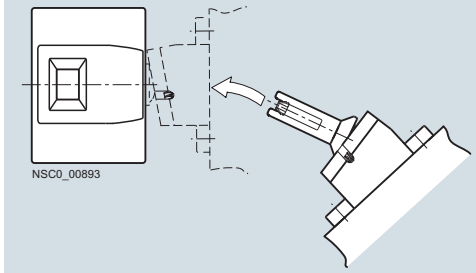
Contact closed
Contact open

Actuator in actuator head:
NC is closed

** Positive opening point

Radius actuators (all directions of approach)

Example: Direction of approach from the left



Circuit diagrams and connector assignment see page 12/12.

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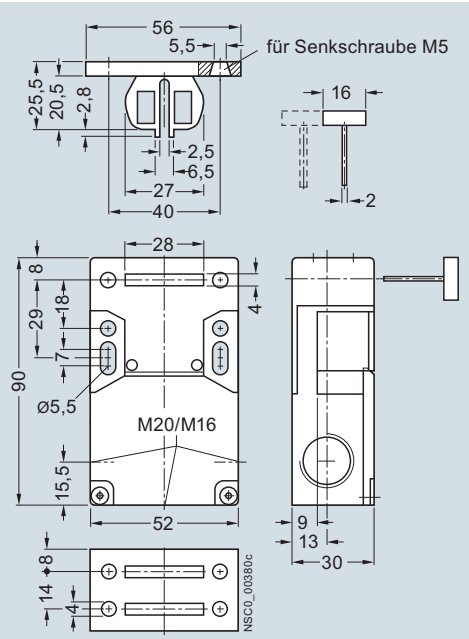
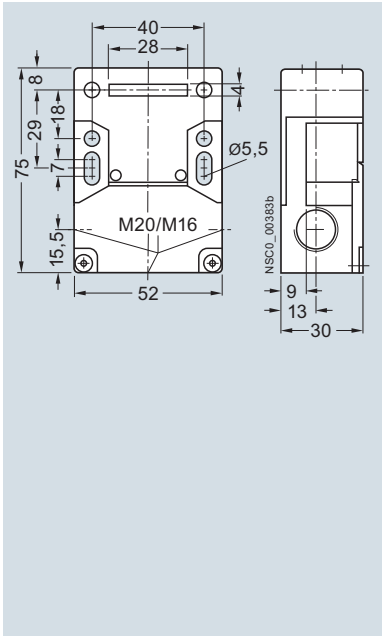
General data

3SE2243, 3SE2257 configuration

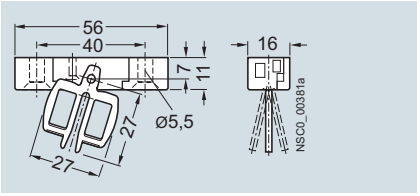
3SE2243, lateral and front-end actuation, with 3SX3218 standard actuator



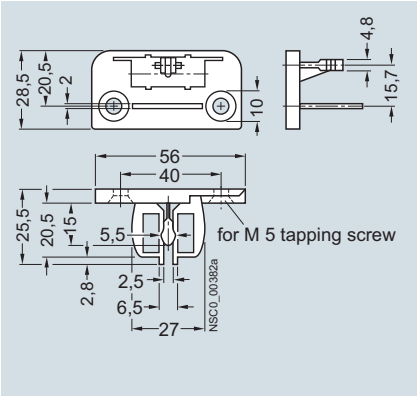
3SE2257, lateral and front-end actuation



3SX3228 universal radius actuator



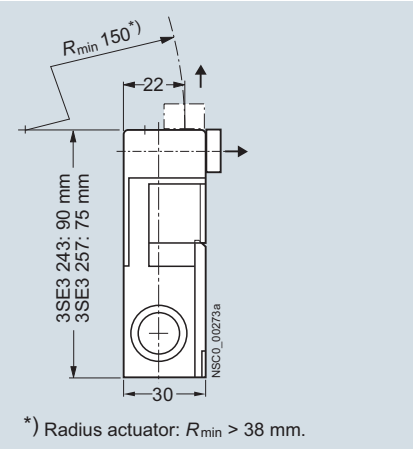
3SX3217 actuator with ball locating



Actuation and travel

Standard and radius actuators

Axial and lateral actuation

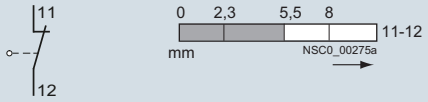


*) Radius actuator: R_{min} > 38 mm.

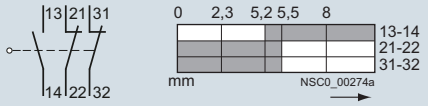
Lateral actuation

Slow-action contacts

1 NC, Ident. No. **01**



1 NO + 2 NC, Ident. No. **12**



Contact closed
Contact open

Actuator in actuator head:
NC is closed

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Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047									
With separate actuator	**5 directions of approach**								
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5232-0RV40**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5232-0QV40**		1	1 unit	41K
	With increased minimum pull-out force 30 N								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5232-0QV40-1AA1**		1	1 unit	41K
With M12 plug	**With M12 connector socket, 4-pole** (250 V, 4 A)								
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5234-0RV40-1AC4**		1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5234-0QV40-1AE0**		1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**								
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5232-1RV40**		1	1 unit	41K
	Slow-action contacts	1 NO + 1 NC	230 V AC	⊖ B	**3SE5232-3RV40**		1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**								
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5234-1RV40-1AF3**		1	1 unit	41K
Enclosure width 50 mm									
With separate actuator	**5 directions of approach**								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5242-0QV40**		1	1 unit	41K
	With increased minimum pull-out force 30 N								
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5242-0RV40-1AA1**		1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**								
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5242-1QV40**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5242-3QV40**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/67).

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With Separate Actuator

3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 40 mm acc. to EN 50041									
With separate actuator	**5 directions of approach**								
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5132-0QV20**		1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**								
	Slow-action contacts	1 NO + 2 NC	24 V DC	➔ C	**3SE5132-1QV20**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	➔ C	**3SE5132-3QV20**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/67).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version[1]	Contacts	LEDs	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
With separate actuator								
5 directions of approach								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5212-0RV40**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5212-0QV40**		1	1 unit	41K
With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5212-1RV40**		1	1 unit	41K
Slow-action contacts	1 NO + 1 NC	230 V AC	⊖ B	**3SE5212-3RV40**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/67).

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041/56 mm

Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Article No.	PU (UNIT, SET, M)	PS*	PG
Enclosure width 40 mm acc. to EN 50041								
With separate actuator	**5 directions of approach**							
	Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5112-0QV10**	1	1 unit	41K
	With increased minimum pull-out force 30 N							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5112-0QV10-1AA7**	1	1 unit	41K
With M12 plug	**With M12 connector socket, 5-pole** (125 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5114-0RV10-1AC5**	1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5114-0QV10-1AE1**	1	1 unit	41K
	With connector socket, 6-pole + PE (250 V, 10 A)							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5115-0QV10-1AD1**	1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5112-1QV10**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5112-3QV10**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A), **and 2 LEDs**							
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5114-1RV10-1AF3**	1	1 unit	41K
	With connector socket, 6-pole + PE (10 A), **and 2 LEDs**							
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5115-1RV10-1AF2**	1	1 unit	41K
Enclosure width 56 mm								
With separate actuator	**5 directions of approach**							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0QV10**	1	1 unit	41K
	With increased minimum pull-out force 30 N							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5122-0QV10-1AA7**	1	1 unit	41K
With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5122-1QV10**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5122-3QV10**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/67).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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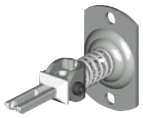
Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators for 3SE51, 3SE52							
	Standard actuators						
3SE5000-0AV01	• Length 75.6 mm	▶	**3SE5000-0AV01**		1	1 unit	41K
3SE5000-0AV02	• With vertical fixing, length 53 mm	B	**3SE5000-0AV02**		1	1 unit	41K
3SE5000-0AV03	• With transverse fixing, length 47 mm	B	**3SE5000-0AV03**		1	1 unit	41K
3SE5000-0AW11	• With transverse fixing, plastic[1] Length 40 mm	B	**3SE5000-0AW11**		1	1 unit	41K
3SE5000-0AV06	**Radius actuators**, length 51 mm						
	• Direction of approach from the left	A	**3SE5000-0AV04**		1	1 unit	41K
	• Direction of approach from the right	▶	**3SE5000-0AV06**		1	1 unit	41K
 3SE5000-0AV05-1AA6	**Universal radius actuators**						
	• Length 77 mm	B	**3SE5000-0AV05**		1	1 unit	41K
	• Length 77 mm, tab rotated 90°	B	**3SE5000-0AV05-1AA6**		1	1 unit	41K
3SE5000-0AV07	**Universal radius actuators, heavy duty**						
	• Length 67 mm	A	**3SE5000-0AV07-1AK2**		1	1 unit	41K
	• Length 77 mm	B	**3SE5000-0AV07**		1	1 unit	41K
Optional accessories for 3SE5							
3SE5000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination (Only for enclosure width 40 or 56 mm)	C	**3SE5000-0AV08-1AA2**		1	1 unit	41K
3SE5000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to eight padlocks	B	**3SE5000-0AV08-1AA3**		1	1 unit	41K
Connections for 3SE5, 3SE2							
3SY3127	**Connector sockets (4-pole), M12, fixed for M20 × 1.5** For max. 250 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3127**		1	1 unit	41K
	Connector sockets (5-pole), M12, fixed for M20 × 1.5 For max. 125 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3128**		1	1 unit	41K
3SX9926	**Cable glands M20 × 1.5** Plastic	A	**3SX9926**		1	1 unit	41K

[1] Not suitable for safety switches with interlocking.

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Selection and ordering data

Complete units

1 or 3 contacts · 3 directions of approach · Degree of protection IP67

Version	Operation	DT	Complete units Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Molded-plastic enclosures in special width of 52 mm							
Lateral and front-end actuation[1]	6 mm stroke						
• With M20 × 1.5 connecting thread							
- Slow-action contacts 1 NO + 2 NC	Holding force 5 N	⊖ ▶	**3SE2243-0XX40**		1	1 unit	41K
	Holding force 30 N	⊖ ▶	**3SE2243-0XX**		1	1 unit	41K
	With automatic ejection	⊖ ▶	**3SE2243-0XX30**		1	1 unit	41K
- Slow-action contacts 1 NC	Holding force 5 N	⊖ ▶	**3SE2257-6XX40**		1	1 unit	41K
	Holding force 30 N	⊖ ▶	**3SE2257-6XX**		1	1 unit	41K
	With automatic ejection	⊖ B	**3SE2257-6XX30**		1	1 unit	41K
• With M16 × 1.5 connecting thread							
- Slow-action contacts 1 NO + 2 NC	Holding force 5 N	⊖ B	**3SE2243-0XX48**		1	1 unit	41K
	Holding force 30 N	⊖ A	**3SE2243-0XX18**		1	1 unit	41K
	With automatic ejection	⊖ C	**3SE2243-0XX38**		1	1 unit	41K
- Slow-action contacts 1 NC	Holding force 5 N	⊖ B	**3SE2257-6XX48**		1	1 unit	41K
	Holding force 30 N	⊖ C	**3SE2257-6XX18**		1	1 unit	41K
	With automatic ejection	⊖ C	**3SE2257-6XX38**		1	1 unit	41K
Accessories							
Actuators							
• Standard actuators (r_{min} = 150 mm), length 28 mm		A	**3SX3218**		1	1 unit	41K
• Universal radius actuator (r_{min} = 45 mm), length 34 mm		A	**3SX3228**		1	1 unit	41K
• Radius actuator, adjustable radius, length 34 mm		D	**3SX3256**		1	1 unit	41K
• Ball locating, force adjustable up to 100 N by 2 screws, length 28 mm		A	**3SX3217**		1	1 unit	41K
• Actuator, length 34 mm, with dust protection and slit cover		D	**3SX3234**		1	1 unit	41K
Accessories							
• Slit cover (1 set = 3 units)		D	**3SX3233**		1	3 units	41K

3SE2243

3SX3218

3SX3228

3SX3256

3SX3217

3SX3234

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The safety switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

3SE5 safety switch with solenoid interlocking

The safety switches with solenoid interlocking comprise a switch part with electromechanical interlock and a mechanical actuator which has to be ordered separately.

They are rugged protective devices that enable the greatest possible safety for man and machine.

The safety switches with solenoid interlocking are offered in plastic or metal enclosures.

Dimensions (W × H × D): 54 mm × 185 mm × 43.5 mm

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuators are not included in the scope of supply of the safety switches and must be ordered separately from a choice of different versions to suit the application (see page 12/75).

Actuation data:

- Maximum actuating speed v_{max} = 1.5 m/s
- Minimum actuating speed v_{min} = 0.4 mm/s
- Minimum force in the direction of actuation F_{min} = 30 N

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The safety switches with radius actuators are particularly suitable for rotary protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel locking device for attaching up to eight padlocks is available for even more safety (see page 12/75).

Dust protection

A rubber cap to protect the actuator entry of the actuator head from contamination is available for operation in dusty environments (see page 12/75).

Solenoid interlocking

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

The spring-actuated lock switch is equipped with an auxiliary release for emergency situations or setup mode. Available as options:

- Escape release or
- Emergency release

Contact blocks

The safety switches with solenoid interlocking have one contact block each for:

- Monitoring the actuator or the position of the protective door
- Monitoring the position of the solenoid

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN 1088.

Optical signaling equipment

The safety switches with solenoid interlocking are available with an optional optical signaling device.

The signaling device indicates the switch position of the lock and the protective device optically by means of 2 LEDs on the front.

Protective device	Solenoid interlocking	Display	Meaning
Closed	Released		Actuator to be pulled
Closed	Locked		Actuator locked
Open	Released		Actuator pulled

Internal wiring:

- The yellow LED is pre-wired to the magnetic monitoring NO contact.
- The green LED is pre-wired to the actuator monitoring NC contact.
- LED ground is pre-wired to the ground of the solenoid.

Note:

- The operational voltage must be connected to the corresponding contacts by the customer.
- This voltage for the LEDs must match the operational voltage of the solenoid (same potential).

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General data

Benefits

The new generation of 3SE53 safety switches offers

- More safety through higher locking forces:
  - 1300 N with plastic enclosure
  - 2600 N with metal enclosure
- Various release mechanisms: Lock release, escape release and emergency release
- Two contact blocks each with three contacts as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: Plastic, metal or with integrated ASIsafe
- An extensive range of actuators
- An optional LED status display 24 V DC, 115 V AC or 230 V AC for all switch versions
- Devices with ASIsafe electronics integrated in the enclosure (see page 12/94)

Application

The safety switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

The safety position switches with solenoid interlocking have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and solenoid interlocking

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN 1088.

Approvals

The switches are approved for use with locking devices according to EN 1088 and EN 292, Parts 1 and 2.

Category 3 according to EN ISO 13849-1 can be attained with a safety switch with solenoid interlocking if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK1 or 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional 3SE5 safety switch.

These switches are approved according to UL 508, UL 50 and UL 746-C.

Solenoid interlocking

The separate actuator operates in a similar way to the coding of a key and protects against manipulation. It transmits the locking force to the protective device and helps to monitor its position.

There are two versions of locking:

Spring-actuated lock (closed-circuit principle)

- In the standard version, the safety switch locks by means of spring force and releases by means of electromagnetic force. In the case of voltage failure, it reliably prevents the protective device from opening when machine parts are still moving.
- The switch is equipped with an auxiliary release for emergency situations or setup mode.
- An auxiliary release which can be secured with a lock to prevent misuse is available as a version.

Auxiliary release

Auxiliary release with lock

The 3SE5 3 safety switches are also available with an escape release or emergency release.

- Personnel working inside the hazard zone can use the escape release feature to manually release the interlocking without tools from the escape side (hazardous area side) so that they can exit the hazard area. An intentional act (in this case pulling the gray actuator) is required to release the locking mechanism and restore the normal operating state.
- The emergency release enables someone in an emergency situation to manually release the interlock without tools from the access side (outside the hazardous area). Releasing the lock and restoring the normal operating state must require effort which is comparable to repair activity, in this case disassembly of the red actuator and resetting the mechanical lock.

Escape release from the front

Emergency release from the back

Solenoid-locked (open-circuit principle)

- The second version offers locking by means of electromagnetic force and release by means of spring force. This version has an advantage when it is necessary to quickly access the machine after a power failure occurs, or in the case of very short coasting times.

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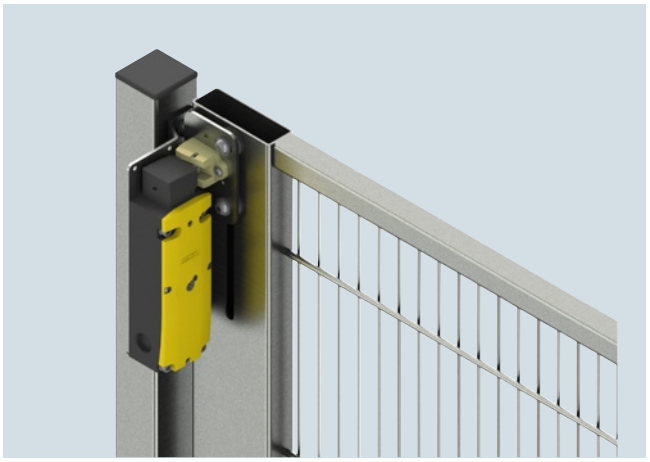
Examples of door interlocking

X-Lock door interlocking from Axelent



Door interlocking from Brühl

For the addresses of the door interlock manufacturers see Chapter 16, "Appendix" ➞ "External Partners".

Technical specifications

Type		3SE5322	3SE5312
General data			
Standards		IEC 60947-5-1, EN 60947-5-1	
Rated insulation voltage U_i	V	250	
Pollution degree acc. to IEC 60664-1		Class 3	
Rated impulse withstand voltage U_{imp}	kV	4	
Rated operational voltage U_e			
• DC	V	24	
• 50/60 Hz AC	V	230	
Conventional thermal current I_{th}	A	6	
Rated operational current I_e			
• With alternating current 50/60 Hz		I_e / AC-15 or B300	
- At 24 V	A	6	
- At 120 V	A	3	
- At 230 V	A	1.5	
• For direct current		I_e / DC-13 or Q300	
- At 24 V	A	3	
- At 125 V	A	0.55	
- At 250 V	A	0.27	
Magnet			
• Locking force, max.	N	1 300	2 600
• Locking force according to GS-ET 19	N	1 000	2 000
• Power consumption at U_c	W	3.5	
Short-circuit protection[1]			
• With DIAZED fuse links, operational class gG	A	6	
• With miniature circuit breaker, Char. C	A	0.5	
Mechanical endurance		1×10^6 operating cycles	
Electrical endurance			
• With 3RH.1, 3RT contactors in size S00, S0		1×10^6 operating cycles	
• For utilization category AC-15 with interrupting of I_e / AC-15 at 230 V		1×10^5 operating cycles	
• With utilization category DC-12/DC-13		For direct current depending on the loading of the switch	
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operating cycles/h	
Shock resistance acc. to IEC 60068-2-27		30 *g* / 11 ms	

[1] Without any welds according to IEC 60947-5-1.

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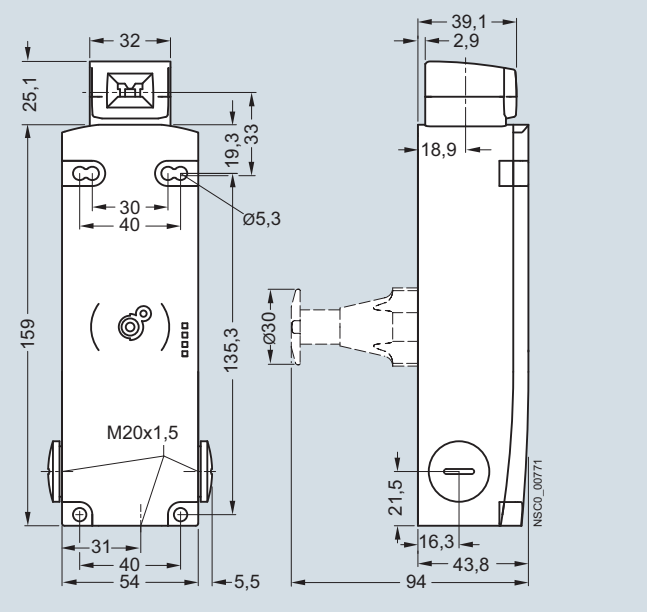
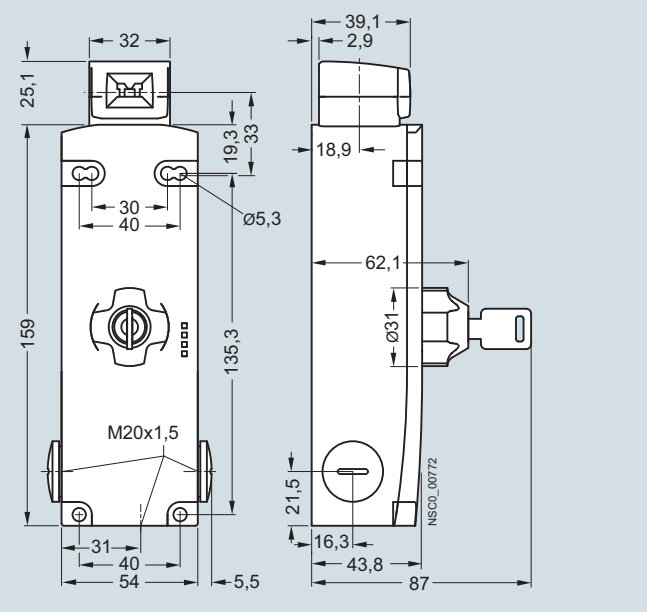
General data

3SE53 configuration

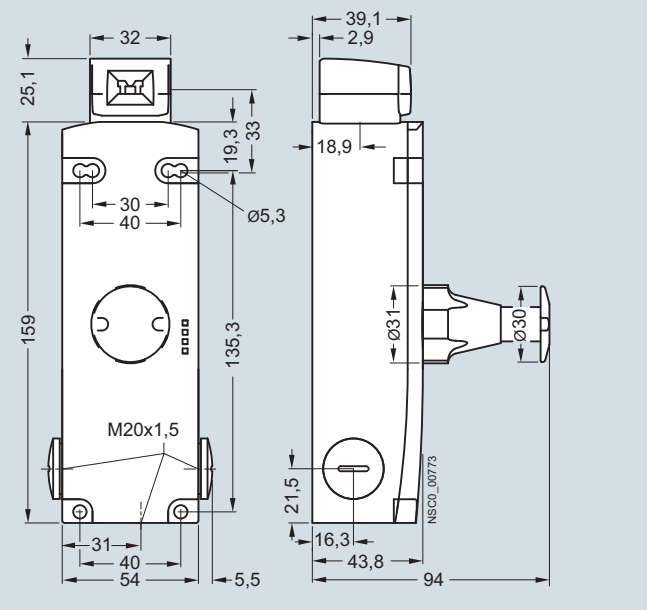
Spring-actuated lock, with auxiliary release
3SE5322-.SD2., 3SE5322-.SG2., 3SE5322-.SJ2.,
3SE5312-.SD1., 3SE5312-.SG1., 3SE5312-.SJ1.,



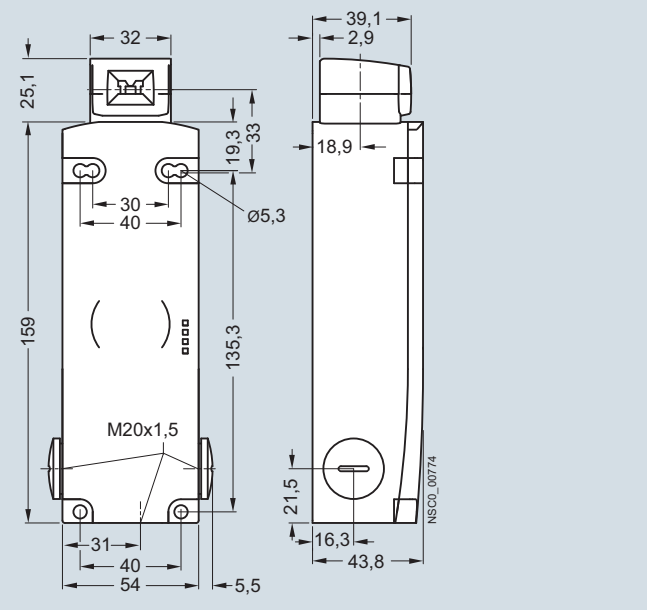
Spring-actuated lock, with auxiliary release with lock
3SE5322-.SE2.,
3SE5312-.SE1.



Spring-actuated lock, with escape release
3SE5322-.SF2.,
3SE5312-.SF1.



Solenoid lock
3SE5322-.SB2.,
3SE5312-.SB1.



Note:

The plastic enclosures have knock-out openings behind the connecting thread; they are delivered therefore without protective caps.

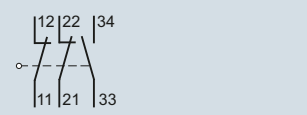
Actuators see pages 12/60 and 12/61.

Actuation see page 12/61.

Circuit diagrams

Monitoring the actuator

Slow-action contacts 1 NO + 2 NC



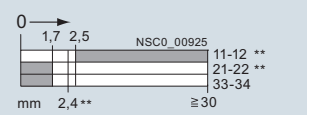
Monitoring the solenoid

Slow-action contacts 1 NO + 2 NC

Operating travel

Monitoring the actuator

Slow-action contacts 1 NO + 2 NC



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Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 1 300 N

	Interlock[1]	LEDs	Solenoid, rated operational voltage		DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC Configurator	PU (UNIT, SET, M)	PS*	PG
			V			Article No. / Price per PU			
1 300 N locking force · Enclosure width 54 mm									
3SE5312-0SD2.	**Spring-actuated locks**								
	• With auxiliary release	--	24 DC	⇒	▶	**3SE5322-0SD21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SD22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SD23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	A	**3SE5322-1SD21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SD22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SD23**	1	1 unit	41K
3SE5312-0SE2.	• With auxiliary release with lock	--	24 DC	⇒	B	**3SE5322-0SE21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SE22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SE23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	B	**3SE5322-1SE21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SE22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SE23**	1	1 unit	41K
3SE5312-0SF2.	• With escape release from the front	--	24 DC	⇒	B	**3SE5322-0SF21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SF22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SF23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	B	**3SE5322-1SF21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SF22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SF23**	1	1 unit	41K
	• With escape release from the front and emergency release from the back	--	24 DC	⇒	B	**3SE5322-0SL21**	1	1 unit	41K
	- For ambient temperature up to –40 °C		24 DC	⇒	B	**3SE5322-0SL21-1AJ0**	1	1 unit	41K
3SE5312-0SG2.	• With escape release from the back and auxiliary release from the front	--	24 DC	⇒	B	**3SE5322-0SG21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SG22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SG23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	B	**3SE5322-1SG21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SG22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SG23**	1	1 unit	41K
	• With escape release from the back and auxiliary release with lock from the front	--	24 DC	⇒	B	**3SE5322-0SH21**	1	1 unit	41K
3SE5312-0SJ2.	• With emergency release from the back and auxiliary release from the front	--	24 DC	⇒	B	**3SE5322-0SJ21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SJ22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SJ23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	B	**3SE5322-1SJ21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SJ22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SJ23**	1	1 unit	41K
3SE5312-0SB2.	**Solenoid locks**	--	24 DC	⇒	▶	**3SE5322-0SB21**	1	1 unit	41K
		--	115 AC	⇒	B	**3SE5322-0SB22**	1	1 unit	41K
		--	230 AC	⇒	B	**3SE5322-0SB23**	1	1 unit	41K
		Yellow/Green	24 DC	⇒	A	**3SE5322-1SB21**	1	1 unit	41K
		Yellow/Green	115 AC	⇒	B	**3SE5322-2SB22**	1	1 unit	41K
		Yellow/Green	230 AC	⇒	B	**3SE5322-3SB23**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

⇒ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/75).

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SIRIUS 3SE5, 3SE2 Mechanical Safety Switches

With Solenoid Interlocking

3SE5, metal enclosures
With locking force greater than 2000 N

Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5 · Locking force 2 600 N

	Interlock[1]	LEDs	Solenoid, rated operational voltage	DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC Configurator	PU (UNIT, SET, M)	PS*	PG
			V		Article No. / Price per PU			
2 600 N locking force · Enclosure width 54 mm								
3SE5312-0SD1.	**Spring-actuated locks**							
	• With auxiliary release	--	24 DC	➔ ▶	**3SE5312-0SD11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SD12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SD13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SD11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SD12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SD13**	1	1 unit	41K
3SE5312-0SE1.	• With auxiliary release with lock	--	24 DC	➔ B	**3SE5312-0SE11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SE12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SE13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SE11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SE12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SE13**	1	1 unit	41K
3SE5312-0SF1.	• With escape release from the front	--	24 DC	➔ B	**3SE5312-0SF11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SF12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SF13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SF11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SF12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SF13**	1	1 unit	41K
3SE5312-0SG1.	• With escape release from the back and auxiliary release from the front	--	24 DC	➔ B	**3SE5312-0SG11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SG12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SG13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SG11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SG12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SG13**	1	1 unit	41K
	• With escape release from the back and auxiliary release with lock from the front	--	24 DC	➔ B	**3SE5312-0SH11**	1	1 unit	41K
3SE5312-0SJ1.	• With emergency release from the back and auxiliary release from the front	--	24 DC	➔ B	**3SE5312-0SJ11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SJ12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SJ13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SJ11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SJ12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SJ13**	1	1 unit	41K
3SE5312-0SB1.	**Solenoid locks**	--	24 DC	➔ ▶	**3SE5312-0SB11**	1	1 unit	41K
		--	115 AC	➔ B	**3SE5312-0SB12**	1	1 unit	41K
		--	230 AC	➔ B	**3SE5312-0SB13**	1	1 unit	41K
		Yellow/Green	24 DC	➔ B	**3SE5312-1SB11**	1	1 unit	41K
		Yellow/Green	115 AC	➔ B	**3SE5312-2SB12**	1	1 unit	41K
		Yellow/Green	230 AC	➔ B	**3SE5312-3SB13**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/75).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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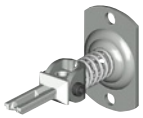
Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators for 3SE53							
	Standard actuators						
3SE5000-0AV01	• Length 75.6 mm	►	**3SE5000-0AV01**		1	1 unit	41K
3SE5000-0AV02	• With vertical fixing, length 53 mm	B	**3SE5000-0AV02**		1	1 unit	41K
3SE5000-0AV03	• With transverse fixing, length 47 mm	B	**3SE5000-0AV03**		1	1 unit	41K
3SE5000-0AV04	**Radius actuators**, length 51 mm						
	• Direction of approach from the left	A	**3SE5000-0AV04**		1	1 unit	41K
	• Direction of approach from the right	►	**3SE5000-0AV06**		1	1 unit	41K
 3SE5000-0AV05-1AA6	**Universal radius actuators**						
	• Length 77 mm	B	**3SE5000-0AV05**		1	1 unit	41K
	• Length 77 mm, tab rotated 90°	B	**3SE5000-0AV05-1AA6**		1	1 unit	41K
3SE5000-0AV07	**Universal radius actuators, heavy duty**						
	• Length 67 mm	A	**3SE5000-0AV07-1AK2**		1	1 unit	41K
	• Length 77 mm	B	**3SE5000-0AV07**		1	1 unit	41K
Optional accessories for 3SE5							
3SE5000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination	C	**3SE5000-0AV08-1AA2**		1	1 unit	41K
3SE5000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to eight padlocks	B	**3SE5000-0AV08-1AA3**		1	1 unit	41K
Spare parts for 3SE53							
	Spare keys	B	**3SX5100-1F**		1	1 unit	41K
Connection for 3SE5							
3SY3 127	**Connector sockets (4-pole), M12, fixed for M20 × 1.5** For max. 250 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3127**		1	1 unit	41K
	Connector sockets (5-pole), M12, fixed for M20 × 1.5 For max. 125 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3128**		1	1 unit	41K
3SX9 926	**Cable glands M20 × 1.5** Plastic	A	**3SX9926**		1	1 unit	41K

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Hinge Switches

General data

Overview

3SE5 hinge switches have the same enclosures as the 3SE5 position switches (modular system).

Hinge switches

Design

Enclosure sizes

The 3SE5 switches are available as complete units in two enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry

Enclosure versions

Various basic versions can be selected for the enclosures:

- Available with two or three-pole contact blocks designed as snap-action contacts
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/97)

For a description of the basic switches, see page 12/4.

Operating mechanism

The hinge switches are provided for mounting on hinges. The actuator head is included in the scope of supply. There are two versions:

- Operating mechanism with hollow shaft, inner diameter 8 mm, outer 12 mm
- Operating mechanism with solid shaft, diameter 10 mm

3SE2283 hinge switches

The 3SE2283 hinge switches with integrated hinge are available in a special design. They are particularly suitable for use in machine doors and flaps.

Benefits

The 3SE5 hinge switches differ from the previous series through the following new characteristics:

- All actuators can be turned around the axis in increments of 22.5° (see picture, page 12/5).
- The new three-pole contact block 1 NO + 2 NC is available for all enclosure sizes (see picture, page 12/5).
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture, page 12/5).
- The ASIsafe electronic component is integrated in the enclosure for the versions with AS-Interface connection (see page 12/82); an additional adapter is not required.

Application

The hinge switches are used in those areas where the position of swiveling protective devices such as doors or flaps must be monitored. With these switches, the position of the doors and hinge switches is converted into electric signals. The switches allow shutdown and signaling without delay in the event of a small opening angle through the snap-action contacts with an operating angle of 10°.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions and fixing points of the enclosures are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN ISO 13849-1 can be attained with the 3SE5 hinge switches with ⊖ if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3TK28 or 3SK1 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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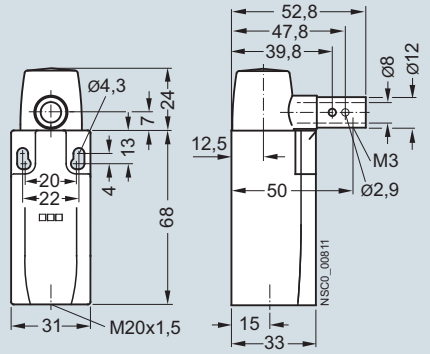
Technical specifications

The technical specifications are the same as for the standard switches (see page 12/7).

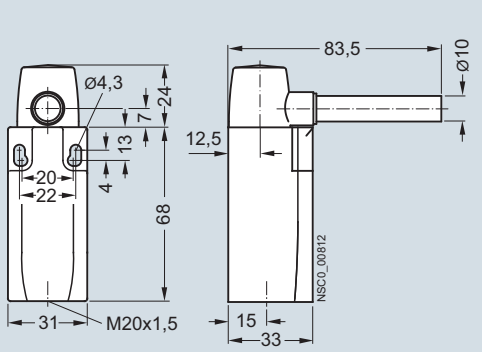
Configuration

Enclosure width 31 mm

With hollow shaft
3SE5212-0.U21, 3SE5232-0.U21

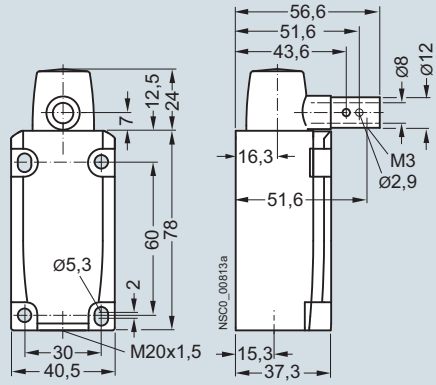


With solid shaft
3SE5212-0.U22, 3SE5232-0.U22

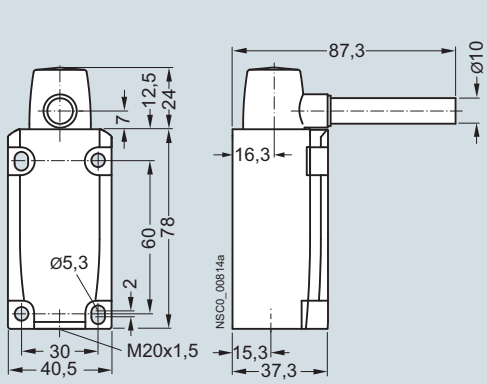


Enclosure width 40 mm

With hollow shaft
3SE5112-0.U21, 3SE5132-0.U21



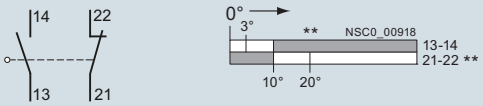
With solid shaft
3SE5112-0.U22, 3SE5132-0.U22



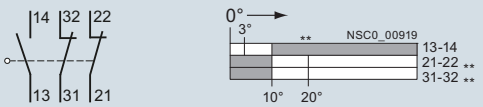
Operating travel of the shaft

Snap-action contacts

1 NO + 1 NC, Ident. No. **11**



1 NO + 2 NC, Ident. No. **12**



Contact closed
Contact open

** Positive opening point

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Hinge Switches

3SE5, plastic enclosures
Enclosure width 31 mm / 40 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP65 (31 mm) or IP67/IP68 (40 mm) · Cable entry M20 × 1.5

	Version	Snap-action contacts	DT	Complete units / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures · Enclosure width 31 mm acc. to EN 50047								
With hollow shaft	**With hollow shaft**							
	Operating angle 10°	1 NO + 1 NC [1]	➔ B	**3SE5232-0HU21**		1	1 unit	41K
	Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5232-0LU21**		1	1 unit	41K
With solid shaft	**With solid shaft**							
	Operating angle 10°	1 NO + 1 NC [1]	➔ B	**3SE5232-0HU22**		1	1 unit	41K
	Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5232-0LU22**		1	1 unit	41K
Plastic enclosures · Enclosure width 40 mm acc. to EN 50041								
With hollow shaft	**With hollow shaft**							
	Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5132-0LU21**		1	1 unit	41K
With solid shaft	**With solid shaft**							
	Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5132-0LU22**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Contact blocks permanently integrated, replacement not available.

Spare parts

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuator heads							
With hollow shaft	**With hollow shaft**						
	Operating angle 10°	B	**3SE5000-0AU21**		1	1 unit	41K
With solid shaft	**With solid shaft**						
	Operating angle 10°	B	**3SE5000-0AU22**		1	1 unit	41K

Note:

The respective actuators are included in the scope of supply for the complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Complete units

3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Snap-action contacts	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures · Enclosure width 31 mm according to EN 50047								
With hollow shaft	**With hollow shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5212-0LU21**		1	1 unit	41K
With solid shaft	**With solid shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5212-0LU22**		1	1 unit	41K
Metal enclosures · Enclosure width 40 mm acc. to EN 50041								
With hollow shaft	**With hollow shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5112-0LU21**		1	1 unit	41K
With solid shaft	**With solid shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5112-0LU22**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

Spare parts

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuator heads							
With hollow shaft	**With hollow shaft** Operating angle 10°	B	**3SE5000-0AU21**		1	1 unit	41K
With solid shaft	**With solid shaft** Operating angle 10°	B	**3SE5000-0AU22**		1	1 unit	41K

Note:

The respective actuators are included in the scope of supply for the complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Hinge Switches

3SE2, plastic enclosures
With integrated hinge

Overview

The 3SE2283 hinge switches with built-in hinge are particularly suitable for use in doors and flaps of machines that must be closed to ensure the safety of operating personnel. Their thin profile and the compact design allow them to be directly mounted on a hinged protective cover and the stable frame.

Benefits

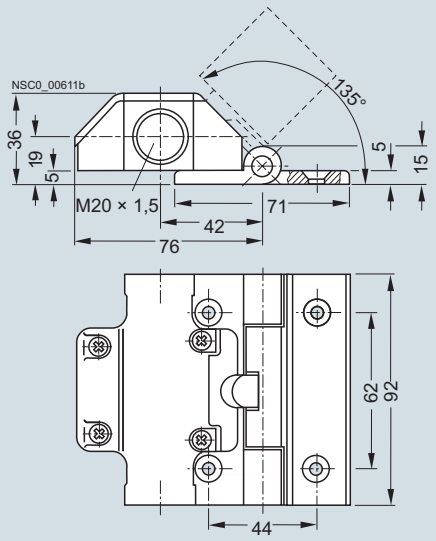
- Easy mounting through use of versions with integrated hinge
- Versions with small operating angle of 4° or 8°
- Protection against personal injury provided by positively driven NC contacts according to IEC 60947-5-1
- Simultaneous shutdown and reporting by 1 NO + 2 NC contacts

Technical specifications

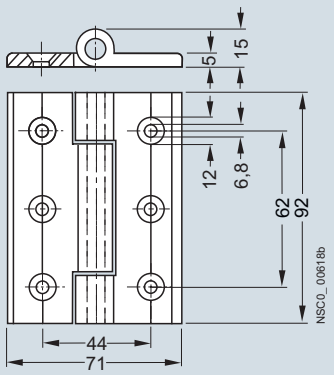
Type		3SE2283
Rated insulation voltage U_i	V	250
Conventional thermal current I_{th}	A	2.5
Rated operational current I_e		
• At AC-15, 120 V	A	4.2
• At AC-15, 250 V	A	2
• At DC-13, 24 V	A	1
Min. make-break capacity		> 5 V / 1 mA
Short-circuit protection		
• Operational class gG	A	2
Mechanical endurance		> 1 × 10^6 operating cycles
Switching frequency		1 200 operating cycles/h
Positive opening		2 mm after opening point
Enclosure material		Plastic
Degree of protection		IP65
Ambient temperature	°C	–25 ... +65
Shock resistance		30 *g*/18 ms
Resistance to vibrations		20 *g* /10 ... 200 Hz
Cable entry		2 × (M20 × 1.5)
Screw terminals		0.5 ... 1.5 mm²/AWG 15

Configuration

3SE2283-.GA.3 hinge switch with hinge



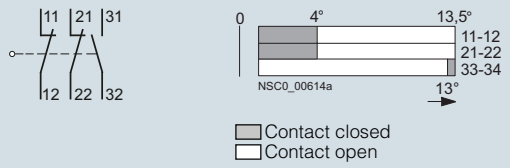
3SX3225 additional hinge



Operating travel of the hinge

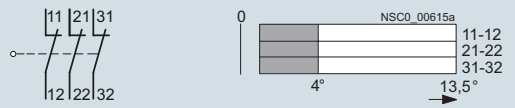
Slow-action contacts

1 NO + 2 NC, Ident. No. **12**



Slow-action contacts

3 NC, Ident. No. **03**



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Selection and ordering data

3 contacts · Degree of protection IP65 · Cable entry 2 × (M20 × 1.5)

Version	Slow-action contacts	DT	Complete units Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures with integrated hinge							
3SE2283							
With integrated hinge (Delivery includes additional hinge and fixing accessories)							
• Aluminum hinge							
- Operating angle 4°	1 NO + 2 NC	⊖ A	**3SE2283-0GA43**		1	1 unit	41K
- Operating angle 4°	3 NC	⊖ B	**3SE2283-6GA43**		1	1 unit	41K
- Operating angle 8°	1 NO + 2 NC	⊖ C	**3SE2283-0GA53**		1	1 unit	41K
- Operating angle 8°	3 NC	⊖ C	**3SE2283-6GA53**		1	1 unit	41K
• High-grade steel hinge							
- Operating angle 4°	1 NO + 2 NC	⊖ B	**3SE2283-0GA44**		1	1 unit	41K
- Operating angle 4°	3 NC	⊖ C	**3SE2283-6GA44**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

Accessories/spare parts

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
3SX3225						
Additional hinge (delivered with fixing accessories)						
• Made of aluminum	⊖ D	**3SX3225**		1	1 unit	41K
• Made of high-grade steel	⊖ D	**3SX3231**		1	1 unit	41K

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

The 3SF1 position switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics component is integrated in the switch enclosure.

Examples of selection options in the modular system

Modular system

The position switches of the 3SF11.4 and 3SF12.4 series are designed as a modular system comprising different versions of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the end users can select the right solution for their application from numerous versions and install it themselves in a very short time.

Design

The 3SF1 switches are available in four different enclosure sizes:

- Plastic and metal enclosures according to EN 50047, 31 mm wide, with M12 plug
- Metal enclosures according to EN 50041, 40 mm wide, with M12 plug
- Plastic enclosures, 50 mm wide, with M12 plug and M12 socket
- Metal enclosures, 56 mm wide, with M12 plug and M12 socket

Display

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red): AS-i/FAULT

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second position switch. Category 4 according to EN ISO 13849-1 is thus achieved.

Benefits

The new generation of 3SF1 position switches offers:

- ASIsafe electronics component integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs

Application

With the standard position switches, mechanical positions of moving machine parts are converted into electrical signals. Through their modular and uniform design and large number of variants, the devices can comply with practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. And many different actuator variants are available to match the mechanical configuration of the moving machined parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 position switch it is possible to achieve Category 2 according to EN ISO 13849-1 or SIL 1 according to IEC 61508.

Categories 3 or 4 according to EN ISO 13849-1 or SIL 2 or 3 according to IEC 61508 can be achieved by using a second 3SE5 position switch.

The 3SF1 position switches are approved according to UL 508, UL 50 and UL 746-C.

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Technical specifications

Type		3SF11.., 3SF12..
General data		
Standards		IEC 60947-5-1, EN 60947-5-1, EN 1088
According to AS-Interface specification		
• I/O configuration / ID configuration		0 / B
• ID1 code / ID2 code (Hex)		F / F
• Power consumption, overall	mA	≤ 60
Inputs		
• Low signal range		Contact open
• High signal range		Contact closed, I_{in} dynamic (I_{peak} ≥ 5 mA)
Status display		Green/red dual LED
Rated impulse withstand voltage U_{imp}	kV	0.6
EMC resistance		
• IEC 61000-1-2	kV	4
• IEC 61000-4-3	V/m	10
• IEC 61000-4-4 (A / B)	kV	1 / 2
Mechanical endurance		
• Basic switches		15×10^6 operating cycles
• With separate actuator, 3SF1...-..V..		1×10^6 operating cycles
PFH value		
Probability of failure upon request of the safety function, with 1 actuation per hour and B10 = 5×10^6		
• Basic switches	1/h	4×10^{-9}
• With separate actuator, 3SF1...-..V..	1/h	2×10^{-9}
• Hinge switches, 3SF1...-..U..	1/h	2×10^{-9}
Shock resistance acc. to IEC 60068-2-27		30 *g* / 11 ms

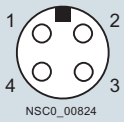
Type		3SF1234	3SF1134	3SF1244	3SF1214	3SF1114	3SF1124
Enclosure							
Enclosure							
• Material		Ultramid A3X2G7			Zinc diecasting GD Zn Al4 Cu1		
• Width	mm	31	40	50	31	40	56
• Dimensions according to EN		EN 50047	EN 50041	--	EN 50047	EN 50041	--
Degree of protection acc. to IEC 60529		IP65	IP66/IP67				
Ambient temperature							
• During operation	°C	–25 ... +60					
• Storage, transport	°C	–40 ... +80					
Mounting position		Any					

Connector assignment

M12 connector socket, 4-pole

1 ASi +
2 Not assigned
3 ASi –
4 Not assigned

M12 socket, 4-pole



1 Channel 2
2 Channel 2
3 Not assigned
4 Not assigned

LEDs

Status display (operating state)

LEDs	No voltage on AS-Interface chip	Communication OK	Communication failed	Slave has address "0"
ASi/Fault (GN/RD)				

Safe inputs

LEDs	Not actuated	Actuated
F-IN1 (YE)		
F-IN2 (YE)		

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Plastic enclosures
Enclosure width 31 mm acc. to EN 50047 / 50 mm

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 connector socket

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches (with rounded plunger[1]) · Enclosure width 31 mm acc. to EN 50047								
ASIsafe basic switch								
With teflon plunger								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1234-1KC05-1BA1**		1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1234-1LC05-1BA1**		1	1 unit	42A
Basic switches (with rounded plunger[1]) · Enclosure width 50 mm								
ASIsafe basic switch								
With teflon plunger								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
Slow-action contacts	1 NC	24 V DC	➔ B	**3SF1244-1KC05-1BA2**		1	1 unit	42A
Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1244-1LC05-1BA2**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator for use in safety circuits.

1) For enclosures with widths of 31 mm and 50 mm, the basic switch is a complete unit with rounded plungers.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

Plastic enclosures
Enclosure width 31 mm acc. to EN 50047 / 50 mm

	Version	Roller diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Roller plungers	**Roller plungers, type C acc. to EN 50047**						
	Plastic roller	10	⊖ A	**3SE5000-0AD03**	1	1 unit	41K
	High-grade steel roller	10	⊖ B	**3SE5000-0AD04**	1	1 unit	41K
With central fixing	**Roller plungers with central fixing**						
	Plastic roller	10	⊖ B	**3SE5000-0AD10**	1	1 unit	41K
	High-grade steel roller	10	⊖ B	**3SE5000-0AD11**	1	1 unit	41K
Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AE10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ B	**3SE5000-0AE12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE13**	1	1 unit	41K
Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AF10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ A	**3SE5000-0AF12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF13**	1	1 unit	41K
Twist actuators with lever							
Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right or left, adjustable		⊖ A	**3SE5000-0AK00**	1	1 unit	41K
	Levers						
	Twist levers, type A acc. to EN 50047						
Twist lever	Metal lever, plastic roller	19	⊖ A	**3SE5000-0AA21**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA22**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊖ B	**3SE5000-0AA23**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA25**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA31**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA32**	1	1 unit	41K
Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K

⊖ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 31 mm according to EN 50047

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches (with rounded plunger[1]) · Enclosure width 31 mm acc. to EN 50047								
ASIsafe basic switch								
With plunger								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1214-1KC05-1BA1**		1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1214-1LC05-1BA1**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator for use in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:

Selection aid see page 12/13.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Metal enclosures
Enclosure width 31 mm according to EN 50047

	Version	Roller diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Plain plunger	**Plain plungers**						
	High-grade steel plungers	10	⊖ A	**3SE5000-0AB01**	1	1 unit	41K
Roller plungers	**Roller plungers, type C acc. to EN 50047**						
	Plastic roller	10	⊖ A	**3SE5000-0AD03**	1	1 unit	41K
	High-grade steel roller	10	⊖ B	**3SE5000-0AD04**	1	1 unit	41K
With central fixing	**Roller plungers with central fixing**						
	Plastic roller	10	⊖ B	**3SE5000-0AD10**	1	1 unit	41K
	High-grade steel roller	10	⊖ B	**3SE5000-0AD11**	1	1 unit	41K
Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AE10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ B	**3SE5000-0AE12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AE13**	1	1 unit	41K
Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	⊖ A	**3SE5000-0AF10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊖ A	**3SE5000-0AF12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊖ B	**3SE5000-0AF13**	1	1 unit	41K
Twist actuators with lever							
Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right or left, adjustable		⊖ A	**3SE5000-0AK00**	1	1 unit	41K
	Levers						
Twist lever	**Twist levers, type A acc. to EN 50047**						
	Metal lever, plastic roller	19	⊖ A	**3SE5000-0AA21**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA22**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊖ B	**3SE5000-0AA23**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA25**	1	1 unit	41K
Twist lever, adjustable length	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA31**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA32**	1	1 unit	41K
	Twist levers 30 mm, straight[1]						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K

⊖ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches · Enclosure width 40 mm acc. to EN 50041								
ASIsafe basic switch								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1114-1KA00-1BA1**		1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1114-1LA00-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 56 mm								
ASIsafe basic switch								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
Slow-action contacts	1 NC	24 V DC	➔ B	**3SF1124-1KA00-1BA2**		1	1 unit	42A
Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1124-1LA00-1BA2**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator for use in safety circuits.

Note:

Selection aid see page 12/13.

Version	Roller diameter mm	DT	Modular system / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Plain plunger							
Plain plungers							
High-grade steel plungers	10	➔ A	**3SE5000-0AB01**		1	1 unit	41K
Rounded plunger							
Rounded plungers, type B, acc. to EN 50041							
High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5000-0AC02**		1	1 unit	41K
Roller plunger							
Roller plungers, type C acc. to EN 50041							
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5000-0AD02**		1	1 unit	41K

➔ Positively driven actuator, for use in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

	Version	Roller diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Article No. / Price per PU			
Operating mechanisms							
Roller lever	**Roller levers**						
	Metal lever, plastic roller	22	⊖ A	**3SE5000-0AE01**	1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5000-0AE02**	1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5000-0AE03**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5000-0AE04**	1	1 unit	41K
Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	22	⊖ A	**3SE5000-0AF01**	1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5000-0AF02**	1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5000-0AF03**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5000-0AF04**	1	1 unit	41K
Twist actuators with lever							
Twist actuator	**Twist actuators**, metal (without lever)						
	• For twist levers, switching right or left, adjustable						
	- For enclosure width 40 and 56 mm		⊖ A	**3SE5000-0AH00**	1	1 unit	41K
	• For fork levers, latching		⊖ B	**3SE5000-0AT10**	1	1 unit	41K
	Levers						
Twist lever	**Twist levers 27 mm, offset, type A, according to EN 50041**						
	Metal lever, plastic roller	19	⊖ A	**3SE5000-0AA01**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ A	**3SE5000-0AA02**	1	1 unit	41K
	Metal lever, high-grade steel roller with ball bearing	19	⊖ B	**3SE5000-0AA03**	1	1 unit	41K
	Metal lever, 2 plastic rollers	19	⊖ B	**3SE5000-0AA04**	1	1 unit	41K
Twist lever, adjustable length	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA05**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA07**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA08**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA11**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA12**	1	1 unit	41K
	Twist levers 35 mm, offset						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA15**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA16**	1	1 unit	41K
	Twist levers 30 mm, straight[1)]						
Fork lever	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	⊖ B	**3SE5000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5000-0AA63**	1	1 unit	41K
	Fork levers (for switches with snap-action contacts only)						
	Metal lever, 2 plastic rollers	19	⊖ B	**3SE5000-0AT01**	1	1 unit	41K
	Metal lever, 2 high-grade steel rollers	19	⊖ B	**3SE5000-0AT02**	1	1 unit	41K
	High-grade steel lever, 2 plastic rollers	19	⊖ B	**3SE5000-0AT03**	1	1 unit	41K
	High-grade steel lever, 2 high-grade steel rollers	19	⊖ B	**3SE5000-0AT04**	1	1 unit	41K

⊖ Positively driven actuator, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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General data

Overview

The 3SF1 safety switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 safety switches the ASIsafe electronics component is integrated in the switch enclosure.

3SF1 safety switches with head for separate actuator and with integrated ASIsafe electronics

3SF1 safety switches with separate actuator have the same enclosures as the 3SF1 position switches.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuators are not included in the scope of supply of the safety switch and must be ordered separately from a choice of different versions to suit the application (see page 12/93).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the actuator head from contamination is available for operation in dusty environments.

Display

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red): AS-i/FAULT

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second safety switch. Category 4 according to EN ISO 13849-1 is thus achieved.

Benefits

The new generation of 3SF1 safety switches with separate actuator offers

- ASIsafe electronics component integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs

Application

Safety switches with separate actuator are used where the position of doors, covers or protective grilles must be monitored for safety reasons.

The safety switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions, fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 safety switch it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508.

Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using a second 3SE5 safety switch.

The 3SF1 safety switches are approved according to UL 508, UL 50 and UL 746-C.

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Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm)

Selection and ordering data

	Version[1]	Contacts	DT	Complete units / Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047							
	5 directions of approach With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact Slow-action contacts	2 NC	⊖ B	**3SF1234-1QV40-1BA1**	1	1 unit	42A
Enclosure width 50 mm							
	5 directions of approach With M12 connector socket, 4-pole; channel 1 on NC contact, channel 2 on M12 socket, right Slow-action contacts	1 NC	⊖ B	**3SF1244-1QV40-1BA2**	1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/93).

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

With Separate Actuator

Metal enclosures
Enclosure width 31 mm / 40 mm / 56 mm

Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP66/IP67

Selection and ordering data

	Version[1]	Contacts	DT	Complete units / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
	5 directions of approach With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact Slow-action contacts	2 NC	⊕ B	**3SF1214-1QV40-1BA1**		1	1 unit	42A
Enclosure width 40 mm acc. to EN 50041								
	5 directions of approach With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact Slow-action contacts	2 NC	⊕ B	**3SF1114-1QV10-1BA1**		1	1 unit	42A
Enclosure width 56 mm								
	5 directions of approach With M12 connector socket, 4-pole; channel 1 on NC contact, channel 2 on M12 socket, right Slow-action contacts	1 NC	⊕ B	**3SF1124-1QV10-1BA2**		1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/93).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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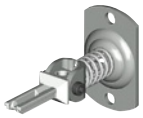
Overview

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators							
	Standard actuators						
3SE5000-0AV01	• Length 75.6 mm	►	**3SE5000-0AV01**		1	1 unit	41K
3SE5000-0AV02	• With vertical fixing, length 53 mm	B	**3SE5000-0AV02**		1	1 unit	41K
3SE5000-0AV03	• With transverse fixing, length 47 mm	B	**3SE5000-0AV03**		1	1 unit	41K
3SE5000-0AW11	• With transverse fixing, plastic[1] Length 40 mm	B	**3SE5000-0AW11**		1	1 unit	41K
	Radius actuators						
3SE5000-0AV04	• Length 51 mm, direction of approach from the left	A	**3SE5000-0AV04**		1	1 unit	41K
3SE5000-0AV6	• Length 51 mm, direction of approach from the right	►	**3SE5000-0AV06**		1	1 unit	41K
 3SE5000-0AV05-1AA6	**Universal radius actuators**						
	- Length 77 mm	B	**3SE5000-0AV05**		1	1 unit	41K
	- Length 77 mm, tab rotated 90°	B	**3SE5000-0AV05-1AA6**		1	1 unit	41K
3SE5000-0AV07	**Universal radius actuators, heavy duty**						
	- Length 67 mm	A	**3SE5000-0AV07-1AK2**		1	1 unit	41K
	- Length 77 mm	B	**3SE5000-0AV07**		1	1 unit	41K
Optional accessories							
3SE5000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination (Only for enclosure width 40 or 56 mm)	C	**3SE5000-0AV08-1AA2**		1	1 unit	41K
3SE5000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to eight padlocks	B	**3SE5000-0AV08-1AA3**		1	1 unit	41K

[1] Not suitable for safety switches with interlocking.

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General data

Overview

The 3SF1 safety switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 safety switches the ASIsafe electronics component is integrated in the switch enclosure.

3SF1 safety switch with solenoid interlocking and with integrated ASIsafe electronics

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuators are not included in the scope of supply of the safety switch and must be ordered separately from a choice of different versions to suit the application (see page 12/93).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the actuator entry of the actuator head from contamination is available for operation of the enclosures in dusty environments.

Solenoid interlocking

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

For more explanations see page 12/70.

Display

The switches have a status display with four LEDs:

- LED 1 (green): AS-i
- LED 2 (red): FAULT
- LED 3 (yellow): F-IN1
- LED 4 (yellow): F-IN2

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable (no additional supply of auxiliary power is required thanks to the low current consumption of the solenoid of max. 170 mA).

Benefits

The new generation of 3SF13 safety switches with solenoid interlocking offers:

- More safety through higher locking forces:
  - 1 300 N for the plastic version
  - 2 600 N for the metal version
- Various release mechanisms: Lock release, escape release and emergency release
- ASIsafe electronics integrated in the enclosure; connected through 4-pole M12 connector socket
- Current consumption of the solenoid no more than 170 mA
- Two contact blocks as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: Plastic, metal
- An extensive range of actuators
- Status display with four LEDs

Application

The safety switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grilles or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched-off machine).

The safety switches with tumbler have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and solenoid interlocking

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the fail-safe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

The switches are approved for use with locking devices according to EN 1088 and EN 292, Parts 1 and 2.

3SF13 safety switches with solenoid interlocking have a VDE test mark.

With a 3SF13 safety switch with solenoid interlocking it is possible to achieve Category 3 according to EN ISO 13849-1 or SIL 2 according to IEC 61508.

Category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508 can be achieved by using a second 3SE5 safety switch.

The 3SF1 safety switches are approved according to UL 508, UL 50 and UL 746-C.

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Overview

5 directions of approach · Degree of protection IP66/IP67

- Slow-action contacts:
  - Version -1BA1: ASIsafe channel 1 on 1 NC contact from the actuator and channel 2 on 1 NC contact from the solenoid
  - Version -1BA3: ASIsafe channel 1 on the first NC contact from the actuator and channel 2 on the second NC contact from the actuator
  - Version -1BA4: ASIsafe channel 1 on 2 NC contacts from the actuator and channel 2 on 1 NC contact from the solenoid. A discrepancy between the two contacts of the actuator will be evaluated already in the switch.
- Solenoid: Rated operational voltage 24 V DC
- 1 300 N locking force
- Status display with 4 LEDs 24 V DC; 1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Safety level

The 3SF1324-1S.21-1BA4 safety switches are also recommended where there are several protective door interlocking devices where reliable diagnostics and quick restart capability of equipment is required.

- A response is received from the magnet.
- No opening of the doors after the solenoid is unlocked.

In connection with an ASIsafe MSS modular safety system or in DP/AS-i F-Link it is possible to achieve SIL 2 according to IEC 61508 or PL d according to ISO 13849-1.

Comparison of versions

Safety switches Type	Contacts Actuator / solenoid	Achievable safety level	Diagnostics Feedback from the solenoid	Reclosing condition after unlocking the solenoid (depending on the type of evaluation)
3SF1324-1S.21-1BA1	1 NC/1 NC	SIL 1 / PL c	✓	Door does not have to be opened
	1 NC/1 NC	SIL 2 / PL d	✓	Door must be opened
3SF1324-1S.21-1BA3	2 NC	SIL 2 / PL d	--	Door does not have to be opened
3SF1324-1S.21-1BA4	2 NC/1 NC	SIL 2 / PL d	✓	Door does not have to be opened

✓ Available
-- Not available

Selection and ordering data

	Interlock[1]	Contacts Actuators/ Solenoids	DT	Complete units / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
1300 N locking force · Enclosure width 54 mm								
3SF1324-1SD21-...	**Spring-actuated locks**							
	• With auxiliary release	1 NC/1 NC	⊖ B	**3SF1324-1SD21-1BA1**		1	1 unit	42A
		2 NC/--	⊖ B	**3SF1324-1SD21-1BA3**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1324-1SD21-1BA4**		1	1 unit	42A
	• With auxiliary release with lock	1 NC/1 NC	⊖ B	**3SF1324-1SE21-1BA1**		1	1 unit	42A
3SF1324-1SF21-...	• With escape release from the front	1 NC/1 NC	⊖ B	**3SF1324-1SF21-1BA1**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1324-1SF21-1BA4**		1	1 unit	42A
	• With escape release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1324-1SG21-1BA1**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1324-1SG21-1BA4**		1	1 unit	42A
	• With emergency release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1324-1SJ21-1BA1**		1	1 unit	42A
3SF1324-1SB21-...	**Solenoid locks**	1 NC/1 NC	⊖ B	**3SF1324-1SB21-1BA1**		1	1 unit	42A
		2 NC/--	⊖ B	**3SF1324-1SB21-1BA3**		1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately.

For actuators and optional accessories see page 12/93.

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

With Solenoid Interlocking

Metal enclosures
With locking force greater than 2000 N

Overview

5 directions of approach · Degree of protection IP66/IP67

- Slow-action contacts:
  Version -1BA1: ASIsafe channel 1 on 1 NC contact from the actuator and channel 2 on 1 NC contact from the solenoid
- Solenoid: Rated operational voltage 24 V DC
- 2 600 N locking force
- Status display with 4 LEDs 24 V DC;
  1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Safety level

See page 12/95.

Selection and ordering data

	Interlock[1]	Contacts Actuators/ Solenoids	DT	Complete units / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
2600 N locking force · Enclosure width 54 mm								
3SF1314-1SD11-...	**Spring-actuated locks**							
	• With auxiliary release	1 NC/1 NC	⊖ B	**3SF1314-1SD11-1BA1**		1	1 unit	42A
	• With auxiliary release with lock	1 NC/1 NC	⊖ B	**3SF1314-1SE11-1BA1**		1	1 unit	42A
3SF1314-1SF11-...	• With escape release from the front	1 NC/1 NC	⊖ B	**3SF1314-1SF11-1BA1**		1	1 unit	42A
	• With escape release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1314-1SG11-1BA1**		1	1 unit	42A
	• With escape release from the back and auxiliary release with lock from the front	1 NC/1 NC	⊖ B	**3SF1314-1SH11-1BA1**		1	1 unit	42A
	• With emergency release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1314-1SJ11-1BA1**		1	1 unit	42A
3SF1314-1SB11-...	**Solenoid locks**	1 NC/1 NC	⊖ B	**3SF1314-1SB11-1BA1**		1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately.

For actuators and optional accessories see page 12/93.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3SF1 safety hinge switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 hinge switches the ASIsafe electronics component is integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator variants here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the 3SF1 position switches (use only versions with snap-action contacts).

The standards and approvals are the same as for the 3SF1 standard switches (see page 12/82).

Selection and ordering data

Modular system

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 connector socket

	Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches · Enclosure width 31 mm acc. to EN 50047									
ASIsafe basic switch	**With teflon plunger, with M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1234-1LC05-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 50 mm									
ASIsafe basic switch	**With teflon plunger, with M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
	Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1244-1LC05-1BA2**		1	1 unit	42A
Actuator heads									
Actuator head with hollow shaft	**With hollow shaft**								
	Operating angle 10°			B	**3SE5000-0AU21**		1	1 unit	41K
Actuator head with solid shaft	**With solid shaft**								
	Operating angle 10°			B	**3SE5000-0AU22**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K.

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Hinge Switches

Metal enclosures
Enclosure width 31 mm / 40 mm / 56 mm

Overview

The 3SF1 safety hinge switches with safety-related communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 hinge switches the ASIsafe electronics component is integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator variants here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the 3SF1 position switches (use only versions with snap-action contacts).

The standards and approvals are the same as for the 3SF1 standard switches (see page 12/82).

Selection and ordering data

Modular system

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

	Version	Contacts	LEDs	DT	Modular system / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches · Enclosure width 31 mm acc. to EN 50047									
ASIsafe basic switch	**With plunger** With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	B	**3SF1214-1LC05-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 40 mm acc. to EN 50041									
ASIsafe basic switch	**With M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	B	**3SF1114-1LA00-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 56 mm									
ASIsafe basic switch	**With M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
	Snap-action contacts	1 NC	24 V DC	B	**3SF1124-1LA00-1BA2**		1	1 unit	42A
Actuator heads									
Actuator head with hollow shaft	**Hollow shaft** Operating angle 10°			B	**3SE5000-0AU21**		1	1 unit	41K
Actuator head with solid shaft	**Solid shaft** Operating angle 10°			B	**3SE5000-0AU22**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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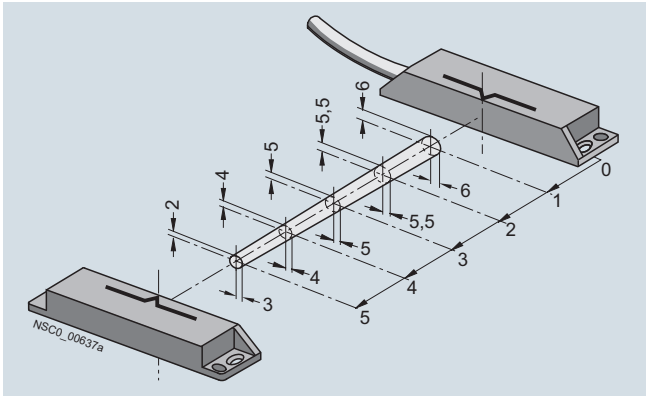
3SE66, 3SE67 magnetically operated switches

Overview

3SE66 contact blocks and 3SE67 switching magnets



Enabling range (example)

A magnetically operated switch comprises a coded switching magnet and a contact block (sensor unit). Evaluation requires a safety relay or connection to a bus system.

3SE6806 safety relays

Up to six protective devices (sensors) can be connected to the safety relay.

The device has six current-sourcing semiconductor outputs (Y1 ... Y6) which signal the state of the connected protective devices.

The 3SE6806 safety relay has two floating enabling circuits (safe circuits) as NO contact circuits and one floating signaling circuit as an NC contact circuit. The number of enabling circuits can be increased by adding one or more 3TK2830 expansion modules.

Application

SIRIUS 3SE6 magnetically operated switches are designed for mounting on movable protective guards (hoods, hinge switches, doors, etc.). Evaluation can be performed by means of a safety relay or through connection to a bus system.

The 3SE66 non-contact, magnetically operated safety switches stand out due to their enclosed design with degree of protection IP67. They are particularly suitable therefore for areas exposed to contamination, cleaning or disinfecting.

A magnetic monitoring system comprises one or more magnetically operated switches and an evaluation unit, e.g. a safety relay. When contact blocks 1 NO + 1 NC are used the 3SE6806 safety relay provides a high degree of protection against manipulation and can be installed in safety circuits up to SIL 3 according to EN ISO 13849-1.

Combination of monitoring units and magnetically operated switches

Monitoring units		**Magnetically operated switches (contact block + switching magnet)**			**Achievable SIL** (IEC 61508, IEC 62061) **Performance Level** (EN ISO 13849-1)
		1 NO + 1 NC 3SE6605-.BA 3SE6704-.BA	2 NC 3SE6604-2BA 3SE6704-2BA	1 NO + 2 NC[1)] 3SE6606-3BA 3SE6704-3BA	
Relay outputs					
SIRIUS safety relays, 6-fold	3SE6806-2CD00	✓	--	✓	**SIL 3 / e**
SIRIUS safety relays	3SK1111	--	✓	--	**SIL 3 / e**
	3SK1121, 3TK2826	✓	✓	✓	**SIL 3 / e**
Solid-state outputs					
SIRIUS safety relays	3SK1112, 3SK1122	--	✓	--	**SIL 3 / e**
	3TK2845	--	✓	--	**SIL 3 / e**
SIRIUS safety relays with contactor relay	3TK2850, 3TK2851, 3TK2852	--	✓	--	**SIL 2 / d**
	3TK2853	--	✓	--	**SIL 3 / e**
ASIsafe compact safety modules	3RK1205, 3RK1405	--	✓	--	**SIL 3 / e**
Modular Safety System (MSS)	3RK3	✓	✓	✓	**SIL 3 / e**
SIMATIC S7-31xF-2 DP or SIMATIC ET 200M	SM 326 F, 24 DI, 24 V DC, SM 326 F, 8 DI, NAMUR	✓	✓	✓	**SIL 3**
SIMATIC ET 200S PROFIsafe	4/8 F-DI / 3 F-DO, 24 V DC	✓	✓	✓	**SIL 2**
	4/8 F-DI, 24 V DC	✓	✓	✓	**SIL 3**
SIMATIC ET 200eco	4/8 F-DI, 24 V DC	✓	✓	✓	**SIL 3**
SIMATIC ET 200pro	8/16 F-DI, 24 V DC, 4/8 F-DI / 4 F-DO 2 A, 24 V DC, F-Switch	✓	✓	✓	**SIL 3**

✓ Suitable magnetically operated switch

[1)] The second NC is a signaling contact, not a safety contact.

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Magnet

3SE66, 3SE67 magnetically operated switches

Selection and ordering data

	Version	Size	Contacts	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm							
Round sensor units									
3SE6704-1BA	**Switching magnets (coded)**	M30		A	**3SE6704-1BA**		1	1 unit	41K
	Contact blocks								
3SE6505-1BA	• With cable, 3 m	M30	1 NO + 1 NC	C	**3SE6605-1BA**		1	1 unit	41K
	• With M12 plug, 4-pole	M30	1 NO + 1 NC	X	**3SE6605-1BA02**		1	1 unit	41K
Rectangular sensor units									
3SE6704-2BA	**Switching magnets (coded)**	25 × 88	--	A	**3SE6704-2BA**		1	1 unit	41K
	Contact blocks								
3SE660.-2BA	• With cable, 3 m	25 × 88	1 NO + 1 NC	C	**3SE6605-2BA**		1	1 unit	41K
			2 NC	C	**3SE6604-2BA**		1	1 unit	41K
	• With cable, 10 m	25 × 88	1 NO + 1 NC	A	**3SE6605-2BA10**		1	1 unit	41K
			2 NC	A	**3SE6604-2BA10**		1	1 unit	41K
	• With M8 plug, 4-pole	25 × 88	1 NO + 1 NC	X	**3SE6605-2BA01**		1	1 unit	41K
			2 NC	X	**3SE6604-2BA01**		1	1 unit	41K
3SE660.-3BA	**Switching magnets (coded)**	25 × 33	--	X	**3SE6704-3BA**		1	1 unit	41K
	Contact blocks								
	• With cable, 3 m	25 × 33	1 NO + 1 NC	C	**3SE6605-3BA**		1	1 unit	41K
	• With cable, 5 m			D	**3SE6605-3BA05**		1	1 unit	41K
	• With cable, 10 m			D	**3SE6605-3BA10**		1	1 unit	41K
	• With cable, 15 m			X	**3SE6605-3BA15**		1	1 unit	41K
	• With cable, 1 m	25 × 33	1 NO + 2 NC[1]	A	**3SE6606-3BA**		1	1 unit	41K
Accessories									
3SX3260	**Spacers**	25 × 88	--	D	**3SX3260**		1	1 unit	41K
3SX3261	**Spacers**	25 × 33	--	D	**3SX3261**		1	1 unit	41K

[1] The second NC is a signaling contact, not a safety contact.

	Version	Number of sensors	Enabling/signaling circuits	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Monitoring units									
3SE6806-2CD00	**Safety relays with relay output, 6-fold** Rated control supply voltage 24 V DC	6	2 NO / 1 NC	X	**3SE6806-2CD00**		1	1 unit	41K

For more monitoring units see Chapters 2, 8, 9 and 11 as well as Catalog IK PI.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Non-contact RFID safety switches
with maximum tamper resistance

RFID 3SE63 non-contact safety switches comply with the highest safety requirements, SIL3 or Cat. 4, for monitoring the positions of movable protective devices.

An RFID safety switch consists of a coded RFID switch with an 8-pole M12 connector plug and an identical RFID actuator.

The switch is available in several versions:

- Family coded with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable once, with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable more than once (an unlimited number of times), with M12 plug or version with additional 18 N magnetic catch

The actuator is therefore available in two versions

- Standard
- With 18 N magnetic catch

The magnetic catch keeps doors and hinge switches closed with permanent magnets.

Mounting and maintenance

Various options for mounting save on enclosure variants:

- Mounting of the switch on the right or left side
- The actuator can be mounted on all sides

Quick and easy mounting thanks to universal mounting holes

- Standard gauge/holes for 3SE6 magnetically operated switches
- Fine adjustment thanks to slotted holes

Little adjustment or maintenance required

- Threshold indication by LED display on the switch for quick and easy adjustment during mounting and maintenance
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Note:

- Keep metal parts and cuttings away from the vicinity of the switch
- Minimum distance between two switches 100 mm

Optional accessories (mounting)

- Covers for sealing mounting holes, also suitable for tamper-proofing screw fixings
- Spacers (approx. 3 mm high) to facilitate cleaning under the installation surface when using high-pressure cleaners, for example

Coding

Family coded

These safety switches are delivered ready to use, i.e. no programming is necessary.

Individually coded, programmable once

The assignment of safety switch and actuator thus created is irreversible.

The actuator is programmed simply by routine during startup, thus permanently preventing any form of tampering by means of a replacement actuator.

Individually coded, programmable several times

The procedure for programming a new actuator can be repeated an unlimited number of times. When a new actuator is programmed the previous code becomes invalid. A protected coding process allows new actuators to be programmed for service purposes.

After this, a ten-minute lockout provides enhanced tamper protection. The green LED flashes until the lockout time has ended and the new actuator has been detected. If the operational voltage is interrupted during this time, the ten-minute guard time is restarted.

Programming procedure for individual coding

1. Apply operational voltage to safety sensor

2. Move actuator into detection range:
red LED lights up, yellow LED flashes (1 Hz).

3. After 10 s it changes to a shorter flashing frequency (3 Hz). In this state switch off operational voltage.

4. After the next time the operational voltage is switched on, the actuator is detected again to activate the programmed actuator code. The activated code is thus stored permanently.

Diagnostics

The RFID safety switch indicates its operating state including faults by means of the LED indicator in the switch and the short-circuit proof diagnostics output. The signals can then be used for central displays or non-safety-related control tasks.

There are two diagnostics functions:

- Crossover monitoring
- Open-circuit monitoring
- External voltage monitoring
- Ambient temperature too high
- Wrong or defective actuator
- Switching interval threshold identification with LED display

The signal combination "diagnostics output switched off" and "safety outputs still switched on" can be used to move the machine into a controlled stop position.

Any crossover or a fault that is not currently compromising the safe function of a safety switch results in the disconnection of the safety channels after a 30-minute delay. However, the diagnostics output switches off instantaneously.

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RFID 3SE63 safety switches

Mode of operation of the diagnostics LEDs

The safety switch indicates not only its operating state, but also faults by means of LEDs in three colors at the ends of the RFID switch.

- The green LED indicates readiness for operation when the control supply voltage is connected.
- The yellow LED indicates that there is an actuator in detection range. If the actuator is in the switching interval threshold, this is indicated by flashing. This flashing can be used to identify a change in the distance between sensor and actuator at an early stage (e.g. as a result of the sagging of a protective door). The installation should be tested before the distance increases further, the safety outputs switch off and the machine stops.
- The red LED indicates the individual causes of the fault by means of defined flashing frequencies.

Benefits

- Maximum tamper resistance by means of individual coding of switches and actuators at the highest safety level
- Plastic enclosure with integrated connector
- Two solid-state short-circuit proof safety outputs, each 250 mA
- Integrated crossover, open circuit and external voltage monitoring, with series circuit as far as the control cabinet
- Safety and diagnostics signals can be connected in series
- Series connection of safety circuits in Cat. 4/PL e/SIL 3
- LED status indication including switching interval threshold indication for quick and easy adjustment during installation and maintenance
- Short-circuit proof conventional diagnostics output
- Optional version with magnetic catch for interlocking hinge switches or small doors even when de-energized
- Highly rugged thanks to the use of tested enclosure materials, resistant to aggressive cleaning products, with a degree of protection of up to IP69K
- Fine adjustment thanks to slotted holes
- Little adjustment or maintenance required
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Application

RFID non-contact safety switches are designed for use in safety circuits, and are used to monitor the positions of movable protective devices. They monitor the positions of rotating, laterally sliding or removable protective devices using the coded electronic actuator.

Their high degree of protection (IP69K) and the use of cleaning product-resistant materials means that these switches are optimized for use under extreme environmental conditions.

Their electronic operating principle makes these switches ideal for metalworking machinery.

The switches have a larger switching interval and switching displacement than mechanical switches, improve the mounting tolerance of the protective door, and offer a wide range of diagnostics options.

The RFID switches can be connected to all standard evaluation units suitable for solid-state inputs and in which the built-in crossover monitoring function can be deactivated, e.g.:

Monitoring units	
Relay outputs	
SIRIUS safety relays	3SK1111-.AB30, 3SK1121
SIRIUS safety relays	3TK2826-.BB4.
Solid-state outputs	
SIRIUS safety relays	3SK1112, 3SK1122
SIRIUS safety relays	3TK2841, 3TK2842, 3TK2845 3TK2853-.BB40
Modular Safety System (MSS)	3RK3 (safe inputs)
SIMATIC ET 200S	6ES7138-4FA0.-0AB0, 6ES7138-4FC0.-0AB0
SIMATIC ET 200M	6ES7326-1BK0.-0AB0
SIMATIC ET 200eco	6ES7148-3FA00-0XB0
SIMATIC ET 200pro	6ES7148-4F.00-0AB0

These safety categories can be achieved in safety circuits:

- Category 4 according to EN ISO 13849-1
- PL e according to EN ISO 13849-1
- SIL 3 according to IEC 61508

Technical specifications

Type		3SE63
General data		
Standards		IEC 60947-5-3, IEC 61508, EN ISO 13849-1
Enclosure material		Glass-fiber reinforced thermoplast, self-extinguishing
Degree of protection		IP69K
Ambient temperature		
• During operation	°C	-25 ... +70
• During storage, transport	°C	-25 ... +85
Shock resistance		30 *g* / 11 ms
Vibration resistance		10 ... 55 Hz / amplitude 1 mm

Type		3SE63
Electrical specifications		
Rated insulation voltage U_i	V	32
Pollution degree acc. to IEC 60664-1		3
Rated impulse withstand voltage U_{imp}	V	800
Rated conditional short-circuit current	A	100
Rated operational voltage U_e (PELV according to EN 60204-1)	V DC	24 –15/+10 %
Protection class		II
Overvoltage category		III
Rated operational current I_e	A	0.6
Smallest operational current I_m	mA	0.5
No-load supply current I_0	mA	35

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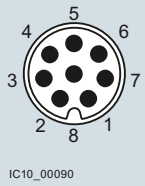
Type		3SE63
Inputs/outputs		
Safety inputs X1/X2		
• Input voltage	V DC	24 –15/+10 %
• Power consumption per input	mA	5
Safety outputs OSSD1/OSSD2		p operation
• Max. rated operational current I_e	A	0.25
• Rated operational current I_e/DC-12/DC-13 at U_e	A	0.25
• Voltage drop U_e	V	< 1
• Switching frequency	Hz	1
• Response time, max.	ms	100
• Risk time, max.	ms	200
• Recovery, max.	s	5
Diagnostics output		p operation
• Max. rated operational current $I_{e2\ max}$	A	0.05
• Rated operational current I_e/DC-12/DC-13 at U_e	A	0.05
• Voltage drop U_e	V	< 2
• Operational current	mA	150
• Conductor capacity, max.	nF	50

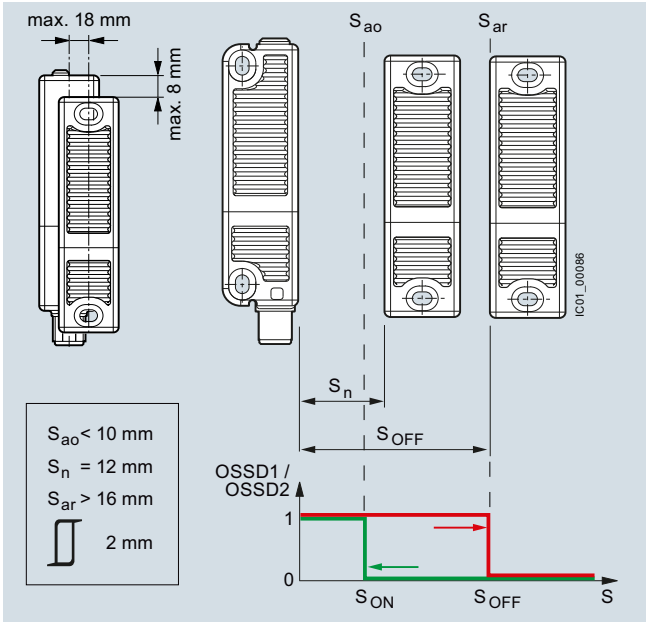
Connector assignment



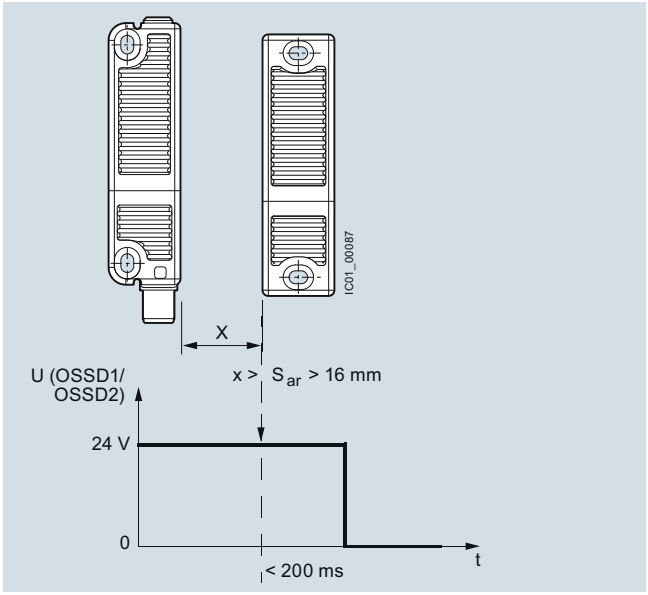
Pin 1: A1 rated operational voltage 24 V DC
Pin 2: X1 safety input 24 V DC
Pin 3: A2 grounding
Pin 4: OSSD1 safety output
Pin 5: OUT conventional diagnostics output
Pin 6: X2 safety input 24 V DC
Pin 7: OSSD2 safety output
Pin 8: Not used

Directions of approach and switching interval

The side area permits a maximum height offset of the switch and actuator of ±8 mm (e.g. mounting tolerance or due to sagging of the protective door). The transverse offset also equals max. ±8 mm.



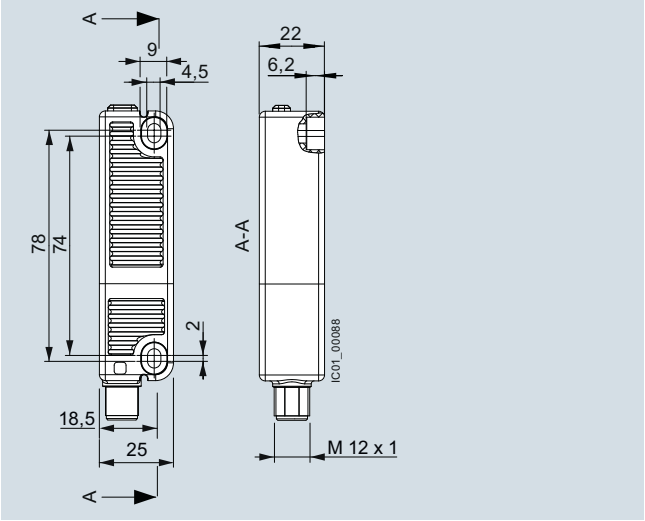
Switching interval: Output signal with hysteresis



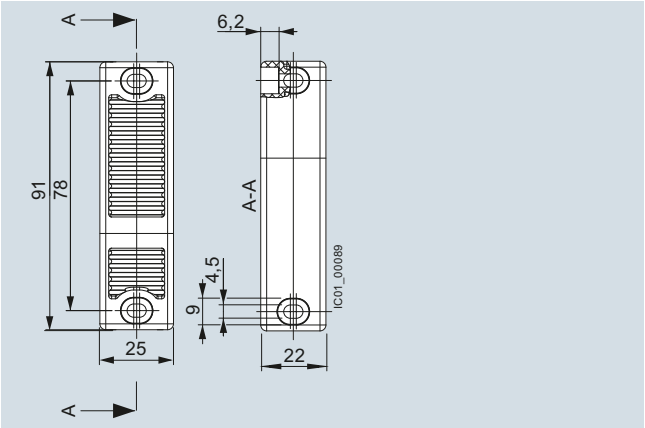
Switching interval: Output signal

Dimensional drawings

RFID switch
3SE6315



RFID actuator
3SE6310



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RFID 3SE63 safety switches

Selection and ordering data

With M12 connector, 8-pole

	Version/coding	Latching/length	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rectangular safety switches 91 mm x 25 mm								
3SE6315	**RFID safety switches**							
	• Family coded	None	A	**3SE6315-0BB01**		1	1 unit	41K
		With 18 N magnetic catch	A	**3SE6315-1BB01**		1	1 unit	41K
	• Individually coded, programmable several times	None	A	**3SE6315-0BB02**		1	1 unit	41K
		With 18 N magnetic catch	A	**3SE6315-1BB02**		1	1 unit	41K
	• Individually coded, programmable once	None	A	**3SE6315-0BB03**		1	1 unit	41K
		With 18 N magnetic catch	A	**3SE6315-1BB03**		1	1 unit	41K
3SE6310	**RFID actuators**							
	• Standard	None	A	**3SE6310-0BC01**		1	1 unit	41K
		With 18 N magnetic catch	A	**3SE6310-1BC01**		1	1 unit	41K
Optional accessories								
3SX5600-1G	**Covers and spacers** One pack (1 unit) contains 8 covers and 4 spacers		A	**3SX5600-1G**		1	1 unit	41K
3SX5601-2GA	**Connecting cables, 8-pole**, with 1 straight M12 socket Rated voltage 30 V Rated current 2 A	Length 3 m	A	**3SX5601-2GA03**		1	1 unit	41K
		Length 5 m	A	**3SX5601-2GA05**		1	1 unit	41K
		Length 10 m	A	**3SX5601-2GA10**		1	1 unit	41K

For monitoring units see Chapter 2, "Industrial Communication" → "AS-Interface" and Chapter 11, "Safety Technology" as well as Catalogs IK PI and ST 70.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Commanding and Signaling Devices

Price groups
PG 41J, 41K, 42A

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SIRIUS 3SB2 pushbuttons and indicator lights, 16 mm
13/4 General data
13/7 Complete units
13/9 Actuators and indicators
13/11 Contact blocks and lampholders
Accessories and spare parts
13/13 Insert labels and insert caps
13/17 Name plates
13/18 Mounting parts and components

SIRIUS 3SB3 pushbuttons and indicator lights, 22 mm
13/20 General data
Actuators and indicators, plastic, round, 22 mm
13/26 Complete units
13/32 Coordinate switches, complete
13/35 Actuators and indicators
Actuators and indicators, plastic, square, 26 mm × 26 mm
13/44 Complete units
13/46 Actuators and indicators
Actuators and indicators, metal, round, 22 mm
13/50 Complete units
13/55 Actuators and indicators
Components for actuators and indicators
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13/100 Components for AS-Interface enclosures
IK PI[1)] Enclosures and front panel modules for AS-Interface

SIRIUS 3SB3 two-hand operation consoles
13/101 Plastic and metal enclosures

SIRIUS 3SE7, 3SF2 cable-operated switches
13/102 3SE7 metal enclosures
13/106 3SF2 cable-operated switches for AS-Interface

SIRIUS 3SE2, 3SE3 foot switches
13/107 Plastic and metal enclosures

SIRIUS 8WD4 signaling columns
13/109 General data
13/112 8WD42 signaling columns, 50 mm diameter
13/114 8WD44 signaling columns, 70 mm diameter

SIRIUS 8WD5 integrated signal lamps
13/118 8WD53 integrated signal lamps, 70 mm diameter

Note:
Conversion tool,
e.g. from 3SB1 to 3SB3 see
www.siemens.com/sirius/conversion-tool

1) See Catalog IK PI "Industrial Communication"

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Introduction

Overview

	3SB2	3SB30, 3SB32	3SB31, 3SB33	3SB35, 3SB36
Pushbuttons and indicator lights				
Designs				
Nominal diameter	16 mm	22 mm	26 mm × 26 mm	22 mm
Version	Plastic, round	Plastic, round	Plastic, square	Metal, round
Actuators				
Pushbuttons and switches	✓[1)]	✓	✓	✓
Illuminated pushbuttons and switches	✓[1)]	✓	✓	✓
Mushroom pushbuttons	--	✓	--	✓
Push-pull buttons	--	✓	--	✓
EMERGENCY-STOP mushroom pushbuttons	✓	✓	✓	✓
Selector switches	✓	✓	✓	✓
Key-operated switches	✓	✓	✓	✓
Special actuators				
Coordinate switches	--	✓	--	--
Twin pushbuttons	--	✓	--	--
Potentiometer drives	--	✓	--	--
Indicators				
Indicator lights	✓	✓	✓	✓
Acoustic signaling devices	--	✓	--	--
Contact blocks				
Single-pole	✓	✓	✓	✓
Two-pole	✓	✓	✓	✓
Lampholders				
Wedge bases	✓	✓ (with solder connections)	✓ (with solder connections)	✓ (with solder connections)
BA 9s bases	--	✓	✓	✓
With integrated LED	--	✓	✓	✓
Connections				
Plug-in connection	✓	--	--	--
Screw terminals	--	✓	✓	✓
Spring-type terminals	--	✓	✓	✓
Solder pins	✓	✓	✓	✓
AS-Interface	--	✓	✓	✓

✓ Standard
-- Not available
❑ Optional
1) Only pushbuttons, no pushbutton switches.

AS-Interface solutions

Commanding and signaling devices of the SIRIUS 3SB3 series can be connected to the AS-Interface communication system quickly and easily with the help of various solutions.

For AS-Interface solutions see catalog IK PI "SIMATIC NET Industrial Communication".

AS-Interface EMERGENCY-STOP according to ISO 13850

Using a special F adapter, EMERGENCY-STOP control devices according to ISO 13850 can be directly connected through the standard AS-Interface with safety-related communication (see page 13/69).

AS-Interface enclosures

Enclosures with standard fittings are listed in this catalog. For customized enclosures, use the 3SB3/3SF5 configurator to select the elements for equipping (see page 13/98).

AS-Interface front panel modules

The front panel module has one 4I/4O slave for connection of four 3SB3 commanding or signaling devices (see Catalog IK PI).

Note:

Safety characteristics see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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	3SB38	3SB386	3SE7, 3SF2	3SE29, 3SB39
	Enclosures	**Two-hand operation consoles**	**Cable-operated switches**	**Foot switches**
Enclosures				
Plastic	✓	✓	--	✓
Metal	✓	✓	✓	✓
Actuators				
Pushbuttons and switches	✓	✓	✓	✓
Illuminated pushbuttons and switches	✓	✓	--	--
Mushroom pushbuttons	✓	✓	--	--
Push-pull buttons	✓	❑	--	--
EMERGENCY-STOP mushroom pushbuttons	✓	✓	✓	--
Selector switches	✓	❑	--	--
Key-operated switches	✓	❑	--	--
Bowden wires	--	--	✓	--
Indicators				
Indicator lights	✓	❑	✓	--
Acoustic signaling devices	✓	❑	--	--
Contact blocks				
Single-pole	✓	✓	--	--
Two-pole	--	✓	✓	✓
Three-pole	--	--	✓	✓
Four-pole	--	--	✓	✓
Connections				
Screw terminals	✓	✓	✓	✓
Spring-type terminals	✓	❑	--	--
Molded cables	--	--	--	✓
Plug-in connection	❑	❑	❑	❑
AS-Interface	✓	❑	✓	--

	8WD42, 8WD44	8WD53
	Signaling columns	**Integrated signal lamps**
Enclosures		
Plastic	✓	✓
Metal	--	--
Lighting		
Incandescent lamps	✓	✓
LEDs	✓	✓
Flashlights	✓	✓
Connections		
Screw terminals	✓	✓
Spring-type terminals	✓	--
AS-Interface	✓	--

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General data

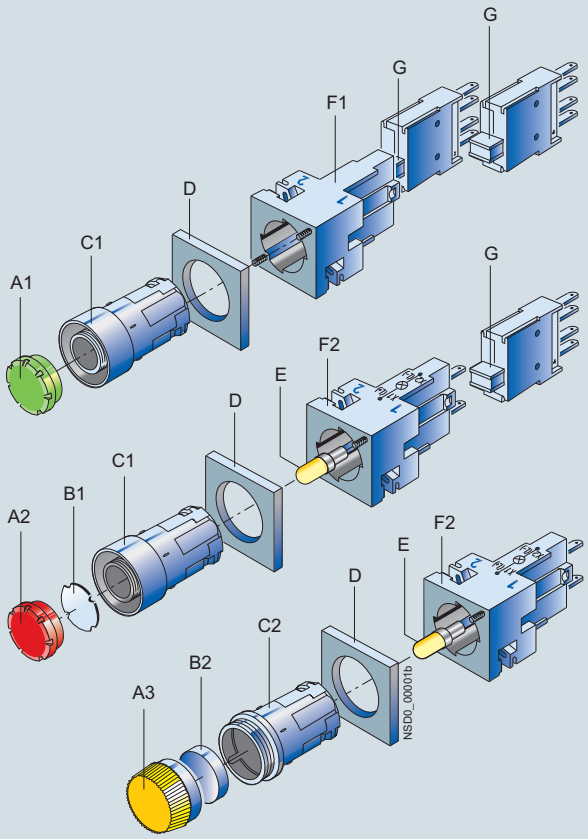
Overview

The 3SB2 pushbuttons and indicator lights are provided for front plate mounting and rear connection with flat connectors. For use on printed circuit boards, contact blocks and lampholders with solder pins are also available.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1,
IEC 60947-5-5, EN 60947-5-5 for
EMERGENCY-STOP mushroom pushbuttons

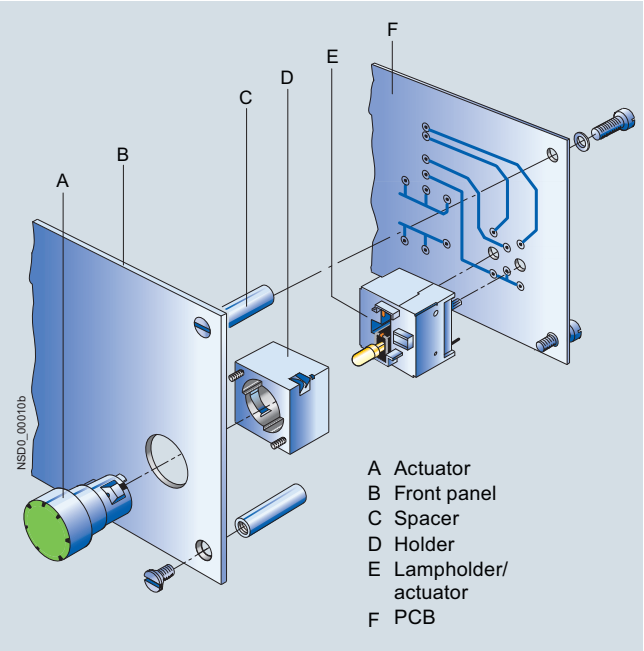
Version with flat connector



A1 Button, flat
A2 Illuminated button, flat
A3 Screw lens for indicator light
B1 Insert label, for labeling
B2 Insert cap, for labeling
C1 Collar with extruded front ring
C2 Collar for indicator light
D Frame for rectangular design
E Wedge base lamp, W2 x 4.6d
F1 Holders
F2 Lampholder with holder
G Contact blocks (1 NO or 1 NC) for snapping onto the holder or onto the lampholder

For PCB mounting

For use on printed circuit boards, special contact blocks and lampholders for soldering into the printed circuit board are available. For this purpose, the contact blocks and lampholders are fitted with 0.8 mm x 0.8 mm solder pins of length 3.5 mm.



Connection methods

Flat connectors

Solder pin connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Application

The devices are climate-proof and suitable for marine applications.

Safety EMERGENCY-STOP pushbuttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom pushbuttons of the 3SB2 series are suitable for use as safety EMERGENCY-STOP pushbuttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN ISO 13849-1 can be attained with the EMERGENCY-STOP mushroom pushbuttons if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK11 safety relays, the 3RK3 Modular Safety System (see Chapter 11, "Safety Technology") or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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Technical specifications

Type		3SB2
Contact blocks and lampholders		
Standards		IEC 60947-5-1, EN 60947-5-1 IEC 60947-5-5, EN 60947-5-5
Rated insulation voltage U_i	V	250
Conventional thermal current I_{th}	A	10
Rated operational current I_e at rated operational voltage U_e		
• Alternating current AC-12		
- At U_e = 24 ... 230 V	A	10
• Alternating current AC-15		
- At U_e = 24 ... 230 V	A	4
• Direct current DC-12		
- At U_e = 24 V	A	6
- At U_e = 60 V	A	5
- At U_e = 110 V	A	2.5
- At U_e = 230 V	A	1
• Direct current DC-13		
- At U_e = 24 V	A	3
- At U_e = 60 V	A	1.5
- At U_e = 110 V	A	0.7
- At U_e = 230 V	A	0.3
Contact stability		
• Test voltage/test current		5 V/1 mA
Lamps		
• Bases		Wedge base W2 x 4.6d
• Rated voltage	V	6, 12, 24, 30, 48, 60
• Rated power, max.	W	1
Short-circuit protection weld-free according to IEC 60947-5-1		
• DIAZED fuse links, utilization category gG		10 A TDz, 16 A Dz
• Miniature circuit breaker with C characteristic according to IEC 60898		10 A
Electrical endurance		
• For utilization category AC-15 with 3RT1015 to 3RT1026 contactors		10 x 10^6 operating cycles
Mechanical endurance		10 x 10^6 operating cycles
Degree of protection acc. to IEC 60529		
• Connection of contact blocks and lampholders behind the front plate		IP00
• Contact chambers of the contact blocks behind the front plate		IP40
Finger-safe according to EN 50274 and BGV A3		With voltages > 50 V AC or 120 V DC, insulation sleeves must be fitted to the unassigned tab connections.
Data according to UL and CSA		
Rated voltage		
• Contact blocks	V	250 AC
• Indicator light (lamp with wedge base W2 × 4.6d)	V	60; 1 W
Uninterrupted current	A	5
Switching capacity		B 300, R 300
Actuators and indicators		
Mechanical endurance		
• Pushbuttons		10 x 10^6 operating cycles
• Actuators, rotary or latching		3 x 10^5 operating cycles
• Illuminated pushbuttons		3 x 10^6 operating cycles
Climatic withstand capability		Climate-proof; suitable for marine applications
Ambient temperature		
• During operation, non-illuminated devices and complete with LED	°C	–25 ... +70
• During operation, devices with incandescent lamp	°C	–25 ... +60
• During storage, transport	°C	–40 ... +80
Degree of protection acc. to IEC 60529		
• Actuators and indicators		IP65
• Actuators and indicators with protective cap		IP67
Protective measures		
• For mounting in metal front plates and enclosures		The actuators and lens assemblies must not be included in the protective measures.
• For fitting into enclosures with total insulation		The protective measure "Total insulation" is retained.
Shock resistance acc. to IEC 60068-2-27		
• Shock amplitude		≤ 50 *g*
• Shock duration	ms	11
• Shock form		Half-sine

More technical information, see Reference Manual "Commanding and signaling devices".

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General data

Configuration

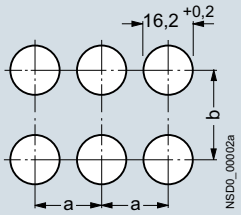
Design

Two design versions can be mounted:

- Round design: The 3SB2 pushbuttons and indicator lights are assembled with the modules – actuator, holder, contact block and lampholder. Depending on the specific application, various versions can be assembled. Complete units are offered for the most commonly used applications.
- Square design: With square, black frames the round units can be given a square look. The frames are inserted underneath the round actuators. Further mounting is the same as for the round version.

Mounting and fixing:

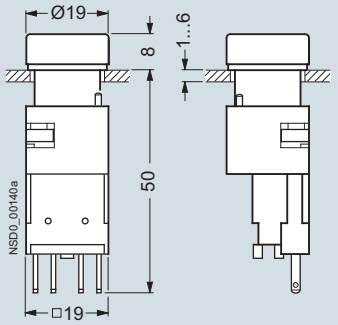
Mounting dimensions according to EN 50007
(not applicable to EMERGENCY-STOP mushroom pushbuttons)



Minimum clearance	a	b
Round version	19	19
Square version without inscription label	21	21
Round and square version with inscription label	21	32
For 2 selector switches with 3 switch positions, latching, side by side	21	21

For mounting, the actuator or the lens assembly is inserted from the front into the hole in the front plate. Four small nubs ensure a secure fitting in the hole. The holder is plugged on from the back and snaps automatically into place. The module is fixed to the holder with two screws so that it is immune to vibrations.

One or two contact blocks can be mounted on the holder. They are inserted into the holder with slide slots and held down with two snap brackets.



Pushbutton (flat) with holder and contact block

If a command point is fitted with an indicator light or illuminated pushbutton, a lamp socket with lampholder must be used instead of a holder. It is suitable for incandescent lamps or LEDs with bases of type W2 x 4.6d.

For PCB mounting

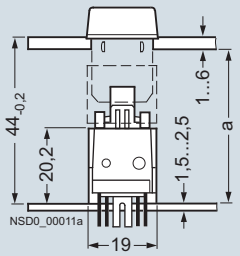
The command point comprises the actuator – e.g. 3SB2 pushbutton, illuminated pushbutton or indicator light –, which is mounted in the front plate, and a contact block and a lampholder which are soldered to the PCB. For this purpose, the contact blocks and lampholders are fitted with 0.8 mm x 0.8 mm solder pins of length 3.5 mm.

Mounting and fixing:

Mounting dimensions according to EN 50007.

The actuators are mounted in the same way as 3SB2 front plate mounting devices.

The contact blocks and lampholders are plugged into the printed circuit board by means of their solder pins and can be flow-soldered. After soldering, the devices must be flush with the board and perpendicular to it. The printed circuit board must be supported on spacing bolts so that it cannot sag or bend more than 0.1 mm.



Length **a** of spacing bolts:
a = $44_{-0.2}$ minus front plate thickness.

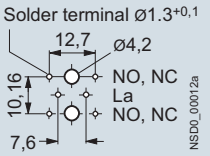
When using name plates, the length **a** is reduced by 0.8 mm.

Illuminated pushbutton with solder pin connection

To avoid bending the PCB when the control device is operated, sufficient spacing bolts must be provided as shown in the table below:

PCB thickness	Max. distance between spacing bolts
1.5 mm	80 mm
2.5 mm	150 mm
When using EMERGENCY-STOP pushbuttons	always 50 mm

These details are based on epoxy resin glass fiber mat.



Solder pin spacing

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Selection and ordering data

Version	Contact blocks	Color of handle	DT	Flat connectors Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons with flat button								
Pushbuttons with flat button	1 NO	Black	▶	**3SB2202-0AB01**		1	1 unit	41J
	1 NC	Black	B	**3SB2203-0AB01**		1	1 unit	41J
	1 NC	Red	▶	**3SB2203-0AC01**		1	1 unit	41J
	1 NO	Yellow	B	**3SB2202-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB2202-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2202-0AF01**		1	1 unit	41J
	1 NO	White	▶	**3SB2202-0AG01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB2202-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button Lampholder W2 x 4.6d without lamp[2]	1 NC	Red	▶	**3SB2207-0AC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB2206-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB2206-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2206-0AF01**		1	1 unit	41J
	1 NO	Clear[1]	▶	**3SB2206-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button Lampholder W2 x 4.6d with incandescent lamp 24 V	1 NC	Red	▶	**3SB2227-0AC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB2226-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB2226-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2226-0AF01**		1	1 unit	41J
	1 NO	Clear[1]	▶	**3SB2226-0AH01**		1	1 unit	41J
Illuminated pushbuttons with raised button								
Pushbuttons with raised button	1 NO	Black	B	**3SB2202-0LB01**		1	1 unit	41J
	1 NC	Red	B	**3SB2203-0LC01**		1	1 unit	41J
	1 NO	Yellow	B	**3SB2202-0LD01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2202-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB2202-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button Lampholder W2 x 4.6d without lamp[2]	1 NC	Red	B	**3SB2207-0LC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB2206-0LD01**		1	1 unit	41J
	1 NO	Green	B	**3SB2206-0LE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2206-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB2206-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button Lampholder W2 x 4.6d with incandescent lamp 24 V	1 NC	Red	B	**3SB2227-0LC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB2226-0LD01**		1	1 unit	41J
	1 NO	Green	B	**3SB2226-0LE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB2226-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB2226-0LH01**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons								
EMERGENCY-STOP mushroom pushbuttons according to ISO 13850, latching[3] Latches automatically when pressed; unlatches by turning the mushroom head counterclockwise, with yellow name plate with inscription "NOT-HALT"	1 NC ⊖[4]	Red	▶	**3SB2203-1AC01**		1	1 unit	41J

1) Inscription is possible by inserting a label.

2) Wedge base lamps see "Accessories", page 13/18.

3) The mushroom pushbutton cannot be combined with 3SB2902-0AB name plate or 3SB2902-0AA single frame.

4) Positive opening according to IEC 60947-5-1, Appendix K.

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3SB2 Pushbuttons and Indicator Lights, 16 mm

Complete units

Selector switches

Version	Contact blocks	Color of handle	DT	Flat connectors Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with 2 switch positions Switching sequence O-I, 62° operating angle, latching 	1 NO	Black	▶	**3SB2202-2AB01**		1	1 unit	41J
	1 NO	Red	B	**3SB2202-2AC01**		1	1 unit	41J
	1 NO	Green	B	**3SB2202-2AE01**		1	1 unit	41J
	1 NO	White	B	**3SB2202-2AG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 × 62° operating angle, latching 	1 NO, 1 NO	Black	▶	**3SB2210-2DB01**		1	1 unit	41J
	1 NO, 1 NO	Red	B	**3SB2210-2DC01**		1	1 unit	41J
	1 NO, 1 NO	Green	B	**3SB2210-2DE01**		1	1 unit	41J
	1 NO, 1 NO	White	B	**3SB2210-2DG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 × 50° operating angle, momentary contact type 	1 NO, 1 NO	Black	▶	**3SB2210-2EB01**		1	1 unit	41J
	1 NO, 1 NO	Red	B	**3SB2210-2EC01**		1	1 unit	41J
	1 NO, 1 NO	Green	B	**3SB2210-2EE01**		1	1 unit	41J
	1 NO, 1 NO	White	B	**3SB2210-2EG01**		1	1 unit	41J

CES key-operated switch

Version	Contact blocks	Lock No.	Key removal position	DT	Flat connectors Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
CES key-operated switches[1], **2 switch positions** Switching sequence O-I, 62° operating angle, latching 	1 NO	SB2	O	▶	**3SB2202-4LA01**		1	1 unit	41J
	1 NO	SB2	O + I	B	**3SB2202-4LB01**		1	1 unit	41J
CES key-operated switches[1], **3 switch positions** Switching sequence I-O-II, 2 × 62° operating angle, latching 	1 NO, 1 NO	SB2	O	B	**3SB2210-4PA01**		1	1 unit	41J
	1 NO, 1 NO	SB2	I + O + II	B	**3SB2210-4PB01**		1	1 unit	41J
CES key-operated switches[1], **3 switch positions** Switching sequence I-O-II, 2 × 50° operating angle, momentary contact type 	1 NO, 1 NO	SB2	O	B	**3SB2210-4QA01**		1	1 unit	41J

[1] Also available with additional locking systems. The Article No. must be supplemented with **"–Z"**, the order code "**Y01**" and the required lock number.

Indicator lights

Version	Color of screw lens	DT	Flat connectors Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Indicator lights Lampholder W2 x 4.6d without lamp[1]	Red	▶	**3SB2204-6BC06**		1	1 unit	41J
	Yellow	B	**3SB2204-6BD06**		1	1 unit	41J
	Green	▶	**3SB2204-6BE06**		1	1 unit	41J
	White	▶	**3SB2204-6BG06**		1	1 unit	41J
	Clear	B	**3SB2204-6BH06**		1	1 unit	41J
Indicator lights Lampholder W2 x 4.6d with incandescent lamp 24 V	Red	▶	**3SB2224-6BC06**		1	1 unit	41J
	Yellow	B	**3SB2224-6BD06**		1	1 unit	41J
	Green	▶	**3SB2224-6BE06**		1	1 unit	41J
	White	▶	**3SB2224-6BG06**		1	1 unit	41J
	Clear	B	**3SB2224-6BH06**		1	1 unit	41J

[1] Wedge base lamps see "Accessories", page 13/18.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Pushbuttons

Pushbuttons and illuminated pushbuttons with flat button

Version	Color of handle	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons with flat button	Black	▶	**3SB2000-0AB01**		1	1 unit	41J
	Red	▶	**3SB2000-0AC01**		1	1 unit	41J
	Yellow	B	**3SB2000-0AD01**		1	1 unit	41J
	Green	▶	**3SB2000-0AE01**		1	1 unit	41J
	Blue	▶	**3SB2000-0AF01**		1	1 unit	41J
	White	▶	**3SB2000-0AG01**		1	1 unit	41J
	Clear[1]	B	**3SB2000-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button	Red	▶	**3SB2001-0AC01**		1	1 unit	41J
	Yellow[1]	B	**3SB2001-0AD01**		1	1 unit	41J
	Green	▶	**3SB2001-0AE01**		1	1 unit	41J
	Blue	B	**3SB2001-0AF01**		1	1 unit	41J
	White	▶	**3SB2000-0AG01**		1	1 unit	41J
	Clear[1]	B	**3SB2000-0AH01**		1	1 unit	41J

Pushbutton and illuminated pushbutton with raised button

Pushbuttons with raised button	Black	B	**3SB2000-0LB01**		1	1 unit	41J
	Red	B	**3SB2000-0LC01**		1	1 unit	41J
	Yellow	B	**3SB2000-0LD01**		1	1 unit	41J
	Blue	B	**3SB2000-0LF01**		1	1 unit	41J
	White	B	**3SB2000-0LG01**		1	1 unit	41J
	Clear[1]	B	**3SB2000-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button	Red	B	**3SB2001-0LC01**		1	1 unit	41J
	Yellow[1]	B	**3SB2001-0LD01**		1	1 unit	41J
	Green	▶	**3SB2001-0LE01**		1	1 unit	41J
	Blue	B	**3SB2001-0LF01**		1	1 unit	41J
	Clear[1]	B	**3SB2000-0LH01**		1	1 unit	41J

EMERGENCY-STOP mushroom pushbuttons

EMERGENCY-STOP mushroom pushbuttons acc. to ISO 13850, latching[2] Latches automatically when pressed; unlatches by turning the mushroom head counterclockwise	Red	▶	**3SB2000-1AC01**		1	1 unit	41J

[1] Inscription is possible by inserting a label.

[2] The mushroom pushbutton cannot be combined with 3SB2902-0AB name plate or 3SB2902-0AA single frame.

Selector switches

Selector switches

Version	Color of handle	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with 2 switch positions Switching sequence O-I, 62° operating angle, latching	Black	▶	**3SB2000-2AB01**		1	1 unit	41J
	Red	B	**3SB2000-2AC01**		1	1 unit	41J
	Green	B	**3SB2000-2AE01**		1	1 unit	41J
	White	B	**3SB2000-2AG01**		1	1 unit	41J
Selector switches with 2 switch positions Switching sequence O-I, 50° operating angle, momentary contact type (reset from the right)	Black	C	**3SB2000-2BB01**		1	1 unit	41J
	Red	B	**3SB2000-2BC01**		1	1 unit	41J
	Green	B	**3SB2000-2BE01**		1	1 unit	41J
Selector switches with 2 switch positions Switching sequence O-I, 90° operating angle, latching	Black	B	**3SB2000-2HB01**		1	1 unit	41J
	Red	B	**3SB2000-2HC01**		1	1 unit	41J
	Green	B	**3SB2000-2HE01**		1	1 unit	41J
	White	B	**3SB2000-2HG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 62° operating angle, latching	Black	▶	**3SB2000-2DB01**		1	1 unit	41J
	Red	B	**3SB2000-2DC01**		1	1 unit	41J
	Green	B	**3SB2000-2DE01**		1	1 unit	41J
	White	B	**3SB2000-2DG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	Black	▶	**3SB2000-2EB01**		1	1 unit	41J
	Red	B	**3SB2000-2EC01**		1	1 unit	41J
	Green	B	**3SB2000-2EE01**		1	1 unit	41J
	White	B	**3SB2000-2EG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 90° operating angle, latching	Black	B	**3SB2000-2JB01**		1	1 unit	41J

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Actuators and indicators

Key-operated switches

CES key-operated switch

Version		Lock No.	Key removal position	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
CES key-operated switches[1] **with 2 keys, 2 switch positions** Switching sequence O-I, 62° operating angle, latching		SB2	O+I	B	**3SB2000-4LB01**		1	1 unit	41J
			O	▶	**3SB2000-4LA01**		1	1 unit	41J
CES key-operated switches[1] **with 2 keys, 2 switch positions** Switching sequence O-I, 50° operating angle, momentary contact type		SB2	O	▶	**3SB2000-4MA01**		1	1 unit	41J
CES key-operated switches[1] **with 2 keys, 3 switch positions** Switching sequence I-O-II, 2 x 62° operating angle, latching		SB2	I+O+II	B	**3SB2000-4PB01**		1	1 unit	41J
			O	B	**3SB2000-4PA01**		1	1 unit	41J
CES key-operated switches[1] **with 2 keys, 3 switch positions** Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type		SB2	O	B	**3SB2000-4QA01**		1	1 unit	41J

[1] Also available with additional locking systems. The Article No. must be supplemented with **"–Z"**, the order code "**Y01**" and the required lock number.

Indicator lights

Indicator lights

Version	Color of screw lens	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Indicator lights with concentric rings (inscription with insert caps is not possible)	Red	▶	**3SB2001-6BC06**		1	1 unit	41J
	Yellow	B	**3SB2001-6BD06**		1	1 unit	41J
	Green	▶	**3SB2001-6BE06**		1	1 unit	41J
	Blue	B	**3SB2001-6BF06**		1	1 unit	41J
	White	▶	**3SB2001-6BG06**		1	1 unit	41J
	Clear	B	**3SB2001-6BH06**		1	1 unit	41J
Indicator lights, smooth for inscription with insert caps[1]	Red	B	**3SB2001-6CC06**		1	1 unit	41J
	Yellow	B	**3SB2001-6CD06**		1	1 unit	41J
	Green	B	**3SB2001-6CE06**		1	1 unit	41J
	Blue	B	**3SB2001-6CF06**		1	1 unit	41J
	Clear	B	**3SB2001-6CH06**		1	1 unit	41J

[1] Insert caps, see "Accessories", page 13/15.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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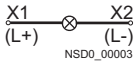
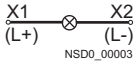
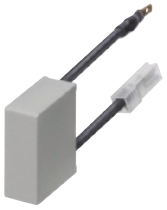
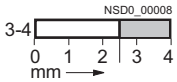
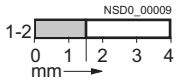
Selection and ordering data

Version	Graphic symbols	Operating travel Contact closed Contact open	DT	Flat connectors Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks and lampholders with flat connectors 2 × 2.8 – 0.8 mm according to IEC 60760								
Holders for fixing the actuator and the contact blocks								
Holder Holders for 2 contact blocks Inscription with identification number 1-2			►	**3SB2908-0AA**		1	5 units	41J
Lampholders with holder for fixing the actuator and the contact blocks								
Lampholders **Lampholders** W2 x 4.6d without lamp	 NSD0_00003		►	**3SB2304-2A**		1	1 unit	41J
Lampholders W2 x 4.6d	 NSD0_00003							
• With 6 V incandescent lamp			B	**3SB2304-2F**		1	1 unit	41J
• With 24 V incandescent lamp			B	**3SB2304-2H**		1	1 unit	41J
 Voltage reducer **Voltage reducers**[1] For connecting the 3SB2908-1AE lamp (48 V) to 230 V AC	NSD0_0005a		B	**3SB2404-3D**		1	1 unit	41J
Contact blocks for fixing in the holder or lampholder								
Contact blocks **Contact blocks with one contact**[2]								
1 NO		 NSD0_00008	►	**3SB2404-0B**		1	1 unit	41J
1 NC ➔ [3]		 NSD0_00009	►	**3SB2404-0C**		1	1 unit	41J

[1] Use fixpoint terminal according to IEC 60439-1.

[2] For plug-in and insulation sleeves see "Accessories", page 13/19.

[3] NC with positive opening according to IEC 60947-5-1, Appendix K.

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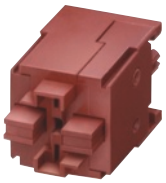
3SB2 Pushbuttons and Indicator Lights, 16 mm

Contact blocks and lampholders

Version	Graphic symbols	Operating travel Contact closed Contact open	DT	Solder pin connections Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks and lampholders with solder pins								
Holder **Holders for contact block with solder pins** For mounting the actuators in the front panel			C	**3SB2908-0AB**		1	5 units	41J
Lampholders Wedge base W2 x 4.6d[1]	(L+) X1 (L-) X2		B	**3SB2455-2A**		1	1 unit	41J
Contact blocks								
 Contact block with solder pins 1 NO	3 4	NSD0_00015 3-4 0 1 2 3 4 mm 2,3	B	**3SB2455-0B**		1	1 unit	41J
1 NC	1 2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	B	**3SB2455-0C**		1	1 unit	41J
1 NO + 1 NC	13 21 14 22	NSD0_00019 21-22 0 1 2 3 4 mm 1,6	B	**3SB2455-0J**		1	1 unit	41J
1 NO + 1 NO	13 23 14 24	NSD0_00021 13-14 23-24 0 1 2 3 4 mm 2,3	B	**3SB2455-0E**		1	1 unit	41J
1 NC + 1 NC	11 21 12 22	NSD0_00023 21-22 11-12 0 1 2 3 4 mm 1,6	B	**3SB2455-0F**		1	1 unit	41J
Contact blocks and lampholders, wedge base W2 x 4.6d[1]								
Contact block and lampholder with solder pins 1 NO	13 X1 14 X2	NSD0_01082 13-14 0 1 2 3 4 mm 2,3	B	**3SB2455-1B**		1	1 unit	41J
1 NC	21 X1 22 X2	NSD0_01083 21-22 0 1 2 3 4 mm 1,6	B	**3SB2455-1C**		1	1 unit	41J
1 NO + 1 NC	13 21 X1 14 22 X2	NSD0_00019 21-22 0 1 2 3 4 mm 1,6	B	**3SB2455-1J**		1	1 unit	41J
1 NO + 1 NO	13 23 X1 14 24 X2	NSD0_00021 13-14 23-24 0 1 2 3 4 mm 2,3	B	**3SB2455-1E**		1	1 unit	41J
1 NC + 1 NC	11 21 X1 12 22 X2	NSD0_00023 21-22 11-12 0 1 2 3 4 mm 1,6	B	**3SB2455-1F**		1	1 unit	41J

[1] The lamp is not included in the scope of supply.

[2] NC with positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Clear pushbuttons, illuminated pushbuttons and indicator lights can be fitted with insert labels and caps for identification purposes.

The insert labels and insert caps are made of a milky-transparent plastic with black lettering; they can be fitted in any 90° angle.

Inscriptions

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscriptions see "Options", page 13/16.

Selection and ordering data

	Inscription/Symbol		Symbol No.	DT	**Insert labels** For pushbuttons and illuminated pushbuttons, flat Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription									
	Blank			B	**3SB2901-4AA**		100	10 units	41J
With inscription									
	Ein			B	**3SB2901-4AB**		100	10 units	41J
	Aus			B	**3SB2901-4AC**		100	10 units	41J
	Auf			B	**3SB2901-4AD**		100	10 units	41J
	Ab			B	**3SB2901-4AE**		100	10 units	41J
	Vor			B	**3SB2901-4AF**		100	10 units	41J
	Zurück			B	**3SB2901-4AG**		100	10 units	41J
	Rechts			B	**3SB2901-4AH**		100	10 units	41J
	Links			B	**3SB2901-4AJ**		100	10 units	41J
	Halt			B	**3SB2901-4AK**		100	10 units	41J
	Zu			B	**3SB2901-4AL**		100	10 units	41J
	Langsam			B	**3SB2901-4AN**		100	10 units	41J
	Störung			B	**3SB2901-4AQ**		100	10 units	41J
	On			B	**3SB2901-4EB**		100	10 units	41J
	Start			B	**3SB2901-4EK**		100	10 units	41J
	Stop			B	**3SB2901-4EL**		100	10 units	41J
	Reset			B	**3SB2901-4EM**		100	10 units	41J
	Test			B	**3SB2901-4EN**		100	10 units	41J
	0			B	**3SB2901-4RA**		100	10 units	41J
	1			B	**3SB2901-4RB**		100	10 units	41J
	2			B	**3SB2901-4RC**		100	10 units	41J
	3			B	**3SB2901-4RD**		100	10 units	41J
	4			B	**3SB2901-4RE**		100	10 units	41J
	5			B	**3SB2901-4RF**		100	10 units	41J
	6			B	**3SB2901-4RG**		100	10 units	41J
	7			B	**3SB2901-4RH**		100	10 units	41J
	8			B	**3SB2901-4RJ**		100	10 units	41J
	9			B	**3SB2901-4RK**		100	10 units	41J
Graphic ON/OFF symbols									
	O (Off)		5008 IEC	B	**3SB2901-4MB**		100	10 units	41J
	I (On)		5007 IEC	B	**3SB2901-4MC**		100	10 units	41J
	II (On)		--	B	**3SB2901-4MD**		100	10 units	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Insert labels and insert caps

Inscription/Symbol		Symbol No.	DT	**Insert labels** For pushbuttons and illuminated pushbuttons, flat Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Graphic equipment symbols								
Electric motor		0011 ISO	B	**3SB2901-4PA**		100	10 units	41J
Horn		5014 IEC	B	**3SB2901-4PB**		100	10 units	41J
Pump		0134 ISO	B	**3SB2901-4PD**		100	10 units	41J
Coolant pump		0355 ISO	B	**3SB2901-4PE**		100	10 units	41J
Graphic motion symbols								
Motion in direction of arrow (straight)		5022 IEC	B	**3SB2901-4NA**		100	10 units	41J
Motion in direction of arrow (diagonal)		--	B	**3SB2901-4NB**		100	10 units	41J
Clockwise rotation		0004 ISO	B	**3SB2901-4NC**		100	10 units	41J
Counterclockwise rotation		--	B	**3SB2901-4ND**		100	10 units	41J
Fast motion		0266 ISO	B	**3SB2901-4NE**		100	10 units	41J
Increase (plus)		5005 IEC	B	**3SB2901-4NG**		100	10 units	41J
Decrease (minus)		5006 IEC	B	**3SB2901-4MC**		100	10 units	41J
Graphic control symbols								
Clamp		--	B	**3SB2901-4QB**		100	10 units	41J
Release		--	B	**3SB2901-4QC**		100	10 units	41J
Brake off		0021 ISO	B	**3SB2901-4QE**		100	10 units	41J
Lock		0022 ISO	B	**3SB2901-4QF**		100	10 units	41J
Unlock		0023 ISO	B	**3SB2901-4QG**		100	10 units	41J
On/Off, momentary contact		5011 IEC	B	**3SB2901-4QJ**		100	10 units	41J
Manual operation		0096 ISO	B	**3SB2901-4QK**		100	10 units	41J
Automatic sequence		0017 ISO	B	**3SB2901-4QL**		100	10 units	41J
Customized inscriptions								
Any inscription 1 line of text with up to 6 characters with 3 mm letter height. Please add the appropriate order code to the Article No. and specify the line of text required.				**3SB2901-4AZ**				
			B	**K0Y**		1	1 unit	41J
			B	**K1Y** or **K2Y**		1	1 unit	41J
			B	**K5Y**		1	1 unit	41J
Other graphic symbols Please add the order code **"K3Y"** to the Article No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).			B	**3SB2901-4AZ** **K3Y**		1	1 unit	41J
Any inscription or symbol Please add the order code **"K9Y"** to the Article No. and specify the inscription or the symbol required.			B	**3SB2901-4AZ** **K9Y**		1	1 unit	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Inscription/Symbol		Symbol No.	DT	Insert caps For pushbuttons and illuminated pushbuttons, raised Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription									
	Blank			B	**3SB2901-5AA**		100	10 units	41J
With inscription									
	On			B	**3SB2901-5EB**		100	10 units	41J
	Aus			B	**3SB2901-5AC**		100	10 units	41J
	Auf			B	**3SB2901-5AD**		100	10 units	41J
	Zu			B	**3SB2901-5AL**		100	10 units	41J
	0			C	**3SB2901-5RA**		100	10 units	41J
	1			B	**3SB2901-5RB**		100	10 units	41J
	2			B	**3SB2901-5RC**		100	10 units	41J
	3			B	**3SB2901-5RD**		100	10 units	41J
	4			B	**3SB2901-5RE**		100	10 units	41J
	5			B	**3SB2901-5RF**		100	10 units	41J
	6			B	**3SB2901-5RG**		100	10 units	41J
	7			B	**3SB2901-5RH**		100	10 units	41J
	8			B	**3SB2901-5RJ**		100	10 units	41J
	9			B	**3SB2901-5RK**		100	10 units	41J
Graphic ON/OFF symbols									
	O (Off)		5008 IEC	B	**3SB2901-5MB**		100	10 units	41J
	I (On)		5007 IEC	B	**3SB2901-5MC**		100	10 units	41J
Graphic motion symbols									
	Motion in direction of arrow		5022 IEC	B	**3SB2901-5NA**		100	10 units	41J
	Motion in direction of arrow		--	B	**3SB2901-5NB**		100	10 units	41J
	Increase (plus)		5005 IEC	B	**3SB2901-5NG**		100	10 units	41J
	Decrease (minus)		5006 IEC	B	**3SB2901-5MC**		100	10 units	41J
Graphic control symbols									
	Clamp		--	B	**3SB2901-5QB**		100	10 units	41J
	Release		--	B	**3SB2901-5QC**		100	10 units	41J
Customized inscriptions									
	Any inscription				**3SB2901-5AZ**				
	1 line of text with up to 6 characters with 3 mm letter height. Please add the appropriate order code to the Article No. and specify the line of text required.			B	**K0Y**		1	1 unit	41J
				B	**K1Y** or **K2Y**		1	1 unit	41J
				B	**K5Y**		1	1 unit	41J
	Other graphic symbols			B	**3SB2901-5AZ**		1	1 unit	41J
	Please add the order code **"K3Y"** to the Article No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).				**K3Y**				
	Any inscription or symbol			B	**3SB2901-5AZ**		1	1 unit	41J
	Please add the order code **"K9Y"** to the Article No. and specify the inscription or the symbol required.				**K9Y**				

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Insert labels and insert caps

	Inscription/Symbol	Symbol No.	DT	Insert caps For indicator lights Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription								
	Blank		B	**3SB2901-7AA**		100	10 units	41J
With inscription								
	Betrieb		B	**3SB2901-7AP**		100	1 unit	41J
	Störung		B	**3SB2901-7AQ**		100	10 units	41J
Graphic symbols								
	Pump	0134 ISO	B	**3SB2901-7PD**		100	10 units	41J
	Manual operation	0096 ISO	B	**3SB2901-7QK**		100	10 units	41J
Customized inscriptions								
	Any inscription			**3SB2901-7AZ**				
	1 line of text with up to 6 characters with 3 mm letter height. Please add the appropriate order code to the Article No. and specify the line of text required.		B	**K0Y**		1	1 unit	41J
			B	**K1Y** or **K2Y**		1	1 unit	41J
			B	**K5Y**		1	1 unit	41J
	Other graphic symbols		B	**3SB2901-7AZ**		1	1 unit	41J
	Please add the order code **"K3Y"** to the Article No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).			**K3Y**				
	Any inscription or symbol		B	**3SB2901-7AZ**		1	1 unit	41J
	Please add the order code **"K9Y"** to the Article No. and specify the inscription or the symbol required.			**K9Y**				

Options

Customized inscriptions

Labels and caps can be inscribed with text and symbols not listed in the ordering data. Append the following order codes to the Article No.:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift"): **K0Y**
- Text line in upper case (e.g. "LIFT"): **K1Y**
- Text line in lower case (e.g. "lift"): **K2Y**
- Text line in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

One line with up to 6 characters with 3 mm letter height is possible for the inscription (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example 1

3SB2901–4AZ
K1Y
Z = pump

Ordering example 2

3SB2901–4AZ
K3Y
Z = 5008 IEC

Ordering example 3

3SB2901–4AZ
K3Y
Z = 1118 ISO

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The name plates consist of a black plastic label holder and an inscription label (silver with black print) for sticking in place.

Note mounting dimensions!

Inscriptions

The inscriptions (also special inscriptions) are lower case with upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

Selection and ordering data

Inscription/Symbol	Symbol No.	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Inscription labels, self-adhesive, 9.5 mm × 18.5 mm							
Blank		►	**3SB2901-2AA**		100	10 units	41J
Ein		B	**3SB2901-2AB**		100	10 units	41J
Aus		B	**3SB2901-2AC**		100	10 units	41J
Auf		B	**3SB2901-2AD**		100	10 units	41J
Zu		B	**3SB2901-2AL**		100	10 units	41J
Vor		B	**3SB2901-2AF**		100	10 units	41J
Zurück		B	**3SB2901-2AG**		100	10 units	41J
Schnell		B	**3SB2901-2AM**		100	10 units	41J
Langsam		B	**3SB2901-2AN**		100	10 units	41J
Betrieb		B	**3SB2901-2AP**		100	10 units	41J
Störung		B	**3SB2901-2AQ**		100	10 units	41J
Einrichten		B	**3SB2901-2AR**		100	10 units	41J
On		B	**3SB2901-2EB**		100	10 units	41J
Off		B	**3SB2901-2EC**		100	10 units	41J
Start		B	**3SB2901-2EL**		100	10 units	41J
Reset		B	**3SB2901-2EM**		100	10 units	41J
Fault		B	**3SB2901-2EW**		100	10 units	41J
Hand Auto		B	**3SB2901-2BA**		100	10 units	41J
Manual 0 Auto		B	**3SB2901-2BE**		100	10 units	41J
Man 0 Auto		B	**3SB2901-2ET**		100	10 units	41J
Graphic symbols							
O (Off)	5008 IEC	B	**3SB2901-2MB**		100	10 units	41J
I (On)	5007 IEC	B	**3SB2901-2MC**		100	10 units	41J
O I (horizontal)	--	B	**3SB2901-2MF**		100	10 units	41J
Motion in direction of arrow	5002 IEC	B	**3SB2901-2NA**		100	10 units	41J
Customized inscriptions or symbols			**3SB2901-2XZ**				
(see Options)		B	**K0Y**		1	1 unit	41J
		B	**K1Y, K2Y** or **K3Y**		1	1 unit	41J
		B	**K5Y**		1	1 unit	41J
		B	**K9Y**		1	1 unit	41J
Label holders							
Label holders for inscription labels The label holders must not be used with the 3SB2...-1AC01 EMERGENCY-STOP mushroom pushbutton.		B	**3SB2902-0AB**		100	10 units	41J

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data. Append the following order codes to the Article No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift out"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OUT"): **K1Y**
- Text line(s) in lower case (e.g. "lift out"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

Two lines of 11 characters are permitted with 4 mm letter height (1 line) or 3 mm (2-line).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

3SB2901–2XZ
K3Y
Z = 1118 ISO

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SB2 Pushbuttons and Indicator Lights, 16 mm

Accessories and Spare Parts

Mounting parts and components

Selection and ordering data

	Version	Lamp voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Buttons and lenses[1]									
3SB2910-0AF	**Buttons, flat** For pushbuttons		Black	B	**3SB2910-0AB**		100	10 units	41J
			Red	B	**3SB2910-0AC**		100	10 units	41J
			Yellow	B	**3SB2910-0AD**		100	10 units	41J
			Green	B	**3SB2910-0AE**		100	10 units	41J
			Blue	B	**3SB2910-0AF**		100	10 units	41J
			White	B	**3SB2910-0AG**		100	10 units	41J
			Clear	B	**3SB2910-0AH**		100	10 units	41J
3SB2910-0CF	**Buttons, flat** For illuminated pushbuttons		Red	B	**3SB2910-0CC**		100	10 units	41J
			Yellow	B	**3SB2910-0CD**		100	10 units	41J
			Green	B	**3SB2910-0CE**		100	10 units	41J
			Blue	B	**3SB2910-0CF**		100	10 units	41J
			White	B	**3SB2910-0AG**		100	10 units	41J
			Clear	B	**3SB2910-0AH**		100	10 units	41J
3SB2910-0BD	**Buttons, raised** For pushbuttons		Black	B	**3SB2910-0BB**		1	10 units	41J
			Red	B	**3SB2910-0BC**		1	10 units	41J
			Yellow	B	**3SB2910-0BD**		1	10 units	41J
			Clear	B	**3SB2910-0BH**		1	10 units	41J
3SB2910-0DD	**Buttons, raised** For illuminated pushbuttons		Red	B	**3SB2910-0DC**		1	10 units	41J
			Yellow	B	**3SB2910-0DD**		1	10 units	41J
			Clear	B	**3SB2910-0BH**		1	10 units	41J
3SB2910-1AD	**Screw lenses** With concentric rings		Red	B	**3SB2910-1AC**		100	10 units	41J
			Yellow	B	**3SB2910-1AD**		100	10 units	41J
			Green	B	**3SB2910-1AE**		100	10 units	41J
			Blue	B	**3SB2910-1AF**		100	10 units	41J
			White	B	**3SB2910-1AG**		100	10 units	41J
			Clear	B	**3SB2910-1AH**		100	10 units	41J
3SB2910-1BE	**Screw lenses** Smooth, for inscription with insert cap		Red	B	**3SB2910-1BC**		100	10 units	41J
			Yellow	B	**3SB2910-1BD**		100	10 units	41J
			Green	B	**3SB2910-1BE**		100	10 units	41J
			Blue	B	**3SB2910-1BF**		100	10 units	41J
			Clear	B	**3SB2910-1BH**		100	10 units	41J
Keys for actuators									
3SB2908-2AJ	**Keys** For CES key-operated switch, lock No. SB2			B	**3SB2908-2AJ**		1	1 unit	41J
Lamps, wedge bases[2]									
3SB2908-1AE	**Incandescent lamps** Wedge base W2 × 4.6d, 1.0 W	AC/DC	Clear						
		6		C	**3SB2908-1AA**		100	10 units	41J
		12		B	**3SB2908-1AB**		100	10 units	41J
		24		B	**3SB2908-1AC**		100	10 units	41J
		30		A	**3SB2908-1AD**		100	10 units	41J
		48		B	**3SB2908-1AE**		1	10 units	41J
		60		B	**3SB2908-1AF**		1	10 units	41J
3SB39 01-1SB	**LED lamps, super-bright** Wedge base W2 × 4.6d	24 AC/DC	Red	B	**3SB3901-1SB**		1	10 units	41J
			Yellow	B	**3SB3901-1RB**		1	10 units	41J
			Green	B	**3SB3901-1TB**		1	10 units	41J
			White	B	**3SB3901-1UB**		1	10 units	41J
			Blue	B	**3SB2908-1BD**		1	10 units	41J
3SB2908-1BD		28 AC/DC	Red	B	**3SB3901-1SE**		1	10 units	41J
			Yellow	B	**3SB3901-1RE**		1	10 units	41J
			Green	B	**3SB3901-1TE**		1	10 units	41J
			White	B	**3SB3901-1UE**		1	10 units	41J
			Blue	C	**3SB3901-1VE**		1	10 units	41J
3SB2908-2AB	**Lamp extractors** For lamps with bases W2 × 4.6d			►	**3SB2908-2AB**		1	1 unit	41J

[1] Included in the scope of supply of actuators or indicator lights.

[2] Included in the scope of supply of some complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for command points							
3SB2902-0AA	**Single frames** for square design[1]	►	**3SB2902-0AA**		100	10 units	41J
3SB2908-2AG	**Name plates, yellow, Ø 50 mm** As backing plate for EMERGENCY-STOP, self-adhesive						
	• Blank	►	**3SB2908-2AF**		1	1 unit	41J
	• With German inscription "NOT-HALT"	►	**3SB2908-2AG**		1	1 unit	41J
	• With German inscription "NOT-AUS"	►	**3SB2908-2AK**		1	1 unit	41J
3SB2908-3AA	**Blanking plugs** Black plastic (degree of protection IP65)	B	**3SB2908-3AA**		1	1 unit	41J
3SB2908-1	**Protective caps, clear** Silicone, for pushbuttons with flat and raised button	B	**3SB2908-3AB**		1	1 unit	41J
Flat connectors							
3SB2908-8AA	**Plug-in sleeves** For flat connectors 2.8 × 0.8 mm, cross-section 0.5 ... 1.5 mm^2	A	**3SB2908-8AA**		100	250 units	41J
3SB2908-8AB	**Insulation sleeves** For flat connectors, attachable from the front	C	**3SB2908-8AB**		100	250 units	41J
3SB2908-8AD	**Complete connectors**[2] For connecting contact blocks and lampholders (up to 10 connections) Ensures finger-safety according to EN 50274 and BGV A3	B	**3SB2908-8AD**		1	1 unit	41J
3SB2908-8AE	**Plug-in sleeves** For flat connectors 2.8 × 0.8 mm, with locating spring for latching in complete connector	B	**3SB2908-8AE**		100	10 units	41J
Tools							
3SB2908-2AA	**Dismantling tools** For holders and lampholders with holder	►	**3SB2908-2AA**		1	1 unit	41J
3SB2908-2AC	**Mounting tools** For buttons and screw lenses	►	**3SB2908-2AC**		1	1 unit	41J
6179 0950	**Crimping tools for non-insulated connections, type KRBC 0560** For plug-in sleeves (both versions) Manufacturer: Lapp Kabel, Stuttgart, Germany E-mail: info@lappkabel.de Website: www.lappkabel.de		6179 0950				

[1] Not suitable for EMERGENCY-STOP mushroom pushbuttons.

[2] Required 3SB2908-8AE plug-in sleeves for flat connectors 2.8 × 0.8 mm are not included in the scope of supply.

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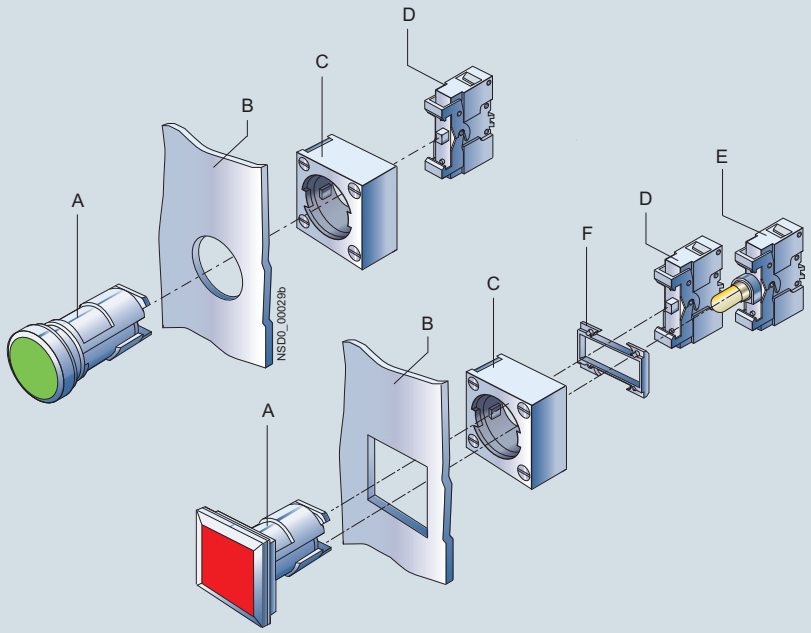
General data

Overview

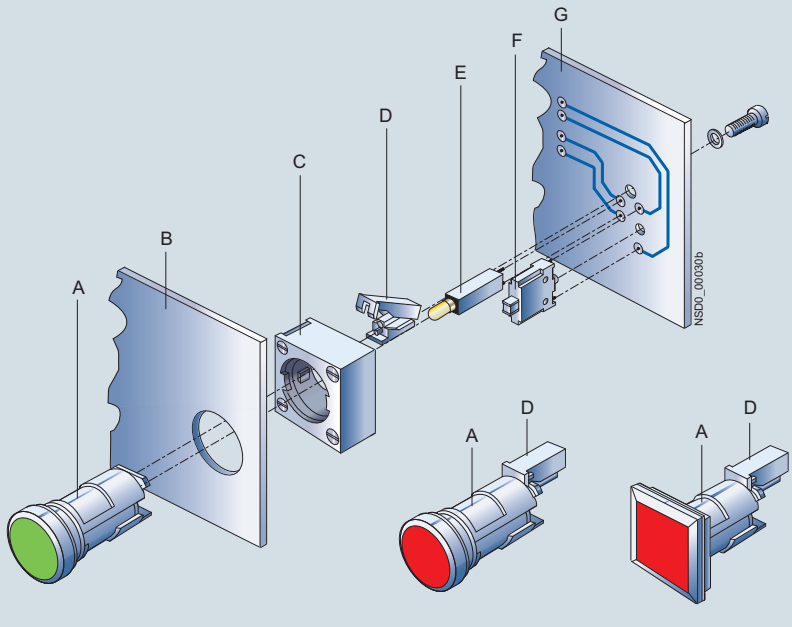
Front plate mounting



A Actuator
B Front plate
C Holder
D Contact block
E Lampholder
F Support element

For actuators see pages 13/26 to 13/64.
For contact blocks and lampholders see pages 13/65 to 13/67.
For holders see page 13/68.

Mounting on printed circuit boards



A Actuator
B Front plate
C Holder
D Holder for printed circuit-board
E Lampholder
F Contact block
G PCB

For contact blocks for mounting on printed circuit boards see page 13/68.

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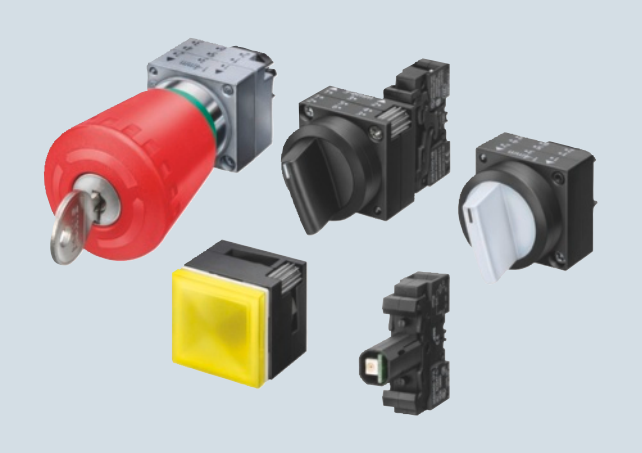
General data

Design

The 3SB3 series is a modular range of commanding and signaling devices for front plate mounting and rear conductor connection. As an alternative, individual elements can also be supplied for use on printed circuit boards. Complete units are offered for the most commonly used applications.



Actuators and indicators and complete units

The 3SB3 series is available:

- Made of molded plastic in flat, round and square design
- Made of metal in round design

The devices are of modern industrial design and can be mounted rapidly by a single person. The operating surfaces of the pushbuttons and illuminated pushbuttons are concave. The lenses of the indicator lights are convex.

The metal version with a high degree of protection according to IP67 and NEMA 4 is available for the world market.

One command point comprises:

- An actuator or lens assembly in front of the control panel
- A holder for mounting behind the control panel
- Up to 3 contact blocks and/or 1 lampholder behind the control panel
- A comprehensive range of accessories for inscription

Mounting of the contact blocks

Two contact blocks can be snapped onto the actuator in the standard version.

When three contact blocks or illuminated actuators are required, an additional holder must be plugged onto the actuator from the rear.

- 3SB3901-0AB holder for 3 contact blocks or for 2 contact blocks and 1 lampholder
- 3SB3901-0AC holder with pressure plates for actuating a central contact block when using a selector switch, key-operated switch and twin pushbutton with 3 contact blocks

For illuminated pushbuttons, illuminated switches and illuminated selector switches the holder is included in the scope of supply as standard.

Contact blocks

The contact blocks are fitted with slow-action contacts (NO contact or NC contact) with double operating contacts. These ensure a high switching reliability even with small voltages and currents, such as 5 V/1 mA. They are suitable for use in electronic systems as well as conventional controls.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1,
IEC 60947-5-5, EN 60947-5-5
for EMERGENCY-STOP mushroom pushbuttons

Connection methods

The devices are available with screw terminals (box terminals), spring-type terminals or solder pins.

	Screw terminals
	Spring-type terminals
	Solder pin connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

The 3SB3 pushbuttons and indicator lights can also be ordered via an online configurator.

	Configurator available in the Industry Mall
	The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

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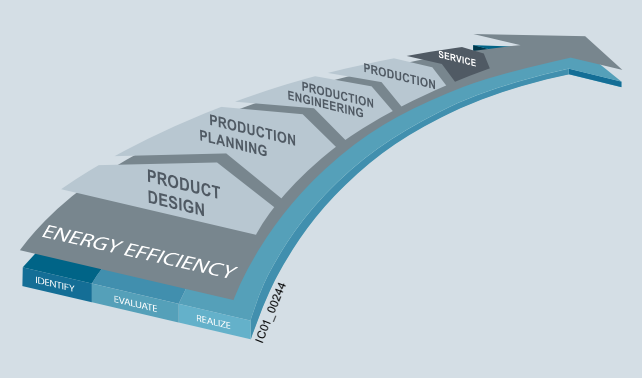
General data

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – identify, evaluate, and realize – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3SB3 pushbuttons and indicator lights contribute to energy efficiency throughout the plant as follows:

- Lower power consumption by means of LED technology
- Long service life

Application

Environmental conditions

The devices are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications. For operation in oily atmospheres (organic oils/lubricants) we recommend actuators which are marked as "solvent-resistant".

AS-Interface solutions

The 3SB3 commanding and signaling devices can be connected to the AS-Interface communication system quickly and safely with the help of various solutions.

The following solutions are available:

- ASIsafe EMERGENCY-STOP mushroom pushbuttons (see page 13/69)
- AS-Interface enclosures with 1 to 6 command points (see page 13/98)
- AS-Interface front panel modules for 4 command points (see Catalog IK PI, "SIMATIC NET Industrial Communication")

"Intrinsic safety" type of protection EEx i according to ATEX directive 94/9/EC

The pushbuttons and indicator lights in round design can also be used in hazardous areas. The 3SB34..-0. contact blocks and the 3SB34..-1A lampholders (with 3SB3901-1.A LED lamp) with screw terminals or spring-type terminals can be used.

Safety EMERGENCY-STOP pushbuttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom pushbuttons of the 3SB3 series are suitable for use as safety EMERGENCY-STOP pushbuttons.

Safety circuits

The IEC 60947-5-1 and EN 60947-5-1 standards require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN ISO 13849-1 can be attained with the EMERGENCY-STOP mushroom pushbuttons if the corresponding fail-safe evaluation units are selected and correctly installed, e.g. the 3SK11 safety relays, the 3RK3 Modular Safety System (see Chapter 11, "Safety Technology") or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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Technical specifications

Type		3SB3400-0, 3SB3420-0	3SB1400-0J	3SB3400-1, 3SB3420-1	3SB3403-0, 3SB3423-0	3SB3403-1, 3SB3423-1	3SB3411-0	3SB3411-1
Contact blocks and lampholders								
Standards		IEC 60947-5-1, IEC 60947-5-5, EN 60947-5-1, EN 60947-5-5						
Connection type		Screw terminals			Spring-type terminals		Solder pins	
Rated insulation voltage U_i For pollution degree according to IEC 60947-1	V	400 Class 3		250 Class 3	400 Class 3		250 Class 3	60 Class 3
Rated impulse withstand voltage U_{imp}	kV	4		4	4	4	4	1.5
Conventional thermal current I_{th}	A	10		--	10	--	10	--
Rated operational current I_e at rated operational voltage U_e								
• Alternating current 50/60 Hz, AC-12								
- At U_e = 24 ... 230 V	A	10		--	10	--	10	--
- At U_e = 400 V	A	10		--	10	--	--	--
• Alternating current 50/60 Hz, AC-15								
- At U_e = 24 ... 230 V	A	6	6	--	6	--	4	--
- At U_e = 400 V	A	3	4	--	3	--	--	--
• Direct current DC-12								
- At U_e = 24 V	A	10	10	--	10	--	10	--
- At U_e = 48 V	A	5	--	--	5	--	5	--
- At U_e = 110 V	A	2.5	2	--	2.5	--	2.5	--
- At U_e = 230 V	A	1	0.5	--	1	--	1	--
• Direct current DC-13								
- At U_e = 24 V	A	3	5	--	3	--	3	--
- At U_e = 48 V	A	1.5	--	--	1.5	--	1.5	--
- At U_e = 110 V	A	0.7	0.5	--	0.7	--	0.7	--
- At U_e = 230 V	A	0.3	0.2	--	0.3	--	0.3	--
Contact stability								
• Test voltage	V	5		--	5	--	5	--
• Test current	mA	1		--	1	--	1	--
Lampholders		--		BA 9s	--	BA 9s	--	Wedge bases
Lamps		--		Incandes-cent lamps, glow lamps and LED lamps	--	Incandes-cent lamps, glow lamps and LED lamps	--	Incandes-cent lamps and LED lamps
Short-circuit protection, weld-free, acc. to IEC 60947-5-1								
• DIAZED fuse links, utilization category gG according to IEC 60269-3-1		Dz10 A						
• DIAZED fuse links, quick according to DIN VDE 0635		Dz 16 A						
• Miniature circuit breaker with C characteristic according to IEC 60898	A	10						
Mechanical endurance		10 x 10^6 operating cycles						
Electrical endurance								
• For utilization category AC-15 with 3RT2015 to 3RT2026 contactors		10 x 10^6 operating cycles						
• With utilization category DC-12, DC-13		With direct current it depends on the operational voltage, the breaking current, the circuit inductance and the switching frequency						
Switching frequency	1/h	1 000 operating cycles						
Degree of protection acc. to IEC 60529								
• Connections		IP20						
• Contact chambers		IP40		--	IP40	--	IP40	--
Touch protection according to EN 50274 and BGV A3		Finger-safe			Finger-safe		--	
Conductor cross-sections[1]								
• Finely stranded, without end sleeves	mm^2	--			2 x (0.25 ... 1.5)		--	
• Finely stranded, with end sleeves to DIN 46228	mm^2	2 x (0.5 ... 1.5)			2 x (0.25 ... 0.75)		--	
• Solid	mm^2	2 x (1 ... 1.5)			2 x (0.25 ... 1.5)		--	
• Solid with end sleeves to DIN 46228	mm^2	2 x (0.5 ... 0.75)			--		--	
• AWG cables, solid or stranded		2 x AWG 18 ... 14			2 x AWG 24 ... 16		--	
Tightening torque, terminal screw	Nm	0.8			--		--	
Solder pins	mm^2	--			--		0.8 × 0.8	

[1] For standard screwdriver size 2 or Pozidriv 2.

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General data

Type		3SB3400-0, 3SB3420-0	3SB3400-1, 3SB3420-1	3SB3403-0, 3SB3423-0	3SB3403-1, 3SB3423-1	3SB3411-0	3SB3411-1
Data according to UL and CSA							
Rated operational voltage	V AC	300	--	300	--	300	--
Conventional thermal current (uninterrupted current)	A	10	--	10	--	10	--
Switching capacity		A 300, R 300, A 600 same polarity					
Rated voltage (lamps)							
• Lamp with BA 9s base	V AC	--	125	--	125	--	--
• Lamp with wedge base	V AC	--	60	--	60	--	60
• Lampholders with integrated LED	V	--	24 AC/DC, 110 AC, 230 AC	--	24 AC/DC, 110 AC, 230 AC	--	--
Rated power (lamps)	W	--	2.5	--	2.5	--	1

Type		3SB30, 3SB32	3SB31, 3SB33	3SB35, 3SB36
Actuators and indicators				
Enclosure material		Plastic		Metal
Design		Round	Square	Round
Terminal designation acc. to EN 50013		Identification number on the holder, function digit on the contact block		
Device identification		Snap-on label		
Tightening torques				
• Screw on holder	Nm	Max. 1		
Mechanical endurance				
• Pushbuttons		10 x 10^6 operating cycles		
• Illuminated pushbuttons		3 x 10^6 operating cycles		
• Actuators, rotary or latching		3 x 10^5 operating cycles		
• Key-operated switch with key monitoring		1 x 10^5 operating cycles		
Switching frequency	1/h	1 000 operating cycles		
Climatic withstand capability acc. to EN ISO 6270-2		Climate-proof KTW24; suitable for marine applications		
Ambient temperature				
• During operation, non-illuminated and with LED	°C	–25 ... +70		
• During operation, devices with incandescent lamp	°C	–25 ... +60		
• During storage, transport	°C	–40 ... +80		
Degree of protection acc. to IEC 60529				
• Actuators and indicators, standard		IP66	IP65	IP67 and NEMA Type 4
- with protective caps		IP67	IP67	--
• Key-operated switch with key monitoring		IP54	--	--
• Twin pushbuttons (3SB31)		IP65	--	--
Protective measures		When mounted on metal front plates and enclosures, the actuators and lens assemblies are not to be included in the protective measures. When mounted in insulated enclosures, the "total insulation" protective measures are met.		Grounding with grounding screw is necessary for operation with protective extra-low voltage (PELV).
Shock resistance according to IEC 60068-2-27 For half-sine shock type, 11 ms shock duration				
• Devices without incandescent lamp		≤ 50 *g*		
• Devices with incandescent lamp		≤ 30 *g*		
Vibration resistance acc. to IEC 60068-2-6				
• Acceleration at frequency 20 ... 200 Hz		5 *g*		

Type	3SB38 0.-0, 3SB380.-1	--	3SB380.-2, 3SB380.-3
Enclosures			
Enclosure material	Plastic		Metal
Actuators and indicators	Plastic, round		Metal, round
Degree of protection acc. to IEC 60529	IP65		IP67 and NEMA Type 4
Resistance to extreme climates acc. to DIN 50017	KTW 24		KTW 24

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General data

Configuration

Mounting and fixing

The 3SB3 devices can be easily and quickly mounted:

- Actuators or indicator lights are positioned in the opening of the front plate from the front
- Position the holder from the rear
- Tighten the screw on the holder
- Snap on the contact block or the lampholder directly onto the actuator from the back

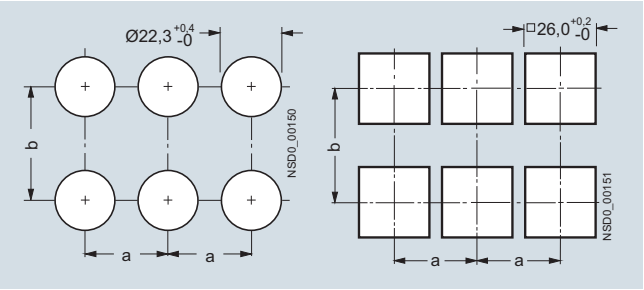
The holder for the round versions is set to a switchboard thickness of 1 to 4 mm when delivered and is placed in the direction of the arrow ↑ 1–4 ↑ mm on the actuator/indicator from the back. The fixing screw is located underneath, on the right.

For a switchboard thickness of 3 to 6 mm, the holder is reversed and mounted in the direction of the arrow at ↑ 3–6 mm ↑ and the fixing screw is located on the upper right. In this case, the fixing screw must be rotated anticlockwise to its limit before mounting the holder.

The control panel depth of 1 to 4 mm can be compensated with the holder for the square version.

When label holders, protective caps or similar accessories are used, the greatest permissible control panel thickness must be reduced by the wall thickness of the accessory part.

Mounting dimensions on front plates

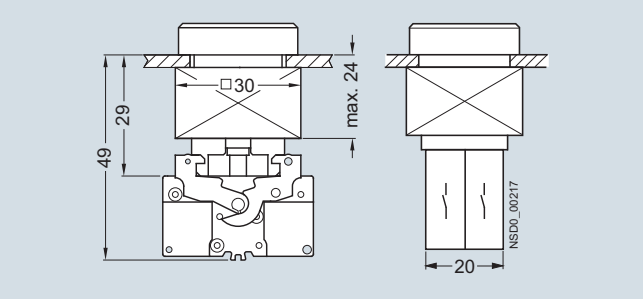


Minimum clearance	a	b
Contact blocks (1 contact) and lampholder		
• For front plate mounting, with screw terminals	30[1]	45
• For front plate mounting with spring-type terminals	30[1]	30[1]
• For use on PCB, with solder pin connections	30[1]	30[1]
Contact blocks with 2 contacts		
• For front plate mounting	30[1]	50
When using holders for inscription labels		
• 12.5 mm x 27 mm	30[1]	45[2]
• 27.0 mm x 27 mm	30[1]	60

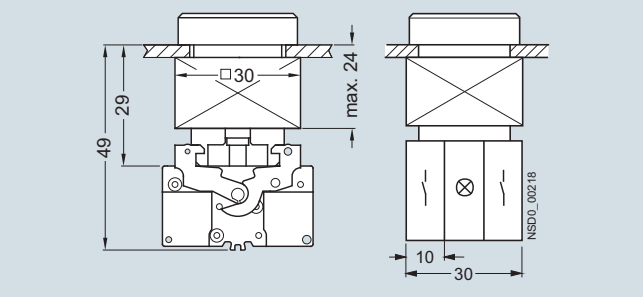
[1] For mushroom pushbutton, EMERGENCY-STOP and push-pull button: Note mushroom diameter d = 40 mm or 60 mm.

[2] 60 mm with contact blocks having two contacts.

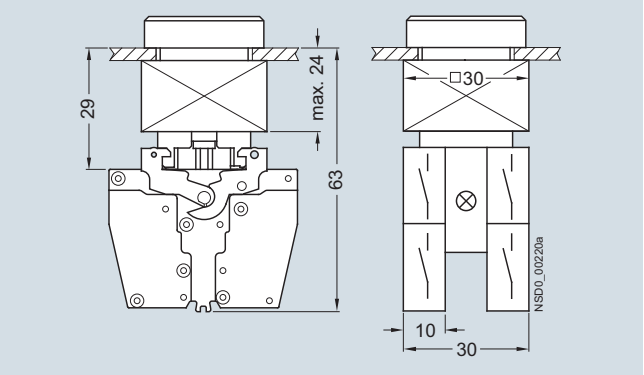
Mounting depth



Pushbuttons with two contact blocks

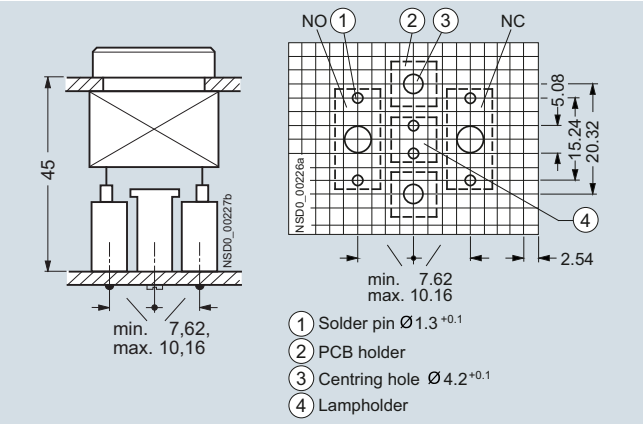


Illuminated pushbuttons with lampholder and two contact blocks



Illuminated pushbuttons with lampholder and two contact blocks with two contacts

Mounting on printed circuit boards



Illuminated pushbutton with solder pins

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Complete units

Selection and ordering data

The following applies to all complete units:

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals Configurator	DT	Spring-type terminals Configurator
V				Article No. / Price per PU		Article No. / Price per PU
Pushbuttons						
Pushbuttons with flat button						
--	Black	1 NO	▶	**3SB3202-0AA11**	B	**3SB3202-0AA11-0CC0**
	Black	1 NC	B	**3SB3203-0AA11**	B	**3SB3203-0AA11-0CC0**
	Red	1 NC	▶	**3SB3203-0AA21**	B	**3SB3203-0AA21-0CC0**
	Yellow	1 NO	B	**3SB3202-0AA31**	B	**3SB3202-0AA31-0CC0**
	Green	1 NO	▶	**3SB3202-0AA41**	B	**3SB3202-0AA41-0CC0**
	Blue	1 NO	B	**3SB3202-0AA51**	B	**3SB3202-0AA51-0CC0**
	White	1 NO	▶	**3SB3202-0AA61**	B	**3SB3202-0AA61-0CC0**
	Black	1 NO + 1 NC	B	**3SB3201-0AA11**	B	**3SB3201-0AA11-0CC0**
	Red	1 NO + 1 NC	B	**3SB3201-0AA21**	B	**3SB3201-0AA21-0CC0**
	Yellow	1 NO + 1 NC	B	**3SB3201-0AA31**	B	**3SB3201-0AA31-0CC0**
	Green	1 NO + 1 NC	B	**3SB3201-0AA41**	B	**3SB3201-0AA41-0CC0**
	Blue	1 NO + 1 NC	B	**3SB3201-0AA51**	B	**3SB3201-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB3201-0AA61**	B	**3SB3201-0AA61-0CC0**
Pushbuttons with raised button						
	Black	1 NO	B	**3SB3202-0BA11**		--
	Black	1 NC	C	**3SB3203-0BA11**		--
	Red	1 NC	B	**3SB3203-0BA21**		--
	Yellow	1 NO	B	**3SB3202-0BA31**		--
	Blue	1 NO	B	**3SB3202-0BA51**		--
	White	1 NO	C	**3SB3202-0BA61**		--
	Black	1 NO + 1 NC	B	**3SB3201-0BA11**		--
	Red	1 NO + 1 NC	B	**3SB3201-0BA21**		--
	Yellow	1 NO + 1 NC	C	**3SB3201-0BA31**		--
	Blue	1 NO + 1 NC	C	**3SB3201-0BA51**		--
	White	1 NO + 1 NC	C	**3SB3201-0BA61**		--
Illuminated pushbuttons with flat button With integrated LED (incl. holder for 3 elements)						
24 AC/DC	Red[2]	1 NC	▶	**3SB3246-0AA21**	B	**3SB3246-0AA21-0CC0**
	Yellow[2]	1 NO	B	**3SB3245-0AA31**	B	**3SB3245-0AA31-0CC0**
	Green[2]	1 NO	▶	**3SB3245-0AA41**	B	**3SB3245-0AA41-0CC0**
	Blue[2]	1 NO	B	**3SB3245-0AA51**	B	**3SB3245-0AA51-0CC0**
	White	1 NO	B	**3SB3245-0AA61**	B	**3SB3245-0AA61-0CC0**
	Clear[2]	1 NO	▶	**3SB3245-0AA71**	B	**3SB3245-0AA71-0CC0**
24 AC/DC	Red[2]	1 NO + 1 NC	B	**3SB3247-0AA21**	B	**3SB3247-0AA21-0CC0**
	Yellow[2]	1 NO + 1 NC	B	**3SB3247-0AA31**	B	**3SB3247-0AA31-0CC0**
	Green[2]	1 NO + 1 NC	B	**3SB3247-0AA41**	B	**3SB3247-0AA41-0CC0**
	Blue[2]	1 NO + 1 NC	B	**3SB3247-0AA51**	B	**3SB3247-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB3247-0AA61**	B	**3SB3247-0AA61-0CC0**
	Clear[2]	1 NO + 1 NC	B	**3SB3247-0AA71**	B	**3SB3247-0AA71-0CC0**
110 AC	Red[2]	1 NC	B	**3SB3250-0AA21**		--
	Yellow[2]	1 NO	B	**3SB3257-0AA31**		--
	Green[2]	1 NO	B	**3SB3257-0AA41**		--
	Blue[2]	1 NO	B	**3SB3257-0AA51**		--
	White	1 NO	B	**3SB3257-0AA61**		--
	Clear[2]	1 NO	B	**3SB3257-0AA71**		--
110 AC	Red[2]	1 NO + 1 NC	B	**3SB3251-0AA21**		--
	Yellow[2]	1 NO + 1 NC	B	**3SB3251-0AA31**		--
	Green[2]	1 NO + 1 NC	B	**3SB3251-0AA41**		--
	Blue[2]	1 NO + 1 NC	C	**3SB3251-0AA51**		--
	White	1 NO + 1 NC	B	**3SB3251-0AA61**		--
	Clear[2]	1 NO + 1 NC	B	**3SB3251-0AA71**		--

Pushbutton with flat button

Illuminated pushbutton with flat button

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
Pushbuttons								
Illuminated pushbutton with flat button								
Illuminated pushbuttons with flat button With integrated LED (incl. holder for 3 elements)								
230 AC	Red[2]	1 NC	▶	**3SB3254-0AA21**		B	**3SB3254-0AA21-0CC0**	
	Yellow[2]	1 NO	B	**3SB3253-0AA31**		B	**3SB3253-0AA31-0CC0**	
	Green[2]	1 NO	▶	**3SB3253-0AA41**		B	**3SB3253-0AA41-0CC0**	
	Blue[2]	1 NO	B	**3SB3253-0AA51**		B	**3SB3253-0AA51-0CC0**	
	White	1 NO	B	**3SB3253-0AA61**		B	**3SB3253-0AA61-0CC0**	
	Clear[2]	1 NO	▶	**3SB3253-0AA71**		B	**3SB3253-0AA71-0CC0**	
230 AC	Red[2]	1 NO + 1 NC	B	**3SB3255-0AA21**		B	**3SB3255-0AA21-0CC0**	
	Yellow[2]	1 NO + 1 NC	B	**3SB3255-0AA31**		B	**3SB3255-0AA31-0CC0**	
	Green[2]	1 NO + 1 NC	B	**3SB3255-0AA41**		B	**3SB3255-0AA41-0CC0**	
	Blue[2]	1 NO + 1 NC	B	**3SB3255-0AA51**		B	**3SB3255-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB3255-0AA61**		B	**3SB3255-0AA61-0CC0**	
	Clear[2]	1 NO + 1 NC	B	**3SB3255-0AA71**		B	**3SB3255-0AA71-0CC0**	
Illuminated pushbutton with flat button								
Illuminated pushbuttons with flat button With BA 9s lampholder, without lamp (incl. holder for 3 elements)								
--	Red[2]	1 NC	B	**3SB3207-0AA21**		B	**3SB3207-0AA21-0CC0**	
	Yellow[2]	1 NO	B	**3SB3206-0AA31**		B	**3SB3206-0AA31-0CC0**	
	Green[2]	1 NO	B	**3SB3206-0AA41**		B	**3SB3206-0AA41-0CC0**	
	Blue[2]	1 NO	B	**3SB3206-0AA51**		B	**3SB3206-0AA51-0CC0**	
	White	1 NO	B	**3SB3206-0AA61**		B	**3SB3206-0AA61-0CC0**	
	Clear[2]	1 NO	B	**3SB3206-0AA71**		B	**3SB3206-0AA71-0CC0**	
--	Red[2]	1 NO + 1 NC	B	**3SB3205-0AA21**		B	**3SB3205-0AA21-0CC0**	
	Yellow[2]	1 NO + 1 NC	B	**3SB3205-0AA31**		B	**3SB3205-0AA31-0CC0**	
	Green[2]	1 NO + 1 NC	B	**3SB3205-0AA41**		B	**3SB3205-0AA41-0CC0**	
	Blue[2]	1 NO + 1 NC	B	**3SB3205-0AA51**		B	**3SB3205-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB3205-0AA61**		B	**3SB3205-0AA61-0CC0**	
	Clear[2]	1 NO + 1 NC	B	**3SB3205-0AA71**		B	**3SB3205-0AA71-0CC0**	
Push-pull buttons								
Mushroom push-pull button								
Mushroom push-pull buttons, Ø 40 mm, latching, with pull-to-unlatch mechanism								
--	Red	1 NC	▶	**3SB3203-1CA21**		B	**3SB3203-1CA21-0CC0**	
		1 NO + 1 NC	B	**3SB3201-1CA21**		B	**3SB3201-1CA21-0CC0**	

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Inscription is possible by inserting a label.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Version	Color of handle/ Lock No.	Contacts for front plate mounting[1]	DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
Selector switches								
Selector switches								
Selector switches, 2 switch positions Switching sequence O-I, 50° operating angle								
Latching 	Black	1 NO	▶	**3SB3202-2KA11**		B	**3SB3202-2KA11-0CC0**	
		1 NO + 1 NC	B	**3SB3201-2KA11**		B	**3SB3201-2KA11-0CC0**	
Selector switches, 2 switch positions Switching sequence O-I, 90° operating angle								
Latching 	Black	1 NO	B	**3SB3202-2HA11**			**--**	
		1 NO + 1 NC	B	**3SB3201-2HA11**			**--**	
Selector switches, 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle								
Latching 	Black	1 NO, 1 NO	▶	**3SB3210-2DA11**		B	**3SB3210-2DA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB3208-2DA11**		B	**3SB3208-2DA11-0CC0**	
Momentary contact type 	Black	1 NO, 1 NO	B	**3SB3210-2EA11**		B	**3SB3210-2EA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB3208-2EA11**		C	**3SB3208-2EA11-0CC0**	
Key-operated switches								
RONIS key-operated switch								
RONIS key-operated switches, 2 switch positions With 2 keys, removal position O + I, switching sequence O-I, 50° operating angle								
Latching 	SB 30	1 NO	▶	**3SB3202-4AD11**		B	**3SB3202-4AD11-0CC0**	
		1 NO + 1 NC	B	**3SB3201-4AD11**		B	**3SB3201-4AD11-0CC0**	
Twin pushbuttons								
Twin pushbutton with flat buttons								
Twin pushbuttons, With flat, square buttons[2]								
With I/O inscription	White/White	1 NO + 1 NC, 1 NO + 1 NC	D	**3SB3100-8AC61**			**--**	

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.
For accessories see page 13/43.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Color of handle	Contacts for front plate mounting[1]		DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
EMERGENCY-STOP control devices according to ISO 13850 and IEC 60947-5-.5, with holder and yellow name plate, Ø 80 mm, with inscription								
With rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function,** With rotate-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
Red	1 NC	⊖	▶	**3SB3203-1HA20**		B	**3SB3203-1HA20-0CC0**	
	1 NC with installation monitoring	⊖	B	**3SB3266-1HA20**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1HA20**		B	**3SB3201-1HA20-0CC0**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⊖	B	**3SB3203-1HR20**			**--**	
	1 NC with installation monitoring	⊖	B	**3SB3266-1HR20**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1HR20**			**--**	
	• French inscription "ARRET D'URGENCE"							
Red	1 NC	⊖	B	**3SB3203-1HP20**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1HP20**			**--**	
With rotate-to-unlatch mechanism and switch position indication	With rotate-to-unlatch mechanism and mechanical switch position indication							
	• German inscription "NOT-HALT"							
Red	1 NC	⊖	▶	**3SB3203-1HA26**		B	**3SB3203-1HA26-0CC0**	
	1 NC with installation monitoring	⊖	B	**3SB3266-1HA26**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1HA26**		B	**3SB3201-1HA26-0CC0**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⊖	B	**3SB3203-1HR26**			**--**	
	1 NC with installation monitoring	⊖	B	**3SB3266-1HR26**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1HR26**			**--**	
With pull-to-unlatch mechanism	With pull-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
Red	1 NC	⊖	B	**3SB3203-1TA20**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1TA20**			**--**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⊖	B	**3SB3203-1TR20**			**--**	
Red	1 NO + 1 NC	⊖	B	**3SB3201-1TR20**			**--**	

⚙ For online configurator see www.siemens.com/sirius/configurators

⊖ Positive opening according to IEC 60947-5-1, Appendix K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".
Certificate:

[1] The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of lens	DT	Screw terminals Configurator	DT	Spring-type terminals Configurator
V			Article No. / Price per PU		Article No. / Price per PU
Indicator lights					
Indicator lights with smooth lens[1] With integrated LED					
24 AC/DC	Red	▶	**3SB3244-6AA20**	B	**3SB3244-6AA20-0CC0**
	Yellow	B	**3SB3244-6AA30**	B	**3SB3244-6AA30-0CC0**
	Green	▶	**3SB3244-6AA40**	B	**3SB3244-6AA40-0CC0**
	Blue	B	**3SB3244-6AA50**	B	**3SB3244-6AA50-0CC0**
	White	B	**3SB3244-6AA60**	B	**3SB3244-6AA60-0CC0**
	Clear	▶	**3SB3244-6AA70**	B	**3SB3244-6AA70-0CC0**
110 AC	Red	B	**3SB3248-6AA20**		--
	Yellow	B	**3SB3248-6AA30**		--
	Green	B	**3SB3248-6AA40**		--
	Blue	B	**3SB3248-6AA50**		--
	White	B	**3SB3248-6AA60**		--
	Clear	B	**3SB3248-6AA70**		--
230 AC	Red	▶	**3SB3252-6AA20**	B	**3SB3252-6AA20-0CC0**
	Yellow	B	**3SB3252-6AA30**	B	**3SB3252-6AA30-0CC0**
	Green	▶	**3SB3252-6AA40**	B	**3SB3252-6AA40-0CC0**
	Blue	B	**3SB3252-6AA50**	B	**3SB3252-6AA50-0CC0**
	White	B	**3SB3252-6AA60**	B	**3SB3252-6AA60-0CC0**
	Clear	▶	**3SB3252-6AA70**	B	**3SB3252-6AA70-0CC0**
With BA 9s lampholder, without lamp					
--	Red	B	**3SB3204-6AA20**	B	**3SB3204-6AA20-0CC0**
	Yellow	B	**3SB3204-6AA30**	B	**3SB3204-6AA30-0CC0**
	Green	B	**3SB3204-6AA40**	B	**3SB3204-6AA40-0CC0**
	Blue	B	**3SB3204-6AA50**	B	**3SB3204-6AA50-0CC0**
	White	B	**3SB3204-6AA60**	B	**3SB3204-6AA60-0CC0**
	Clear	B	**3SB3204-6AA70**	B	**3SB3204-6AA70-0CC0**

Indicator light with smooth lens

Indicator lights with lens with concentric rings[1] With integrated LED					
24 AC/DC	Red	▶	**3SB3244-6BA20**	B	**3SB3244-6BA20-0CC0**
	Yellow	B	**3SB3244-6BA30**	B	**3SB3244-6BA30-0CC0**
	Green	▶	**3SB3244-6BA40**	B	**3SB3244-6BA40-0CC0**
	Blue	B	**3SB3244-6BA50**	B	**3SB3244-6BA50-0CC0**
	White	B	**3SB3244-6BA60**	B	**3SB3244-6BA60-0CC0**
	Clear	▶	**3SB3244-6BA70**	B	**3SB3244-6BA70-0CC0**
110 AC	Red	B	**3SB3248-6BA20**		--
	Yellow	B	**3SB3248-6BA30**		--
	Green	B	**3SB3248-6BA40**		--
	Blue	B	**3SB3248-6BA50**		--
	White	B	**3SB3248-6BA60**		--
	Clear	B	**3SB3248-6BA70**		--
230 AC	Red	▶	**3SB3252-6BA20**	B	**3SB3252-6BA20-0CC0**
	Yellow	B	**3SB3252-6BA30**	B	**3SB3252-6BA30-0CC0**
	Green	▶	**3SB3252-6BA40**	B	**3SB3252-6BA40-0CC0**
	Blue	B	**3SB3252-6BA50**	B	**3SB3252-6BA50-0CC0**
	White	B	**3SB3252-6BA60**	B	**3SB3252-6BA60-0CC0**
	Clear	▶	**3SB3252-6BA70**	B	**3SB3252-6BA70-0CC0**
With BA 9s lampholder, without lamp					
--	Amber	B	**3SB3204-6BA00**		--
	Red	B	**3SB3204-6BA20**	B	**3SB3204-6BA20-0CC0**
	Yellow	B	**3SB3204-6BA30**	B	**3SB3204-6BA30-0CC0**
	Green	B	**3SB3204-6BA40**	B	**3SB3204-6BA40-0CC0**
	Blue	B	**3SB3204-6BA50**	B	**3SB3204-6BA50-0CC0**
	White	B	**3SB3204-6BA60**	B	**3SB3204-6BA60-0CC0**
	Clear	B	**3SB3204-6BA70**	B	**3SB3204-6BA70-0CC0**
With BA 9s lampholder, with LED					
130 AC	Amber	B	**3SB3240-6BA00**		--
	Red	B	**3SB3240-6BA20**		--
	Yellow	B	**3SB3240-6BA30**		--
	Green	B	**3SB3240-6BA40**		--
	Blue	B	**3SB3240-6BA50**		--
	White	B	**3SB3240-6BA60**		--
	Clear	B	**3SB3240-6BA70**		--

Indicator lights with lens with concentric rings

For online configurator see www.siemens.com/sirius/configurators

[1] Inscription by inserting a label is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

Version	Rated voltage of lamp	Color of lens	DT	Screw terminals / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Signaling devices								
Acoustic signaling devices, IP65[1]								
Continuous tone 2.4 kHz, operational current min. 4 mA, sound pressure min. 80 dB/10 cm	24 AC/DC	Black	B	**3SB3233-7BA10**		1	1 unit	41J
	115 AC/DC		B	**3SB3234-7BA10**		1	1 unit	41J
	230 AC/DC		B	**3SB3235-7BA10**		1	1 unit	41J

Acoustic signaling device

For online configurator see www.siemens.com/sirius/configurators

[1] Mounting in 3SB38 enclosures only with the 3SB3400-1A lampholder for front plate mounting, which is included.

Version	Degree of protection	Color of handle	DT	Without connection Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Special devices								
Actuators for potentiometers[1][2], 30 ... 32 mm long	IP65	Black						
With shaft Ø 6 mm			B	**3SB1000-7CH07**		1	1 unit	41J
With shaft Ø 6.3 mm (1/4 Inch)			B	**3SB1000-7CJ07**		1	1 unit	41J
Pushbuttons with extended stroke[1] For actuating relays (possible to connect the 3SX1335 extension plunger)								
12 mm stroke	IP65	Black	B	**3SB3000-0EA11**		1	1 unit	41J

Actuator for potentiometers

Pushbuttons with 12 mm stroke

[1] Mounting in 3SB38 enclosure is not possible.

[2] The potentiometer is not included in the scope of supply.

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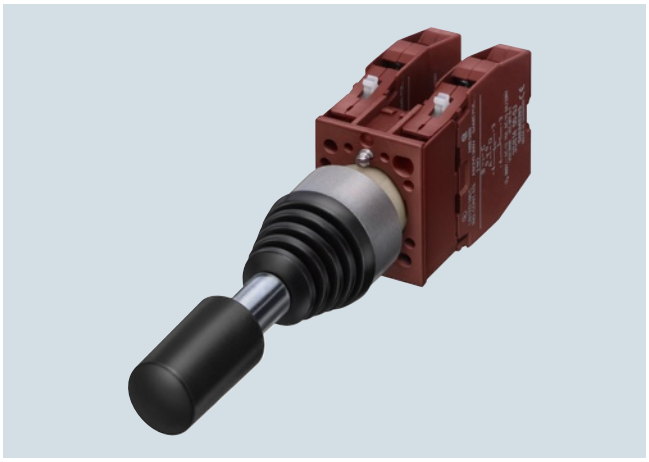
Coordinate switches, complete

Overview



Coordinate switch with contact blocks

Coordinate switches control auxiliary circuits permitting movements in various directions of machines and equipment.

The switches are designed for front plate mounting.
They are climate-proof.

Operation

The 3SB1400-0J contact block is used, which due to its depth cannot be built into 3SB38 enclosures.

Switches are available as follows:
- With 2 or 4 switch positions
- Latching or momentary contact type
- With or without mechanical interlocking

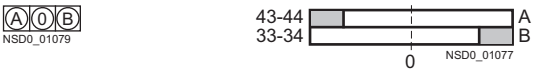
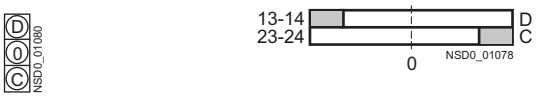
In the case of switches with mechanical interlock in O position, the switch is unlatched with the unlatching button at the front of the actuating lever.

Inscriptions

A name plate consisting of a black, plastic label holder and two or four adhesive, silver-colored inscription labels of 27 mm x 27 mm in size is available for labeling purposes. These labels can be supplied with and without customized inscription.

Note mounting dimensions!

Selection and ordering data

Version	Operating travel Contact closed Contact open	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Coordinate switches							
	2 switch positions, 1 NO per direction						
	Horizontal, momentary contact type						
Coordinate switch, 2 switch positions							
	Without mechanical interlocking in the O position						
	• With plastic front ring, black	C	**3SB1201-7DV01**		1	1 unit	41J
	• With metal front ring	C	**3SB1201-7DV20**		1	1 unit	41J
	With mechanical interlocking in the O position						
	• With plastic front ring, black	C	**3SB1201-7DW01**		1	1 unit	41J
	• With metal front ring	C	**3SB1201-7DW20**		1	1 unit	41J
	Vertical, momentary contact type						
							
	Without mechanical interlocking in the O position						
	• With plastic front ring, black	C	**3SB1201-7FV01**		1	1 unit	41J
	• With metal front ring	C	**3SB1201-7FV20**		1	1 unit	41J
	With mechanical interlocking in the O position						
	• With plastic front ring, black	C	**3SB1201-7FW01**		1	1 unit	41J
	• With metal front ring	C	**3SB1201-7FW20**		1	1 unit	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Coordinate switches, complete

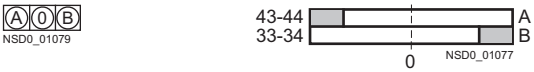
Version	Operating travel Contact closed Contact open	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG

Coordinate switches

Coordinate switch, 2 switch positions

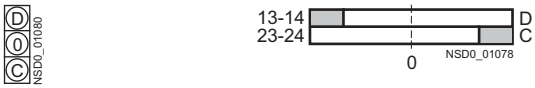
2 switch positions, 1 NO per direction

Horizontal, latching



Without mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1201-7EV01**	1	1 unit	41J
• With metal front ring	C	**3SB1201-7EV20**	1	1 unit	41J
With mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1201-7EW01**	1	1 unit	41J
• With metal front ring	C	**3SB1201-7EW20**	1	1 unit	41J

Vertical, latching

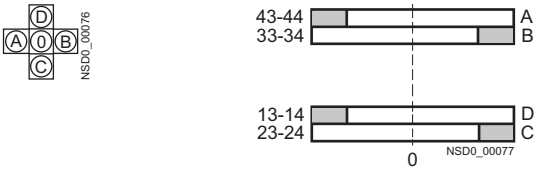


Without mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1201-7GV01**	1	1 unit	41J
• With metal front ring	C	**3SB1201-7GV20**	1	1 unit	41J
With mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1201-7GW01**	1	1 unit	41J
• With metal front ring	C	**3SB1201-7GW20**	1	1 unit	41J

Coordinate switch, 4 switch positions

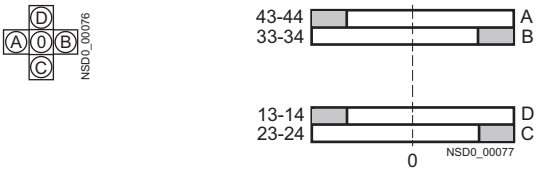
4 switch positions, 1 NO per direction

Momentary contact type



Without mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1208-7JV01**	1	1 unit	41J
• With metal front ring	C	**3SB1208-7JV20**	1	1 unit	41J
With mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1208-7JW01**	1	1 unit	41J
• With metal front ring	C	**3SB1208-7JW20**	1	1 unit	41J

Latching



Without mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1208-7KV01**	1	1 unit	41J
• With metal front ring	C	**3SB1208-7KV20**	1	1 unit	41J
With mechanical interlocking in the O position					
• With plastic front ring, black	C	**3SB1208-7KW01**	1	1 unit	41J
• With metal front ring	C	**3SB1208-7KW20**	1	1 unit	41J

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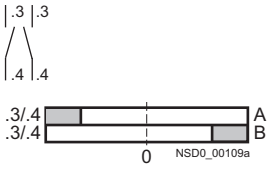
Coordinate switches, complete

Accessories

Version Contact blocks	Symbols/ operating travel Contact closed Contact open	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Spare contact blocks							
 3SB1400-0J	**Contact blocks with 2 contacts** 1 NO, 1 NO (included in scope of supply of switch)		C	**3SB1400-0J**		1	1 unit	41J

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Name plates						
 3SB1906-0AV	**Label holders for coordinate switches**					
	2 switch positions, horizontal, 89 mm x 30 mm	B	**3SB1906-0AU**		1	1 unit	41J
	2 switch positions, vertical, 30 mm x 89 mm	B	**3SB1906-0AV**		1	1 unit	41J
	4 switch positions	B	**3SB1906-0AW**		1	1 unit	41J
	Inscription labels 27 mm × 27 mm, silver-colored, adhesive						
	Without inscription	B	**3SB1906-2AA**		100	10 units	41J
	With customized inscription (engraved)		**3SB1906-2XZ**				
	• Text lines (up to 5 lines each with 11 characters)	D	**K0Y, K1Y, K2Y,** or **K5Y**		1	1 unit	41J
 3SB1906-0AW	• Graphic symbol with No.	D	**K3Y**		1	1 unit	41J
	• Any inscription or symbol	D	**K9Y**		1	1 unit	41J

For black plastic labels see page 13/76.

Options

Customized inscriptions

These labeling plates can be inscribed with text or symbols. 5 lines with 11 characters each in a letter height of 4 mm are possible.

Ordering notes

Append the following order codes to the Article No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift out"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OUT"): **K1Y**
- Text line(s) in lower case (e.g. "lift out"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower".

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417.

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

A label inscribed with symbol No. 1117 according to ISO 7000 is required:

3SB19 06-2XZ
K3Y
Z = 1117 ISO

Other ordering examples see page 13/79.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Inscriptions	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons with holder[1]								
With flat button								
Pushbuttons with flat button		Black	▶	**3SB3000-0AA11**		1	1 unit	41J
		Red	▶	**3SB3000-0AA21**		1	1 unit	41J
		Yellow	B	**3SB3000-0AA31**		1	1 unit	41J
		Green	▶	**3SB3000-0AA41**		1	1 unit	41J
		Blue	B	**3SB3000-0AA51**		1	1 unit	41J
		White	▶	**3SB3000-0AA61**		1	1 unit	41J
		Gray	B	**3SB3000-0AB51**		1	1 unit	41J
		Clear[2]	B	**3SB3000-0AA71**		1	1 unit	41J
	I	Green	B	**3SB3000-0AA81**		1	1 unit	41J
	O	Red	B	**3SB3000-0AB01**		1	1 unit	41J
	I	White	B	**3SB3000-0AB11**		1	1 unit	41J
	O	Black	B	**3SB3000-0AB21**		1	1 unit	41J
	R	Blue	B	**3SB3000-0AC81**		1	1 unit	41J
With raised button								
Pushbuttons with raised button		Black	B	**3SB3000-0BA11**		1	1 unit	41J
		Red	B	**3SB3000-0BA21**		1	1 unit	41J
		Yellow	B	**3SB3000-0BA31**		1	1 unit	41J
		Green	B	**3SB3000-0BA41**		1	1 unit	41J
		Blue	B	**3SB3000-0BA51**		1	1 unit	41J
		White	B	**3SB3000-0BA61**		1	1 unit	41J
With raised button, latching								
Pushbuttons with raised button, latching by pressing in and turning to the right, unlatches by turning to the left		Black	▶	**3SB3000-0CA11**		1	1 unit	41J
		Red	B	**3SB3000-0CA21**		1	1 unit	41J
With raised front ring								
Pushbuttons with raised front ring (height 13 mm)		Black	B	**3SB3000-0AA12**		1	1 unit	41J
		Red	B	**3SB3000-0AA22**		1	1 unit	41J
		Yellow	B	**3SB3000-0AA32**		1	1 unit	41J
		Green	B	**3SB3000-0AA42**		1	1 unit	41J
		Blue	B	**3SB3000-0AA52**		1	1 unit	41J
		White	B	**3SB3000-0AA62**		1	1 unit	41J
Pushbuttons with raised front ring, castellated (height 13 mm)		Black	B	**3SB3000-0AA13**		1	1 unit	41J
		Red	B	**3SB3000-0AA23**		1	1 unit	41J
		Yellow	B	**3SB3000-0AA33**		1	1 unit	41J
		Green	B	**3SB3000-0AA43**		1	1 unit	41J
		White	B	**3SB3000-0AA63**		1	1 unit	41J
Pushbuttons with raised front ring (height 18.5 mm)		Black	B	**3SB3000-0AA14**		1	1 unit	41J
		Red	B	**3SB3000-0AA24**		1	1 unit	41J
		Yellow	B	**3SB3000-0AA34**		1	1 unit	41J
		Green	B	**3SB3000-0AA44**		1	1 unit	41J
		Blue	B	**3SB3000-0AA54**		1	1 unit	41J
		White	B	**3SB3000-0AA64**		1	1 unit	41J
With raised front ring, castellated								
Illuminated pushbuttons with flat button (incl. holder for 3 elements)		Amber[2]	C	**3SB3001-0AA01**		1	1 unit	41J
		Red[2]	▶	**3SB3001-0AA21**		1	1 unit	41J
		Yellow[2]	▶	**3SB3001-0AA31**		1	1 unit	41J
		Green[2]	▶	**3SB3001-0AA41**		1	1 unit	41J
		Blue[2]	B	**3SB3001-0AA51**		1	1 unit	41J
		White	B	**3SB3001-0AA61**		1	1 unit	41J
		Clear[2]	▶	**3SB3001-0AA71**		1	1 unit	41J
Illuminated pushbuttons with raised button (incl. holder for 3 elements)		Red	B	**3SB3001-0BA21**		1	1 unit	41J
		Yellow	B	**3SB3001-0BA31**		1	1 unit	41J
		Green	B	**3SB3001-0BA41**		1	1 unit	41J
		Blue	B	**3SB3001-0BA51**		1	1 unit	41J
		Clear	B	**3SB3001-0BA71**		1	1 unit	41J
Illuminated pushbutton with raised button								
Pushbuttons with flat button, latching, unlatches by pressing again		Black	B	**3SB3000-0DA11**		1	1 unit	41J
		Red	B	**3SB3000-0DA21**		1	1 unit	41J
		Yellow	B	**3SB3000-0DA31**		1	1 unit	41J
		Green	B	**3SB3000-0DA41**		1	1 unit	41J
		Blue	B	**3SB3000-0DA51**		1	1 unit	41J
		White	B	**3SB3000-0DA61**		1	1 unit	41J
		Gray	C	**3SB3000-0DB51**		1	1 unit	41J
Illuminated pushbuttons with flat button, latching, unlatches by pressing again, (incl. holder for 3 elements)		Red[2]	B	**3SB3001-0DA21**		1	1 unit	41J
		Yellow[2]	B	**3SB3001-0DA31**		1	1 unit	41J
		Green[2]	B	**3SB3001-0DA41**		1	1 unit	41J
		Blue[2]	B	**3SB3001-0DA51**		1	1 unit	41J
		White	B	**3SB3001-0DA61**		1	1 unit	41J
		Clear[2]	B	**3SB3001-0DA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

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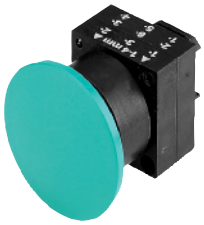
Actuators and indicators

	Version	Color of handle	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
				Article No. / Price per PU			
Mushroom pushbuttons with holder[1)2)]							
Mushroom pushbutton, Ø 30 mm	**Mushroom pushbuttons, Ø 30 mm**	Black	B	**3SB3000-1DA11**	1	1 unit	41J
		Red	B	**3SB3000-1DA21**	1	1 unit	41J
		Yellow	B	**3SB3000-1DA31**	1	1 unit	41J
		Green	B	**3SB3000-1DA41**	1	1 unit	41J
 Mushroom pushbutton, Ø 40 mm	**Mushroom pushbuttons, Ø 40 mm**	Black	▶	**3SB3000-1GA11**	1	1 unit	41J
		Red	▶	**3SB3000-1GA21**	1	1 unit	41J
		Yellow	B	**3SB3000-1GA31**	1	1 unit	41J
		Green	B	**3SB3000-1GA41**	1	1 unit	41J
Mushroom pushbutton, Ø 60 mm	**Mushroom pushbuttons, Ø 60 mm**	Black	B	**3SB3000-1QA11**	1	1 unit	41J
		Red	B	**3SB3000-1QA21**	1	1 unit	41J
		Yellow	B	**3SB3000-1QA31**	1	1 unit	41J
		Green	B	**3SB3000-1QA41**	1	1 unit	41J
Illuminated mushroom pushbutton, Ø 30 mm	**Illuminated mushroom pushbuttons, Ø 30 mm** (incl. holder for 3 elements)	Red	B	**3SB3001-1DA21**	1	1 unit	41J
		Yellow	B	**3SB3001-1DA31**	1	1 unit	41J
		Green	B	**3SB3001-1DA41**	1	1 unit	41J
		Blue	B	**3SB3001-1DA51**	1	1 unit	41J
		White	B	**3SB3001-1DA61**	1	1 unit	41J
		Clear	B	**3SB3001-1DA71**	1	1 unit	41J
Illuminated mushroom pushbutton, Ø 40 mm	**Illuminated mushroom pushbuttons, Ø 40 mm** (incl. holder for 3 elements)	Yellow	B	**3SB3001-1GA31**	1	1 unit	41J
		Green	B	**3SB3001-1GA41**	1	1 unit	41J
		White	B	**3SB3001-1GA61**	1	1 unit	41J
		Clear	C	**3SB3001-1GA71**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code "**B01**". Price reduction on request.

2) Maximum permissible equipment: 3 single-pole or 2 double-pole contact blocks. When using the 3SB3901-0AB holder, the central command point must not be empty.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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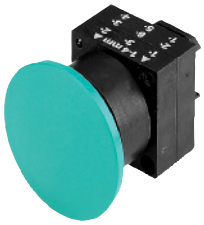
Version	Color of handle	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
Push-pull buttons with holder[1)2)]						
Push-pull button, Ø 30 mm	**Push-pull buttons, Ø 30 mm, latching,** pull to unlatch	Black	B	**3SB3000-1EA11**	1	1 unit	41J
		Red	B	**3SB3000-1EA21**	1	1 unit	41J
		Yellow	B	**3SB3000-1EA31**	1	1 unit	41J
 Push-pull button, Ø 40 mm	**Push-pull buttons, Ø 40 mm, latching,** pull to unlatch	Black	▶	**3SB3000-1CA11**	1	1 unit	41J
		Red	▶	**3SB3000-1CA21**	1	1 unit	41J
		Yellow	B	**3SB3000-1CA31**	1	1 unit	41J
		Green	C	**3SB3000-1CA41**	1	1 unit	41J
	Push-pull buttons, Ø 60 mm, latching, pull to unlatch	Black	B	**3SB3000-1RA11**	1	1 unit	41J
		Red	B	**3SB3000-1RA21**	1	1 unit	41J
Push-pull button, Ø 30 mm, can be illuminated	**Push-pull buttons, Ø 30 mm, can be illuminated, latching**, pull to unlatch, (including holder for 3 elements)	Red	B	**3SB3001-1EA21**	1	1 unit	41J
		Yellow	B	**3SB3001-1EA31**	1	1 unit	41J
		Green	B	**3SB3001-1EA41**	1	1 unit	41J
		Blue	B	**3SB3001-1EA51**	1	1 unit	41J
		Clear	B	**3SB3001-1EA71**	1	1 unit	41J
Push-pull button, Ø 40 mm, can be illuminated	**Push-pull buttons, Ø 40 mm, can be illuminated, latching**, pull to unlatch, (including holder for 3 elements)	Red	B	**3SB3001-1CA21**	1	1 unit	41J
		Yellow	B	**3SB3001-1CA31**	1	1 unit	41J
		Green	B	**3SB3001-1CA41**	1	1 unit	41J
		Blue	B	**3SB3001-1CA51**	1	1 unit	41J
		Clear	B	**3SB3001-1CA71**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code "**B01**". Price reduction on request.

2) Maximum permissible equipment: 3 single-pole or 2 double-pole contact blocks. When using the 3SB3901-0AB holder, the central command point must not be empty.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Actuators and indicators

Version	Version Illumination	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holder[1]								
Selector switches with 2 switch positions								
Non-illuminated Illuminated Switching sequence O-I, 90° operating angle, latching	**Non-illuminated**	Black	B	**3SB3000-2HA11**		1	1 unit	41J
		Red	B	**3SB3000-2HA21**		1	1 unit	41J
		Green	B	**3SB3000-2HA41**		1	1 unit	41J
		White	B	**3SB3000-2HA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2HA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2HA31**		1	1 unit	41J
		Green	B	**3SB3001-2HA41**		1	1 unit	41J
		Blue	B	**3SB3001-2HA51**		1	1 unit	41J
		Clear	B	**3SB3001-2HA71**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, latching	**Non-illuminated**	Black	▶	**3SB3000-2KA11**		1	1 unit	41J
		Red	B	**3SB3000-2KA21**		1	1 unit	41J
		Green	B	**3SB3000-2KA41**		1	1 unit	41J
		White	B	**3SB3000-2KA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2KA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2KA31**		1	1 unit	41J
		Green	B	**3SB3001-2KA41**		1	1 unit	41J
		Blue	B	**3SB3001-2KA51**		1	1 unit	41J
		Clear	B	**3SB3001-2KA71**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	**Non-illuminated**	Black	▶	**3SB3000-2LA11**		1	1 unit	41J
		Red	B	**3SB3000-2LA21**		1	1 unit	41J
		Green	B	**3SB3000-2LA41**		1	1 unit	41J
		White	B	**3SB3000-2LA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2LA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2LA31**		1	1 unit	41J
		Green	B	**3SB3001-2LA41**		1	1 unit	41J
		Blue	B	**3SB3001-2LA51**		1	1 unit	41J
		Clear	B	**3SB3001-2LA71**		1	1 unit	41J
Selector switches with 3 switch positions								
Non-illuminated Illuminated Switching sequence I-O-II, 2 x 50° operating angle, latching	**Non-illuminated**	Black	▶	**3SB3000-2DA11**		1	1 unit	41J
		Red	B	**3SB3000-2DA21**		1	1 unit	41J
		Green	B	**3SB3000-2DA41**		1	1 unit	41J
		White	B	**3SB3000-2DA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2DA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2DA31**		1	1 unit	41J
		Green	B	**3SB3001-2DA41**		1	1 unit	41J
		Blue	B	**3SB3001-2DA51**		1	1 unit	41J
		Clear	B	**3SB3001-2DA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	**Non-illuminated**	Black	▶	**3SB3000-2EA11**		1	1 unit	41J
		Red	B	**3SB3000-2EA21**		1	1 unit	41J
		Green	B	**3SB3000-2EA41**		1	1 unit	41J
		White	B	**3SB3000-2EA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2EA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2EA31**		1	1 unit	41J
		Green	B	**3SB3001-2EA41**		1	1 unit	41J
		Blue	B	**3SB3001-2EA51**		1	1 unit	41J
		Clear	B	**3SB3001-2EA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	**Non-illuminated**	Black	▶	**3SB3000-2GA11**		1	1 unit	41J
		Red	B	**3SB3000-2GA21**		1	1 unit	41J
		Green	B	**3SB3000-2GA41**		1	1 unit	41J
		White	B	**3SB3000-2GA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2GA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2GA31**		1	1 unit	41J
		Green	B	**3SB3001-2GA41**		1	1 unit	41J
		Blue	B	**3SB3001-2GA51**		1	1 unit	41J
		Clear	B	**3SB3001-2GA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	**Non-illuminated**	Black	B	**3SB3000-2FA11**		1	1 unit	41J
		Red	B	**3SB3000-2FA21**		1	1 unit	41J
		Green	B	**3SB3000-2FA41**		1	1 unit	41J
		White	B	**3SB3000-2FA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3001-2FA21**		1	1 unit	41J
		Yellow	B	**3SB3001-2FA31**		1	1 unit	41J
		Green	B	**3SB3001-2FA41**		1	1 unit	41J
		Blue	C	**3SB3001-2FA51**		1	1 unit	41J
		Clear	B	**3SB3001-2FA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

[1] Also available without holder. Supplement Article No. with **"-Z"** and quote order code "**B01**". Price reduction on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Lock version Type	Lock No./color	Key removal position	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	B	**3SB3000-4HD11**		1	1 unit	41J
			O	B	**3SB3000-4HD01**		1	1 unit	41J
			I	B	**3SB3000-4HD21**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	▶	**3SB3000-4AD11**		1	1 unit	41J
			O	▶	**3SB3000-4AD01**		1	1 unit	41J
			I	B	**3SB3000-4AD21**		1	1 unit	41J
	CES	SSG 10	O+I	▶	**3SB3000-4LD11**		1	1 unit	41J
			O	▶	**3SB3000-4LD01**		1	1 unit	41J
			I	B	**3SB3000-4LD21**		1	1 unit	41J
		LSG 1	O+I	B	**3SB3000-4LF01**		1	1 unit	41J
			O	B	**3SB3000-4LF11**		1	1 unit	41J
	CES with key monitoring[2]	SSG 10	O	C	**3SB3000-4LD05**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB3000-5AD11**		1	1 unit	41J
			O	B	**3SB3000-5AD01**		1	1 unit	41J
			I	B	**3SB3000-5AD21**		1	1 unit	41J
		E1 for VW[3]	O+I	B	**3SB3000-5AE01**		1	1 unit	41J
			O	B	**3SB3000-5AE11**		1	1 unit	41J
		E2 for VW[3]	O+I	B	**3SB3000-5AE21**		1	1 unit	41J
			O	B	**3SB3000-5AE31**		1	1 unit	41J
		E7 for VW[3]	O+I	B	**3SB3000-5AE41**		1	1 unit	41J
			O	B	**3SB3000-5AE51**		1	1 unit	41J
		E9 for VW[3]	O+I	B	**3SB3000-5AE61**		1	1 unit	41J
			O	B	**3SB3000-5AE71**		1	1 unit	41J
	O.M.R.[4]	73038 Light blue	O+I	B	**3SB3000-3AG11**		1	1 unit	41J
			O	B	**3SB3000-3AG01**		1	1 unit	41J
		73037 Red	O+I	B	**3SB3000-3AH11**		1	1 unit	41J
			O	B	**3SB3000-3AH01**		1	1 unit	41J
		73034 Black	O+I	B	**3SB3000-3AJ11**		1	1 unit	41J
			O	B	**3SB3000-3AJ01**		1	1 unit	41J
		73033 Yellow	O+I	B	**3SB3000-3AK11**		1	1 unit	41J
			O	B	**3SB3000-3AK01**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	RONIS	SB 30	O	▶	**3SB3000-4BD01**		1	1 unit	41J
	CES	SSG 10	O	▶	**3SB3000-4MD01**		1	1 unit	41J
		LSG 1	O	B	**3SB3000-4MF11**		1	1 unit	41J
	BKS	S1	O	B	**3SB3000-5BD01**		1	1 unit	41J
	O.M.R.[4]	73038 Light blue	O	B	**3SB3000-3BG01**		1	1 unit	41J
		73037 Red	O	B	**3SB3000-3BH01**		1	1 unit	41J
		73034 Black	O	B	**3SB3000-3BJ01**		1	1 unit	41J
		73033 Yellow	O	B	**3SB3000-3BK01**		1	1 unit	41J

RONIS key-operated switch

CES key-operated switch

BKS key-operated switch

O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators

BKS and CES special locks see page 13/70.

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) For key-operated switches with key monitoring, the enclosed holder 3SB3901-0AB must be used.
The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.
Special locks can be ordered only with order code **"Y01"**.

3) Keys are not included in scope of supply.

4) According to FIAT standards; also available for other users.

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Actuators and indicators

Version	Lock version: Type	Lock version: Lock No./color	Lock version: Key removal position	DT	Configurator: Article No.	Configurator: Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching	RONIS	SB 30	I+O+II	B	**3SB3000-4DD11**		1	1 unit	41J
			O	B	**3SB3000-4DD01**		1	1 unit	41J
			I+II	B	**3SB3000-4DD41**		1	1 unit	41J
			I	B	**3SB3000-4DD21**		1	1 unit	41J
			II	B	**3SB3000-4DD31**		1	1 unit	41J
			O+I	B	**3SB3000-4DD51**		1	1 unit	41J
	CES	SSG 10	I+O+II	B	**3SB3000-4PD11**		1	1 unit	41J
			O	B	**3SB3000-4PD01**		1	1 unit	41J
			O+I	B	**3SB3000-4PD51**		1	1 unit	41J
			I+II	B	**3SB3000-4PD41**		1	1 unit	41J
			I	B	**3SB3000-4PD21**		1	1 unit	41J
			II	B	**3SB3000-4PD31**		1	1 unit	41J
	CES with key monitoring	SSG 10 [2]	O	C	**3SB3000-4PD05**		1	1 unit	41J
	BKS	S1	I+O+II	B	**3SB3000-5DD11**		1	1 unit	41J
			II	C	**3SB3000-5DD31**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	I+O+II	B	**3SB3000-3DG11**		1	1 unit	41J
			O	B	**3SB3000-3DG01**		1	1 unit	41J
		73037 Red	O	B	**3SB3000-3DH01**		1	1 unit	41J
			O+I	B	**3SB3000-3DH51**		1	1 unit	41J
		73034 Black	I+O+II	B	**3SB3000-3DJ11**		1	1 unit	41J
			O	B	**3SB3000-3DJ01**		1	1 unit	41J
		73033 Yellow	I+O+II	B	**3SB3000-3DK11**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	RONIS	SB 30	O	B	**3SB3000-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB3000-4QD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB3000-5ED01**		1	1 unit	41J
	O.M.R.[3]	73034 Black	O	B	**3SB3000-3EJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	RONIS	SB 30	O+II	B	**3SB3000-4GD61**		1	1 unit	41J
			O	B	**3SB3000-4GD01**		1	1 unit	41J
			II	B	**3SB3000-4GD31**		1	1 unit	41J
	CES	SSG 10	O+II	B	**3SB3000-4SD61**		1	1 unit	41J
			O	B	**3SB3000-4SD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB3000-5GD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	RONIS	SB 30	O+I	B	**3SB3000-4FD51**		1	1 unit	41J
			O	B	**3SB3000-4FD01**		1	1 unit	41J
			I	B	**3SB3000-4FD21**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB3000-4RD51**		1	1 unit	41J
			O	B	**3SB3000-4RD01**		1	1 unit	41J
			I	B	**3SB3000-4RD21**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB3000-5FD51**		1	1 unit	41J
			O	B	**3SB3000-5FD01**		1	1 unit	41J
			I	B	**3SB3000-5FD21**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O	B	**3SB3000-3FG01**		1	1 unit	41J
		73034 Black	I	B	**3SB3000-3FJ21**		1	1 unit	41J

RONIS key-operated switch

CES key-operated switch

BKS key-operated switch

O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators

BKS and CES special locks see page 13/70.

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) For key-operated switches with key monitoring, the enclosed holder 3SB3901-0AB must be used.
The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.
Special locks can be ordered only with order code **"Y01"**.

3) According to FIAT standards; also available for other users.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Version	Color of handle	Approval	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP control devices acc. to ISO 13850 and IEC 60947-5-5 with holder[1)2)], can also be used with safety relays[3)]								
Mushroom diameter 32 mm **EMERGENCY-STOP mushroom pushbuttons, Ø 32 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red		B	**3SB3000-1FA20**		1	1 unit	41J
Mushroom diameter 40 mm, with rotate-to-unlatch mechan. with switch position indicator **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red							
• Without switch position indicator			▶	**3SB3000-1HA20**		1	1 unit	41J
• With mechanical switch position indicator			▶	**3SB3000-1HA26**		1	1 unit	41J
Mushroom pushbuttons, Ø 40 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Black		B	**3SB3000-1HA10**		1	1 unit	41J
Mushroom diameter 40 mm, pull-to-unlatch mechanism **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm,** with positive latching according to ISO 13850, with pull-to-unlatch mechanism	Red		B	**3SB3000-1TA20**		1	1 unit	41J
Mushroom diameter 60 mm **EMERGENCY-STOP mushroom pushbuttons, Ø 60 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red		B	**3SB3000-1AA20**		1	1 unit	41J
Mushroom diameter 40 mm, with RONIS key-oper. switch **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS lock,** lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3000-1BA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES lock, lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3000-1KA20**		1	1 unit	41J
Mushroom diameter 40 mm, with CES key-operated switch **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS lock,** lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3000-1LA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. lock, lock No. 73037, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3000-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) The yellow backing plates must be ordered separately, see "Accessories" on page 13/85.

3) Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

BKS and CES special locks see page 13/70.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Actuators and indicators

Version	Color of lens	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
Signaling elements with holder[1]						
Indicator light with concentric rings						
Indicator lights with smooth lens[2]	Amber	B	**3SB3001-6AA00**	1	1 unit	41J
	Red ▶		**3SB3001-6AA20**	1	1 unit	41J
	Yellow	B	**3SB3001-6AA30**	1	1 unit	41J
	Green ▶		**3SB3001-6AA40**	1	1 unit	41J
	Blue	B	**3SB3001-6AA50**	1	1 unit	41J
	White	B	**3SB3001-6AA60**	1	1 unit	41J
	Clear ▶		**3SB3001-6AA70**	1	1 unit	41J
Indicator lights with lens with concentric rings[2]	Amber	B	**3SB3001-6BA00**	1	1 unit	41J
	Red	B	**3SB3001-6BA20**	1	1 unit	41J
	Yellow	B	**3SB3001-6BA30**	1	1 unit	41J
	Green	B	**3SB3001-6BA40**	1	1 unit	41J
	Blue	B	**3SB3001-6BA50**	1	1 unit	41J
	White	B	**3SB3001-6BA60**	1	1 unit	41J
	Clear	B	**3SB3001-6BA70**	1	1 unit	41J
Acoustic signaling device						
Acoustic signaling devices, IP40[3] For acoustic signal transformer 24 V DC[4] (without BA 9s base)	Black	B	**3SB3000-7AA10**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription by inserting a label is not possible.

3) For acoustic signaling devices, IP65, see Complete units, page 13/31.

4) Following must also be ordered:
- 3SB1902-2BN acoustic signal transformer, see "Accessories", page 13/82
- lampholder with screw terminals
  3SB3400-1A for front plate mounting or
  3SB3420-1A for base mounting

Devices assembled in this way are suitable for use in enclosures.
Lampholders with spring-type terminals cannot be used.

Version	Inscriptions	Color of handle	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
				Article No. / Price per PU			
Twin pushbuttons with indicator light with holder[1][2]							
Twin pushbutton with indicator light, with flat buttons							
Twin pushbuttons with indicator light, with flat, square buttons, incl. holder for 3 elements	I/O[3]	Green/Red	B	**3SB3101-8BC21**	1	1 unit	41J
	I/O[3]	White/Black	B	**3SB3101-8BC31**	1	1 unit	41J
	↑/↓ [3]	Green/Red	B	**3SB3101-8BC81**	1	1 unit	41J
Twin pushbuttons with indicator light, with flat and raised buttons							
Twin pushbuttons with indicator light, with flat and raised, square buttons, incl. holder for 3 elements	I/O[3]	Green/Red	B	**3SB3101-8DC21**	1	1 unit	41J
	I/O[3]	White/Black	B	**3SB3101-8DC31**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.

3) Black inscription for green, red and white buttons; white inscription on black button.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Inscriptions	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Twin pushbuttons with holder[1)2)]								
Twin pushbuttons, with flat, square buttons	I/O[3)]	Green/Red	B	**3SB3100-8AC21**		1	1 unit	41J
	I/O[3)]	White/Black	B	**3SB3100-8AC31**		1	1 unit	41J
	↑/↓ [3)]	White/White	B	**3SB3100-8AC61-0AD0**		1	1 unit	41J
Twin pushbuttons, with flat and raised, square buttons	I/O[3)]	Green/Red	B	**3SB3100-8CC21**		1	1 unit	41J
	I/O[3)]	White/Black	B	**3SB3100-8CC31**		1	1 unit	41J

Twin pushbutton with flat buttons

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.

3) Black inscription for green, red and white buttons; white inscription on black button.

Version	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for twin pushbuttons							
Label holders 70 mm x 30 mm for inscription label 12.5 mm x 27 mm[1)]	Twin pushbuttons	B	**3SB3922-0AY**		100	10 units	41J
Protective caps, clear Silicone, for degree of protection IP67	Twin pushbuttons with flat buttons	B	**3SB3921-0AQ**		1	1 unit	41J

Label holders

Protective cap

1) Mounting in 3SB38 enclosure is not possible.
For inscription labels see pages 13/75 and 13/76.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Complete units

Selection and ordering data

Version	Rated voltage of lamp	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V								
Pushbuttons									
Pushbuttons									
Pushbuttons with flat button	--	Black	1 NO	B	**3SB3302-0AA11**		1	1 unit	41J
		Black	1 NC	B	**3SB3303-0AA11**		1	1 unit	41J
		Red	1 NC	B	**3SB3303-0AA21**		1	1 unit	41J
		Yellow	1 NO	B	**3SB3302-0AA31**		1	1 unit	41J
		Green	1 NO	B	**3SB3302-0AA41**		1	1 unit	41J
		Blue	1 NO	B	**3SB3302-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB3302-0AA61**		1	1 unit	41J
		Black	1 NO + 1 NC	B	**3SB3301-0AA11**		1	1 unit	41J
		Red	1 NO + 1 NC	B	**3SB3301-0AA21**		1	1 unit	41J
		Yellow	1 NO + 1 NC	B	**3SB3301-0AA31**		1	1 unit	41J
		Green	1 NO + 1 NC	B	**3SB3301-0AA41**		1	1 unit	41J
		Blue	1 NO + 1 NC	C	**3SB3301-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB3301-0AA61**		1	1 unit	41J
Illuminated pushbuttons									
Illuminated pushbuttons with flat button With integrated LED (incl. holder for 3 elements)	24 AC/DC	Red[2]	1 NC	B	**3SB3346-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO	B	**3SB3345-0AA31**		1	1 unit	41J
		Green[2]	1 NO	B	**3SB3345-0AA41**		1	1 unit	41J
		Blue[2]	1 NO	B	**3SB3345-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB3345-0AA61**		1	1 unit	41J
		Clear[2]	1 NO	B	**3SB3345-0AA71**		1	1 unit	41J
		Red[2]	1 NO + 1 NC	B	**3SB3347-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO + 1 NC	B	**3SB3347-0AA31**		1	1 unit	41J
		Green[2]	1 NO + 1 NC	B	**3SB3347-0AA41**		1	1 unit	41J
		Blue[2]	1 NO + 1 NC	B	**3SB3347-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB3347-0AA61**		1	1 unit	41J
		Clear[2]	1 NO + 1 NC	B	**3SB3347-0AA71**		1	1 unit	41J
Illuminated pushbuttons with flat button With integrated LED (incl. holder for 3 elements)	230 AC	Red[2]	1 NC	B	**3SB3354-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO	C	**3SB3353-0AA31**		1	1 unit	41J
		Green[2]	1 NO	B	**3SB3353-0AA41**		1	1 unit	41J
		Blue[2]	1 NO	C	**3SB3353-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB3353-0AA61**		1	1 unit	41J
		Clear[2]	1 NO	B	**3SB3353-0AA71**		1	1 unit	41J
		Red[2]	1 NO + 1 NC	B	**3SB3355-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO + 1 NC	C	**3SB3355-0AA31**		1	1 unit	41J
		Green[2]	1 NO + 1 NC	B	**3SB3355-0AA41**		1	1 unit	41J
		Blue[2]	1 NO + 1 NC	C	**3SB3355-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	C	**3SB3355-0AA61**		1	1 unit	41J
		Clear[2]	1 NO + 1 NC	B	**3SB3355-0AA71**		1	1 unit	41J
Illuminated pushbuttons with flat button With BA 9s lampholder without lamp (incl. holder for 3 elements)	--	Red[2]	1 NC	B	**3SB3307-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO	B	**3SB3306-0AA31**		1	1 unit	41J
		Green[2]	1 NO	B	**3SB3306-0AA41**		1	1 unit	41J
		Blue[2]	1 NO	B	**3SB3306-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB3306-0AA61**		1	1 unit	41J
		Clear[2]	1 NO	B	**3SB3306-0AA71**		1	1 unit	41J
		Red[2]	1 NO + 1 NC	B	**3SB3305-0AA21**		1	1 unit	41J
		Yellow[2]	1 NO + 1 NC	B	**3SB3305-0AA31**		1	1 unit	41J
		Green[2]	1 NO + 1 NC	B	**3SB3305-0AA41**		1	1 unit	41J
		Blue[2]	1 NO + 1 NC	B	**3SB3305-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB3305-0AA61**		1	1 unit	41J
		Clear[2]	1 NO + 1 NC	B	**3SB3305-0AA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP control devices according to ISO 13850 and IEC 60947-5-5, with holder and yellow name plate, Ø 80 mm, with inscription[2]								
EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function, with rotate-to-unlatch mechanism	Red	1 NC ➔	B	**3SB3303-1HA20**		1	1 unit	41J
		1 NO + 1 NC ➔	B	**3SB3301-1HA20**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

Certificate: DVE

[1] The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A).

[2] German inscription "NOT-HALT".

Version	Rated voltage of lamp	Color of lens	DT	Screw terminals / Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Signaling devices								
Indicator lights								
Indicator lights with integrated LED	24 AC/DC	Red	B	**3SB3344-6AA20**		1	1 unit	41J
		Yellow	B	**3SB3344-6AA30**		1	1 unit	41J
		Green	B	**3SB3344-6AA40**		1	1 unit	41J
		Blue	B	**3SB3344-6AA50**		1	1 unit	41J
		White	B	**3SB3344-6AA60**		1	1 unit	41J
		Clear	B	**3SB3344-6AA70**		1	1 unit	41J
Indicator lights with integrated LED	230 AC	Red	B	**3SB3352-6AA20**		1	1 unit	41J
		Yellow	B	**3SB3352-6AA30**		1	1 unit	41J
		Green	B	**3SB3352-6AA40**		1	1 unit	41J
		Blue	B	**3SB3352-6AA50**		1	1 unit	41J
		White	B	**3SB3352-6AA60**		1	1 unit	41J
		Clear	B	**3SB3352-6AA70**		1	1 unit	41J
Indicator lights with BA 9s lampholder (without lamp)	–	Red	B	**3SB3304-6AA20**		1	1 unit	41J
		Yellow	B	**3SB3304-6AA30**		1	1 unit	41J
		Green	B	**3SB3304-6AA40**		1	1 unit	41J
		Blue	B	**3SB3304-6AA50**		1	1 unit	41J
		White	B	**3SB3304-6AA60**		1	1 unit	41J
		Clear	B	**3SB3304-6AA70**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Selection and ordering data

Version	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons and switches with holder[1]							
Pushbuttons **Pushbuttons with flat button**	Black	B	**3SB3110-0AA11**		1	1 unit	41J
	Red	B	**3SB3110-0AA21**		1	1 unit	41J
	Yellow	B	**3SB3110-0AA31**		1	1 unit	41J
	Green	B	**3SB3110-0AA41**		1	1 unit	41J
	Blue	B	**3SB3110-0AA51**		1	1 unit	41J
	White	B	**3SB3110-0AA61**		1	1 unit	41J
	Clear[2]	B	**3SB3110-0AA71**		1	1 unit	41J
Pushbutton with raised front ring **Pushbuttons with raised front ring** (height 13 mm)	Black	B	**3SB3110-0AA12**		1	1 unit	41J
	Red	B	**3SB3110-0AA22**		1	1 unit	41J
	Green	C	**3SB3110-0AA42**		1	1 unit	41J
	Blue	B	**3SB3110-0AA52**		1	5 units	41J
	White	B	**3SB3110-0AA62**		1	1 unit	41J
Pushbutton with raised front ring, castellated **Pushbuttons with raised front ring, castellated** (height 13 mm)	Black	C	**3SB3110-0AA13**		1	1 unit	41J
	Red	C	**3SB3110-0AA23**		1	1 unit	41J
	Yellow	C	**3SB3110-0AA33**		1	1 unit	41J
	Green	C	**3SB3110-0AA43**		1	1 unit	41J
	Blue	B	**3SB3110-0AA53**		1	5 units	41J
	White	C	**3SB3110-0AA63**		1	1 unit	41J
Illuminated pushbuttons **Illuminated pushbuttons with flat button** (incl. holder for 3 elements)	Red[2]	B	**3SB3111-0AA21**		1	1 unit	41J
	Yellow[2]	B	**3SB3111-0AA31**		1	1 unit	41J
	Green[2]	B	**3SB3111-0AA41**		1	1 unit	41J
	Blue[2]	B	**3SB3111-0AA51**		1	1 unit	41J
	White	B	**3SB3111-0AA61**		1	1 unit	41J
	Clear[2]	B	**3SB3111-0AA71**		1	1 unit	41J
Pushbutton **Pushbuttons, latching**, **with flat button,** unlocking by pressing again	Black	B	**3SB3110-0DA11**		1	1 unit	41J
	Red	B	**3SB3110-0DA21**		1	1 unit	41J
	Yellow	B	**3SB3110-0DA31**		1	1 unit	41J
	Green	B	**3SB3110-0DA41**		1	1 unit	41J
	Blue	C	**3SB3110-0DA51**		1	1 unit	41J
	White	B	**3SB3110-0DA61**		1	1 unit	41J
Illuminated pushbutton **Illuminated pushbuttons, latching**, **with flat button** (incl. holder for 3 elements), unlocking by pressing again	Red[2]	B	**3SB3111-0DA21**		1	1 unit	41J
	Yellow[2]	B	**3SB3111-0DA31**		1	1 unit	41J
	Green[2]	B	**3SB3111-0DA41**		1	1 unit	41J
	Blue[2]	B	**3SB3111-0DA51**		1	1 unit	41J
	White	B	**3SB3111-0DA61**		1	1 unit	41J
	Clear[2]	B	**3SB3111-0DA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Version Illumination	Color of handle	DT	Configurator / Article No.	PU (UNIT, SET, M)	PS*	PG
				Price per PU			
Selector switches with holder[1]							
Selector switches with 2 switch positions							
Switching sequence O-I, 50° operating angle, latching	**Non-illuminated**	Black	B	**3SB3110-2KA11**	1	1 unit	41J
		Red	B	**3SB3110-2KA21**	1	1 unit	41J
		Green	B	**3SB3110-2KA41**	1	1 unit	41J
		White	B	**3SB3110-2KA61**	1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3111-2KA21**	1	1 unit	41J
		Yellow	B	**3SB3111-2KA31**	1	1 unit	41J
		Green	B	**3SB3111-2KA41**	1	1 unit	41J
		Blue	B	**3SB3111-2KA51**	1	1 unit	41J
		Clear	B	**3SB3111-2KA71**	1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	**Non-illuminated**	Black	B	**3SB3110-2LA11**	1	1 unit	41J
		Red	C	**3SB3110-2LA21**	1	1 unit	41J
		Green	C	**3SB3110-2LA41**	1	1 unit	41J
		White	C	**3SB3110-2LA61**	1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3111-2LA21**	1	1 unit	41J
		Yellow	C	**3SB3111-2LA31**	1	1 unit	41J
		Green	C	**3SB3111-2LA41**	1	1 unit	41J
		Blue	C	**3SB3111-2LA51**	1	1 unit	41J
		Clear	B	**3SB3111-2LA71**	1	1 unit	41J
Selector switches with 3 switch positions							
Switching sequence I-O-II, 2 x 50° operating angle, latching	**Non-illuminated**	Black	B	**3SB3110-2DA11**	1	1 unit	41J
		Red	B	**3SB3110-2DA21**	1	1 unit	41J
		Green	C	**3SB3110-2DA41**	1	1 unit	41J
		White	C	**3SB3110-2DA61**	1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB3111-2DA21**	1	1 unit	41J
		Yellow	B	**3SB3111-2DA31**	1	1 unit	41J
		Green	B	**3SB3111-2DA41**	1	1 unit	41J
		Blue	C	**3SB3111-2DA51**	1	1 unit	41J
		Clear	B	**3SB3111-2DA71**	1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	**Non-illuminated**	Black	B	**3SB3110-2EA11**	1	1 unit	41J
		Red	B	**3SB3110-2EA21**	1	1 unit	41J
		Green	C	**3SB3110-2EA41**	1	1 unit	41J
		White	C	**3SB3110-2EA61**	1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	C	**3SB3111-2EA21**	1	1 unit	41J
		Yellow	C	**3SB3111-2EA31**	1	1 unit	41J
		Green	B	**3SB3111-2EA41**	1	1 unit	41J
		Blue	C	**3SB3111-2EA51**	1	1 unit	41J
		Clear	B	**3SB3111-2EA71**	1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	**Non-illuminated**	Black	B	**3SB3110-2GA11**	1	1 unit	41J
		Green	C	**3SB3110-2GA41**	1	1 unit	41J
		White	B	**3SB3110-2GA61**	1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	**Non-illuminated**	Black	B	**3SB3110-2FA11**	1	1 unit	41J
		Red	C	**3SB3110-2FA21**	1	1 unit	41J
		Green	B	**3SB3110-2FA41**	1	1 unit	41J

Selector switches

Selector switch, illuminated

Selector switches

Selector switch, illuminated

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1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Actuators and indicators

Version	Lock version: Type	Lock No./color	Key removal position	DT	Configurator: Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	B	**3SB3110-4AD11**		1	1 unit	41J
			O	B	**3SB3110-4AD01**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB3110-4LD11**		1	1 unit	41J
			O	B	**3SB3110-4LD01**		1	1 unit	41J
			I	B	**3SB3110-4LD21**		1	1 unit	41J
		LSG 1	O+I	C	**3SB3110-4LF01**		1	1 unit	41J
			O	B	**3SB3110-4LF11**		1	1 unit	41J
	BKS	E2 for VW[2]	O	B	**3SB3110-5AE31**		1	1 unit	41J
		E7 for VW[2]	O+I	B	**3SB3110-5AE41**		1	1 unit	41J
			O	B	**3SB3110-5AE51**		1	1 unit	41J
		E9 for VW[2]	O	B	**3SB3110-5AE71**		1	1 unit	41J
	O.M.R.[3]	73037 Red	O	B	**3SB3110-3AH01**		1	1 unit	41J
		73034 Black	O+I	B	**3SB3110-3AJ11**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	RONIS	SB 30	O	B	**3SB3110-4BD01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB3110-4MD01**		1	1 unit	41J
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching	RONIS	SB 30	I+O+II	B	**3SB3110-4DD11**		1	1 unit	41J
	CES	SSG 10	I+O+II	B	**3SB3110-4PD11**		1	1 unit	41J
			O	B	**3SB3110-4PD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	RONIS	SB 30	O	B	**3SB3110-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB3110-4QD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	CES	SSG 10	O	B	**3SB3110-4SD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	CES	SSG 10	O+I	C	**3SB3110-4RD51**		1	1 unit	41J

RONIS key-operated switch

CES key-operated switch

O.M.R. key-operated switch

⚙ For online configurator see www.siemens.com/sirius/configurators

BKS and CES special locks see page 13/70.

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Keys are not included in scope of supply.

3) According to FIAT standards; also available for other users.

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	Version	Color of handle	Approval	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-5 with holder[1)2)], can also be used with safety relays[3)]									
EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm**, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	VDE	B	**3SB3110-1HA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbutton with RONIS key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS key-operated switch** (with 2 keys), lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB3110-1BA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbutton with CES key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES key-operated switch** (with 2 keys), lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB3110-1KA20**		1	1 unit	41J
	EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS key-operated switch (with 2 keys), lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB3110-1LA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbutton with O.M.R. key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. key-operated switch** (with 2 keys), lock No. 73037 with positive latching according to ISO 13850, unlocking only using key	Red	VDE	B	**3SB3110-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Yellow backing plates must be ordered separately, see "Accessories" on page 13/85.

3) Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

BKS and CES special locks see page 13/70.

	Version	Color of lens	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling elements with holder[1)]								
Indicator lights	**Indicator lights**	Red	B	**3SB3111-6AA20**		1	1 unit	41J
		Yellow	B	**3SB3111-6AA30**		1	1 unit	41J
		Green	B	**3SB3111-6AA40**		1	1 unit	41J
		Blue	B	**3SB3111-6AA50**		1	1 unit	41J
		Clear	B	**3SB3111-6AA70**		1	1 unit	41J
		White	B	**3SB3111-6AA60**		1	1 unit	41J

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1) Also available without holder. Supplement Article No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Metal, Round, 22 mm

Complete units

Selection and ordering data

The following applies to all complete units:

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals Configurator	DT	Spring-type terminals Configurator
V				Article No. / Price per PU		Article No. / Price per PU
Pushbuttons						
Pushbuttons with flat button						
--	Black	1 NO	▶	**3SB3602-0AA11**	B	**3SB3602-0AA11-0CC0**
	Black	1 NC	B	**3SB3603-0AA11**	B	**3SB3603-0AA11-0CC0**
	Red	1 NC	▶	**3SB3603-0AA21**	C	**3SB3603-0AA21-0CC0**
	Yellow	1 NO	B	**3SB3602-0AA31**	C	**3SB3602-0AA31-0CC0**
	Green	1 NO	▶	**3SB3602-0AA41**	C	**3SB3602-0AA41-0CC0**
	Blue	1 NO	B	**3SB3602-0AA51**	C	**3SB3602-0AA51-0CC0**
	White	1 NO	▶	**3SB3602-0AA61**	C	**3SB3602-0AA61-0CC0**
	Black	1 NO + 1 NC	B	**3SB3601-0AA11**	B	**3SB3601-0AA11-0CC0**
	Red	1 NO + 1 NC	B	**3SB3601-0AA21**	B	**3SB3601-0AA21-0CC0**
	Yellow	1 NO + 1 NC	B	**3SB3601-0AA31**	C	**3SB3601-0AA31-0CC0**
	Green	1 NO + 1 NC	B	**3SB3601-0AA41**	C	**3SB3601-0AA41-0CC0**
	Blue	1 NO + 1 NC	B	**3SB3601-0AA51**	B	**3SB3601-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB3601-0AA61**	B	**3SB3601-0AA61-0CC0**
	Clear	1 NO + 1 NC	B	**3SB3601-0AA71**		**--**
Illuminated pushbuttons with flat button With integrated LED (incl. holder for 3 elements)						
24 AC/DC	Red[2]	1 NC	▶	**3SB3646-0AA21**	C	**3SB3646-0AA21-0CC0**
	Yellow[2]	1 NO	B	**3SB3645-0AA31**	B	**3SB3645-0AA31-0CC0**
	Green[2]	1 NO	▶	**3SB3645-0AA41**	B	**3SB3645-0AA41-0CC0**
	Blue[2]	1 NO	B	**3SB3645-0AA51**	C	**3SB3645-0AA51-0CC0**
	White	1 NO	B	**3SB3645-0AA61**	B	**3SB3645-0AA61-0CC0**
	Clear[2]	1 NO	▶	**3SB3645-0AA71**	C	**3SB3645-0AA71-0CC0**
	Red[2]	1 NO + 1 NC	B	**3SB3647-0AA21**	B	**3SB3647-0AA21-0CC0**
	Yellow[2]	1 NO + 1 NC	B	**3SB3647-0AA31**	C	**3SB3647-0AA31-0CC0**
	Green[2]	1 NO + 1 NC	B	**3SB3647-0AA41**	B	**3SB3647-0AA41-0CC0**
	Blue[2]	1 NO + 1 NC	B	**3SB3647-0AA51**	B	**3SB3647-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB3647-0AA61**	B	**3SB3647-0AA61-0CC0**
	Clear[2]	1 NO + 1 NC	B	**3SB3647-0AA71**	C	**3SB3647-0AA71-0CC0**
110 AC	Red[2]	1 NC	B	**3SB3650-0AA21**		**--**
	Yellow[2]	1 NO	B	**3SB3657-0AA31**		**--**
	Green[2]	1 NO	B	**3SB3657-0AA41**		**--**
	Blue[2]	1 NO	B	**3SB3657-0AA51**		**--**
	White	1 NO	B	**3SB3657-0AA61**		**--**
	Clear[2]	1 NO	D	**3SB3657-0AA71**		**--**
	Red[2]	1 NO + 1 NC	B	**3SB3651-0AA21**		**--**
	Yellow[2]	1 NO + 1 NC	B	**3SB3651-0AA31**		**--**
	Green[2]	1 NO + 1 NC	B	**3SB3651-0AA41**		**--**
	Blue[2]	1 NO + 1 NC	D	**3SB3651-0AA51**		**--**
	White	1 NO + 1 NC	B	**3SB3651-0AA61**		**--**
	Clear[2]	1 NO + 1 NC	B	**3SB3651-0AA71**		**--**
230 AC	Red[2]	1 NC	▶	**3SB3654-0AA21**	C	**3SB3654-0AA21-0CC0**
	Yellow[2]	1 NO	B	**3SB3653-0AA31**	C	**3SB3653-0AA31-0CC0**
	Green[2]	1 NO	▶	**3SB3653-0AA41**	C	**3SB3653-0AA41-0CC0**
	Blue[2]	1 NO	D	**3SB3653-0AA51**	C	**3SB3653-0AA51-0CC0**
	White	1 NO	B	**3SB3653-0AA61**	C	**3SB3653-0AA61-0CC0**
	Clear[2]	1 NO	▶	**3SB3653-0AA71**	C	**3SB3653-0AA71-0CC0**
	Red[2]	1 NO + 1 NC	B	**3SB3655-0AA21**	C	**3SB3655-0AA21-0CC0**
	Yellow[2]	1 NO + 1 NC	B	**3SB3655-0AA31**	C	**3SB3655-0AA31-0CC0**
	Green[2]	1 NO + 1 NC	B	**3SB3655-0AA41**	C	**3SB3655-0AA41-0CC0**
	Blue[2]	1 NO + 1 NC	D	**3SB3655-0AA51**	C	**3SB3655-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB3655-0AA61**	C	**3SB3655-0AA61-0CC0**
	Clear[2]	1 NO + 1 NC	B	**3SB3655-0AA71**	C	**3SB3655-0AA71-0CC0**

Pushbutton with flat button

Illuminated pushbutton with flat button

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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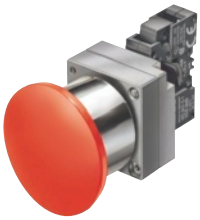
Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting[1]	DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
V								
Pushbuttons								
Illuminated pushbutton with flat button								
Illuminated pushbuttons with flat button With BA 9s lampholder, without lamp (incl. holder for 3 elements)								
--	Red[2]	1 NC	B	**3SB3607-0AA21**		C	**3SB3607-0AA21-0CC0**	
	Amber[2]	1 NO	D	**3SB3606-0AA01**			**--**	
	Yellow[2]	1 NO	B	**3SB3606-0AA31**		B	**3SB3606-0AA31-0CC0**	
	Green[2]	1 NO	B	**3SB3606-0AA41**		C	**3SB3606-0AA41-0CC0**	
	Blue[2]	1 NO	B	**3SB3606-0AA51**		C	**3SB3606-0AA51-0CC0**	
	White	1 NO	B	**3SB3606-0AA61**		B	**3SB3606-0AA61-0CC0**	
	Clear[2]	1 NO	B	**3SB3606-0AA71**		C	**3SB3606-0AA71-0CC0**	
	Red[2]	1 NO + 1 NC	B	**3SB3605-0AA21**		C	**3SB3605-0AA21-0CC0**	
	Amber[2]	1 NO + 1 NC	B	**3SB3605-0AA01**			**--**	
	Yellow[2]	1 NO + 1 NC	B	**3SB3605-0AA31**		C	**3SB3605-0AA31-0CC0**	
	Green[2]	1 NO + 1 NC	B	**3SB3605-0AA41**		C	**3SB3605-0AA41-0CC0**	
	Blue[2]	1 NO + 1 NC	B	**3SB3605-0AA51**		C	**3SB3605-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB3605-0AA61**		C	**3SB3605-0AA61-0CC0**	
	Clear[2]	1 NO + 1 NC	B	**3SB3605-0AA71**		C	**3SB3605-0AA71-0CC0**	
Illuminated pushbutton with flat button								
Illuminated pushbuttons with flat solvent-resistant button[3], with integrated LED (incl. holder for 3 elements)								
24 AC/DC	Red[2]	1 NC	B	**3SB3646-0AA21-0PA0**			**--**	
	Yellow[2]	1 NO	B	**3SB3645-0AA31-0PA0**			**--**	
	Green[2]	1 NO	B	**3SB3645-0AA41-0PA0**			**--**	
	Blue[2]	1 NO	B	**3SB3645-0AA51-0PA0**			**--**	
	White	1 NO	B	**3SB3645-0AA61-0PA0**			**--**	
	Clear[2]	1 NO	B	**3SB3645-0AA71-0PA0**			**--**	
	Red[2]	1 NO + 1 NC	B	**3SB3647-0AA21-0PA0**			**--**	
	Yellow[2]	1 NO + 1 NC	B	**3SB3647-0AA31-0PA0**			**--**	
	Green[2]	1 NO + 1 NC	B	**3SB3647-0AA41-0PA0**			**--**	
	Blue[2]	1 NO + 1 NC	B	**3SB3647-0AA51-0PA0**			**--**	
	White	1 NO + 1 NC	B	**3SB3647-0AA61-0PA0**			**--**	
	Clear[2]	1 NO + 1 NC	B	**3SB3647-0AA71-0PA0**			**--**	
Mushroom pushbuttons								
 Mushroom push-pull button								
Mushroom push-pull buttons, Ø 40 mm, latching with pull-to-unlatch mechanism								
--	Red	1 NC	B	**3SB3603-1CA21**		B	**3SB3603-1CA21-0CC0**	
		1 NO + 1 NC	B	**3SB3601-1CA21**		C	**3SB3601-1CA21-0CC0**	

For online configurator see www.siemens.com/sirius/configurators

1) The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

2) Inscription is possible by inserting a label.

3) Not suitable for laser inscription.

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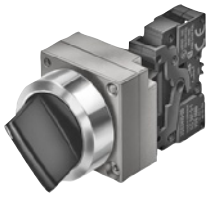
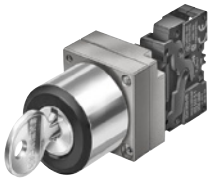
3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Metal, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Version	Color of handle/ Lock No.	Contacts for front plate mounting[1]	DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
Selector switches								
 Selector switches								
Selector switches, 2 switch positions Switching sequence O-I, 50° operating angle								
Latching 	Black	1 NO	▶	**3SB3602-2KA11**		B	**3SB3602-2KA11-0CC0**	
	Standard	1 NO + 1 NC	B	**3SB3601-2KA11**		B	**3SB3601-2KA11-0CC0**	
	Heavy duty	1 NO	D	**3SB3602-2PA11**			**--**	
		1 NO + 1 NC	D	**3SB3601-2PA11**			**--**	
Selector switches, 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle								
Latching 	Black	1 NO, 1 NO	▶	**3SB3610-2DA11**		B	**3SB3610-2DA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	▶	**3SB3608-2DA11**		C	**3SB3608-2DA11-0CC0**	
	Heavy duty	1 NO, 1 NO	D	**3SB3610-2SA11**			**--**	
		1 NO + 1 NC, 1 NO + 1 NC	D	**3SB3608-2SA11**			**--**	
Momentary contact type 	Black	1 NO, 1 NO	▶	**3SB3610-2EA11**		C	**3SB3610-2EA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB3608-2EA11**		C	**3SB3608-2EA11-0CC0**	
	Heavy duty	1 NO, 1 NO	D	**3SB3610-2TA11**			**--**	
		1 NO + 1 NC, 1 NO + 1 NC	D	**3SB3608-2TA11**			**--**	
Key-operated switches								
 RONIS key-operated switch								
RONIS key-operated switches, 2 switch positions With 2 keys, removal position O + I, switching sequence O-I, 50° operating angle								
Latching 	SB 30	1 NO	▶	**3SB3602-4AD11**		C	**3SB3602-4AD11-0CC0**	
		1 NO + 1 NC	B	**3SB3601-4AD11**		C	**3SB3601-4AD11-0CC0**	

For online configurator see www.siemens.com/sirius/configurators

[1] The inscription 1 NO + 1 NC means that a contact block with two contacts is used (3SB3400-0A or 3SB3403-0A).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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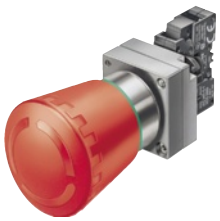
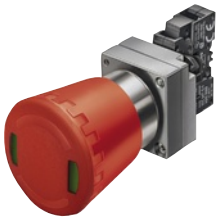
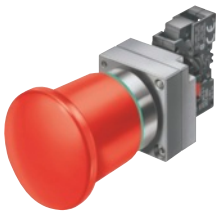
Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Color of handle	Contacts for front plate mounting[1]		DT	Screw terminals Configurator Article No.	Price per PU	DT	Spring-type terminals Configurator Article No.	Price per PU
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-.5, with holder and yellow name plate, Ø 80 mm, with inscription								
 EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function,** with rotate-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊖	▶ **3SB3603-1HA20**		B	**3SB3603-1HA20-0CC0**	
		1 NC with installation monitoring	⊖	B **3SB3666-1HA20**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1HA20**		B	**3SB3601-1HA20-0CC0**	
		1 NC, 1 NC	⊖	**--**		B	**3SB3611-1HA20-0CC0**	
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊖	B **3SB3603-1HR20**			--	
		1 NC with installation monitoring	⊖	B **3SB3666-1HR20**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1HR20**			--	
	• French inscription "ARRET D'URGENCE"							
	Red	1 NC	⊖	B **3SB3603-1HP20**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1HP20**			--	
 EMERGENCY-STOP mushroom pushbuttons with rotate-to-unlatch mechanism and switch position indicator	With rotate-to-unlatch mechanism and mechanical switch position indicator							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊖	C **3SB3603-1HA26**		B	**3SB3603-1HA26-0CC0**	
		1 NC with installation monitoring	⊖	B **3SB3666-1HA26**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1HA26**		B	**3SB3601-1HA26-0CC0**	
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊖	B **3SB3603-1HR26**			--	
		1 NC with installation monitoring	⊖	B **3SB3666-1HR26**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1HR26**			--	
 EMERGENCY-STOP mushroom pushbutton with pull-to-unlatch mechanism	With pull-to-unlatch mechanism, solvent-resistant							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊖	B **3SB3603-1TA20**		B	**3SB3603-1TA20-0CC0**	
		1 NO + 1 NC	⊖	B **3SB3601-1TA20**		B	**3SB3601-1TA20-0CC0**	
		1 NC, 1 NC	⊖	**--**		B	**3SB3611-1TA20-0CC0**	
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊖	B **3SB3603-1TR20**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1TR20**			--	
	• French inscription "ARRET D'URGENCE"							
	Red	1 NC	⊖	B **3SB3603-1TP20**			--	
		1 NO + 1 NC	⊖	B **3SB3601-1TP20**			--	

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⊖ Positive opening according to IEC 60947-5-1, Appendix K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".
Certificate:

[1] Meaning of the inscription:
1 NO + 1 NC : One contact block is delivered with two contacts (3SB3400-0A or 3SB3403-0A).
1 NC, 1 NC: Two contact blocks are delivered with one contact each (2 x 3SB3403-0C).

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of lens	DT	Screw terminals Configurator	DT	Spring-type terminals Configurator
V			Article No.		Article No.

Indicator lights

Indicator lights

Indicator lights with lens with concentric rings[1] with integrated LED

Rated voltage of lamp	Color of lens	DT	Screw terminals Article No.	DT	Spring-type terminals Article No.
24 AC/DC	Red	▶	**3SB3644-6BA20**	B	**3SB3644-6BA20-0CC0**
	Yellow	B	**3SB3644-6BA30**	B	**3SB3644-6BA30-0CC0**
	Green	▶	**3SB3644-6BA40**	B	**3SB3644-6BA40-0CC0**
	Blue	B	**3SB3644-6BA50**	B	**3SB3644-6BA50-0CC0**
	White	B	**3SB3644-6BA60**	B	**3SB3644-6BA60-0CC0**
	Clear	▶	**3SB3644-6BA70**	B	**3SB3644-6BA70-0CC0**
110 AC	Red	B	**3SB3648-6BA20**	B	**3SB3648-6BA20-0CC0**
	Yellow	B	**3SB3648-6BA30**	C	**3SB3648-6BA30-0CC0**
	Green	B	**3SB3648-6BA40**	B	**3SB3648-6BA40-0CC0**
	Blue	B	**3SB3648-6BA50**	C	**3SB3648-6BA50-0CC0**
	White	B	**3SB3648-6BA60**	B	**3SB3648-6BA60-0CC0**
	Clear	B	**3SB3648-6BA70**	B	**3SB3648-6BA70-0CC0**
230 AC	Red	▶	**3SB3652-6BA20**	C	**3SB3652-6BA20-0CC0**
	Yellow	B	**3SB3652-6BA30**	C	**3SB3652-6BA30-0CC0**
	Green	▶	**3SB3652-6BA40**	C	**3SB3652-6BA40-0CC0**
	Blue	B	**3SB3652-6BA50**	C	**3SB3652-6BA50-0CC0**
	White	B	**3SB3652-6BA60**	C	**3SB3652-6BA60-0CC0**
	Clear	▶	**3SB3652-6BA70**	C	**3SB3652-6BA70-0CC0**
With BA 9s lampholder, without lamp					
--	Red	B	**3SB3604-6BA20**	B	**3SB3604-6BA20-0CC0**
	Yellow	B	**3SB3604-6BA30**	C	**3SB3604-6BA30-0CC0**
	Green	B	**3SB3604-6BA40**	B	**3SB3604-6BA40-0CC0**
	Blue	B	**3SB3604-6BA50**	C	**3SB3604-6BA50-0CC0**
	White	B	**3SB3604-6BA60**	B	**3SB3604-6BA60-0CC0**
	Clear	B	**3SB3604-6BA70**	C	**3SB3604-6BA70-0CC0**

For online configurator see www.siemens.com/sirius/configurators

1) Inscription by inserting a label is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Inscriptions	Color of handle	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
				Article No. / Price per PU			
Pushbuttons with holder[1]							
Pushbutton with flat button							
Pushbuttons with flat button		Black	▶	**3SB3500-0AA11**	1	1 unit	41J
		Red	▶	**3SB3500-0AA21**	1	1 unit	41J
		Yellow	B	**3SB3500-0AA31**	1	1 unit	41J
		Green	▶	**3SB3500-0AA41**	1	1 unit	41J
		Blue	B	**3SB3500-0AA51**	1	1 unit	41J
		White	▶	**3SB3500-0AA61**	1	1 unit	41J
		Gray	B	**3SB3500-0AB51**	1	1 unit	41J
		Clear[2]	B	**3SB3500-0AA71**	1	1 unit	41J
	I	Green	B	**3SB3500-0AA81**	1	1 unit	41J
	O	Red	B	**3SB3500-0AB01**	1	1 unit	41J
	I	White	B	**3SB3500-0AB11**	1	1 unit	41J
	O	Black	B	**3SB3500-0AB21**	1	1 unit	41J
	R	Blue	D	**3SB3500-0AC81**	1	1 unit	41J
Pushbutton with raised button							
Pushbuttons with flat solvent-resistant button[3]		Black	▶	**3SB3500-0AA11**	1	1 unit	41J
		Red	B	**3SB3500-0AA21-0PA0**	1	1 unit	41J
		Yellow	B	**3SB3500-0AA31-0PA0**	1	1 unit	41J
		Green	B	**3SB3500-0AA41-0PA0**	1	1 unit	41J
		Blue	B	**3SB3500-0AA51-0PA0**	1	1 unit	41J
		White	C	**3SB3500-0AA61-0PA0**	1	1 unit	41J
Pushbutton with raised front ring							
Pushbuttons with raised button		Black	B	**3SB3500-0BA11**	1	1 unit	41J
		Red	B	**3SB3500-0BA21**	1	1 unit	41J
		Yellow	B	**3SB3500-0BA31**	1	1 unit	41J
		Green	B	**3SB3500-0BA41**	1	1 unit	41J
		Blue	B	**3SB3500-0BA51**	1	1 unit	41J
		White	B	**3SB3500-0BA61**	1	1 unit	41J
Pushbuttons with raised front ring (height 15.5 mm)		Black	B	**3SB3500-0AA12**	1	1 unit	41J
		Red	B	**3SB3500-0AA22**	1	1 unit	41J
		Yellow	B	**3SB3500-0AA32**	1	1 unit	41J
		Green	B	**3SB3500-0AA42**	1	1 unit	41J
		Blue	B	**3SB3500-0AA52**	1	1 unit	41J
		White	B	**3SB3500-0AA62**	1	1 unit	41J
Illuminated pushbutton with flat button							
Illuminated pushbuttons with flat button (incl. holder for 3 elements)		Amber[2]	B	**3SB3501-0AA01**	1	1 unit	41J
		Red[2]	▶	**3SB3501-0AA21**	1	1 unit	41J
		Yellow[2]	B	**3SB3501-0AA31**	1	1 unit	41J
		Green[2]	▶	**3SB3501-0AA41**	1	1 unit	41J
		Blue[2]	B	**3SB3501-0AA51**	1	1 unit	41J
		White	B	**3SB3501-0AA61**	1	1 unit	41J
		Clear[2]	▶	**3SB3501-0AA71**	1	1 unit	41J
Illuminated pushbutton with raised button							
Illuminated pushbuttons with flat solvent-resistant button[3] (incl. holder for 3 elements)		Red[2]	B	**3SB3501-0AA21-0PA0**	1	1 unit	41J
		Yellow[2]	B	**3SB3501-0AA31-0PA0**	1	1 unit	41J
		Green[2]	B	**3SB3501-0AA41-0PA0**	1	1 unit	41J
		Blue[2]	B	**3SB3501-0AA51-0PA0**	1	1 unit	41J
		White	B	**3SB3501-0AA61-0PA0**	1	1 unit	41J
		Clear[2]	B	**3SB3501-0AA71-0PA0**	1	1 unit	41J
Pushbutton with flat button							
Illuminated pushbuttons with raised button (incl. holder for 3 elements)		Amber	D	**3SB3501-0BA01**	1	1 unit	41J
		Red	B	**3SB3501-0BA21**	1	1 unit	41J
		Yellow	B	**3SB3501-0BA31**	1	1 unit	41J
		Green	B	**3SB3501-0BA41**	1	1 unit	41J
		Blue	B	**3SB3501-0BA51**	1	1 unit	41J
		Clear	B	**3SB3501-0BA71**	1	1 unit	41J
Pushbuttons with flat button, latching, unlatches by pressing again		Black	B	**3SB3500-0DA11**	1	1 unit	41J
		Red	B	**3SB3500-0DA21**	1	1 unit	41J
		Yellow	B	**3SB3500-0DA31**	1	1 unit	41J
		Green	B	**3SB3500-0DA41**	1	1 unit	41J
		Blue	B	**3SB3500-0DA51**	1	1 unit	41J
		White	B	**3SB3500-0DA61**	1	1 unit	41J
		Gray	D	**3SB3500-0DB51**	1	1 unit	41J
Illuminated pushbuttons with flat button, latching, unlatches by pressing again (incl. holder for 3 elements)		Amber[2]	D	**3SB3501-0DA01**	1	1 unit	41J
		Red[2]	B	**3SB3501-0DA21**	1	1 unit	41J
		Yellow[2]	B	**3SB3501-0DA31**	1	1 unit	41J
		Green[2]	B	**3SB3501-0DA41**	1	1 unit	41J
		Blue[2]	B	**3SB3501-0DA51**	1	1 unit	41J
		White	B	**3SB3501-0DA61**	1	1 unit	41J
		Clear[2]	B	**3SB3501-0DA71**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

3) Not suitable for laser inscription.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Metal, Round, 22 mm

Actuators and indicators

Mushroom pushbutton, Ø 30 mm

Mushroom pushbutton, Ø 40 mm

Illuminated mushroom pushbutton, Ø 60 mm

Push-pull button, Ø 30 mm

Push-pull button, Ø 40 mm

Push-pull button, Ø 60 mm, can be illuminated

Version	Color of handle	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
Mushroom pushbuttons with holder[1]						
Mushroom pushbuttons, Ø 30 mm	Black	B	**3SB3500-1DA11**	1	1 unit	41J
	Red	B	**3SB3500-1DA21**	1	1 unit	41J
	Yellow	B	**3SB3500-1DA31**	1	1 unit	41J
	Green	B	**3SB3500-1DA41**	1	1 unit	41J
Mushroom pushbuttons, Ø 40 mm	Black	B	**3SB3500-1GA11**	1	1 unit	41J
	Red	B	**3SB3500-1GA21**	1	1 unit	41J
	Yellow	B	**3SB3500-1GA31**	1	1 unit	41J
	Green	B	**3SB3500-1GA41**	1	1 unit	41J
Mushroom pushbuttons, Ø 60 mm	Black	B	**3SB3500-1QA11**	1	1 unit	41J
	Red	B	**3SB3500-1QA21**	1	1 unit	41J
	Yellow	B	**3SB3500-1QA31**	1	1 unit	41J
	Green	B	**3SB3500-1QA41**	1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 30 mm (incl. holder for 3 elements)	Amber	B	**3SB3501-1DA01**	1	1 unit	41J
	Yellow	B	**3SB3501-1DA31**	1	1 unit	41J
	Green	B	**3SB3501-1DA41**	1	1 unit	41J
	White	B	**3SB3501-1DA61**	1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 40 mm (incl. holder for 3 elements)	Amber	B	**3SB3501-1GA01**	1	1 unit	41J
	Yellow	B	**3SB3501-1GA31**	1	1 unit	41J
	Green	B	**3SB3501-1GA41**	1	1 unit	41J
	White	B	**3SB3501-1GA61**	1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 60 mm (incl. holder for 3 elements)	Amber	B	**3SB3501-1QA01**	1	1 unit	41J
	Yellow	B	**3SB3501-1QA31**	1	1 unit	41J
	Green	B	**3SB3501-1QA41**	1	1 unit	41J
	White	B	**3SB3501-1QA61**	1	1 unit	41J
Push-pull buttons, Ø 30 mm, latching, pull to unlatch	Black	B	**3SB3500-1EA11**	1	1 unit	41J
	Red	B	**3SB3500-1EA21**	1	1 unit	41J
Push-pull buttons, Ø 40 mm, latching, pull to unlatch	Black	B	**3SB3500-1CA11**	1	1 unit	41J
	Red	B	**3SB3500-1CA21**	1	1 unit	41J
	Yellow	B	**3SB3500-1CA31**	1	1 unit	41J
	Green	C	**3SB3500-1CA41**	1	1 unit	41J
Push-pull buttons, Ø 60 mm, latching, pull to unlatch	Black	B	**3SB3500-1RA11**	1	1 unit	41J
	Red	B	**3SB3500-1RA21**	1	1 unit	41J
Push-pull buttons, Ø 30 mm, latching, pull to unlatch, **can be illuminated,** (incl. holder for 3 elements)	Amber	B	**3SB3501-1EA01**	1	1 unit	41J
	Red	B	**3SB3501-1EA21**	1	1 unit	41J
	Yellow	B	**3SB3501-1EA31**	1	1 unit	41J
	Green	B	**3SB3501-1EA41**	1	1 unit	41J
	Blue	B	**3SB3501-1EA51**	1	1 unit	41J
	Clear	B	**3SB3501-1EA71**	1	1 unit	41J
Push-pull buttons, Ø 40 mm, latching, pull to unlatch, **can be illuminated,** (incl. holder for 3 elements)	Amber	C	**3SB3501-1CA01**	1	1 unit	41J
	Red	B	**3SB3501-1CA21**	1	1 unit	41J
	Yellow	B	**3SB3501-1CA31**	1	1 unit	41J
	Green	B	**3SB3501-1CA41**	1	1 unit	41J
	Blue	B	**3SB3501-1CA51**	1	1 unit	41J
	Clear	B	**3SB3501-1CA71**	1	1 unit	41J
Push-pull buttons, Ø 60 mm, latching, pull to unlatch, **can be illuminated,** (incl. holder for 3 elements)	Amber	C	**3SB3501-1RA01**	1	1 unit	41J
	Red	B	**3SB3501-1RA21**	1	1 unit	41J
	Yellow	B	**3SB3501-1RA31**	1	1 unit	41J
	Green	C	**3SB3501-1RA41**	1	1 unit	41J
	Blue	C	**3SB3501-1RA51**	1	1 unit	41J
	Clear	D	**3SB3501-1RA71**	1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

[1] Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Version Illumination	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 2 switch positions								
Selector switch, 2 switch positions, standard version, 90°								
Switching sequence O-I, 90° operating angle, latching	**Non-illuminated, standard version**[1]	Black	▶	**3SB3500-2HA11**		1	1 unit	41J
		Red	A	**3SB3500-2HA21**		1	1 unit	41J
		Green	B	**3SB3500-2HA41**		1	1 unit	41J
		White	B	**3SB3500-2HA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob[1]	Black	B	**3SB3500-2HA11-0PA0**		1	1 unit	41J
		Red	B	**3SB3500-2HA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3500-2HA41-0PA0**		1	1 unit	41J
	Illuminated, standard version[1], (incl. holder for 3 elements)	Amber	C	**3SB3501-2HA01**		1	1 unit	41J
		Red	C	**3SB3501-2HA21**		1	1 unit	41J
		Yellow	C	**3SB3501-2HA31**		1	1 unit	41J
		Green	C	**3SB3501-2HA41**		1	1 unit	41J
		Blue	C	**3SB3501-2HA51**		1	1 unit	41J
		Clear	B	**3SB3501-2HA71**		1	1 unit	41J
Selector switch, 2 switch positions, standard version, 50°								
Switching sequence O-I, 50° operating angle, latching	**Non-illuminated, standard version**[1]	Black	▶	**3SB3500-2KA11**		1	1 unit	41J
		Red	B	**3SB3500-2KA21**		1	1 unit	41J
		Green	B	**3SB3500-2KA41**		1	1 unit	41J
		White	B	**3SB3500-2KA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob[1]	Black	B	**3SB3500-2KA11-0PA0**		1	1 unit	41J
		Red	D	**3SB3500-2KA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3500-2KA41-0PA0**		1	1 unit	41J
	Illuminated, standard version[1], (incl. holder for 3 elements)	Amber	D	**3SB3501-2KA01**		1	1 unit	41J
		Red	B	**3SB3501-2KA21**		1	1 unit	41J
		Yellow	B	**3SB3501-2KA31**		1	1 unit	41J
		Green	B	**3SB3501-2KA41**		1	1 unit	41J
		Blue	B	**3SB3501-2KA51**		1	1 unit	41J
		Clear	B	**3SB3501-2KA71**		1	1 unit	41J
Selector switch, 2 switch positions, heavy-duty version								
	Illuminated, with solvent-resistant knob[1] (incl. holder for 3 elements)	Red	D	**3SB3501-2KA21-0PA0**		1	1 unit	41J
		Green	D	**3SB3501-2KA41-0PA0**		1	1 unit	41J
		Blue	D	**3SB3501-2KA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB3501-2KA71-0PA0**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	C	**3SB3500-2PA11**		1	1 unit	41J
		Red	D	**3SB3500-2PA21**		1	1 unit	41J
		Green	D	**3SB3500-2PA41**		1	1 unit	41J
		White	D	**3SB3500-2PA61**		1	1 unit	41J
	Illuminated, heavy-duty version, (incl. holder for 3 elements)	Amber	D	**3SB3501-2PA01**		1	1 unit	41J
		Red	D	**3SB3501-2PA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2PA31**		1	1 unit	41J
		Green	D	**3SB3501-2PA41**		1	1 unit	41J
		Blue	D	**3SB3501-2PA51**		1	1 unit	41J
		Clear	D	**3SB3501-2PA71**		1	1 unit	41J
Selector switch, 2 switch positions, long handle								
	Non-illuminated, long handle	Black	D	**3SB3500-3PA11**		1	1 unit	41J
		Red	D	**3SB3500-3PA21**		1	1 unit	41J
		Green	D	**3SB3500-3PA41**		1	1 unit	41J
		White	D	**3SB3500-3PA61**		1	1 unit	41J
	Illuminated, long handle, (incl. holder for 3 elements)	Red	D	**3SB3501-3PA21**		1	1 unit	41J
		Yellow	D	**3SB3501-3PA31**		1	1 unit	41J
		Green	D	**3SB3501-3PA41**		1	1 unit	41J
		Blue	D	**3SB3501-3PA51**		1	1 unit	41J
		Clear	D	**3SB3501-3PA71**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators

[1] Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

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Actuators and indicators

Version	Version Illumination	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 2 switch positions								
Selector switch, 2 switch positions, standard version								
Switching sequence O-I, 50° operating angle, momentary contact type	**Non-illuminated, standard version** [1]	Black	▶	**3SB3500-2LA11**		1	1 unit	41J
		Red	B	**3SB3500-2LA21**		1	1 unit	41J
		Green	B	**3SB3500-2LA41**		1	1 unit	41J
		White	B	**3SB3500-2LA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob [1]	Black	B	**3SB3500-2LA11-0PA0**		1	1 unit	41J
		Red	B	**3SB3500-2LA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3500-2LA41-0PA0**		1	1 unit	41J
	Illuminated, standard version [1], (incl. holder for 3 elements)	Amber	D	**3SB3501-2LA01**		1	1 unit	41J
		Red	B	**3SB3501-2LA21**		1	1 unit	41J
		Yellow	B	**3SB3501-2LA31**		1	1 unit	41J
		Green	B	**3SB3501-2LA41**		1	1 unit	41J
		Blue	B	**3SB3501-2LA51**		1	1 unit	41J
		Clear	B	**3SB3501-2LA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob [1] (incl. holder for 3 elements)	Red	D	**3SB3501-2LA21-0PA0**		1	1 unit	41J
		Green	D	**3SB3501-2LA41-0PA0**		1	1 unit	41J
		Blue	D	**3SB3501-2LA51-0PA0**		1	1 unit	41J
		Clear	B	**3SB3501-2LA71-0PA0**		1	1 unit	41J
Selector switch, 2 switch positions, heavy-duty version	**Non-illuminated, heavy-duty version**	Black	D	**3SB3500-2QA11**		1	1 unit	41J
		Red	D	**3SB3500-2QA21**		1	1 unit	41J
		Green	D	**3SB3500-2QA41**		1	1 unit	41J
		White	D	**3SB3500-2QA61**		1	1 unit	41J
	Illuminated, heavy-duty version, (incl. holder for 3 elements)	Amber	D	**3SB3501-2QA01**		1	1 unit	41J
		Red	D	**3SB3501-2QA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2QA31**		1	1 unit	41J
		Green	D	**3SB3501-2QA41**		1	1 unit	41J
		Blue	D	**3SB3501-2QA51**		1	1 unit	41J
		Clear	D	**3SB3501-2QA71**		1	1 unit	41J
Selector switch, 2 switch positions, long handle	**Non-illuminated, long handle**	Black	D	**3SB3500-3QA11**		1	1 unit	41J
		Red	D	**3SB3500-3QA21**		1	1 unit	41J
		Green	D	**3SB3500-3QA41**		1	1 unit	41J
	Illuminated, long handle, (incl. holder for 3 elements)	Red	D	**3SB3501-3QA21**		1	1 unit	41J
		Yellow	D	**3SB3501-3QA31**		1	1 unit	41J
		Green	D	**3SB3501-3QA41**		1	1 unit	41J
		Blue	D	**3SB3501-3QA51**		1	1 unit	41J
		Clear	D	**3SB3501-3QA71**		1	1 unit	41J

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[1] Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Version Illumination	Color of handle	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 3 switch positions								
Switching sequence I-O-II, 2 x 50° operating angle, latching	**Non-illuminated, standard version** [1]	Black	▶	**3SB3500-2DA11**		1	1 unit	41J
		Red	B	**3SB3500-2DA21**		1	1 unit	41J
		Green	B	**3SB3500-2DA41**		1	1 unit	41J
		White	B	**3SB3500-2DA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob [1]	Black	B	**3SB3500-2DA11-0PA0**		1	1 unit	41J
		Red	C	**3SB3500-2DA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3500-2DA41-0PA0**		1	1 unit	41J
	Illuminated, standard version [1] (incl. holder for 3 elements)	Amber	D	**3SB3501-2DA01**		1	1 unit	41J
		Red	B	**3SB3501-2DA21**		1	1 unit	41J
		Yellow	B	**3SB3501-2DA31**		1	1 unit	41J
		Green	B	**3SB3501-2DA41**		1	1 unit	41J
		Blue	B	**3SB3501-2DA51**		1	1 unit	41J
		Clear	B	**3SB3501-2DA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob [1] (incl. holder for 3 elements)	Red	B	**3SB3501-2DA21-0PA0**		1	1 unit	41J
		Green	D	**3SB3501-2DA41-0PA0**		1	1 unit	41J
		Blue	B	**3SB3501-2DA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB3501-2DA71-0PA0**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	C	**3SB3500-2SA11**		1	1 unit	41J
		Red	D	**3SB3500-2SA21**		1	1 unit	41J
		Green	D	**3SB3500-2SA41**		1	1 unit	41J
		White	D	**3SB3500-2SA61**		1	1 unit	41J
	Illuminated, heavy-duty version, (incl. holder for 3 elements)	Amber	D	**3SB3501-2SA01**		1	1 unit	41J
		Red	D	**3SB3501-2SA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2SA31**		1	1 unit	41J
		Green	D	**3SB3501-2SA41**		1	1 unit	41J
		Blue	D	**3SB3501-2SA51**		1	1 unit	41J
		Clear	D	**3SB3501-2SA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB3500-3SA11**		1	1 unit	41J
		Red	D	**3SB3500-3SA21**		1	1 unit	41J
		Green	D	**3SB3500-3SA41**		1	1 unit	41J
		White	D	**3SB3500-3SA61**		1	1 unit	41J
	Illuminated, long handle, (incl. holder for 3 elements)	Red	D	**3SB3501-3SA21**		1	1 unit	41J
		Yellow	D	**3SB3501-3SA31**		1	1 unit	41J
		Green	D	**3SB3501-3SA41**		1	1 unit	41J
		Blue	D	**3SB3501-3SA51**		1	1 unit	41J
		Clear	D	**3SB3501-3SA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	**Non-illuminated, standard version** [1]	Black	▶	**3SB3500-2EA11**		1	1 unit	41J
		Red	B	**3SB3500-2EA21**		1	1 unit	41J
		Green	B	**3SB3500-2EA41**		1	1 unit	41J
		White	B	**3SB3500-2EA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob [1]	Black	B	**3SB3500-2EA11-0PA0**		1	1 unit	41J
		Red	B	**3SB3500-2EA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3500-2EA41-0PA0**		1	1 unit	41J
	Illuminated, standard version [1], (incl. holder for 3 elements)	Amber	D	**3SB3501-2EA01**		1	1 unit	41J
		Red	B	**3SB3501-2EA21**		1	1 unit	41J
		Yellow	B	**3SB3501-2EA31**		1	1 unit	41J
		Green	B	**3SB3501-2EA41**		1	1 unit	41J
		Blue	B	**3SB3501-2EA51**		1	1 unit	41J
		Clear	B	**3SB3501-2EA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob [1] (incl. holder for 3 elements)	Red	B	**3SB3501-2EA21-0PA0**		1	1 unit	41J
		Green	B	**3SB3501-2EA41-0PA0**		1	1 unit	41J
		Blue	B	**3SB3501-2EA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB3501-2EA71-0PA0**		1	1 unit	41J

Selector switch, 3 switch positions, standard version

Selector switch, 3 switch positions, heavy-duty version

Selector switch, 3 switch positions, long handle

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[1] Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

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Actuators and indicators

Selector switch, 3 switch positions, standard version

Selector switch, 3 switch positions, heavy-duty version

Selector switch, 3 switch positions, long handle

Version	Version Illumination	Color of handle	DT	Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 3 switch positions								
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	**Non-illuminated, heavy-duty version**	Black	C	**3SB3500-2TA11**		1	1 unit	41J
		Red	D	**3SB3500-2TA21**		1	1 unit	41J
		Green	D	**3SB3500-2TA41**		1	1 unit	41J
		White	D	**3SB3500-2TA61**		1	1 unit	41J
	Illuminated, heavy-duty version, (incl. holder for 3 elements)	Amber	D	**3SB3501-2TA01**		1	1 unit	41J
		Red	D	**3SB3501-2TA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2TA31**		1	1 unit	41J
		Green	D	**3SB3501-2TA41**		1	1 unit	41J
		Blue	D	**3SB3501-2TA51**		1	1 unit	41J
		Clear	D	**3SB3501-2TA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB3500-3TA11**		1	1 unit	41J
		Red	D	**3SB3500-3TA21**		1	1 unit	41J
		Green	D	**3SB3500-3TA41**		1	1 unit	41J
		White	D	**3SB3500-3TA61**		1	1 unit	41J
	Illuminated, long handle, (incl. holder for 3 elements)	Red	D	**3SB3501-3TA21**		1	1 unit	41J
		Yellow	D	**3SB3501-3TA31**		1	1 unit	41J
		Green	D	**3SB3501-3TA41**		1	1 unit	41J
		Blue	D	**3SB3501-3TA51**		1	1 unit	41J
		Clear	D	**3SB3501-3TA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	**Non-illuminated, standard version**[1]	Black	B	**3SB3500-2GA11**		1	1 unit	41J
		Red	B	**3SB3500-2GA21**		1	1 unit	41J
		Green	B	**3SB3500-2GA41**		1	1 unit	41J
		White	B	**3SB3500-2GA61**		1	1 unit	41J
	Illuminated, standard version[1], (incl. holder for 3 elements)	Amber	D	**3SB3501-2GA01**		1	1 unit	41J
		Red	D	**3SB3501-2GA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2GA31**		1	1 unit	41J
		Green	B	**3SB3501-2GA41**		1	1 unit	41J
		Blue	D	**3SB3501-2GA51**		1	1 unit	41J
		Clear	D	**3SB3501-2GA71**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	D	**3SB3500-2VA11**		1	1 unit	41J
		Red	D	**3SB3500-2VA21**		1	1 unit	41J
		Green	D	**3SB3500-2VA41**		1	1 unit	41J
		White	D	**3SB3500-2VA61**		1	1 unit	41J
	Illuminated, heavy-duty version	Amber	D	**3SB3501-2VA01**		1	1 unit	41J
		Red	D	**3SB3501-2VA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2VA31**		1	1 unit	41J
		Green	D	**3SB3501-2VA41**		1	1 unit	41J
		Blue	D	**3SB3501-2VA51**		1	1 unit	41J
		Clear	D	**3SB3501-2VA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB3500-3VA11**		1	1 unit	41J
		Red	D	**3SB3500-3VA21**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	**Non-illuminated, standard version**[1]	Black	B	**3SB3500-2FA11**		1	1 unit	41J
		Red	D	**3SB3500-2FA21**		1	1 unit	41J
		Green	B	**3SB3500-2FA41**		1	1 unit	41J
		White	B	**3SB3500-2FA61**		1	1 unit	41J
	Illuminated, standard version[1], (incl. holder for 3 elements)	Amber	D	**3SB3501-2FA01**		1	1 unit	41J
		Red	D	**3SB3501-2FA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2FA31**		1	1 unit	41J
		Green	B	**3SB3501-2FA41**		1	1 unit	41J
		Blue	D	**3SB3501-2FA51**		1	1 unit	41J
		Clear	B	**3SB3501-2FA71**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	D	**3SB3500-2UA11**		1	1 unit	41J
		Red	D	**3SB3500-2UA21**		1	1 unit	41J
		Green	D	**3SB3500-2UA41**		1	1 unit	41J
		White	D	**3SB3500-2UA61**		1	1 unit	41J
	Illuminated, heavy-duty version	Amber	D	**3SB3501-2UA01**		1	1 unit	41J
		Red	D	**3SB3501-2UA21**		1	1 unit	41J
		Yellow	D	**3SB3501-2UA31**		1	1 unit	41J
		Green	D	**3SB3501-2UA41**		1	1 unit	41J
		Blue	D	**3SB3501-2UA51**		1	1 unit	41J
		Clear	D	**3SB3501-2UA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB3500-3UA11**		1	1 unit	41J
		Red	D	**3SB3500-3UA21**		1	1 unit	41J
		Green	D	**3SB3500-3UA41**		1	1 unit	41J
		White	D	**3SB3500-3UA61**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

[1] Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Lock version: Type	Lock version: Lock No./color	Lock version: Key removal position	DT	Configurator: Article No.	Configurator: Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	▶	**3SB3500-4AD11**		1	1 unit	41J
			O	▶	**3SB3500-4AD01**		1	1 unit	41J
			I	B	**3SB3500-4AD21**		1	1 unit	41J
	CES	SSG 10	O+I	▶	**3SB3500-4LD11**		1	1 unit	41J
			O	▶	**3SB3500-4LD01**		1	1 unit	41J
			I	B	**3SB3500-4LD21**		1	1 unit	41J
		LSG 1	O+I	B	**3SB3500-4LF01**		1	1 unit	41J
			O	B	**3SB3500-4LF11**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB3500-5AD11**		1	1 unit	41J
			O	B	**3SB3500-5AD01**		1	1 unit	41J
		E1 for VW[2]	O	B	**3SB3500-5AE11**		1	1 unit	41J
		E2 for VW[2]	O+I	B	**3SB3500-5AE21**		1	1 unit	41J
			O	B	**3SB3500-5AE31**		1	1 unit	41J
		E7 for VW[2]	O+I	B	**3SB3500-5AE41**		1	1 unit	41J
			O	B	**3SB3500-5AE51**		1	1 unit	41J
		E9 for VW[2]	O	B	**3SB3500-5AE71**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O+I	B	**3SB3500-3AG11**		1	1 unit	41J
			O	B	**3SB3500-3AG01**		1	1 unit	41J
			I	B	**3SB3500-3AG21**		1	1 unit	41J
		73037 Red	O+I	B	**3SB3500-3AH11**		1	1 unit	41J
			O	B	**3SB3500-3AH01**		1	1 unit	41J
			I	B	**3SB3500-3AH21**		1	1 unit	41J
		73034 Black	O+I	B	**3SB3500-3AJ11**		1	1 unit	41J
			O	B	**3SB3500-3AJ01**		1	1 unit	41J
			I	B	**3SB3500-3AJ21**		1	1 unit	41J
		73033 Yellow	O+I	B	**3SB3500-3AK11**		1	1 unit	41J
			O	B	**3SB3500-3AK01**		1	1 unit	41J
			I	B	**3SB3500-3AK21**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	RONIS	SB 30	O	▶	**3SB3500-4BD01**		1	1 unit	41J
	CES	SSG 10	O	▶	**3SB3500-4MD01**		1	1 unit	41J
		LSG 1	O	B	**3SB3500-4MF11**		1	1 unit	41J
	BKS	S1	O	B	**3SB3500-5BD01**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O	B	**3SB3500-3BG01**		1	1 unit	41J
		73037 Red	O	B	**3SB3500-3BH01**		1	1 unit	41J
		73034 Black	O	B	**3SB3500-3BJ01**		1	1 unit	41J
		73033 Yellow	O	B	**3SB3500-3BK01**		1	1 unit	41J

RONIS key-operated switch

CES key-operated switch

BKS key-operated switch

O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators

BKS and CES special locks see page 13/70.

1) Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Keys are not included in scope of supply.

3) According to FIAT standards; also available for other users.

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Actuators and indicators

Version	Lock version: Type	Lock version: Lock No./color	Lock version: Key removal position	DT	Configurator: Article No.	Configurator: Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching	RONIS	SB 30	I+O+II	B	**3SB3500-4DD11**		1	1 unit	41J
			O	B	**3SB3500-4DD01**		1	1 unit	41J
			I+II	B	**3SB3500-4DD41**		1	1 unit	41J
			I	B	**3SB3500-4DD21**		1	1 unit	41J
			II	B	**3SB3500-4DD31**		1	1 unit	41J
			O+I	B	**3SB3500-4DD51**		1	1 unit	41J
	CES	SSG 10	I+O+II	B	**3SB3500-4PD11**		1	1 unit	41J
			O	B	**3SB3500-4PD01**		1	1 unit	41J
			I+II	B	**3SB3500-4PD41**		1	1 unit	41J
			I	B	**3SB3500-4PD21**		1	1 unit	41J
			II	B	**3SB3500-4PD31**		1	1 unit	41J
	BKS	S1	O	C	**3SB3500-5DD01**		1	1 unit	41J
			I+II	C	**3SB3500-5DD41**		1	1 unit	41J
	O.M.R.[2]	73038 Light blue	I+O+II	B	**3SB3500-3DG11**		1	1 unit	41J
		73037 Red	I+O+II	B	**3SB3500-3DH11**		1	1 unit	41J
		73034 Black	I+O+II	B	**3SB3500-3DJ11**		1	1 unit	41J
			O	B	**3SB3500-3DJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	RONIS	SB 30	O	B	**3SB3500-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB3500-4QD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB3500-5ED01**		1	1 unit	41J
	O.M.R.	73034 Black	O	B	**3SB3500-3EJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	RONIS	SB 30	O+II	B	**3SB3500-4GD61**		1	1 unit	41J
			O	B	**3SB3500-4GD01**		1	1 unit	41J
	CES	SSG 10	O+II	B	**3SB3500-4SD61**		1	1 unit	41J
			O	B	**3SB3500-4SD01**		1	1 unit	41J
			II	B	**3SB3500-4SD31**		1	1 unit	41J
	BKS	S1	O+II	C	**3SB3500-5GD61**		1	1 unit	41J
			O	C	**3SB3500-5GD01**		1	1 unit	41J
	O.M.R.	73033 Yellow	II	C	**3SB3500-3GK31**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	RONIS	SB 30	O+I	B	**3SB3500-4FD51**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB3500-4RD51**		1	1 unit	41J
			O	B	**3SB3500-4RD01**		1	1 unit	41J
			I	B	**3SB3500-4RD21**		1	1 unit	41J
	BKS	S1	O+I	C	**3SB3500-5FD51**		1	1 unit	41J
			O	B	**3SB3500-5FD01**		1	1 unit	41J
			I	B	**3SB3500-5FD21**		1	1 unit	41J

RONIS key-operated switch

CES key-operated switch

BKS key-operated switch

O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators

BKS and CES special locks see page 13/70.

1) Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) According to FIAT standards; also available for other users.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Color of handle	Appro-val	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-5 with holder[1)2)], can also be used with safety relays[3)]								
Mushroom diameter 32 mm								
EMERGENCY-STOP mushroom pushbuttons, Ø 32 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism								
• Standard version			B	**3SB3500-1FA20**		1	1 unit	41J
• Solvent-resistant[4)]			B	**3SB3500-1FA20-0PA0**		1	1 unit	41J
Mushroom diameter 40 mm, with rotate-to-unlatch mechanism with switch position indicator								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red							
• Without switch position indicator			▶	**3SB3500-1HA20**		1	1 unit	41J
• Without switch position indicator, solvent-resistant[4)]			B	**3SB3500-1HA20-0PA0**		1	1 unit	41J
• With mechanical switch position indicator			▶	**3SB3500-1HA26**		1	1 unit	41J
Mushroom pushbuttons, Ø 40 mm, with positive latching acc. to ISO 13850, with rotate-to-unlatch mechanism	Black		B	**3SB3500-1HA10**		1	1 unit	41J
Mushroom diameter 40 mm, pull-to-unlatch mechanism								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching according to ISO 13850, with pull-to-unlatch mechanism[4)]	Red		B	**3SB3500-1TA20**		1	1 unit	41J
Mushroom diameter 60 mm								
EMERGENCY-STOP mushroom pushbuttons, Ø 60 mm With positive latching according to ISO 13850, with rotate-to-unlatch mechanism[4)]	Red		B	**3SB3500-1AA20**		1	1 unit	41J
Mushroom diameter 40 mm, with RONIS key-oper. switch								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS key-operated switch (with 2 keys), lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3500-1BA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES key-operated switch, (with 2 keys), lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3500-1KA20**		1	1 unit	41J
Mushroom diameter 40 mm, with CES key-operated switch								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS key-operated switch, (with 2 keys), lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB3500-1LA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. key-operated switch (with 2 keys), lock No. 73037, with positive latching according to ISO 13850, unlocking only using key	Red		B	**3SB3500-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Yellow backing plates must be ordered separately, see "Accessories" on page 13/85.

3) Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

4) Not suitable for laser inscription.

BKS and CES special locks see page 13/70.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Metal, Round, 22 mm

Actuators and indicators

Version	Color of lens	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
			Article No. / Price per PU			
Signaling elements with holder[1]						
Indicator lights with lens with concentric rings[2]	Amber	B	**3SB3501-6BA00**	1	1 unit	41J
	Red	▶	**3SB3501-6BA20**	1	1 unit	41J
	Yellow	B	**3SB3501-6BA30**	1	1 unit	41J
	Green	▶	**3SB3501-6BA40**	1	1 unit	41J
	Blue	B	**3SB3501-6BA50**	1	1 unit	41J
	White	B	**3SB3501-6BA60**	1	1 unit	41J
	Clear	▶	**3SB3501-6BA70**	1	1 unit	41J
Indicator lights with smooth lens[2]	Amber	B	**3SB3501-6AA00**	1	1 unit	41J
	Red	B	**3SB3501-6AA20**	1	1 unit	41J
	Yellow	B	**3SB3501-6AA30**	1	1 unit	41J
	Green	B	**3SB3501-6AA40**	1	1 unit	41J
	Blue	B	**3SB3501-6AA50**	1	1 unit	41J
	White	▶	**3SB3501-6AA60**	1	1 unit	41J
	Clear	B	**3SB3501-6AA70**	1	1 unit	41J
Indicator lights with smooth solvent-resistant lens[2][3]	Red	B	**3SB3501-6AA20-0PA0**	1	1 unit	41J
	Yellow	B	**3SB3501-6AA30-0PA0**	1	1 unit	41J
	Green	B	**3SB3501-6AA40-0PA0**	1	1 unit	41J
	Blue	B	**3SB3501-6AA50-0PA0**	1	1 unit	41J
	White	B	**3SB3501-6AA60-0PA0**	1	1 unit	41J
	Clear	B	**3SB3501-6AA70-0PA0**	1	1 unit	41J

Indicator light with smooth lens

For online configurator see www.siemens.com/sirius/configurators

1) Also available without holder. Supplement Article No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription by inserting a label is not possible.

3) Not suitable for laser inscription.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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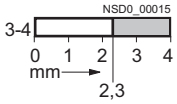
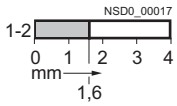
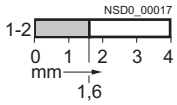
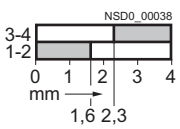
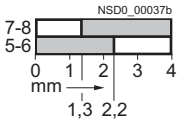
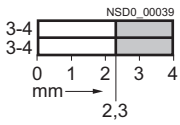
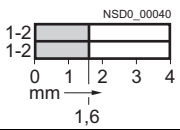
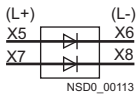
Selection and ordering data

Version	Graphic symbols	Operating travel ▭ Contact closed ▭ Contact open	DT	Screw terminals ⊕ Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for front plate mounting								
Contact blocks with one contact								
• Mounting depth 50 mm								
1 NO			▶	**3SB3400-0B**		1	1 unit	41J
1 NO with gold-plated contacts			C	**3SB3400-0BA**		1	1 unit	41J
1 NC ➔			▶	**3SB3400-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔			C	**3SB3400-0CA**		1	1 unit	41J
• Mounting depth 63 mm								
1 NC with installation monitoring contact[1] ➔			B	**3SB3400-0M**		1	1 unit	41J
Contact block with 2 contacts Mounting depth 63 mm (including unit labeling plate)								
1 NO + 1 NC ➔			▶	**3SB3400-0A**		1	1 unit	41J
1 NO + 1 NC with gold-plated contacts ➔			B	**3SB3400-0AA**		1	1 unit	41J
1 NO + 1 NC with dust protection[2] ➔			D	**3SB3400-0N**		1	1 unit	41J
1 NO leading + 1 NC lagging			B	**3SB3400-0H**		1	1 unit	41J
1 NO leading + 1 NC lagging with gold-plated contacts			D	**3SB3400-0HA**		1	1 unit	41J
2 NO			B	**3SB3400-0D**		1	1 unit	41J
2 NO with gold-plated contacts			B	**3SB3400-0DA**		1	1 unit	41J
2 NO with dust protection[2]			C	**3SB3400-0P**		1	1 unit	41J
2 NC ➔			B	**3SB3400-0E**		1	1 unit	41J
2 NC with gold-plated contacts ➔			B	**3SB3400-0EA**		1	1 unit	41J
2 NC with dust protection[2] ➔			C	**3SB3400-0Q**		1	1 unit	41J
Blocks with 2 diodes type 1N 4007 Mounting depth 63 mm								
U_{RMS} = max. 250 V I_{FAV} = 0.8 A at T_u = 60 °C			B	**3SB3400-2A**		1	1 unit	41J

3SB3400-0B

3SB3400-0M

3SB3400-0A

3SB3400-2A

➔ Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3SK1, 3TK28 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

1) The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped onto the actuator. Unsuitable for mounting in 3SB38 enclosures.

2) With 3SB3901-0CH dust protection shield (see page 13/85).

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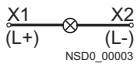
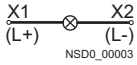
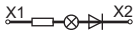
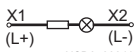
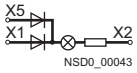
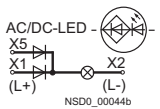
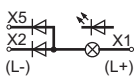
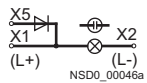
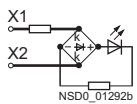
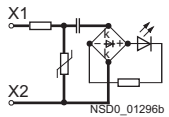
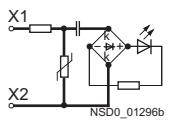
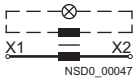
Contact blocks and lampholders

Version	Graphic symbols	Rated voltage V	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for front plate mounting								
BA 9s lampholders, mounting depth 50 mm								
Without lamp	 NSD0_00003	Acc. to lamp	▶	**3SB3400-1A**		1	1 unit	41J
With 24 V incandescent lamp (3SX1344)	 NSD0_00003	24 AC/DC	B	**3SB3400-1D**		1	1 unit	41J
With integrated voltage reducer and with 130 V lamp (3SX1731)[1)2)]	 NSD0_00042	230/240 AC	B	**3SB3400-1C**		1	1 unit	41J
With built-in resistor for longer endurance and with 130 V lamp (3SX1731)[1)3)]	 NSD0_00041	110/130 AC/DC	B	**3SB3400-1B**		1	1 unit	41J
BA 9s lampholders, mounting depth 66 mm, with separate lamp test function[4)]								
With integrated voltage reducer and with 130 V lamp (3SX1731)[1)]	 NSD0_00043	230/240 AC	B	**3SB3400-1F**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for LED lamp, 24/48/230 V AC/DC[5)]	 NSD0_00044b	Acc. to lamp	B	**3SB3400-1G**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for LED lamp, AC or DC	 NSD0_00045	Acc. to lamp	B	**3SB3400-1L**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for glow lamp, AC	 NSD0_00046a	Acc. to lamp	B	**3SB3400-1H**		1	1 unit	41J
Lampholders with integrated LED Mounting depth 50 mm								
Yellow	 NSD0_01292b	24 AC/DC	B	**3SB3400-1PA**		1	1 unit	41J
Red			▶	**3SB3400-1PB**		1	1 unit	41J
Green			▶	**3SB3400-1PC**		1	1 unit	41J
Blue			B	**3SB3400-1PD**		1	1 unit	41J
White			▶	**3SB3400-1PE**		1	1 unit	41J
Yellow	 NSD0_01296b	110 AC	B	**3SB3400-1QA**		1	1 unit	41J
Red			B	**3SB3400-1QB**		1	1 unit	41J
Green			B	**3SB3400-1QC**		1	1 unit	41J
Blue			B	**3SB3400-1QD**		1	1 unit	41J
White			B	**3SB3400-1QE**		1	1 unit	41J
Yellow	 NSD0_01296b	230 AC	B	**3SB3400-1RA**		1	1 unit	41J
Red			▶	**3SB3400-1RB**		1	1 unit	41J
Green			▶	**3SB3400-1RC**		1	1 unit	41J
Blue			B	**3SB3400-1RD**		1	1 unit	41J
White			▶	**3SB3400-1RE**		1	1 unit	41J
Transformers For snapping onto 3SB3400-1A lampholder For incandescent lamp AC, max. 2 W Mounting depth: 97 mm	 NSD0_00047	127 / 24	B	**3SB3400-3A**		1	1 unit	41J
		240 / 24	B	**3SB3400-3C**		1	1 unit	41J
		260 / 24	D	**3SB3400-3E**		1	1 unit	41J
		400 / 24	B	**3SB3400-3F**		1	1 unit	41J
		127 / 6	B	**3SB3400-3M**		1	1 unit	41J
		240 / 6	B	**3SB3400-3P**		1	1 unit	41J
		400 / 6	B	**3SB3400-3S**		1	1 unit	41J
		480 / 6	B	**3SB3400-3U**		1	1 unit	41J
		600 / 6	D	**3SB3400-3W**		1	1 unit	41J

3SB3400-1A

3SB3400-1F

3SB3400-1PA

3SB3400-3.

1) The voltage reducer can only be used with this lamp.
2) Also suitable for LED lamp 230 V AC, 3SB3901-1.F
3) Also suitable for LED lamp 130 V AC, 3SB3901-1.D
4) The lampholder with separate lamp test function can not be installed in an enclosure.
5) Not suitable for LED lamps which are suitable only for AC or DC.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Rated voltage of lamp/ Graphic symbol V	Operating travel/color ▭ Contact closed ▭ Contact open	DT	Spring-type terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for front plate mounting								
Contact blocks with one contact, mounting depth 50 mm								
1 NO		.3 .4	B	**3SB3403-0B**		1	1 unit	41J
1 NO with gold-plated contacts		3-4 NSD0_00015 0 1 2 3 4 mm 2,3	B	**3SB3403-0BA**		1	1 unit	41J
1 NC ➔		.1 .2	B	**3SB3403-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔		1-2 NSD0_00017 0 1 2 3 4 mm 1,6	B	**3SB3403-0CA**		1	1 unit	41J
1 NC with installation monitoring contact[1] ➔ • Mounting depth 63 mm		.1 .2 1-2 NSD0_00017 0 1 2 3 4 mm 1,6	B	**3SB3403-0M**		1	1 unit	41J
Contact blocks with 2 contacts, mounting depth 63 mm								
1 NO + 1 NC ➔		.3 .1 .4 .2	B	**3SB3403-0A**		1	1 unit	41J
1 NO + 1 NC with gold-plated contacts ➔		3-4 1-2 NSD0_00038 0 1 2 3 4 mm 1,6 2,3	B	**3SB3403-0AA**		1	1 unit	41J
1 NO leading + 1 NC lagging		.7 .5 .8 .6	B	**3SB3403-0H**		1	1 unit	41J
1 NO leading + 1 NC lagging with gold-plated contacts		7-8 5-6 NSD0_00037b 0 1 2 3 4 mm 1,3 2,2	C	**3SB3403-0HA**		1	1 unit	41J
2 NO		.3 .3 .4 .4	B	**3SB3403-0D**		1	1 unit	41J
2 NO with gold-plated contacts		3-4 3-4 NSD0_00039 0 1 2 3 4 mm 2,3	D	**3SB3403-0DA**		1	1 unit	41J
2 NC ➔		.1 .1 .2 .2	B	**3SB3403-0E**		1	1 unit	41J
2 NC with gold-plated contacts ➔		1-2 1-2 NSD0_00040 0 1 2 3 4 mm 1,6	D	**3SB3403-0EA**		1	1 unit	41J
BA 9s lampholders, mounting depth 50 mm								
Without lamp[2]	Acc. to lamp X1 (L+) X2 (L-) NSD0_00003		B	**3SB3403-1A**		1	1 unit	41J
With integrated voltage reducer and with 130 V lamp (3SX1731)[2][3]	230/240 V AC X1 X2 NSD0_00042		B	**3SB3403-1C**		1	1 unit	41J
Lampholders with integrated LED Mounting depth 50 mm	24 V AC/DC X1 X2 NSD0_01292b	Yellow	B	**3SB3403-1PA**		1	1 unit	41J
		Red	B	**3SB3403-1PB**		1	1 unit	41J
		Green	B	**3SB3403-1PC**		1	1 unit	41J
		Blue	B	**3SB3403-1PD**		1	1 unit	41J
		White	B	**3SB3403-1PE**		1	1 unit	41J
	110 V AC X1 X2 NSD0_01296b	Yellow	B	**3SB3403-1QA**		1	1 unit	41J
		Red	B	**3SB3403-1QB**		1	1 unit	41J
		Green	B	**3SB3403-1QC**		1	1 unit	41J
		Blue	B	**3SB3403-1QD**		1	1 unit	41J
		White	B	**3SB3403-1QE**		1	1 unit	41J
	230 V AC X1 X2 NSD0_01296b	Yellow	B	**3SB3403-1RA**		1	1 unit	41J
		Red	B	**3SB3403-1RB**		1	1 unit	41J
		Green	B	**3SB3403-1RC**		1	1 unit	41J
		Blue	B	**3SB3403-1RD**		1	1 unit	41J
		White	B	**3SB3403-1RE**		1	1 unit	41J

3SB3403-0B

3SB3403-0M

3SB3403-0A

3SB3403-1C

3SB3403-1PA

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). More explanations see footnote 1) on page 13/65. Unsuitable for mounting in 3SB38 enclosures.

[2] Not suitable for square command devices.

[3] Use these lamps only.

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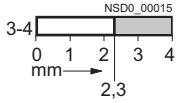
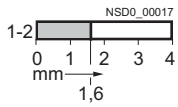
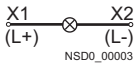
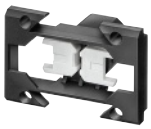
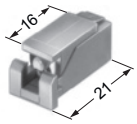
Contact blocks and lampholders

	Version	Graphic symbols	Operating travel ▭ Contact closed ▭ Contact open	DT	Solder pin connections / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for use on printed circuit boards									
3SB3411-0B	**Contact blocks with one contact** Mounting depth 44 mm								
	1 NO			B	**3SB3411-0B**		1	1 unit	41J
	1 NC ➔			B	**3SB3411-0C**		1	1 unit	41J
3SB3411-1A	**Wedge base lampholders** W2 x 4.6d Mounting depth: 44 mm								
	Without lamp			B	**3SB3411-1A**		1	1 unit	41J

➔ Positive opening according to IEC 60947-5-1, Appendix K.

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Holders for 3 contact blocks, for front plate mounting							
3SB3901-0AB	**Holders for pushbuttons and switches**[1] For snapping on 3 blocks (for illuminated pushbuttons and illuminated selector switches the holder is included in the scope of supply)	►	**3SB3901-0AB**		100	20 units	41J
 3SB3901-0AC	**Holders for selector switches, key-operated switches and twin pushbuttons** With pressure plate for actuating the central contact block of three contact blocks[2]	►	**3SB3901-0AC**		100	10 units	41J
Pressure plates for use on printed circuit boards							
3SB3901-0AW	**Pressure plates for selector switches and key-operated switches** For actuating the central contact block of three contact blocks[2]	B	**3SB3901-0AW**		100	10 units	41J
Accessories for printed circuit boards							
 3SB3901-0AA	**Holders for printed circuit boards** For mounting the command devices on the printed circuit board (screw is included in the scope of supply)	B	**3SB3901-0AA**		100	10 units	41J

[1] Holder also for mushroom pushbutton and push-pull button.

[2] The pressure plates can be removed to meet individual requirements.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

EMERGENCY-STOP mushroom pushbutton with F adapter for bus connection

The AS-Interface F adapter is used to connect an EMERGENCY-STOP device according to ISO 13850 from the 3SB3 series to the AS-Interface bus system. The F adapter is suitable for control devices with mounting on front plates.

The F adapter has a safe AS-Interface 2E slave and is snapped from behind onto the EMERGENCY-STOP mushroom pushbutton. In the 2E/1A expanded version, an output is also available for actuating an indicator light with LED.

Depending on the version, screw terminals or spring-type terminals or the insulation piercing method are used for connecting to the AS-Interface bus cable. Addressing is performed using the AS-Interface connection or the integrated addressing socket.

Safety category 4 (SIL 3) is achieved with the adapter.

Selection and ordering data

Version	DT	**Screw terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5402-1AA03**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5402-1AB03**		1	1 unit	42A

3SF5402-1AA03

Version	DT	**Spring-type terminals** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5402-1AA04**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5402-1AB04**		1	1 unit	42A

3SF5402-1AA04

Version	DT	**Insulation piercing method** Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5402-1AA05**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5402-1AB05**		1	1 unit	42A

3SF5402-1AA05

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Special locks

Options

Special locks for key-operated switches

The BKS and CES plastic and metal key-operated switches, round and square versions, can be optionally equipped with special locks.

In this case the Article No. of the matching key-operated switch must be supplemented with **"-Z"**, the matching order code **"Y01"** or **"Y02"** and the required lock number.

Order code	Y01	Y02
In accordance with the table of special locks	No	Yes
Normal delivery time	25 working days	5 working days
Additional price per unit	On request	On request
Ordering example	3SB3000-4LD01-Z Y01 Z = SSG18	3SB3000-4LD01-Z Y02 Z = SSG11

Available special locks with order code **"Y02"**	Article No. with order code
Key-operated switch	
CES SSG 11 to SSG 15	**3SB3...-4LD01-Z Y02** **3SB3...-4LD11-Z Y02** **3SB3...-4LD21-Z Y02** **3SB3...-4MD01-Z Y02** **3SB3...-4PD..-Z Y02** **3SB3...-4QD..-Z Y02** **3SB3...-4RD..-Z Y02** **3SB3...-4SD..-Z Y02**
BKS E1, E2, E7, E9[1)]	**3SB3...-5AD..-Z Y02** **3SB3...-5BD01-Z Y02** **3SB3...-5DD..-Z Y02** **3SB3...-5ED01-Z Y02** **3SB3...-5FD01-Z Y02** **3SB3...-5GD01-Z Y02**
BKS E9[1)]	**3SB3...-5FD51-Z Y02**
EMERGENCY-STOP mushroom pushbuttons	
CES SSP 9	**3SB3...-1KA20-Z Y02**
BKS E2, E7, E9[1)]	**3SB3...-1LA20-Z Y02**

[1)] Delivery of these BKS key-operated switches (locks for VW) without key.

Ordering notes

- For all special locks, an additional price applies.
- The order code **"Y01"** or **"Y02"** must be quoted in accordance with the above table. Automated processing of the order with a defined delivery time can be guaranteed only for correctly submitted orders.
- For applications in which access security is important and several lock numbers are used, we recommend the use of BKS or CES key-operated switches.
- Special locks for VW (E1, E2, ...) will be delivered without keys, all others with 2 keys.

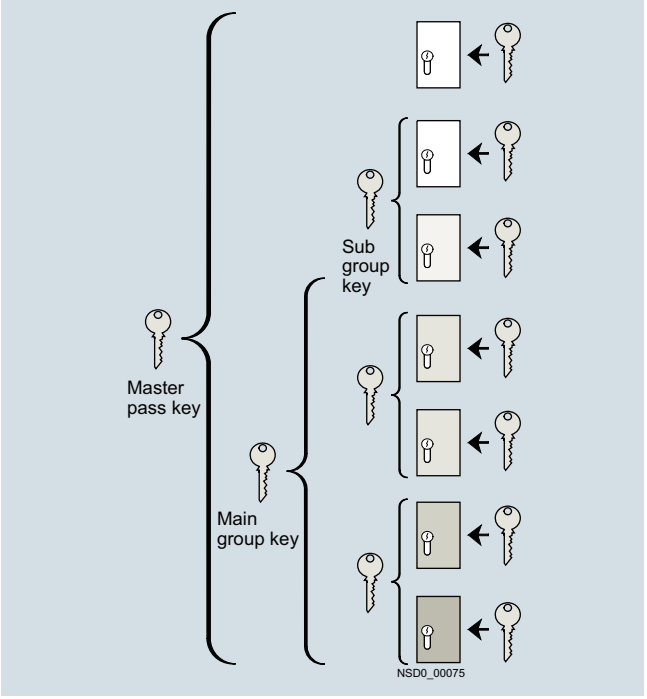
Master and master-pass key systems

The following key systems can be supplied with BKS and CES key-operated switches:

- Central lock systems
- Master key systems
- Central master key systems
- Master-pass key systems

When placing an order you must supplement the Article No. of the matching key-operated switches with **"-Z"** and quote the order code **"Y03"**.

Please enquire for price and delivery time.



Example of master-pass key system

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Overview

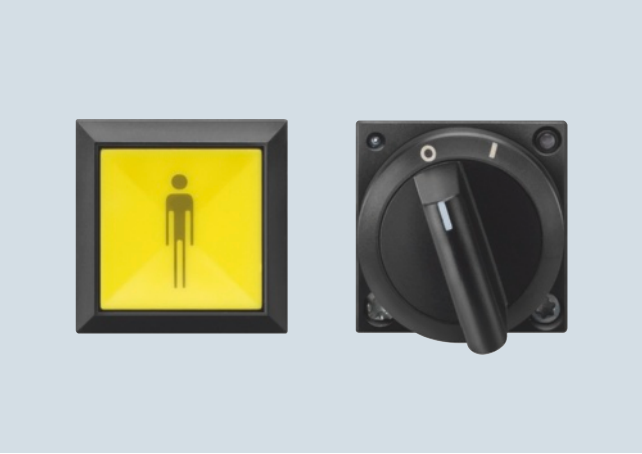
Inscription of actuators and indicators

Actuators and indicators of plastic as well as metal version can be optionally inscribed with a laser.

Pushbutton (metal) with laser inscription

The actuators of the pushbuttons, illuminated pushbuttons, mushroom pushbuttons, illuminated mushroom pushbuttons and twin pushbuttons can be inscribed as well as the lenses of the indicator lights.

Selector switches can be inscribed only if they are made of plastic (only one text line on the front ring).



Pushbutton and selector switch (plastic) with laser inscription

Version

A letter height of 4 mm is used as standard for text inscriptions:

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round buttons and lenses, the possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square buttons and lenses, 10 characters are possible per line.

Ordering notes

When ordering, supplement the Article No. of the actuator or the indicator light with **"–Z"** and an order code:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift out"): **Y10**
- Text in upper case (e.g. "LIFT OUT"): **Y11**
- Text in lower case (e.g. "lift out"): **Y12**
- Text in upper/lower case, all words begin with capital letters (e.g. "Lift Out"): **Y15**
- Symbol with number according to ISO 7000 or IEC 60417: **Y13**
- Any inscription or symbol according to order form supplement: **Y19**

Additional price per unit for Y10 to Y19 on request.

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language (see ordering example 1).

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division.

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example 2 and 3).

For special symbols (order code Y19), a CAD drawing in BMP, GIF, JEPG, PDF, PNG or TIFF format must be submitted. For special inscriptions (order code Y19): document in DOC or XLS format.

E-mail to: sirius-attach.aud@siemens.com

Ordering example 1

A round pushbutton with the inscription "Reset" is required:

3SB3000–0AA41–Z
Y10
Z = Reset (English)

Ordering example 2

A square pushbutton inscribed with symbol No. 5389 according to IEC 60417 is required:

3SB3110–0AA31–Z
Y13
Z = 5389 IEC

Ordering example 3

A round pushbutton inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB3000–0AA41–Z
Y13
Z = 1118 ISO

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Inscriptions

Inscriptions by laser printer

Overview

Label inscriptions

Using the "Label Designer" software, which can be downloaded from the Internet, and the inscription labels for laser inscription you can create your own customized labels with a standard laser printer.

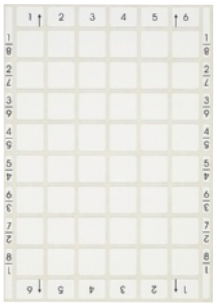
The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holders (see Name plates). Round labels are provided for inserting in illuminated pushbuttons and switches.

The labels are suitable for printing with one to three lines of text or symbols.

For applications with more exacting requirements we recommend factory-printed inscription labels and insert labels (laser-printed or engraved depending on the type).

For the "Label Designer" software see www.siemens.com/sirius-label-designer

Selection and ordering data

Version	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Labels for printing							
 **Insert labels** for inserting in round illuminated pushbuttons and illuminated switches	Milky	B	**3SB3901-2AB**		100	480 units	41J
Inscription labels 12.5 mm x 27 mm for sticking onto label holder	White	B	**3SB3902-2AA**		100	480 units	41J
Inscription labels 27 mm x 27 mm for sticking onto label holder	White	B	**3SB3903-2AA**		100	480 units	41J
Inscription labels 17.5 mm x 28 mm for snapping onto label holder	White	B	**3SB3905-2AA**		100	784 units	41J
Inscription labels 22 mm x 22 mm for sticking onto enclosure	White	B	**3SB3906-2AA**		100	700 units	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Pushbuttons (clear) and illuminated pushbuttons with a flat button can be fitted with insert labels for identification purposes, but indicator lights cannot.

These insert labels are made of clear, semi-transparent plastic with black inscription; they can be fitted in any 90° angle.

Inscriptions

The inscription is in upper/lower case, all words begin with upper case letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 13/74).

The insert labels without inscription are suitable for user marking with permanent pen.

Selection and ordering data

PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscription/Symbol		Symbol No.	DT	Round range Article No.	Price per PU	DT	Square range Article No.	Price per PU
Insert labels								
For self-inscription								
Blank			B	**3SB1901-4AS**		B	**3SB3940-4AA**	
With inscription								
Ein			B	**3SB1901-4AB**		B	**3SB3940-4AB**	
On			B	**3SB1901-4EB**		B	**3SB3940-4EB**	
Aus			B	**3SB1901-4AC**		B	**3SB3940-4AC**	
Off			B	**3SB1901-4EC**		B	**3SB3940-4EC**	
Auf			B	**3SB1901-4AD**		B	**3SB3940-4AD**	
Up			B	**3SB1901-4ED**		B	**3SB3940-4ED**	
Ab			B	**3SB1901-4AE**		B	**3SB3940-4AE**	
Down			B	**3SB1901-4EE**		B	**3SB3940-4EE**	
Vor			B	**3SB1901-4AF**		B	**3SB3940-4AF**	
Forward			B	**3SB1901-4EF**		B	**3SB3940-4EF**	
Zurück			B	**3SB1901-4AG**		B	**3SB3940-4AG**	
Reverse			B	**3SB1901-4EG**		B	**3SB3940-4EG**	
Rechts			B	**3SB1901-4AH**			**--**	
Right			C	**3SB1901-4EH**			**--**	
Links			B	**3SB1901-4AJ**			**--**	
Left			C	**3SB1901-4EJ**			**--**	
Auf			B	**3SB1901-4AD**		B	**3SB3940-4AD**	
Open			B	**3SB1901-4EP**			**--**	
Zu			B	**3SB1901-4AL**		B	**3SB3940-4AL**	
Close			B	**3SB1901-4EQ**			**--**	
Schnell			B	**3SB1901-4AM**		B	**3SB3940-4AM**	
Fast			B	**3SB1901-4ER**			**--**	
Langsam			B	**3SB1901-4AN**		B	**3SB3940-4AN**	
Slow			B	**3SB1901-4ES**			**--**	
Betrieb			B	**3SB1901-4AP**			**--**	
Running			B	**3SB1901-4EV**			**--**	
Störung			B	**3SB1901-4AQ**		B	**3SB3940-4AQ**	
Fault			B	**3SB1901-4EW**			**--**	
Einrichten			B	**3SB1901-4AR**			**--**	
Reset			B	**3SB1901-4EM**		B	**3SB3940-4EM**	
Test			B	**3SB1901-4EN**			**--**	
Start			B	**3SB1901-4EK**		B	**3SB3940-4EK**	
Halt			B	**3SB1901-4AK**		B	**3SB3940-4AK**	
Stop			B	**3SB1901-4EL**		B	**3SB3940-4EL**	
With graphic symbol								
O (Off)	○	5008 IEC	B	**3SB1901-4MB**		B	**3SB3940-4MB**	
I (On)	|	5007 IEC	B	**3SB1901-4MC**		B	**3SB3940-4MC**	
II (On)	||	--	B	**3SB1901-4MD**		B	**3SB3940-4MD**	
III (ON)	||	--	B	**3SB1901-4ME**			**--**	
Electric motor		0011 ISO	B	**3SB1901-4PA**			**--**	
Motion in direction of arrow	→	5022 IEC	B	**3SB1901-4NA**		B	**3SB3940-4NA**	
Increase, plus	+	5005 IEC	B	**3SB1901-4NG**		B	**3SB3940-4NG**	
Decrease, minus	—	5006 IEC	B	**3SB1901-4NH**		B	**3SB3940-4NH**	
With customized inscription								
For inscriptions or symbols see "Options"				**3SB1901-4AZ**			**3SB3940-4AZ**	
• Text line(s) or symbol with No.			B	**K0Y, K1Y, K2Y, K3Y** or **K5Y**		B	**K0Y, K1Y, K2Y, K3Y** or **K5Y**	
• Any inscription or symbol			B	**K9Y**		B	**K9Y**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscriptions

Insert labels

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

By default, a letter height of 4 mm (for a single line of text) or 3 mm (for 2 or 3 lines of text) is used for text inscriptions.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round insert labels, the maximum possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square insert labels, 10 characters are possible per line.

Examples for customized inscription

Two-line inscription in upper/lower case lettering (K0Y)

Single-line inscription in upper case lettering (K1Y)

Three-line inscription in lower case letters (K2Y)

Symbol number 5011 according to IEC 60147 (K3Y)

Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following order codes to the Article No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift out"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OUT"): **K1Y**
- Text line(s) in lower case (e.g. "lift out"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example 2 and 3).

For special symbols (order code K9Y), a CAD drawing in BMP, GIF, JEPG, PDF, PNG or TIFF format must be submitted. For special inscriptions (order code K9Y): document in DOC or XLS format.

E-mail to: sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB1901–4AZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB1901–4AZ
K3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB1901–4AZ
K3Y
Z = 1118 ISO

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Overview

The name plates consist of a black plastic label holder and an inscription label (black with white print or silver-colored with black print) for sticking or snapping in place. They are not suitable for EMERGENCY-STOP pushbuttons.

Note mounting dimensions!

Inscriptions

The inscription is in upper/lower case, all words with upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the tables, are according to ISO 7000 or IEC 60417 (see page 13/79).

Self-adhesive labels

There are 2 sizes available for the round and square ranges:

- Label holders 30 mm × 45 mm × 7 mm with inscription label 12.5 mm × 27 mm.
- Label holders 30 mm × 60 mm × 7 mm with inscription label 27 mm × 27 mm.

Snap-on labels

The following version is available for the round range:

- Label holders 29.8 mm × 51 mm × 3 mm with inscription label 17.5 mm × 28 mm (inscription area: 17.5 mm × 27 mm)

Selection and ordering data

PU (UNIT) = 100
PS* = 10 units
PG = 41J

Inscriptions	DT	Black Article No.	Black Price per PU	DT	Silver-colored Article No.	Silver-colored Price per PU
Inscription labels, self-adhesive, 12.5 mm × 27 mm						
For self-inscription						
Blank	B	**3SB3902-1AA**		B	**3SB1901-2AA**	
With inscription						
Ein	B	**3SB3902-1AB**		B	**3SB1901-2AB**	
On	B	**3SB3902-1EB**		B	**3SB1901-2EB**	
Aus	B	**3SB3902-1AC**		B	**3SB1901-2AC**	
Off	B	**3SB3902-1EC**		B	**3SB1901-2EC**	
Auf	B	**3SB3902-1AD**		B	**3SB1901-2AD**	
Up	B	**3SB3902-1ED**		B	**3SB1901-2ED**	
Ab	B	**3SB3902-1AE**		B	**3SB1901-2AE**	
Down	B	**3SB3902-1EE**		B	**3SB1901-2EE**	
Vor	B	**3SB3902-1AF**		B	**3SB1901-2AF**	
Forward	B	**3SB3902-1EF**			--	
Zurück	B	**3SB3902-1AG**		B	**3SB1901-2AG**	
Reverse	B	**3SB3902-1EG**			--	
Rechts	B	**3SB3902-1AH**		B	**3SB1901-2AH**	
Right	B	**3SB3902-1EH**		B	**3SB1901-2EH**	
Links	B	**3SB3902-1AJ**		B	**3SB1901-2AJ**	
Left	B	**3SB3902-1EJ**		B	**3SB1901-2EJ**	
Auf	B	**3SB3902-1AD**		B	**3SB1901-2AD**	
Open	B	**3SB3902-1EP**		B	**3SB1901-2EP**	
Zu	B	**3SB3902-1AL**		B	**3SB1901-2AL**	
Close	B	**3SB3902-1EQ**		B	**3SB1901-2EQ**	
Schnell		--		B	**3SB1901-2AM**	
Fast		--		B	**3SB1901-2ER**	
Langsam		--		B	**3SB1901-2AN**	
Slow		--		B	**3SB1901-2ES**	
Halt	B	**3SB3902-1AK**		B	**3SB1901-2AK**	
Stop	B	**3SB3902-1EK**		B	**3SB1901-2EK**	
Start	B	**3SB3902-1EL**		B	**3SB1901-2EL**	
Test	B	**3SB3902-1EN**		B	**3SB1901-2EN**	
Betrieb	B	**3SB3902-1AP**		B	**3SB1901-2AP**	
Running		--		B	**3SB1901-2EV**	
Störung	B	**3SB3902-1AQ**		B	**3SB1901-2AQ**	
Fault	B	**3SB3902-1EW**		B	**3SB1901-2EW**	
Einrichten		--		B	**3SB1901-2AR**	
Reset		--		B	**3SB1901-2EM**	
Stop Start	B	**3SB3902-1BC**		B	**3SB1901-2BC**	
Hand Auto	B	**3SB3902-1BA**		B	**3SB1901-2BA**	
Man Auto	B	**3SB3902-1EU**		B	**3SB1901-2EU**	
Hand O Auto		--		B	**3SB1901-2BE**	
Man O Auto		--		B	**3SB1901-2ET**	

For label holders see page 13/78.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscriptions

Name plates

PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscriptions	DT	Black Article No.	Black Price per PU	DT	Silver-colored Article No.	Silver-colored Price per PU
Inscription labels, self-adhesive, 12.5 mm x 27 mm						
With graphic symbol						
O	B	**3SB3902-1MB**		B	**3SB1901-2MB**	
I	B	**3SB3902-1MC**		B	**3SB1901-2MC**	
II		--		C	**3SB1901-2MD**	
III		--		B	**3SB1901-2ME**	
O I	B	**3SB3902-1MF**		B	**3SB1901-2MF**	
I O II	B	**3SB3902-1MG**		B	**3SB1901-2MG**	
1 O 2		--		B	**3SB1901-2MK**	
1 2	B	**3SB3902-1ML**			--	
	B	**3SB3902-1NJ**		B	**3SB1901-2NA**	
→	B	**3SB3902-1NA**		B	**3SB1901-2NJ**	
With customized inscription						
For inscriptions or symbols see "Options"		**3SB3902-1XZ**			**3SB1901-2XZ**	
• Text line(s)	B	**K0Y, K1Y, K2Y** or **K5Y**		B	**K0Y, K1Y, K2Y** or **K5Y**	
• Symbol with No.	B	**K3Y**		B	**K3Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

Inscriptions	DT	Black Article No.	Black Price per PU	DT	Silver-colored Article No.	Silver-colored Price per PU
Inscription labels, self-adhesive, 27 mm x 27 mm						
For self-inscription						
Blank	B	**3SB3903-1AA**		B	**3SB1906-2AA**	
With inscription						
Ein	B	**3SB3903-1AB**			--	
On	B	**3SB3903-1EB**			--	
Aus	B	**3SB3903-1AC**			--	
Off	B	**3SB3903-1EC**			--	
Auf	B	**3SB3903-1AD**			--	
Ab	B	**3SB3903-1AE**			--	
Vor	B	**3SB3903-1AF**			--	
Zurück	B	**3SB3903-1AG**			--	
Rechts	B	**3SB3903-1AH**			--	
Links	B	**3SB3903-1AJ**			--	
Auf	B	**3SB3903-1AD**			--	
Zu	B	**3SB3903-1AL**			--	
Halt	B	**3SB3903-1AK**			--	
Start	B	**3SB3903-1EL**			--	
Betrieb	B	**3SB3903-1AP**			--	
Störung	B	**3SB3903-1AQ**			--	
Stop Start	B	**3SB3903-1BC**			--	
Hand Auto	B	**3SB3903-1BA**			--	
With graphic symbol						
O	B	**3SB3903-1MB**			--	
I	B	**3SB3903-1MC**			--	
O I	B	**3SB3903-1MF**			--	
→	B	**3SB3903-1NA**			--	
With customized inscription						
For inscriptions or symbols see "Options"		**3SB3903-1XZ**			**3SB1906-2XZ**	
• Text line(s)	B	**K0Y, K1Y, K2Y** or **K5Y**		B	**K0Y, K1Y, K2Y** or **K5Y**	
• Symbol with No.	B	**K3Y**		B	**K3Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

For label holders see page 13/78.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscriptions	DT	Black Article No.	Price per PU	DT	Silver-colored Article No.	Price per PU
Inscription labels, for snapping on, 17.5 mm x 28 mm						
For self-inscription						
Blank	B	**3SB3905-1AA**		B	**3SB1904-2AA**	
With inscription						
Ein	B	**3SB3905-1AB**		B	**3SB1904-2AB**	
On	B	**3SB3905-1EB**		B	**3SB1904-2EB**	
Aus	B	**3SB3905-1AC**		B	**3SB1904-2AC**	
Off	B	**3SB3905-1EC**		B	**3SB1904-2EC**	
Auf	B	**3SB3905-1AD**		B	**3SB1904-2AD**	
Up	B	**3SB3905-1ED**			**--**	
Ab	B	**3SB3905-1AE**		B	**3SB1904-2AE**	
Down	B	**3SB3905-1EE**			**--**	
Vor	B	**3SB3905-1AF**		B	**3SB1904-2AF**	
Forward	B	**3SB3905-1EF**			**--**	
Zurück	B	**3SB3905-1AG**		B	**3SB1904-2AG**	
Reverse	B	**3SB3905-1EG**		B	**3SB1904-2EG**	
Rechts	B	**3SB3905-1AH**		B	**3SB1904-2AH**	
Right	B	**3SB3905-1EH**		B	**3SB1904-2EH**	
Links	B	**3SB3905-1AJ**		B	**3SB1904-2AJ**	
Auf	B	**3SB3905-1AD**		B	**3SB1904-2AD**	
Open	B	**3SB3905-1EP**			**--**	
Zu	B	**3SB3905-1AL**		B	**3SB1904-2AL**	
Close	B	**3SB3905-1EQ**			**--**	
Halt	B	**3SB3905-1AK**		B	**3SB1904-2AK**	
Stop	B	**3SB3905-1EK**		B	**3SB1904-2EK**	
Start	B	**3SB3905-1EL**		B	**3SB1904-2EL**	
Test	B	**3SB3905-1EN**		B	**3SB1904-2EN**	
Betrieb	B	**3SB3905-1AP**		B	**3SB1904-2AP**	
Running	B	**3SB3905-1EV**		B	**3SB1904-2EV**	
Störung	B	**3SB3905-1AQ**		B	**3SB1904-2AQ**	
Fault	B	**3SB3905-1EW**		B	**3SB1904-2EW**	
Einrichten		**--**		B	**3SB1904-2AR**	
Reset		**--**		B	**3SB1904-2EM**	
Stop Start	B	**3SB3905-1BC**		B	**3SB1904-2BC**	
Hand Auto	B	**3SB3905-1BA**		B	**3SB1904-2BA**	
Man Auto	B	**3SB3905-1EU**		C	**3SB1904-2EU**	
Man O Auto		**--**		B	**3SB1904-2ET**	
With graphic symbol						
O	B	**3SB3905-1MB**		B	**3SB1904-2MB**	
I	B	**3SB3905-1MC**		B	**3SB1904-2MC**	
O I	B	**3SB3905-1MF**		B	**3SB1904-2MF**	
I O II		**--**		B	**3SB1904-2MG**	
1 O 2		**--**		B	**3SB1904-2MK**	
→	B	**3SB3905-1NA**		B	**3SB1904-2NA**	
	B	**3SB3905-1NJ**		B	**3SB1904-2NJ**	
With customized inscription						
For inscriptions or symbols see "Options"		**3SB3905-1XZ**			**3SB1904-2XZ**	
• Text line(s)	B	**K0Y, K1Y, K2Y** or **K5Y**		B	**K0Y, K1Y, K2Y** or **K5Y**	
• Symbol with No.	B	**K3Y**		B	**K3Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

For label holders see page 13/78.

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscriptions

Name plates

Version	DT	Black		PU (UNIT, SET, M)	PS*	PG
		Article No.	Price per PU			
Label holders for inscription labels 12.5 mm × 27 mm						
For round range, flat	B	**3SB3922-0AV**		100	10 units	41J
For potentiometer drives 3SB1000-7CH07[1)]	B	**3SB3922-0AS**		1	1 unit	41J
For square range, flat	B	**3SB3942-0AX**		100	5 units	41J
Label holders for inscription labels 27 mm x 27 mm						
For round range, flat	B	**3SB3923-0AV**		100	10 units	41J
For round range, raised	C	**3SB3923-0AX**		1	10 units	41J
For potentiometer drives, flat	B	**3SB3923-0AS**		1	1 unit	41J
For square range, flat	B	**3SB3943-0AX**		100	1 unit	41J
Label holders for inscription labels 17.5 mm x 28 mm						
For round design	B	**3SB3925-0AV**		100	10 units	41J

3SB3922-0AV

3SB3923-0AV

3SB3925-0AV

1) This label holder can also be used for pushbuttons with dust covers if the front plate thickness of 3 mm is not exceeded.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

The following letter heights are used as standard for text inscriptions:

- Label size 12.5 mm × 27 mm: maximum 3 lines with letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 27 mm × 27 mm: maximum 5 lines with letter height 4 mm (1- to 5-line)
- Label size 17.5 mm × 28 mm: maximum 3 lines with letter height 4 mm (1- and 2-line) or 3 mm (3-line)

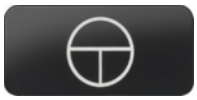
Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription

Two-line inscription in upper/lower case lettering (K0Y)

Single-line inscription in upper case lettering (K1Y)

Three-line inscription in lower case letters (K2Y)



Symbol number 5011 according to IEC 60417 (K3Y)

Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following order codes to the Article No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift out"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OUT"): **K1Y**
- Text line(s) in lower case (e.g. "lift out"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example 2 and 3).

For special symbols (order code K9Y), a CAD drawing in BMP, GIF, JEPG, PDF, PNG or TIFF format must be submitted. For special inscriptions (order code K9Y): document in DOC or XLS format.

E-mail to: sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB3902–1XZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB3902–1XZ
K3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB3902–1XZ
K3Y
Z = 1118 ISO

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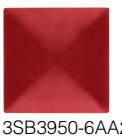
Selection and ordering data

	Version	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Buttons and lenses for round version[1]								
3SB3930-0CA6	**Buttons, flat** For round illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB3930-0CA2**		100	10 units	41J
		Yellow	B	**3SB3930-0CA3**		100	10 units	41J
		Green	B	**3SB3930-0CA4**		100	10 units	41J
		Blue	B	**3SB3930-0CA5**		100	10 units	41J
		White	B	**3SB3930-0CA6**		100	10 units	41J
		Clear	B	**3SB3930-0CA7**		100	10 units	41J
3SB3930-0EA3	**Buttons, flat** For round pushbuttons and switches, metal version	Black	B	**3SB3930-0EA1**		100	10 units	41J
		Red	B	**3SB3930-0EA2**		100	10 units	41J
		Yellow	B	**3SB3930-0EA3**		100	10 units	41J
		Green	B	**3SB3930-0EA4**		100	10 units	41J
		Blue	B	**3SB3930-0EA5**		100	10 units	41J
		White	B	**3SB3930-0EA6**		100	10 units	41J
		Clear	B	**3SB3930-0EA7**		100	10 units	41J
3SB3930-0DA4	**Buttons, raised** For round illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB3930-0DA2**		1	10 units	41J
		Green	B	**3SB3930-0DA4**		1	10 units	41J
		Clear	B	**3SB3930-0DA7**		1	10 units	41J
	Buttons, raised For round pushbuttons and switches, metal version	Black	D	**3SB3930-0FA1**		1	10 units	41J
		Red	C	**3SB3930-0FA2**		1	10 units	41J
		Yellow	C	**3SB3930-0FA3**		1	10 units	41J
		Green	C	**3SB3930-0FA4**		1	10 units	41J
		Blue	C	**3SB3930-0FA5**		1	10 units	41J
		White	C	**3SB3930-0FA6**		1	10 units	41J
		Clear	C	**3SB3930-0FA7**		1	10 units	41J
3SB3930-0FA4	**Buttons, flat** For round illuminated pushbuttons and illuminated switches, metal version	Amber	B	**3SB3930-0GA0**		100	10 units	41J
		Red	B	**3SB3930-0GA2**		100	10 units	41J
		Yellow	B	**3SB3930-0GA3**		100	10 units	41J
		Green	B	**3SB3930-0GA4**		100	10 units	41J
		Blue	B	**3SB3930-0GA5**		100	10 units	41J
		White	B	**3SB3930-0GA6**		100	10 units	41J
		Clear	B	**3SB3930-0GA7**		100	10 units	41J
3SB3930-0GA3	**Buttons, flat, solvent-resistant**[2], For round illuminated pushbuttons and switches, metal version	Red	B	**3SB3930-0GA20-0PA0**		100	10 units	41J
		Yellow	B	**3SB3930-0GA30-0PA0**		100	10 units	41J
		Green	B	**3SB3930-0GA40-0PA0**		100	10 units	41J
		Blue	B	**3SB3930-0GA50-0PA0**		100	10 units	41J
		White	B	**3SB3930-0GA60-0PA0**		100	10 units	41J
		Clear	B	**3SB3930-0GA70-0PA0**		100	10 units	41J
3SB3930-0HA4	**Buttons, raised** For round illuminated pushbuttons and illuminated switches, metal version	Amber	C	**3SB3930-0HA0**		1	10 units	41J
		Red	C	**3SB3930-0HA2**		1	10 units	41J
		Yellow	C	**3SB3930-0HA3**		1	10 units	41J
		Green	C	**3SB3930-0HA4**		1	10 units	41J
		Blue	C	**3SB3930-0HA5**		1	10 units	41J
		White	C	**3SB3930-0HA6**		1	10 units	41J
		Clear	C	**3SB3930-0HA7**		1	10 units	41J
3SB3930-6BA3	**Lenses, smooth** For round indicator lights, plastic and metal version	Amber	C	**3SB3930-6BA0**		1	10 units	41J
		Red	B	**3SB3930-6BA2**		1	10 units	41J
		Yellow	B	**3SB3930-6BA3**		1	10 units	41J
		Green	B	**3SB3930-6BA4**		1	10 units	41J
		Blue	B	**3SB3930-6BA5**		1	10 units	41J
		White	B	**3SB3930-6BA6**		1	10 units	41J
		Clear	B	**3SB3930-6BA7**		1	10 units	41J
3SB3930-6CA3	**Lenses with concentric rings** For round indicator lights, plastic and metal version	Amber	B	**3SB3930-6CA0**		1	10 units	41J
		Red	B	**3SB3930-6CA2**		1	10 units	41J
		Yellow	B	**3SB3930-6CA3**		1	10 units	41J
		Green	B	**3SB3930-6CA4**		1	10 units	41J
		Blue	B	**3SB3930-6CA5**		1	10 units	41J
		White	B	**3SB3930-6CA6**		1	10 units	41J
		Clear	B	**3SB3930-6CA7**		1	10 units	41J
Buttons and lenses for square version								
3SB3950-0CA6	**Buttons, flat** For square illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB3950-0CA2**		100	10 units	41J
		Yellow	B	**3SB3950-0CA3**		100	10 units	41J
		Green	B	**3SB3950-0CA4**		100	10 units	41J
		Blue	B	**3SB3950-0CA5**		100	10 units	41J
		White	B	**3SB3950-0CA6**		100	10 units	41J
		Clear	B	**3SB3950-0CA7**		100	10 units	41J
 3SB3950-6AA2	**Lenses, smooth** For square indicator lights, plastic version	Red	B	**3SB3950-6AA2**		1	10 units	41J
		Yellow	B	**3SB3950-6AA3**		1	10 units	41J
		Green	B	**3SB3950-6AA4**		1	10 units	41J
		Blue	B	**3SB3950-6AA5**		1	10 units	41J
		White	B	**3SB3950-6AA6**		1	10 units	41J
		Clear	B	**3SB3950-6AA7**		1	10 units	41J

[1] In scope of supply of pushbuttons or indicator lights.

[2] Not suitable for laser inscription.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Lamps, BA 9s bases[1]								
3SB1902-0AY								
Incandescent lamps 1.2 W Length up to 28 mm, max. bulb diameter 10 mm	24 AC/DC	Clear	A	**3SB1902-0AY**		1	10 units	41J
Incandescent lamps 2 W Length up to 28 mm, max. bulb diameter 10 mm	6 AC/DC	Clear	A	**3SX1342**		1	10 units	41J
	12 AC/DC		A	**3SX1343**		1	10 units	41J
	24 AC/DC		A	**3SX1344**		1	10 units	41J
	30 AC/DC		B	**3SB1902-2AF**		1	10 units	41J
	48 AC/DC		B	**3SB1902-1AP**		1	10 units	41J
	60 AC/DC		A	**3SR9424**		1	10 units	41J
Incandescent lamps 2.6 W Length 28 mm, bulb diameter 10 mm	110 ... 130 AC/DC[2]	Clear	A	**3SX1731**		1	10 units	41J
Multi-incandescent lamps 1.2 W Endurance 25 000 h, high resistance to vibration	24 AC/DC		B	**3SB1902-2BU**		1	10 units	41J
3SB3901-1PA								
LED lamps, super-bright Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	24 AC/DC	Red	►	**3SB3901-1CA**		1	10 units	41J
		Yellow	B	**3SB3901-1BA**		1	10 units	41J
		Green	►	**3SB3901-1DA**		1	10 units	41J
		Blue	B	**3SB3901-1PA**		1	10 units	41J
		White	B	**3SB3901-1QA**		1	10 units	41J
	48 AC/DC	Red	B	**3SB3901-1CC**		1	10 units	41J
		Yellow	B	**3SB3901-1BC**		1	10 units	41J
		Green	B	**3SB3901-1DC**		1	10 units	41J
		Blue	B	**3SB3901-1PC**		1	10 units	41J
		White	B	**3SB3901-1QC**		1	10 units	41J
	130 AC, 70 ... 90 DC, if X1 at "+"[3]	Red	B	**3SB3901-1CD**		1	10 units	41J
		Yellow	B	**3SB3901-1BD**		1	10 units	41J
		Green	B	**3SB3901-1DD**		1	10 units	41J
		Blue	B	**3SB3901-1PD**		1	10 units	41J
		White	B	**3SB3901-1QD**		1	10 units	41J
	230 AC, 110 ... 160 DC, if X1 at "+"[3]	Red	B	**3SB3901-1CF**		1	10 units	41J
		Yellow	B	**3SB3901-1BF**		1	10 units	41J
		Green	B	**3SB3901-1DF**		1	10 units	41J
		Blue	B	**3SB3901-1PF**		1	10 units	41J
		White	B	**3SB3901-1QF**		1	10 units	41J
	230 AC/DC	Red	B	**3SB3901-1CG**		1	10 units	41J
		Yellow	B	**3SB3901-1BG**		1	10 units	41J
		Green	B	**3SB3901-1DG**		1	10 units	41J
		Blue	B	**3SB3901-1PG**		1	10 units	41J
		White	B	**3SB3901-1QG**		1	10 units	41J
3SB1902-4MC								
LED lamps Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	22 ... 32 DC	Red	D	**3SB1902-4AJ**		1	10 units	41J
		Yellow	D	**3SB1902-4BJ**		1	10 units	41J
		Green	D	**3SB1902-4CJ**		1	10 units	41J
LED lamps, flashing (1.4 Hz) Length up to 28 mm, bulb diameter 10 mm, operational current 24 ... 29 mA	24 DC	Red	B	**3SB1902-4LC**		1	10 units	41J
		Yellow	C	**3SB1902-4MC**		1	10 units	41J
		Green	C	**3SB1902-4NC**		1	10 units	41J
3SX1703								
Glow lamps[4] Length 28 mm, bulb diameter 10 mm, operational current approx. 1.8 mA	110 AC	Clear	A	**3SX1703**		1	10 units	41J
	220 AC	Clear	A	**3SX1701**		1	10 units	41J
	220 AC	Green	C	**3SX1702**		1	10 units	41J
3SB1902-2AD								
Lamp extractors For lamps with BA 9s base			C	**3SB1902-2AD**		1	1 unit	41J

1) Essential accessories when using lampholders with BA 9s base and delivery without lamp.

2) Also for 230 V when used with a 3SB3400-1C voltage reducer.

3) Not suitable for 3SB3400-1G lampholder with separate lamp test function. Can be used with 3SB3400-1L.

4) Due to the inherent orange color of glow lamps and their lower luminance level compared to incandescent lamps, it is recommended that they should only be used with clear or red screw lenses and in areas where ambient light levels are not very high.

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Accessories and Spare Parts

Lamps, acoustic signal transformers and keys

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Lamps, Wedge bases[1]									
3SB2908-1AE	**Incandescent lamps** Wedge base W2 × 4.6d, 1.0 W	6 AC/DC	Clear	C	**3SB2908-1AA**		100	10 units	41J
		12 AC/DC		B	**3SB2908-1AB**		100	10 units	41J
		24 AC/DC		B	**3SB2908-1AC**		100	10 units	41J
		30 AC/DC		A	**3SB2908-1AD**		100	10 units	41J
		48 AC/DC		B	**3SB2908-1AE**		1	10 units	41J
		60 AC/DC		B	**3SB2908-1AF**		1	10 units	41J
3SB3901-1SB	**LED lamps, super-bright** Wedge base W2 × 4.6d, operational current 10 mA	24 AC/DC	Red	B	**3SB3901-1SB**		1	10 units	41J
			Yellow	B	**3SB3901-1RB**		1	10 units	41J
			Green	B	**3SB3901-1TB**		1	10 units	41J
			White	B	**3SB3901-1UB**		1	10 units	41J
			Blue	B	**3SB2908-1BD**		1	10 units	41J
3SB3901-1VE		28 AC/DC	Red	B	**3SB3901-1SE**		1	10 units	41J
			Yellow	B	**3SB3901-1RE**		1	10 units	41J
			Green	B	**3SB3901-1TE**		1	10 units	41J
			White	B	**3SB3901-1UE**		1	10 units	41J
			Blue	C	**3SB3901-1VE**		1	10 units	41J
3SB2908-2AB	**Lamp extractors** For lamps with bases W2 × 4.6d			►	**3SB2908-2AB**		1	1 unit	41J
3SB1902-1AU	**Lamp adapters** For fitting a lamp with a wedge base socket into a BA 9s lampholder			C	**3SB1902-1AU**		1	1 unit	41J
Acoustic signal transformers, BA 9s base									
3SB1902-2BN	**Acoustic signal transformers** For acoustic signaling devices[2] operational current 25 mA, 0.6 W, sound pressure 80 dB/10 cm	24 ... 28 DC		B	**3SB1902-2BN**		1	1 unit	41J

[1] Can be used with lamp adapters in lampholders with BA 9s base.

[2] For increased protection, the IP65 acoustic signaling device (complete unit) can be used.

	Version Lock Manufacturer	Lock No.	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Keys for actuators[1]									
3SY1054	RONIS	SB 30	--	B	**3SB3910-4A**		1	1 unit	41J
	BKS	S1	--	A	**3SY1066**		1	1 unit	41J
	CES	LSG 1	--	B	**3SB1910-2F**		1	1 unit	41J
		SSG 10	--	B	**3SY1054**		1	1 unit	41J
		SSP 9	--	A	**3SY1052**		1	1 unit	41J
	O.M.R.	73038	Light blue	C	**3SB1910-2L**		1	1 unit	41J
		73037	Red	B	**3SB1910-2M**		1	1 unit	41J
		73034	Black	B	**3SB1910-2N**		1	1 unit	41J
		73033	Yellow	D	**3SB1910-2P**		1	1 unit	41J

[1] Included in scope of supply of the key-operated switches and the EMERGENCY-STOP mushroom pushbuttons with lock.
Also available with special lock. Supplement Article No. with **"-Z"** and quote the required lock in plain text. Additional price on request.
This does not include locks for VW and main and general locking systems.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

	Version	Use	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Protective caps[1], degree of protection IP67									
	Material: elastolan								
3SB3921-0AJ	**Protective caps** For round version	Flat button (plastic)	Clear	B	**3SB3921-0AJ**		1	1 unit	41J
		Flat button (metal), raised button (plastic)	Clear	B	**3SB3921-0AM**		1	1 unit	41J
	• PVC	Raised button (metal)	Clear	C	**3SB1902-2AN**		1	1 unit	41J
3SB3941-0AJ	**Protective caps** For square version	Flat button (plastic)	Clear	B	**3SB3941-0AJ**		1	1 unit	41J
	Material: silicone								
3SB3921-0AH	**Protective caps** For round version	Flat button (plastic)	Clear	B	**3SB3921-0AH**		1	1 unit	41J
3SB1902-0AK		Flat button (metal), raised button (plastic)	Clear	B	**3SB1902-0AK**		1	1 unit	41J
3SB1902-0AN		Raised button (metal)	Clear	B	**3SB1902-0AN**		1	1 unit	41J
3SB3921-0BA	**Protective caps** For round version	Selector switch (plastic and metal, normal handle)	Clear	B	**3SB3921-0BA**		1	1 unit	41J
3SB1902-2BH	**Protective caps** For round version	Mushroom push-pull button, Ø 40 mm (plastic and metal)	Clear	B	**3SB1902-2BH**		1	1 unit	41J
3SB3921-0BU		EMERGENCY-STOP mushroom pushbutton, Ø 40 mm (plastic and metal)	Clear	B	**3SB3921-0BU**		1	1 unit	41J
3SB3941-0AH	**Protective caps** For square version	Flat button (plastic)	Clear	B	**3SB3941-0AH**		1	1 unit	41J

[1] No protective caps can be used with 3SB38 plastic enclosures.
For the 3SB38 metal enclosures, protective caps can only be used together with single-pole contact blocks for front plate mounting. In addition, the base plate must be removed.

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Accessories and Spare Parts

Protective covers

	Version	Use	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Other protective caps[1]									
3SB1902-0AL	**Sealable caps** For round version	Flat button (plastic)	Black	B	**3SB1902-0AL**		1	1 unit	41J
		Flat button (metal), raised button (plastic)[2]	Clear	B	**3SB1902-2AR**		1	1 unit	41J
3SB1902-2AR									
3SB3921-0BT	**Dust covers** For use in dusty environments	BKS, CES, O.M.R. key-operated switch	Clear	B	**3SB3921-0BT**		1	1 unit	41J
Protective collars for front plates									
3SB3921-0AX	**Protective collars for EMERGENCY-STOP**[3] For round version	EMERGENCY-STOP mushroom pushbutton without key-operated switch	Yellow	B	**3SB3921-0AK**		1	1 unit	41J
			Gray	C	**3SB3921-0AP**		1	1 unit	41J
		EMERGENCY-STOP mushroom pushbutton with key-operated switch	Yellow	B	**3SB3921-0AX**		1	1 unit	41J
3SB3921-0CG	**Protective collars for EMERGENCY-STOP for 5 padlocks**[3] For round version	3SB3...-1AA20 EMERGENCY-STOP mushroom pushbutton	Yellow	B	**3SB3921-0CG**		1	1 unit	41J
3SB3921-0AS	**Sun collars** For round version	Illuminated pushbuttons	Black	B	**3SB3921-0AS**		1	1 unit	41J
Blanking plugs for spare command points for front plates									
3SB3921-0AA	**Blanking plugs** For round version	Plastic version	Black	►	**3SB3921-0AA**		1	10 units	41J
3SB3941-0AA	**Blanking plugs** For square version	Plastic version	Black	B	**3SB3941-0AA**		1	1 unit	41J
3SB1902-0AQ	**Blanking plugs** (plastic) for round version	Metal version	Alumi-nized	B	**3SB1902-0AQ**		1	10 units	41J

[1] Unsuitable for mounting in 3SB38 enclosures. Not to be used with label holder.

[2] Maximum control panel thickness 2 mm.

[3] The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded actuation of the EMERGENCY-STOP mushroom pushbutton.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version	Use	Inscriptions	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Yellow name plates for EMERGENCY-STOP									
	For use on front plates								
	Name plates, round Self-adhesive, external diameter 60 mm, internal diameter 23 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB3921-0DY**		1	1 unit	41J
			Customized inscription[1]	B	**3SB3921-0DZ K1Y**		1	1 unit	41J
3SB3921-0AC 3SB3921-0BW	**Name plates, round** Self-adhesive, external diameter 80 mm, internal diameter 23 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB3921-0AB**		1	1 unit	41J
			4 languages, de[2], en, it, es	B	**3SB3921-0BW**		1	1 unit	41J
			NOT-HALT	B	**3SB3921-0AC**		1	1 unit	41J
			NOT-AUS	B	**3SB3921-0CK**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB3921-0AD**		1	1 unit	41J
			ARRET D'URGENCE	B	**3SB3921-0AG**		1	1 unit	41J
			EMERGENZA	B	**3SB3921-0AN**		1	1 unit	41J
			Customized inscription[1]	B	**3SB3921-0AZ K1Y**		1	1 unit	41J
	Name plates, round Self-adhesive, external diameter 80 mm, cutout 26 mm × 26 mm	EMERGENCY-STOP mushroom pushbuttons (square version)	Blank	B	**3SB3941-0AB**		1	1 unit	41J
			NOT-HALT	B	**3SB3941-0AC**		1	1 unit	41J
			NOT-AUS	B	**3SB3941-0BX**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB3941-0AD**		1	1 unit	41J
	Name plates, round 1 mm thick, external diameter 75 mm, internal diameter 22.5 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB1902-2BA**		1	1 unit	41J
			NOT-HALT	B	**3SB1902-2BB**		1	1 unit	41J
			NOT-AUS	B	**3SB3921-0CH**		1	1 unit	41J
3SB3921-0DA	**Name plates, illuminated, round** self-adhesive, external diameter 60 mm, internal diameter 23 mm[3] As signaling device for EMERGENCY-STOP, with plug-in terminal for 24 V AC/DC[4]	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	►	**3SB3921-0DA**		1	1 unit	41J
			NOT-HALT	►	**3SB3921-0DK**		1	1 unit	41J
			NOT-AUS	B	**3SB3921-0DC**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB3921-0DD**		1	1 unit	41J
Inscription labels									
3SB3901-0CH	**Inscription labels** For supporting dust resistance	Contact blocks		B	**3SB3901-0CH**		100	10 units	41J
3TX4210-0H	**Unit labeling plates**	Contact blocks		B	**3TX4210-0H**		100	100 units	41B

1) The customized inscription, e.g. in other languages than specified in the table, occurs in capital letters according to the order code **"K1Y"** (compare "Options" page 13/79).

2) With German inscription "NOT-HALT"

3) For front plate thickness of max. 4 mm.

4) The illuminated label can also be operated through the AS-Interface F adapter (see page 13/69).

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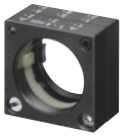
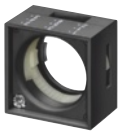
Miscellaneous accessories

	Version	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Holders and pressure plates								
3SB3901-0AB	**Holders** For snapping on 3 blocks[1]	Pushbuttons, push-pull buttons, mushroom pushbuttons with front plate mounting	►	**3SB3901-0AB**		100	20 units	41J
3SB3901-0AC	**Holders with pressure plate** For actuating the central contact block of 3 contact blocks[2]	Selector switches, key-operated switches and twin pushbuttons with front plate mounting	►	**3SB3901-0AC**		100	10 units	41J
3SB3901-0AW	**Pressure plates** For actuating the central contact block of 3 contact blocks[2]	Selector switches and key-operated switches for use on PCBs or with base mounting	B	**3SB3901-0AW**		100	10 units	41J
Holders for commanding and signaling elements[3]								
 3SB3931-0AA	**Holders** For plastic version, round	As-supplied state for front plate thickness 1 ... 4 mm	►	**3SB3931-0AA**		1	10 units	41J
 3SB3951-0AA	**Holders** For plastic version, square		B	**3SB3951-0AA**		1	1 unit	41J
3SB3931-0AC	**Holders** For metal version, round		►	**3SB3931-0AC**		1	10 units	41J
3SB3921-0BD	**Grounding screws** For grounding metal actuators for fitting in front plates and enclosures made of non-conducting materials, e.g. 3SB38 plastic enclosures		B	**3SB3921-0BD**		100	50 units	41J

1) The holder for illuminated commanding devices is included in the scope of supply.

2) The pressure plates can be removed one by one to meet individual requirements.

3) The matching holder for actuators and indicators is included in the scope of supply (exception: Order with order code **"B01"**).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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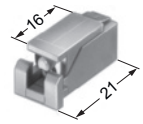
	Version	Use	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools									
3SB3941-0AF	**Blanking tools** 26 mm × 26 mm, for square version			B	**3SB3941-0AF**		1	1 unit	41J
3SB1902-2BG	**Hole drilling templates** For 30 mm x 30 mm grid, horizontal, for round and square versions			C	**3SB1902-2BG**		1	1 unit	41J
3SB3921-0BC	**Mounting tools** (plastic) For buttons and lenses, metal version			B	**3SB3921-0BC**		1	1 unit	41J
3SX1707	**Mounting tools** For potentiometer drives and for pushbuttons with extended stroke			C	**3SX1707**		1	1 unit	41J
3SB3901-0CB	**Dismantling tools** For contact blocks and lampholders	Blocks with screw terminals		C	**3SB3901-0CB**		1	1 unit	41J
	Dismantling tools For contact blocks and lampholders	With spring-type terminals		C	**3SB3901-0CG**		1	1 unit	41J
Various accessories									
3SB3921-0AU	**Single frames** For square design of the round version		Black	C	**3SB3921-0AU**		1	1 unit	41J
3SB3921-0AE	**Adapter parts** Adapters for 30.5 mm mounting hole, comprising a metal disk with an adhesive layer on one side, degree of protection IP65	As thrust ring for a thin molded-plastic front plate		B	**3SB3921-0AE**		1	1 unit	41J
 3SB3901-0AA	**Printed circuit board holders** For mounting the command devices on the printed circuit board (screw is included in the scope of supply)	Contact blocks and lamp-holders for solder connection		B	**3SB3901-0AA**		100	10 units	41J
3SX1335	**Extension plungers** For compensation of the distance between a pushbutton and the unlatching button of an overload relay	Pushbuttons with extended stroke		A	**3SX1335**		1	1 unit	41J

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Enclosures

General data

Overview

Enclosures with standard and customized equipment

Enclosed pushbuttons and indicator lights are used as hand operated control devices for separately allocated control units and cabinets.

Enclosures with handle are available for suspension (e.g. for crane control units).

The enclosed pushbuttons and indicator lights are available with conventional controls as well as for connection to the AS-Interface bus system.

The following versions are available:

- Enclosures with standard fittings with 1 to 3 command points
- Enclosures with customized equipment with 1 to 6 command points
- Empty enclosures (individual parts must be ordered separately)

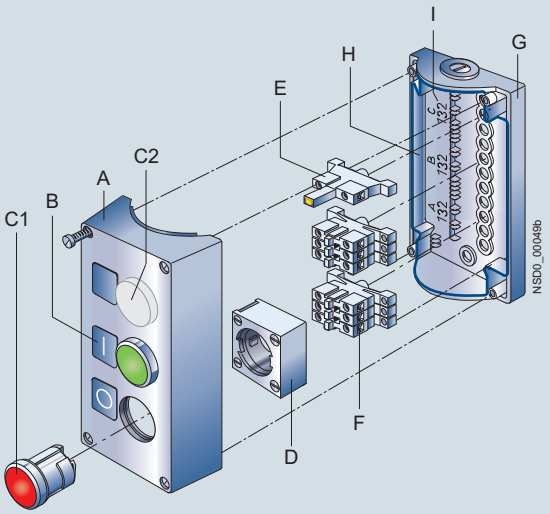
Customized enclosures

On request enclosures with more than 6 command points can also be supplied with AS-Interface connection.

Use the configurator for selection.

For AS-Interface enclosures see page 13/98.

Enclosures with standard fittings



A Top part of enclosure
B Inscription labels
C1 Pushbutton
C2 Indicator light
D Holder
E Contact designations
F Contact blocks, lampholders for floor mounting
G Bottom part of enclosure
H Identification letters for the command points
I Identification number

Standards

IEC 60947-5-1, EN 60947-5-1

Application

The devices are climate-proof (KTW 24) according to EN ISO 6270-2 and suitable for stationary use (weather-protected) and for use in marine applications.

Technical specifications

Type	3SB380.-0, 3SB380.-1	3SB380.-2, 3SB380.-3
Enclosures		
Enclosure material	Plastic	Metal
Actuators and indicators	Plastic, round	Metal, round
Degree of protection acc. to IEC 60529	IP65	IP67 and NEMA Type 4
Climatic withstand capability according to EN ISO 6270-2	KTW 24	
Shock resistance according to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration		
• Devices without incandescent lamp	≤ 50 *g*	
• Devices with incandescent lamp	≤ 30 *g*	
Vibration resistance acc. to IEC 60068-2-6		
• Acceleration at frequency 20 ... 200 Hz	5 *g*	

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Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage up to 400 V
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators
- Contact blocks and lampholders for base mounting (are snapped into the enclosure base); screw terminals (box terminals) as standard; some versions also with spring-type terminals (Article No. ends with -0CC0)

Color of enclosure cover:

- Gray, RAL 7035
- Yellow, RAL 1004 for EMERGENCY-STOP

Color of enclosure base:

- Black, RAL 9005

Selection and ordering data

Equipment	Contact block function	Number of command points	DT	Screw terminals / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures with standard fittings								
Cable entry top and bottom each 1 x M20								
 3SB3801-0DA3								
A = Pushbutton green, label "I"	1 NO	1	B	**3SB3801-0DA3**		1	1 unit	41J
A = Pushbutton red, label "O"	1 NC	1	B	**3SB3801-0DB3**		1	1 unit	41J
A = Pushbutton white, label "I"	1 NO	1	B	**3SB3801-0DD3**		1	1 unit	41J
A = Pushbutton black, label "O"	1 NC	1	B	**3SB3801-0DE3**		1	1 unit	41J
 3SB3801-0.F3								
A = EMERGENCY-STOP mushroom pushbuttons, red, Ø 40 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, without protective collar	1 NC ➔	1	B	**3SB3801-0DG3**		1	1 unit	41J
	2 NC ➔	1	B	**3SB3801-0EG3**		1	1 unit	41J
• With yellow top part, with protective collar[1]	1 NC ➔	1	B	**3SB3801-0DF3**		1	1 unit	41J
	2 NC ➔	1	B	**3SB3801-0EF3**		1	1 unit	41J
 3SB3802-0DA3								
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	B	**3SB3802-0DA3**		1	1 unit	41J
B = Pushbutton white, label "I" A = Pushbutton black, label "O"	1 NO, 1 NC	2	B	**3SB3802-0DB3**		1	1 unit	41J
 3SB3803-0DA3								
C = Indicator light clear, label without inscription, B = Pushbutton green, label "I", A = Pushbutton red, label "O"	BA 9s[2], 1 NO, 1 NC	3	B	**3SB3803-0DA3**		1	1 unit	41J
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	C	**3SB3803-0DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton white, label "I", A = Pushbutton black, label "O"	BA 9s[2], 1 NO, 1 NC	3	C	**3SB3803-0DC3**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

➔ Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3SK1, 3TK28 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

2) Only lampholder; order lamp separately.

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Enclosures with standard fittings

Equipment	Contact block function	Number of command points	DT	Screw terminals / Spring-type terminals[2] / Configurator — Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures with standard fittings								
Cable entry top and bottom each 1 x M20								
3SB3801-2DB3								
A = Pushbutton green, label "I"	1 NO	1	B	**3SB3801-2DA3**		1	1 unit	41J
A = Pushbutton red, label "O"	1 NC	1	B	**3SB3801-2DB3**		1	1 unit	41J
A = Pushbutton white, label "I"	1 NO	1	B	**3SB3801-2DD3**		1	1 unit	41J
A = Pushbutton black, label "O"	1 NC	1	B	**3SB3801-2DE3**		1	1 unit	41J
3SB3801-2.F3								
A = EMERGENCY-STOP mushroom pushbuttons, red, Ø 40 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, without protective collar	1 NC ⊖	1	B	**3SB3801-2DG3**		1	1 unit	41J
	2 NC ⊖	1	B	**3SB3801-2EG3**		1	1 unit	41J
- With M12 plug	2 NC ⊖ [2]	1	C	**3SB3801-2EG10-0CC0**		1	1 unit	41J
• With yellow top part, with protective collar[1]	1 NC ⊖	1	B	**3SB3801-2DF3**		1	1 unit	41J
	2 NC ⊖	1	B	**3SB3801-2EF3**		1	1 unit	41J
3SB3801-2EB30-0CC0								
A = EMERGENCY-STOP mushroom pushbuttons, red, Ø 60 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, with protective collar for 5 padlocks[1]	2 NC ⊖	1	B	**3SB3801-2EA30**		1	1 unit	41J
	2 NC ⊖ [2]	1	B	**3SB3801-2EA30-0CC0**		1	1 unit	41J
3SB3802-2DA3								
A = mushroom pushbutton, Ø 60 mm, black, with positive latching and rotate-to-unlatch mechanism								
• With gray top part, with protective collar for 5 padlocks[1]	2 NC[2]	1	B	**3SB3801-2EB30-0CC0**		1	1 unit	41J
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	B	**3SB3802-2DA3**		1	1 unit	41J
3SB3803-2DA3								
B = Pushbutton white, label "I" A = Pushbutton black, label "O"	1 NO, 1 NC	2	B	**3SB3802-2DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton green, label "I", A = Pushbutton red, label "O"	BA 9s[3], 1 NO, 1 NC	3	B	**3SB3803-2DA3**		1	1 unit	41J
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	B	**3SB3803-2DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton white, label "I", A = Pushbutton black, label "O"	BA 9s[3], 1 NO, 1 NC	3	B	**3SB3803-2DC3**		1	1 unit	41J
3SB3803-2DB3								

For online configurator see www.siemens.com/sirius/configurators

Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3SK1, 3TK28 safety relays or the 3RK3 Modular Safety System; see Chapter 11, "Safety Technology".

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

2) **-0CC0**: Contact blocks with spring-type terminals.

3) Only lampholder; order lamp separately.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

Version	Number of command points	DT	Configurator / Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Empty enclosures, plastic							
3SB3802-0AA3							
Cable entry top and bottom each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points							
For contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening), with gray top part	1	B	**3SB3801-0AA3**		1	1 unit	41J
	2	B	**3SB3802-0AA3**		1	1 unit	41J
	3	B	**3SB3803-0AA3**		1	1 unit	41J
	4	B	**3SB3804-0AA3**		1	1 unit	41J
	6	B	**3SB3806-0AA3**		1	1 unit	41J
3SB3801-0AB3							
For EMERGENCY-STOP, for contact blocks and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)							
• With yellow top part, without protective collar	1	B	**3SB3801-0AB3**		1	1 unit	41J
• With yellow top part, with protective collar[1)]	1	B	**3SB3801-0AD3**		1	1 unit	41J
Empty enclosures, metal							
3SB3804-2AA3							
Cable entry top and bottom each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points							
For contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening), with gray top part	1	B	**3SB3801-2AA3**		1	1 unit	41J
	2	B	**3SB3802-2AA3**		1	1 unit	41J
	3	B	**3SB3803-2AA3**		1	1 unit	41J
	4	B	**3SB3804-2AA3**		1	1 unit	41J
	6	B	**3SB3806-2AA3**		1	1 unit	41J
3SB3801-2AB3							
For EMERGENCY-STOP, for contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)							
• With yellow top part, without protective collar	1	B	**3SB3801-2AB3**		1	1 unit	41J
3SB3801-2AD3							
• With yellow top part, with protective collar[1)]	1	B	**3SB3801-2AD3**		1	1 unit	41J
• With gray top part, with protective collar[1)]	1	B	**3SB3801-2AE3**		1	1 unit	41J
3SB3801-2EC3							
• With yellow top part, with protective collar for 3 padlocks [1)], for mushroom Ø 40 mm, can be locked (BKS, CES, O.M.R.)	1	B	**3SB3801-2EC3**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

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Customized enclosures

Overview

Customized enclosures are available with:
- 1 to 6 command points
- Operational voltage up to 400 V

One command point comprises:
- 1 actuator or indicator
- Up to 3 contact blocks or up to 2 contact blocks + 1 lampholder
- 1 inscription label

For plastic enclosures the command points are equipped as standard with plastic actuators and indicators, for metal enclosures they are equipped with metal actuators and indicators.

For cable entry in each case, a hole is provided at the top and bottom:
- For M20 for 1 to 3 command points
- For M25 for 4 and 6 command points

Ordering notes (selection by configurator)

To order customized enclosures with the 3SB3 control devices (except suspended pushbuttons), use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options. Configurator see
- Electronic Catalog CA01 on DVD or
- Industry Mall, www.siemens.com/industrymall

Supplement the Article No. with the order code **"K0Y"** (as already listed in the selection table).

The list price of the complete enclosure is generated in the configurator for the customized equipment.

Please send the resulting electronic order form along with your order by e-mail to our Competence Center at

sirius-attach.aud@siemens.com

If you are unable to access either catalog, please contact our Technical Assistance.

Selection and ordering data

Version	Number of command points	DT	Configurator Article No.	Price per PU[1]	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures							
3SB3803-.AZ With contact blocks and lampholders for base mounting	1	C	**3SB3801-0AZ K0Y**		1	1 unit	41J
	2	C	**3SB3802-0AZ K0Y**		1	1 unit	41J
	3	C	**3SB3803-0AZ K0Y**		1	1 unit	41J
	4	B	**3SB3804-0AZ K0Y**		1	1 unit	41J
	6	B	**3SB3806-0AZ K0Y**		1	1 unit	41J
With single-pole contact blocks and lampholders for front plate mounting	1	C	**3SB3801-1AZ K0Y**		1	1 unit	41J
	2	C	**3SB3802-1AZ K0Y**		1	1 unit	41J
	3	C	**3SB3803-1AZ K0Y**		1	1 unit	41J
	4	B	**3SB3804-1AZ K0Y**		1	1 unit	41J
	6	B	**3SB3806-1AZ K0Y**		1	1 unit	41J
Metal enclosures							
3SB3803-.AZ With contact blocks and lampholders for base mounting	1	C	**3SB3801-2AZ K0Y**		1	1 unit	41J
	2	C	**3SB3802-2AZ K0Y**		1	1 unit	41J
	3	C	**3SB3803-2AZ K0Y**		1	1 unit	41J
	4	C	**3SB3804-2AZ K0Y**		1	1 unit	41J
	6	C	**3SB3806-2AZ K0Y**		1	1 unit	41J
With single-pole contact blocks and lampholders for front plate mounting	1	C	**3SB3801-3AZ K0Y**		1	1 unit	41J
	2	C	**3SB3802-3AZ K0Y**		1	1 unit	41J
	3	C	**3SB3803-3AZ K0Y**		1	1 unit	41J
	4	C	**3SB3804-3AZ K0Y**		1	1 unit	41J
	6	C	**3SB3806-3AZ K0Y**		1	1 unit	41J
3SB3887-1AZ **Suspended pushbuttons** With holding plate and handle, customized equipment[2]	max. 6	D	**3SB3887-1AZ K0Y**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators

1) The prices depend on the equipment selected.

2) Order forms for customized orders are available from Technical Assistance.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For self-equipping of the enclosures

Version	Rated voltage/ Graphical symbol	Operating travel/color Contact closed Contact open	DT	Screw terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for base mounting								
Contact blocks with one contact								
1 NO	.3 / .4	NSD0_00015 3-4 0 1 2 3 4 mm 2,3	▶	**3SB3420-0B**		1	1 unit	41J
1 NO with gold-plated contacts	.3 / .4	NSD0_00015 3-4 0 1 2 3 4 mm 2,3	B	**3SB3420-0BA**		1	1 unit	41J
1 NC ➔	.1 / .2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	▶	**3SB3420-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔	.1 / .2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	C	**3SB3420-0CA**		1	1 unit	41J
BA 9s lampholders								
Without lamp	Acc. to lamp X1 (L+) X2 (L-) NSD0_00003		▶	**3SB3420-1A**		1	1 unit	41J
With integrated voltage reducer and with 130 V lamp (3SX1731)[1]	230/240 V AC X1 X2 NSD0_00042	Clear	B	**3SB3420-1C**		1	1 unit	41J
Lampholders with integrated LED	24 V AC/DC X1 X2 NSD0_01292b	Yellow	B	**3SB3420-1PA**		1	1 unit	41J
		Red	▶	**3SB3420-1PB**		1	1 unit	41J
		Green	▶	**3SB3420-1PC**		1	1 unit	41J
		Blue	B	**3SB3420-1PD**		1	1 unit	41J
		White	▶	**3SB3420-1PE**		1	1 unit	41J
	110 V AC X1 X2 NSD0_01296b	Yellow	B	**3SB3420-1QA**		1	1 unit	41J
		Red	B	**3SB3420-1QB**		1	1 unit	41J
		Green	B	**3SB3420-1QC**		1	1 unit	41J
		Blue	D	**3SB3420-1QD**		1	1 unit	41J
		White	B	**3SB3420-1QE**		1	1 unit	41J
	230 V AC X1 X2 NSD0_01296b	Yellow	B	**3SB3420-1RA**		1	1 unit	41J
		Red	B	**3SB3420-1RB**		1	1 unit	41J
		Green	B	**3SB3420-1RC**		1	1 unit	41J
		Blue	B	**3SB3420-1RD**		1	1 unit	41J
		White	B	**3SB3420-1RE**		1	1 unit	41J
Fixpoint terminals		Black	B	**3SB3901-0AG**		1	1 unit	41J
		Blue	B	**3SB3901-0AH**		1	1 unit	41J
		Green/Yellow	B	**3SB3901-0AJ**		1	1 unit	41J

3SB3420-0B

3SB3420-1A

3SB3420-1PE

3SB3901-0AH

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] The voltage reducer can only be used with this lamp.

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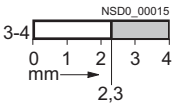
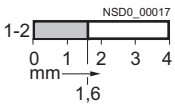
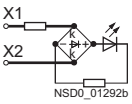
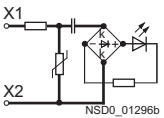
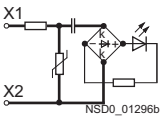
Contact blocks and lampholders

Version	Rated voltage/ Graphical symbol	Operating travel/color Contact closed Contact open	DT	Spring-type terminals Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for base mounting								
Contact blocks with one contact								
1 NO			B	**3SB3423-0B**		1	1 unit	41J
1 NO with gold-plated contacts			D	**3SB3423-0BA**		1	1 unit	41J
1 NC ➔			B	**3SB3423-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔			B	**3SB3423-0CA**		1	1 unit	41J
Lampholders with integrated LED	24 V AC/DC 	Yellow	B	**3SB3423-1PA**		1	1 unit	41J
		Red	B	**3SB3423-1PB**		1	1 unit	41J
		Green	B	**3SB3423-1PC**		1	1 unit	41J
		Blue	B	**3SB3423-1PD**		1	1 unit	41J
		White	B	**3SB3423-1PE**		1	1 unit	41J
	110 V AC 	Yellow	B	**3SB3423-1QA**		1	1 unit	41J
		Red	D	**3SB3423-1QB**		1	1 unit	41J
		Green	D	**3SB3423-1QC**		1	1 unit	41J
		Blue	D	**3SB3423-1QD**		1	1 unit	41J
		White	D	**3SB3423-1QE**		1	1 unit	41J
	230 V AC 	Yellow	D	**3SB3423-1RA**		1	1 unit	41J
		Red	B	**3SB3423-1RB**		1	1 unit	41J
		Green	B	**3SB3423-1RC**		1	1 unit	41J
		Blue	B	**3SB3423-1RD**		1	1 unit	41J
		White	B	**3SB3423-1RE**		1	1 unit	41J
Fixpoint terminals		Black	B	**3SB3423-2F**		1	1 unit	41J
		Blue	B	**3SB3423-2G**		1	1 unit	41J
		Green/Yellow	B	**3SB3423-2H**		1	1 unit	41J

3SB3423-0B

3SB3423-2G

➔ Positive opening according to IEC 60947-5-1, Appendix K.

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
Pressure plates for selector switches and key-operated switches For actuating the central contact block of 3 contact blocks[1)]	B	**3SB3901-0AW**		100	10 units	41J

3SB3901-0AW

1) The pressure plates can be removed one by one to meet individual requirements.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Black labels

The inscription labels (black with white inscription or silver-colored with black print) have an adhesive layer on the back. The size of the labels is 22 mm × 22 mm.

Inscriptions

The inscriptions have upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 13/96).

Selection and ordering data

PU (UNIT) = 1
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscriptions	DT	Black Article No.	Price per PU	DT	Silver-colored Article No.	Price per PU
Inscription labels, self-adhesive, 22 mm x 22 mm						
For self-inscription						
Blank	B	**3SB3906-1AA**		B	**3SB1901-3AA**	
With inscription						
Ein	B	**3SB3906-1AB**		B	**3SB1901-3AB**	
On	B	**3SB3906-1EB**		B	**3SB1901-3EB**	
Aus	B	**3SB3906-1AC**		B	**3SB1901-3AC**	
Off	B	**3SB3906-1EC**		B	**3SB1901-3EC**	
Auf	B	**3SB3906-1AD**		B	**3SB1901-3AD**	
Up	B	**3SB3906-1ED**		B	**3SB1901-3ED**	
Ab	B	**3SB3906-1AE**		B	**3SB1901-3AE**	
Down	B	**3SB3906-1EE**		B	**3SB1901-3EE**	
Auf	B	**3SB3906-1AD**		B	**3SB1901-3AD**	
Open	B	**3SB3906-1EP**		B	**3SB1901-3EP**	
Zu	B	**3SB3906-1AL**		B	**3SB1901-3AL**	
Close	B	**3SB3906-1EQ**		B	**3SB1901-3EQ**	
Vor	B	**3SB3906-1AF**		B	**3SB1901-3AF**	
Forward	B	**3SB3906-1EF**		B	**3SB1901-3EF**	
Zurück	B	**3SB3906-1AG**		B	**3SB1901-3AG**	
Reverse	B	**3SB3906-1EG**		B	**3SB1901-3EG**	
Rechts	B	**3SB3906-1AH**		B	**3SB1901-3AH**	
Right	B	**3SB3906-1EH**			**--**	
Links	B	**3SB3906-1AJ**		B	**3SB1901-3AJ**	
Left	B	**3SB3906-1EJ**			**--**	
Schnell	B	**3SB3906-1AM**		B	**3SB1901-3AM**	
Fast	B	**3SB3906-1ER**			**--**	
Langsam	B	**3SB3906-1AN**		B	**3SB1901-3AN**	
Slow	B	**3SB3906-1ES**			**--**	
Betrieb	B	**3SB3906-1AP**		B	**3SB1901-3AP**	
Running	B	**3SB3906-1EV**		B	**3SB1901-3EV**	
Störung	B	**3SB3906-1AQ**		B	**3SB1901-3AQ**	
Fault	B	**3SB3906-1EW**			**--**	
Einrichten	B	**3SB3906-1AR**		B	**3SB1901-3AR**	
Start	B	**3SB3906-1EL**		B	**3SB1901-3EL**	
Reset	B	**3SB3906-1EM**		B	**3SB1901-3EM**	
Test	B	**3SB3906-1EN**		B	**3SB1901-3EN**	
Halt	B	**3SB3906-1AK**		B	**3SB1901-3AK**	
Stop	B	**3SB3906-1EK**		B	**3SB1901-3EK**	
NOT-HALT	B	**3SB3906-1AS**		B	**3SB1901-3AT**	
NOT-AUS	B	**3SB3906-1AV**		B	**3SB1901-3AS**	
EMERGENCY STOP	B	**3SB3906-1EY**		B	**3SB1901-3EY**	
Lüfter	B	**3SB3906-1CA**			**--**	
Pumpe	B	**3SB3906-1CB**		B	**3SB1901-3CB**	
Kühlung	B	**3SB3906-1CC**			**--**	
Heizung	B	**3SB3906-1CD**			**--**	
Beleuchtung	B	**3SB3906-1CE**		B	**3SB1901-3CE**	
Filter	B	**3SB3906-1CF**			**--**	
Motor	B	**3SB3906-1CG**			**--**	
Kompressor	B	**3SB3906-1CH**		B	**3SB1901-3CH**	
With graphic symbol						
O	B	**3SB3906-1MB**		B	**3SB1901-3MB**	
I	B	**3SB3906-1MC**		B	**3SB1901-3MC**	
II	B	**3SB3906-1MD**		B	**3SB1901-3MD**	
III	B	**3SB3906-1ME**		B	**3SB1901-3ME**	
O I (horizontal)	B	**3SB3906-1MF**		B	**3SB1901-3MF**	
I O II (horizontal)	B	**3SB3906-1MG**		B	**3SB1901-3MG**	
I O (vertical)	B	**3SB3906-1MH**		B	**3SB1901-3MH**	
II O I (vertical)	B	**3SB3906-1MW**		C	**3SB1901-3MW**	
→	B	**3SB3906-1NA**		B	**3SB1901-3NA**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscription labels for enclosures

Inscriptions	DT	Black Article No.	Price per PU	DT	Silver-colored Article No.	Price per PU
Inscription labels, self-adhesive, 22 mm x 22 mm						
With customized inscription						
For inscriptions or symbols see "Options"		**3SB3906-0XZ**			**3SB1901-3XZ**	
• Text line(s)	B	**K0Y, K1Y, K2Y** or **K5Y**		B	**K0Y, K1Y, K2Y** or **K5Y**	
• Symbol with No.	B	**K3Y**		B	**K3Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

A letter height of 4 mm is used as standard for text inscriptions (1 to 3 lines).

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription

Two-line inscription in upper/lower case lettering (K0Y)

Single-line inscription in upper case lettering (K1Y)

Three-line inscription in lower case letters (K2Y)

Symbol number 5011 according to IEC 60417 (K3Y)

Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following order codes to the Article No.:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift out"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OUT"): **K1Y**
- Text line(s) in lower case (e.g. "lift out"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Out"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format should be submitted to:

sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB3906–0XZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB3906–0XZ
K3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB3906–0XZ
K3Y
Z = 1118 ISO

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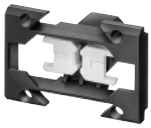
Selection and ordering data

	Version	Color/ inscription	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blanking plugs for spare command points								
3SB3921-0AA	**Blanking plugs** For plastic version, round	Black	►	**3SB3921-0AA**		1	10 units	41J
3SB1902-0AQ	**Blanking plugs** (plastic) For metal version, round	Aluminized	B	**3SB1902-0AQ**		1	10 units	41J
Holders and pressure plates								
3SB3901-0AB	**Holders for pushbuttons and switches** For snapping on 3 blocks,[1] for front plate mounting		►	**3SB3901-0AB**		100	20 units	41J
 3SB3901-0AC	**Holders for selector switches and key-operated switches with pressure plate** For actuating a central contact block, for front plate mounting[2]		►	**3SB3901-0AC**		100	10 units	41J
3SB3901-0AW	**Pressure plates for selector switches and key-operated switches** For actuating a central contact block, for base mounting[2]		B	**3SB3901-0AW**		100	10 units	41J
Accessories for enclosures								
3SB1902-1AQ	**Yellow name plates** As backing plate for EMERGENCY-STOP, self-adhesive	Without inscription	D	**3SB1902-1AQ**		1	1 unit	41J
		With inscription						
		• NOT-HALT	B	**3SB1902-2AQ**		1	1 unit	41J
		• NOT-AUS	B	**3SB3921-0CJ**		1	1 unit	41J
		With recess for inscription label	B	**3SB3921-0BV**		1	1 unit	41J
3SB3901-0CK	**M20 cable gland** incl. hexagonal nut		B	**3SB3901-0CK**		1	1 unit	41J
	M25 cable gland incl. hexagonal nut		B	**3SB3901-0CM**		1	1 unit	41J
3SB3901-0CL	**M20 hexagonal nuts** For cable glands		B	**3SB3901-0CL**		100	10 units	41J
	M25 hexagonal nuts For cable glands		B	**3SB3901-0CN**		100	10 units	41J
3SB3901-0CS	**Connecting pieces** For connecting 2 plastic enclosures							
	• M20/M20		B	**3SB3901-0CS**		1	1 unit	41J
	• M20/M25[3]		B	**3SB3901-0CT**		1	1 unit	41J
	• M25/M25		B	**3SB3901-0CU**		1	1 unit	41J
3SB3901-0CP	**Connecting pieces** For connecting 2 metal enclosures							
	• M20/M20		B	**3SB3901-0CP**		1	1 unit	41J
	• M25/M25		B	**3SB3901-0CQ**		1	1 unit	41J

1) The holder for illuminated commanding devices is included in the scope of supply.

2) The pressure plates can be removed one by one to meet individual requirements.

3) Not suitable for plastic enclosures with 6 command points.

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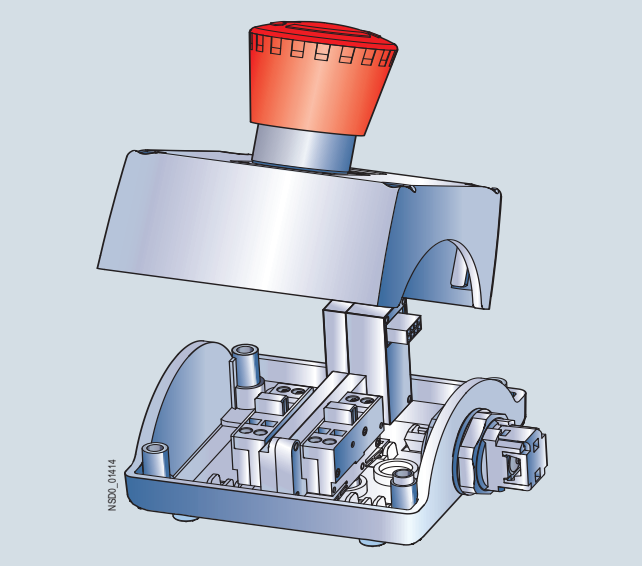
General data

Overview

AS-Interface enclosures with customized equipment

Distributed command devices of the 3SB3 series can be quickly connected to the AS-Interface using AS-Interface enclosures. Using suitable components you can make your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.



EMERGENCY-STOP enclosures

Enclosures

Color of enclosure cover:

- Gray, RAL 7035
- Yellow, RAL 1004, for EMERGENCY-STOP

Color of enclosure base:

- Black, RAL 9005

Installation of AS-Interface slaves

The following slave types are available for connecting the command points:

- Slave in A/B technology with 4 inputs and 3 outputs
- Slave with 4 inputs and 4 outputs
- F Slave with two secure inputs for EMERGENCY-STOP mushroom pushbutton

The following table shows the maximum number of equippable slaves:

Enclosures for	Number of slaves for enclosures without EMERGENCY-STOP	Number of slaves for enclosures with EMERGENCY-STOP
1 command point	Not available	1 x F slave
2 command points	1 x slave 4I/4O or 4I/3O	Not available
3 command points	1 x slave 4I/4O or 4I/3O	1 x slave 4I/4O or 4I/3O + 1 x F slave
4 command points	2 x slave 4I/4O or 4I/3O[1)]	2 x slave 4I/4O or 4I/3O + 1 x F slave[1)]
6 command points	2 x slave 4I/4O or 4I/3O	2 x slave 4I/4O or 4I/3O + 1 x F slave

[1)] Applies to plastic enclosures. For metal enclosures with 4 command points, only 1 x slave 4I/4O or 4I/3O is possible.

Connection

One set of links is required in each case to connect a slave to contact blocks, to lampholders and to the connection element.

The connection elements are mounted in the front-end cable glands and are used for connection of the AS-Interface or for bringing unused inputs or outputs out of the enclosure.

For connection to AS-Interface can be selected between:

- Terminal for shaped AS-Interface cable. The cable is contacted by the insulation piercing method and routed past the enclosure on the outside (possible only with plastic enclosure).
- Cable gland for the shaped AS-Interface cable or round cable. The cable is routed into the enclosure (preferable for metal enclosure).
- Connection using M12 plug.

If less than all inputs/outputs of the installed slaves in an enclosure are used for connecting the command devices, free inputs and outputs can be routed on request to the outside through an M12 socket on the top or bottom side of the enclosure.

To supply inputs with power, the S+ connection of the slave must be assigned to the socket, for outputs the OUT– connection must be assigned.

Addressing is performed using the AS-Interface connections or the integrated addressing socket. An external power supply is not required.

Customized enclosures (selection by configurator)

To order customized 3SF58 AS-Interface enclosures with the 3SB3 control devices, use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options.

Related ordering notes see page 13/92.

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Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators

The enclosures without EMERGENCY-STOP each have one user module with 4I/3O; the enclosures with EMERGENCY-STOP mushroom pushbuttons have a safe AS-Interface slave integrated in the enclosure.

Enclosures with EMERGENCY-STOP mushroom pushbuttons are fitted with two NC contact blocks, which are wired to the safe slave. The contact blocks and lampholders (with spring-type terminals) of the control device, and the AS-Interface slaves, are mounted in the base of the enclosure and are cable-connected.

The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is run along the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure.

The housing with EMERGENCY-STOP mushroom pushbuttons with an M12 connector is also available.

Selection and ordering data

Equipping options (A, B, C = identification letters of the command points)	No. of command points	DT	Configurator ⚙ Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface enclosures, plastic							
3SF5811-0AA08							
With M12 top connector							
A = EMERGENCY-STOP mushroom pushbuttons, red, with rotate-to-unlatch mechanism, 1 NC, 1 NC • Yellow enclosure top	1	B	**3SF5811-0AA10**		1	1 unit	42A
With terminal for insulation piercing method at top							
A = EMERGENCY-STOP mushroom pushbuttons, red, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	A	**3SF5811-0AA08**		1	1 unit	42A
• Yellow enclosure top, with protective collar[1)]	1	A	**3SF5811-0AB08**		1	1 unit	42A
3SF5812-0DA00							
B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	A	**3SF5812-0DA00**		1	1 unit	42A
B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	A	**3SF5812-0DB00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5813-0DA00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	3	A	**3SF5813-0DC00**		1	1 unit	42A
C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5813-0DB00**		1	1 unit	42A
AS-Interface enclosures, metal							
3SF5811-2AB08							
With M12 top connector							
A = EMERGENCY-STOP mushroom pushbuttons, red, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	C	**3SF5811-2AA10**		1	1 unit	42A
• Yellow enclosure top, with protective collar[1)]	1	C	**3SF5811-2AB10**		1	1 unit	42A
With cable gland at top							
A = EMERGENCY-STOP mushroom pushbuttons, red, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	A	**3SF5811-2AA08**		1	1 unit	42A
• Yellow enclosure top, with protective collar[1)]	1	A	**3SF5811-2AB08**		1	1 unit	42A
3SF5813-2DA00							
B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	A	**3SF5812-2DA00**		1	1 unit	42A
B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	A	**3SF5812-2DB00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5813-2DA00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	3	A	**3SF5813-2DC00**		1	1 unit	42A
C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5813-2DB00**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators

[1)] The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

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Selection and ordering data

For self-equipping of the enclosures

	Version	Number of command points	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For plastic enclosures								
3SF5500-0BA	**AS-Interface slaves**							
	F slave, 2 safe inputs, for plastic enclosure, EMERGENCY-STOP, without protective collar	1 ... 6	A	**3SF5500-0BA**		1	1 unit	42A
	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	A	**3SF5500-0DA**		1	1 unit	42A
3SF5500-0BB	A/B slave, 4I/3O for plastic enclosure	2 ... 6	A	**3SF5500-0BB**		1	1 unit	42A
	Slave, 4I/4O, for plastic enclosure	2 ... 6	A	**3SF5500-0BC**		1	1 unit	42A
3SF5900-0CA	**Sets of links**							
	For F slave		A	**3SF5900-0BA**		1	1 unit	42A
	For slave 4I/4O or A/B slave 4I(3O)		A	**3SF5900-0BB**		1	1 unit	42A
	Connection elements							
3SF5900-0CC	For AS-Interface shaped cable, connection by insulation piercing method, for plastic enclosure	1 ... 3	A	**3SF5900-0CA**		1	1 unit	42A
		4 ... 6	B	**3SF5900-0CB**		1	1 unit	42A
	For AS-Interface connection using M12 plug, for plastic enclosure	1 ... 3	B	**3SF5900-0CC**		1	1 unit	42A
		4 ... 6	B	**3SF5900-0CD**		1	1 unit	42A
	For bringing out unused inputs/outputs through an M12 socket, for plastic enclosure	1 ... 3	B	**3SF5900-0CE**		1	1 unit	42A
		4 ... 6	B	**3SF5900-0CF**		1	1 unit	42A
3SF5900-0CG	For AS-Interface shaped cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5900-0CG**		1	1 unit	42A
		4 ... 6	A	**3SF5900-0CH**		1	1 unit	42A
	For round cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5900-0CJ**		1	1 unit	42A
		4 ... 6	A	**3SF5900-0CK**		1	1 unit	42A
For metal enclosures								
3SF5500-0CB	**AS-Interface slaves**							
	F slave, 2 safe inputs, for metal enclosure, EMERGENCY-STOP, without protective collar	1 ... 6	A	**3SF5500-0CA**		1	1 unit	42A
	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	A	**3SF5500-0DA**		1	1 unit	42A
	A/B slave, 4I/3O, for metal enclosure	2 ... 6	A	**3SF5500-0CB**		1	1 unit	42A
	Slave, 4I/4O, for metal enclosure	2 ... 6	A	**3SF5500-0CC**		1	1 unit	42A
3SF5900-0CG	**Sets of links**							
	For F slave		A	**3SF5900-0BA**		1	1 unit	42A
	For slave 4I/4O or A/B slave 4I(3O)		A	**3SF5900-0BB**		1	1 unit	42A
	Connection elements							
	For AS-Interface connection using M12 plug, for metal enclosure	1 ... 3	B	**3SF5900-2CC**		1	1 unit	42A
		4 ... 6	B	**3SF5900-2CD**		1	1 unit	42A
3SF5900-0CJ	For bringing out unused inputs/outputs through an M12 socket, for metal enclosure	1 ... 3	B	**3SF5900-2CE**		1	1 unit	42A
		4 ... 6	B	**3SF5900-2CF**		1	1 unit	42A
	For AS-Interface shaped cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5900-0CG**		1	1 unit	42A
		4 ... 6	A	**3SF5900-0CH**		1	1 unit	42A
	For round cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5900-0CJ**		1	1 unit	42A
		4 ... 6	A	**3SF5900-0CK**		1	1 unit	42A
Spare parts								
3RK1901-3QA00	**Cable clips** For cable adapters		►	**3RK1901-3QA00**		100	10 units	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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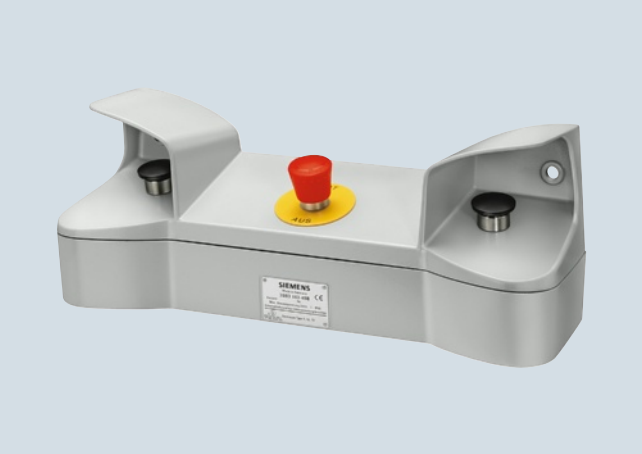
Plastic and metal enclosures

Overview



Two-hand operation console with metal enclosure

Equipment

The two-hand operation consoles are pre-equipped with 3SB3 command devices. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic, in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard equipment comprises:

- 2 black mushroom pushbuttons, Ø 40 mm, 1 NO + 1 NC, Article No. 3SB3000-1GA11 or 3SB3500-1GA11
- 1 red EMERGENCY-STOP mushroom pushbutton according to ISO 13850, Ø 40 mm, with positive latching, 2 NC, Article No. 3SB3000-1HA20 or 3SB3500-1HA20

The plastic version can be retrofitted with up to 8 customized command points. The surface of the console has premachined breaking points for this purpose.

Application

The two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

Operator panels are primarily used on presses, stamping machines, printing presses and paper converting machines, in the chemical industry and in the rubber and plastics industries.

The control command is given by pressing the two mushroom pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

For the further processing of control commands, suitable evaluation units are used, e.g. 3SK11 safety relays or the 3RK3 Modular Safety System (see Chapter 11, "Safety Technology").

Standards

The two-hand operation consoles comply with the requirements of EN 574.

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures, degree of protection IP65						
3SB3863-4BB	**Two-hand operation consoles, metal enclosure**					
• With standard fittings	B	**3SB3863-4BB**		1	1 unit	41J
• With standard fittings and 4 additional holes for 22.5 mm command devices[1)]	B	**3SB3863-4BA**		1	1 unit	41J
• Empty enclosure, unequipped	B	**3SB3863-4BC**		1	1 unit	41J
Plastic enclosures, degree of protection IP65						
3SB3863-1BB3	**Two-hand operation consoles, plastic enclosure** With standard fittings and premachined breaking points for 8 additional 22.5 mm[1)] command devices, with holes for metric cable glands	B	**3SB3863-1BB3**	1	1 unit	41J
Accessories						
3SB3901-0AQ	**Stands for two-hand operation consoles** With holes for metric cable glands	B	**3SB3901-0AQ3**	1	1 unit	41J

[1)] See 3SB3 Pushbuttons and Indicator Lights, 22 mm, page 13/20.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE7 metal enclosures

Overview

3SE7 cable-operated switches

The cable-operated switches are used for monitoring or for EMERGENCY-STOP devices on particularly endangered system components.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected. Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance trackers are used primarily for monitoring very long belt systems.

Contact blocks

The switches for wire lengths up to 50 m are supplied with 1 NO + 1 NC or 2 NC contacts and those up to 75 m with 1 NO + 3 NC contacts. The switches for wire lengths from 2 x 75 m and the conveyor belt unbalance protection device are supplied with 2 NO + 2 NC contacts.

The NC contacts of the cable-break or cable-pull signaling are positive opening. The NO contact can be used, for example, for signaling purposes.

Free position and display

Cable-operated switches with one-side operation are held in free position by the pre-tension on the turnbuckle.

On switches with interlocking, with a pretensioned cable, the locking must be deactivated beforehand in order to return the cable-operated switch to its original position.

The cable-operated switch and the conveyor belt unbalance tracker can be supplied optionally with a factory-fitted LED (red, 24 V DC). This light in innovative chip-on-board technology allows the operating state of the switch to be visible at a distance of at least 50 m.

Application

Standards

The switches are equipped with positive latching and positive NC contacts and are thus suitable for operation in EMERGENCY-STOP devices according to EN ISO 13850.

Technical specifications

Type		3SE7120	3SE7150	3SE7140	3SE7141	3SE7160	3SE7310
General data							
Standards		IEC 60947-5-1, EN 60947-5-1; IEC 60204-1, EN 60204-1; EN ISO 13850					
Approvals		UL/CSA					
Electrical design		Contacts electrically isolated from each other					
Electrical load							
• 2-pole, at AC-15		400 V AC, 6 A		400 V AC, 6 A	250 V AC, 2 A	400 V AC, 6 A	--
• 3-pole, at AC-15		250 V AC, 2 A		--	--	--	--
• 4-pole, at AC-15		--		--	--	400 V AC, 6 A	400 V AC, 6 A
• Minimum		24 V AC/DC, 10 mA					
Short-circuit protection	A	6 (slow)					
Mechanical endurance		> 1 million operating cycles					
Contact material		Fine silver					
Operation		By pulling or breaking of wire					
Wire length, maximum	m	10	25	50	75	2 x 75	–
Distance between wire supports, max.	m	2.5	3	5			–
Enclosures							
Enclosure material		GD Al alloy, coated (color), dark black RAL 9005					
Cover		Shock-resistant thermoplast					
Degree of protection acc. to IEC 60529		IP65			IP67	IP65	
Ambient temperature	°C	–25 ... +70					
Mounting		Designed for M5					
Fixing spacing	mm	30 and 40					
Cable entry		2 x (M20 x 1.5)		1 x (M16 x 1.5)	3 x (M20 x 1.5)	2 x (M25 x 1.5)	
Connection type		Screw terminals M3.5, self-lifting clamp terminal					

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Selection and ordering data

Version	Wire length	Contacts		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	m								
Cable-operated switches									
3SE7120-1BH00									
Metal enclosures, IP65 (cover made of molded plastic)	10								
• Without latching, only cable pull monitoring		1 NO + 1 NC	⊖	A	**3SE7120-2DD01**		1	1 unit	41K
• With latching and button reset		2 NC	⊖	A	**3SE7120-1BF00**		1	1 unit	41K
- With yellow lid		1 NO + 2 NC	⊖	A	**3SE7120-1BH00**		1	1 unit	41K
3SE7150-1BD00 3SE7150-1BH00									
Metal enclosures, IP65 (cover made of molded plastic), with alignment window	25								
• Without latching		1 NO + 1 NC	⊖	A	**3SE7150-2DD00**		1	1 unit	41K
• With latching and button reset		1 NO + 1 NC	⊖	A	**3SE7150-1BD00**		1	1 unit	41K
		2 NC	⊖	A	**3SE7150-1BF00**		1	1 unit	41K
- With yellow lid		1 NO + 2 NC	⊖	B	**3SE7150-1BH00**		1	1 unit	41K
• With latching and key unlatching		1 NO + 1 NC	⊖	B	**3SE7150-1CD00**		1	1 unit	41K
3SE7150-1BD04									
Metal enclosures, IP65 (cover made of molded plastic), with alignment window, with LED, red, 24 V DC	25								
• Without latching		1 NO + 1 NC	⊖	B	**3SE7150-2DD04**		1	1 unit	41K
• With latching and button reset		1 NO + 1 NC	⊖	B	**3SE7150-1BD04**		1	1 unit	41K
3SE7140-1B.00									
Metal enclosures, IP65 (cover made of molded plastic)	50								
• With latching and button reset		1 NO + 1 NC	⊖	A	**3SE7140-1BD00**		1	1 unit	41K
		2 NC	⊖	B	**3SE7140-1BF00**		1	1 unit	41K
• In addition with LED, red, 24 V DC		1 NO + 1 NC	⊖	B	**3SE7140-1BD04**		1	1 unit	41K
• With latching and key unlatching		1 NO + 1 NC	⊖	B	**3SE7140-1CD00**		1	1 unit	41K
3SE7141-1EG10									
Metal enclosures, IP67 (cover made of molded plastic), with EMERGENCY-STOP mushroom, with rotate-to-unlatch mechanism	75	1 NO + 3 NC	⊖	A	**3SE7141-1EG10**		1	1 unit	41K
3SE7160-1AE00									
Metal enclosures, IP65 with actuation on both sides	2 x 75								
• With latching and button reset		2 NO + 2 NC	⊖	A	**3SE7160-1AE00**		1	1 unit	41K
		1 NO + 1 NC	⊖	B	**3SE7160-1BD00**		1	1 unit	41K
• In addition with LED, red, 24 V DC		2 NO + 2 NC	⊖	B	**3SE7160-1AE04**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

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3SE7 metal enclosures

Version	Contacts	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Conveyor belt unbalance trackers							
Metal enclosures, IP65							
• With latching and button reset	2 NO + 2 NC ➔	B	**3SE7310-1AE00**		1	1 unit	41K
• In addition with LED, red, 24 V DC	2 NO + 2 NC ➔	B	**3SE7310-1AE04**		1	1 unit	41K

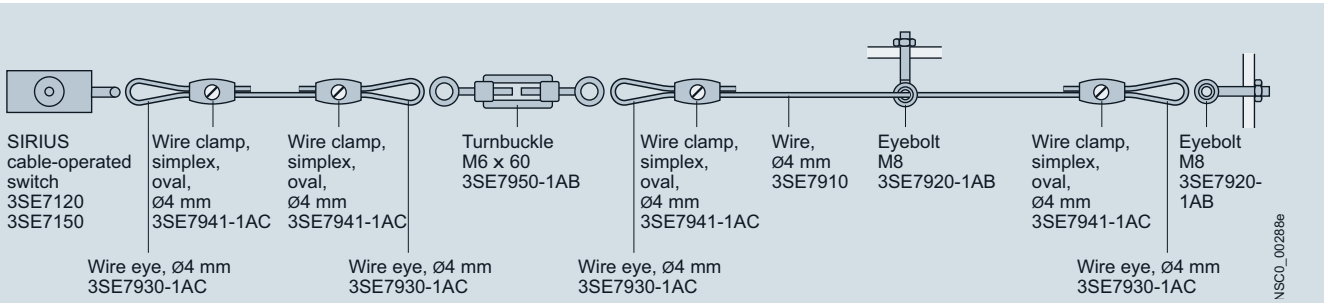
3SE7310-1AE00

➔ Positive opening according to IEC 60947-5-1, Appendix K.

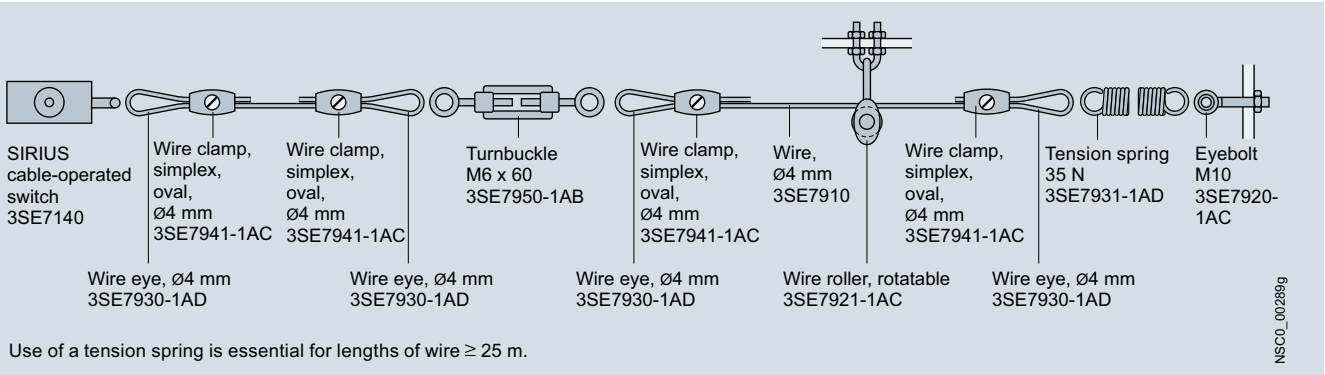
Accessories

Configuration of the cable-operated switches

Short lengths of wire up to 25 m

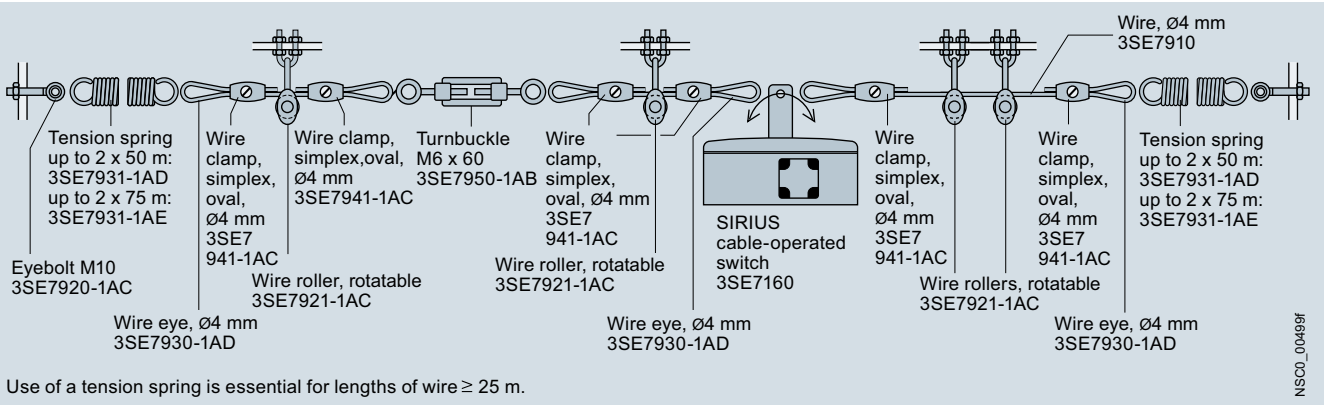


Long lengths of wire up to 50 m



Use of a tension spring is essential for lengths of wire ≥ 25 m.

Pulling from both sides up to 2 x 75 m



Use of a tension spring is essential for lengths of wire ≥ 25 m.

Note:

Large temperature fluctuations require corresponding compensation springs. For reliable connection the PVC sheath must be removed from the clamping area of the steel bowden wire. Bowden wire supports must be used at the recommended intervals.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE7 metal enclosures

	Version	Wire length/ diameter	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Trip-wire with fixing								
	Steel wires, with red plastic sheath, Ø 4 mm[1)]	10 m	A	**3SE7910-3AA**		1	1 unit	41K
		15 m	A	**3SE7910-3AB**		1	1 unit	41K
		20 m	A	**3SE7910-3AC**		1	1 unit	41K
		50 m	A	**3SE7910-3AH**		1	1 unit	41K
	Wire clamps, galvanized white							
	• Oval	2 x Ø 4 mm	A	**3SE7941-1AC**		1	1 unit	41K
	• Single (1 set = 4 units)	2 x Ø 4 mm	A	**3SE7942-1AA**		1	4 units	41K
	• Simplex (1 set = 4 units)	2 x Ø 4 mm	A	**3SE7943-1AC**		1	4 units	41K
	• Duplex (1 set = 4 units)	2 x Ø 4 mm	A	**3SE7944-1AC**		1	4 units	41K
	Tension springs (zinc-plated) to maintain the counter tension							
	• 13 N		A	**3SE7931-1AB**		1	1 unit	41K
	• 35 N, for bowden wires up to 50 m		A	**3SE7931-1AD**		1	1 unit	41K
	• > 35 N, for bowden wires up to 2 × 75 m		B	**3SE7931-1AE**		1	1 unit	41K
	Wire rollers for changing the direction of the wire, rotatable	Ø 4 mm	A	**3SE7921-1AC**		1	1 unit	41K
	Fixtures for the wire rollers (incl. fixing nuts)		A	**3SE7921-1AA**		1	1 unit	41K
	Wire eyes for changes in wire direction and improved power transmission at the fixing points (1 set = 4 units)	Ø 4 mm	A	**3SE7930-1AD**		1	4 units	41K
	Eyebolts for fixing the wire							
	• Including M8 nut		A	**3SE7920-1AB**		1	1 unit	41K
	• Including M10 nut		A	**3SE7920-1AC**		1	1 unit	41K
	Turnbuckles for precise adjustment of the pretension							
	• M6 x 60		A	**3SE7950-1AB**		1	1 unit	41K
	• M6 x 110		A	**3SE7950-1AD**		1	1 unit	41K
Spare parts								
	LED lamps, red 24 V DC 25 mm diameter; for M20 x 1.5 connection		B	**3SX3235**		1	1 unit	41K

[1)] Diameter including casing; the diameter of the steel wire is 3.2 mm.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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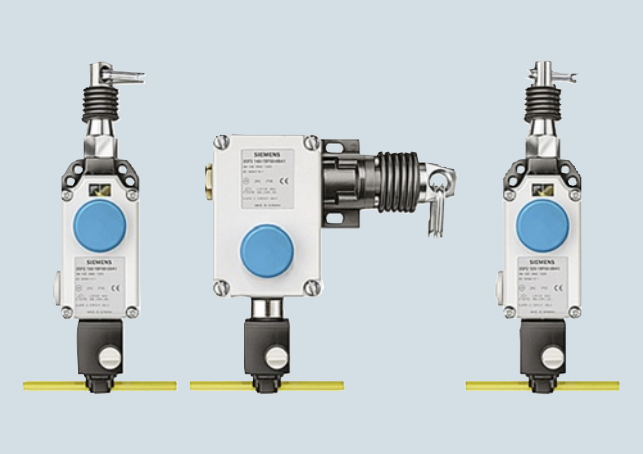
3SF2 cable-operated switches for AS-Interface

Overview



3SF2 cable-operated switch with AS-Interface adapter

AS-Interface cable-operated switches can be directly connected via the bus system AS-Interface with safety-oriented communication.

The safety functions no longer have to be conventionally wired up.

Application

SIRIUS cable-operated switches are used for monitoring or for EMERGENCY-STOP devices on particularly endangered system components.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected.

Standards

The switches with positive latching are suitable for operation in EMERGENCY-STOP devices according to EN ISO 13850. They can achieve up to category 4 according to EN ISO 13849-1 or SIL 3 according to IEC 61508.

Selection and ordering data

Version	Basic switches	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ASIsafe cable-operated switches							
Metal enclosures, IP65 (cover made of molded plastic), with dust protection, latching acc. to ISO 13850, with button reset, 2 NC contacts							
3SF2120-1BF00-0BA1							
• For wire lengths up to 10 m, with alignment window	*3SE7120-1BF00*	C	**3SF2120-1BF00-0BA1**		1	1 unit	42A
3SF2150-1BF00-0BA1							
• For wire lengths up to 25 m, with alignment window	*3SE7150-1BF00*	C	**3SF2150-1BF00-0BA1**		1	1 unit	42A
3SF2140-1BF00-0BA1							
• For wire lengths up to 50 m	*3SE7140-1BF00*	B	**3SF2140-1BF00-0BA1**		1	1 unit	42A

Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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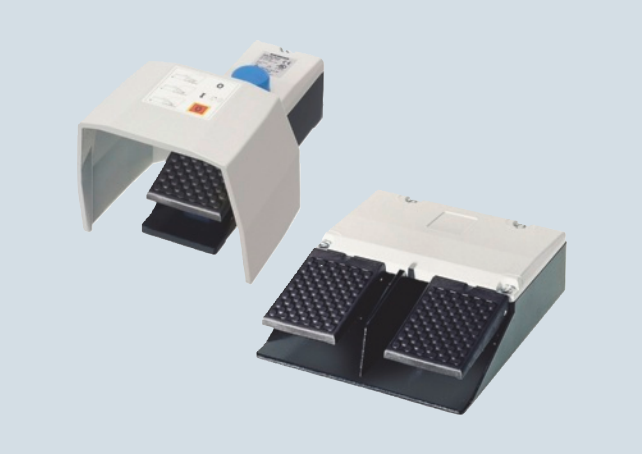
Overview



3SE29 foot switch with metal enclosure

Standard switches

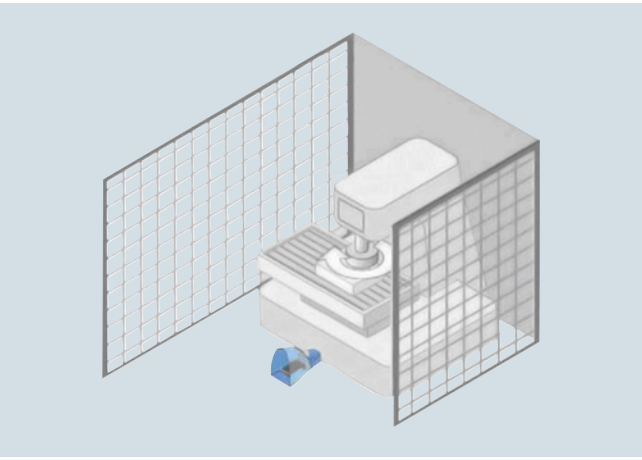
The 3SE29 and 3SE39 foot switch range encompasses versions in a metal enclosure for rugged applications as well as versions with plastic enclosure for less harsh environments. The devices can be supplied with or without a cover and have fixing holes for them to be screwed to the floor.

Depending on the particular application, the metal enclosures can be ordered in latching or momentary-contact versions. The momentary-contact pedal switch in the plastic enclosure has one microswitch (changeover contact) per actuating pedal.

Safety foot switches

The 3SE2924-3AA20 single-pedal safety foot switches are used on machines and plants as OK switches when operation by hand is not possible. The switches are interlocked according to EN ISO 13850 and bear the CE mark in accordance with the machinery directive.

The safety foot switches are protected by a guard hood against accidental operation.



Application example

The switches have two contact blocks, each with one NO contact and one NC contact. The NO contacts and NC contacts of the two contact blocks are connected for easy connection of a single-phase motor. The normal workflow is initiated by pressing down the pedal as far as the pressure point so that the two NO contacts close and the motor starts to run.

If in the event of danger the pedal is pressed beyond the resistance of the pressure point, the positively driven NC contacts will open and the motor is stopped. At the same time the independent latching takes effect and holds the NC contacts in open position. This prevents the machine parts from continuing to run out of control or from being restarted.

After the hazard is eliminated, the machine can only be restarted after manually releasing the switch using a pushbutton on the top of the enclosure. The contacts are then released again and return to their initial position (the NO contacts are open and the NC contacts are closed).

Technical specifications

Type		3SE29	3SE39
Metal and plastic enclosures			
Standards		IEC 60947-5-1	
Electrical load			
• At AC-15, 400 V			
- 1 NO + 1 NC	A	10	--
- 2 NO + 2 NC	A	6	--
- 3SE2924-3AA20 (2 NO + 2 NC)	A	10	
• At 250 V AC	A	–	5
Short-circuit protection			
- 1 NO + 1 NC	A	10 (slow)	--
- 2 NO + 2 NC	A	6 (slow)	--
- 3SE2924-3AA20 (2 NO + 2 NC)	A	10 (slow)	--
- 1 CO contact	A	--	5 (slow)
Mechanical endurance		> 10^6 operating cycles	
Material			
• Enclosures		Aluminum casting	Impact-resistant thermoplast, self-extinguishing according to UL 94 VO
• Covers		Thermoplast	–
• Guard hoods		Aluminum casting	Metal
Degree of protection		IP65	IP65
Ambient temperature	°C	-25 ... +80	-10 ... +75
Connection		Cable entry, metric	Cable AWG20, UL Style 2464, length 3 m

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Plastic and metal enclosures

Selection and ordering data

	Version	Slow-action contacts for each pedal		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures, degree of protection IP65									
3SE290.-.AA20 3SE291.-.AA20	**Momentary-contact foot switches, single pedal** M20 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	A	**3SE2902-0AB20**		1	1 unit	41K
		2 NO + 2 NC	⊖	A	**3SE2903-1AB20**		1	1 unit	41K
	• With hood	1 NO + 1 NC	⊖	A	**3SE2902-0AA20**		1	1 unit	41K
		2 NO + 2 NC	⊖	A	**3SE2903-1AA20**		1	1 unit	41K
	Momentary-contact foot switches, single pedal M20 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	C	**3SE2912-2AB20**		1	1 unit	41K
	• With hood	1 NO + 1 NC	⊖	C	**3SE2912-2AA20**		1	1 unit	41K
3SE2932-.AB20	**Momentary-contact foot switches, two pedals** M25 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	B	**3SE2932-0AB20**		1	1 unit	41K
		2 NO + 2 NC	⊖	B	**3SE2932-1AB20**		1	1 unit	41K
3SE2932-.AA20	• With hood	1 NO + 1 NC	⊖	B	**3SE2932-0AA20**		1	1 unit	41K
		2 NO + 2 NC	⊖	B	**3SE2932-1AA20**		1	1 unit	41K
3SE2924-3AA20	**Safety foot switches, single pedal,** with hood, M20 x 1.5 cable entry, with interlock according to ISO 13850, NO closes as momentary contact type, NC opens with latching	2 NO + 2 NC	⊖	C	**3SE2924-3AA20**		1	1 unit	41K
Plastic enclosures, degree of protection IP65									
3SE3902-4CA20	**Momentary-contact pedal switches**, 3 m cable	Microswitch							
	• Single pedal								
	- Without hood	1 CO contact		B	**3SE3902-4CB20**		1	1 unit	41K
	- With hood	1 CO contact		B	**3SE3902-4CA20**		1	1 unit	41K
3SE3934-5CB20	• Two pedals, without hood	2 × 1 CO		B	**3SE3934-5CB20**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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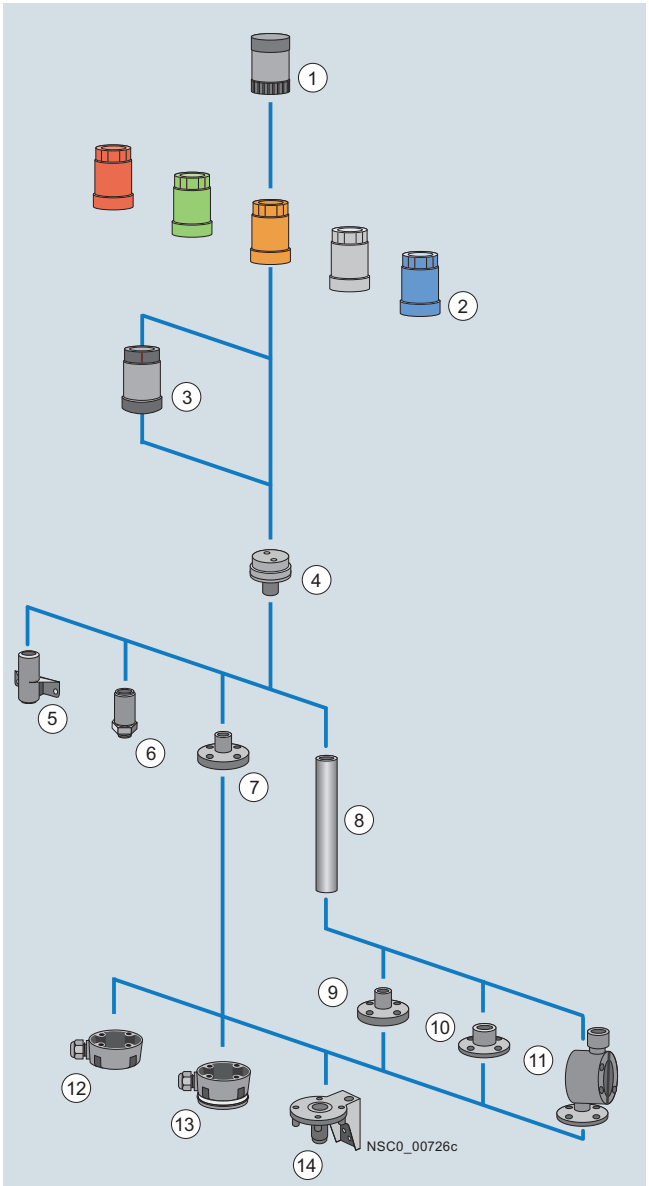
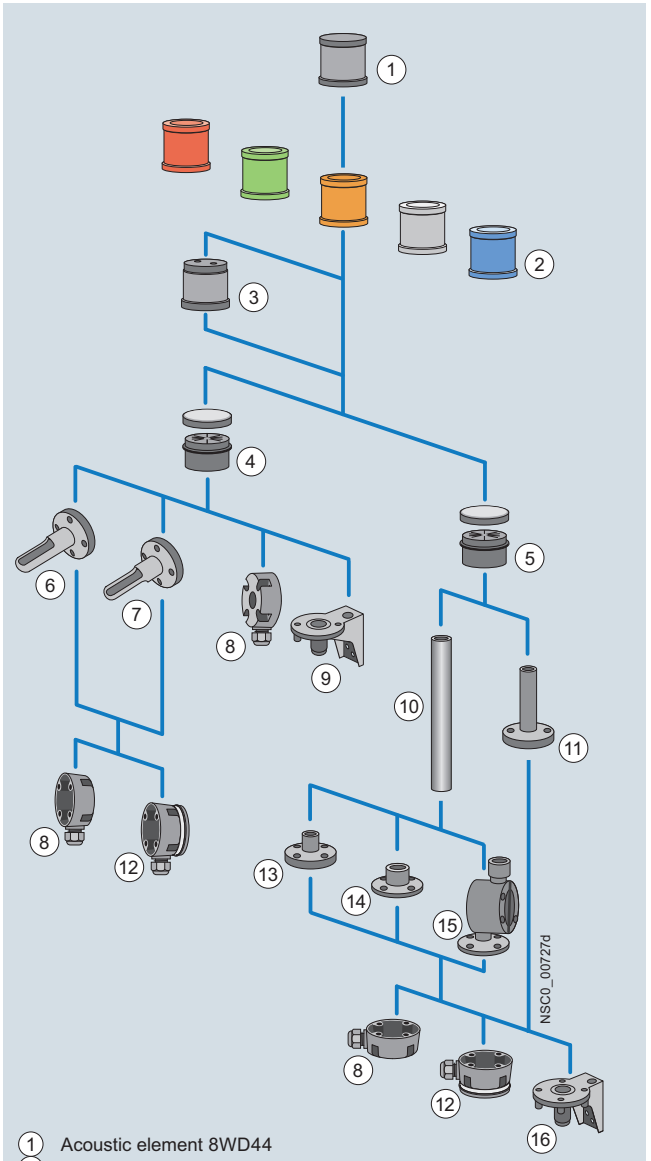
Overview

The 8WD4 signaling columns are flexible in design and versatile in use.



1 Acoustic element 8WD42.0-0FA
2 Light element 8WD42
3 AS-Interface adapter element 8WD4228-0BB
4 Connection element 8WD4208-0AA
5 Bracket for wall mounting 8WD4208-0CD
6 Adapter for single-hole mounting 8WD4208-0EH
7 Foot for mounting 8WD4208-0DE
8 Pipe 8WD4208-0EF/8WD4308-0E.
9 Foot for mounting with pipe 8WD4308-0DB
10 Foot for mounting with pipe (> 400 mm) 8WD4308-0DC
11 Adjustable-angle foot for mounting on pipes 8WD4408-0DF
12 Socket 8WD4308-0DD
13 Socket (magnetic fixing) 8WD4308-0DE
14 Bracket for mounting with foot 8WD4408-0CC

8WD42 signaling column (width 50 mm) with up to 4 elements



1 Acoustic element 8WD44
2 Light element 8WD44
3 AS-Interface adapter element 8WD4428-0BD/8WD4428-0BE
4 Connection element for mounting on bracket, base and floor 8WD4408-0AB/8WD4408-0AE
5 Connection element for mounting on pipe 8WD4408-0AA/8WD4408-0AD
6 Bracket for wall mounting 8WD4308-0CA
7 Bracket for wall mounting (two-sided) 8WD4308-0CB
8 Socket 8WD4308-0DD
9 Bracket for base mounting 8WD4408-0CD
10 Pipe 8WD4208-0EF/8WD4308-0E.
11 Foot with pipe 8WD4308-0DA
12 Socket (magnetic fixing) 8WD4308-0DE
13 Foot for mounting with pipe 8WD4308-0DB
14 Foot for mounting with pipe (> 400 mm) 8WD4308-0DC
15 Adjustable-angle foot for mounting on pipes 8WD4408-0DF
16 Bracket for mounting with foot 8WD4408-0CC

8WD44 signaling columns (width 70 mm) with up to 5 elements

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General data

Two product series are available:

- 8WD42
  - Thermoplast enclosure, diameter 50 mm
  - Degree of protection IP54
  - Up to 4 elements can be mounted between the connection element and the cover
- 8WD44
  - Thermoplast enclosure, diameter 70 mm
  - Advanced design and significantly improved illumination
  - Fast and flexible connection using spring-type terminals
  - Integrated degree of protection IP65
  - Up to 5 elements can be mounted between the connection element and the cover

Signaling columns, mounting examples

The illustrated examples are from the left:

- 8WD42: Cover (no No.), four light elements ②, connection element ④, pipe ⑧, foot ⑨
- 8WD44: Acoustic element with cover ①, two light elements ②, connection element ⑤, foot with pipe ⑪
- 8WD44: Cover (no No.), four light elements ②, AS-Interface adapter element ③, connection element ④, bracket for wall mounting ⑥
- 8WD44: Cover (no No.), three light elements ②, AS-Interface adapter element ③, connection element ⑤, foot with pipe ⑪

Note:

The cover is supplied with the connection element.

Benefits

- Choice of various light and acoustic elements with different functions:
  continuous light, blinklight, flashlight and rotating light; buzzer and siren
- Light elements with particularly long-lasting LEDs
- Variety of colors: red, yellow, green, white or blue
- Optimized illumination through improved prism technology with the 8WD44
- Acoustic elements can be adjusted in tone and volume
- Extremely resistant to shock and vibrations
- Easy connection and quick lamp change with secure bayonet mechanism
- Communication capability through connection to AS-Interface

Application

8WD4 signaling columns are used in machines or in automatic processes for monitoring complex procedures or as visual or acoustic warning devices in emergency situations, e.g. for displaying individual assembly stages.

Communication capability

Connection to AS-Interface

The 8WD4 signaling columns can be directly connected to the AS-Interface bus system through an adapter element that can be integrated in the column. Wiring outlay is reduced as the result. The two-wire bus cable is fixed to the terminals in the connection element. Up to four signaling elements can be mounted on it using an adapter element.

A/B technology enables the connection of up to 62 slaves on one AS-Interface system.

Connection

The signaling elements are wired up using the screw terminals in the connection element, screw terminals on the 8WD42 and screw or spring-type terminals on the 8WD44.

Cable outlet

The connecting cables can be guided either downwards or sideways through the cable gland using an adapter that can be screwed under the foot. This makes wiring easier if there is no access from below.

Connection to AS-Interface

8WD42:

The two-wire bus cable is fixed to the screw terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. A maximum of four signaling elements can then be mounted on it.

The 8WD4228-0BB adapter element is a standard slave.

8WD44:

The two-wire bus cable is fixed to the screw or spring-type terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. The signaling elements can then be mounted on it.

The 8WD4428-0BE adapter element is a standard slave.
A maximum of four signaling elements can be mounted on it.

The 8WD4428-0BD adapter element with A/B technology enables the connection of up to 62 slaves on one AS-Interface system. The addressing socket provides user-friendly parameterization of the AS-Interface elements. A maximum of three signaling elements can be mounted on it.

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Technical specifications

Type		8WD42	8WD44
General data			
Approvals		UL, CSA	UL, CSA
Light and acoustic elements			
Rated voltage, power consumption			
Light elements with incandescent lamp		(AC values for 50/60 Hz)	(AC values for 50/60 Hz)
• Continuous light		12 V, 24 V, 115 V, 230 V AC/DC	12 V, 24 V, 115 V, 230 V AC/DC
• Blinklight		24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA	24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA
• Flashlights		--	24 V DC/125 mA; 115 V AC/20 mA; 230 V AC/35 mA
• Max. inrush current, blinklight/flashlight		--	500 mA
Light elements with integrated LED			
• Continuous light		24 V AC/DC/60 mA	24 V AC/DC/25 mA; 115 V AC/25 mA; 230 V AC/25 mA
• Blinklight		24 V AC/DC/60 mA; 115 V AC/60 mA; 230 V AC/60 mA	24 V AC/DC/40 mA
• Rotating light		--	24 V AC/DC/70 mA
Acoustic elements			
• Buzzer element (tone: pulsating or continuous tone)		80 dB: 24 V AC/DC/25 mA; 115 V AC/25 mA; 230 V AC/25 mA	85 dB: 24 V AC/DC/25 mA; 115 V AC/25 mA; 230 V AC/25 mA
• Siren element (8 tones + amplification can be set, 100 dB)		--	24 V AC/DC/80 mA; 115 V AC/30 mA; 230 V AC/16 mA
• Siren element (108 dB)		--	24 V DC/100 mA
Power consumption			
• Incandescent lamps, base BA 15d	W	Max. 5	7
• Flashlight, flash energy	Ws	–	2
Endurance			
• Flashlights		--	4×10^6 flashes
AS-Interface adapter elements			
IO code/ID code		8/F	8/E
Power supply		Through bus cable	Through bus cable
• Operational voltage	V	18.5 ... 31.6	18.5 ... 31.6
• Power consumption I_{max}	mA	50	100
Protective measures			
• Watchdog		✓	✓
• Short-circuit/overload protection		External back-up fuse M 1.6 A	✓
• Reverse polarity protection		✓	✓
• Induction protection		N/A	✓
Outputs		4 relay outputs	3 solid-state outputs
• Load voltage	V V	External auxiliary voltage 0 ... 30 DC 0 ... 230 AC	Through bus cable or external auxiliary voltage, switch-selectable
• Current carrying capacity ΣI_{max}			
- With external auxiliary voltage	A	1.5	0.3
- Without external auxiliary voltage	A	--	0.2
Operating temperature	°C	–20 ... +50	–20 ... +50
Enclosures			
Enclosure material		Thermoplast (polyamide), impact-resistant, black	Thermoplast (polyamide), impact-resistant, black
Light elements		Thermoplast (polycarbonate)	Thermoplast (polycarbonate)
Mounting			
• Horizontal (for base mounting, foot with 25 mm Ø pipe)		✓	✓
• Horizontal (single-hole mounting)		✓	--
• Vertical with bracket		✓	✓
Degree of protection			
• Light elements		IP54	IP65 (seal premounted with every module)
• Acoustic elements, AS-i adapter elements		IP54	IP65
Operating temperature	°C	–20 ... +50	–20 ... +50
Connection		M3 screw terminal	Spring-type terminals/M3 screw terminals
• Conductor cross-sections	mm^2	Max. 2.5	Max. 2.5
• Tightening torque	Nm	Max. 0.5	– / max. 0.5

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8WD42 signaling columns, 50 mm diameter

Overview

Features:

- Thermoplast enclosure, diameter 50 mm
- Degree of protection IP54
- Up to four elements can be mounted between the connection element and the cover

Selection and ordering data

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Acoustic elements[1]									
	Buzzer elements 80 dB, pulsating or continuous tone, adjustable by means of a wire jumper	24 AC/DC	Black	A	**8WD4220-0FA**		1	1 unit	41J
		115 AC	Black	A	**8WD4240-0FA**		1	1 unit	41J
		230 AC	Black	A	**8WD4250-0FA**		1	1 unit	41J
Light elements for incandescent lamps/LEDs, BA 15d bases[2]									
	Continuous light elements	24 ... 230 AC/DC	Red	A	**8WD4200-1AB**		1	1 unit	41J
			Green	A	**8WD4200-1AC**		1	1 unit	41J
			Yellow	A	**8WD4200-1AD**		1	1 unit	41J
			Clear	A	**8WD4200-1AE**		1	1 unit	41J
			Blue	A	**8WD4200-1AF**		1	1 unit	41J
Light elements with integrated LED									
	Continuous light elements	24 AC/DC	Red	A	**8WD4220-5AB**		1	1 unit	41J
			Green	A	**8WD4220-5AC**		1	1 unit	41J
			Yellow	A	**8WD4220-5AD**		1	1 unit	41J
			Clear	A	**8WD4220-5AE**		1	1 unit	41J
			Blue	A	**8WD4220-5AF**		1	1 unit	41J
		115 AC	Red	A	**8WD4240-5AB**		1	1 unit	41J
			Green	A	**8WD4240-5AC**		1	1 unit	41J
			Yellow	A	**8WD4240-5AD**		1	1 unit	41J
			Clear	A	**8WD4240-5AE**		1	1 unit	41J
			Blue	A	**8WD4240-5AF**		1	1 unit	41J
		230 AC	Red	A	**8WD4250-5AB**		1	1 unit	41J
			Green	A	**8WD4250-5AC**		1	1 unit	41J
			Yellow	A	**8WD4250-5AD**		1	1 unit	41J
			Clear	A	**8WD4250-5AE**		1	1 unit	41J
			Blue	A	**8WD4250-5AF**		1	1 unit	41J
	Blinklight elements	24 AC/DC	Red	A	**8WD4220-5BB**		1	1 unit	41J
			Green	A	**8WD4220-5BC**		1	1 unit	41J
			Yellow	A	**8WD4220-5BD**		1	1 unit	41J
			Clear	A	**8WD4220-5BE**		1	1 unit	41J
			Blue	A	**8WD4220-5BF**		1	1 unit	41J
		115 AC	Red	A	**8WD4240-5BB**		1	1 unit	41J
			Green	A	**8WD4240-5BC**		1	1 unit	41J
			Yellow	A	**8WD4240-5BD**		1	1 unit	41J
			Clear	A	**8WD4240-5BE**		1	1 unit	41J
			Blue	A	**8WD4240-5BF**		1	1 unit	41J
		230 AC	Red	A	**8WD4250-5BB**		1	1 unit	41J
			Green	A	**8WD4250-5BC**		1	1 unit	41J
			Yellow	A	**8WD4250-5BD**		1	1 unit	41J
			Clear	A	**8WD4250-5BE**		1	1 unit	41J
			Blue	A	**8WD4250-5BF**		1	1 unit	41J
	Flashlight elements	24 AC/DC	Red	A	**8WD4220-0CB**		1	1 unit	41J
			Green	A	**8WD4220-0CC**		1	1 unit	41J
			Yellow	A	**8WD4220-0CD**		1	1 unit	41J
			Clear	A	**8WD4220-0CE**		1	1 unit	41J
			Blue	A	**8WD4220-0CF**		1	1 unit	41J
Adapter elements for AS-Interface									
	AS-Interface adapter elements with external auxiliary voltage	For 4 signaling elements 24 V DC	Black	A	**8WD4228-0BB**		1	1 unit	41J

1) One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

2) The lamp is not included in the scope of supply. Please order separately.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD42 signaling columns, 50 mm diameter

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Connection elements									
	Connection elements with cover For mounting on pipes, floors and angles Essential part for assembling the signaling columns		Black	A	**8WD4208-0AA**		1	1 unit	41J
Mounting									
	Feet, single	Plastic, for mounting on pipes		A	**8WD4308-0DB**		1	1 unit	41J
		Metal, for pipe lengths > 400 mm		A	**8WD4308-0DC**		1	1 unit	41J
		Plastic, for base mounting (without pipe)		A	**8WD4208-0DE**		1	1 unit	41J
	Adjustable-angle feet for positioning in 7.5° increments[1]	Plastic, for mounting on pipes, incl. rubber seal		A	**8WD4408-0DF**		1	1 unit	41J
	Pipes, single	Length 100 mm		A	**8WD4208-0EF**		1	1 unit	41J
		Length 150 mm		A	**8WD4308-0EE**		1	1 unit	41J
		Length 250 mm		A	**8WD4308-0EA**		1	1 unit	41J
		Length 400 mm		A	**8WD4308-0EB**		1	1 unit	41J
		Length 1 000 mm		A	**8WD4308-0ED**		1	1 unit	41J
	Sockets for feet	Side cable outlet		A	**8WD4308-0DD**		1	1 unit	41J
		Side cable outlet, with magnetic fixing[2]		A	**8WD4308-0DE**		1	1 unit	41J
	Brackets for mounting with foot			A	**8WD4408-0CC**		1	1 unit	41J
	Brackets for wall mounting (plastic)	Mounting without feet and pipe		A	**8WD4208-0CD**		1	1 unit	41J
	Adapters for single-hole mounting	Mounting without feet and pipe, with M18 thread and fixing nut		A	**8WD4208-0EH**		1	1 unit	41J
Lamps									
	Incandescent lamps, 5 W								
	Base BA 15d	24 AC/DC	Clear	A	**8WD4328-1XX**		1	10 units	41J
		115 AC	Clear	A	**8WD4348-1XX**		1	10 units	41J
		230 AC	Clear	A	**8WD4358-1XX**		1	10 units	41J
	LEDs								
	Base BA 15d	24 AC/DC	Red	A	**8WD4428-6XB**		1	1 unit	41J
			Green	A	**8WD4428-6XC**		1	1 unit	41J
			Yellow	A	**8WD4428-6XD**		1	1 unit	41J
			Clear	A	**8WD4428-6XE**		1	1 unit	41J
			Blue	A	**8WD4428-6XF**		1	1 unit	41J
		115 AC	Red	A	**8WD4448-6XB**		1	1 unit	41J
			Green	A	**8WD4448-6XC**		1	1 unit	41J
			Yellow	A	**8WD4448-6XD**		1	1 unit	41J
			Clear	A	**8WD4448-6XE**		1	1 unit	41J
			Blue	A	**8WD4448-6XF**		1	1 unit	41J
		230 AC	Red	A	**8WD4458-6XB**		1	1 unit	41J
			Green	A	**8WD4458-6XC**		1	1 unit	41J
			Yellow	A	**8WD4458-6XD**		1	1 unit	41J
			Clear	A	**8WD4458-6XE**		1	1 unit	41J
			Blue	A	**8WD4458-6XF**		1	1 unit	41J

For labeling panels see 8WD44, page 13/117.

[1] Markings for 30°, 45°, 60° and 90°.

[2] For horizontal mounting, only 1 element is recommended.

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8WD44 signaling columns, 70 mm diameter

Overview

Features:

- Thermoplast enclosure, diameter 70 mm
- Advanced design and significantly improved illumination
- Fast and flexible connection using spring-type terminals
- Integrated degree of protection IP65
- Up to five elements can be mounted

Selection and ordering data

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Acoustic elements[1]									
	Buzzer elements 85 dB, pulsating or continuous tone, adjustable by means of a wire jumper	24 AC/DC	Black	A	**8WD4420-0FA**		1	1 unit	41J
		115 AC	Black	A	**8WD4440-0FA**		1	1 unit	41J
		230 AC	Black	A	**8WD4450-0FA**		1	1 unit	41J
	Siren elements, multi-tone, 100 dB, 8 tones and volume are adjustable	24 AC/DC	Black	A	**8WD4420-0EA2**		1	1 unit	41J
		115 AC	Black	A	**8WD4440-0EA2**		1	1 unit	41J
		230 AC	Black	A	**8WD4450-0EA2**		1	1 unit	41J
	Siren elements 108 dB, IP40	24 DC	Black	A	**8WD4420-0EA**		1	1 unit	41J
Light elements for incandescent lamps/LEDs, BA 15d bases[2]									
	Continuous light elements	12 ... 230 AC/DC	Red	A	**8WD4400-1AB**		1	1 unit	41J
			Green	A	**8WD4400-1AC**		1	1 unit	41J
			Yellow	A	**8WD4400-1AD**		1	1 unit	41J
			Clear	A	**8WD4400-1AE**		1	1 unit	41J
			Blue	A	**8WD4400-1AF**		1	1 unit	41J
Light elements with integrated flash lamps[3]									
	Flashlight elements with integrated electronic flash	24 DC	Red	A	**8WD4420-0CB**		1	1 unit	41J
			Green	A	**8WD4420-0CC**		1	1 unit	41J
			Yellow	A	**8WD4420-0CD**		1	1 unit	41J
			Clear	A	**8WD4420-0CE**		1	1 unit	41J
			Blue	A	**8WD4420-0CF**		1	1 unit	41J
		115 AC	Red	A	**8WD4440-0CB**		1	1 unit	41J
			Green	D	**8WD4440-0CC**		1	1 unit	41J
			Yellow	A	**8WD4440-0CD**		1	1 unit	41J
			Clear	D	**8WD4440-0CE**		1	1 unit	41J
			Blue	D	**8WD4440-0CF**		1	1 unit	41J
		230 AC	Red	A	**8WD4450-0CB**		1	1 unit	41J
			Green	A	**8WD4450-0CC**		1	1 unit	41J
			Yellow	A	**8WD4450-0CD**		1	1 unit	41J
			Clear	A	**8WD4450-0CE**		1	1 unit	41J
			Blue	A	**8WD4450-0CF**		1	1 unit	41J

1) One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

2) The lamp is not included in the scope of supply. Please order separately.

3) The lamp is included in the scope of supply.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Light elements with integrated LED									
	Continuous light elements	24 AC/DC	Red	A	**8WD4420-5AB**		1	1 unit	41J
			Green	A	**8WD4420-5AC**		1	1 unit	41J
			Yellow	A	**8WD4420-5AD**		1	1 unit	41J
			Clear	A	**8WD4420-5AE**		1	1 unit	41J
			Blue	A	**8WD4420-5AF**		1	1 unit	41J
		115 AC	Red	A	**8WD4440-5AB**		1	1 unit	41J
			Green	A	**8WD4440-5AC**		1	1 unit	41J
			Yellow	A	**8WD4440-5AD**		1	1 unit	41J
			Clear	A	**8WD4440-5AE**		1	1 unit	41J
			Blue	A	**8WD4440-5AF**		1	1 unit	41J
		230 AC	Red	A	**8WD4450-5AB**		1	1 unit	41J
			Green	A	**8WD4450-5AC**		1	1 unit	41J
			Yellow	A	**8WD4450-5AD**		1	1 unit	41J
			Clear	A	**8WD4450-5AE**		1	1 unit	41J
			Blue	A	**8WD4450-5AF**		1	1 unit	41J
	Blinklight elements	24 AC/DC	Red	A	**8WD4420-5BB**		1	1 unit	41J
			Green	A	**8WD4420-5BC**		1	1 unit	41J
			Yellow	A	**8WD4420-5BD**		1	1 unit	41J
			Clear	A	**8WD4420-5BE**		1	1 unit	41J
			Blue	A	**8WD4420-5BF**		1	1 unit	41J
		115 AC	Red	A	**8WD4440-5BB**		1	1 unit	41J
			Green	A	**8WD4440-5BC**		1	1 unit	41J
			Yellow	A	**8WD4440-5BD**		1	1 unit	41J
			Clear	A	**8WD4440-5BE**		1	1 unit	41J
			Blue	A	**8WD4440-5BF**		1	1 unit	41J
		230 AC	Red	A	**8WD4450-5BB**		1	1 unit	41J
			Green	A	**8WD4450-5BC**		1	1 unit	41J
			Yellow	A	**8WD4450-5BD**		1	1 unit	41J
			Clear	A	**8WD4450-5BE**		1	1 unit	41J
			Blue	A	**8WD4450-5BF**		1	1 unit	41J
	Rotating light elements	24 AC/DC	Red	A	**8WD4420-5DB**		1	1 unit	41J
			Green	A	**8WD4420-5DC**		1	1 unit	41J
			Yellow	A	**8WD4420-5DD**		1	1 unit	41J
			Clear	A	**8WD4420-5DE**		1	1 unit	41J
			Blue	A	**8WD4420-5DF**		1	1 unit	41J
Adapter elements for AS-Interface									
	AS-Interface adapter elements								
	With/without external auxiliary voltage, switchable								
	• A/B technology	For 3 signaling elements 24 V DC	Black	A	**8WD4428-0BD**		1	1 unit	41J
	• Standard AS-i	For 4 signaling elements 24 V DC	Black	A	**8WD4428-0BE**		1	1 unit	41J
Connection elements[1)]									
	Connection elements with cover		Black						
	Screw terminals								
	• For mounting on pipes			A	**8WD4408-0AA**		1	1 unit	41J
	• For mounting on brackets and floors			A	**8WD4408-0AB**		1	1 unit	41J
	Spring-type terminals								
	• For mounting on pipes			A	**8WD4408-0AD**		1	1 unit	41J
	• For mounting on brackets and floors			A	**8WD4408-0AE**		1	1 unit	41J
	Cover (replacement)			A	**8WD4408-0XA**		1	1 unit	41J

[1)] The connection element with cover is an essential part for assembling the signaling columns.

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

	Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mounting								
	Foot with pipe	Pipe length 100 mm	A	**8WD4308-0DA**		1	1 unit	41J
	Feet, single	Plastic, for mounting on pipes	A	**8WD4308-0DB**		1	1 unit	41J
		Metal, for pipe lengths > 400 mm	A	**8WD4308-0DC**		1	1 unit	41J
	Adjustable-angle feet for positioning in 7.5° increments[1]	Plastic, for mounting on pipes, incl. rubber seal	A	**8WD4408-0DF**		1	1 unit	41J
	Pipes, single	Length 100 mm	A	**8WD4208-0EF**		1	1 unit	41J
		Length 150 mm	A	**8WD4308-0EE**		1	1 unit	41J
		Length 250 mm	A	**8WD4308-0EA**		1	1 unit	41J
		Length 400 mm	A	**8WD4308-0EB**		1	1 unit	41J
		Length 1 000 mm	A	**8WD4308-0ED**		1	1 unit	41J
	Sockets for feet	Side cable outlet (can also be used without feet)	A	**8WD4308-0DD**		1	1 unit	41J
		Side cable outlet, with magnetic fixing[2]	A	**8WD4308-0DE**		1	1 unit	41J
	Brackets for wall mounting (mounting without feet and pipe)	For single-sided mounting	A	**8WD4308-0CA**		1	1 unit	41J
		For double-sided mounting	A	**8WD4308-0CB**		1	1 unit	41J
	Brackets for mounting with foot		A	**8WD4408-0CC**		1	1 unit	41J
	Brackets for base mounting	Mounting without feet and pipe	A	**8WD4408-0CD**		1	1 unit	41J
	Adapter for mounting on pipes according to NPT	Mounting on pipes, ∅ 25 mm, with NPT 1/2" thread	A	**8WD4308-0DF**		1	1 unit	41J

[1] Markings for 30°, 45°, 60° and 90°.

[2] For horizontal mounting, only 1 element is recommended.

13

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Lamps									
	Incandescent lamps, 5 W								
	Base BA 15d	24 AC/DC	Clear	A	**8WD4328-1XX**		1	10 units	41J
		115 AC	Clear	A	**8WD4348-1XX**		1	10 units	41J
		230 AC	Clear	A	**8WD4358-1XX**		1	10 units	41J
	LEDs								
	Base BA 15d	24 AC/DC	Red	A	**8WD4428-6XB**		1	1 unit	41J
			Green	A	**8WD4428-6XC**		1	1 unit	41J
			Yellow	A	**8WD4428-6XD**		1	1 unit	41J
			Clear	A	**8WD4428-6XE**		1	1 unit	41J
			Blue	A	**8WD4428-6XF**		1	1 unit	41J
		115 AC	Red	A	**8WD4448-6XB**		1	1 unit	41J
			Green	A	**8WD4448-6XC**		1	1 unit	41J
			Yellow	A	**8WD4448-6XD**		1	1 unit	41J
			Clear	A	**8WD4448-6XE**		1	1 unit	41J
			Blue	A	**8WD4448-6XF**		1	1 unit	41J
		230 AC	Red	A	**8WD4458-6XB**		1	1 unit	41J
			Green	A	**8WD4458-6XC**		1	1 unit	41J
			Yellow	A	**8WD4458-6XD**		1	1 unit	41J
			Clear	A	**8WD4458-6XE**		1	1 unit	41J
			Blue	A	**8WD4458-6XF**		1	1 unit	41J
Inscriptions									
	Labeling panels With fixing accessories for mounting on pipe ∅ 25 mm Inscription area/ step 50 mm x 140 mm Suitable for standard labels, e.g. • Zweckform 3425 • Herma 4457			A	**8WD4408-0FA**		1	1 unit	41J

13

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD53 integrated signal lamps, 70 mm diameter

Overview

8WD53 integrated signal lamps

Design

Features:

- Thermoplast enclosures, diameter 70 mm
- Degree of protection IP65
- Rated voltage 24 V, 115 V, 230 V AC/DC
- Ambient temper. -20 to +50 °C, incandescent lamp up to 60 °C

The special shape of the integrated signal lamps means that the light is emitted optimally in every direction (to the sides and upwards). Continuous lights (with incandescent lamp or LED) and single-flash lights are available in five colors.

The LED versions of the integrated signal lamps offer a considerably longer endurance than the incandescent lamp versions.

All integrated signal lamps have a high degree of protection IP65 and are made of a material highly resistant to impact.

Mounting

8WD53 integrated signal lamps can be mounted directly at any point of the machine for the purpose of giving visual signals. They are mounted by means of a Pg 29 screw base with nut.

Selection and ordering data

	Version	Rated voltage	Color	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Luminaires for incandescent lamps/LED, BA 15d base									
	Continuous lights[1]	12 ... 230 AC/DC	Red	A	**8WD5300-1AB**		1	1 unit	41J
			Green	A	**8WD5300-1AC**		1	1 unit	41J
			Yellow	A	**8WD5300-1AD**		1	1 unit	41J
			Clear	A	**8WD5300-1AE**		1	1 unit	41J
			Blue	A	**8WD5300-1AF**		1	1 unit	41J
Luminaires with integrated flash lamp									
	Single-flash lights with integrated electronic flash	24 AC/DC	Red	A	**8WD5320-0CB**		1	1 unit	41J
			Green	A	**8WD5320-0CC**		1	1 unit	41J
			Yellow	A	**8WD5320-0CD**		1	1 unit	41J
			Clear	A	**8WD5320-0CE**		1	1 unit	41J
			Blue	A	**8WD5320-0CF**		1	1 unit	41J
		115 AC	Red	A	**8WD5340-0CB**		1	1 unit	41J
			Green	A	**8WD5340-0CC**		1	1 unit	41J
			Yellow	A	**8WD5340-0CD**		1	1 unit	41J
			Clear	A	**8WD5340-0CE**		1	1 unit	41J
			Blue	D	**8WD5340-0CF**		1	1 unit	41J
		230 AC	Red	A	**8WD5350-0CB**		1	1 unit	41J
			Green	D	**8WD5350-0CC**		1	1 unit	41J
			Yellow	A	**8WD5350-0CD**		1	1 unit	41J
			Clear	A	**8WD5350-0CE**		1	1 unit	41J
			Blue	D	**8WD5350-0CF**		1	1 unit	41J
Luminaires with integrated LED									
	Continuous light	24 AC/DC	Red	A	**8WD5320-5AB**		1	1 unit	41J
			Green	A	**8WD5320-5AC**		1	1 unit	41J
			Yellow	A	**8WD5320-5AD**		1	1 unit	41J
			Clear	A	**8WD5320-5AE**		1	1 unit	41J
			Blue	A	**8WD5320-5AF**		1	1 unit	41J
	Blinklight lamps	24 AC/DC	Red	A	**8WD5320-5BB**		1	1 unit	41J
			Green	A	**8WD5320-5BC**		1	1 unit	41J
			Yellow	A	**8WD5320-5BD**		1	1 unit	41J
			Clear	A	**8WD5320-5BE**		1	1 unit	41J
			Blue	A	**8WD5320-5BF**		1	1 unit	41J
	Rotating lights	24 AC/DC	Red	A	**8WD5320-5DB**		1	1 unit	41J
			Green	A	**8WD5320-5DC**		1	1 unit	41J
			Yellow	A	**8WD5320-5DD**		1	1 unit	41J
			Clear	A	**8WD5320-5DE**		1	1 unit	41J
			Blue	A	**8WD5320-5DF**		1	1 unit	41J
Accessories for mounting (optional)									
	Pipe adapter For mounting on pipes[2]			A	**8WD5308-0EG**		1	1 unit	41J

[1] Lamp not included in scope of supply, see Signaling Columns, page 13/117.

[2] Pipes and feet see Signaling Columns, page 13/116.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Parameterization, Configuration and Visualization with SIRIUS

14

Price groups
PG 200, 346, 42B, 42C, 42D, 42H, 42J, 4N1

14/2 **Introduction**

14/5 **Soft Starter ES**

14/9 **SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7** NEW

14/13 **Motor Starter ES**

14/17 **SIRIUS motor starter block library for SIMATIC PCS 7** NEW

14/20 **SIMOCODE ES (TIA Portal)** NEW

14/24 **SIMOCODE ES**

14/28 **SIMOCODE pro block library for SIMATIC PCS 7** NEW

14/31 **AS-Interface block library for SIMATIC PCS 7** NEW

14/33 **Modular Safety System ES** NEW

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Introduction

Overview

Engineering software

SIRIUS ES engineering software (E-SW)

Intuitive, efficient and future-proof – the engineering programs of the SIRIUS ES software family

The programs of the SIRIUS ES software family enable:

- Intuitive engineering from the word go
  The SIRIUS ES programs enable you to focus on your engineering task. Thanks to the intuitive layout and simple navigation, a clearly arranged configuring of device functions and their parameters is possible – online and offline. The task- and user-oriented portal views as well as the flexible screen layout, the uniform look and feel for all program editors and finally the graphic network and device configuration provide support.
- Efficient parameterization for quick success
  Faster start-up is achieved by the use of local and global libraries. The joint hardware configuration for all components in the application also assists in the efficient parameterization and simple networking of system components. Not least, integrated system diagnostics offers fast troubleshooting and efficient fault analysis, thus making it possible to shorten startup times even further and to minimize production downtimes.
- Future-oriented basis for innovative results
  All future product developments are seamlessly integrated into the TIA Portal. Investments made up to now are still safe tomorrow. To harmonize engineering in all performance classes, the SIRIUS ES programs in TIA Portal are scalable and upwardly compatible. In the event of an upgrade, existing projects can easily be transferred and integrated into the next product level. Even existing SIRIUS ES projects in version 2007 can easily be migrated to the TIA Portal software version.

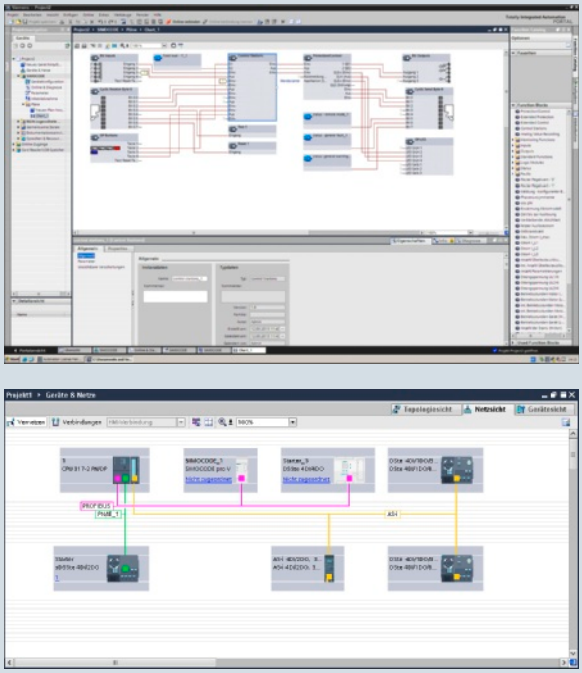
The next generation of SIRIUS ES programs, such as SIMOCODE ES V12 (TIA Portal), is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), which provides the user with a consistent, efficient and intuitive solution for all automation tasks. Thus, the TIA Portal is also the integrated working environment for the programs in the SIRIUS software family. The same operator control concept, the elimination of interfaces and a high degree of user-friendliness make it possible to quickly integrate SIRIUS devices into an automation process and start them up with the TIA Portal. Besides SIMOCODE ES Version 12, which is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), the 2007 version of the software continues to be available for commissioning, operation and diagnostics of SIMOCODE pro.

The SIRIUS ES programs such as Motor Starter ES, Soft Starter ES, MSS ES and SIMOCODE ES are available in three versions which differ in user-friendliness, scope of functions and price:

- Basic
  The Basic version contains all basic functions that are needed to parameterize devices. These include both parameterization functions and also operator control, diagnostics and test functions.
- Standard
  The Standard version contains the basic functionality plus standard functions. The standard functions include parameterization with the aid of integrated graphic editors, creation of typicals, parameter export, analog value recording and parameter comparison.
- Premium
  Die Premium versions contain the complete functionality of the software package. Besides the standard functionality, this includes communication functions such as access via PROFIBUS/PROFINET and S7 routing.

Note:

The scope of functions depends on the SIRIUS ES program, for details see the descriptions of the individual products.



Efficient engineering and startup with graphic user interfaces and simple network and device configuration

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Introduction

Types of delivery and license

The programs of the SIRIUS ES software family are available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
- Combo license - license for parallel use
  - Licensed parallel use of the TIA Portal version and SIRIUS ES Version 2007
  - For all other properties such as floating license
- Trial license (free use of all program functions for 14/21 days for test and evaluation purposes, included on every product CD/DVD, available in the download file of the SIRIUS ES program in the Service&Support portal)

Following delivery versions are available in addition for the programs of the SIRIUS ES software family:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades.
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see www.siemens.com/tia-online-software-delivery.

Article number scheme for the engineering software

Digit of the Article No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS engineering software	**3 Z S 1**														
Software type		□													
Package designation 1			□												
Package designation 2				□											
Package designation 3						□									
Hardware, operating system							□								
Data carriers								□							
Serial number									□						
Function status										□					
Product category												**0**			
Language													□		
Delivery versions														□	
License type															□
Example	**3 Z S 1**	**3**	**1**	**3**	**–**	**4**	**C**	**C**	**1**	**0**	**–**	**0**	**Y**	**A**	**5**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Safety note:

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.
More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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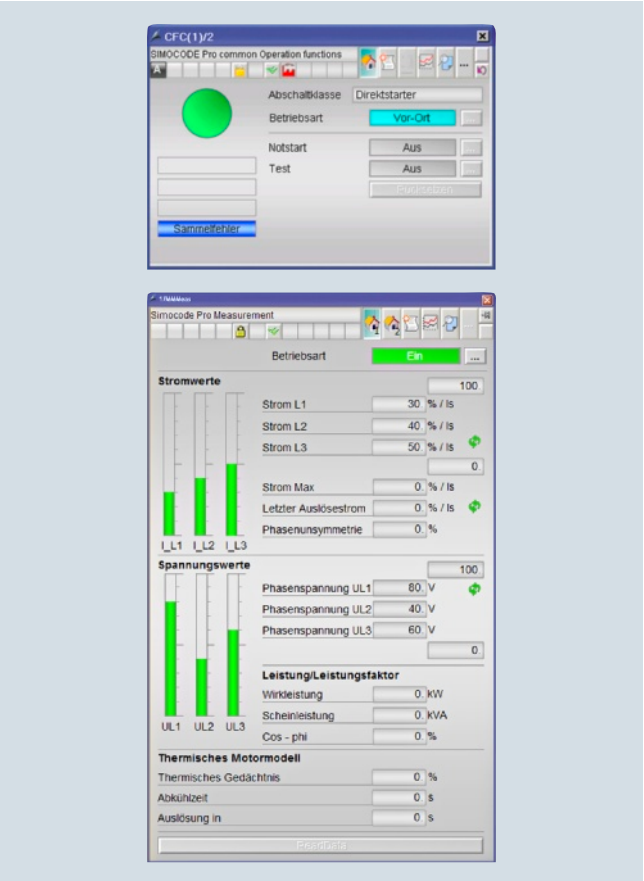
Introduction

Block libraries for SIMATIC PCS 7



Advanced Process Library (APL) – faceplates and blocks for control and measured data of the SIMOCODE pro block library for PCS 7

The PCS 7 block libraries for SIMOCODE, motor starters, soft starters and AS-Interface can be used for simple and easy integration of the corresponding units into the SIMATIC PCS 7 process control system. PCS 7 block libraries contain the diagnostics and driver blocks corresponding with the diagnostics and driver concept of SIMATIC PCS 7 as well as the elements (symbols and faceplate) required for operator control and process monitoring.

Types of delivery and license

The PCS 7 block libraries supplied on CD-ROM allow the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

Article number scheme of the block libraries for SIMATIC PCS 7

Digit of the Article No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□□	□	□	□	–	□	X	X	□	□	–	□	□	□	□
SIRIUS engineering software	**3 Z S 1**														
Software type, standard FB/FC		□													
Package designation 1			□												
Package designation 2				□											
Type						□									
Function status, start of delivery									□	□					
Product category												**0**			
Language (multilingual)													**Y**		
Delivery versions														□	
License type															□
Example	**3 Z S 1**	**6**	**3**	**3**	**–**	**1**	**X**	**X**	**0**	**0**	**–**	**0**	**Y**	**A**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Safety note:

System networking requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation.
More information about the subject of Industrial Security see www.siemens.com/industrialsecurity.

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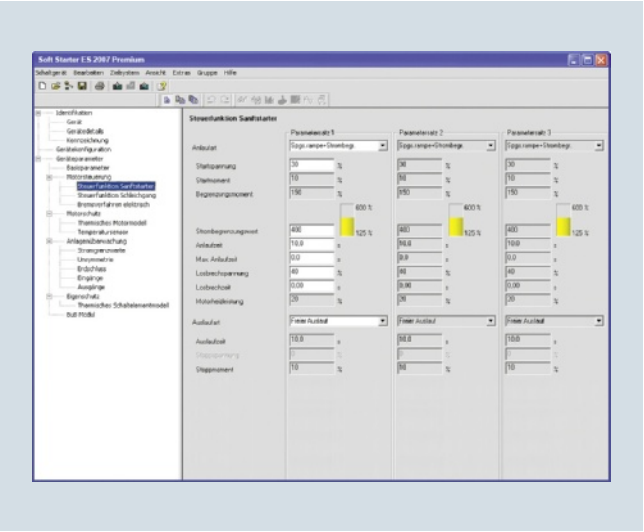
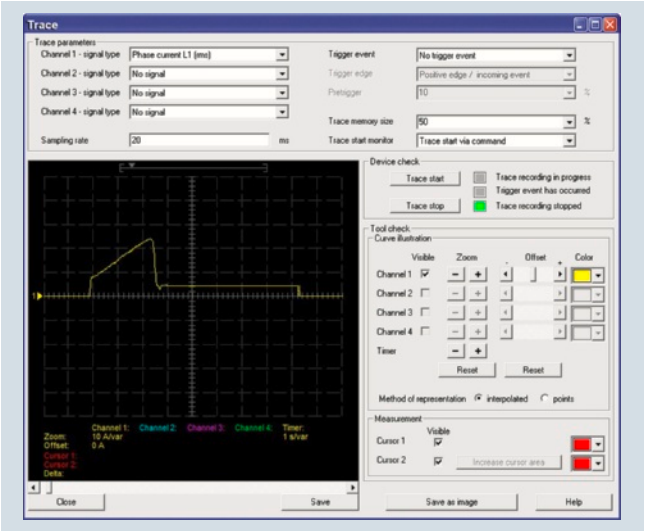
Overview



Easy and clearly arranged parameter setting of the 3RW44 soft starter with Soft Starter ES 2007



Graphic presentation of measured values with the trace function (oscilloscope function) of Soft Starter ES 2007 Standard and Premium

The Soft Starter ES software permits the quick and easy parameterization, monitoring and diagnostics of SIRIUS 3RW44 High-Feature soft starters for service purposes.
The device parameters can be configured directly on the PC and transferred to the soft starter through a serial cable or an optional PROFIBUS/PROFINET interface.

Efficient engineering with three program versions

The Soft Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

Soft Starter ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Creation of typicals	--	✓[1)]	✓
Parameter export	--	✓	✓
Comparison functions	--	✓	✓
Standard-compatible printout according to EN ISO 7200	--	✓	✓
Service data (slave pointer, statistics data)	--	✓	✓
Access through PROFIBUS/PROFINET	--	--	✓
Group functions	--	--	✓
Teleservice through MPI	--	--	✓
S7 routing	--	--	✓
STEP7 Object Manager	--	--	✓

✓ Function available
-- Function not available

1) Typicals with Service Pack 1 and higher.

Additional functions

- Standard-compatible printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be adapted, e. g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS/PROFINET. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The Soft Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

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Soft Starter ES

Types of delivery and license

Soft Starter ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

Following delivery versions are available in addition for Soft Starter ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Soft Starter ES 2006 to Soft Starter ES 2007.
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Soft Starter ES 2007 for switching from Standard to Premium.
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades.
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see www.siemens.com/tia-online-software-delivery.

Licensing procedure

To make licensing easier, the three versions of Soft Starter ES are available with the following license:

14 day trial license for Premium functions:
for test and evaluation purposes, included on every product CD, available also in the download file of the SIRIUS Soft Starter ES 2007 program in the Service&Support portal.

System requirements

Soft Starter ES 2007 parameterization, start-up and diagnostics software for SIRIUS 3RW44 soft starters	**Basic/Standard**	**Premium**
	Product version ≥ *E04* [1]	**Product version ≥ *E06*** [2]
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32/64-bit Professional/Ultimate/Enterprise (Service Pack 1)	
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)	
RAM	≥ 512 Mbyte (Windows XP Professional)/≥ 1 GB (Windows 7 32 Bit)/ ≥ 2 GB (Windows 7 64 Bit)	
Free space on hard disk	≥ 150 Mbyte	
CD-ROM/DVD drive	Yes (only when installing from CD)	
Interface	Depends on PC cable: serial (COM) or USB	
PC cable/parameterization cable/connection cable	Yes	
PROFIBUS/PROFINET communication module (optional)	--	Yes

[1] SIRIUS 3RW44 with product version ≥ *E04*. Installed in starters delivered after December 2005.

[2] SIRIUS 3RW44 with product version ≥ *E06*. Installed in starters delivered after May 2006.

Benefits

- Transparent setting of the device functions and their parameters – online and offline
- Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (in the Soft Starter ES Standard and Premium versions)
- Complete transparency thanks to printout, logbook and event memory
- High degree of user-friendliness – convenient user interface, with German, English and French as possible operating languages
- Time savings through shorter startup times
- Fast, low-cost licensing using a simple licensing procedure (available online too)

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Selection and ordering data

Soft Starter ES parameterization and service software for SIRIUS 3RW44 soft starters

- Delivered without PC cable

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 Basic						
3ZS1313-4CC10-0YA5						
Floating license for one user Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1313-4CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	▶	**3ZS1313-4CE10-0YB5**		1	1 unit	42H
Soft Starter ES 2007 Standard						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1313-5CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	▶	**3ZS1313-5CE10-0YB5**		1	1 unit	42H
Upgrade for Soft Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1313-5CC10-0YE5**		1	1 unit	42H
Powerpack for Soft Starter ES 2007 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface	B	**3ZS1313-5CC10-0YD5**		1	1 unit	42H
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	▶	**3ZS1313-5CC10-0YL5**		1	1 unit	42H

Notes:

Please order PC cable separately, see page 14/8.

For description of the software versions see page 14/5.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Soft Starter ES

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS/PROFINET/STEP7 Object Manager						
• License key on USB stick, Class A, including CD	B	**3ZS1313-6CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	►	**3ZS1313-6CE10-0YB5**		1	1 unit	42H
Upgrade for Soft Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS/PROFINET	B	**3ZS1313-6CC10-0YE5**		1	1 unit	42H
Powerpack for Soft Starter ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS/PROFINET	B	**3ZS1313-6CC10-0YD5**		1	1 unit	42H
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface or PROFIBUS/PROFINET	►	**3ZS1313-6CC10-0YL5**		1	1 unit	42H

Notes:

Please order PC cable separately, see Accessories.

For description of the software versions see page 14/5.

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7940-0AA00-0 **RS 232 PC cables** For connecting to the serial interface of a PC/PG, for communication with Soft Starter ES through the system interface	►	**3UF7940-0AA00-0**		1	1 unit	42J
 3UF7941-0AA00-0 **USB PC cables** For connecting to the USB interface of a PC/PG, for communication with Soft Starter ES through the system interface	►	**3UF7941-0AA00-0**		1	1 unit	42J
USB/serial adapters For connecting the RS 232 PC cable to the USB interface of a PC, recommended for use in conjunction with Soft Starter ES	B	**3UF7946-0AA00-0**		1	1 unit	42J
Optional PROFIBUS communication module for SIRIUS 3RW44	►	**3RW4900-0KC00**		1	1 unit	42H
Optional PROFINET communication module for SIRIUS 3RW44	►	**3RW4900-0NC00**		1	1 unit	42H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The SIRIUS 3RW44 Soft Starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The SIRIUS 3RW44 soft starter PCS 7 block library contains the diagnostics and driver blocks corresponding with the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Integrated functionality for optimal process control for all process control systems

In addition to the general sensor technology, the motor feeder data is increasingly being integrated into the process control system. By integrating the SIRIUS 3RW44 soft starters into the process control system it becomes possible to prevent errors in the motor feeder simply and reliably, or to detect these errors quickly and rectify them. Downtimes are reduced to a minimum or can be prevented before they happen.

For example, the output and display of the key measured values calculated by the 3RW44 is also a good aid for being able to assess and monitor the current system status.

Easy integration with the PCS 7 block library

The PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The focus here is simple configuration. The function of the modules is based on the PCS 7 standard libraries and is optimally harmonized with the functions of the SIRIUS 3RW44.

Users who have previously integrated motor feeders into conventional technology via signal blocks and motor or valve blocks or, for example, already have experience with SIMOCODE modules, are easily able to switch to SIRIUS 3RW44.

All blocks required for the automation systems are provided by the PCS 7 block library – as are the block symbols and faceplates for the operator station required for monitoring and control.

With the integration of the SIRIUS 3RW44 into SIMATIC PDM, the system-wide device parameterization and diagnostics of the SIRIUS 3RW44 soft starters are possible from a central point.

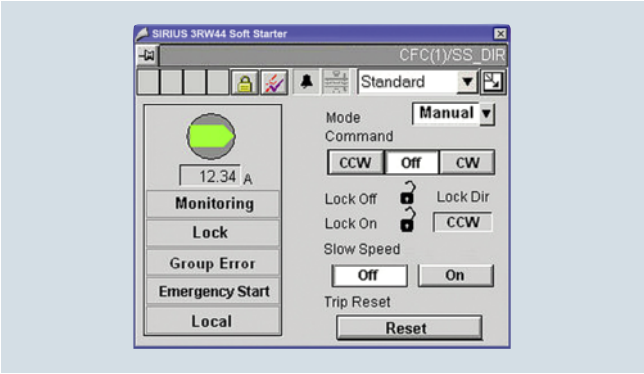
Motor block for the direct control of the drive

The low-voltage motors started and protected by SIRIUS 3RW44 soft starters can be integrated into the process automation via the motor blocks. This means that they form the interface between the process control system and the motors controlled by the SIRIUS 3RW44.

To reduce the amount of configuring work required, functions for signal processing and technological functions are integrated into one motor block.

The important measured value – the current in the motor feeder – is recorded via the 3RW44 and monitored for motor protection. The motor current is accessible from the I&C system via the motor blocks.

The block symbols and faceplates for the motor blocks display the motor feeders on the operator station and provide all the required information for monitoring and control as well as detailed diagnostics.



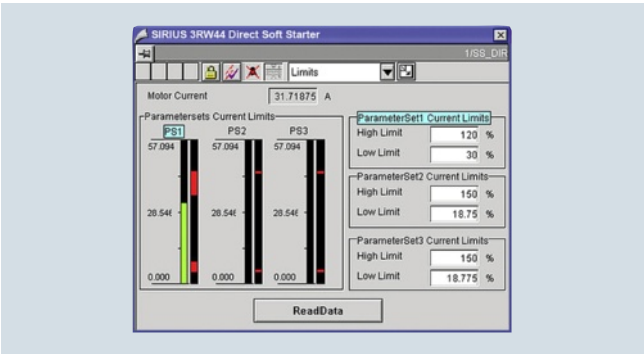
Faceplate of the motor block

Evaluation of additional motor feeder measurements

All measured values calculated by the soft starter, such as current, voltage and output of the feeder, are displayed and output via the measured value blocks. A key advantage here is that where required, a wide range of information on important motor feeder measurements is available, e.g. for load monitoring.

The 3RW44 is not only able to detect measured values here, but also to react if these values are exceeded or undershot, for example, via custom settings – e.g. with a motor disconnection or with a warning.

The faceplate for the measured values is accessed from the motor block faceplate.



Faceplate for measured values

Evaluation of maintenance-related motor feeder data

The 3RW44 has powerful functions to detect and monitor maintenance-related motor feeder data. For example, the operating and downtimes of the motor, operating cycles and overload tripping events are detected and stored directly on the device. If required, the information already on the device is available via the statistics block in the I&C system. The display is provided on a separate faceplate for the statistics block on the operator station.

Types of delivery and license

The SIRIUS 3RW44 soft starter PCS 7 block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

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SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized blocks for simple integration and optimal operation
- Including Advanced Process Library (APL) in Version V8
- Greater process transparency due to greater information density in the process control system
- System-wide device parameterization and diagnostics with SIMATIC PDM

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7 Version V8 with Advanced Process Library (APL)						
3ZS1633-1XX02-0YA0						
Engineering software V8 NEW ►		**3ZS1633-1XX02-0YA0**		1	1 unit	42H
For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system						
Runtime license V8 NEW ►		**3ZS1633-2XX02-0YB0**		1	1 unit	42H
For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V8 on an additional automation system within a plant Type of delivery: one license for one automation system, without software and documentation						
Upgrade for PCS 7 block library SIRIUS 3RW44, V6.0 or V7 to version SIRIUS 3RW44 V8 NEW ►		**3ZS1633-1XX02-0YE0**		1	1 unit	42H
For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V 8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7 Version V7						
3ZS1633-1XX00-0YA0						
Engineering software V7 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, for PCS 7, version V 6.1/V7.0/V7.1 [1] Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3ZS1633-1XX00-0YA0**	1	1 unit	42H
Runtime license V7 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: one license for one automation system, without software and documentation	►	**3ZS1633-2XX00-0YB0**	1	1 unit	42H
Engineering software migration V7-V8 NEW For upgrading (migrating) an existing engineering software V6.1/V7.0/V7.1 of the SIRIUS 3RW44 soft starter block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the SIRIUS 3RW44 soft starter block library for PCS 7 for the PCS 7 version V6.1, V7.0 or V7.1 The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V8.0; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 soft starters into the PCS 7 process control system, for PCS 7 version V8.0 Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	►	**3ZS1633-1XX10-0YE0**	1	1 unit	42H

[1] For earlier versions of the engineering software, SP1 can be downloaded from www.siemens.com/sirius-engineering.

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SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7

More information

Programming and Operating Manual for PCS 7 Block Library for SIRIUS Soft Starter 3RW44 V6.1/V7.0 + SP1 see http://support.automation.siemens.com/WW/view/en/41856585.

Getting Started for PCS 7 Block Library for SIRIUS 3RW44 Soft Starter V6.1/V7.0 + SP1 see http://support.automation.siemens.com/WW/view/en/41856498.

Note:

Programming Manual and GETTING STARTED are valid for engineering software V7 and engineering software migration V7-V8.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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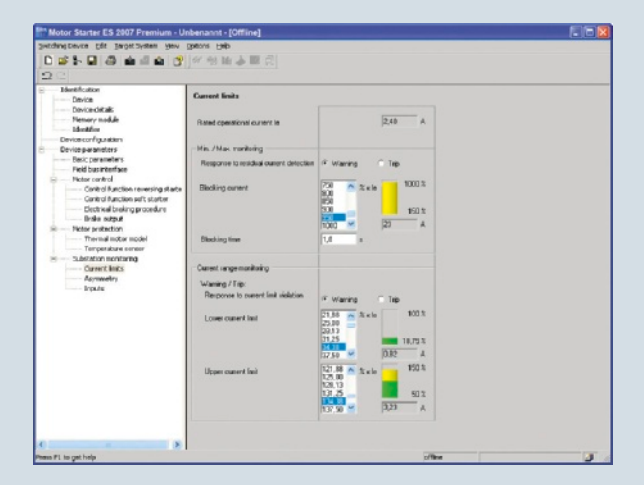
Overview



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200S, ET 200pro, ECOFAST and M200D product families.

Interfacing is performed

- Through the local interface on the device
- With PROFIBUS DP V1 capable motor starters from any point in PROFIBUS or in PROFINET (applies to ET 200S DP V1/ ET 200pro/ECOFAST/M200D)
- With PROFINET capable motor starters from any point in PROFINET or in PROFIBUS (applies to ET 200S DP V1, ET 200pro/M200D)

Using Motor Starter ES, the communication-capable motor starters are easily parameterized during start-up, monitored during normal operation and successfully diagnosed for service purposes. Preventative maintenance is supported by a function for reading out diverse statistical data (e. g.operating hours, operating cycles, cut-off currents, etc.). The user is supported during these procedures with comprehensive Help functions and plain text displays.

Motor Starter ES can either be used as a stand-alone program or it can be integrated into STEP 7 via an Object Manager.

Efficient engineering with three program versions

The Motor Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

Motor Starter ES	Basic	Standard	Premium
ET 200S High-Feature PROFIBUS IM	✓	✓	✓
ET 200S High-Feature PROFINET IM	✓	✓	✓
ECOFAST AS-Interface High-Feature	✓	✓	--
ECOFAST PROFIBUS	✓	✓	✓
ET 200pro PROFIBUS IM	✓	✓	✓
ET 200pro PROFINET IM	✓	✓	✓
M200D AS-Interface Standard	✓	✓	(✓)
M200D PROFIBUS	✓	✓	✓
M200D PROFINET	✓	✓	✓

✓ Function available, (✓) Available with restricted functionality

-- Function not available

Motor Starter ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	--	✓	✓
Creation of typicals	--	✓	✓
Comparison functions	--	✓	✓
Standard-compliant printout according to EN ISO 7200	--	✓	✓
Service data (slave pointer, statistics data)	--	✓	✓
Access through PROFIBUS	--	--	✓
Access through PROFINET	--	--	✓
S7 routing	--	--	✓
Teleservice through MPI	--	--	✓
STEP 7 Object Manager	--	--	✓
Trace function	--	✓	✓

✓ Function available

-- Function not available

Additional functions

- Standard-compatible printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be adapted, e. g. by the startup engineer.
- Teleservice through MPI
  The Motor Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Types of delivery and license

Motor Starter ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal)

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Motor Starter ES

Following delivery versions are also available for Motor Starter ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades.
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see www.siemens.com/tia-online-software-delivery.

System requirements

Parameterization, start-up and diagnostics software Motor Starter ES 2007 For ECOFAST Motor Starter, SIMATIC ET 200S High-Feature Starter, SIMATIC ET 200pro Starter and M200D (AS-I Standard, PROFIBUS, PROFINET)	
Operating system	Windows XP Professional (Service Pack 2 or 3) Windows 7 32/64 Bit Professional/Ultimate/Enterprise (Service Pack 1)
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte (Windows XP Professional)/≥ 1 GB (Windows 7 32 Bit)/ ≥ 2 GB (Windows 7 64 Bit)
Monitor resolution	≥ 1024 x 768
Free space on hard disk[1)]	≥ 400 Mbyte
CD-ROM/DVD drive	Yes (only when installing from CD)
Interface	Depends on PC cable: serial (COM) or USB
PC cable/parameterization cable/connection cable	Yes
PROFIBUS card/PROFIBUS processor	Optional, for parameterization and diagnostics through PROFIBUS
Ethernet interface/PROFINET card	Optional, for parameterization and diagnostics through PROFINET

1) Additional free space recommended, e.g. for swap-out file.

Benefits

- Fast, error-free configuration and startup of motor starters even without extensive previous knowledge
- Transparent setting of the device functions and their parameters – online and offline
- Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (included in the Motor Starter ES Standard and Premium software version for M200D PROFIBUS and PROFINET).

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Selection and ordering data

Parameterization, start-up and diagnostics software
Motor Starter ES 2007

For ECOFAST Motor Starter, SIMATIC ET 200S High-Feature Starter, SIMATIC ET 200pro Starter and M200D (AS-I Standard, PROFIBUS, PROFINET)

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor Starter ES 2007 Basic						
3ZS1310-4CC10-0YA5 **Floating license for one user** Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1310-4CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	►	**3ZS1310-4CE10-0YB5**		1	1 unit	42D
Motor Starter ES 2007 Standard						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1310-5CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	►	**3ZS1310-5CE10-0YB5**		1	1 unit	42D
Upgrade for Motor Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1310-5CC10-0YE5**		1	1 unit	42D
Powerpack for Motor Starter ES 2007 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface	B	**3ZS1310-5CC10-0YD5**		1	1 unit	42D
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	B	**3ZS1310-5CC10-0YL5**		1	1 unit	42D

Notes:

Please order PC cable separately, see page 14/16.

For description of the software versions see page 14/13.

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Motor Starter ES

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor Starter ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS/PROFINET/STEP7 Object Manager						
• License key on USB stick, Class A, including CD	B	**3ZS1310-6CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	▶	**3ZS1310-6CE10-0YB5**		1	1 unit	42D
Upgrade for Motor Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1310-6CC10-0YE5**		1	1 unit	42D
Powerpack for Motor Starter ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1310-6CC10-0YD5**		1	1 unit	42D
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface or PROFIBUS	B	**3ZS1310-6CC10-0YL5**		1	1 unit	42D

Notes:

Please order PC cable separately, see Accessories.

For description of the software versions see page 14/13.

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3RK1903-0CH20						
Control module 2DI LC COM For ET 200S High-Feature starter, Failsafe starter A	A	**3RK1903-0CH20**		1	1 unit	42D
LOGO! PC cables For ET 200S High-Feature starter	A	**6ED1057-1AA00-0BA0**		1	1 unit	200
RS 232 interface cable Serial data connection between ET 200pro MS/FC, M200D and laptop/PC/PG or MS	B	**3RK1922-2BP00**		1	1 unit	42D
USB interface cable Serial data connection between ET 200pro MS/FC, M200D and laptop/PC/PG or MS	B	**6SL3555-0PA00-2AA0**		1	1 unit	346
USB/serial adapters For connecting an RS 232 PC cable to the USB interface of a PC, recommended for use in conjunction with ET 200S/ECOFAST/ET 200pro motor starters	B	**3UF7946-0AA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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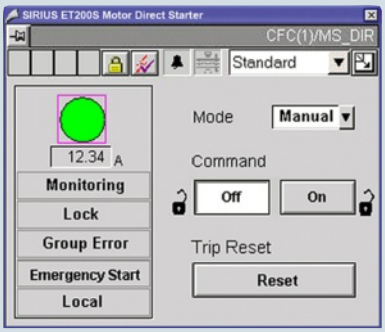
Overview



Faceplate of the motor block

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S and ET 200pro motor starters can be easily and simply integrated into the SIMATIC PCS 7 process control system. The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver blocks corresponding to the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Easy integration with the PCS 7 block library

The PCS 7 block library can be used for simple and easy integration of SIRIUS ET 200S and ET 200pro motor starters into the SIMATIC PCS 7 process control system V7.0, V7.1 and V8.0. The focus here is simple configuration. The function of the modules is based on the PCS 7 standard libraries and is optimally harmonized with the functions of the SIRIUS motor starters.

Users who have previously integrated motor feeders into PCS 7 are easily able to switch to SIRIUS motor starters.

All blocks required for the automation systems are provided by the PCS 7 block library – as are the block symbols and faceplates for the operator station required for monitoring and control.

Regardless of whether, for example, the motor starter is controlled directly, or its current value is to be read out and status, warning and error signals are to be displayed, the right modules are always available.

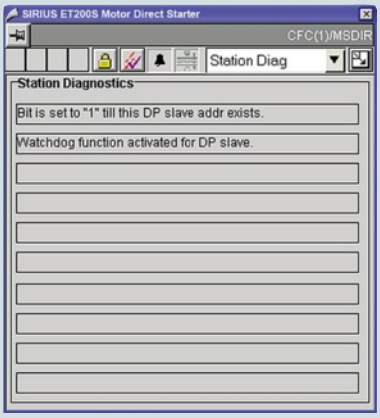
Connection to powerrate

The SIRIUS motor starters can be connected to powerrate. The block provides the possibility of integrating the motor starters into energy management.

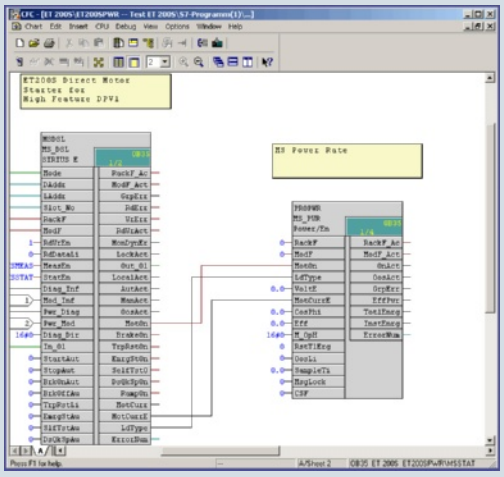
The current values are supplied directly from the motor starter block, while the voltage and the power factor (p.f.) must be entered manually.

Types of delivery and license

The SIRIUS Motor Starter PCS 7 block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.



Faceplate for diagnostics



Faceplate for energy management with powerrate

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the process control system

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SIRIUS motor starter block library for SIMATIC PCS 7

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIRIUS motor starter block library for SIMATIC PCS 7						
3ZS1630-1XX00-0YA0						
Engineering software V7 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS motor starters into the PCS 7 process control system, for PCS 7 version V 7.0/V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3ZS1630-1XX01-0YA0**		1	1 unit	42D
Runtime license V7 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	►	**3ZS1630-2XX01-0YB0**		1	1 unit	42D
Upgrade for SIRIUS motor starter block library for SIMATIC PCS 7 V6.1/V7.0 to V7.0/V7.1 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS motor starters into the PCS 7 process control system, for PCS 7 version V7.0 or V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3ZS1630-1XX01-0YE0**		1	1 unit	42D
Engineering software migration V7-V8 For upgrading (migrating) an existing engineering software V7 of the SIRIUS motor starter block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the SIRIUS motor starter block library for PCS 7 for the PCS 7 version V7.0 or V7.1 The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V8.0; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIRIUS motor starters into the PCS 7 process control system, for PCS 7 version V8.0 Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	NEW ►	**3ZS1630-1XX10-0YE0**		1	1 unit	42H

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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More information

Programming and Operating Manual for SIRIUS Motor Starter PCS 7 Block Library V7.1 see http://support.automation.siemens.com/WW/view/en/41856573.

Getting Started for SIRIUS Motor Starter PCS 7 Block Library V7.1 see http://support.automation.siemens.com/WW/view/en/41856486.

Note:

Programming Manual and GETTING STARTED are valid for engineering software V7 and engineering software migration V7-V8.

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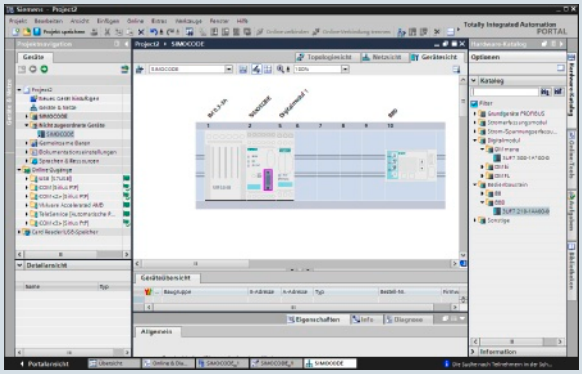
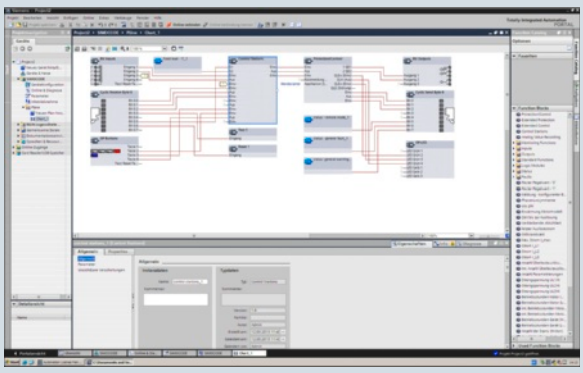
SIMOCODE ES (TIA Portal)

Overview



Selection of SIMOCODE pro device configuration in SIMOCODE ES V12



Parameterize easily and ergonomically with the CFC-based graphics editor of SIMOCODE ES V12

SIMOCODE ES is the central software for configuration, startup, operation and diagnostics of SIMOCODE pro.

Version 12, which is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), is available in addition to SIMOCODE ES Version 2007.

SIMOCODE ES V12 is integrated seamlessly when further TIA Portal-based software exists such as STEP 7 or WinCC, thus enabling users to achieve a consistent, efficient and intuitive solution for all automation tasks.

Users who use SIMOCODE ES V12 as stand-alone software also profit from these advantages, through.

Three program versions

The user can choose between three different versions of SIMOCODE ES: SIMOCODE ES Basic, SIMOCODE ES Standard and SIMOCODE ES Premium. While SIMOCODE ES Basic is a powerful tool for startup or maintenance personnel, SIMOCODE ES Standard and Premium are the perfect tools for engineers or configuration engineers on account of their larger scope of functions and integrated graphics editor. Unlike the Standard version, SIMOCODE ES Premium also permits parameterization and diagnostics through PROFIBUS. Indication of all operating, service and diagnostics data supplies important information about the current state of the motor and plant at all times – everywhere on the PROFIBUS.

Working with libraries

Users can create copy templates for SIMOCODE pro device configuration and can manage them in global or project libraries.

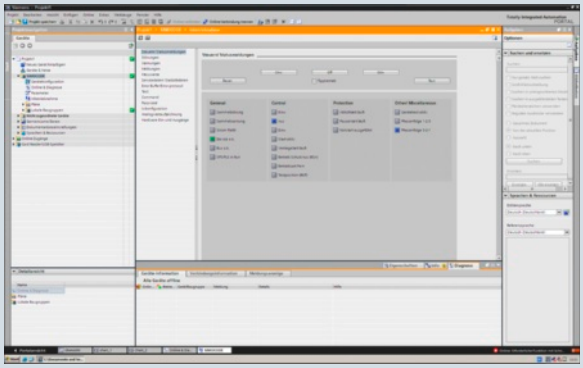
Thus, individual modules and diagrams and also complete device configurations can be saved as reusable elements for frequently occurring tasks.

Integrated graphics editor

The graphics editor is a part of SIMOCODE ES Standard and SIMOCODE ES Premium. It is based on the Continuous Function Chart (CFC) and adds a powerful tool to the parameterizing interface that enables easy parameterization of devices by Drag&Drop. Extremely compact documentation of all configured parameters is possible, as is the graphic online presentation of the configured device functions including all signal states during operation.

Online functions for startup and diagnostics

To this end, SIMOCODE ES provides powerful functions for startup and diagnostics of motor feeders. Besides a detailed display of status information and the causes of faults, all available measurement and statistics data can be retrieved online. Access to the fault and event memory and also to analog values recorded on the device, e.g. current or voltage, is also possible.



Startup functions of SIMOCODE ES V12

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Efficient engineering with three program versions

SIMOCODE ES V12	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment in list form	✓	✓	✓
Parameter printing in list form	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Test	✓	✓	✓
Service data	✓	✓	✓
Analog value recording[1)]	✓	✓	✓
Parameterizing with convenient graphical display	--	✓	✓
Parameterizing with the integrated graphics editor (CFC-based)	--	✓	✓
Printing of diagrams	--	✓	✓
Parameter comparison	--	✓	✓
Access through PROFIBUS	--	--	✓
Teleservice through MPI	--	--	✓
S7 routing	--	--	✓

✓ Function available

-- Function not available

1) For SIMOCODE pro V.

Additional functions

SIMOCODE ES V12 offers numerous advantages of the TIA Portal that can be used in an integrated working environment.

- Seamless integration when using other TIA Portal-based software such as STEP 7 or WinCC.
  Thus, for example, the configuration for devices and networks for all components used is created in a standardized environment.
- Working with libraries
  Users can create copy templates for device configuration and can manage them in global libraries. In this way, frequently used functions can be managed in a clearly structured fashion.

Types of delivery and license

SIMOCODE ES V12 is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 21 days for test and evaluation purposes, included on every product DVD, available in the download file of the SIRIUS ES program in the Service&Support portal)
- Combo license - license for parallel use
  - Licensed parallel use of the TIA Portal version and SIRIUS ES Version 2007
  - For all other properties see floating license

Following delivery versions are available in addition for SIMOCODE ES V12:

- Upgrade
  Upgrade of an old version to a new version with expanded functions, e.g. upgrade from SIMOCODE ES 2007 to SIMOCODE ES V12; includes a combo license for parallel use of SIMOCODE ES 2007 and SIMOCODE ES V12
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack SIMOCODE ES V12 Premium for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades.
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see www.siemens.com/tia-online-software-delivery.

System requirements

SIMOCODE ES V12 parameterization, start-up and diagnostics software for SIMOCODE pro	
Operating system	Windows XP Professional (Service Pack 3 required), Windows 7 32/64 bit Professional/Ultimate/Enterprise (Service Pack 1), Windows Server 2008 32 bit (Service Pack 2), Windows Server 2008 64 bit R2 (Service Pack 1)
Processor	≥ 2 GHz (Core 2 Duo)
RAM	≥ 1 GB (Windows XP) ≥ 2 GB (other operating system)
Monitor resolution	≥ 1024 x 768
Graphics cards	≥ 32 Mbyte RAM, 24-bit color intensity
Free space on hard disk	≥ 2 GB
CD-ROM/DVD drive	DVD-ROM (only when installing from DVD)
Interface	Depends on PC cable: serial (COM) or USB
PC cable/parameterization cable/connection cable	Yes
PROFIBUS interface	Optional, for parameterization and diagnostics through PROFIBUS

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SIMOCODE ES (TIA Portal)

Benefits

- Easy parameterization with the graphics editor based on the Continuous Function Chart (CFC) reduces engineering work and shortens start-up times.
- Clear plant documentation by means of graphic presentation
- Detailed information, also when there are faults, is a help for maintenance personnel and shortens downtimes
- Universally applicable through stand-alone version or seamless integration into the central engineering framework when other TIA Portal-based software such as STEP 7 or WinCC are available
- Parameter changes are also possible during normal operation
- Users can create copy templates for device configurations and can manage them in global libraries

Selection and ordering data

Parameterization and service software for SIMOCODE pro 3UF7

- Delivered without PC cable

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES V12 Basic						
Floating license for one user Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface)						
• License key on USB stick, Class A	►	**3ZS1322-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1322-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES V12 Standard						
Floating license for one user Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface parameterizing with integrated graphics editor (CFC-based)						
• License key on USB stick, Class A	►	**3ZS1322-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1322-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2007 Floating license for one user, engineering software, software and documentation on DVD, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), combo license for parallel use of versions 2007 and V12 of SIRIUS ES, for all SIMOCODE pro with PROFIBUS, online functions through system interface, parameterizing with integrated graphics editor (CFC-based)	A	**3ZS1322-5CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES V12 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface, parameterizing with integrated graphics editor (CFC-based)	A	**3ZS1322-5CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on DVD, online functions through system interface, parameterizing with integrated graphics editor (CFC-based)	►	**3ZS1322-5CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see page 14/23.

For description of the software versions see page 14/21.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES V12 Premium						
Floating license for one user Engineering software, software and documentation on DVD, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)						
• License key on USB stick, Class A	►	**3ZS1322-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1322-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2007 Floating license for one user, engineering software, software and documentation on DVD, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), combo license for parallel use of versions 2007 and V12 of SIRIUS ES, for all SIMOCODE pro with PROFIBUS, online functions through system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	A	**3ZS1322-6CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES V12 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 6 languages (German/English/French/Italian/Spanish/Chinese), for all SIMOCODE pro with PROFIBUS, online functions through system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	A	**3ZS1322-6CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on DVD, online functions through the system interface and PROFIBUS, parameterizing with integrated graphics editor (CFC-based)	►	**3ZS1322-6CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see Accessories.

For description of the software versions see page 14/21.

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7940-0AA00-0 **RS 232 PC cables** For connecting to the serial interface of a PC/PG, for communication with SIMOCODE ES through the system interface	►	**3UF7940-0AA00-0**		1	1 unit	42J
USB PC cables For connecting to the USB interface of a PC/PG, for communication with SIMOCODE ES through the system interface	►	**3UF7941-0AA00-0**		1	1 unit	42J
 3UF7941-0AA00-0 **USB/serial adapters** For connecting an RS 232 PC cable to the USB interface of a PC, recommended for use in conjunction with SIMOCODE ES	B	**3UF7946-0AA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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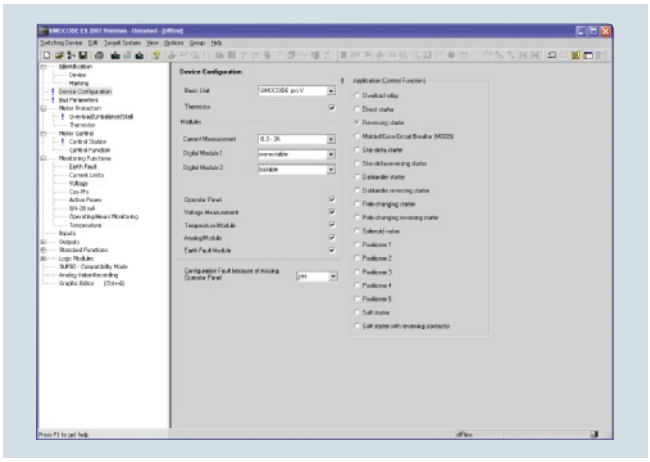
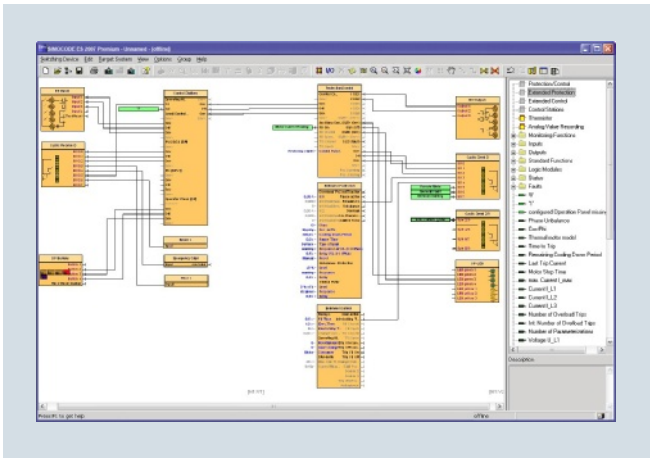
SIMOCODE ES

Overview



Selection of predefined control functions in SIMOCODE ES



Easy and ergonomic parameterizing with the graphics editor

Besides SIMOCODE ES Version 12, which is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), the 2007 version of the software continues to be available for commissioning, operation and diagnostics of SIMOCODE pro.

As a result, unnecessary plant downtimes can be consistently prevented, for example, by changing parameters online during operation. Control functions, protection functions and the wiring of the control circuit are implemented in SIMOCODE pro by predefined control functions and can be readily configured using SIMOCODE ES.

Three program versions

The user can choose between three different versions of SIMOCODE ES: SIMOCODE ES Basic, SIMOCODE ES Standard and SIMOCODE ES Premium. While SIMOCODE ES Basic is a powerful tool for startup or maintenance personnel, SIMOCODE ES Standard and Premium are the perfect tools for engineers or configuration engineers on account of their larger scope of functions and integrated graphics editor. Unlike the Standard version, SIMOCODE ES Premium also permits parameterization and diagnostics through PROFIBUS/PROFINET. Indication of all operating, service and diagnostics data supplies important information about the current state of the motor and plant at all times – everywhere on PROFIBUS/PROFINET.

Object Manager for SIMATIC S7

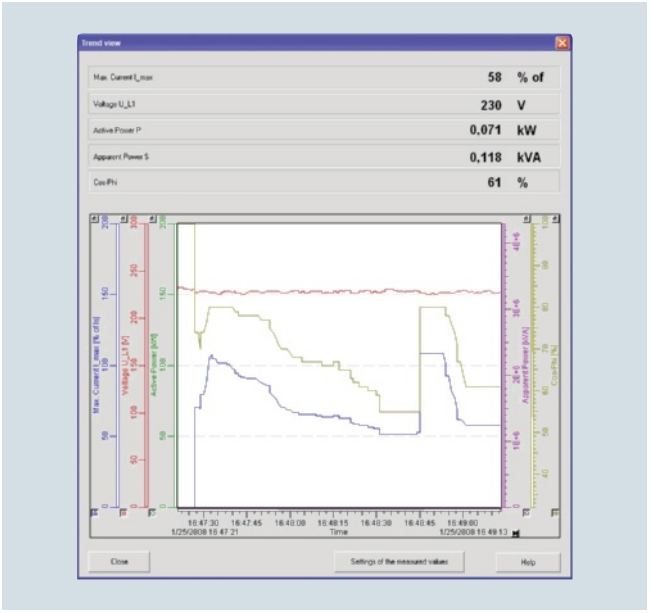
The Object Manager is a component of SIMOCODE ES Premium. Thanks to this software tool, SIMOCODE ES is totally integrated in SIMATIC S7. If the two software packages are installed on the PG/PC with which the SIMATIC S7 hardware configuration is performed, then SIMOCODE ES can be called up directly from STEP 7.

Integrated graphics editor

The graphics editor is a part of SIMOCODE ES Standard and SIMOCODE ES Premium. It adds a powerful tool to the parameterizing interface that enables easy parameterization of devices by Drag&Drop. Extremely compact documentation of all configured parameters is possible, as is the graphic online presentation of the configured device functions including all signal states during operation.

Trend display of measured values

With this online function, SIMOCODE ES Standard or Premium can present the trend of up to five different measured values. It is thus possible for example to record and evaluate the start-up characteristic of a motor or its behavior in different load conditions.



Trend displays of measured values in SIMOCODE ES

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Efficient engineering with three program versions

SIMOCODE ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Test	✓	✓	✓
Service data	✓	✓	✓
Parameterizing with the integrated graphics editor	--	✓	✓
Creation of typicals	--	✓	✓
Parameter export	--	✓	✓
Comparison functions	--	✓	✓
Trend display of measured values	--	✓	✓
Parameter comparison	--	✓	✓
Analog value recording[1)]	--	✓	✓
Standard-compatible printout according to EN ISO 7200	--	✓	✓
Group functions	--	--	✓
Access through PROFIBUS/PROFINET	--	--	✓
Teleservice through MPI	--	--	✓
S7 routing	--	--	✓
STEP7 Object Manager	--	--	✓

✓ Function available

-- Function not available

[1)] For SIMOCODE pro V.

Additional functions

In addition to device-specific parameterization, SIMOCODE ES 2007 also offers the following functionality in a uniform look and feel. These functions are available in many SIRIUS ES programs.

- Standard-compatible printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be adapted, e. g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS/PROFINET. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The SIMOCODE ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Types of delivery and license

SIMOCODE ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal)

Following delivery versions are available in addition for SIMOCODE ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from SIMOCODE ES 2004 to SIMOCODE ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack SIMOCODE ES 2007 Premium for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades.
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see www.siemens.com/tia-online-software-delivery.

System requirements

SIMOCODE ES 2007 parameterization, start-up and diagnostics software for SIMOCODE pro	
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32/64 bit Professional/Ultimate/Enterprise (Service Pack 1)
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte (Windows XP Professional)/≥ 1 GB (Windows 7 32 bit)/ ≥ 2 GB (Windows 7 64 bit)
Monitor resolution	≥ 1024 x 768
Free space on hard disk	≥ 280 Mbyte
CD-ROM/DVD drive	Yes (only when installing from CD)
Interface	Depends on PC cable: serial (COM) or USB
PC cable/parameterization cable/connection cable	Yes
Network adapter	≥ 100 Mbit/s Ethernet, for parameterization and diagnostics through PROFINET
PROFIBUS card/PROFIBUS processor	Optional, for parameterization and diagnostics through PROFIBUS

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SIMOCODE ES

Benefits

- Easy parameterization reduces the amount of engineering work and shortens start-up times
- Clear plant documentation by means of graphic presentation
- Detailed information, also when there are faults, is a help for maintenance personnel and shortens downtimes
- Stand-alone version and integration in SIMATIC STEP 7 enable universal use
- Parameter changes are also possible during normal operation
- Consistent data storage and easy configuration by means of integration in TIA (Totally Integrated Automation)

Selection and ordering data

Parameterization and service software for SIMOCODE pro 3UF7

- Delivered without PC cable

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Basic						
3ZS1312-4CC10-0YA5						
Floating license for one user						
Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	►	**3ZS1312-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES 2007 Standard						
Floating license for one user						
Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
• License key on USB stick, Class A	►	**3ZS1312-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later	A	**3ZS1312-5CC10-0YE5**		1	1 unit	42J
Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
Powerpack for SIMOCODE ES 2007 Basic	A	**3ZS1312-5CC10-0YD5**		1	1 unit	42J
Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through system interface integrated graphics editor						
Software Update Service	►	**3ZS1312-5CC10-0YL5**		1	1 unit	42J
For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through system interface, integrated graphics editor						

Notes:

Please order PC cable separately, see page 14/27.

For description of the software versions see page 14/25.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager						
• License key on USB stick, Class A	►	**3ZS1312-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1312-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1312-6CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1312-6CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS/PROFINET or system interface, integrated graphics editor, STEP7 Object Manager	►	**3ZS1312-6CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see Accessories.

For description of the software versions see page 14/25.

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7940-0AA00-0 **RS 232 PC cables** For connecting to the serial interface of a PC/PG, for communication with SIMOCODE ES through the system interface	►	**3UF7940-0AA00-0**		1	1 unit	42J
USB PC cables For connecting to the USB interface of a PC/PG, for communication with SIMOCODE ES through the system interface	►	**3UF7941-0AA00-0**		1	1 unit	42J
 3UF7941-0AA00-0 **USB/serial adapters** For connecting an RS 232 PC cable to the USB interface of a PC, recommended for use in conjunction with SIMOCODE ES	B	**3UF7946-0AA00-0**		1	1 unit	42J

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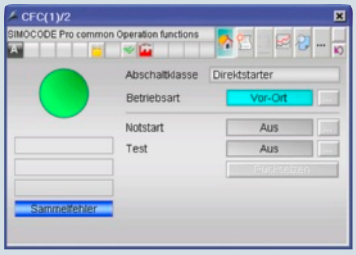
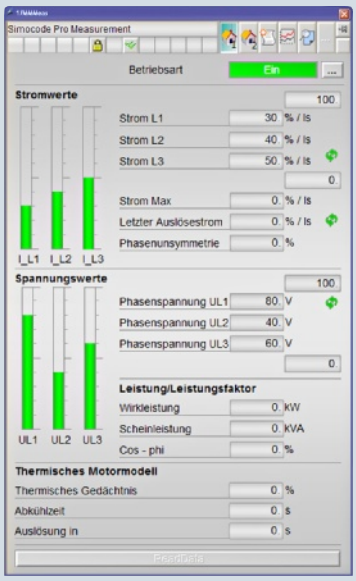
SIMOCODE pro block library for SIMATIC PCS 7

Overview



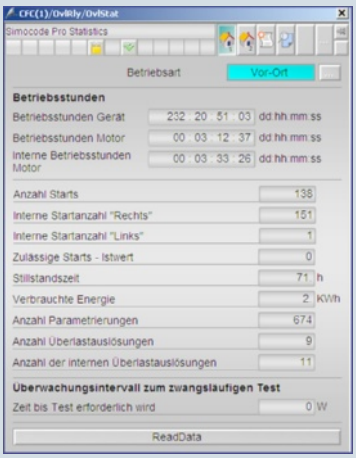


Advanced Process Library (APL) - faceplates and blocks for control and measured data of the SIMOCODE pro library for PCS 7

The PCS 7 block library can be used for simple and easy integration of SIMOCODE pro into the SIMATIC PCS 7 process control system. One focus here is on easy configuration, because the number of required configuration steps is reduced crucially. The configuration of the modules is based on the PCS 7 standard configuration processes and is optimally harmonized with the functions of SIMOCODE pro. Users who have previously integrated conventional motor feeders into PCS 7 will therefore find it easy to switch to SIMOCODE pro.

Types of delivery and license

The SIMOCODE pro PCS 7 block library supplied on CD-ROM allows users to run the required engineering software on an engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.



Advanced Process Library (APL) - faceplates and blocks for statistical data of the SIMOCODE pro library for PCS 7

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the process control system

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Selection and ordering data

Version		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7 Version V8 with Advanced Process Library (APL)							
3ZS1632-1XX02-0YA0							
Engineering software V8 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	NEW	►	**3ZS1632-1XX02-0YA0**		1	1 unit	42J
Runtime license V8 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V8 within a plant Type of delivery: One license for one automation system, without software and documentation	NEW	►	**3ZS1632-2XX02-0YB0**		1	1 unit	42J
Upgrade for PCS 7 block library SIMOCODE pro, V6.0 or V7 to version SIMOCODE pro V8 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, with Advanced Process Library, for PCS 7 version V8.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	NEW	A	**3ZS1632-1XX02-0YE0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIMOCODE pro block library for SIMATIC PCS 7

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7 Version 7							
3UF7982-0AA00-0	**Engineering software V7** For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS7 version V7.0/V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3UF7982-0AA10-0**		1	1 unit	42J
	Runtime license V7 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	►	**3UF7982-0AA11-0**		1	1 unit	42J
	Upgrade for PCS 7 block library SIMOCODE pro, V6.0 or V6.1 to version SIMOCODE pro V7.0/V7.1 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS7 version V7.0 or V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	A	**3UF7982-0AA13-0**		1	1 unit	42J
	Engineering software migration V7-V8 NEW For upgrading (migrating) an existing engineering software V7 of the SIMOCODE pro block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the SIMOCODE pro block library for PCS 7 for the PCS 7 version V7.0 or V7.1 The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V8.0; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English/French Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 version V8.0 Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	►	**3UF7982-0AA20-0**		1	1 unit	42J

More information

Programming and Operating Manual SIMOCODE pro Library for PCS 7 see http://support.automation.siemens.com/WW/view/en/49963525.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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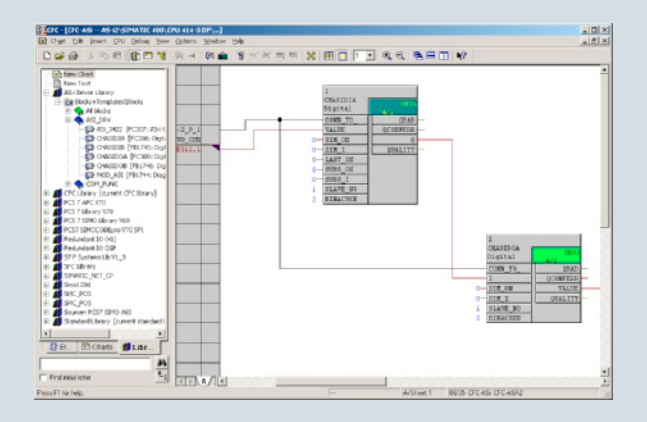
Overview



AS-Interface block library for SIMATIC PCS 7: User interfaces

The AS-Interface block library for PCS 7 is integrated in the SIMATIC PCS 7 process control system and expands it for integration of the AS-Interface system.

As the result, the advantages of AS-Interface such as the considerable reduction of wiring outlay for distributed actuators/sensors and very simple installation can also be used in a system based on PCS 7.

The library contains modules for accessing the I/O data of AS-i slaves, modules for diagnostics of the AS-i system, and a faceplate for the PCS 7 Maintenance Station.

Supported AS-Interface modules

The AS-Interface block library for PCS 7 can be used with the following AS-i master and link modules:

- CP 343-2 (in ET 200M station) 6GK7343-2AH01-0XA0
- CP 343-2P (in ET 200M station) 6GK7343-2AH11-0XA0
- DP/AS-i LINK Advanced single master 6GK1415-2BA10
- DP/AS-i LINK Advanced double master 6GK1415-2BA20

The AS-i CP 343-2 and CP 343-2P masters are supported within an ET 200M station connected through PROFIBUS.

For direct connection to PROFIBUS it is possible to use DP/AS-i LINK Advanced as an AS-i single master and double master.

Digital AS-i standard slaves and A/B slaves (according to AS-Interface Specification V 3.0) can be used on the CP 343-2 and CP 343-2P.

In combination with DP/AS-i LINK Advanced it is also possible to integrate analog AS-i slaves.

Hardware and software requirements

The library requires PCS 7 version V6.1, V7.0 or V7.1 and PCS 7 version V8.0.

Types of delivery and license

The block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license).

If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

No additional licenses are required in order to use the faceplates on further operator stations.

Benefits

- Easy connection of AS-Interface to PCS 7
- Engineering work reduced to positioning and connecting the blocks in the CFC
- With no additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system is optimally guaranteed.

Application

The AS-Interface block library for PCS 7 is used in systems based on PCS 7 where the actuators and sensors are to be connected using AS-Interface.

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AS-Interface block library for SIMATIC PCS 7

Selection and ordering data

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface block library for PCS 7						
3ZS1635-1XX01-0YA0						
Engineering software V7 For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating AS-Interface into the PCS 7 process control system, for PCS 7 version V6.1, V7.0 or V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	►	**3ZS1635-1XX01-0YA0**		1	1 unit	42C
Runtime license V7 For execution of the AS modules in an automation system (single license) Required for using the AS modules of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	►	**3ZS1635-2XX01-0YB0**		1	1 unit	42C
Engineering software migration V7-V8 For upgrading (migrating) an existing engineering software V7 of the AS-Interface block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the AS-Interface block library for PCS 7 for the PCS 7 version V6.1, V7.0 or V7.1 The engineering software migration V7-V8 can be installed directly onto a system with PCS 7 version V8.0; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS modules in an automation system (single license), German/English Scope of supply: AS modules and faceplates for integrating AS-Interface into the PCS 7 process control system, for PCS 7 version V 8.0 Type of delivery: software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	►	**3ZS1635-1XX11-0YE0**		1	1 unit	42C

More information

Programming Manual for the PCS 7 Block Library for AS-Interface see http://support.automation.siemens.com/WW/view/en/46504691.

Note:

The Programming Manual is valid for engineering software V7 and engineering software migration V7-V8.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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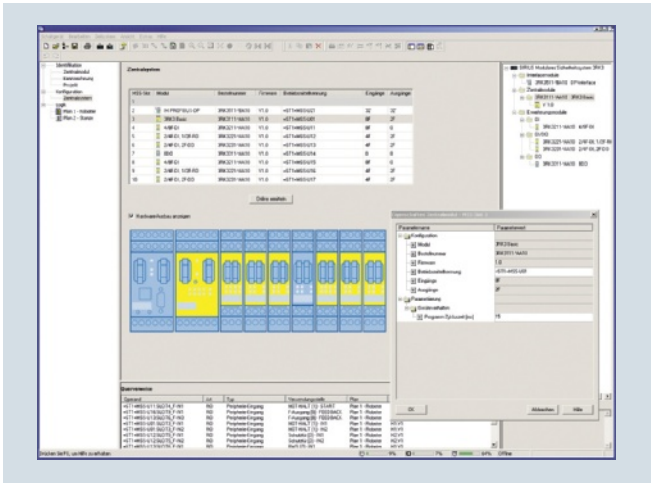
Overview

Modular Safety System ES is the engineering software for the configuration, start-up and diagnostics of the 3RK3 Modular Safety System. The software combines the configuring of the hardware, the parameterization of the safety functions, and the testing and diagnostics of the safety system.

Hardware configuration

The configuration defines the system's hardware layout. It lays down which modules are used in the system: A central unit as a safe control system including onboard peripherals, expansion modules with inputs and outputs, an interface module for connecting to PROFIBUS. For better clarity the layout is shown in a graphic presentation. In addition, the project data on the AS-i bus can be obtained online or configured from the AS-i library. For each module, it is optionally possible to issue an equipment ID which is shown in the logic diagram for identification of the inputs and outputs.



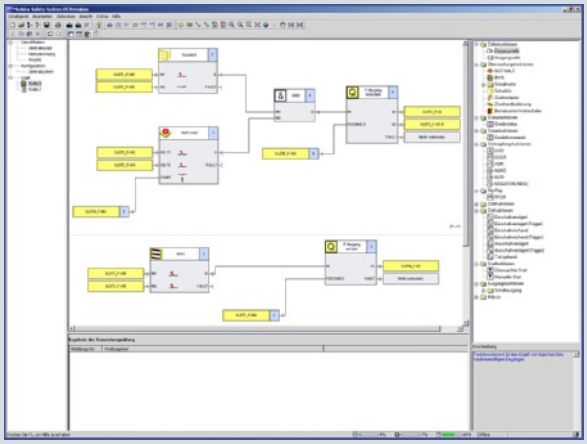
Definition of the hardware layout

Graphic parameterizing of the safety logic by Drag & Drop

The functionality of the safety logic is laid down with a graphics editor designed for intuitive operation. Safe monitoring functions (EMERGENCY-STOP, non-contact protective devices/light arrays, protective doors, etc.), output functions and logic functions (AND/OR operations, counting function, time functions, etc.), non-safety-related input/output functions, device status functions and control functions can be dragged from the extensive functions catalog onto the work interface by Drag&Drop. Depending on the version, each function has several input and output connecting points through which the functions can be interconnected by simple mouse clicks. Double-clicking on a function symbol opens the related features dialog window in which all the parameters can be displayed and configured: Scope of the function's inputs and outputs, configuring the channel type (single-/two-channel, NC contact/NO contact), activating crossover detection, defining start options, assigning the hardware inputs and outputs, etc. Of course each function can be issued with an individual name so that e.g. the position of a safety switch in the plant can be documented.

The safety logic can be divided into several diagrams in order to enable structured processing of the entire plant. The user can freely position the functions on a quasi infinitely large drawing board, whereby the connecting lines are drawn automatically. If there is not enough space, more pages are automatically added to the diagram in horizontal or vertical direction. Connecting lines extending over several pages are automatically issued with cross-references during print-out. If required in the interest of clarity, the user can divide a connecting line manually into two segments, whereby the mutual reference is marked by reference arrows. For further documentation, freely compilable comment texts can be placed at any point in the diagram. Every point in the logic diagram can be processed with ease by dragging and zooming.

Every project can be saved as a file and be password-protected from unauthorized access.



Processing the safety functions in the graphics editor

AS-Interface

Evaluation of the AS-i slaves connected to the AS-i bus is also parameterized using the tried and tested method described above. The CTT2 diagnostics slave allows cyclical and acyclical diagnostics to be carried out without difficulty.

In order to be able to use the AS-i functionalities, an Advanced central unit or ASIsafe (basic/extended) must be used.

User prompting during start-up and maintenance

To start up the 3RK3 Modular Safety System, the created project file is uploaded to the device. There are two ways of doing this:

- Connect the serial (COM) or USB interface of the PC to the device using an appropriate connection cable.
- Use the DP interface to download the parameterization through any PROFIBUS node.

Access to the device can be password-protected.

After the project is loaded, the user switches the device by means of the software from configuring mode to test mode in which the safety functions are tested.

Activating the diagnostics shows the status of the individual functions in the graphic logic diagram by means of different colors and symbols. In addition, the signal status of each input and output can be manually overwritten ("forcing").

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Modular Safety System ES

If the test is completed successfully, the user releases the configuration and switches the device to protection mode, in which case "forcing" is automatically deactivated.

Service personnel can activate the graphic diagnostics in protection mode as well. The I&M (Identification & Maintenance) data saved in the device facilitate maintenance.

Efficient engineering with three program versions

Modular Safety System ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Test	✓	✓	✓
Integrated graphics editor	✓	✓	✓
Importing/exporting parameters	--	✓	✓
Comparison functions	--	✓	✓
Comfort functions	--	✓	✓
Terminal designator	--	✓	✓
Work on sub-diagrams	--	✓	✓
Standard-compliant printout according to EN ISO 7200	✓	✓	✓
Downloading parameterization through PROFIBUS	--	--	✓
Online diagnostics using PROFIBUS	--	--	✓
Creating, importing and exporting macros	--	--	✓

✓ Function available

-- Function not available

Additional functions

- The program interface language can be switched during use between German, English and French
- A context-sensitive help function provides useful assistance with questions concerning the use of the program
- A consistency check informs clearly about function assignment errors; Checks are carried out automatically when a project is saved and during the configuration test, but they can also be initiated manually
- Lists of symbols and cross-references can be issued output for effective processing of the project file
- Standards-conform printouts:
  The programs of the SIRIUS ES software family make machine documentation far easier. They enable parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.

Types of delivery and license

Modular Safety System ES 2008 is available as follows:

- Floating license
  - Package contains the software on CD and a floating license on a USB stick
  - The software can be installed on any number of PCs
  - The floating license enables the software to be used by 1 user; after use, it can be transferred from the one PC to another
  - The CD also contains a trial license for test and evaluation purposes (free use of all program functions on any PC for a period of 14 days).

Following delivery versions are available in addition for Modular Safety System ES 2008:

- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e. g. Powerpack Modular Safety System ES 2008 for switching from Basic to Standard and from Standard to Premium.
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades on CD (floating license not included in delivery)
- License download
  User-friendly license key download from our Mall (for selected countries) as an easy and quick way for you to receive additional licenses for your software.
  For more information see
  www.siemens.com/tia-online-software-delivery.

The software can be downloaded free from the Internet (without floating license) see
http://support.automation.siemens.com/WW/view/en/30319329.

The download file also contains a trial license for test and evaluation purposes that allows free use of all program functions for a period of 14 days. A floating license is needed to use the software after the 14 days.

System requirements

Modular Safety System ES 2008 parameterization, start-up and diagnostics software (including service pack 3) for the 3RK3 Modular Safety System	
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32/64 bit Professional/Ultimate/Enterprise (Service Pack 1)
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte (Windows XP Professional)/≥ 1 GB (Windows 7 32 bit)/ ≥ 2 GB (Windows 7 64 bit)
Monitor resolution	≥ 1024 x 768
Free space on hard disk	≥ 280 Mbyte
CD-ROM/DVD drive	Yes (only when installing from CD)
Interface	Depends on PC cable: serial (COM) or USB
PC cables for PC/PG communication	Yes

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Benefits

- Convenient parameterization, operation, monitoring and testing by means of a user-friendly and clear-cut user interface
- Reliable diagnostic tool
- All functions, such as safety and logic functions, are available as modules, and are easy to link to one another.
- Automatic creation of comprehensive documentation of safety functions

Selection and ordering data

Parameterization, start-up and diagnostics software for the 3RK3 modular safety system

- Delivered without PC cable

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modular Safety System ES 2008 Basic						
3ZS1314-4CC10-0YA5						
Floating license for one user Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through the system interface						
• License key on USB stick, Class A	A	**3ZS1314-4CC10-0YA5**		1	1 unit	42B
• License key download, Class A	▶	**3ZS1314-4CE10-0YB5**		1	1 unit	42B
Modular Safety System ES 2008 Standard						
3ZS1314-5CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	B	**3ZS1314-5CC10-0YA5**		1	1 unit	42B
• License key download, Class A	▶	**3ZS1314-5CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Basic to Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	A	**3ZS1314-5CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	▶	**3ZS1314-5CC10-0YL5**		1	1 unit	42B
Modular Safety System ES 2008 Premium						
3ZS1314-6CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros						
• License key on USB stick, Class A	NEW B	**3ZS1314-6CC10-0YA5**		1	1 unit	42B
• License key download, Class A	NEW ▶	**3ZS1314-6CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	NEW A	**3ZS1314-6CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, online diagnostics via PROFIBUS, creating, importing and exporting macros	NEW ▶	**3ZS1314-6CC10-0YL5**		1	1 unit	42B

Notes:

Please order PC cable separately, see page 14/36.

For description of the software versions see page 14/34.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Modular Safety System ES

Accessories

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories							
3UF7940-0AA00-0	**RS 232 PC cables** For connecting to the serial interface of a PC/PG, for communication with the 3RK3 Modular Safety System through the system interface	►	**3UF7940-0AA00-0**		1	1 unit	42J
3UF7941-0AA00-0	**USB PC cables** For connecting to the USB interface of a PC/PG, for communication with the 3RK3 Modular Safety System through the system interface, recommended for use in connection with 3RK3 Modular Safety System	►	**3UF7941-0AA00-0**		1	1 unit	42J
	USB/serial adapters For connecting a RS 232 PC cable to the USB interface of a PC	B	**3UF7946-0AA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Products for Specific Requirements

15

Price groups
PG 15A, 470, 471, 477, 478, 42J, 4M1, 581, 582, 583, 584, 585, 586, 588, 593

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Single-phase transformers
15/10 Safety, isolating, control and mains transformers
15/17 SIRIUS 4AM safety, mains and control transformers
15/20 SIRIUS 4AM safety and mains transformers
15/21 SIRIUS 4AM, 4AT isolating, control and mains transformers

Three-phase transformers
15/26 Safety, isolating, control and mains transformers
15/31 SIRIUS 4AP, 4AU isolating, control and mains transformers

15/32 **Non-stabilized power supplies**
15/33 Filtered for supply of electronic controls
15/35 SIRIUS 4AV2, 4AV4 power supplies, filtered, single-phase
15/37 SIRIUS 4AV3, 4AV5 power supplies, filtered, three-phase
Unfiltered for supply of general loads
15/39 SIRIUS 4AV98 power supplies, unfiltered, single-phase
15/40 SIRIUS 4AV96 power supplies, unfiltered, three-phase

Stabilized power supplies
SITOP power supplies
15/41 SITOP lite, single-phase NEW
15/42 SITOP compact, single-phase NEW
15/43 LOGO!Power, single-phase NEW
15/44 SITOP smart, single-phase and three-phase NEW
15/45 SITOP modular, single-phase, two-phase and three-phase NEW
15/47 Special design, special use
15/48 Expansion modules NEW
15/50 24 V DC uninterruptible power supplies

15/53 **Heating control systems**
15/54 With integrated power outputs – compact design
15/54 SIPLUS HCS3200 heating control system NEW
15/59 With integrated power outputs – modular design
15/59 SIPLUS HCS716I heating control system
15/62 - Racks NEW
15/66 - Power output modules NEW
15/69 SIPLUS HCS724I heating control systems
15/72 - Central interface modules
15/74 - Power output modules
15/78 - Line-voltage sensing module
15/79 - Fan module
15/80 - Current measuring module
15/81 Without integrated power outputs
15/81 SIPLUS HCS300I heating controller
15/84 - Basic unit
15/86 - Digital modules
15/88 - Temperature modules
15/90 - Current measuring modules
15/91 - Current/voltage measuring modules
15/93 - Decoupling module
15/94 - TCP 3000 temperature control software (optional)

15/95 **Automatic door controls NEW**
15/97 For elevators
15/98 Control devices
15/99 - SIDOOR AT12 elevator door drive
15/102 - SIDOOR AT40 elevator door drive
15/106 - SIDOOR ATD400V elevator door drive
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15/118 For industrial applications
15/118 Control devices
15/119 - SIDOOR ATD400K cold room gate drive
15/123 - SIDOOR ATD400W machine tool door drive

15/127 **Condition monitoring systems**
15/128 SIPLUS CMS1000 condition monitoring system
15/129 Bearing Guard
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- SIPLUS CMS2000 Basic Unit VIB
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- SIPLUS CMS2000 VIB-MUX
- Temperature modules
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Electrical charging components
15/146 Components for electric vehicle charging stations
15/147 SIPLUS ECC1000 and ECC2000 charging controllers NEW
15/151 - CM-100 charging controllers according to IEC 61851
15/155 - CM-230 charging controllers according to IEC 61851 with Ethernet connection
15/159 SIPLUS ECC8000 prefabricated function systems

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Introduction

Overview

Single-phase transformers

4AM

4AT

Version	Rated power kVA	Rated input voltage V AC	Rated output voltage V AC	Safety class	Page
Safety, isolating, control and mains transformers					
SIRIUS 4AM safety, mains and control transformers					
With one input voltage	0.063 ... 1.0	230 ± 5 %; 400 ± 5 %	24; 42	I	15/17
For European voltages	0.063 ... 1.0	400/230 ± 15 V	24; 42	I	15/18
In multi-voltage version	0.063 ... 1.0	550 ... 208; 600 ... 230	24	I	15/19
SIRIUS 4AM safety and mains transformers					
With one input voltage	0.025; 0.04	230 ± 5 %; 400 ± 5 %	24	I	15/20
SIRIUS 4AM, 4AT isolating, control and mains transformers					
4AM and 4AT with one input voltage	4AM: 0.063 ... 2.5; 4AT: 4 ... 10	230 ± 5 %; 400 ± 5 %; 440 ± 5 %	110; 230	I	15/21
		500 ± 5 %	230		15/23
4AM with one input voltage without cULus	4AM: 0.063 ... 2.5	690 ± 5 %	230	I	15/24
4AM in European voltage design	4AM: 0.063 ... 2.5	400/230 ± 15 V	2 × 115	I	15/24
4AM and 4AT in multi-voltage version	4AM: 0.063 ... 2.5; 4AT: 4 ... 10	550 ... 208; 600 ... 230	2 × 115	I	15/25

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

Three-phase transformers

4AP20

4AU

Version	Rated power kVA	Rated input voltage 3 AC V	Rated output voltage 3 AC V	Safety class	Page
Safety, isolating, control and mains transformers					
SIRIUS 4AP, 4AU isolating, control and mains transformers					
4AP and 4AU in two-voltage version	0.63 ... 10	Y 500-400/Δ 289-230	Y 400/Δ 230	I	15/31
4AP and 4AU in multi-voltage version	0.63 ... 16	Y 520 ... 360/Δ 300 ... 208	Y 400/Δ 230	I	15/31

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

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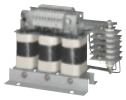
Non-stabilized power supplies

		4AV21/23	4AV20/22/24/26	4AV4	4AV3	4AV5
Filtered for supply of electronic controls						
Ripple		< 5 %	< 5 %	< 5 %	< 5 %	< 5 %
Phase		1	1	1	3	3
Rated input voltage	V AC	115 ... 415	115 ... 415	230 ... 415	200 ... 600	400 ... 415
Rated output voltage according to IEC 61131-2 suitable for SIMATIC systems	V DC	24	24	24	24	24
Rated output current	A	1 ... 4.2	2.5 ... 18	1.5 ... 6	15 ... 180	25, 35
Connection		Screw terminals/ flat connectors	Screw terminals/ flat connectors	Screw terminals/ flat connectors	Screw terminals/ flat connectors	Screw terminals/ flat connectors
Mounting		Standard rail mounting	Screw and/or standard rail mounting	Screw and/or standard rail mounting	Screw mounting	Screw mounting
cULus approval at 60 °C		Yes	Yes	No	4AV30 ... 4AV35: Yes, 4AV36, 4AV38: No	No
Page		15/35	15/36	15/36	15/37, 15/38	15/37

		4AV98	 4AV96
Unfiltered for supply of general loads			
Ripple		48.3 %	< 5 %
Phase		1	3
Rated input voltage	V AC	230 or 400	400 ± 5 %
Rated output voltage	V DC	24	30-27-24
Rated output current/ rated power		50 ... 315 W	4 ... 25 A
Connection		Screw terminals/flat connectors	Screw terminals/flat connectors
Mounting		Screw mounting	Screw mounting
cULus approval		No	No
Page		15/39	15/40

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

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Introduction

Stabilized power supplies

		6EP1 SITOP lite	**6EP1 SITOP compact**	**6EP1 LOGO!Power**	**6EP1 SITOP smart**
SITOP power supplies					
Phase		1	1	1	1, 3
Rated input voltage	V	120/230 AC	100 ... 230 AC, 120 ... 230 AC	100 ... 240 AC	120/230 AC, 3 AC 400 ... 500
Rated output voltage	V DC	24	24, 12	5, 12, 15, 24	24
Rated output current	A	2.5 ... 10	0.6 ... 6.5	1.3 ... 6.3	2.5 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting
Approval		UL, cUL	NEC Class 2, UL, cUL	UL, cUL	UL, cUL
Page		15/41	15/42	15/43	15/44

		6EP1 SITOP modular	**6EP1 Special design, special use**	**6EP1 Expansion modules**	**6EP1 Uninterruptible 24 V DC power supplies**
SITOP power supplies					
Phase		1, 2, 3	1	1	1
Rated input voltage	V	120/230 ... 500 AC, 120/230 AC, 3 AC 400 ... 500; 600 DC	120/230 AC	24 DC	24 DC
Rated output voltage	V DC	24, 48	3 ... 52	U_e – approx. 0.5, U_e – approx. 1	24
Rated output current	A	5 ... 40	10	3.5 ... 20, 40, 4 x 3, 4 x 10	6 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting (except: wall mounting with SITOP UPS500P)
Approval		UL, cUL	UL, cUL	NEC Class 2, UL, cUL	UL, cUL
Pages		15/45, 15/46	15/47	15/48, 15/49	15/50 ... 15/52

More power supply products see Catalog KT 10.1 "SITOP Power Supply" or www.siemens.com/sitop.

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

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Heating control systems

	SIPLUS heating control systems			SIPLUS heating controller
	HCS3200	**HCS716I**	**HCS724I**	**HCS300I**
With integrated power outputs	✓	✓	✓	--
Design	**Compact**	**Modular**	**Modular**	**Modular**
• Compact design	9 power channels on only 0.12 m²	192 power channels on only 0.2 m²	384 power channels on only 0.4 m²	--
• System structure	Compact unit	Four rack versions for up to 4 or 12 power output modules	Central interface for up to 16 power output modules	Basic unit for connection of 4 digital modules, 4 temperature modules and 1 current measurement or 1 current/ voltage measuring module
• Mounting	Screw fixing with variable mounting angles	Screw fixing with mounting angles	Screw fixing with fixing lugs	Snap-on mounting onto TH 35 standard mounting rail or screw fixing using additional push-in lugs
• Degree of protection	IP65	IP00	IP20	IP20
Power outputs				
• The central solution for power outputs	Up to 4 kW per channel	Up to 2.3 kW per channel	Up to 4 kW per channel	Dependent on the solid-state switching relay used
• Power outputs	9 outputs 400 V AC	3 power output modules for selection: 8 or 16 output channels 230 V AC	3 power output modules for selection: LA724I HP, LA724I: 12 or 24 output channels 230/400 V AC LA724I SSR: for controlling external SIRIUS solid-state relays	Per digital module: 6 digital outputs for controlling external SIRIUS solid-state relays, available up to 90 A
• Zero-point switching solid-state switching devices	Integrated	--	--	External
• Zero-point switching triacs	--	Integrated	Integrated	--
• Protection of the outputs	With fine fuses in fuse holders	With fine fuses in fuse holders	Protection of the outputs with fine fuses in fuse holders which can be reached from the front	--
• Control for external fans	Control for external fan with 1 output 230 V AC up to 500 W	--	--	--
Open-loop/closed-loop control				
• Temperature measurement	--	--	--	Temperature module with four temperature inputs for Pt100/Pt1000 and thermoelements type J/K/L
• Software for temperature control	--	--	--	Optional TCP 3000 temperature control software
• Current measurement	--	--	3 x 400 A	3 measuring ranges: 2.4 ... 25 A, 10 ... 100 A, 20 ... 200 A
• Voltage measurement with compensation	Up to 400 V	--	Up to 400 V	Up to 690 V
Communication and diagnostics				
• Communication with higher-level control system through PROFIBUS DP	✓	✓	✓	✓
• Diagnostics functions	Detection of external and internal faults	Detection of external and internal faults	Detection of external and internal faults	Via the current measuring module and the current/ voltage measuring module
• Easy data management with TIA	✓	✓	✓	✓
• Integrated line voltage sensing for compensation of line voltage fluctuations	Integrated	--	Optional	Optional though current/ voltage measuring module
Connections				
• Network supply	Through plugs	Through terminals or plugs	Busbar system at the front	--
• Connection of heat emitter	Through plugs	Through plugs	Through plugs	--
• PROFIBUS DP connection	Through ECOFAST plugs	Over a 9-pin Sub D socket	Over a 9-pin Sub D socket	Over a 9-pin Sub D socket
• Connection of the 24 V DC power supply	Through ECOFAST plugs	--	--	Screw terminals
Pages	15/54 to 15/58	15/59 to 15/68	15/69 to 15/80	15/81 to 15/94

✓ Has this function

-- Does not have this function

For more information see Industry Mall or www.siemens.com/siplus-hcs.

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Introduction

Automatic door controls

	SIDOOR AT12 elevator door drive	**SIDOOR AT40 elevator door drive**	**SIDOOR ATD400V elevator door drive**
Control devices for elevators			
Characteristics			
• Application	Intelligent door control system for the operation of sliding doors	Intelligent door control system for the horizontal and vertical operation of sliding doors	Intelligent door control system for the operation of rising doors and rolling shutters for elevators
• Max. dynamic door weight	120 kg	400 kg	400 kg
• Automatic door weight detection – hence stable drive characteristics and reduced service costs	✓	✓	✓
• SIDOOR user software (included in the Software Kit) enables user-friendly operation and detailed diagnostics.	✓	✓	✓
• 1-button operation for the entire commissioning process	✓	✓	✓
• Flexible motor management	--	Three motor types for different power requirements	--
• Degree of protection	IP20	Motor IP54, IP40 for gear unit for 180 to 400 kg motor versions	Motor IP54, IP40 for gear unit for 400 kg motor version
• Power supply	Integrated switch-mode power supply – hence low installation costs	External application-optimized NT40 switch-mode power supply or external mains transformer	External application-optimized NT40 switch-mode power supply or external mains transformer
• Emergency power module 24 V DC	--	Optional	Optional
• Communication module	Integrated CAN module	Either relay or CAN module	Integrated relay module
• Communication interfaces	CANopen, USB via USB adapter, RS 485 – hence easy system integration	CANopen (optional), USB via USB adapter, RS 485 – hence easy system integration	USB via USB adapter, RS 485 – hence easy system integration
Pages	15/99 to 15/101	15/102 to 15/105	15/106 to 15/108

✓ Has this function

-- Does not have this function

Automatic door controllers for industrial applications see next page.

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Automatic door controls (continued)

	SIDOOR ATD400K cold room gate drives	**SIDOOR ATD400W machine tool door drive**
Control devices for industrial applications		
Characteristics		
• Application	Intelligent door control system for the operation of cold room gates	Intelligent door control system for the operation of machine tool doors
• Max. dynamic door weight	400 kg	400 kg
• Automatic door weight detection – hence stable drive characteristics and reduced service costs	✓	✓
• SIDOOR user software (included in the Software Kit) enables user-friendly operation and detailed diagnostics	✓	✓
• 1-button operation for the entire commissioning process	✓	✓
• "Cable-operated switch" function	When actuated, the gate opens with an adjustable opening width and hold-open time before closing again automatically.	--
• A higher force can be set for the first 10 cm of the opening movement (lifting the gate)	✓	--
• Flexible motor management	Two motor types for different power requirements	Three motor types for different power requirements
• Degree of protection	Motor IP54, IP40 for gear unit for 400 kg motor version	Motor IP54, IP40 for gear unit for 400 kg motor version
• Performance level according to ISO 13849-1	--	"d" (limitation of force and energy)
• Category according to ISO 13849-1	--	"2"
• Power supply	External mains transformer	External application-optimized NT40 switch-mode power supply or external mains transformer
• Emergency power module 24 V DC	Optional	Optional
• Communication module	Integrated relay module	Integrated relay module
• Communication interfaces	USB via USB adapter, RS 485	USB via USB adapter, RS 485
Pages	15/119 to 15/122	15/123 to 15/126

✓ Has this function

-- Does not have this function

For more information see Industry Mall or www.siemens.com/sidoor.

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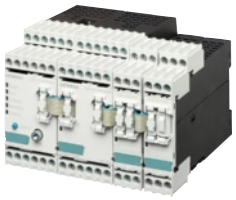
Introduction

Condition monitoring systems



	SIPLUS CMS1000	SIPLUS CMS2000	SIPLUS CMS4000
Monitoring			
• Of motors, generators, fans, pumps, etc.	✓	✓	✓
- For imbalance, misalignment, roller bearings	✓	✓	✓
• Max. number of vibration channels	1	16	180
Analysis methods			
Characteristic values			
• Bearing monitoring: DKW, based on K(t) according to VDI 3832	✓	✓	✓
• Vibration monitoring: RMS based on DIN ISO 10816-3	✓	✓	✓
• CREST factor, etc. application-specific characteristic values	--	--	✓
Vibration analysis			
• Parameterizable	--	✓	--
• Configurable	--	--	✓
• FFT, envelope curve, fingerprint comparison, trend analysis	--	✓	✓
• Orbit analysis, free configuration of other analysis methods	--	--	✓
Monitoring functions			
• Adjustable limit values for DKW and RMS: Warning and alarm	✓	✓	✓
• Adjustable alarm ranges for frequency spectrums	--	✓	✓
• Limit value monitoring of analog values	--	✓	✓
• Temperature monitoring	--	✓	✓
• Creation of own monitoring algorithms	--	--	✓
Recording functions			
• Raw data recording: Manually or event-triggered, snapshot of the FFT, characteristic values, long-term trend recording	--	✓	✓
• Black box for process data	--	--	✓
Visualization			
• Traffic light status display via binary outputs	✓	✓	--
• Local display	✓	--	--
• Parameterization and online diagnostics via standard web browser	--	✓	--
• Software SIPLUS CMS X-Tools	--	--	✓
Pages	15/128 to 15/134	15/135 to 15/145	See Industry Mall or www.siemens.com/siplus-cms

✓ Has this function
-- Does not have this function

For more information see Industry Mall or www.siemens.com/siplus-cms.

Electrical charging components

	SIPLUS ECC1000 (CM-100)	SIPLUS ECC2000 (CM-230/CM-230-C)	SIPLUS ECC8000 (SYS-101A, SYS-102A, SYS-202A)
Version	Charging controllers for installing AC electric vehicle charging stations according to IEC 61851	Charging controllers for installing AC electric vehicle charging stations according to IEC 61851 with Ethernet connection	Function units (factory-wired and ready to install), comprising a charging controller and load feeder for installing electric vehicle charging stations according to IEC 61851
Pages	15/151 to 15/154	15/155 to 15/158	15/159 to 15/161

For more information see Industry Mall or www.siemens.com/siplus-ecc.

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Options

Delivery time class DT

The delivery time classes are specified in the selection tables in front of the article numbers.

The standard transport time for Germany is 1 day (see Chapter 16 "Appendix" → "Ordering notes").

The quoted delivery time class for the 4AM, 4AT, 4AP, 4AU transformers and the 4AV non-stabilized power supplies is applicable to an order quantity of up to 5 units.

The quoted delivery time class for the SIPLUS extreme power supplies and heating control systems is applicable to an order quantity of up to 9 units.

The quoted delivery time class for the door control systems is applicable to an order quantity of up to 10 units.

▸ Preferred type

This delivery time class applies with the degree of protection IP00, i.e. these units can be supplied immediately from stock[1)] and will be dispatched within 24 hours. The transport times depend on the destination and the mode of delivery.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class A

The ordered units will be dispatched within 1 or 2 working days.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class B

The ordered units will be dispatched within 3 to 5 working days.

Delivery time class C is applicable to an order quantity of 6 units and more.

Delivery time class C

The ordered units will be dispatched within 6 to 15 working days.

Delivery time class D is applicable to an order quantity of 6 units and more.

Delivery time class D

The ordered units, including enclosure and additional options, will be dispatched within 16 to 30 working days.

Delivery time class X

On request.

Orders for transformers and non-stabilized power supplies in customized versions or with special applications are handled exclusively by the company mdexx GmbH.

For customized transformers and non-stabilized power supplies not listed in our Catalog IC 10 please send your inquiries to mdexx GmbH:

trafo@mdexx.com

or by fax +49 (421) 5125-333.

mdexx GmbH will reply with all the data needed for you to place an order.

[1)] This is based on standard commercial orders – normal order!

More information

For more information about power supplies, transformers, reactors and filters, see www.siemens.com/sirius-supplying or www.mdexx.com.

Transformers for converter systems from Siemens see the following catalogs:

- Catalog NC 60, SINUMERIK & SIMODRIVE
- Catalog DA 65.10, SIMOVERT MASTERDRIVES Vector Control
- Catalog DA 65.11, SIMOVERT MASTERDRIVES Motion Control

Further information:

- SIPLUS extreme
  see Industry Mall or www.siemens.com/siplus-extreme
- Heating control systems
  see Industry Mall or www.siemens.com/siplus-hcs
- For door control systems
  see Industry Mall or www.siemens.com/sidoor
- Conditioning monitoring systems
  see Industry Mall or www.siemens.com/siplus-cms
- Electrical charging components
  see Industry Mall or www.siemens.com/siplus-ecc

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General data

Overview

4AM../4AT.. transformers

With the right transformer, the right voltage will be available at any conditions.

Our transformers are the right choice for each application: They work reliably, safely and worldwide under a wide range of different conditions.

Transformers are summarized in a user-friendly manner as:

- Isolating, control and mains transformers according to IEC 61558-2-4, -2-2, -2-1 or
- Safety, control and mains transformers according to IEC 61558-2-6, -2-2, -2-1

Note:

Mains transformers with ≤ 50 V on the output side are, in the case of SIRIUS transformers, always designed as safety transformers.

Our transformers provide optimal protection through high permissible ambient temperatures up to 40 °C or 55 °C, a high short-time rating in the case of control transformers, fuseless design and thanks to their compliance with safety standard IEC 61558, "Safety inside".

Connection methods

The transformers 4AM../4AT.. are available with screw terminals/ flat connectors.

Screw terminals

Flat connectors

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

The transformers 4AM../4AT.. can also be ordered with the help of an online configurator.

Configurator available in the Industry Mall

The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

Article No. scheme

Digit of the Article No.	1st	2nd	3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□	□	□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Transformer product type	**4**	**A**																
Product group			□															
Rated power				□	□													
Power level						□												
Development status							□											
Rated input voltage									□	□								
Rated output voltage											□	□						
Version, e. g. coil form													□					
Application															□	□		
Degree of protection																	□	
Connection type																		□
Example	**4**	**A**	**M**	**4**	**0**	**4**	**2**	**–**	**5**	**A**	**T**	**1**	**0**	**–**	**0**	**F**	**A**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

- High short-time rating of the SIRIUS transformers: Lower transformer rated power for a large number of contactors
- Suitable for "fuseless design": The small inrush current means that "circuit breakers for motor protection" can also be used on the primary side.
- cULus approvals for the USA and Canada: can be used worldwide without any problems
- Comprehensive type spectrum supplied from stock: rapid availability

Application

Transformers are used in industrial machines, process engineering, heating and air-conditioning equipment, etc., for supplying control and signaling circuits, when:

- Several electromagnetic loads (e.g. contactors) have to be controlled
- Control and signaling devices are used outside the control cabinet
- The operational voltage for the loads differs from the available voltage level
- Voltage matching for machines and installations with electrical isolation or as an autotransformer

Generally our transformers are used for voltage matching of electrical devices, e.g. in communications, medical engineering and domestic appliances.

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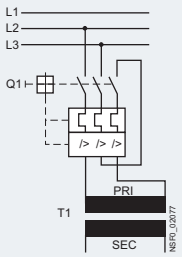
Technical specifications

General data

Transformers	Type	**4AM**	**4AT**
• Version		EI core	UI core
• Performance range (with IP00)	kVA	0.025 ... 2.5	> 2.5 ... 16
• Approvals		cULus	
Voltage range	V	≤ 690	
• Approvals for USA, Canada	V	≤ 600	
Rated frequency	Hz	50 ... 60	
Thermal class		B	H
• Acc. to UL/CSA		CLASS 130	CLASS 180
Ambient conditions		Protection against harmful ambient conditions: Complete impregnation in polyester resin Climate-proof for installation in rooms with an external climate according to DIN 50010	
Rated ambient temperature			
• At rated power	°C	40	55
• Maximum value (after power reduction according to load characteristic[1])	°C	80	
• Minimum value	°C	–25	
Relative air humidity			
• Mean value up to	%	80	
• Maximum value for 30 days/year	%	95	
• At 40 °C occasionally	%	100	
Protection class		I	
Degree of protection			
• Without enclosure		IP00	
Installation altitude		Up to 1 000 m above sea level (above this, power reduction is necessary)	
Protective devices			
• External		The transformers can be protected against short circuits and overload on the primary and secondary side with motor starter protectors, see circuit diagram.	
			
		For reliable protection against short circuits, overload and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 (particularly section 525) and Part 610.	
		Assigned protective devices (see "Primary-side short-circuit and overload protection with motor starter protectors" on pages 15/13 and 15/14)	
Connection methods		The permissible conductor cross-sections are assigned to the specified terminal types.	
• Terminal arrangement[1]		Refer to DIN VDE 0298-4 and IEC 60204 (VDE 0113-1) for the permissible conductor cross-sections for the specified current according to the installation type. The terminals used are finger-safe according to EN 50274.	
• Terminal versions and connectable cross-sections[1]		Other terminal sizes than standard versions on request.	
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids"[1].	

1) See Reference Manual "Single-Phase Transformers · Three-Phase Transformers", http://support.automation.siemens.com/WW/view/en/35681848.

More technical specifications see www.siemens.com/sirius-supplying or http://support.automation.siemens.com/WW/view/en/22172730/133200.

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General data

Rated power outputs at different ambient temperatures

- With electrically separated windings
- Degree of protection IP00
- According to IEC 61558, cULus

Transformer Type	Rated power P_n kVA	Permissible transformer load depending on the ambient temperature t_a = 60 °C kVA	t_a = 55 °C kVA	t_a = 50 °C kVA	t_a = 45 °C kVA	t_a = 40 °C kVA	t_a = 35 °C kVA	t_a = 30 °C kVA	t_a = 25 °C kVA
4AM transformers									
4AM234	0.025	0.021	0.022	0.023	0.024	0.025	0.026	0.027	0.0278
4AM264	0.04	0.0336	0.0352	0.0368	0.0384	0.04	0.0416	0.0432	0.0444
4AM324	0.063	0.0529	0.0554	0.058	0.0605	0.063	0.0655[1)]	0.068[1)]	0.0699[1)]
4AM344	0.1	0.084	0.088	0.092	0.096	0.1	0.104[1)]	0.108[1)]	0.111[1)]
4AM384	0.16	0.134	0.141	0.147	0.154	0.16	0.166[1)]	0.173[1)]	0.178[1)]
4AM404	0.25	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.278
4AM434	0.315	0.265	0.277	0.29	0.302	0.315	0.328	0.34	0.35
4AM464	0.4	0.336	0.352	0.368	0.384	0.4	0.416	0.432	0.444
4AM484	0.5	0.42	0.44	0.46	0.48	0.5	0.52	0.54	0.555
4AM524	0.63	0.529	0.554	0.58	0.605	0.63	0.655	0.68	0.699
4AM554	0.8	0.672	0.704	0.736	0.768	0.8	0.832	0.864	0.888
4AM574	1	0.84	0.88	0.92	0.96	1	1.04	1.08	1.11
4AM614	1.6	1.34	1.41	1.47	1.54	1.6	1.66	1.73	1.78
4AM644	2	1.68	1.76	1.84	1.92	2	2.08	2.16	2.22
4AM654	2.5	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.78
4AT transformers									
4AT303	4	3.88	4	4.12	4.24	4.4	4.52	4.64	4.76
4AT361	5	4.85	5	5.15	5.3	5.5	5.65	5.8	5.95
4AT363	6.3	6.11	6.3	6.49	6.68	6.93	7.12	7.31	7.5
4AT391	8	7.76	8	8.24	8.48	8.8	9.04	9.28	9.52
4AT393	10	9.7	10	10.3	10.6	11	11.3	11.6	11.9

[1)] For control transformers, the values t_a = 40 °C apply.

Operation characteristics

- According to IEC 61558-2-6, IEC 61558-2-4, IEC 61558-2-2, IEC 61558-2-1

Transformer Type	Rated power P_n 50 Hz ... 60 Hz 1 000 m above sea level degree of protection IP00 kVA	Core size	Voltage rise in no-load operation (operating temperature) u_A approx. %	Voltage drop on rated load[1)] u_R approx. %	Short-circuit voltage[1)] u_Z approx. %	Degree of efficiency η approx. %
4AM transformers: t_a = 40 °C/B						
4AM234	0.025	EI 60/20	26	17.6	17.6	74
4AM264	0.04	EI 66/22	23	15.3	15.3	76
4AM324	0.063	EI 84/28	10	8.4	8.4	85
4AM344	0.1	EI 84/42	10	7.7	7.7	86
4AM384	0.16	EI 96/44	10.4	7.6	7.7	86
4AM404	0.25	EI 96/58	7.2	5.4	5.4	89
4AM434	0.315	EI 105/60	6.6	4.9	5	90
4AM464	0.4	EI 120/52	5.7	4.3	4.4	91
4AM484	0.5	EI 120/72	5	3.8	3.8	91
4AM524	0.63	EI 150/48	4.7	3.6	3.7	92
4AM554	0.8	EI 150/65	4	3	3.1	92
4AM574	1	EI 150/90	3.2	2.5	2.5	93
4AM614	1.6	EI 174/82	2.4	1.9	2.1	96
4AM644	2	EI 174/102	2.1	1.7	1.9	96
4AM654	2.5	EI 192/110	1.6	1.3	1.6	96
4AT transformers: t_a = 55 °C/H						
4AT303	4	UI 150/75	3.8	2.7	2.9	95
4AT361	5	UI 180/75	5.5	3.8	3.9	94
4AT363	6.3	UI 180/75	4.3	3.1	3.3	95
4AT391	8	UI 210/70	4.3	3.1	3.3	95
4AT393	10	UI 210/70	3.5	2.5	3.3	96

Calculation of power loss P_V

$$P_V = \frac{P_n\,(100 - \eta)}{\eta}\ [\text{kW}]$$

[1)] Winding reference temperature: 20 °C.

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Primary-side short-circuit and overload protection with motor starter protectors

Version with one input voltage

Trans-former	Rated power P_n	Motor starter protector version: Motor protection[1]	Rated input voltage U_{1N} in V																		
Type	kVA	Type	690	660	600	575	550	525	500	480	460	440	415	400	380	240	230	220	208	200	190
4AM transformers																					
4AM234	0.025	3RV2011-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0CA	0CA	0CA	0CA	0DA	0DA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.18	0.18	0.19	0.2	0.22	0.22
4AM264	0.04	3RV2011-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0BA	0BA	0BA	0BA	0CA	0CA	0EA	0EA	0EA	0EA	0FA	0FA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.14	0.14	0.14	0.15	0.18	0.18	0.28	0.28	0.29	0.3	0.35	0.35
4AM324	0.063	3RV2011-□□□10	0BA	0BA	0BA	0BA	0CA	0CA	0CA	0CA	0CA	0DA	0DA	0DA	0DA	0FA	0GA	0GA	0GA	0GA	0GA
		Set value in A	0.14	0.14	0.15	0.16	0.18	0.18	0.18	0.19	0.19	0.22	0.22	0.22	0.24	0.37	0.45	0.45	0.45	0.45	0.47
4AM344	0.1	3RV2011-□□□10	0DA	0DA	0EA	0EA	0EA	0EA	0EA	0FA	0FA	0FA	0FA	0FA	0GA	0JA	0JA	0JA	0JA	0KA	0KA
		Set value in A	0.22	0.23	0.28	0.28	0.28	0.28	0.3	0.35	0.35	0.35	0.36	0.37	0.45	0.7	0.7	0.7	0.72	0.9	0.9
4AM384	0.16	3RV2011-□□□10	0FA	0FA	0FA	0FA	0FA	0GA	0GA	0GA	0GA	0HA	0HA	0HA	0HA	0KA	0KA	1AA	1AA	1AA	1AA
		Set value in A	0.35	0.35	0.39	0.4	0.42	0.45	0.46	0.48	0.5	0.55	0.56	0.58	0.61	0.96	1	1.1	1.1	1.2	1.2
4AM404	0.25	3RV2011-□□□10	0HA	0HA	0HA	0HA	0JA	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1BA	1BA	1CA	1CA	1CA	1CA
		Set value in A	0.55	0.55	0.57	0.59	0.7	0.7	0.7	0.7	0.74	0.9	0.9	0.9	0.9	1.4	1.5	1.8	1.8	1.8	1.8
4AM434	0.315	3RV2011-□□□10	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1CA	1DA	1DA	1DA	1DA	1DA
		Set value in A	0.7	0.7	0.71	0.74	0.9	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.8	2.2	2.2	2.2	2.2	2.2
4AM464	0.4	3RV2011-□□□10	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1DA	1DA	1EA	1EA	1EA	1EA
		Set value in A	0.9	0.9	0.9	0.92	1.1	1.1	1.1	1.1	1.2	1.4	1.4	1.4	1.4	2.2	2.3	2.8	2.8	2.8	2.8
4AM484	0.5	3RV2011-□□□10	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1EA	1FA	1FA	1FA	1FA	1FA
		Set value in A	1.1	1.1	1.1	1.4	1.4	1.4	1.4	1.4	1.5	1.8	1.8	1.8	1.8	2.8	3.5	3.5	3.5	3.5	3.5
4AM524	0.63	3RV2011-□□□10	1AA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1DA	1DA	1DA	1FA	1FA	1FA	1GA	1GA	1GA
		Set value in A	1.2	1.4	1.4	1.4	1.5	1.6	1.8	1.8	1.8	1.9	2.2	2.2	2.2	3.5	3.5	3.7	4.5	4.5	4.5
4AM554	0.8	3RV2011-□□□10	1CA	1CA	1CA	1DA	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1GA	1GA	1HA	1HA	1HA	1HA
		Set value in A	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.8	2.8	2.8	2.8	4.5	4.5	5.5	5.5	5.5	5.5
4AM574	1	3RV2011-□□□10	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1FA	1HA	1HA	1JA	1JA	1JA	1JA
		Set value in A	2.2	2.2	2.2	2.3	2.4	2.8	2.8	2.8	2.8	3	3.5	3.5	3.5	5.5	5.7	7	7	7	7
4AM614	1.6	3RV2011-□□□10	1FA	1FA	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1KA	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA
		Set value in A	3.5	3.5	3.5	3.7	3.9	4.5	4.5	4.5	4.6	5.5	5.5	5.5	5.6	9	11	11	11	11	11
4AM644	2	3RV2011-□□□10	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4AA	4AA	4BA	4BA	4BA	4BA
		Set value in A	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.7	7	7	7	7	11	11	14	14	14	14
4AM654	2.5	3RV2011-□□□10	1GA	1GA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4BA	4BA	4CA	4CA	4CA	4DA
		Set value in A	4.5	5.5	5.5	5.5	5.7	7	7	7	7	9	9	9	9	14	14	17	17	17	20
4AT transformers																					
4AT303	4	3RV2011-□□□10	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4EA	4FA	4FA
		Set value in A	8	8	9	9	9	10	11	11	11	12	12	13	14	22	22	23	24	28	28
4AT361	5	3RV2011-□□□10	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4BA	4BA	4CA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	10	10	11	11	12	12	14	14	14	15	16	16	17	28	28	29	31	32	36
4AT363	6.3	3RV2021-□□□10	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4GA	4GA	4GA	4GA	4GA	4HA
		Set value in A	12	12	14	14	15	15	17	17	17	18	20	20	21	36	36	36	38	39	41
4AT391	8	3RV2021-□□□10	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4FA	4HA	4HA	4HA	--	--	--
		3RV1041-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA
		Set value in A	15	15	17	18	18	20	20	21	22	23	24	25	28	42	43	45	48	50	52
4AT393	10	3RV2021-□□□10	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4FA	--	--	--	--	--	--
		3RV1041-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4KA	4KA	4KA	4KA	4KA
		Set value in A	18	19	21	22	23	24	25	26	28	28	30	31	32	51	57	57	59	69	64

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/11.

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Single-Phase Transformers
Safety, Isolating, Control and Mains Transformers

General data

European voltage and multi-voltage version

Trans-former	Rated power P_n	Motor starter protector[1]	Rated input voltage U_{1N} in V																		
Type	kVA	Type	690	660	600	575	550	525	500	480	460	440	415	400	380	240	230	220	208	200	190
Motor starter protector version for 4AM transformers: Transformer protection																					
4AM234	0.025	3RV2411-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0CA	0CA	0CA	0CA	0CA	0CA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.19	0.2	0.2	0.23	0.24	0.25
4AM264	0.04	3RV2411-□□□10	0AA	0AA	0AA	0AA	0AA	0BA	0BA	0BA	0BA	0BA	0BA	0CA	0CA	0DA	0DA	0DA	0EA	0EA	0EA
		Set value in A	0.11	0.11	0.12	0.12	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.3	0.32	0.32	0.35	0.35	0.38
4AM324	0.063	3RV2411-□□□10	0BA	0BA	0BA	0CA	0CA	0CA	0CA	0CA	0DA	0DA	0DA	0DA	0DA	0FA	0FA	0FA	0GA	0GA	0GA
		Set value in A	0.15	0.15	0.17	0.18	0.19	0.2	0.2	0.21	0.22	0.23	0.25	0.26	0.27	0.43	0.45	0.47	0.49	0.5	0.55
4AM344	0.1	3RV2411-□□□10	0DA	0DA	0EA	0EA	0EA	0EA	0EA	0FA	0FA	0FA	0FA	0FA	0FA	0HA	0HA	0HA	0JA	0JA	0JA
		Set value in A	0.25	0.26	0.29	0.3	0.31	0.33	0.34	0.35	0.35	0.39	0.41	0.43	0.45	0.72	0.75	0.75	0.83	0.85	0.9
4AM384	0.16	3RV2411-□□□10	0FA	0FA	0GA	0GA	0GA	0GA	0GA	0HA	0HA	0HA	0HA	0HA	0HA	0KA	0KA	0KA	1AA	1AA	1AA
		Set value in A	0.39	0.4	0.45	0.45	0.49	0.51	0.54	0.55	0.55	0.6	0.65	0.67	0.71	1.1	1.1	1.2	1.3	1.35	1.4
4AM404	0.25	3RV2411-□□□10	0HA	0HA	0HA	0HA	0JA	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1BA	1BA	1BA	1BA	1BA	1BA
		Set value in A	0.55	0.6	0.66	0.69	0.7	0.75	0.8	0.82	0.85	0.9	0.95	0.99	1	1.65	1.7	1.8	1.9	1.9	2
4AM434	0.315	3RV2411-□□□10	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	0KA	0KA	0KA	1AA	1AA	1CA	1CA	1CA	1CA	1CA	1CA
		Set value in A	0.7	0.75	0.8	0.85	0.9	0.9	1	1	1	1.1	1.2	1.24	1.3	2	2.1	2.2	2.3	2.4	2.5
4AM464	0.4	3RV2411-□□□10	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1AA	1AA	1BA	1BA	1DA	1DA	1DA	1DA	1DA	1DA
		Set value in A	0.9	0.9	1	1	1.1	1.1	1.2	1.3	1.35	1.4	1.48	1.55	1.63	2.6	2.7	2.8	3	3.1	3.2
4AM484	0.5	3RV2411-□□□10	1AA	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1EA	1EA	1EA	1EA	1EA	1EA
		Set value in A	1.1	1.1	1.3	1.35	1.4	1.4	1.5	1.6	1.65	1.75	1.85	1.9	2	3.2	3.3	3.5	3.7	3.8	4
4AM524	0.63	3RV2411-□□□10	1AA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1CA	1CA	1DA	1DA	1FA	1FA	1FA	1FA	1FA	1FA
		Set value in A	1.35	1.4	1.5	1.6	1.7	1.8	1.9	1.9	2	2.1	2.2	2.3	2.5	3.9	4	4	4.5	4.7	5
4AM554	0.8	3RV2411-□□□10	1BA	1CA	1CA	1CA	1CA	1DA	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1GA	1GA	1GA	1GA	1GA	1GA
		Set value in A	1.5	1.8	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.9	3	3.1	5	5	5.5	5.8	6	6.3
4AM574	1	3RV2411-□□□10	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1HA	1HA	1HA	1HA	1HA	1HA
		Set value in A	2.2	2.3	2.5	2.6	2.7	2.9	3	3.1	3.3	3.4	3.6	3.8	4	6.3	6.5	6.5	7	7.6	8
4AM614	1.6	3RV2411-□□□10	1FA	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1KA	1KA	1KA	1KA	1KA	1KA
		Set value in A	3.6	3.7	4.1	4.3	4.5	4.7	5	5	5.4	5.6	5.9	6.2	6.3	10	10.5	11	12	12.3	12.5
4AM644	2	3RV2411-□□□10	1FA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	4AA	4AA	4AA	4AA	4AA	4AA
		Set value in A	4.4	4.6	5	5.3	5.5	5.8	6.1	6.3	6.6	6.9	7.3	7.6	8	12.5	13	13.5	14.5	15	16
4AM654	2.5	3RV2411-□□□10	1HA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1JA	1JA	1KA	1KA	4BA	4BA	4BA	4BA	4BA	--
		3RV2421-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4DA
		Set value in A	5.5	5.8	6.4	6.6	7	7.3	7.5	8	8.3	8.7	9.2	9.5	10	16	16.5	17	18.5	19	20
Motor starter protector version for 4AT transformers: Motor protection																					
4AT303	4	3RV2011-□□□10	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4EA	4FA	4FA
		Set value in A	8	8	9	9	9	10	11	11	11	12	12	13	14	22	22	23	24	28	28
4AT361	5	3RV2011-□□□10	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4BA	4BA	4CA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	10	10	11	11	12	12	14	14	14	15	16	16	17	28	28	29	31	32	36
4AT363	6.3	3RV2021-□□□10	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4GA	4GA	4GA	4GA	4GA	4HA
		Set value in A	12	12	14	14	15	15	17	17	17	18	20	20	21	36	36	36	8	39	41
4AT391	8	3RV2021-□□□10	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4FA	4HA	4HA	4HA	--	--	--
		3RV1041-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA
		Set value in A	15	15	17	18	18	20	20	21	22	23	24	25	28	42	43	45	48	50	52
4AT393	10	3RV2021-□□□10	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4FA	--	--	--	--	--	--
		3RV1041-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4KA	4KA	4KA	4KA	4KA
		Set value in A	18	19	21	22	23	24	25	26	28	28	30	31	32	51	57	57	59	69	64

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/11.

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Secondary-side short-circuit and overload protection with motor starter protector

Transformer	Rated power P_n	Motor starter protectors					
		Version: Motor protection[1]	Rated output voltage U_{2N} in V				
Type	kVA	Type	230	115	110	42	24
4AM transformers							
4AM234	0.025	3RV2011-□□□10	0AA	0DA	0DA	0HA	1AA
		Set value in A	0.14	0.26	0.29	0.75	1.3
4AM264	0.04	3RV2011-□□□10	0CA	0FA	0FA	0KA	1CA
		Set value in A	0.21	0.41	0.45	1.2	2.1
4AM324	0.063	3RV2011-□□□10	0EA	0HA	0HA	1BA	1EA
		Set value in A	0.34	0.68	0.72	1.9	3.3
4AM344	0.1	3RV2011-□□□10	0GA	0KA	0KA	1DA	1GA
		Set value in A	0.55	1.1	1.14	3	5.2
4AM384	0.16	3RV2011-□□□10	0JA	1BA	1BA	1FA	1JA
		Set value in A	0.86	1.72	1.82	4.8	8.4
4AM404	0.25	3RV2011-□□□10	1AA	1DA	1DA	1HA	--
		3RV2021-□□□10	--	--	--	--	4AA
		Set value in A	1.37	2.7	2.8	7.4	13
4AM434	0.315	3RV2011-□□□10	1BA	1EA	1EA	1JA	--
		3RV2021-□□□10	--	--	--	--	4BA
		Set value in A	1.72	3.4	3.6	9.4	16.5
4AM464	0.4	3RV2011-□□□10	1CA	1FA	1FA	1KA	--
		3RV2021-□□□10	--	--	--	--	4CA
		Set value in A	2.2	4.4	4.6	12	21
4AM484	0.5	3RV2011-□□□10	1DA	1GA	1GA	--	--
		3RV2021-□□□10	--	--	--	4AA	--
		3RV1031-□□□10	--	--	--	--	4EA
		Set value in A	2.7	5.4	5.7	15	26
4AM524	0.63	3RV2011-□□□10	1EA	1HA	1HA	--	--
		3RV2021-□□□10	--	--	--	4BA	--
		3RV1031-□□□10	--	--	--	--	4FA
		Set value in A	3.4	6.8	7.2	18.8	33
4AM554	0.8	3RV2011-□□□10	1FA	1JA	1JA	--	--
		3RV2021-□□□10	--	--	--	4DA	--
		3RV1031-□□□10	--	--	--	--	4GA
		Set value in A	4.4	8.8	9.2	24	42
4AM574	1	3RV20 11-□□□10	1GA	1KA	1KA	--	--
		3RV10 31-□□□10	--	--	--	4EA	--
		3RV10 41-□□□10	--	--	--	--	4JA
		Set value in A	5.4	10.8	11.4	30	52
4AM614	1.6	3RV2011-□□□10	1JA	--	--	--	--
		3RV1031-□□□10	--	4BA	4BA	4HA	--
		3RV1041-□□□10	--	--	--	--	4LA
		Set value in A	8.6	17	18.5	48	81
4AM644	2	3RV2011-□□□10	1KA	--	--	--	--
		3RV1031-□□□10	--	4DA	4DA	--	--
		3RV1041-□□□10	--	--	--	4JA	4MA
		Set value in A	10.9	22	23	60	101
4AM654	2.5	3RV2021-□□□10	4AA	--	--	--	--
		3RV1031-□□□10	--	4EA	4EA	--	--
		3RV1041-□□□10	--	--	--	4KA	--
		3VF3211-□□□□□-0AA0	--	--	--	--	1BU41
		Set value in A	13.6	27	28	72	125
4AT transformers							
4AT303	4	3RV2021-□□□10	4CA	--	--	--	--
		3RV1031-□□□10	--	4GA	--	--	--
		Set value in A	21	41	--	--	--
4AT361	5	3RV1031-□□□10	4EA	--	--	--	--
		3RV1041-□□□10	--	4JA	--	--	--
		Set value in A	26	51	--	--	--
4AT363	6.3	3RV1031-□□□10	4FA	--	--	--	--
		3RV1041-□□□10	--	4KA	--	--	--
		Set value in A	32	64	--	--	--
4AT391	8	3RV1031-□□□10	4GA	--	--	--	--
		3RV1041-□□□10	--	4LA	--	--	--
		Set value in A	41	81	--	--	--
4AT393	10	3RV1041-□□□10	4JA	4MA	--	--	--
		Set value in A	51	100	--	--	--

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/11.

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General data

Short-time rating of control transformers $P_{short-t.}$[1] = f (p.f.) for $U_2 = 0.95 \times U_{2N}$

Trans-former	Rated power P_n	Short-time rating $P_{short-t.}$[1] with p.f. of										Voltage rise in no-load operation (operating temperature)	Voltage drop on rated load (at 20 °C)	Short-circuit voltage (at 20 °C)
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	u_A %	u_R %	u_Z %
4AM transformers														
4AM324	0.063	0.56	0.37	0.28	0.23	0.19	0.16	0.14	0.12	0.12	0.11	10	8.4	8.5
4AM344	0.1	0.96	0.62	0.46	0.37	0.31	0.26	0.23	0.21	0.19	0.17	10	7.7	7.7
4AM384	0.16	1.52	0.98	0.73	0.58	0.49	0.42	0.37	0.33	0.3	0.28	10.4	7.6	7.7
4AM404	0.25	2.5	1.62	1.24	1	0.85	0.74	0.66	0.59	0.54	0.51	7.2	5.4	5.4
4AM434	0.315	3.4	2.15	1.63	1.33	1.12	0.97	0.86	0.77	0.71	0.67	6.6	4.9	5
4AM464	0.4	3.51	2.53	2	1.67	1.44	1.26	1.13	1	0.95	0.92	5.7	4.3	4.4
4AM484	0.5	5.34	3.75	2.9	2.4	2	1.75	1.55	1.4	1.3	1.25	5	3.8	3.8
4AM524	0.63	5.05	3.85	3.15	2.7	2.35	2.1	1.9	1.75	1.65	1.6	4.7	3.6	3.7
4AM554	0.8	7.69	5.8	4.65	3.9	3.4	3	2.7	2.5	2.3	2.25	4	3	3.1
4AM574	1.0	12.1	8.85	7	5.85	5	4.4	3.95	3.6	3.3	3.2	3.2	2.5	2.5
4AM614	1.6	12.1	10.3	9	8.1	7.3	6.8	6.4	6.1	5.9	6.4	2.4	1.9	2.1
4AM644	2	15.8	13.5	11.9	10.7	9.7	9	8.5	8.1	7.9	8.6	2.1	1.7	1.9
4AM654	2.5	19.6	17.3	15.6	14.3	13.3	12.5	12	11.6	11.5	13.2	1.6	1.3	1.6
4AT transformers														
With one input voltage														
4AT303	4	31.2	25	20.9	18	16	14.4	13.2	12.2	11.6	11.7	3.8	2.7	2.9
4AT361	5	44.3	32.5	25.8	21.4	18.5	16.1	14.4	13.1	12.1	11.6	5.5	3.8	3.9
4AT363	6.3	40.7	33.4	28.4	24.9	22.5	20.3	18.7	17.5	16.7	16.9	4.3	3.1	3.3
4AT391	8	52.7	43.1	36.5	31.8	28.5	25.6	23.4	21.9	20.8	21.3	4.3	3.1	3.3
4AT393	10	42	37.7	34.4	31.9	30	28.4	27.3	26.7	26.8	29	3.5	2.5	3.3
In multi-voltage version														
4AT303	4	45.8	32.6	25.4	20.9	17.8	15.5	13.8	12.5	11.5	11	4.1	2.9	2.9
4AT361	5	48	36.7	27.9	22.6	19	16.5	14.6	13.1	12	11.2	5.9	4	4.1
4AT363	6.3	54.9	42.1	33.8	28.4	24.5	21.7	19.5	17.8	16.5	16.1	4.7	3.2	3.3
4AT391	8	70	53.6	43	36	31.1	27.5	24.8	22.6	21	20.4	4.6	3.2	3.3
4AT393	10	64.1	53.3	45.8	40.5	36.4	33.3	30.9	29.1	27.9	29.4	3.7	2.6	2.9

[1] $P_{short-t.}$ applies to up to 300 contactor operations per hour. The specified power is the typical maximum short-time rating.

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Overview

- According to IEC 61558-2-6, -2-1, -2-2
- cULus
- t_a = 40 °C/B
- 50/60 Hz AC
- Degree of protection IP00
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

SIRIUS 4AM single-phase transformer
with screw terminals/flat connectors

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/flat connectors Configurator Article No.	Price per PU	Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/flat connectors Configurator Article No.	Price per PU	Cu weight per PU approx.
kVA	kVA				kg				kg
Degree of protection IP00, standard version [3]									
0.063	0.19	A	**4AM3242-4TN00-0EA0**		0.260	A	**4AM3242-4TV00-0EA0**		0.260
0.1	0.31	A	**4AM3442-4TN00-0EA0**		0.260	A	**4AM3442-4TV00-0EA0**		0.260
0.16	0.49	A	**4AM3842-4TN00-0EA0**		0.320	A	**4AM3842-4TV00-0EA0**		0.320
0.25	0.85	A	**4AM4042-4TN00-0EA0**		0.600	A	**4AM4042-4TV00-0EA0**		0.580
0.315	1.12	A	**4AM4342-4TN00-0EA0**		0.710		**--**		
0.4	1.44	A	**4AM4642-4TN00-0EA0**		1.050	D	**4AM4642-4TV00-0EA0**		1.100
0.5	2	A	**4AM4842-4TN00-0EA0**		1.050	D	**4AM4842-4TV00-0EA0**		1.100
0.63	2.35	A	**4AM5242-4TN00-0EA0**		1.770	D	**4AM5242-4TV00-0EA0**		1.700
0.8	3.4	A	**4AM5542-4TN00-0EA0**		1.880		**--**		
1	5	A	**4AM5742-4TN00-0EA0**		1.910	D	**4AM5742-4TV00-0EA0**		2.000
Degree of protection IP00, standard rail mounting [3]									
0.063	0.19	A	**4AM3242-4TN00-0EA0**		0.260	A	**4AM3242-4TV00-0EA0**		0.260
0.1	0.31	A	**4AM3442-4TN00-0EA0**		0.260	A	**4AM3442-4TV00-0EA0**		0.260
0.16	0.49	A	**4AM3842-4TN00-0EA0**		0.320	A	**4AM3842-4TV00-0EA0**		0.320
0.25	0.85	A	**4AM4042-4TN00-0EA0**		0.600	A	**4AM4042-4TV00-0EA0**		0.580
0.315	1.12	D	**4AM4342-4TN00-0EB0**		0.710		**--**		
0.4	1.44	D	**4AM4642-4TN00-0EB0**		1.050		**--**		
0.5	2	D	**4AM4842-4TN00-0EB0**		1.050		**--**		

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

[3] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4AM
safety, mains and control transformers

With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus, ⓑ, ⓒ, ⓓ

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.
			Article No. Price per PU			Article No. Price per PU	
kVA	kVA			kg			kg
Degree of protection IP00, standard version [3]							
0.063	0.19	A	**4AM3242-5AN00-0EA0**	0.280		**--**	
0.1	0.31	A	**4AM3442-5AN00-0EA0**	0.290	A	**4AM3442-5AV00-0EA0**	0.290
0.16	0.49	A	**4AM3842-5AN00-0EA0**	0.340	A	**4AM3842-5AV00-0EA0**	0.340
0.25	0.85	A	**4AM4042-5AN00-0EA0**	0.590	A	**4AM4042-5AV00-0EA0**	0.610
0.315	1.12	A	**4AM4342-5AN00-0EA0**	0.750	D	**4AM4342-5AV00-0EA0**	0.670
0.4	1.44	A	**4AM4642-5AN00-0EA0**	1.030		**--**	
0.5	2	A	**4AM4842-5AN00-0EA0**	1.030	D	**4AM4842-5AV00-0EA0**	1.100
0.63	2.35	A	**4AM5242-5AN00-0EA0**	1.800		**--**	
0.8	3.4	A	**4AM5542-5AN00-0EA0**	1.860	D	**4AM5542-5AV00-0EA0**	1.900
1	5	A	**4AM5742-5AN00-0EA0**	1.860	D	**4AM5742-5AV00-0EA0**	2.000
Degree of protection IP00, standard rail mounting [3]							
0.063	0.19	A	**4AM3242-5AN00-0EA0**	0.280	A	**4AM3242-5AV00-0EA0**	0.280
0.1	0.31	A	**4AM3442-5AN00-0EA0**	0.290	A	**4AM3442-5AV00-0EA0**	0.290
0.16	0.49	A	**4AM3842-5AN00-0EA0**	0.340	A	**4AM3842-5AV00-0EA0**	0.340
0.25	0.85	A	**4AM4042-5AN00-0EA0**	0.590	A	**4AM4042-5AV00-0EA0**	0.610
0.315	1.12	D	**4AM4342-5AN00-0EB0**	0.750		**--**	
0.4	1.44	D	**4AM4642-5AN00-0EB0**	1.030		**--**	
0.5	2	D	**4AM4842-5AN00-0EB0**	1.030		**--**	

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

[3] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

For European voltages

Rated input voltage U_{1N} 400/230 V ± 15 V, rated output voltages U_{2N} 24 V or 42 V

cULus, ⓑ, ⓒ, ⓓ

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.
			Article No. Price per PU			Article No. Price per PU	
kVA	kVA			kg			kg
Degree of protection IP00, standard version [3]							
0.063	0.19	A	**4AM3242-8JN00-0EA0**	0.330		**--**	
0.1	0.31	A	**4AM3442-8JN00-0EA0**	0.330		**--**	
0.16	0.49	A	**4AM3842-8JN00-0EA0**	0.400		**--**	
0.25	0.85	A	**4AM4042-8JN00-0EA0**	0.690		**--**	
0.315	1.12	D	**4AM4342-8JN00-0EA0**	1.000		**--**	
0.4	1.44	D	**4AM4642-8JN00-0EA0**	1.500		**--**	
0.5	2	D	**4AM4842-8JN00-0EA0**	1.500		**--**	
0.63	2.35	D	**4AM5242-8JN00-0EA0**	2.400		**--**	
1	5	D	**4AM5742-8JN00-0EA0**	2.800		**--**	
Degree of protection IP00, standard rail mounting [3]							
0.063	0.19	A	**4AM3242-8JN00-0EA0**	0.330	X	**4AM3242-8JV00-0EA0**	0.340
0.1	0.31	A	**4AM3442-8JN00-0EA0**	0.330		**--**	
0.16	0.49	A	**4AM3842-8JN00-0EA0**	0.400	X	**4AM3842-8JV00-0EA0**	0.450
0.25	0.85	A	**4AM4042-8JN00-0EA0**	0.690	X	**4AM4042-8JV00-0EA0**	0.820

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

[3] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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In multi-voltage version

Rated input voltage U_{1N} 550-525-500-480-460-440-415-400-380-230-208 V, rated output voltages U_{2N} 24 V

cULus, ⊕, ⊕, ⊕

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals/ flat connectors / Configurator — Article No.	Price per PU	Cu weight per PU approx.
kVA	kVA				kg
Degree of protection IP00, standard version [3]					
0.063	0.19	A	**4AM3242-8DN00-0EA0**		0.320
0.1	0.31	A	**4AM3442-8DN00-0EA0**		0.300
0.16	0.49	A	**4AM3842-8DN00-0EA0**		0.420
0.25	0.85	A	**4AM4042-8DN00-0EA0**		0.630
0.315	1.12	A	**4AM4342-8DN00-0EA0**		0.830
0.4	1.44	A	**4AM4642-8DN00-0EA0**		1.200
0.5	2	A	**4AM4842-8DN00-0EA0**		1.280
0.63	2.35	A	**4AM5242-8DN00-0EA0**		1.930
0.8	3.4	D	**4AM5542-8DN00-0EA0**		2.600
1	5	D	**4AM5742-8DN00-0EA0**		2.800
Degree of protection IP00, standard rail mounting [3]					
0.063	0.19	A	**4AM3242-8DN00-0EA0**		0.320
0.1	0.31	A	**4AM3442-8DN00-0EA0**		0.300
0.16	0.49	A	**4AM3842-8DN00-0EA0**		0.420
0.25	0.85	A	**4AM4042-8DN00-0EA0**		0.630

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

In multi-voltage version

Rated input voltage U_{1N} 600-575-550-525-500-480-460-440-415-400-240-230 V, rated output voltages U_{2N} 24 V

cULus, ⊕, ⊕, ⊕

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals/ flat connectors / Configurator — Article No.	Price per PU	Cu weight per PU approx.
kVA	kVA				kg
Degree of protection IP00, standard version [3]					
0.063	0.19	A	**4AM3242-8EN00-0EA0**		0.340
0.1	0.31	A	**4AM3442-8EN00-0EA0**		0.340
0.16	0.49	A	**4AM3842-8EN00-0EA0**		0.440
0.25	0.85	A	**4AM4042-8EN00-0EA0**		0.670
0.315	1.12	A	**4AM4342-8EN00-0EA0**		0.880
0.4	1.44	A	**4AM4642-8EN00-0EA0**		1.280
0.5	2	A	**4AM4842-8EN00-0EA0**		1.240
0.63	2.35	A	**4AM5242-8EN00-0EA0**		2.040
Degree of protection IP00, standard rail mounting [3]					
0.063	0.19	A	**4AM3242-8EN00-0EA0**		0.340
0.1	0.31	A	**4AM3442-8EN00-0EA0**		0.340
0.16	0.49	A	**4AM3842-8EN00-0EA0**		0.440
0.25	0.85	A	**4AM4042-8EN00-0EA0**		0.670
0.315	1.12	D	**4AM4342-8EN00-0EB0**		0.880
0.5	2	A	**4AM4842-8EN00-0EA0**		1.240

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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Single-Phase Transformers
Safety, Isolating, Control and Mains Transformers

SIRIUS 4AM
safety and mains transformers

Overview

- According to IEC 61558-2-6, -2-1
- cULus
- t_a = 40 °C/B
- 50/60 Hz AC
- Degree of protection IP00
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

SIRIUS 4AM single-phase transformer with screw terminals/flat connectors

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 24 V

cULus,

Rated power P_n	Short-time rating $P_{short-t.}$	DT[1]	Screw terminals/ flat connectors Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version								
0.025	--	A	**4AM2342-4TN00-0EA0**		1	1 unit	4M1	0.100
0.04	--	A	**4AM2642-4TN00-0EA0**		1	1 unit	4M1	0.140
Degree of protection IP00, standard rail mounting								
0.025	--	D	**4AM2342-4TN00-0EB0**		1	1 unit	4M1	0.100
0.04	--	D	**4AM2642-4TN00-0EB0**		1	1 unit	4M1	0.140

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 24 V

cULus,

Rated power P_n	Short-time rating $P_{short-t.}$	DT[1]	Screw terminals/ flat connectors Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version								
0.025	--	A	**4AM2342-5AN00-0EA0**		1	1 unit	4M1	0.100
0.04	--	A	**4AM2642-5AN00-0EA0**		1	1 unit	4M1	0.160
Degree of protection IP00, standard rail mounting								
0.025	--	D	**4AM2342-5AN00-0EB0**		1	1 unit	4M1	0.100
0.04	--	D	**4AM2642-5AN00-0EB0**		1	1 unit	4M1	0.160

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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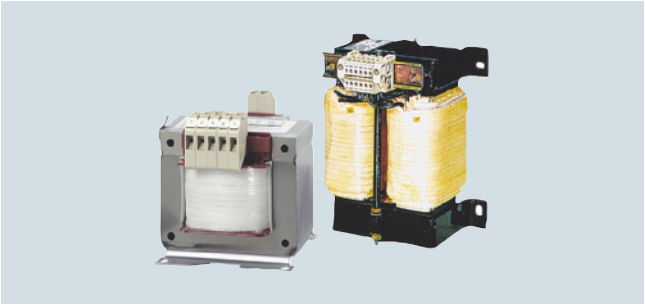
Overview

- According to IEC 61558-2-4, -2-2, -2-1
- cULus[1)]
- 4AM: t_a = 40 °C/B, 4AT: t_a = 55 °C/H
- 50/60 Hz AC
- Degree of protection IP00
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AM single-phase transformer with screw terminals/flat connectors (left) and SIRIUS 4AT single-phase transformer with screw terminals (right)

1) cULus approval for voltages ≤ 600 V (excl. tapping).

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$[1)]	DT[2)]	U_{2N} 110 V		Cu weight per PU approx.	DT[2)]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals[3)]/ flat connectors[3)]				Screw terminals[3)]/ flat connectors[3)]		
			Configurator				Configurator		
			Article No.	Price per PU			Article No.	Price per PU	
kVA	kVA				kg				kg
Degree of protection IP00, standard version[4)]									
0.063	0.19	A	**4AM3242-4TJ10-0FA0**		0.270	A	**4AM3242-4TT10-0FA0**		0.270
0.1	0.31	A	**4AM3442-4TJ10-0FA0**		0.270	A	**4AM3442-4TT10-0FA0**		0.270
0.16	0.49	A	**4AM3842-4TJ10-0FA0**		0.320	A	**4AM3842-4TT10-0FA0**		0.330
0.25	0.85	A	**4AM4042-4TJ10-0FA0**		0.570	A	**4AM4042-4TT10-0FA0**		0.610
0.315	1.12	A	**4AM4342-4TJ10-0FA0**		0.730	A	**4AM4342-4TT10-0FA0**		0.740
0.4	1.44	A	**4AM4642-4TJ10-0FA0**		1.000	A	**4AM4642-4TT10-0FA0**		1.040
0.5	2	A	**4AM4842-4TJ10-0FA0**		1.050	A	**4AM4842-4TT10-0FA0**		1.030
0.63	2.35	A	**4AM5242-4TJ10-0FA0**		1.700	A	**4AM5242-4TT10-0FA0**		1.720
0.8	3.4	A	**4AM5542-4TJ10-0FA0**		1.780	A	**4AM5542-4TT10-0FA0**		1.780
1	5	A	**4AM5742-4TJ10-0FA0**		1.920	A	**4AM5742-4TT10-0FA0**		1.910
1.6	7.3	D	**4AM6142-4TJ10-0FA0**		4.100	A	**4AM6142-4TT10-0FA0**		3.960
2	9.7	D	**4AM6442-4TJ10-0FA0**		4.700	A	**4AM6442-4TT10-0FA0**		4.430
2.5	13.3	D	**4AM6542-4TJ10-0FA0**		6.400	A	**4AM6542-4TT10-0FA0**		6.560
4	16	D	**4AT3032-4TJ10-0FA0**		9.900	D	**4AT3032-4TT10-0FA0**		9.900
Degree of protection IP00, standard rail mounting[4)]									
0.063	0.19	A	**4AM3242-4TJ10-0FA0**		0.270	A	**4AM3242-4TT10-0FA0**		0.270
0.1	0.31	A	**4AM3442-4TJ10-0FA0**		0.270	A	**4AM3442-4TT10-0FA0**		0.270
0.16	0.49	A	**4AM3842-4TJ10-0FA0**		0.320	A	**4AM3842-4TT10-0FA0**		0.330
0.25	0.85	A	**4AM4042-4TJ10-0FA0**		0.570	A	**4AM4042-4TT10-0FA0**		0.610
0.315	1.12	D	**4AM4342-4TJ10-0FB0**		0.730	D	**4AM4342-4TT10-0FB0**		0.740
0.4	1.44		--			D	**4AM4642-4TT10-0FB0**		1.040
0.5	2		--			D	**4AM4842-4TT10-0FB0**		1.030

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and U_2 = 0.95 × U_{2N}.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) The 4AT types are only supplied with screw terminals.
4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V

cULus, ⊖, ⚠, ⊖

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	U_{2N} 110 V Screw terminals [3] / flat connectors [3] Configurator		Cu weight per PU approx.	DT [2]	U_{2N} 230 V Screw terminals [3] / flat connectors [3] Configurator		Cu weight per PU approx.
			Article No.	Price per PU			Article No.	Price per PU	
kVA	kVA				kg				kg
Degree of protection IP00, standard version [4]									
0.063	0.19	A	**4AM3242-5AJ10-0FA0**		0.280	A	**4AM3242-5AT10-0FA0**		0.280
0.1	0.31	A	**4AM3442-5AJ10-0FA0**		0.280	A	**4AM3442-5AT10-0FA0**		0.270
0.16	0.49	A	**4AM3842-5AJ10-0FA0**		0.340	A	**4AM3842-5AT10-0FA0**		0.320
0.25	0.85	A	**4AM4042-5AJ10-0FA0**		0.600	A	**4AM4042-5AT10-0FA0**		0.640
0.315	1.12	A	**4AM4342-5AJ10-0FA0**		0.750	A	**4AM4342-5AT10-0FA0**		0.760
0.4	1.44	A	**4AM4642-5AJ10-0FA0**		0.980	A	**4AM4642-5AT10-0FA0**		1.020
0.5	2	A	**4AM4842-5AJ10-0FA0**		1.040	A	**4AM4842-5AT10-0FA0**		1.020
0.63	2.35	A	**4AM5242-5AJ10-0FA0**		1.700	A	**4AM5242-5AT10-0FA0**		1.700
0.8	3.4	A	**4AM5542-5AJ10-0FA0**		1.770	A	**4AM5542-5AT10-0FA0**		1.770
1	5	A	**4AM5742-5AJ10-0FA0**		1.850	A	**4AM5742-5AT10-0FA0**		1.880
1.6	7.3	A	**4AM6142-5AJ10-0FA0**		4.130	A	**4AM6142-5AT10-0FA0**		3.970
2	9.7	D	**4AM6442-5AJ10-0FA0**		4.700	A	**4AM6442-5AT10-0FA0**		4.360
2.5	13.3	A	**4AM6542-5AJ10-0FA0**		5.900	A	**4AM6542-5AT10-0FA0**		5.970
4	16	D	**4AT3032-5AJ10-0FA0**		9.900	D	**4AT3032-5AT10-0FA0**		9.900
5	18.5	D	**4AT3612-5AJ10-0FA0**		6.900	D	**4AT3612-5AT10-0FA0**		6.850
6.3	22.5		--			D	**4AT3632-5AT10-0FA0**		11.300
8	28.5		--			D	**4AT3912-5AT10-0FA0**		12.800
10	30		--			D	**4AT3932-5AT10-0FA0**		22.100
Degree of protection IP00, standard rail mounting [4]									
0.063	0.19	A	**4AM3242-5AJ10-0FA0**		0.280	A	**4AM3242-5AT10-0FA0**		0.280
0.1	0.31	A	**4AM3442-5AJ10-0FA0**		0.280	A	**4AM3442-5AT10-0FA0**		0.270
0.16	0.49	A	**4AM3842-5AJ10-0FA0**		0.340	A	**4AM3842-5AT10-0FA0**		0.320
0.25	0.85	A	**4AM4042-5AJ10-0FA0**		0.600	A	**4AM4042-5AT10-0FA0**		0.640
0.4	1.44		--			D	**4AM4642-5AT10-0FB0**		1.020
0.5	2		--			D	**4AM4842-5AT10-0FB0**		1.020

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 440 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V

cULus, ⊖, ⚠, ⊖

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	U_{2N} 110 V		Cu weight per PU approx.	DT [2]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals [3] / flat connectors [3]				Screw terminals [3] / flat connectors [3]		
			Configurator				Configurator		
			Article No.	Price per PU			Article No.	Price per PU	
kVA	kVA				kg				kg
Degree of protection IP00, standard version [4]									
0.063	0.19	D	**4AM3242-5CJ10-0FA0**		0.240	A	**4AM3242-5CT10-0FA0**		0.260
0.1	0.31	D	**4AM3442-5CJ10-0FA0**		0.260	A	**4AM3442-5CT10-0FA0**		0.260
0.16	0.49		--			A	**4AM3842-5CT10-0FA0**		0.380
0.25	0.85	D	**4AM4042-5CJ10-0FA0**		0.590	A	**4AM4042-5CT10-0FA0**		0.590
0.315	1.12	D	**4AM4342-5CJ10-0FA0**		0.670	A	**4AM4342-5CT10-0FA0**		0.710
0.4	1.44		--			A	**4AM4642-5CT10-0FA0**		1.080
0.5	2		--			A	**4AM4842-5CT10-0FA0**		1.000
0.63	2.35		--			A	**4AM5242-5CT10-0FA0**		1.700
0.8	3.4		--			A	**4AM5542-5CT10-0FA0**		1.730
1	5	D	**4AM5742-5CJ10-0FA0**		2.000	A	**4AM5742-5CT10-0FA0**		1.850
1.6	7.3	D	**4AM6142-5CJ10-0FA0**		4.100	A	**4AM6142-5CT10-0FA0**		3.900
2	9.7	D	**4AM6442-5CJ10-0FA0**		4.700	A	**4AM6442-5CT10-0FA0**		4.430
2.5	13.3	D	**4AM6542-5CJ10-0FA0**		6.400	D	**4AM6542-5CT10-0FA0**		6.400
4	16	D	**4AT3032-5CJ10-0FA0**		9.900	D	**4AT3032-5CT10-0FA0**		9.900
5	18.5		--			D	**4AT3612-5CT10-0FA0**		6.900
6.3	22.5		--			D	**4AT3632-5CT10-0FA0**		11.300

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/9 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

With one input voltage

Rated input voltage U_{1N} 500 V ± 5 %, rated output voltages U_{2N} 230 V

cULus, ⊖, ⚠, ⊖

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals [3] / flat connectors [3]		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
			Configurator					
			Article No.	Price per PU				
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM3242-5FT10-0FA0**		1	1 unit	4M1	0.250
0.1	0.31	A	**4AM3442-5FT10-0FA0**		1	1 unit	4M1	0.280
0.16	0.49	A	**4AM3842-5FT10-0FA0**		1	1 unit	4M1	0.360
0.25	0.85	A	**4AM4042-5FT10-0FA0**		1	1 unit	4M1	0.640
0.315	1.12	A	**4AM4342-5FT10-0FA0**		1	1 unit	4M1	0.760
0.4	1.44	A	**4AM4642-5FT10-0FA0**		1	1 unit	4M1	1.010
0.5	2	A	**4AM4842-5FT10-0FA0**		1	1 unit	4M1	1.010
0.63	2.35	A	**4AM5242-5FT10-0FA0**		1	1 unit	4M1	1.700
0.8	3.4	A	**4AM5542-5FT10-0FA0**		1	1 unit	4M1	1.760
1	5	A	**4AM5742-5FT10-0FA0**		1	1 unit	4M1	1.870
1.6	7.3	A	**4AM6142-5FT10-0FA0**		1	1 unit	4M1	4.250
2	9.7	A	**4AM6442-5FT10-0FA0**		1	1 unit	4M1	4.370
2.5	13.3	A	**4AM6542-5FT10-0FA0**		1	1 unit	4M1	5.980
4	16	D	**4AT3032-5FT10-0FA0**		1	1 unit	4M1	9.900
5	18.5	D	**4AT3612-5FT10-0FA0**		1	1 unit	4M1	6.900
6.3	22.5	D	**4AT3632-5FT10-0FA0**		1	1 unit	4M1	11.300
8	28.5	D	**4AT3912-5FT10-0FA0**		1	1 unit	4M1	12.800
10	30	D	**4AT3932-5FT10-0FA0**		1	1 unit	4M1	22.100
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM3242-5FT10-0FA0**		1	1 unit	4M1	0.250
0.1	0.31	A	**4AM3442-5FT10-0FA0**		1	1 unit	4M1	0.280
0.16	0.49	A	**4AM3842-5FT10-0FA0**		1	1 unit	4M1	0.360
0.25	0.85	A	**4AM4042-5FT10-0FA0**		1	1 unit	4M1	0.640
0.315	1.12	D	**4AM4342-5FT10-0FB0**		1	1 unit	4M1	0.760

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/9 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltages U_{1N} 690 V ± 5 %[1], rated output voltage U_{2N} 230 V

Rated power P_n	Short-time rating $P_{short-t.}$[2]	DT[3]	Screw terminals/ flat connectors Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version[4]								
0.063	0.19	D	**4AM3242-5MT10-0FA0**		1	1 unit	4M1	0.240
0.1	0.31	D	**4AM3442-5MT10-0FA0**		1	1 unit	4M1	0.260
0.16	0.49	D	**4AM3842-5MT10-0FA0**		1	1 unit	4M1	0.320
0.25	0.85	D	**4AM4042-5MT10-0FA0**		1	1 unit	4M1	0.590
0.315	1.12	D	**4AM4342-5MT10-0FA0**		1	1 unit	4M1	0.670
0.4	1.44	D	**4AM4642-5MT10-0FA0**		1	1 unit	4M1	1.100
0.5	2	D	**4AM4842-5MT10-0FA0**		1	1 unit	4M1	1.100
0.63	2.35	D	**4AM5242-5MT10-0FA0**		1	1 unit	4M1	1.700
0.8	3.4	D	**4AM5542-5MT10-0FA0**		1	1 unit	4M1	1.900
1	5	D	**4AM5742-5MT10-0FA0**		1	1 unit	4M1	2.000
1.6	7.3	D	**4AM6142-5MT10-0FA0**		1	1 unit	4M1	4.100
2	9.7	D	**4AM6442-5MT10-0FA0**		1	1 unit	4M1	4.700
2.5	13.3	D	**4AM6542-5MT10-0FA0**		1	1 unit	4M1	6.400
Degree of protection IP00, standard rail mounting[4]								
0.063	0.19	D	**4AM3242-5MT10-0FA0**		1	1 unit	4M1	0.240
0.1	0.31	D	**4AM3442-5MT10-0FA0**		1	1 unit	4M1	0.260
0.16	0.49	D	**4AM3842-5MT10-0FA0**		1	1 unit	4M1	0.320
0.25	0.85	D	**4AM4042-5MT10-0FA0**		1	1 unit	4M1	0.590

For online configurator see www.siemens.com/sirius/configurators.

1) Without cULus approval.
2) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
3) The delivery time class depends on the quantity, see page 15/9 "Options".
4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

For European voltages

Rated input voltage U_{1N} 400/230 V ±15 V, rated output voltage U_{2N} 2 × 115 V

cULus,

Rated power P_n	Short-time rating $P_{short-t.}$[1]	DT[2]	Screw terminals[3]/ flat connectors[3] Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version[4]								
0.063	0.19	A	**4AM3242-8JD40-0FA0**		1	1 unit	4M1	0.290
0.1	0.31	A	**4AM3442-8JD40-0FA0**		1	1 unit	4M1	0.340
0.16	0.49	A	**4AM3842-8JD40-0FA0**		1	1 unit	4M1	0.430
0.25	0.85	A	**4AM4042-8JD40-0FA0**		1	1 unit	4M1	0.660
0.315	1.12	A	**4AM4342-8JD40-0FA0**		1	1 unit	4M1	0.830
0.4	1.44	A	**4AM4642-8JD40-0FA0**		1	1 unit	4M1	1.210
0.5	2	A	**4AM4842-8JD40-0FA0**		1	1 unit	4M1	1.270
0.63	2.35	A	**4AM5242-8JD40-0FA0**		1	1 unit	4M1	2.180
0.8	3.4	A	**4AM5542-8JD40-0FA0**		1	1 unit	4M1	2.310
1	5	A	**4AM5742-8JD40-0FA0**		1	1 unit	4M1	2.320
1.6	7.3	A	**4AM6142-8JD40-0FA0**		1	1 unit	4M1	4.540
2	9.7	A	**4AM6442-8JD40-0FA0**		1	1 unit	4M1	4.840
2.5	13.3	A	**4AM6542-8JD40-0FA0**		1	1 unit	4M1	6.000
Degree of protection IP00, standard rail mounting[4]								
0.063	0.19	A	**4AM3242-8JD40-0FA0**		1	1 unit	4M1	0.290
0.1	0.31	A	**4AM3442-8JD40-0FA0**		1	1 unit	4M1	0.340
0.16	0.49	A	**4AM3842-8JD40-0FA0**		1	1 unit	4M1	0.430
0.25	0.85	A	**4AM4042-8JD40-0FA0**		1	1 unit	4M1	0.660

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) The 4AT types are only supplied with screw terminals.
4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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In multi-voltage version

Rated input voltage U_{1N} 550-525-500-480-460-440-415-400-380-230-208 V, rated output voltage U_{2N} 2 × 115 V

cULus, ⊖, ⚠, ⊖

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM3242-8DD40-0FA0**		1	1 unit	4M1	0.310
0.1	0.31	A	**4AM3442-8DD40-0FA0**		1	1 unit	4M1	0.340
0.16	0.49	A	**4AM3842-8DD40-0FA0**		1	1 unit	4M1	0.440
0.25	0.85	A	**4AM4042-8DD40-0FA0**		1	1 unit	4M1	0.680
0.315	1.12	A	**4AM4342-8DD40-0FA0**		1	1 unit	4M1	0.820
0.4	1.44	A	**4AM4642-8DD40-0FA0**		1	1 unit	4M1	1.170
0.5	2	A	**4AM4842-8DD40-0FA0**		1	1 unit	4M1	1.260
0.63	2.35	A	**4AM5242-8DD40-0FA0**		1	1 unit	4M1	1.990
0.8	3.4	A	**4AM5542-8DD40-0FA0**		1	1 unit	4M1	2.190
1	5	A	**4AM5742-8DD40-0FA0**		1	1 unit	4M1	2.250
1.6	7.3	A	**4AM6142-8DD40-0FA0**		1	1 unit	4M1	4.520
2	9.7	A	**4AM6442-8DD40-0FA0**		1	1 unit	4M1	4.260
2.5	13.3	A	**4AM6542-8DD40-0FA0**		1	1 unit	4M1	5.470
4	16	D	**4AT3032-8DD40-0FA0**		1	1 unit	4M1	9.300
5	18.5	D	**4AT3612-8DD40-0FA0**		1	1 unit	4M1	7.300
6.3	22.5	D	**4AT3632-8DD40-0FA0**		1	1 unit	4M1	12.200
8	28.5	D	**4AT3912-8DD40-0FA0**		1	1 unit	4M1	13.900
10	30	D	**4AT3932-8DD40-0FA0**		1	1 unit	4M1	23.700
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM3242-8DD40-0FA0**		1	1 unit	4M1	0.310
0.1	0.31	A	**4AM3442-8DD40-0FA0**		1	1 unit	4M1	0.340
0.16	0.49	A	**4AM3842-8DD40-0FA0**		1	1 unit	4M1	0.440
0.25	0.85	A	**4AM4042-8DD40-0FA0**		1	1 unit	4M1	0.680
0.4	1.44	D	**4AM4642-8DD40-0FB0**		1	1 unit	4M1	1.170
0.5	2	D	**4AM4842-8DD40-0FB0**		1	1 unit	4M1	1.260

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/9 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

In multi-voltage version

Rated input voltage U_{1N} 600-575-550-525-500-480-460-440-415-400-240-230 V, rated output voltage U_{2N} 2 × 115 V

cULus, ⊖, ⚠, ⊖

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM3242-8ED40-0FA0**		1	1 unit	4M1	0.290
0.1	0.31	A	**4AM3442-8ED40-0FA0**		1	1 unit	4M1	0.390
0.16	0.49	A	**4AM3842-8ED40-0FA0**		1	1 unit	4M1	0.400
0.25	0.85	A	**4AM4042-8ED40-0FA0**		1	1 unit	4M1	0.650
0.315	1.12	A	**4AM4342-8ED40-0FA0**		1	1 unit	4M1	0.860
0.4	1.44	A	**4AM4642-8ED40-0FA0**		1	1 unit	4M1	1.260
0.5	2	A	**4AM4842-8ED40-0FA0**		1	1 unit	4M1	1.210
0.63	2.35	A	**4AM5242-8ED40-0FA0**		1	1 unit	4M1	2.080
0.8	3.4	A	**4AM5542-8ED40-0FA0**		1	1 unit	4M1	2.330
1	5	A	**4AM5742-8ED40-0FA0**		1	1 unit	4M1	2.400
1.6	7.3	A	**4AM6142-8ED40-0FA0**		1	1 unit	4M1	4.630
2	9.7	A	**4AM6442-8ED40-0FA0**		1	1 unit	4M1	4.450
2.5	13.3	A	**4AM6542-8ED40-0FA0**		1	1 unit	4M1	5.190
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM3242-8ED40-0FA0**		1	1 unit	4M1	0.290
0.1	0.31	A	**4AM3442-8ED40-0FA0**		1	1 unit	4M1	0.390
0.16	0.49	A	**4AM3842-8ED40-0FA0**		1	1 unit	4M1	0.400
0.25	0.85	A	**4AM4042-8ED40-0FA0**		1	1 unit	4M1	0.650
0.5	2	D	**4AM4842-8ED40-0FB0**		1	1 unit	4M1	1.500

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/9 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

4AP../4AU.. transformers

With the right transformer, the right voltage will be available at any conditions.

Our transformers are the right choice for each application: They work reliably, safely and worldwide under a wide range of different conditions.

Transformers are summarized in a user-friendly manner as:

- Isolating, control and mains transformers according to IEC 61558-2-4, -2-2, -2-1 or
- Safety, control and mains transformers according to IEC 61558-2-6, -2-2, -2-1 (see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com)

Note:

Mains transformers with ≤ 50 V on the output side are, in the case of SIRIUS transformers, always designed as safety transformers.

Our transformers provide optimal protection through high permissible ambient temperatures up to 40 °C or 55 °C, a high short-time rating in the case of control transformers, fuseless design and thanks to their compliance with safety standard IEC 61558, "Safety inside".

Connection methods

The transformers 4AP../4AU.. are available with screw terminals/ flat connectors.

	Screw terminals
	Flat connectors
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

The transformers 4AP../4AU.. can also be ordered with the help of an online configurator.

	Configurator available in the Industry Mall
	The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

Article No. scheme

Digit of the Article No.	1st	2nd	3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□	□	□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Transformer product type	**4**	**A**																
Product group			□															
Rated power				□	□													
Power level						□												
Development status							□											
Rated input voltage									□	□								
Rated output voltage											□	□						
Protective device													□					
Application															□	□		
Degree of protection																	□	
Connection type																		□
Example	**4**	**A**	**P**	**3**	**0**	**4**	**2**	**–**	**8**	**B**	**C**	**4**	**0**	**–**	**0**	**H**	**A**	**0**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

Benefits

- High short-time rating of the SIRIUS transformers: Lower transformer rated power for a large number of contactors
- Suitable for "fuseless design": The small inrush current means that "circuit breakers for motor protection" can also be used on the primary side
- cULus approvals for the USA and Canada: can be used worldwide without any problems
- Comprehensive type spectrum supplied from stock: rapid availability

Application

Transformers are used in industrial machines, process engineering, heating and air-conditioning equipment, etc., for supplying control and signaling circuits, when:

- Several electromagnetic loads (e.g. contactors) have to be controlled
- Control and signaling devices are used outside the control cabinet
- The operational voltage for the loads differs from the available voltage level
- Voltage matching for machines and installations with electrical isolation or as an autotransformer

Generally our transformers are used for voltage matching of electrical devices, e.g. in communications, medical engineering and domestic appliances.

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Technical specifications

General data

Transformers	Type	**4AP**	**4AU**
• Version		3UI core	3UI core
• Performance range (with IP00)	kVA	0.16 ... 5	> 5 ... 16
• Approvals		cULus	
Voltage range	V	≤ 690	
• Approvals for USA, Canada	V	≤ 600	
Rated frequency	Hz	50 ... 60	
Thermal class		B	H
• Acc. to UL/CSA		CLASS 130	CLASS 180
Ambient conditions		Protection against harmful ambient conditions: Complete impregnation in polyester resin. Climate-proof for installation in rooms with an external climate according to DIN 50010	
Rated ambient temperature			
• At rated power	°C	40	55
• Maximum value (after power reduction according to load characteristic[1])	°C	80	
• Minimum value	°C	– 25	
Relative air humidity			
• Mean value up to	%	80	
• Maximum value for 30 days/year	%	95	
• At 40 °C occasionally	%	100	
Protection class		I	
Degree of protection			
• Without enclosure		IP00	
Installation altitude		Up to 1 000 m above sea level (above this, power reduction is necessary)	
Protective devices			
• External		The transformers are protected from short circuits and overload on the primary and secondary side with motor starter protectors. For reliable protection against short circuits, overload and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 (particularly section 525) and Part 610. Assigned protective devices (see "Primary-side short-circuit and overload protection with motor starter protectors" on page 15/29)	
Connection methods		The permissible conductor cross-sections are assigned to the specified terminal types.	
• Terminal arrangement[1]		Refer to DIN VDE 0298-4 and IEC 60204 (VDE 0113-1) for the permissible conductor cross-sections for the specified current according to the installation type. The terminals used are finger-safe according to EN 50274.	
• Terminal versions and connectable cross-sections[1]		Other terminal sizes than standard versions on request.	
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids"[1].	

[1] See Reference Manual "Single-phase transformers · Three-phase transformers", http://support.automation.siemens.com/WW/view/en/35681848.

More technical specifications see www.siemens.com/sirius-supplying or http://support.automation.siemens.com/WW/view/en/22172732/133200.

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General data

Rated outputs at different ambient temperatures

- With electrically separated windings
- Degree of protection IP00
- According to IEC 61558, cULus

Transformer	Rated power P_n	Permissible transformer load depending on the ambient temperature t_a of							
		60 °C	55 °C	50 °C	45 °C	40 °C	35 °C	30 °C	25 °C
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
4AP transformers									
4AP204	0.63	0.529	0.554	0.580	0.605	0.630	0.655	0.680	0.699
4AP214	1	0.840	0.880	0.920	0.960	1	1.04	1.08	1.11 1.78
4AP254	1.6	1.34	1.41	1.47	1.54	1.60	1.66	1.73	
4AP274	2.5	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.78
4AP304	4	3.36	3.52	3.68	3.84	4	4.16	4.32	4.44
4AP305	5	4.20	4.40	4.60	4.80	5.50	5.20	5.40	5.55
4AU transformers									
4AU303	6.3	6.11	6.30	6.49	6.68	6.93	7.12	7.31	7.50
4AU361	8	7.76	8	8.24	8.48	8.80	9.04	9.28	9.52
4AU363	10	9.70	10	10.3	10.6	11	11.3	11.6	11.9
4AU393	16	15.5	16	16.5	17	17.6	18.1	18.6	19

Operation characteristics

- According to IEC 61558-2-6, IEC 61558-2-4, IEC 61558-2-1

Transformer	Rated power P_n 50 Hz ... 60 Hz 1 000 m above sea level degree of protection IP00	Core size	Voltage rise in no-load operation (operating temperature) u_A approx.	Voltage drop on rated load[1] u_R approx.	Short-circuit voltage[1] u_Z approx.	Degree of efficiency η approx.
Type	kVA		%	%	%	%
4AP transformers: t_a = 40 °C/B						
4AP204	0.63	3UI 90/30	9.3	6.8	6.8	89
4AP214	1	3UI 90/50	6.4	4.8	4.8	92
4AP254	1.6	3UI 114/62	4.9	3.6	3.6	93
4AP274	2.5	3UI 132/70	4.5	3.4	3.4	94
4AP304	4	3UI 150/75	3.5	2.6	2.7	95
4AP305	5	3UI 150/75	2.8	2.1	2.2	96
4AU transformers: t_a = 55 °C/H						
4AU303	6.3	3UI 150/75	3.8	2.6	2.6	96
4AU361	8	3UI 180/75	5.1	3.6	3.6	94
4AU363	10	3UI 180/75	4.1	2.9	3	95
4AU393	16	3UI 210/70	3.2	2.3	2.8	96

Higher ratings and other conditions on request.

[1] Winding reference temperature: 20 °C.

Calculation of power loss P_V

$$P_V = \frac{P_n\,(100 - \eta)}{\eta}\ [\text{kW}]$$

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Primary-side short-circuit and overload protection with motor starter protectors

Trans-former	Rated power P_n	Motor starter protectors Version: Motor protection	Rated input voltage U_{1N} in V																	
Type	kVA	Type	520	500	480	460	440	420	400	380	360	300	288	277	265	254	242	230	220	208
4AP transformers																				
4AP204	0.63	3RV2011-□□□10	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1AA	1BA	1CA	1CA	1CA	1CA	1CA	1DA	1DA	1DA	1DA
		Set value in A	0.95	0.95	1.1	1.1	1.1	1.2	1.2	1.3	1.5	1.8	1.9	2	2	2	2.2	2.2	2.2	2.3
4AP214	1	3RV2011-□□□10	1BA	1BA	1CA	1CA	1CA	1CA	1CA	1CA	1DA	1EA	1EA	1EA	1EA	1EA	1EA	1EA	1FA	1FA
		Set value in A	1.5	1.5	1.7	1.8	1.8	1.8	2	2	2.3	2.8	2.9	3.1	3.2	3.2	3.2	3.2	3.5	3.5
4AP254	1.6	3RV2011-□□□10	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1GA	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA
		Set value in A	2.3	2.3	2.8	2.8	2.8	2.8	3	3.5	3.5	4.5	4.5	4.9	5	5	5.5	5.5	5.5	5.6
4AP274	2.5	3RV2011-□□□10	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1JA	1JA	1KA	1KA
		Set value in A	3.6	3.6	4	4.5	4.5	4.5	4.5	5.8	5.8	7	7	7.5	7.5	8	8	8	9	9
4AP304	4	3RV2011-□□□10	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1KA	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	4BA	4BA
		Set value in A	5.7	5.7	6	7	7	7	7.2	8	9	11	11	12	12	13	13	14	14	14
4AP305	5	3RV2011-□□□10	1JA	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA
		Set value in A	7.2	7.2	8	9	9	9	9	11	11	13	14	15	15	16	17	17	17	17
4AU transformers																				
4AU303	6.3	3RV2011-□□□10	1KA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV2021-□□□10	--	--	--	--	--	4AA	4AA	4AA	4AA	4BA	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA
		Set value in A	9	9	10	10	10	11	11	12	13	15	16	16	17	18	19	20	20	22
4AU361	8	3RV2021-□□□10	4AA	4AA	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA
		Set value in A	12	12	13	13	13	14	15	15	16	20	20	21	22	23	24	25	26	28
4AU391	12.5	3RV2021-□□□10	4CA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	9	19	20	20	20	22	22	23	25	30	31	32	34	35	37	39	40	43
4AU393	16	3RV2021-□□□10	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV1031-□□□10	--	--	--	--	4EA	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4HA	4HA	4HA	4HA	4HA	4HA
		Set value in A	24	24	25	25	26	28	28	30	31	38	39	40	43	44	47	49	50	50

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General data

Secondary-side short-circuit and overload protection with motor starter protectors

Transformer	Rated power P_n	Motor starter protectors		
		Version: Motor protection	Rated output voltage U_{2N} in V	
Type	kVA	Type	400	230
4AP transformers				
4AP204	0.63	3RV2011-□□□10 Set value in A	0KA 1.1	1BA 1.9
4AP214	1	3RV2011-□□□10 Set value in A	1BA 1.7	1DA 3
4AP254	1.6	3RV2011-□□□10 Set value in A	1DA 2.7	1FA 5
4AP274	2.5	3RV2011-□□□10 Set value in A	1FA 4.2	1HA 7.5
4AP304	4	3RV2011-□□□10 Set value in A	1HA 6.7	1KA 12
4AP305	5	3RV2011-□□□10 3RV2021-□□□10 Set value in A	1JA -- 8.5	-- 4AA 15
4AU transformers				
4AU303	6.3	3RV2011-□□□10 3RV2021-□□□10 Set value in A	1KA -- 11	-- 4BA 19
4AU361	8	3RV2021-□□□10 Set value in A	4AA 14	4DA 24
4AU363	10	3RV2021-□□□10 3RV1031-□□□10 Set value in A	4BA -- 17	-- 4EA 29
4AU393	16	3RV1031-□□□10 Set value in A	4EA 27	4HA 47

Short-time rating of control transformers $P_{short-t.}$ [1] = f (p.f.) for $U_2 = 0.95 \times U_{2N}$

Trans-former	Rated power P_n	Short-time rating $P_{short-t.}$ [1] with p.f. of										Voltage rise in no-load operation (operating temperature)	Voltage drop on rated load (at 20 °C)	Short-circuit voltage (at 20 °C)
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	u_A %	u_R %	u_Z %
4AP transformers														
4AP204	0.63	4.5	3.3	2.6	2.1	1.8	1.6	1.4	1.3	1.2	1.1	9.3	6.8	6.8
4AP214	1	9.3	6.5	5	4.1	3.5	3	2.7	2.4	2.2	2.1	6.4	4.8	4.8
4AP254	1.6	21	14	10	8.3	6.9	5,9	5.2	4.7	4.2	3.9	4.9	3.6	3.6
4AP274	2.5	37	24	17	14	11	9.9	8.7	7.8	7	6.5	4.5	3.4	3.4
4AP304	4	60	40	30	24	20	18	16	14	13	12	3.5	2.6	2.7
4AP305	5	53	41	34	29	25	22	20	19	18	17	2.8	2.1	2.2
4AU transformers														
4AU303	6.3	64,5	48.5	39	32.5	28	25	22.5	20.5	19	18.5	3.5	2.6	2.6
4AU361	8	83	58.5	45	37	31.5	27.5	24	22	20	19	5.1	3.6	3.6
4AU363	10	80.5	63	52	44	39	35	31,5	29	27.5	27	4.1	2.9	3
4AU393	16	85	74	66	60	55	51.5	48.5	46.5	46	51	3.2	2.3	2.8

[1] $P_{short-t.}$ applies to up to 300 contactor operations per hour.

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Overview

- According to IEC 61558-2-4, -2-2, -2-1
- cULus
- 4AP: t_a = 40 °C/B, 4AU: t_a = 55 °C/H
- 50/60 Hz AC
- Degree of protection IP00
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

SIRIUS 4AP20 (left) and SIRIUS 4AU (right) three-phase transformers

Selection and ordering data

In two-voltage version

Rated input voltage U_{1N} 3 AC Y 500-400 V/Δ 289-230 V, rated output voltage U_{2N} 3 AC Y 400 V/Δ 230 V

cULus,

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00								
0.63	1.8	A	**4AP2042-8BC40-0HA0**		1	1 unit	4M1	2.550
1	3.5	A	**4AP2142-8BC40-0HA0**		1	1 unit	4M1	3.140
1.6	6.9	X	**4AP2542-8BC40-0HA0**		1	1 unit	4M1	4.100
2.5	11	A	**4AP2742-8BC40-0HA0**		1	1 unit	4M1	4.570
4	20	X	**4AP3042-8BC40-0HA0**		1	1 unit	4M1	9.200
6.3	28	D	**4AU3032-8BC40-0HA0**		1	1 unit	4M1	13.500
10	39	D	**4AU3632-8BC40-0HA0**		1	1 unit	4M1	16.300

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) The 4AU transformers are only supplied with screw terminals.

In multi-voltage version

Rated input voltage U_{1N} 3 AC Y 520-500-480-460-440-420-400-380-360 V/Δ 300-289-277-266-254-240-230-220-208 V, rated output voltage U_{2N} 3 AC Y 400 V/Δ 230 V

cULus,

Rated power P_n	Short-time rating $P_{short-t.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00								
0.63	1.8	X	**4AP2042-8CC40-0HA0**		1	1 unit	4M1	2.800
1	3.5	X	**4AP2142-8CC40-0HA0**		1	1 unit	4M1	2.900
1.6	6.9	X	**4AP2542-8CC40-0HA0**		1	1 unit	4M1	4.800
2.5	11	X	**4AP2742-8CC40-0HA0**		1	1 unit	4M1	5.200
4	20	X	**4AP3042-8CC40-0HA0**		1	1 unit	4M1	9.400
6.3	28	D	**4AU3032-8CC40-0HA0**		1	1 unit	4M1	16.000
8	32	D	**4AU3612-8CC40-0HA0**		1	1 unit	4M1	13.000
10	39	D	**4AU3632-8CC40-0HA0**		1	1 unit	4M1	21.000
16	55	D	**4AU3932-8CC40-0HA0**		1	1 unit	4M1	43.000

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
2) The delivery time class depends on the quantity, see page 15/9 "Options".
3) The 4AU transformers are only supplied with screw terminals.

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General data

Overview

With SIRIUS power supplies, we offer a full range of first-class products. The complete type series ensure uniform voltages and minimum downtimes. They cover all important input voltages worldwide.

Connection methods

4AV.. non-stabilized power supplies are available with screw terminals/flat connectors.

Screw terminals

Flat connectors

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Support function

4AV non-stabilized power supplies can also be ordered with the help of an online configurator.

Configurator available in the Industry Mall

The online configurator is indicated in the corresponding tables by the symbol shown on an orange background.

Article No. scheme

Digit of the Article No.		1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th
		□□□	□	□	□	□	–	□	□	□	□	□	–	□	□
Power supplies		**4 A V**													
Versions															
20 ... 26	Single-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks		□	□											
30 ... 35	Three-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
36, 38	Three-phase, unfiltered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
41	Single-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
51	Three-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
96	Three-phase, unfiltered, t_a = 50 °C/B														
98	Single-phase, unfiltered, t_a = 50 °C/B														
Power level					□	□									
Application								□							
Development status									□						
Impregnated transformer										□					
Serial number											□	□			
Connection type														□	
Mounting type/options															□
Example		**4 A V**	**2**	**0**	**0**	**0**	**–**	**2**	**E**	**B**	**0**	**0**	**–**	**0**	**A**

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the catalog in the Selection and ordering data.

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Overview

4AV2, 4AV3, 4AV4 and 4AV5 power supplies deliver a non-stabilized DC voltage of 24 V DC based on single-phase or three-phase safety transformers with downstream rectifiers and capacitor filtering (4AV36 and 4AV38 without capacitor filtering).

Benefits

The rugged design of the 4AV units makes them extremely reliable. They are extremely stable when confronted with external mains failures and have a damping effect on EMC.

They are also highly suitable for supplying capacitive loads, because when the loads are connected only minimal voltage dips occur.

Application

The 4AV2, 4AV3, 4AV4 and 4AV5 units are used for:

- Supplying general electrical loads
- Supplying control circuits
- Power supply to electronic controllers They comply with the requirements of IEC 61131-2 "Programmable logic controllers – equipment specifications and tests" and are suitable for SIMATIC or other systems.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The units are designed for mounting in enclosed controllers and electronics cabinets. They are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values

- Ambient temperature with rated power and rated current for types:
  - 4AV2 and 4AV3: Up to +60 °C
  - 4AV4 and 4AV5: Up to +40 °C
  - Minimum value for all types: -25 °C
- Relative air humidity:
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Technical specifications

Single- and three-phase DC power supplies

Direct voltage 24 V DC Limit values	IEC 61131-2	Typical value				Conditions
		4AV2	4AV3	4AV4	4AV5	
Ripple	≤ 5 %	2.2 ... 2.7 %	4.2 %	3.0 ... 3.7 %	4.2 %	At rated current
Direct voltage 24 V DC						
• Upper limit	30 V	≤ 28.8 V	≤ 28.8 V	≤ 30 V	≤ 30 V	For mains overvoltage +6 % and no-load operation
• Lower limit						For mains undervoltage –10 % and rated current
- arithmetic mean value	20.4 V	20.4 V	20.5 V	20.4 V	20.4 V	
- lower peak value	19.2 V	19.3 V	19.3 V	19.2 V	19.2 V	
• Rated value		23.5 V	23.5 V	23.5 V	23.5 V	For rated mains voltage and rated current

Load rating of the power supplies with 3RT1 contactors for DC operation

- Sizes S00 to S3 with DC solenoid systems:
  power at closing = power when closed. The DC power supplies can be loaded up to their rated currents.
- Sizes S6 to S12:
  When operating the rectifier units at –10 % mains undervoltage

Contactor	Number of 3RT1[1] contactors that can be operated simultaneously with preloading																							
	4AV20/ 4AV21		4AV23		4AV22		4AV24		4AV26		4AV30		4AV31		4AV32		4AV33		4AV34		4AV35		4AV36		4AV38	
Type	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②
3RT1.5	--	--	--	--	1	1	2	1	3	1	2	1	3	2	4	2	7	5	8	5	14	10	22	16	42	30
3RT1.6	--	--	--	--	1	1	1	1	2	1	1	1	2	1	2	1	4	3	4	3	7	5	11	8	22	15
3RT1.7	--	--	--	--	--	--	1	--	1	--	1	--	1	1	2	1	3	2	3	2	5	4	9	6	16	12

① No-load operation

② Rated current

[1] The number of contactors can be significantly increased by using additional banks of capacitors which must be connected externally.

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General data

Primary-side short-circuit protection, secondary-side short-circuit and overload protection

Rectifier unit	Ambient temperature t_a	Rated output current I_d	Primary-side protection against short circuits (line protection) by means of motor starter protector[1)2)] or fuse								Secondary-side protection against short-circuit and overload by means of motor starter protector or fuse	
			Type	Rated input voltage U_{1N}								
				575 V (600 V)	500 V	460 V (480 V)	400 V (415 V)	230 V (240 V)	200 V	115 V (120 V)		
Type	°C	DC A									Type	
Single-phase												
4AV21	60	1	3RV2011-□□□10	--	--	--	0CA	0FA	--	0JA	Built-in electrical short-circuit/overload protection fuse	--
			Set value in A	--	--	--	0.24	0.4	--	0.9		
	40	1.2	3RV2011-□□□10	--	--	--	0DA	0FA	--	0KA		
			Set value in A	--	--	--	0.29	0.48	--	1.1		
4AV20			3RV2011-□□□10	--	--	--	0FA	0HA	--	1BA	3RV2011-□□□10	1DA
	60	2.5	Set value in A	--	--	--	0.4	0.6	--	1.6	Set value in A	2.5
	40	3	Set value in A	--	--	--	0.48	0.72	--	1.9	Set value in A	3
4AV23			3RV2011-□□□10	--	--	--	0HA	0JA	--	1CA	Built-in electrical short-circuit/overload protection fuse	--
	60	3.5	Set value in A	--	--	--	0.55	0.7	--	2		
	40	4.2	Set value in A	--	--	--	0.66	0.84	--	2.4		
4AV22			3RV2011-□□□10	--	--	--	0HA	1AA	--	1DA	3RV2011-□□□10	1GA
	60	5	Set value in A	--	--	--	0.6	1.1	--	2.4	Set value in A	5
	40	6	Set value in A	--	--	--	0.72	1.3	--	2.9	Set value in A	6
4AV24			3RV2011-□□□10	--	--	--	1CA	1DA	--	1GA	3RV2011-□□□10	1KA
	60	10	Set value in A	--	--	--	1.8	2.4	--	5	Set value in A	10
	40	12	Set value in A	--	--	--	2.2	2.9	--	6	Set value in A	12
4AV26			3RV2011-□□□10	--	--	--	1CA	1EA	--	1HA	3RV2021-□□□10	4BA
	60	15	Set value in A	--	--	--	2	3.2	--	6	Set value in A	15
	40	18	Set value in A	--	--	--	2.4	3.8	--	7.2	Set value in A	18
4AV4101	40	1.5	3RV2011-□□□10	--	--	--	0BA	0DA	--	--	Integrated blade-type fuse FK2	4 A
			Set value in A	--	--	--	0.15	0.27	--	--		
			Fuse gG in A	--	--	--	0.5	1	--	--		
4AV4103	40	3	3RV2011-□□□10	--	--	--	0GA	0HA	--	--	Integrated blade-type fuse FK2	7,5 A
			Set value in A	--	--	--	0.5	0.7	--	--		
			Fuse gG in A	--	--	--	1	2	--	--		
4AV4106	40	6	3RV2011-□□□10	--	--	--	0JA	0KA	--	--	Integrated blade-type fuse FK2	15 A
			Set value in A	--	--	--	0.8	1.2	--	--		
			Fuse gG in A	--	--	--	2	1	--	--		
4AV4110	40	10	3RV2011-□□□10	--	--	--	1BA	1CA	--	--	Integrated blade-type fuse FK2	25 A
			Set value in A	--	--	--	1.6	2.4	--	--		
			Fuse gG in A	--	--	--	4	4	--	--		
3-phase												
4AV30			3RV2011-□□□10	0FA	0FA	0FA	0HA	0KA	0KA	--	3RV2011-□□□10	1KA
	60	9/10	Set value in A	0.4	0.4	0.4	0.6	1	1	--	Set value in A	9/10
	40	11/12	Set value in A	0.48	0.48	0.48	0.72	1.2	1.2	--	Set value in A	11/12
4AV31			3RV2011-□□□10	0HA	0HA	0HA	0KA	1BA	1CA	--	3RV2021-□□□10	4BA
	60	13.5/15	Set value in A	0.6	0.6	0.6	1	1.6	2	--	Set value in A	14/15
	40	16/18	Set value in A	0.72	0.72	0.72	1.2	1.9	2.4	--	Set value in A	16/18
4AV32			3RV2011-□□□10	0HA	0KA	0KA	0KA	1BA	1DA	--	3RV1031-□□□10	4DA
	60	18/20	Set value in A	0.6	1	1	1	1.6	2.4	--	Set value in A	18/20
	40	21.5/24	Set value in A	0.72	1.2	1.2	1.2	1.9	2.9	--	Set value in A	21.5/24
4AV33			3RV2011-□□□10	1CA	1CA	1CA	1CA	1EA	1FA	--	3RV1031-□□□10	4FA
	60	27/30	Set value in A	1.8	1.8	1.8	2	3.2	4	--	Set value in A	28/30
	40	32.5/36	Set value in A	2.2	2.2	2.2	2.4	3.8	4.8	--	Set value in A	32.5/36
4AV34			3RV2011-□□□10	1CA	1CA	1CA	1DA	1GA	1GA	--	3RV1041-□□□10	4HA
	60	36/40	Set value in A	2	2	2	2.4	5	5	--	Set value in A	36/40
	40	43/48	Set value in A	2.4	2.4	2.4	2.9	6	6	--	Set value in A	43/48
4AV35			3RV2011-□□□10	1DA	1DA	1EA	1FA	1HA	1HA	--	3RV1041-□□□10	4JA
	60	45/50	Set value in A	2.4	2.4	3.2	4	6	6	--	Set value in A	45/50
	40	54/60	Set value in A	2.9	2.9	3.8	4.8	7.2	7.2	--	Set value in A	54/60
4AV36			3RV2011-□□□10	--	1HA	--	1HA	--	--	--	3RV1041-□□□10	4MA
	60	80	Set value in A	--	6	--	6	--	--	--	Set value in A	80
	40	96	Set value in A	--	7.2	--	72	--	--	--	Set value in A	96
4AV38	60	150	3RV2011-□□□10	--	1KA	--	1KA	--	--	--	3VL2716-1DC33-0AA0	
			Set value in A	--	10	--	12	--	--	--	Set value in A	150/800
	40	180	3RV2021-□□□10	--	4AA	--	4AA	--	--	--	3VL3720-1DC36-0AA0	
			Set value in A	--	12	--	14	--	---	--	Set value in A	180/1 000
4AV5125	40	25	3RV2011-□□□10	--	--	--	1BA	--	--	--	3RV1031-□□□10	4EA
			Set value in A	--	--	--	1.6	--	--	--	Set value in A	25
			Fuse gG in A	--	--	--	2	--	--	--	Fuse gG in A	25
4AV5135	40	35	3RV2011-□□□10	--	--	--	1CA	--	--	--	3RV1031-□□□10	4FA
			Set value in A	--	--	--	2.4	--	--	--	Set value in A	35
			Fuse gG in A	--	--	--	4	--	--	--	Fuse gG in A	35

1) In the event of a short circuit on the supply lines between the protective device and the input side of the unit, the rated short-circuit breaking capacity of the protection equipment must be taken into account with regard to the maximum possible prospective short-circuit current at the place of installation.

2) Circuit recommendation for single-phase power supplies, see circuit diagram on page 15/11.

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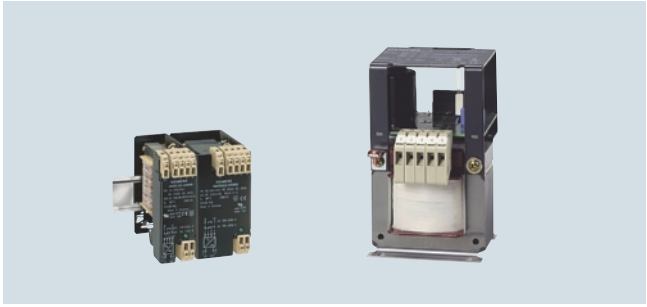
Overview

- Rated output voltage U_{2N} 24 V DC according to IEC 61131-2[1] and SIMATIC for input voltage +6 % to –10 % and load 0 % to 100 %
- Safety transformer according to IEC 61558-2-6
- 4AV21, 4AV23: cULus at 60 °C, ;
  4AV20, 4AV22, 4AV24, 4AV26: cULus at 60 °C, ;
  4AV41:
- 4AV2: t_a = max. 60 °C/B,
  4AV41: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to IEC 62041:
  - 4AV2: Suitable for connection to public supply networks (residential environments) and industrial networks (industrial environments);
  - 4AV4: Suitable for connection to industrial networks (industrial environments)
- Ripple < 5%
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV21, 4AV23 (left) and 4AV20, 4AV22 to 4AV24 (right) power supplies

[1] IEC 61131-2: equipment specification for power supply and interface for programmable controllers.
For limit values for 24 V DC see Reference Manual "Power Supplies Non-Stabilized - Stabilized", http://support.automation.siemens.com/WW/view/en/35681104.

Selection and ordering data

Rated input voltage U_{1N}[1] 230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus	Rated output current I_d 40 °C/B IEC 61558	DT[2]	Screw terminals/ flat connectors Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Integrated standard rail mounting								
1	1.2	A	**4AV2102-2EB00-0A**		1	1 unit	4M1	0.280
3.5	4.2	A	**4AV2302-2EB00-0A**		1	1 unit	4M1	0.390

For online configurator see www.siemens.com/sirius/configurators.

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to IEC 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

Rated input voltage U_{1N}[1] 400 (415) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus	Rated output current I_d 40 °C/B IEC 61558	DT[2]	Screw terminals/ flat connectors Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A							kg
Integrated standard rail mounting								
1	1.2	A	**4AV2106-2EB00-0A**		1	1 unit	4M1	0.290
3.5	4.2	A	**4AV2306-2EB00-0A**		1	1 unit	4M1	0.410

For online configurator see www.siemens.com/sirius/configurators.

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to IEC 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 15/9 "Options".

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SIRIUS 4AV2, 4AV4 power supplies, filtered, single-phase

Rated input voltage U_{1N}[1] 400 (415)-230 (240) V with tapping ±15 V, rated output voltage U_{2N} 24 V DC

4AV2: cULus, ; ***4AV41:***

Rated output current I_d 60 °C/B IEC 61558 cULus DC A	40 °C/B IEC 61558 DC A	DT[2]	Screw terminals/ flat connectors / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx. kg
Screw mounting[3]								
2.5	3	A	**4AV2000-2EB00-0A**		1	1 unit	4M1	0.390
5	6	A	**4AV2200-2EB00-0A**		1	1 unit	4M1	0.630
10	12	A	**4AV2400-2EB00-0A**		1	1 unit	4M1	1.030
15	18	A	**4AV2600-2EB00-0A**		1	1 unit	4M1	2.300
--	1.5	X	**4AV4101-2EB00-0A**		1	1 unit	4M1	0.300
--	3	A	**4AV4103-2EB00-0A**		1	1 unit	4M1	0.670
--	6	A	**4AV4106-2EB00-0A**		1	1 unit	4M1	0.520
Standard rail mounting								
2.5	3	A	**4AV2000-2EB00-0A**		1	1 unit	4M1	0.390
5	6	A	**4AV2200-2EB00-0B**		1	1 unit	4M1	0.630
10	12	X	**4AV2400-2EB00-0B**		1	1 unit	4M1	1.030
--	1.5	X	**4AV4101-2EB00-0B**		1	1 unit	4M1	0.300
--	3	A	**4AV4103-2EB00-0A**		1	1 unit	4M1	0.670
--	6	A	**4AV4106-2EB00-0A**		1	1 unit	4M1	0.520

For online configurator see www.siemens.com/sirius/configurators.

1) During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to IEC 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation with types 4AV4, 31.4 V can be achieved.

2) The delivery time class depends on the quantity, see page 15/9 "Options".

3) Types 4AV20, 4AV4103 and 4AV4106 are equipped with an integrated standard rail mounting as standard.

Rated input voltage U_{1N} 400 (415)-230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus DC A	40 °C/B IEC 61558 DC A	DT[1]	Screw terminals/ flat connectors / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx. kg
Screw mounting[2]								
2.5	3	A	**4AV2001-2EB00-0A**		1	1 unit	4M1	0.350
5	6	A	**4AV2201-2EB00-0A**		1	1 unit	4M1	0.620
10	12	A	**4AV2401-2EB00-0A**		1	1 unit	4M1	0.970
15	18	A	**4AV2601-2EB00-0A**		1	1 unit	4M1	2.220
Standard rail mounting								
2.5	3	A	**4AV2001-2EB00-0A**		1	1 unit	4M1	0.350
5	6	X	**4AV2201-2EB00-0B**		1	1 unit	4M1	0.620
10	12	X	**4AV2401-2EB00-0B**		1	1 unit	4M1	0.970

For online configurator see www.siemens.com/sirius/configurators.

1) The delivery time class depends on the quantity, see page 15/9 "Options".

2) Types 4AV20 are equipped with an integrated standard rail mounting as standard.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

- Rated output voltage U_{2N} 24 V DC according to IEC 61131-2[1] and SIMATIC for input voltage +6 % to –10 % and load 0 % to 100 %
- Safety transformer according to IEC 61558-2-6
- 4AV30 to 4AV35: cULus at 60 °C, ;
  4AV36, 4AV38, 4AV51:
- 4AV3: t_a = max. 60 °C/B,
  4AV51: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to IEC 62041:
  - 4AV3 suitable for connection to public supply networks (residential environments) and industrial networks (industrial environments);
  - 4AV5 suitable for connection to industrial networks (industrial environments)
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

SIRIUS 4AV30 to 4AV33 (left) and 4AV38 (right) power supplies

[1] IEC 61131-2: equipment specification for power supply and interface for programmable controllers.
For limit values for 24 V DC see Reference Manual "Power Supplies Non-Stabilized - Stabilized", http://support.automation.siemens.com/WW/view/en/35681104.

Selection and ordering data

Rated input voltage U_{1N} Y 400 (415) V with tapping ± 20 V, Δ 230 V with tapping ± 10 V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus	40 °C/B IEC 61558	Additional capacitance	Ripple	Buffer time for $U_1 = U_{1N}$ –10 %	DT[1]	Screw terminals/ flat connectors / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A	µF	%	ms							kg
Standard version											
10	12	--	< 5	--	A	**4AV3000-2EB00-0A**		1	1 unit	4M1	1.470
15	18	--	< 5	--	A	**4AV3100-2EB00-0A**		1	1 unit	4M1	1.420
20	24	--	< 5	--	A	**4AV3200-2EB00-0A**		1	1 unit	4M1	2.440
30	36	--	< 5	--	A	**4AV3300-2EB00-0A**		1	1 unit	4M1	2.780
40	48	--	< 5	--	A	**4AV3400-2FB00-0A**		1	1 unit	4M1	4.710
50	60	--	< 5	--	A	**4AV3500-2FB00-0A**		1	1 unit	4M1	5.590
Additional capacitors (aluminum electrolyte)											
10	12	10 000	2	1	X	**4AV3000-2EB00-0C**		1	1 unit	4M1	1.470
15	18	10 000	3	0.6	X	**4AV3100-2EB00-0C**		1	1 unit	4M1	1.420
20	24	10 000	3	0.4	X	**4AV3200-2EB00-0C**		1	1 unit	4M1	2.440
30	36	10 000	4	0.7	X	**4AV3300-2EB00-0C**		1	1 unit	4M1	2.780
40	48	10 000	3	0.7	X	**4AV3400-2FB00-0C**		1	1 unit	4M1	4.710
50	60	10 000	4	0.3	X	**4AV3500-2FB00-0C**		1	1 unit	4M1	5.590

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

Rated input voltage U_{1N} 400 (415) V with tapping ± 20 V, rated output voltage U_{2N} 24 V DC

Rated output current I_d 60 °C/B IEC 61558	40 °C/B IEC 61558	Ripple	DT[1]	Screw terminals/ flat connectors / Configurator Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A	%							kg
Standard version									
--	25	< 5	A	**4AV5125-2EB00-0A**		1	1 unit	4M1	1.830
--	35	< 5	A	**4AV5135-2EB00-0A**		1	1 unit	4M1	3.180

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4AV3, 4AV5 power supplies, filtered, three-phase

Rated input voltage U_{1N} 500-400 (415) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus	Rated output current I_d 40 °C/B IEC 61558	Additional capacitance	Ripple	Buffer time for $U_1 = U_{1N}$ –10 %	DT[1]	Screw terminals/ flat connectors / Configurator	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A	µF	%	ms								kg
Standard version												
15	18	--	< 5	--	A		**4AV3101-2EB00-0A**		1	1 unit	4M1	1.640
30	36	--	< 5	--	A		**4AV3301-2EB00-0A**		1	1 unit	4M1	2.840
50	60	--	< 5	--	A		**4AV3501-2FB00-0A**		1	1 unit	4M1	5.830

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

Rated input voltage U_{1N} 500-400 (415) V, rated output voltage U_{2N} 24 V DC

Rated output current I_d 60 °C/B IEC 61558	Rated output current I_d 40 °C/B IEC 61558	Additional capacitance	Ripple	Buffer time for $U_1 = U_{1N}$ –10 %	DT[1]	Screw terminals/ flat connectors / Configurator	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A	µF	%	ms								kg
Standard versions (unfiltered)												
80	96	--	< 5	--	A		**4AV3601-2EB00-0A**		1	1 unit	4M1	8.040
150	180	--	< 5	--	D		**4AV3801-2EB00-0A**		1	1 unit	4M1	14.400
Additional capacitors (aluminum electrolyte)												
80	96	2 × 10 000	4	0.2	X		**4AV3601-2EB00-0C**		1	1 unit	4M1	8.040

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

Rated input voltage U_{1N} 575 (600)-500-460 (480)-400 (415)-230 (240)-200 V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B IEC 61558 cULus	Rated output current I_d 40 °C/B IEC 61558	Additional capacitance	Ripple	Buffer time for $U_1 = U_{1N}$ –10 %	DT[1]	Screw terminals/ flat connectors / Configurator	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
DC A	DC A	µF	%	ms								kg
Standard version												
9	11	--	< 5	--	A		**4AV3002-2EB00-0A**		1	1 unit	4M1	1.300
13.5	16	--	< 5	--	A		**4AV3102-2EB00-0A**		1	1 unit	4M1	1.130
27	32.5	--	< 5	--	A		**4AV3302-2EB00-0A**		1	1 unit	4M1	2.210
36	43	--	< 5	--	A		**4AV3402-2FB00-0A**		1	1 unit	4M1	4.180
45	54	--	< 5	--	A		**4AV3502-2FB00-0A**		1	1 unit	4M1	5.420
Additional capacitors (aluminum electrolyte)												
9	11	10 000	2	1	X		**4AV3002-2EB00-0C**		1	1 unit	4M1	1.300

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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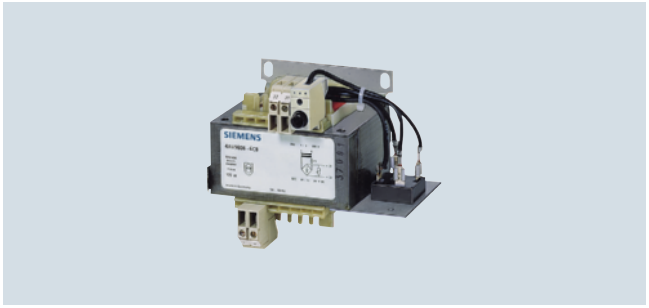
SIRIUS 4AV98 power supplies, unfiltered, single-phase

Overview

The 4AV98 power supplies comprise single-phase safety transformers according to IEC 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 24 V DC
- Safety transformer according to IEC 61558-2-6
-
- t_a = 50 °C/B
- Varistor suppressor circuit
- Short-circuit and overload protection on the output side with top-mounted fuse
- Ripple 48 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV9806-6CB00-2N power supply

Application

The single-phase 4AV98 devices are especially suitable for supplying resistive and inductive loads whose operational voltages place no special demands with regard to ripple.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values:

- Ambient temperature
  - At rated power or rated current: +50 °C
  - Minimum value: -25 °C
- Relative air humidity
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Selection and ordering data

Rated input voltage U_{1N} 230 V, rated output voltage U_d 24 V DC

Rated power P_{2N}	Voltage rise during no-load operation u_A	DT[1]	Screw terminals/ flat connectors Configurator	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
			Article No.				
W	%						kg
50	24	X	**4AV9806-4CB00-2N**	1	1 unit	4M1	0.200
125	14	X	**4AV9806-6CB00-2N**	1	1 unit	4M1	0.400
200	11	X	**4AV9806-7CB00-2N**	1	1 unit	4M1	0.600
315	10	X	**4AV9806-8CB00-2N**	1	1 unit	4M1	1.100

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

Rated input voltage U_{1N} 400 V, rated output voltage U_d 24 V DC

Rated power P_{2N}	Voltage rise during no-load operation u_A	DT[1]	Screw terminals/ flat connectors Configurator	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
			Article No.				
W	%						kg
50	24	X	**4AV9807-0CB00-2N**	1	1 unit	4M1	0.200
80	18	X	**4AV9807-1CB00-2N**	1	1 unit	4M1	0.300
125	14	X	**4AV9807-2CB00-2N**	1	1 unit	4M1	0.400
200	11	X	**4AV9807-3CB00-2N**	1	1 unit	4M1	0.600

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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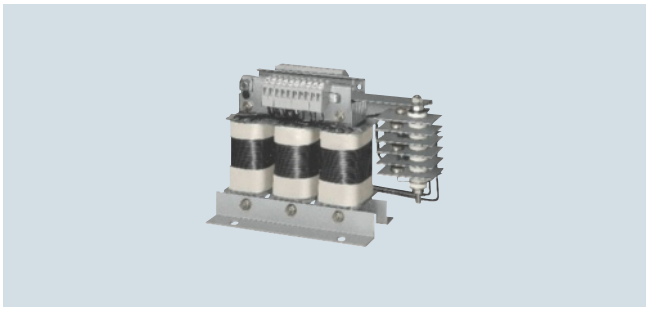
Non-Stabilized Power Supplies
Unfiltered for Supply of General Loads

SIRIUS 4AV96 power supplies, unfiltered, three-phase

Overview

The 4AV96 power supplies comprise three-phase safety transformers according to IEC 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 30-27-24 V DC
- Safety transformer according to IEC 61558-2-6
-
- t_a = 50 °C/B
- Shield winding between input and output winding
- Varistor suppressor circuit
- Designed and approved according to VW equipment specification
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV9604-.CB00-2N power supply

Application

VW approval

The 4AV96 three-phase units are designed and approved according to the VW equipment specifications.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values:

- Ambient temperature
  - At rated power or rated current: +50 °C
  - Minimum value: -25 °C
- Relative air humidity
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Technical specifications

Primary-side short-circuit and overload protection

Rectifier unit	Rated output current I_d	Primary-side short-circuit and overload protection for the rectifier with motor starter protector	
		Motor starter protectors	Set value at 400 V AC
Type	DC A	Type	A
4AV9604-1CB00-2N	4	3RV2011-0EA10	0.28
4AV9604-5CB00-2N	12	3RV2011-0JA10	0.8
4AV9604-2CB00-2N	25	3RV2011-1CA10	1.8

Selection and ordering data

Rated input voltage U_{1N} 400 V with tapping ± 5 %, rated output voltage U_d 30-27-24 V DC

Rated output current I_d	Voltage rise during no-load operation u_A	VW material No.	DT[1]	Screw terminals/ flat connectors Configurator		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
				Article No.	Price per PU				
DC A	V								kg
4	3.5	6142	X	**4AV9604-1CB00-2N**		1	1 unit	4M1	0.800
12	3.3	6141	X	**4AV9604-5CB00-2N**		1	1 unit	4M1	1.400
25	3.1	6145	X	**4AV9604-2CB00-2N**		1	1 unit	4M1	2.500

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/9 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The SITOP lite range of power supplies is designed for standard requirements in industrial environments and offers all important functions at a favorable price, of course without compromising quality and the proverbial SITOP reliability. The wide range input with manual switchover supports connection to a variety of single-phase supply systems. Thanks to the slim design, the primary switched power supplies have a low space requirement on the standard mounting rail, and their excellent degree of efficiency ensures low thermal losses in the control cabinet. Short-circuit and overload protection as well as UL approval for export ensure problem-free use.

- 24 V/2.5 A, 5 A and 10 A for industrial applications with basic requirements
- Single-phase wide range input with manual switchover
- Narrow width
- Excellent degree of efficiency
- Green LED for "24 V o.k."
- Can be switched in parallel
- No lateral installation clearances required
- Ambient temperature range of 0 °C to 60 °C (from 45 °C with derating)
- Cooling through natural convection
- Short-circuit and overload protection
- Certification acc. to UL

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
6EP1332-1LB00	**2.5 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	2.5 A	32,5 x 125 x 125	A	**6EP1332-1LB00**		1	1 unit	593
6EP1333-1LB00	**5 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	5 A	50 x 125 x 125	A	**6EP1333-1LB00**		1	1 unit	593
6EP1334-1LB00	**10 A**	120/230 V AC (93 ... 132 V AC/ 187 ... 264 V AC)	24 V DC ±3 %	10 A	70 x 125 x 125	A	**6EP1334-1LB00**		1	1 unit	593

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SITOP compact, single-phase

Overview

The SITOP PSU100C power supply series for the low performance range features an extremely space-saving, narrow design which makes it suitable in particular for distributed applications in switchboxes or small control cabinets. The switching power supply units are characterized by low power loss over the entire load range. With losses being extremely small even in no-load operation, these units are predestined for example for supplying machines and plants which are often operated in stand-by mode. The switching power supply units have a wide range input for AC and DC networks, with plug-in terminals which facilitate easy electrical connection.

- 24 V/0.6 A, 1.3 A, 2.5 A, 4 A and 3.7 A NEC Class 2; 12 V/2 A and 6.5 A
- Small mounting area thanks to narrow design
- Wide range input for 85 V to 264 V AC and 110 V to 300 V DC
- High degree of efficiency over the entire load range, up to 28 % energy savings compared to comparable units
- Low energy consumption in no-load operation and stand-by, possible energy savings of up to 53 %
- Adjustable output voltage
- Green LED for "output voltage o.k."
- Plug-in terminals
- Temperature range from -20 °C to +70 °C
- Comprehensive certification, e.g. ATEX, NEC Class 2 (24 V/3.7 A)

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
6EP1331-5BA00	**0.6 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	0.6 A	22.5 x 80 x 100	A	**6EP1331-5BA00**		1	1 unit	584
6EP1331-5BA10	**1.3 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	1.3 A	30 x 80 x 100	A	**6EP1331-5BA10**		1	1 unit	584
6EP1332-5BA00	**2.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	2.5 A	45 x 80 x 100	A	**6EP1332-5BA00**		1	1 unit	584
6EP1332-5BA10	**4 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	4 A	52.5 x 80 x 100	A	**6EP1332-5BA10**		1	1 unit	584
6EP1332-5BA20	**3.7 A NEC Class 2**	120 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	3.7 A	52.5 x 80 x 100	A	**6EP1332-5BA20**		1	1 unit	584
Power supplies 12 V											
6EP1321-5BA00	**2 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	2 A	30 x 80 x 100	A	**6EP1321-5BA00**		1	1 unit	584
6EP1322-5BA10	**6.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	6.5 A	52.5 x 80 x 100	A	**6EP1322-5BA10**		1	1 unit	584

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

With LOGO!Power power supplies it is possible not only for 24 V loads to benefit from the advantages of a stabilized power supply – loads with a 5 V, 12 V and 15 V supply voltage can now do likewise. For each of these three voltages there are two levels of current available, and for 24 V there is even a 4 A version in a width of only 90 mm.

The primary switched power supplies can be used for a wide range of different applications: In automation systems for industry and buildings, solar technology, measurement and closed-loop control, sensor technology, for supplying electronic circuits in TTL technology, etc.

Advantages of LOGO!Power power supplies:

- Two performance classes each with 5 V, 12 V and 15 V; three performance classes with 24 V
- Compact design with 54 mm, 72 mm or 90 mm width
- Flat step profile, ideal also for mounting in small distribution boards
- Design adapted to LOGO!
- Constant current in case of overloading, for reliable connection of difficult loads such as DC/DC transformers and motors
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Green LED indicator for "output voltage o.k."
- For universal use – in industry and public low-voltage systems – worldwide
- Wide range input from 85 to 264 V AC for virtually any network in the world
- Large temperature range from –20 °C to +70 °C for universal use
- High EMC standards
- Extensive approvals and certifications according to CE, UL/cUL, FM, GL (shipbuilding) and ATEX
- Constant stabilized output voltage protects connected loads
- Parallel switching option permitted to increase performance
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

Enclosures 54 mm wide

Enclosures 72 mm wide

Enclosures 90 mm wide

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 5 V										
3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	5 V DC ±3 %	3 A	54 x 90 x 55	A	**6EP1311-1SH03**		1	1 unit	583
6.3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	5 V DC ±3 %	6.3 A	72 x 90 x 55	A	**6EP1311-1SH13**		1	1 unit	583
Power supplies 12 V										
1.9 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	1.9 A	54 x 90 x 55	A	**6EP1321-1SH03**		1	1 unit	583
4.5 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	4.5 A	72 x 90 x 55	A	**6EP1322-1SH03**		1	1 unit	583
Power supplies 15 V										
1.9 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	15 V DC ±3 %	1.9 A	54 x 90 x 55	A	**6EP1351-1SH03**		1	1 unit	583
4 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	15 V DC ±3 %	4 A	72 x 90 x 55	A	**6EP1352-1SH03**		1	1 unit	583
Power supplies 24 V										
1.3 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	1.3 A	54 x 90 x 55						
• LOGO!Power					A	**6EP1331-1SH03**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1331-1SH03-7AA0**		1	1 unit	470
2.5 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	2.5 A	72 x 90 x 55						
• LOGO!Power					A	**6EP1332-1SH43**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1332-1SH43-7AA0**		1	1 unit	471
4 A	100 ... 240 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	4 A	90 x 90 x 55						
• LOGO!Power					A	**6EP1332-1SH52**		1	1 unit	583
• SIPLUS extreme for medial load, temperature range -25 ... +70 °C					D	**6AG1332-1SH52-7AA0**		1	1 unit	470

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SITOP smart, single-phase and three-phase

Overview

Small in size, big in performance. SITOP smart requires little room on the standard mounting rail and offers high functionality at an attractive price. With its good-natured overload behavior, even loads with a high inrush current can be smoothly switched on. If required, 50 % extra power can be supplied for a duration of 5 s. In addition, the 24 V versions will permanently supply 120 % of the rated power provided the ambient temperature does not exceed 45 °C.

- For 24 V standard applications up to 40 A
- Compact design for small mounting area, no lateral clearance required
- Easy standard rail mounting
- Smooth switching on of loads with high inrush current such as DC/DC converters and motors
- More performance thanks to permanent 120 % of rated power up to an ambient temperature of 45 °C (24 V versions)
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Parallel switching option to increase performance
- Extensive certifications according to UL, CSA, GL (Germanischer Lloyd) and ATEX directives (Atmosphère Explosible)
- For universal use – in industry and public low-voltage systems – worldwide
- Can be combined with SITOP expansion modules and the uninterruptible power supplies (24 V versions)
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V										
Limitation of input current harmonics according to IEC 61000-3-2										
2.5 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	2.5 A	32.5 x 125 x 125	A	**6EP1332-2BA20**		1	1 unit	582
6EP1332-2BA20										
Limitation of input current harmonics according to IEC 61000-3-2										
5 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	5 A	50 x 125 x 125	A	**6EP1333-2BA20**		1	1 unit	582
6EP1333-2BA20										
Limitation of input current harmonics according to IEC 61000-3-2										
10 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	10 A	70 x 125 x 125						
6EP1334-2BA20, 6AG1334-2BA20-4AA0	• SITOP smart				A	**6EP1334-2BA20**		1	1 unit	582
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)				D	**6AG1334-2BA20-4AA0**		1	1 unit	471
20 A	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC)	24 V DC ±3 %	20 A	115 x 145 x 150	A	**6EP1336-2BA10**		1	1 unit	582
6EP1336-2BA10										
10 A	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	10 A	90 x 145 x 150	A	**6EP1434-2BA10**		1	1 unit	582
6EP1434-2BA10										
20 A	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	20 A	90 x 145 x 150						
6EP1436-2BA10, 6AG1436-2BA10-7AA0	• SITOP smart				A	**6EP1436-2BA10**		1	1 unit	582
	• SIPLUS extreme for medial load, temperature range -25 ... +70 °C				D	**6AG1436-2BA10-7AA0**		1	1 unit	471
40 A	3 AC 400 ... 500 V (3 AC 360 ... 550 V)	24 V DC ±3 %	40 A	150 x 145 x 150	A	**6EP1437-2BA20**		1	1 unit	582
6EP1437-2BA20										

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Compact basic units for single-phase, two-phase or three-phase connections and output currents from 5 A to 40 A form the basis of the SITOP modular stabilized supplies. Depending on the requirements, SITOP expansion modules can be connected in addition.

The compact design of the primary switched power supply requires only a small mounting surface. The rugged metal enclosure is also suitable for the harshest industrial applications. The standard rail mounting fixture is also made of metal. Mounting is therefore fast, easy and vibration-proof. Reliability and quality are further characteristics of the electronic design.

The large input voltage range and the international certifications enable operation in virtually any network worldwide. The single-phase basic units 5 A and 10A have an ultra-wide input range up to 550 V, which even enables connection to two phases.

The robust SITOP PSU400M 6EP1536-3AA00 DC/DC converter is characterized by a wide DC input range from 200 V to 900 V, which permits connection to a variety of DC networks and battery systems. On the DC link of frequency-controlled drive systems, the efficient power supply enables a cost-efficient mains failure concept by using the braking energy to maintain the 24 V supply.

- Rugged metal enclosure for standard rail mounting
- 5 A and 10 A units with ultra-wide input range up to 500 V AC for single-phase and two-phase operation
- 20 A and 40 A units with wide range input for single-phase or three-phase connection
- Limitation of input current harmonics according to IEC 61000-3-2 (except 6EP1337-3BA00)
- High degree of efficiency up to 96 %
- 50 % extra power for connection of loads with a high power requirement
- Power boost of 300 % for the tripping of protective devices (not on PSU400M 6EP1536-3AA00)
- Adjustable output voltage up to 28.8 V
- 3-way status LED
- Selectable short-circuit response, constant current or latching disconnection
- Changeover for parallel operation
- 20 A and 40 A units with single-phase and three-phase connection, new 20 A and 40 A devices in compact design (70 mm and 150 mm wide)
- PSU400M 6EP1536-3AA00 with wide range input for DC voltages from 200 V to 900 V
- Can be combined with SITOP expansion modules and the uninterruptible power supplies
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
6EP1333-3BA00, 6AG1933-3BA00-2AA0	**5 A**	120 ... 230 V AC/ 230 ... 500 V (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	5 A	70 x 125 x 125						
	• SITOP modular					►	**6EP1333-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C					D	**6AG1933-3BA00-2AA0**		1	1 unit	471
6EP1334-3BA00, 6AG1334-3BA00-.AA0	**10 A**	120 ... 230 V AC/ 230 ... 500 V (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	10 A	90 x 125 x 125						
	• SITOP modular					►	**6EP1334-3BA00**		1	1 unit	581
	• SIPLUS extreme										
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)					D	**6AG1334-3BA00-4AA0**		1	1 unit	471
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +60 °C					D	**6AG1334-3BA00-2AA0**		1	1 unit	471
6EP1336-3BA10	**20 A**	120 ... 230 V AC (85 ... 275 V AC or 88 ... 350 V DC)	24 V DC ±3 %	20 A	90 x 125 x 125	A	**6EP1336-3BA10**		1	1 unit	581

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SITOP modular, single-, two- and three-phase

	Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V (continued)											
6EP1336-3BA00, 6AG1936-3BA00-4AA0, 6AG1336-3BA00-7AA0	**20 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC) Start-up from 3/183 V AC	24 V DC ±3 %	20 A	160 x 125 x 125						
	• SITOP modular					►	**6EP1336-3BA00**		1	1 unit	581
	• SIPLUS extreme										
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)					D	**6AG1936-3BA00-4AA0**		1	1 unit	471
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C					D	**6AG1336-3BA00-7AA0**		1	1 unit	471
6EP1536-3AA00	**20 A**	600 V DC (200 ... 900 V DC) Start-up from 400 V DC	24 V DC ±3 %	20 A	90 x 125 x 125	A	**6EP1536-3AA00**		1	1 unit	581
6EP1436-3BA00, 6AG1436-3BA00-7AA0	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V) Start-up from 3 AC 340 V	24 V DC ±3 %	20 A	160 x 125 x 125						
	• SITOP modular					►	**6EP1436-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C					D	**6AG1436-3BA00-7AA0**		1	1 unit	471
6EP1436-3BA10	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	20 A	70 x 125 x 125	A	**6EP1436-3BA10**		1	1 unit	581
6EP1337-3BA00, 6AG1337-3BA00-7AA0	**40 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC) Start-up from 95/190 V AC	24 V DC ±3 %	40 A	240 x 125 x 125						
	• SITOP modular					►	**6EP1337-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C					D	**6AG1337-3BA00-7AA0**		1	1 unit	471
6EP1437-3BA10, 6AG1437-3BA10-7AA0	**40 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	40 A	150 x 125 x 150						
	• SITOP modular					A	**6EP1437-3BA10**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C					D	**6AG1437-3BA10-7AA0**		1	1 unit	471
6EP1437-3BA00	**40 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V) Start-up from 3 AC 340 V	24 V DC ±3 %	40 A	240 x 125 x 125	►	**6EP1437-3BA00**		1	1 unit	581
Power supplies 48 V											
6EP1456-3BA00	**10 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	48 V DC ±3 %	10 A	70 x 125 x 125	A	**6EP1456-3BA00**		1	1 unit	581
6EP1457-3BA00	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V) Start-up from 3 AC 340 V	48 V DC ±3 %	20 A	240 x 125 x 125	A	**6EP1457-3BA00**		1	1 unit	581

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SITOP flexi with steplessly adjustable output voltage:
one standard unit for various special voltages.

Selection and ordering data

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W x H x D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 3 V to 52 V										
 6EP1353-2BA00	Limitation of input current harmonics according to IEC 61000-3-2; adjustable output voltage 3 V to 52 V, output max. 10 A or 120 W									
Max. 10 A or 120 W	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	3 ... 52 V DC ±1 %	10 A	75 x 125 x 125	►	**6EP1353-2BA00**		1	1 unit	582

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

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Expansion modules

Overview

The SITOP expansion modules offer further functions:

The signaling module can be snapped onto the side of the 6EP1…-3BA00 basic unit; with floating signaling contacts "Output voltage o.k." and "Ready o.k."; with signal input for remote ON/OFF switching of the basic unit.

The SITOP PSE202U redundancy module uses diodes to disconnect two SITOP stabilized power supplies in parallel mode. If a power supply fails, the 24 V supply is reliably maintained. The 24 V/NEC Class 2 module can also be used to limit the output power to 100 VA in accordance with NEC Class 2.

- 24 V/10 A for the disconnection of two power supplies up to 5 A or one power supply up to 10 A per redundancy module
- 24 V/NEC Class 2 disconnects and limits the output to the Class 2 Limit (100 VA) of two power supplies from 5 A to 40 A
- Floating relay contact
- Green LED for signaling "Infeed 1 and 2 o.k."
- Switching threshold adjustable from 20 V to 25 V

The two SITOP PSE200U selectivity modules and the SITOP select diagnostics module are used in combination with 24 V power supplies for distributing the load current among up to four current branches per module and for monitoring the individual partial currents. Overloads or short circuits in individual branches are selectively switched off and the remaining load current paths remain unaffected. Individually adjustable rated current, LED, group alarm contact or signaling interface for channel-specific evaluation via SIMATIC S7 function block, standard rail mounting.

The buffer module bridges mains interruptions in the range of seconds. Buffer time 200 ms at 40 A, up to 1.6 s at 5 A load current. Multiplication possible through parallel circuit, maximum buffer time 10 s.

Versions for use in severe ambient conditions (SIPLUS extreme) are available.

Selection and ordering data

	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling modules										
 6EP1961-3BA10, 6AG1961-3BA10-.AA0	--	--	--	25 × 125 × 125						
	• SITOP signaling modules				►	**6EP1961-3BA10**		1	1 unit	581
	• SIPLUS extreme									
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1961-3BA10-7AA0**		1	1 unit	471
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and with hard gold-plated contacts				D	**6AG1961-3BA10-6AA0**		1	1 unit	471
SITOP PSE202U redundancy modules										
 6EP1964-2BA00	24 V DC (19 ... 29 V DC)	U_e – approx. 0.5 V	10 A	30 × 80 × 100	A	**6EP1964-2BA00**		1	1 unit	588
 6EP1962-2BA00	24 V DC (19 ... 29 V DC)	U_e – approx. 0.5 V	3.5 A (NEC Class 2)	30 × 80 × 100	A	**6EP1962-2BA00**		1	1 unit	588
 6EP1961-3BA21, 6AG1961-3BA21-.AX0	24 V DC (24 ... 28.8 V DC)	U_e – approx. 0.5 V	20 A	70 × 125 × 125						
	• SITOP redundancy modules				A	**6EP1961-3BA21**		1	1 unit	588
	• SIPLUS extreme									
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)				D	**6AG1961-3BA21-4AX0**		1	1 unit	471
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C				D	**6AG1961-3BA21-7AX0**		1	1 unit	471

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	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP PSE200U selectivity modules										
6EP1961-2BA11, 6EP1961-2BA21	24 V DC (22 ... 30 V DC)	--	4 x 3 A (0.5 ... 3 A)	72 × 80 × 72	A	**6EP1961-2BA11**		1	1 unit	586
	24 V DC (22 ... 30 V DC)	--	4 x 10 A (3 ... 10 A)	72 × 80 × 72	A	**6EP1961-2BA21**		1	1 unit	586
SITOP PSE200U selectivity modules with single-channel signaling										
6EP1961-2BA31, 6EP1961-2BA41	24 V DC (22 ... 30 V DC)	--	4 x 3 A (0.5 ... 3 A)	72 × 80 × 72	A	**6EP1961-2BA31**		1	1 unit	586
	24 V DC (22 ... 30 V DC)	--	4 x 10 A (3 ... 10 A)	72 × 80 × 72	A	**6EP1961-2BA41**		1	1 unit	586
SITOP select diagnostics modules										
6EP1961-2BA00	24 V DC (22 .. 30 V DC)	--	4 x 10 A (2 ... 10 A)	72 × 90 × 90	►	**6EP1961-2BA00**		1	1 unit	586
Buffer modules										
6EP1961-3BA01, 6AG1961-3BA01-7AA0	24 V DC (24 .. 28.8 V DC)	U_e – approx. 1 V	40 A	70 × 125 × 125						
	• SITOP buffer modules				A	**6EP1961-3BA01**		1	1 unit	588
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1961-3BA01-7AA0**		1	1 unit	471

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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24 V DC uninterruptible power supplies

Overview

To combat prolonged mains failures the 24 V SITOP power supply units can be upgraded into a 24 V DC uninterruptible power supply.

SITOP offers two systems for this purpose:

- Capacitors for 24 V buffering in the minutes range
- Battery modules as energy stores which provide a buffer in the hours range

The DC-UPS systems are used for example in machine-tool building, in the textile industry, on all types of production lines and filling plants, and in conjunction with 24 V industrial PCs. They prevent the negative consequences which often result from mains failures.

Selection and ordering data

DC-UPS with capacitors

In many PC-based automation solutions, greater damage can be prevented in case of mains failure by putting the system into a defined status.

The necessary backup of operating data and the subsequent controlled shutdown of the PC generally occurs within one minute. The highly capacitive double-layer capacitors of the SITOP UPS500 store enough energy to shut down PC-based systems safely and also offer unique advantages.

The capacitors themselves have a very long service life even at very high ambient temperatures. No maintenance or replacement of the energy storage unit is necessary, which means that the DC-UPS pays for itself after just a short time. And because the capacitors emit no gas, there is no need for control cabinet air extraction. Short charging times quickly restore the buffer readiness after a mains failure.

For use in the control cabinet, the SITOP UPS500S 15 A basic unit comes in a 2.5 and 5 kWs version. For longer buffer times it is possible to attach up to three SITOP UPS501S expansion modules with 5 kWs. The SITOP UPS500P basic units have degree of protection IP65 and are suitable for distributed use.

The USB interface and the software tool enable simple communication with a PC.

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP UPS500S										
Basic units 15 A										
2.5 kWs	24 V DC (22 ... 29 V DC) infeed through SITOP 24 V DC	24 V DC ±3 %	15.2 A + approx. 2.3 A (charging mode)	120 × 125 × 125	A	**6EP1933-2EC41**		1	1 unit	585
5 kWs				120 × 125 × 125	A	**6EP1933-2EC51**		1	1 unit	585
SITOP UPS501 expansion modules										
5 kWs	Infeed through basic unit	--	--	70 × 125 × 125	A	**6EP1935-5PG01**		1	1 unit	585
SITOP UPS500P										
Basic units 7 A, degree of protection IP65										
5 kWs	24 V DC (22.5 ... 29 V DC) infeed through SITOP 24 V DC	24 V DC ±3 %	7 A + approx. 2 A (charging mode)	400 (without plug) x 80 x 80	A	**6EP1933-2NC01**		1	1 unit	585
10 kWs				470 (without plug) x 80 x 80	A	**6EP1933-2NC11**		1	1 unit	585
Connector set for SITOP UPS500P[1)] with input and output connector and assembled UPS cable in 2 m length					A	**6EP1975-2ES00**		1	1 unit	585

6EP1933-2EC.1, 6EP1935-5PG01

6EP1933-2NC01

6EP1933-2NC11

[1)] The connector set must be ordered as optional equipment.

DC-UPS with battery modules see page 15/51 onwards.

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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DC-UPS with battery modules

If the 24 V power supply has to be intermittently stored or a larger buffer power is required, the DC-UPS power supply lead power packs offers optimal maintenance-free security.

It bridges any mains failures for hours and delivers up to 40 A. This enables processes or subprocesses to be continued, measured values to continue to be recorded without interruption and communication is maintained.

High-performance industrial PCs require a somewhat higher energy demand and must be powered down. Especially if a large panel continues to be operated during the shutdown.

The sophisticated battery management of the compact DC-UPS modules enables optimal battery charging – and thus dependable buffer readiness. The active battery test function even checks the age of the battery. This makes preventive battery replacement unnecessary – and leads to significant cost savings.

The 24 V DC uninterruptible power supply with battery modules is comprised of DC UPS modules with 6 A, 15 A or 40 A output current and the battery modules 1.2 Ah, 3.2 Ah, 7 Ah and 12 Ah (containing lead rechargeable batteries with corrosion-resistant lead-calcium high-performance grid plates and glass fiber fleece) and 2.5 Ah (containing "high-temperature rechargeable batteries" type Reinblei).

All relevant signals are made via non-floating contacts, and also optionally via a serial interface or USB. The software tool enables easy integration on the software side.

Versions for use in severe ambient conditions (SIPLUS extreme) are available.

Version	Inputs Rated voltage $U_{e\ rated}$	Outputs Rated voltage $U_{a\ rated}$	Rated current $I_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DC UPS modules										
6EP1931-2DC..	**6 A** DC 24 V (DC 22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	6 A	50 × 125 × 125						
• SITOP DC UPS modules					►	**6EP1931-2DC21**		1	1 unit	585
- With serial interface					►	**6EP1931-2DC31**		1	1 unit	585
- With USB interface					►	**6EP1931-2DC42**		1	1 unit	585
6EP1931-2EC.., 6AG1931-2EC21-2AA0	**15 A** DC 24 V (DC 22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	15 A	50 × 125 × 125						
• SITOP DC UPS modules					►	**6EP1931-2EC21**		1	1 unit	585
- With serial interface					►	**6EP1931-2EC31**		1	1 unit	585
- With USB interface					►	**6EP1931-2EC42**		1	1 unit	585
• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +60 °C					D	**6AG1931-2EC21-2AA0**		1	1 unit	471
6EP1931-2FC.., 6AG1931-2FC21-7AA0	**40 A** DC 24 V (DC 22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	40 A	102 x 125 x 125						
• SITOP DC UPS modules					►	**6EP1931-2FC21**		1	1 unit	585
- With USB interface					►	**6EP1931-2FC42**		1	1 unit	585
• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C					D	**6AG1931-2FC21-7AA0**		1	1 unit	471

Battery modules for DC-USP modules see page 15/52.

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24 V DC uninterruptible power supplies

	Version	Charging voltage at +25 °C U_{charge}	Outputs Rated voltage $U_{a\ rated}$	Dimensions (W × H × D) mm	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Battery modules										
	For DC-UPS modules 6 A									
6EP1935-6MC01	**1.2 Ah**	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	96 × 106 × 108	►	**6EP1935-6MC01**		1	1 unit	585
	For DC-UPS modules 6 A and 15A									
	2.5 Ah/ high temperature rechargeable battery	27.7 V DC	24 V DC (end of charge voltage: 27.7 V DC, exhaustive discharge protection: 18.5 V DC)	265 × 151 × 91	►	**6EP1935-6MD31**		1	1 unit	585
	3.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	190 × 151 × 82	►	**6EP1935-6MD11**		1	1 unit	585
	For DC-UPS modules 6 A to 40 A									
6EP1935-6ME21	**7 Ah**	27.0 V DC	24 V DC (end of charge voltage: 27.0 V DC, exhaustive discharge protection: 18.5 V DC)	186 x 168 x 121	►	**6EP1935-6ME21**		1	1 unit	585
	12 Ah	27.0 V DC		253 x 168 x 121	►	**6EP1935-6MF01**		1	1 unit	585

For other units and versions see Catalog KT 10.1 "SITOP Power Supply".

For more information about SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Heating control systems

SIPLUS HCS heating control systems: Industrial heating processes – maximum precision and efficiency

In manufacturing processes where temperature plays a crucial role, deviations of just a few degrees can cause enormous quality problems. To avoid this and to minimize rejection rates, high-precision and reliable, individual control of the electrical heating elements is essential.

Nearly all industrially manufactured products undergo heat treatment. Even slight deviations in the heating process can lead to a huge impairment of product quality.

To increase the quality and quantity of a heat-treated product it is important to be able to focus the energy required with the highest level of precision in terms of both time and space. The SIPLUS HCS ensures utmost precision in the control of electrical heating elements such as infrared heaters.

Three heating control systems are available:

- With integrated power outputs – compact design
- With integrated power outputs – modular design
- Without integrated power outputs

The SIPLUS HCS family of heating control systems saves time, costs and resources when it comes to configuring, commissioning, operation and maintenance.

This is achieved by:

- Simple integration into existing automation systems such as SIMATIC and SIMOTION
- Low wiring outlay and user-friendly engineering
- Intelligent diagnostics options for swift fault detection
- Service-friendly design thanks to ready-to-use function and data blocks
- Reduced volume in the control cabinet with spacing savings of up to 50 %

For an overview of available heating control systems, see page 15/5.

For more information, see Industry Mall or www.siemens.com/siplus-hcs.

Benefits

- Significantly increased plant availability thanks to detailed, intelligent diagnostics functions and fast localization of faults in the heating process
- Simple integration into existing automation systems
- Automation from a single source: Easy data management with TIA
- Easy commissioning with STEP 7 and TIA portal

Application

The SIPLUS HCS heating control systems are designed for use in the SIMATIC industrial automation system and the SIMOTION motion control system.

They are used above all in the following industries and plants:

- Plastics industry: thermoforming, blow molding, injection molding and extrusion
- Automotive industry: drying tunnels in paint shops
- Food and beverage industry, e.g. packaging lines and PET blow molding

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General data

Overview

The distributed solution for deployment in proximity to heating elements – ideally suited for the linear setup of heat emitter arrays, for example when controlling heat emitter arrays to heat preforms in PET blow molding machines.

SIPLUS HCS3200 heating control system

Overview

SIPLUS HCS3200 heating control system with fixing brackets

The SIPLUS HCS3200 heating control system was developed as a compact solution for controlling linear heat emitter arrays.

Thanks to the high IP65 degree of protection, it can be used independently of a control cabinet in a distributed location near the emitters.

Benefits

- Rugged thanks to high IP65 protection

Application

- Heating solutions which require distributed connection of the heating control system with a high degree of protection, e.g.
  - PET blow molding machines
  - Roasting/baking/melting/drying of foodstuffs
- Applications with a small number of heater elements, e.g.
  - Vulcanizing machines
  - Spot repair emitters
  - Drying of coatings on headlights
- Applications requiring medium outputs, e.g.
  - Welding of tanks
  - Drying of paint, e.g. on gas tanks
  - Drying of coatings on alloy wheel rims
  - Forming of loudspeaker covers
  - Drying the screen printing on screens

Design

The main components of the HCS3200 heating control system are:

- HCS3200 device built into a metal enclosure with IP65 degree of protection
- Four mounting brackets for attaching the device (included in scope of supply)

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Function

Communications

- Are executed via PROFIBUS DP at 12 Mbit/s
- For importing the parameter settings from the higher-level control system
- For transferring the diagnostics information to the higher-level control system
- Communication takes place via the ECOFAST X3/X4 plugs and can be looped through from device to device using daisy chaining.

Performance features

- Calculation of output control variables of power output channels
- Setpoints can be adjusted from 0 % to 100 % in increments of 1 %
- Zero cross-switching solid-state relays (SSR)
- External fan output for connection of a 230 V AC fan up to 500 W

Diagnostics

The following faults are detected:

- Heating element fault
- Breakdown of solid-state relay (SSR)
- Incoming line fuse has tripped
- Outgoing fuse has tripped or solid state relay (SSR) has high resistance
- Monitoring of the fan outlet

Air extraction

- An internal fan is used in order to obtain uniform heat distribution within the enclosure. The fan is controlled according to the internal temperature and is also monitored. If the fan is not functioning correctly, a fault is signaled to the user
- The internal fan is available as an accessory and can be replaced if it becomes defective

Power supply to the main circuit

- The power supply is two-phase with a voltage of 400 V AC (± 10 %)
- The mains frequency is 50/60 Hz (± 5 %)

Power supply to the internal electronics

- The internal electronics of the device must be supplied with 24 V DC ± 20 % (PELV = Protective Extra Low Voltage)
- The maximum current consumed per device is 0.25 A
- Connection for 24 V DC power supply and PROFIBUS DP via the ECOFAST X3/X4 plugs
- The 24 V DC supply can be looped through from device to device using daisy chaining

Power outputs

- Nine power outputs are available for each device
- Max. 4 000 W switching capacity per output
- Max. 25 200 W switching capacity per device

Fan output

An external 230 V AC fan with a maximum output of 500 W can be operated.

Temperature monitoring

The SIPLUS HCS3200 heating control system is fitted with a sensor for monitoring the internal temperature. When a temperature threshold that is permanently set in the hardware is overshot, all the outputs (power outputs and the external fan) are automatically switched off to prevent damage to the device.

Fuses

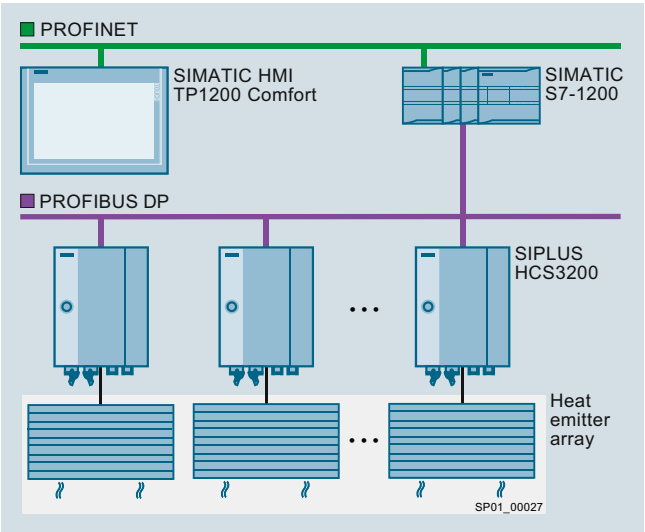
- Two gG 16 A fuses per power output for protecting the power outputs
- One gG 4 A fuse for protecting the fan output
- All fuses are fitted in fuse holders and are easily accessible

Integration

The SIPLUS HCS3200 heating control system is a distributed I/O device. It communicates via the PROFIBUS DP fieldbus with the SIMATIC S7 controller.

A complete system includes the following components:

- SIPLUS HCS3200 heating control system
- Higher-level control through SIMATIC S7 automation system with integrated interface for PROFIBUS DP or SIMOTION
- PROFIBUS DP
- Cabling
- Heat emitter array
- HMI panel (optional)



Application example with SIMATIC and SIPLUS HCS3200

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Technical specifications

Type		6BK1932-0BA00-0AA0
Product designation		HCS3200 fan
General data		
Type of control of heat emitters		Half-wave control
Type of load		Resistive load
Reference designations according to IEC 81346-2		Q
Degree of pollution		2
Approvals/Certificates		
Certificate of suitability		CE
Supply voltage		
Type of voltage of the supply voltage		AC
Supply voltage at AC rated value	V	400
• Relative negative tolerance	%	10
• Relative positive tolerance	%	10
Supply voltage frequency		
• 1	Hz	50
• 2	Hz	60
• Relative symmetrical tolerance		5
Switching capacity current per phase maximum	A	63
Breaking capacity, short-circuit current limit (I_{cu}) at 400 V, rated value	kA	25
Type of electrical isolation		Optocoupler between main circuit and PELV
Maximum permissible power carrying capacity	W	25 200
Type of electrical connection for supply voltage		Connector socket, 4-pole + PE
Type of connectable conductor cross-sections for supply voltage		
• Finely stranded with end sleeve	mm^2	3 x (6 ... 25), 1 x PE (6 ... 16)
• Finely stranded for AWG cables	AWG	3 x (8 ... 4), 1 x PE (10 ... 6)
Power electronics		
Number of outputs		
• For fans		1
• For heating power		9
Number of heat emitters per output, maximum		1
Output voltage at the output		
• For heating power	V	400
• For fans	V	230
Power carrying capacity		
• Per output	W	200 ... 4 000
• For fans per output	W	60 ... 500
Output voltage at the output for heating power, rated value	V	400
Electrical separation between the outputs		No
Version of short-circuit protection		
• At the output for fan		4 A melting fuse
• For heating power per output		16 A melting fuse
Type of electrical connection at output for heater and fan		Connector sockets, 20-pole + PE
Type of connectable conductor cross-sections for heater and fans		
• Finely stranded with end sleeve	mm^2	20 x (1.5 ... 4), 1 x PE (1.5 ... 16)
• Finely stranded for AWG cables	AWG	20 x (18 ... 12), 1 x PE (16 ... 6)
Measuring inputs for voltage		
Product function voltage measuring		Yes
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Interface version		PROFIBUS DP
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		ECOFAST
Display		
Number of status displays		2
Type of status display using LEDs		• LED green = status indicator • LED red = fault indicator

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Type		**6BK1932-0BA00-0AA0**
Product designation		HCS3200 fan
Auxiliary circuit		
Design of the power supply		External
Type of voltage		DC
Supply voltage for electronics	V	24
• Relative symmetrical tolerance of the input voltage	%	20
Consumed current for electronics maximum	A	0.25
Monitoring functions		
Product function temperature monitoring		Yes
Type of temperature monitoring		NTC thermistors
Diagnostics functions		Fuse diagnostics
• Blown fuse		Yes
• Open circuit		Yes
• Heat emitter break		Yes
Mechanical features		
Mounting position		Vertical
Type of mounting		Screw mounting
Type of ventilation		Self-ventilation
Shock resistance		
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis
• According to IEC 60068-2-29		25 *g*/6 ms/1 000 shocks/axis
Vibration resistance		
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.075 mm, 58 ... 150 Hz/1 *g*
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*
IP degree of protection		IP65
Dimensions		
• Width	mm	300
• Height	mm	380
• Depth	mm	200
Electromagnetic compatibility		
Conducted interference injection BURST according to IEC 61000-4-4		2 kV power supply cables/1 kV signal cables
Conducted interference injection SURGE according to IEC 61000-4-5		• On supply cables: 1 kV symmetrical, 2 kV asymmetrical, (24 V DC supply only with external protective measure) • On PROFIBUS DP cable: 1 kV asymmetrical
Conducted interference injection as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)
EMC emitted interference		According to IEC 61000-6-4:2007 + A1:2011
Overvoltage category		III
Climatic ambient conditions		
Ambient temperature		
• During operation	°C	0 … 50
• During storage	°C	-40 … +70
• During transport	°C	-40 … +70
Air pressure		
• During operation	hPa	860 … 1 080
• During storage	hPa	660 … 1 080
Relative humidity		
• At 25 °C during operation maximum	%	95
• At 50 °C during operation maximum	%	50
Installation altitude at height above sea level maximum	m	2 000

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SIPLUS HCS3200 heating control system

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS HCS3200 heating control system						
HCS3200 fan	X	**6BK1932-0BA00-0AA0**		1	1 unit	477

6BK1932-0BA00-0AA0
with fixing brackets

More information

For more product details see the operating instructions "SIPLUS HCS3200 Heating control system", http://support.automation.siemens.com/WW/view/en/69048101.

For more information see Industry Mall or www.siemens.com/siplus-hcs.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The cost-optimized, space-saving solution for use in a central control cabinet with an almost unlimited number of power outputs, e.g. for controlling the heat emitter arrays in thermoforming machines or drying ovens in the automotive industry.

SIPLUS HCS716I heating control system: General data

Overview

SIPLUS HCS716I heating control system

The SIPLUS HCS716I heating control system was developed as a cost-optimized controller of heat emitter arrays in thermoforming machines. It is suitable for all generally available radiation devices such as quartz, quartz material, ceramic, halogen and infrared radiation devices.

The SIPLUS HCS716I can be used wherever resistive loads of small to medium output require switching at low-cost in an industrial environment.

The SIPLUS HCS716I range is comprised of four racks and three power output modules.

Benefits

- High degree of modularity in terms of number of channels and channel performance

Application

The SIPLUS HCS716I heating control system is used, for example, to switch the small and medium output heat emitter arrays in thermoforming machines, drying ovens and packaging machines.

The SIPLUS HCS716I is a distributed I/O unit (slave) that communicates over the PROFIBUS DP fieldbus with a higher-level control system (master) such as SIMATIC S7/SIMOTION.

Design

The main components of the SIPLUS HCS716I heating control system are:

- 19" rack with bus board for inserting up to 4 or up to 12 power output modules, as well as a control module and CPU module
- Power output modules in double-height Eurocard format with 8/16 output channels
- Fan unit with one or three fans (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC
- Plug-in card system on the front

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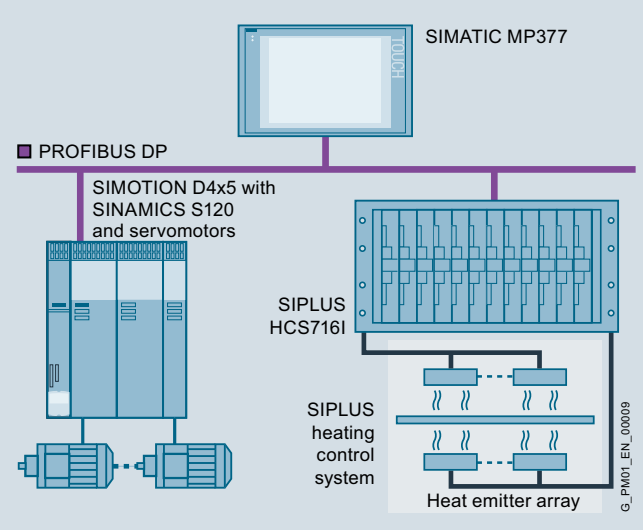
SIPLUS HCS716I heating control system: General data

Integration



Application example with SIMOTION, SINAMICS and SIPLUS HCS716I

Technical specifications

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0	6BK1700-2BA70-0AA1	4BA80-0AA0	4CA00-0AA0
Product designation		Racks					Power output modules		
		Hinged frame	Mounting frame With flange	Mounting frame Without flange	Narrow version	Expansion frame	LA716	LA716I	LA716I HP
Approvals/Certificates									
Certificate of suitability		CE, KCC							
Supply voltage									
Type of voltage of the supply voltage		AC							
Supply voltage at AC rated value	V	230				--	230		
• Relative negative tolerance	%	18							
• Relative positive tolerance	%	15							
Supply voltage frequency									
• 1	Hz	50							
• 2	Hz	60							
• Relative symmetrical tolerance	%	5							
Communications									
Interface version		PROFIBUS DP					System interface		
Mechanical features									
Mounting position		Horizontal					Vertical		
Type of mounting		In one hinged frame	Rear panel control cabinet				Fixing clips in racks		
Type of ventilation		Self-ventilation or forced ventilation							
Shock resistance according to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis							
Vibration resistance									
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.15 mm, 58 ... 150 Hz/1 *g*							
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*							
IP degree of protection		IP00							
Dimensions									
• Width	mm	483	510		202.7		31		
• Height	mm	265.5	310		309.5		233.4		
• Depth	mm	350	330		287		241	279	

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SIPLUS HCS716I heating control system: General data

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0	6BK1700-2BA70-0AA1	4BA80-0AA0	4CA00-0AA0
Product designation		Racks					Power output modules		
		Hinged frame	Mounting frame With flange	Mounting frame Without flange	Mounting frame Narrow version	Expansion frame	LA716	LA716I	LA716I HP
Electromagnetic compatibility									
Conducted interference injection BURST according to IEC 61000-4-4		2 kV power supply cables/2 kV signal cables							
Conducted interference injection SURGE according to IEC 61000-4-5		• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On PROFIBUS DP cable - 1 kV asymmetrical				--	• On power supply and signal cables - 1 kV symmetrical - 2 kV asymmetrical		
Conducted interference injection as high-frequency interference according to IEC 61000-4-6		10 V effective in the frequency range 0.15 ... 80 MHz, modulation 80 % AM with 1 kHz, assessment criterion A					10 V (0.15 ... 80 MHz)		
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge							
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)							
EMC emitted interference		According to IEC 61000-6-4:2007 + A1:2011							
Overvoltage category		III							
Climatic ambient conditions									
Ambient temperature									
• During operation	°C	0 … 55							
• During storage	°C	-40 … +70							
• During transport	°C	-40 … +70							
Air pressure									
• During operation	hPa	860 … 1 080							
• During storage	hPa	660 … 1 080							
Relative humidity									
• At 25 °C - Max.	%	95							
Installation altitude at height above sea level, maximum	m	2 000							

More information

For more product details see the operating instructions "Heater controller SIPLUS HCS716I", http://support.automation.siemens.com/WW/view/en/50695867.

For more information see Industry Mall or www.siemens.com/siplus-hcs.

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SIPLUS HCS716I heating control system: Racks

Overview

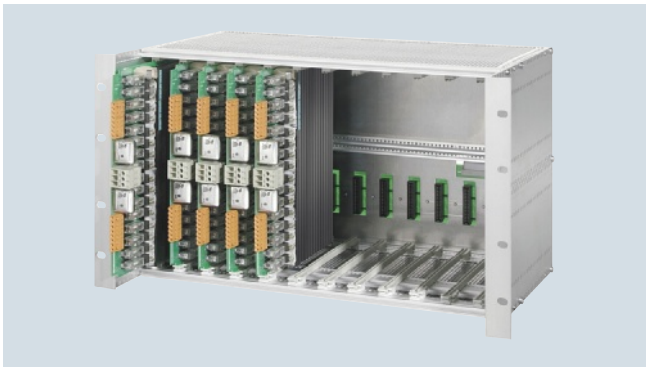
The rack is the mechanical framework of the SIPLUS HCS716I and contains all the modules required to control the power outputs.

These are available in four different versions:

- Rack hinged frame
- Rack mounting frame
- Rack mounting frame without flange
- Rack mounting frame, narrow version, and expansion frame, narrow version

Rack hinged frame

The CPU module and the control module are located at the rear of the rack. This rack is suitable for installation in a hinged frame.



Rack hinged frame 6BK1700-2AA00-0AA1

Rack mounting frame

The CPU module and the control module are also located on the right side of the rack. This rack is suitable for direct installation in a control cabinet.

Rack mounting frame 6BK1700-2AA10-0AA1

Rack mounting frame without flange

The CPU module and the control module are also located on the right side of the rack. This rack is suitable for installation in a control cabinet. In contrast to the mounting frame, this version has no mounting bracket (flange) at the front.

Rack mounting frame without flange 6BK1700-2AA70-0AA0

Rack mounting frame, narrow version, and expansion frame, narrow version

The CPU module and the control module are also located on the right side of the rack. This rack is suitable for installation in a control cabinet. It accommodates up to four power output modules and can be extended with the expansion frame to take a further four power output modules. The expansion frame is mounted on the left of the mounting frame, narrow version, and is connected to it by a cable.

A fan unit is also available as an accessory. It is fitted to the rack mounting frame, narrow version, and to the expansion frame, narrow version, from underneath.

Rack mounting frame narrow version 6BK1700-2AA80-0AA0 (right), and expansion frame narrow version 6BK1700-3AA00-0AA0 (left), with fan units 6BK1700-2GA10-0AA0 attached below

Fan unit 6BK1700-2GA10-0AA0

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Design

- 19" rack
  - Rear panel for CPU module, control module and bus module
  - Mountings for 4 or 12 power output modules
  - Partition as cover when slots are not all populated
- CPU module with PROFIBUS interface module
- Control module
  - Power supply for the modules of the heating control system
  - Decoding for controlling the power output modules
- Bus module
  - Contains 4 or 12 direct plug-in connectors for connecting the control module to the power output modules
- Heat dissipation possible with optional fan units

Function

Communications

- PROFIBUS DP
  - Import of the parameter settings from the higher-level control system
  - Transfer of the diagnostics information to the higher-level control system
- Internal system bus via bus PCB
- Controlling and monitoring up to 192 power channels

Performance features

- Calculation of the emitter manipulated variables of the power output channels
- Setpoint values are adjustable in 1 % increments from 0 % to 100 %

Diagnostics

- Evaluating the diagnostics information of the connected power output modules
- Automatic detection of the mains frequency

Forced ventilation

Depending on the switching capacity and ambient temperature, the rack may have to be force-ventilated. Fan units for this purpose are available as optional accessories (see page 15/65).

For detailed information see the operating instructions "SIPLUS HCS716I Heating Control System", http://support.automation.siemens.com/WW/view/en/50695867.

Technical specifications

Type		6BK1700-2AA00-0AA1	2AA10-0AA1	2AA70-0AA0	2AA80-0AA0	3AA00-0AA0
Product designation		Racks				
		Hinged frame	Mounting frame With flange	Mounting frame Without flange	Narrow version	Expansion frame
General data						
Reference designations according to IEC 81346-2		K				
Number of slots		12			4	
Type of power output module connectable		LA716/LA716I/LA716I HP				
Pollution degree		2				
Supply voltage						
Active power input	W	15				
Mains failure buffering time	ms	20				
Recovery time after mains failure, typical	s	1				
Power carrying capacity						
• With fan per rack	kW	176			59	
• Without fan per rack	kW	67			22	
Type of electrical connection for supply voltage		Plug, 2-pole				
Type of connectable conductor cross-sections for supply voltage						
• Solid	mm^2	1 x (0.2 ... 2.5)				
• Finely stranded with end sleeve	mm^2	1 x (0.25 ... 2.5)				
• Finely stranded for AWG cables	AWG	24 ... 12				
Dimensions						
• Width	mm	483	510		202.7	
• Height	mm	265.5	310		309.5	
• Depth	mm	350	330		287	
Communications						
Protocol is supported PROFIBUS DP protocol		Yes				
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12				
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket				
Display						
Number of status displays		2				
Type of status displays using LEDs		• LED green = status indicator • LED red = fault indicator				

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SIPLUS HCS716I heating control system: Racks

Selection and ordering data

	Number of slots	Type of power output module connectable	Interface version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rack hinged frame									
6BK1700-2AA00-0AA1	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA00-0AA1**		1	1 unit	477
Rack mounting frame									
6BK1700-2AA10-0AA1	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA10-0AA1**		1	1 unit	477
Rack mounting frame without flange									
6BK1700-2AA70-0AA0	12	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA70-0AA0**		1	1 unit	477
Rack mounting frame, narrow version									
6BK1700-3AA00-0AA0 (left) with 6BK1700-2AA80-0AA0 (right) with fan units attached below	**Mounting frame, narrow version**								
	4	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-2AA80-0AA0**		1	1 unit	477
	Expansion frame, narrow version								
	4	LA716/LA716I/ LA716I HP	PROFIBUS DP	C	**6BK1700-3AA00-0AA0**		1	1 unit	477

Accessories see next page.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For rack hinged frame, rack mounting frame and rack mounting frame without flange						
Fan units[1)]						
• 230 V AC with 3 fans		On request [1)]				
• 115 … 230 V AC/24 V DC with 3 fans and speed monitoring		On request [1)]				
These are fitted to the racks from below.						
For rack mounting frame, narrow version and expansion frame, narrow version						
6BK1700-2GA10-0AA0 **Fan unit** • 230 V AC with 1 fan This is attached from below to the rack mounting frame, narrow version and to the expansion frame, narrow version.	C	**6BK1700-2GA10-0AA0**		1	1 unit	477

[1)] Fan units for the rack hinged frames, rack mounting frames and rack mounting frames without flange are available from: HEITEC AG see Chapter 16 "Appendix" → "External partners".

More information

For more information see Industry Mall or www.siemens.com/siplus-hcs.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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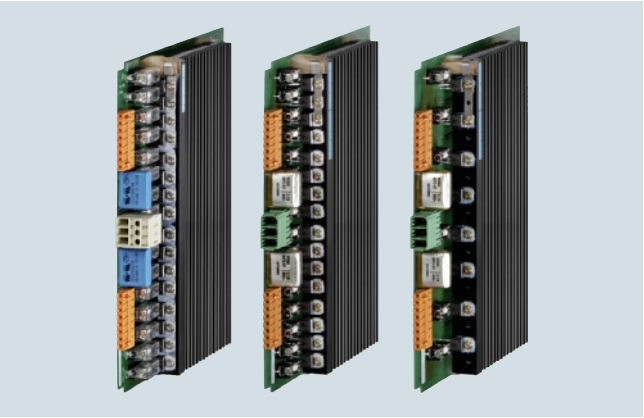
SIPLUS HCS716I heating control system: Power output modules

Overview

The power output modules are an important component of the SIPLUS HCS716I heating control system.

Three different power output modules can be used depending on the application:

- LA716 power output module – the **universal** version
- LA716I power output module – the **innovative** version
- LA716I HP power output module – the **HighPower** version



LA716 (left), LA716I (center) and LA716I HP (right) power output modules

LA716 power output module

The **universal** power output module provides 16 channels for switching on resistive loads. A maximum of 650 W can be used for each output channel.

LA716I power output module

The **innovative** power output module provides 16 channels for switching on resistive loads. A maximum of 1 150 W can be used for each output channel.

LA716I HP power output module

The **HighPower** version provides 8 channels for switching on resistive loads. A maximum of 2 300 W can be used for each output channel.

Design

- Connection of the heat emitter via two 8-pole mating connectors (The heat emitters and the mating connectors are ordered separately)
- Mains infeed at the front:
  - LA716 power output module: 3-pole terminal (Lx/N/Ly)
  - LA716I and LA716I HP power output modules: 3-pole plug connector (Lx/N/Ly)

Function

Protector elements

- Power triacs with zero crossover switching
- Protection of triacs and opto-triacs against overvoltages by Transil diodes

Output power

LA716 power output module

- 16 power output channels 230 V each (8 outputs each per phase)
- Max. 10 400 W switching capacity per module

LA716I power output module

- 16 power output channels 230 V each (8 outputs each per phase)
- Max. 14 720 W switching capacity per module

LA716I HP power output module

- 8 power output channels 230 V each (4 outputs each per phase)
- Max. 14 720 W switching capacity per module

Temperature monitoring

There is an NTC thermistor on the heat sink for monitoring its temperature. In the event of an overtemperature, this temperature-dependent resistor issues a signal to the higher-level control system.

Fuses

LA716 power output module

- Each output is protected with a 5 A fuse in an accessible fuse holder for the protection of the power triacs.
- A fuse cover is available as touch protection.

LA716I power output module

- Each output is protected with a 5 A fuse in an accessible fuse holder for the protection of the power triacs.
- A plexiglass cover is available on the front side as touch protection.

LA716I HP power output module

- Each output is protected with a 10 A fuse in an accessible fuse holder for the protection of the power triacs.
- A plexiglass cover is available on the front side as touch protection.

Diagnostic option

Standard diagnostics are provided for detecting the following faults:

- Circuit breaker triac at high resistance or internal fuse blown
- Channel fuse blown on the module
- External faults such as a blown fuse, broken heat emitter or broken cable

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Technical specifications

Type		6BK1700-2BA70-0AA1	6BK1700-4BA80-0AA0	6BK1700-4CA00-0AA0
Product designation		Power output modules		
		LA716	LA716I	LA716I HP
General data				
Type of control of heat emitters		Full-wave control		
Type of load		Resistive load		
Reference designations according to IEC 81346-2		Q		
Pollution degree		2		
Supply voltage				
Switching capacity current per phase, maximum		23	32	
Type of electrical isolation		Optocoupler between main circuit and SELV/PELV		
Power carrying capacity				
• Of the module for delta connection at 40 °C				
- With fan maximum	W	10 400	14 720	
- Without fan maximum	W	6 200	6 500	
• Maximum permissible	W	10 400	14 720	
Type of electrical connection for supply voltage		Terminal 3-pole		
Type of connectable conductor cross-sections for supply voltage				
• Solid	mm^2	1 x (0,2 ... 6)	1 x (0,2 ... 10)	1 x (0,2 ... 10)
• Finely stranded with end sleeve	mm^2	1 x (0.25 ... 4)	1 x (0.25 ... 6)	1 x (0.25 ... 6)
• Finely stranded for AWG cables	AWG	22 ... 10	24 ... 8	24 ... 8
Power electronics				
Number of outputs for heating power		16		8
Number of heat emitters per output, maximum		1		
Output voltage with wye connection		230		
Version of the overvoltage protection		Transil diodes		
Power carrying capacity				
• Per output	W	75 … 650	75 … 1 150	75 … 2 300
Output current at the output for heating power, rated value	A	5		10
Type of short-circuit protection for heating power per output		5 A melting fuse		10 A melting fuse
• Electrical separation between the outputs		No		
Type of electrical connection at output for heater		8-pole socket connector		
Type of connectable conductor cross-sections for heater				
• Solid	mm^2	1 x (0.2 ... 1.5)		
• Finely stranded with end sleeve	mm^2	1 x (0.2 ... 1.5)		
• Finely stranded for AWG cables	AWG	28 ... 16		
Dimensions				
• Width	mm	31		
• Height	mm	233.4		
• Depth	mm	241	279	
Auxiliary circuit				
Design of the power supply		Supply through racks		
Monitoring functions				
Product function temperature monitoring		Yes		
Type of temperature monitoring		NTC thermistors		
Diagnostics function		Voltage diagnostics		
• Blown fuse		Yes		
• Open circuit		Yes		
• Heat emitter break		Yes		

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SIPLUS HCS716I heating control system: Power output modules

Selection and ordering data

	Number of outputs for heating power	Power carrying capacity per output max.	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		W						
LA716 power output module								
6BK1700-2BA70-0AA1	16	650	C	**6BK1700-2BA70-0AA1**		1	1 unit	477
LA716I power output module								
6BK1700-4BA80-0AA0	16	1 150	C	**6BK1700-4BA80-0AA0**		1	1 unit	477
LA716I HP power output module								
6BK1700-4CA00-0AA0	8	2 300	C	**6BK1700-4CA00-0AA0**		1	1 unit	477

Accessories

Version	For power output module	Type
Fuse		
• 5 A quick/250 V	LA716, LA716I	200021116
• 10 A quick/250 V	LA716I HP	A5E00186303
Mating connectors		
• 3-pole for mains connection	LA716I, LA716I HP	A5E30280233
• 8-pole for connection of the heat emitters	LA716, LA716I, LA716I HP	A5E00507233

More information

For more information see Industry Mall or www.siemens.com/siplus-hcs.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIPLUS HCS724I heating control system: General data

Overview

SIPLUS HCS724I heating control system

The SIPLUS HCS724I heating control system controls and switches heat emitter arrays and other resistive loads of medium to high output in the industrial environment.

It is connected through PROFIBUS DP and can be used together with for example SIMATIC S7 to form a highly modern and powerful automation system. As an option, a line-voltage sensing module can be integrated in order to compensate automatically and internally for variations in the line voltage.

Benefits

- Time savings by means of adaptation to each production process
- Excellent product quality thanks to integrated line voltage compensation

Application

The SIPLUS HCS724I heating control system is used for example for controlling heat emitter arrays:

- Thermoforming machines
- Blow molding machines
- Plastic welding machines
- Drying ovens

Design

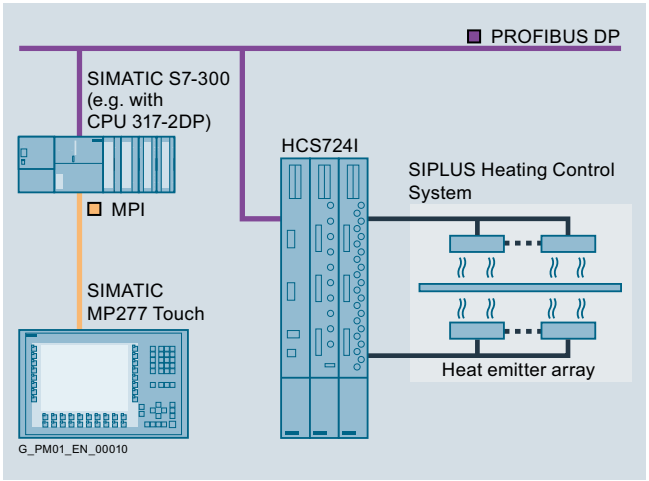
The main components of the SIPLUS HCS724I heating control system are:

- Central interface module
- LA724I/LA724I HP/LA724I SSR power output modules: Up to 16 power output modules can be connected.
- Line-voltage sensing module (option)
- Fan module (option)
- Current measuring module (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC

The central interface module and the LA724I/LA724I HP/LA724I SSR power output modules are installed in a metal enclosure and mounted on a mounting plate in the control cabinet.

Customized, distributed solutions are also possible.

Integration



Application example with SIMOTION, SINAMICS and SIPLUS HCS724I

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SIPLUS HCS724I heating control system: General data

Technical specifications

Type		6BK1700-2BA30-0AA0	6BK1700-2BA00-0AA0	4BA70-0AA0	2BA10-0AA0	6ES7171-1XX00-6AA0	6ES7171-3AA00-0AA0	6BK1700-2BA40-0AA0
Product designation		Central interface module	Power output modules LA724I	LA724I HP	LA724I SSR	Line-voltage sensing module	Fan module	Current measuring module
General data								
Reference designations according to IEC 81346-2		K	Q		K	T	G	T
Pollution degree		2						
Approvals/Certificates								
Certificate of suitability		CE, KCC						
Supply voltage								
Type of voltage of the supply voltage		AC				--	AC	--
Supply voltage at AC rated value	V	230		400		--	230	--
• Relative negative tolerance of the supply voltage	%	18				--	18	--
• Relative positive tolerance of the supply voltage	%	15				--	15	--
Type of electrical connection for supply voltage		Terminal 2-pole	Busbars or ring terminal lugs			4 connecting cables with ring terminal lug	Plug, 2-pole	Terminal 16-pole
Communications								
Interface version		PROFIBUS DP	System interface				--	
Mechanical features								
Mounting position		Vertical					Horizontal	Vertical
Type of mounting		Screws in fixing lugs on the top and bottom				--	Mounting clips	Screws in fixing lugs on the top and bottom
Type of ventilation		Self-ventilation or forced ventilation			Self-ventilation	Self-ventilation or forced ventilation		
Shock resistance								
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis						
• According to IEC 60068-2-29		25 *g*/6 ms/1 000 shocks/axis						
Vibration resistance								
• During operation according to IEC 60068-2-6		10 ... 58 Hz/0.15 mm, 58 ... 150 Hz/1 *g*						
• During storage according to IEC 60068-2-6		5 ... 9 Hz/3.5 mm, 9 ... 500 Hz/1 *g*						
IP degree of protection		IP20						
Dimensions								
• Width	mm	50				86	100	150
• Height	mm	480				22	50	77.5
• Depth	mm	210				160	162	115
Electromagnetic compatibility								
Conducted interference injection BURST according to IEC 61000-4-4		2 kV power supply cables/2 kV signal cables						
Conducted interference injection SURGE according to IEC 61000-4-5		• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On PROFIBUS DP cable - 1 kV asymmetrical	• On power supply and signal cables - 1 kV symmetrical - 2 kV asymmetrical					
Conducted interference injection as high-frequency interference according to IEC 61000-4-6		10 V (0.15 ... 80 MHz)						
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge						
Field-related interference according to IEC 61000-4-3		10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)						
EMC emitted interference		Limit value class A acc. to EN 55011 Group 1						
Overvoltage category		III						

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SIPLUS HCS724I heating control system: General data

Type		6BK1700-2BA30-0AA0	6BK1700-2BA00-0AA0	4BA70-0AA0	2BA10-0AA0	6ES7171-1XX00-6AA0	6ES7171-3AA00-0AA0	6BK1700-2BA40-0AA0
Product designation		Central interface module	Power output modules LA724I	LA724I HP	LA724I SSR	Line-voltage sensing module	Fan module	Current measuring module
Climatic ambient conditions								
Ambient temperature								
• During operation	°C	0 … 55						
• During storage	°C	-40 … +70						
• During transport	°C	-40 … +70						
Air pressure								
• During operation	hPa	860 … 1 080						
• During storage	hPa	660 … 1 080						
Installation altitude at height above sea level, maximum	m	2 000						
Relative air humidity								
• At 25 °C - Max.	%	95						

More information

For more product details see the operating instructions "SIPLUS HCS724I Heating control system", http://support.automation.siemens.com/WW/view/en/55336534.

For more information see Industry Mall or www.siemens.com/siplus-hcs.

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SIPLUS HCS724I heating control system: Central interface module

Overview

Central interface module

The central interface module is the intelligent processor module of the SIPLUS HCS724I heating control system.

Design

- Module encapsulated in a metal enclosure
- Two LEDs for operating state (green) and fault indication (red)
- PROFIBUS DP interface (up to 12 Mbaud)
- Rotary switch for setting the PROFIBUS DP address
- Serial interface RS 232 C
- Parallel bus interface for the power output modules
- Possibility of connecting a maximum of 16 LA724I/ LA724I HP/LA724I SSR power output modules per central interface module
- Expansion slot for line-voltage sensing module (optional)

Function

Communications

PROFIBUS DP

- Import of the parameter settings from the higher-level control system
- Transfer of the diagnostics information to the higher-level control system

Parallel bus (internal)

- Controlling and monitoring up to 384 power channels

Performance features

- Calculation of the emitter manipulated variables of the power channels
- Setpoint values are adjustable in 0.5 % increments from 0 % to 100 %
- Even load distribution over all power channels and over all SIPLUS HCS724I heating control systems operated as an integrated group
- Simple adaptation to each production process through the selection of up to four operating modes
- The various power output modules can be used in mixed operation

Diagnostics

- Evaluation of diagnostics information from connected power output modules
- Phase-sequence detection indicating whether phases L1, L2, and L3 are properly connected
- Automatic detection of the line frequency

Grid synchronization

In order to ensure synchronization of the power output modules with the connected power supply, the system is synchronized with phase L1. The respective switch-on times for phases L2 and L3 are then calculated automatically.

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Technical specifications

Type		6BK1700-2BA30-0AA0
General data		
Type of power output module connectable		• LA724I • LA724I HP • LA724I SSR (Up to 16 power output modules can be connected)
Supply voltage		
Type of voltage of the supply voltage		AC
Supply voltage at AC, rated value	V	230
• Relative negative tolerance of the supply voltage	%	18
• Relative positive tolerance of the supply voltage	%	15
Supply voltage frequency		
• Rated value 1	Hz	50
• Rated value 2	Hz	60
• Relative symmetrical tolerance	%	5
Active power input	W	35
Mains failure buffering time	ms	20
Recovery time after mains failure, typical	s	1
Type of electrical connection for supply voltage		Terminal 2-pole
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2	1 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5)
• Finely stranded for AWG cables	AWG	26 ... 14

Type		6BK1700-2BA30-0AA0
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Transmission rate for PROFIBUS DP, maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket
Displays		
Number of status displays		2
Type of status displays using LEDs		• LED green = status indicator • LED red = fault indicator
Dimensions		
• Width	mm	50
• Height	mm	480
• Depth	mm	210

Selection and ordering data

	Interface version	Type of power output module connectable	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Central interface modules								
6BK1700-2BA30-0AA0	PROFIBUS DP	• LA742I • LA724I HP • LA724I SSR	C	**6BK1700-2BA30-0AA0**		1	1 unit	477

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SIPLUS HCS724I heating control system: Power output modules

Overview

The power output modules are an important component of the SIPLUS HCS724I heating control system.

Three different power output modules can be used depending on the application:

- LA724I power output module – the **universal** version
- LA724I HP power output module – the **HighPower** version
- LA724I SSR power output modules – the **high-current** version

LA724I (left), LA724I HP (center) and LA724I SSR (right) power output modules

LA724I power output module

The **universal** power output module provides 24 channels for switching on resistive loads. A maximum of 1 150 W can be used for each output channel.

LA724I HP power output module

The **HighPower** output module provides 12 channels for switching on resistive loads for voltages up to 400 V/max. and 10 A per channel.

LA724I SSR power output module

The 24-channel power output module is the **high-current** power output module for controlling external SSR solid-state relays (up to 90 A/load).

Design

- Modules encapsulated in a metal enclosure
- Connection of the phases via busbars
- Connection of the heat emitter via mating connectors (the heat emitters and the mating connectors are ordered separately).
- Channel fuses at the front
- Heat dissipation with the optimal fan module is possible for the LA724I and LA724I HP power output modules, see page 15/79
- Internal parallel bus interface
- Four diagnostics LEDs for displaying channel/module faults

Function

Protector elements

LA724I and LA724I HP power output modules

- Power triacs with zero crossover switching
- Protection of the triacs and opto-triacs by means of Transil diodes against overvoltage

LA724I SSR power output module

There are no power triacs here. Control of the load is handled via external SSR solid-state relays.

Output power

LA724I power output module

- 24 power output channels 230 V each (8 outputs per phase)
- Max. 1 150 W switching capacity per output
- Max. 7 360 W switching capacity per phase

LA724I HP power output module

- 12 power output channels 230 V/400 V each (4 outputs per phase)
- Max. 2 300 W/4 000 W switching capacity per output
- Max. 9 200 W switching capacity per phase with wye connection and max. 16 000 W switching capacity with delta connection

LA724I SSR power output module

24 channels with one digital control signal of 24 V (8 outputs per phase)

Forced ventilation

LA724I and LA724I HP power output modules

Depending on the switching capacity and ambient temperature, these power output modules may have to be force-ventilated. For this purpose, a fan module is available as an option, see page 15/79.

For detailed information see the operating instructions "SIPLUS HCS724I Heating Control System", http://support.automation.siemens.com/WW/view/en/55336534.

Temperature monitoring

LA724I and LA724I HP power output modules

There is an NTC thermistor on the heat sink for monitoring its temperature. This temperature-dependent resistance sends a signal at 92 °C ± 3 °C to SIMATIC S7-300. A second switching threshold at 100 °C ± 3 °C switches off the power outputs of the module.

Supply voltage monitoring

LA724I SSR power output module

- The connected 24 V DC supply is monitored for failure. In case of failure, the outputs to the solid-state relay (SSR) are shut down.
- The drivers of the control outputs are monitored for correct functioning.

Fuses

LA724I power output module

- For each power output, there is a 5 A fuse in one of the fuse holders accessible from the front for protecting the power triacs, as well as a 32 A fuse per phase for limiting the phase current.

LA724I HP power output module

- For each power output, there is a 10 A fuse in a fuse holder accessible from the front for protecting the power triacs, as well as a 40 A fuse per phase for limiting the phase current.

LA716I SSR power output module

Protection for each channel is to be provided externally.

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Diagnostic option

LA724I and LA724I HP power output modules

Standard diagnostics are provided for detecting the following faults:

- Internal fuse defective or triac at high-resistance
- Triac failed
- External faults such as a blown fuse, broken heat emitter or broken cable

If several heat emitters are connected to one output in parallel, failure of an individual heat emitter is detected by means of extended diagnostics.

LA724I SSR power output module

As an alternative, two different diagnostics methods are possible:

- Through diagnostics of the voltages from the load circuit, the following faults can be detected:
  - Solid-state relay (SSR) cannot be switched, infeed to SSR interrupted or external channel fuse dropped
  - Solid-state relay (SSR) cannot be switched, broken emitters or broken conductors
- Through diagnosis via the external current measuring module (see page 15/80) the following faults can also be detected (these diagnostics are recommended for fault detection on parallel switched emitters):
  - Rated power on the channel is overshot
  - Rated power on the channel is undershot

Technical specifications

Type		6BK1700-2BA00-0AA0	6BK1700-4BA70-0AA0	6BK1700-2BA10-0AA0
Product designation		Power output modules		
		LA724I	LA724I HP	LA724I SSR
General data				
Type of control of heat emitters		Half-wave control		--
Type of load		Resistive load		Solid-state relay (SSR)
Supply voltage				
Type of voltage of the supply voltage		AC		
Supply voltage at AC, rated value	V	230	400	
• Relative negative tolerance of the supply voltage	%	18		
• Relative positive tolerance of the supply voltage	%	15		
Supply voltage frequency				
• Rated value 1	Hz	50		--
• Rated value 2	Hz	60		--
• Relative symmetrical tolerance of the supply voltage frequency	%	5		--
Current switching capacity				
• Per busbar a maximum of	A	120		
• Per phase a maximum of	A	32	40	--
Type of electrical isolation		Optocoupler between main circuit and SELV/PELV		
Power carrying capacity of the module				
• For delta connection at 40 °C				
- With fan maximum	kW	--	36.5	--
- Without fan maximum	kW	--	22.6	--
• With wye connection at 40 °C				
- With fan maximum	kW	22	21	--
- Without fan maximum	kW	14.4	13	--
Maximum permissible power carrying capacity	kW	22	48	--
Type of electrical connection for supply voltage		Busbars or ring terminal lugs		
Power electronics				
Number of outputs for heating power		24	12	--
Number of heat emitters per output maximum		5		--
Output voltage				
• With wye connection	V	230		--
• With delta connection	V	--	400	--
Version of the overvoltage protection		Transil diodes		--
Power carrying capacity				
• Per output	W	75 … 1 150	75 … 4 000	--
Output current at the output for heating power, rated value	A	5	10	--
Type of short-circuit protection for heating power per output		5 A melting fuse	16 A melting fuse	--
Electrical separation between the outputs		No		--
Type of electrical connection at output for heater		8-pole socket connector		--
Type of connectable conductor cross-sections for heating				
• Solid	mm^2	1 x (0.2 ... 1.5)		--
• Finely stranded with end sleeve	mm^2	1 x (0.2 ... 1.5)		--
• Finely stranded for AWG cables	AWG	28 … 16		--

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SIPLUS HCS724I heating control system: Power output modules

Type		6BK1700-2BA00-0AA0	6BK1700-4BA70-0AA0	6BK1700-2BA10-0AA0
Product designation		Power output modules		
		LA724I	LA724I HP	LA724I SSR
Digital outputs				
Supply voltage at DC				
• Rated value	V	--		20.4 … 28.8
Type of electrical connection for supply voltage		--		2-pole plug
Type of connectable conductor cross-sections for supply voltage				
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded for AWG cables	AWG	--		28 … 14
Number of semiconductor outputs		--		24
Type of the switching output		--		Semiconductor output (high side switch)
Type of voltage for the output voltages		--		DC
Output voltage for DC, rated value	V	--		24
Output voltage	V	--		18.4 … 28.8
Output current at digital output when signal <1> max.	A	--		0.05
Electrical isolation between outputs and system interface		--		No
Switching performance		--		Monostable
Property of the output short-circuit-proof		--		Yes
Type of electrical connection on the digital outputs		--		8-pole plug
Type of connectable conductor cross-sections on the digital outputs				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded for AWG cables	AWG	--		28 … 14
Measuring inputs for current				
Type of electrical connection on the measuring inputs for current		Internal		Externally by 6-pole connector for current measuring module
Type of connectable conductor cross-sections on the measuring inputs for current				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded for AWG cables	AWG	--		28 … 14
Measuring inputs for voltage				
Diagnostics voltage				
• With wye connection of rated value	V	--		230
• Rated value with delta connection	V	--		400
Type of electrical connection on the measuring inputs for voltage		--		8-pole socket connector
Type of connectable conductor cross-sections on the measuring inputs for voltage				
• Solid	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded with end sleeve	mm^2	--		1 x (0.2 ... 1.5)
• Finely stranded for AWG cables	AWG	--		28 … 16
Displays				
Number of status displays		4		
Type of status displays using LEDs		• 1 LED green = status indicator • 3 LED red = fault indicator per phase		
Auxiliary circuit				
Design of the power supply		Power supply via central interface		
Monitoring functions				
Product function temperature monitoring		Yes		--
Type of temperature monitoring		NTC thermistors		--
Diagnostics function		Voltage and power diagnostics		
• Blown fuse		Yes		
• Open circuit		Yes		
• Heat emitter break		Yes		
Dimensions				
• Width	mm	50		
• Height	mm	480		
• Depth	mm	210		

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Selection and ordering data

	Number of outputs for heating power	Number of semiconductor outputs	Power carrying capacity per output Max. W	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LA724I power output module									
6BK1700-2BA00-0AA0	24	--	1 150	C	**6BK1700-2BA00-0AA0**		1	1 unit	477
LA724I HP power output module									
6BK1700-4BA70-0AA0	12	--	4 000	C	**6BK1700-4BA70-0AA0**		1	1 unit	477
LA724I SSR power output module									
6BK1700-2BA10-0AA0	--	24	--	X	**6BK1700-2BA10-0AA0**		1	1 unit	477

Accessories

Version	For power output module	Type
Mating connectors		
• For connection of the heat emitters (3 units required per power output module)	LA724I, LA724I HP	40018384
• For the 24 V DC supply	LA724I SSR	A5E00210675
• For connection of the solid state relay (SSR) (3 units required per power output module)	LA724I SSR	A5E00043661
• For connection of the current measuring module	LA724I SSR	A5E00210670
• For voltage diagnostics (3 units required for each power output module)	LA724I SSR	41818384
Fuse		
• 5 A quick/250 V	LA724I	200021116
• 16 A slow/500 V	LA724I HP	A5E01204540

Recommendation for solid-state relay (SSR) to be used

SIRIUS SC solid-state relays/contactors
e.g. 3RF2350-1AA02:
Solid-state contactor 50 A,
40 °C,
control voltage 24 V,
screw terminals

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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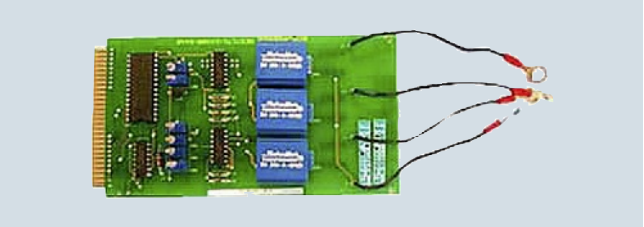
SIPLUS HCS724I heating control system: Line-voltage sensing module

Overview



Line-voltage sensing module

The line-voltage sensing module is an optional module for mains voltage sensing and correction.

The line-voltage sensing module is inserted from the front into the enclosure of the central interface module. The slot is located in the busbar area. If the line-voltage sensing module is not used, the opening is sealed with the busbar cover. When the line-voltage sensing function is used, the cover provides touch protection.

Design

- Connection of the phases L1, L2, L3 and of the neutral conductor via cable with Teflon insulation
- Printed circuit-boards terminals for central connection

Function

Line-voltage compensation

This function is required, if output power is to be automatically corrected in strongly fluctuating networks.

To implement this function, a line-voltage sensing module must be plugged in to at least one central interface module in a network of several HCS724I heating control system.

The correction factors are calculated and transmitted to the PROFIBUS DP master. The DP master then distributes these values to all HCS724I DP slaves.

Voltage measuring for advanced diagnostics

In order to measure the voltage values for advanced diagnostics, a line-voltage sensing module is required for each central interface.

The measured voltage value is used for fault detection for parallel switched emitters.

Note:

The central interface is only delivered ex works without a line-voltage sensing module. If you want to compensate for line-voltage fluctuations, you must order both modules (line-voltage sensing module and central interface module) and connect them together on site.

Technical specifications

Type		6ES7171-1XX00-6AA0
Supply voltage		
Design of the power supply		Power supply via central interface
Measuring inputs for current		
Product function current measurement		No
Measuring inputs for voltage		
Product function voltage measuring		Yes
Operational voltage		
• At 50 Hz at AC	V	187 … 264
• At 60 Hz at AC	V	187 … 264
• Relative measuring accuracy relative to the measured voltage value	%	3
Operating frequency	Hz	50 … 60
Type of electrical connection on the measuring inputs for voltage		M6 ring terminal lug
Dimensions		
• Width	mm	86
• Height	mm	22
• Depth	mm	160

Selection and ordering data

	Supply voltage at AC rated value	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V						
Line-voltage sensing module[1]							
6ES7171-1XX00-6AA0	230	C	**6ES7171-1XX00-6AA0**		1	1 unit	477

[1] Inserted in the central interface module.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIPLUS HCS724I heating control system: Fan module

Overview

Fan module for installation underneath two power output modules

The fan module is available for reliable heat dissipation of the LA724I and LA724I HP power output modules. The fan module is a standard fan in an IP00 enclosure.

The fan module can be connected to

- 2 LA724I or LA724I HP power output modules

or

- 1 central interface module and 1 LA724I or LA724I HP power output module

Technical specifications

Type		6ES7171-3AA00-0AA0
Supply voltage		
Supply voltage at AC, rated value	V	230
• Relative negative tolerance of the supply voltage	%	18
• Relative positive tolerance of the supply voltage	%	15
Supply voltage frequency		
• Rated value 1	Hz	50
• Rated value 2	Hz	60
• Relative symmetrical tolerance of the supply voltage frequency	%	5
Active power input	W	6
Type of electrical connection for supply voltage		Terminal 2-pole
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2	1 x (0.2 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.25 ... 2.5)
• Finely stranded for AWG cables	AWG	24 ... 12
Dimensions		
• Width	mm	100
• Height	mm	50
• Depth	mm	162

Selection and ordering data

	Supply voltage at AC Rated value	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V						
Fan module[1]							
6ES7171-3AA00-0AA0	230	D	**6ES7171-3AA00-0AA0**		1	1 unit	477

[1] Mounted below two LA724I / LA724I HP power output modules in each case.

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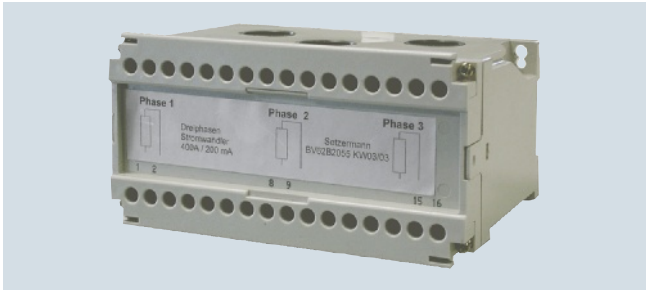
SIPLUS HCS724I heating control system: Current measuring module

Overview



Current measuring module

The current measuring module is an optional module for diagnostics-based current measurement when connected to the LA724I SSR power output module.

The module is required when heat emitters are connected in parallel and failure of a single heat emitter is to be detected using a current measurement.

It is mounted in the control cabinet on a sturdy mounting surface (recommended) or on a standard mounting rail.

Technical specifications

Type		6BK1700-2BA40-0AA0
Measuring inputs for current		
Product function current measurement		Yes
Current measuring range	A	1 ... 400
• Relative measuring accuracy relative to the measured current value	%	1
Operating frequency		
• Rated value 1	Hz	50
• Rated value 2	Hz	60
Type of electrical connection for the main circuit		Straight-through transformers
Diameter of the feed-through opening	m	22
Dimensions		
• Width	mm	150
• Height	mm	77.5
• Depth	mm	115

Selection and ordering data

	Current measuring range	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A						
Current measuring module							
6BK1700-2BA40-0AA0	1 ... 400	C	**6BK1700-2BA40-0AA0**		1	1 unit	477

Accessories

Version	Type
Mating connectors for connection of the current measuring module to the LA724I SSR power output module	A5E00210670

Note on the cable to be used between the LA724I SSR power output module and the current measuring module

It is recommended that a 3 x 2-core cable is used with a cross-section of 0.75 mm^2 whose cores are twisted together in pairs. It is not necessary to use a shielded cable.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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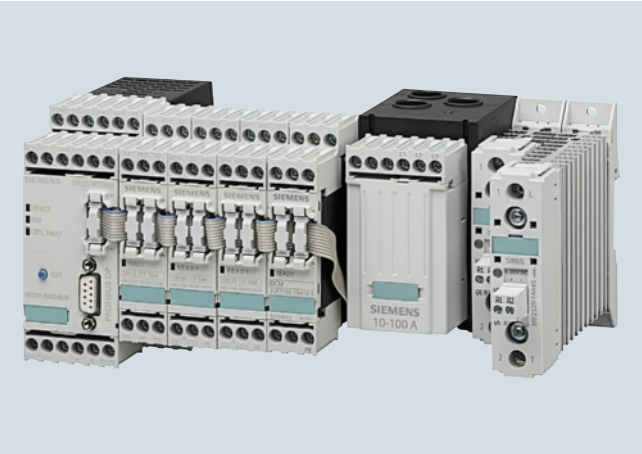
Overview

Variable output power by indirect control of electrical heating elements, e.g. via solid-state contactors. User-friendly control is possible by means of the TCP 3000 temperature control software.

SIPLUS HCS300I heating controller: General data

Overview



SIPLUS HCS300I heating controller

SIPLUS HCS300I is an industrial heating controller which uses solid-state relays (SSR) or contactors to control resistive loads. SIPLUS HCS300I was developed on the basis of the SIMOCODE system.

Benefits

- Easy control of SIRIUS solid-state relays (SSR) using preassembled cables
- Reduced wiring outlay thanks to distributed application
- User-friendly TCP 3000 control software available

Application

SIPLUS HCS300I is an industrial heating controller, e.g. for extruders and injection molding machines.

Design

SIPLUS HCS300I can be adapted to your special application by using various modules:

- The basic unit handles the central functions and communicates with the higher-level automation system.
- Digital modules expand the SIPLUS HCS300I heating control system with additional digital outputs via which solid-state relays (SSR) or contactors are switched.
- Temperature modules process analog temperature values supplied by the temperature sensors of your plant.
- The current measuring module measures the load currents, the current/voltage measuring module measures the load currents and the voltages of the heating or cooling devices, and delivers the measured values to the basic unit.

The SIPLUS HCS300I is designed for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing using additional push-in lugs.

If your application requires more than 16 temperature measuring channels or 24 digital outputs, a second SIPLUS HCS300I basic unit can be connected to the higher-level automation system. Another 16 temperature measuring channels or 24 digital outputs are then available.

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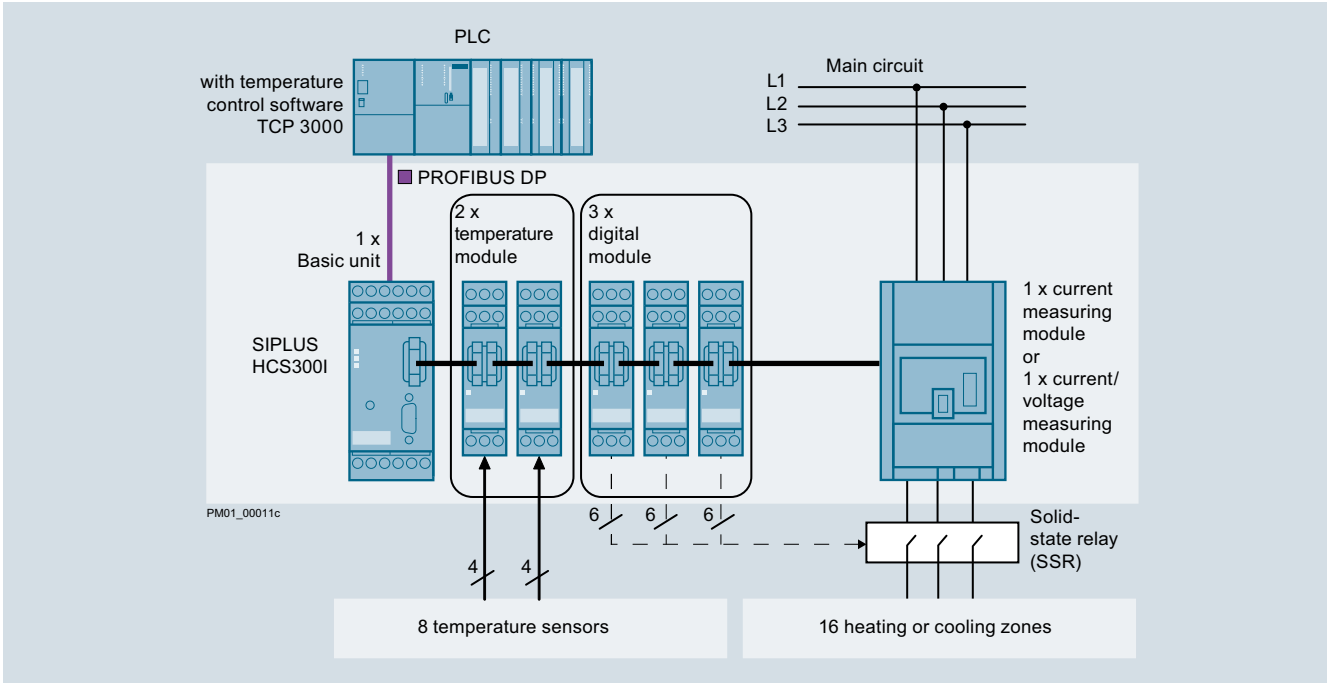
SIPLUS HCS300I heating controller: General data

Integration



Application example SIPLUS HCS300I

Technical specifications

Type		6BK1700-3BA20-0AA0	6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0	6BK1700-4BA60-0AA0	6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0	6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0	6BK1700-4BA40-0AA0
Product designation		Basic unit	Digital modules version		Temperature module	Current measuring modules			Current/voltage measuring modules			Decoupling module
			1	2		2.4 ... 25 A	10 ... 100 A	20 ... 200 A	2.4 ... 25 A	10 ... 100 A	20 ... 200 A	
General data												
Reference designations												
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		F										
• According to IEC 61346-2		F										
• According to IEC 81346-2		F										
Pollution degree		2										
Approvals/Certificates												
Certificate of suitability		CE, cULus, c-tick										
Communications												
Interface version		PROFIBUS DP	System interface									
Mechanical features												
Mounting position		Any										
Type of mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw fixing with additional push-in lug										
Shock resistance according to IEC 60068-2-27		15*g*/11 ms										
Vibration resistance during operation according to IEC 60068-2-6		5 ... 500 Hz/3.5 mm amplitude, 1 *g*, 10 cycles, 1 octaves/min										
Dimensions												
• Width	mm	45	22.5	22.5	45	55	120	45	55	120	22.5	
• Height	mm	106	92	102	84	94	95	85	94	95	92	
• Depth	mm	115			45	72	145	71	97	145	115	

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Type	6BK1700-3BA20-0AA0	6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0	6BK1700-4BA60-0AA0	6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0	6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0	6BK1700-4BA40-0AA0
Product designation	Basic unit	Digital modules version 1	Digital modules version 2	Temperature module	Current measuring modules 2.4 ... 25 A	Current measuring modules 10 ... 100 A	Current measuring modules 20 ... 200 A	Current/voltage measuring modules 2.4 ... 25 A	Current/voltage measuring modules 10 ... 100 A	Current/voltage measuring modules 20 ... 200 A	Decoupling module
Electromagnetic compatibility											
Conducted interference injection BURST according to IEC 61000-4-4	2 kV power supply cables/1 kV signal cables										
Conducted interference injection SURGE according to IEC 61000-4-5	• On supply cables: - 1 kV symmetrical - 2 kV asymmetrical • On signal cables - > 30 m unshielded: 1 kV symmetrical, 2 kV asymmetrical - > 30 m shielded: 2 kV asymmetrical	• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On signal cables - > 30 m unshielded: 0.5 kV symmetrical, 1 kV asymmetrical			• On supply cables - 1 kV symmetrical - 2 kV asymmetrical • On signal cables: - > 30 m unshielded: 1 kV symmetrical, 2 kV asymmetrical - > 30 m shielded: 2 kV asymmetrical						
Conducted interference injection as high-frequency interference according to IEC 61000-4-6	10 V (0.15 ... 80 MHz)										
Electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge/ 8 kV air discharge	4 kV contact discharge/ 8 kV air discharge			6 kV contact discharge/ 8 kV air discharge						
Field-related interference according to IEC 61000-4-3	10 V/m (80 ... 1 000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)										
EMC emitted interference	IEC 61131: Class A; conducted and radiated interference: EN 55011/CISPR11 (corresponds to degree of severity A)										
Overvoltage category	--				III						--
Climatic ambient conditions											
Ambient temperature											
• During operation °C	-25 … +60										
• During storage °C	-40 … +80										
• During transport °C	-40 … +80										
Air pressure											
• During operation hPa	795 … 1 080										
• During storage hPa	660 … 1 080										
Installation altitude at height above sea level maximum m	2 000										

More information

For more product details see system manual "SIPLUS HCS300I heating controller", http://support.automation.siemens.com/WW/view/en/54439691.

For more information see Industry Mall or www.siemens.com/siplus-hcs.

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SIPLUS HCS300I heating controller: Basic unit

Overview

Basic unit

The basic unit handles the central functions of the SIPLUS HCS300I heating controller and communicates with the higher-level automation system.

Benefits

- Three digital relay outputs for switching ohmic loads
- Communication with the higher-level automation system over PROFIBUS DP
- Local control of the system
- Four digital inputs for detecting external signals

Technical specifications

Type		6BK1700-3BA20-0AA0
General data		
Switchgears connectable		Max. • 4 digital modules and 4 temperature modules • 1 current measuring module or 1 current/voltage measuring module • 1 decoupling module
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1 at DC, rated value	V	24
• Relative negative tolerance of the supply voltage	%	15
• Relative positive tolerance of the supply voltage	%	20
Active power input	W	7
Type of electrical connection for supply voltage		Screw terminals
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)
Digital inputs		
Number of digital inputs		4
Type of electrical connection on the digital inputs		Screw-type connection with removable terminal
Type of connectable conductor cross-sections on the digital inputs		
• Solid	mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14), 2 x (20 ... 16)

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Type		6BK1700-3BA20-0AA0
Digital outputs		
Type of voltage for the output voltages		DC
Supply voltage at DC		
• Rated value	V	24 … 125
Type of electrical connection for supply voltage		Screw-type connection with removable terminal
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)
Number of outputs as contacting switching element		3
Output voltage	V	24 … 125
Output current at digital output when signal <1>	A	2
Switching performance		Monostable
Type of the switching output		Monostable relays
Electrical isolation between outputs and system interface		Yes
Property of the output short-circuit-proof		No
Type of electrical connection on the digital outputs		Screw-type connection with removable terminal
Type of connectable conductor cross-sections on the digital outputs		
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)
Communications		
Protocol is supported PROFIBUS DP protocol		Yes
Transmission rate for PROFIBUS DP maximum	Mbit/s	12
Type of electrical connection of the PROFIBUS interface		9-pin sub D socket
Displays		
Number of status displays		3
Type of sstatus displays using LEDs		• Device: 4 states • BUS: 2 states • GEN.FAULT: 2 states
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	115

Selection and ordering data

	Supply voltage 1 at DC, rated value	Switching devices connectable	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Basic unit								
6BK1700-3BA20-0AA0	24	Max. • 4 digital modules and 4 temperature modules • 1 current measuring module or 1 current/voltage measuring module • 1 decoupling module	C	**6BK1700-3BA20-0AA0**		1	1 unit	477

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIPLUS HCS300I heating controller: Digital modules

Overview

Digital modules

The digital modules expand the SIPLUS HCS300I heating controller with additional digital outputs via which solid-state relays (SSR) or contactors are switched.

Benefits

- Six digital 24 V DC outputs in the form of "high-side" switches
- Up to four digital modules can be connected to a basic unit
- Up to 24 digital output signals (with four digital modules) can be switched to loads of up to 500 mA
- Control of the digital outputs by means of a higher-level automation system that communicates with the SIPLUS HCS300I basic unit via PROFIBUS DP
- Easy control of solid-state relays (SSR) possible using preassembled cables

Technical specifications

Type		6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0
		Version 1	Version 2
Digital outputs			
Supply voltage at DC, rated value	V	20.4 … 28.8	
Type of electrical connection for supply voltage		Screw-type connection with removable terminal	
Type of connectable conductor cross-sections for supply voltage			
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)	
Number of semiconductor outputs		6	
Type of the switching output		Semiconductor output (high side switch)	
Type of voltage for the output voltages		DC	
Output voltage for DC rated value	V	24	
Output voltage	V	19.4 … 28.8	
Output current at digital output when signal <1> max.	mA	500	
Switching frequency of the outputs for resistive load max.	Hz	50	
• Note		For a digital module 50 Hz; for maximum configuration of at least 20 Hz	
Electrical isolation between outputs and system interface		No	
Switching performance		Monostable	
Property of the output short-circuit-proof		Yes	
Product function control for solid-state-relay via assembled connecting cable		Yes	
Type of electrical connection for auxiliary and control circuits		Screw terminals	
Type of electrical connection on the digital outputs		Screw terminal with removable terminal, cable assembly	Screw terminal with removable terminal
Type of connectable conductor cross-sections on the digital outputs			
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)	

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Type		6BK1700-2BA80-0AA0	6BK1700-4BA50-0AA0
		Version 1	Version 2
Displays			
Number of status displays		1	
Type of as status displays using LEDs		• Continuous light: Ready • Flashing light: No connection to the basic unit	
Auxiliary circuit			
Design of the power supply		Supply through basic unit	
Dimensions			
• Width	mm	22.5	
• Height	mm	92	
• Depth	mm	115	

Selection and ordering data

Version	Type of electrical connection on the digital outputs	Output current at digital output when signal <1> max.	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mA						
Digital modules								
Version 1	Screw terminal with removable terminal, cable assembly	500	C	**6BK1700-2BA80-0AA0**		1	1 unit	477
Version 2	Screw terminal with removable terminal	500	C	**6BK1700-4BA50-0AA0**		1	1 unit	477

6BK1700-.BA.0-0AA0

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SIPLUS HCS300I heating controller: Temperature modules

Overview

Temperature module

Temperature modules process analog temperature values supplied by a plant's temperature sensors.

Benefits

- Up to four analog sensor measuring circuits in 2-wire technology or two analog sensor measuring circuits in 4-wire technology
- Up to four temperature modules per basic unit which can detect up to 16 analog temperature values
- The compensation method for measurements with thermo-couples can be set to one of the following:
  - No compensation
  - Internal compensation
  - External compensation
  - Compensation via the higher-level automation system
- Resolution of temperature values to one decimal point
- Automatic calibration on powering up assures high measuring accuracy
- Different sensor types are supported for use in solid, liquid, or gaseous media: Pt100; Pt1000; TC type J, K, L

Technical specifications

Type		6BK1700-4BA60-0AA0
Analog channels		
Product component input for analog temperature sensor		Yes
Type of connection method		2- and 4-conductor technology
Number of analog inputs		
• For 2-wire system		4
• For 4-wire system		2
Physical measurement principle		Sigma-Delta Modulation
Measurement accuracy		Typical ± 1 K, Pt100 up to max. ± 1.3 K
A/D conversion time at analog input	ms	600
Typical sensor circuit	µA	210
Electrical separation between the channels		No
Impulse withstand voltage of the outputs, max.	V	15
Typical temperature drift per °C	%/°C	0.00115
Offset temperature per K, max.	K/K	0.1
Type of electrical connection for temperature sensors		Screw-type connection with removable terminal
Type of connectable conductor cross-sections for temperature sensors		
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)
Sensors that can be connected		
Temperature measuring range		
• According to IEC 60751		
- At pt100	°C	0 … 400
- At pt1000	°C	0 … 400
• With thermoelement		
- Type J	°C	0 … 400
- Type K	°C	0 … 400
- Type L	°C	0 … 400
Digital outputs		
Electrical isolation between outputs and system interface		Yes

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Type		6BK1700-4BA60-0AA0
Displays		
Number of status displays		3
Type of status displays using LEDs		• Continuous light: Ready • Flashing light: No connection to the basic unit
Auxiliary circuit		
Design of the power supply		Supply through basic unit
Monitoring functions		
Diagnostics function open circuit		Yes
Dimensions		
• Width	mm	22.5
• Height	mm	102
• Depth	mm	115

Selection and ordering data

Number of analog inputs For 2-wire system	For 4-wire system	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Temperature modules							
4	2	C	**6BK1700-4BA60-0AA0**		1	1 unit	477

6BK1700-4BA60-0AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIPLUS HCS300I heating controller: Current measuring modules

Overview

Current measuring module

The current measuring module measures the load currents of the heating or cooling devices, and delivers the values to the basic unit.

The module must be selected according to the expected maximum current of all connected loads.

There are three different versions:

- Current measuring modules 2.4 A to 25 A
- Current measuring modules 10 A to 100 A
- Current measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A

Technical specifications

Type		6BK1700-3BA30-0AA0	6BK1700-3BA40-0AA0	6BK1700-3BA50-0AA0
Product designation		Current measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
General data				
Can be connected to		• Basic unit • Expansion modules (digital module or temperature module) • Decoupling module		
Measuring inputs for current				
Product function current measurement		Yes		
Current measuring range	A	2.4 … 25	10 … 100	20 … 200
• Relative measuring accuracy relative to the measured current value	%	3		
Adjustable current response value	A	2.4 … 25	10 … 100	20 … 200
Operating frequency				
• Rated value 1	Hz	50		
• Rated value 2	Hz	60		
Design of the power supply		Supply through basic unit		
Type of electrical connection for the main circuit		Straight-through transformers		
Auxiliary circuit				
Diameter of the feed-through opening	mm	7.5	14	25
Dimensions				
• Width	mm	45	55	120
• Height	mm	84	94	95
• Depth	mm	45	72	145

Selection and ordering data

	Current measuring range	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A						
Current measuring modules							
	2.4 ... 25	C	**6BK1700-3BA30-0AA0**		1	1 unit	477
	10 ... 100	C	**6BK1700-3BA40-0AA0**		1	1 unit	477
	20 ... 200	C	**6BK1700-3BA50-0AA0**		1	1 unit	477

6BK1700-3BA.0-0AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Current/voltage measuring modules

In addition to measuring the load currents, the current/voltage measuring module can also be used to measure phase voltages in a single or three-phase system.

There are three different versions:

- Current/voltage measuring modules 2.4 A to 25 A
- Current/voltage measuring modules 10 A to 100 A
- Current/voltage measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A
- Measurement of phase voltages up to 400 V (e.g. UL1) or phase-to-phase voltages up to 690 V (e.g. UL1-UL2)
- Measurement in three-phase current systems or single-phase AC systems

Technical specifications

Type		6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0
Product designation		Current/voltage measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
General data				
Can be connected to		• Basic unit • Expansion modules (digital module or temperature module) • Decoupling module		
Measuring inputs for current				
Product function current measurement		Yes		
Current measuring range	A	2.4 … 25	10 … 100	20 … 200
• Relative measuring accuracy relative to the measured current value	%	3		
Operating frequency				
• Rated value 1 • Rated value 2	Hz Hz	50 60		
Type of electrical connection for the main circuit		Straight-through transformers		
Diameter of the feed-through opening	mm	7.5	14	25
Measuring inputs for voltage				
Product function voltage measuring		Yes		
Operational voltage				
• at 50 Hz at AC • at 60 Hz at AC	V V	110 … 690 110 … 690		
Relative measuring accuracy relative to the measured voltage value	%	3		
Operating frequency	Hz	50 … 60		
Type of electrical connection on the measuring inputs for voltage		Screw-type connection with removable terminal		
Type of connectable conductor cross-sections on the measuring inputs for voltage				
• Solid	mm^2 mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		
• Finely stranded for AWG cables	AWG AWG	1 x (20 ... 14), 2 x (20 ... 16)		

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SIPLUS HCS300I heating controller: Current/voltage measuring modules

Type		6BK1700-3BA60-0AA0	6BK1700-3BA70-0AA0	6BK1700-3BA80-0AA0
Product designation		Current/voltage measuring modules		
		2.4 ... 25 A	10 ... 100 A	20 ... 200 A
Auxiliary circuit				
Design of the power supply		Supply through basic unit		
Dimensions				
• Width	mm	45	55	120
• Height	mm	85	94	95
• Depth	mm	71	97	145

Selection and ordering data

	Current measuring range	Operating frequency	Operational voltage At 50 Hz At AC	Operational voltage At 60 Hz At AC	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	Hz	V	V						
Current/voltage measuring modules										
	2.4 ... 25	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA60-0AA0**		1	1 unit	477
	10 ... 100	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA70-0AA0**		1	1 unit	477
	20 ... 200	50 ... 60	110 ... 690	110 ... 690	C	**6BK1700-3BA80-0AA0**		1	1 unit	477

6BK1700-3BA.0-0AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Decoupling module

A decoupling module must be used:

- When using a current/voltage measuring module, if the supply system is not grounded.
- When using a current measuring module or a current/voltage measuring module when the system bus has reached its maximum current consumption.

If a mixed configuration is planned with temperature module, digital module and current measuring module or current/voltage measuring module, it must be checked first whether a decoupling module is required.

If

(number (temperature module) * 2 + number (digital module) * 1 + number (current measuring module or current/voltage measuring module) * 4) > 14,

a decoupling module will be needed.

Example calculation see system manual "SIPLUS HCS300I heating controller", http://support.automation.siemens.com/WW/view/en/54439691.

Note:

For this equation, each module type is weighted with a specific current factor, see table

Module	Current factor
Temperature modules	2
Digital modules	1
Current measuring module, current/voltage measuring module	4

Benefits

- Electrical separation of the current/voltage measuring module from the previous expansion modules (digital module, temperature module) or a basic unit
- Power supply for a current measuring module or a current/voltage measuring module when the system bus has reached its maximum current consumption

Technical specifications

Type		6BK1700-3BA60-0AA0
Supply voltage		
Type of electrical connection for supply voltage		Screw terminals
Type of connectable conductor cross-sections for supply voltage		
• Solid	mm²	1 x (0.5 ... 4),
	mm²	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm²	1 x (0.5 ... 2.5),
	mm²	2 x (0.5 ... 1.5)
• Finely stranded for AWG cables	AWG	1 x (20 ... 14),
	AWG	2 x (20 ... 16)

Type		6BK1700-3BA60-0AA0
Displays		
Number of status displays		1
Type of status displays using LEDs		Continuous light: Ready
Auxiliary circuit		
Design of the power supply		Supply through basic unit
Dimensions		
• Width	mm	22.5
• Height	mm	92
• Depth	mm	115

Selection and ordering data

	Interface version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Decoupling modules							
6BK17004BA40-0AA0	System interface	C	**6BK1700-4BA40-0AA0**		1	1 unit	477

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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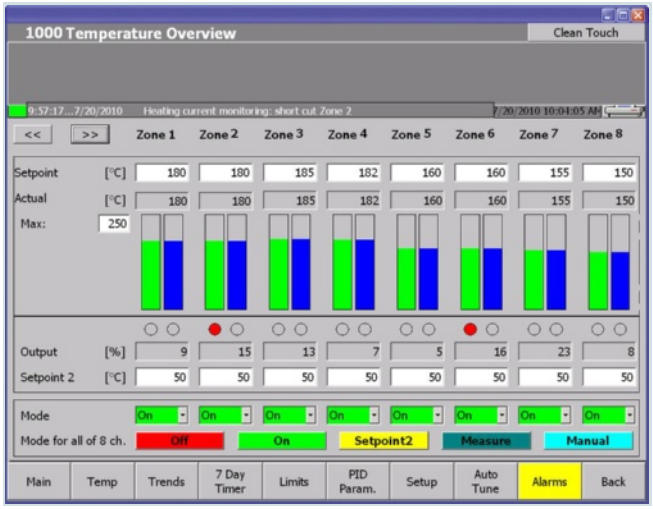
SIPLUS HCS300I heating controller: TCP 3000 temperature control software (optional)

Overview



TCP 3000 temperature control software

In order to control SIPLUS HCS300I from the higher-level automation level, a suitable automation system such as a programmable logic controller (PLC) is required. Together with the TCP 3000 temperature control software the result is a powerful automation solution for controlling heating or cooling units.

The following licenses can be purchased optionally for the TCP 3000 temperature control software:

- Initial license TCP 3000
  Type A4027462-A0443
- Runtime license TCP 3000
  Type A4027462-A0444

More information

For more information, please contact your Siemens sales office.

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Overview

For elevators
- Passenger elevators
- Freight elevators
- Rising doors and rolling shutters

For rail applications
- Interior railway doors
- Platform screen doors

For industrial applications
- Cold room doors / gates
- Protective machine doors / gates
- Machine tool doors

Automatic door controllers

Design

SIDOOR automatic door control systems

Door control system is the general term for a controller of access systems.

The SIDOOR product family is primarily intended for the operation of sliding doors, whereby these doors can be operated both horizontally and vertically.

Door control systems are characterized by the fact that there are always two defined states for the open and closed position of the door.

The door is always controlled, regulated and operated between these positions according to the guidelines of the respective application.

In a defined learn run via "1-button operation", the door system independently determines the values for the door width, the dynamic door weight and the drive direction of the geared motor and stores these data in a non-volatile memory.

The optimum travel behavior at the door is automatically calculated and consistently adhered to.

The travel curve transitions are rounded off so that the door movement is smooth and jerk-free.

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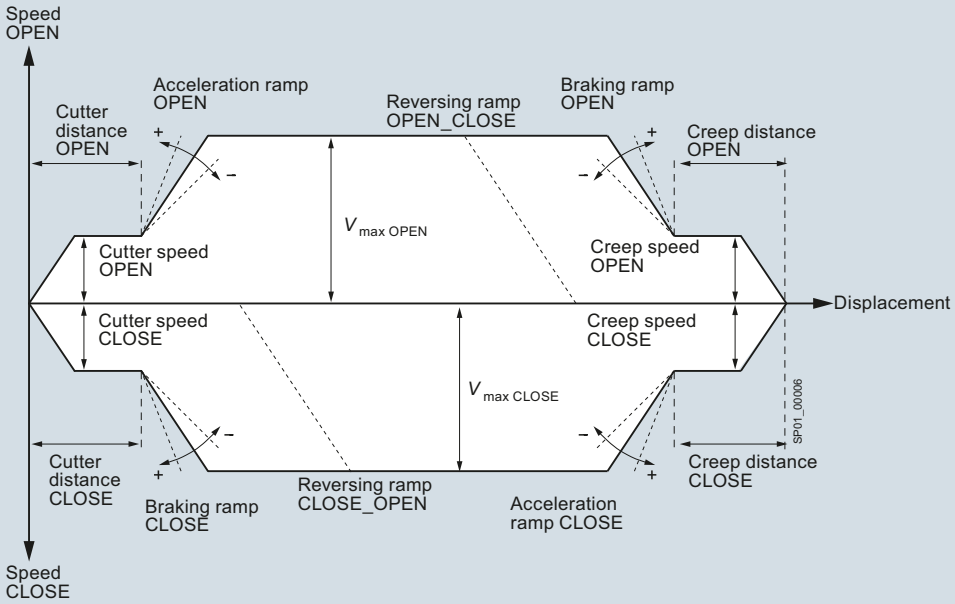
General data



Creep speed	Reduced speed in the vicinity of the OPEN position of the elevator door (creep distance)
Cutter speed	Reduced speed in the vicinity of the CLOSED position of the elevator door (cutter distance)
Creep distance	Range of door travel in the vicinity of the OPEN position
Cutter distance	Range of door travel in the vicinity of the CLOSED position
V_{max}	Maximum permissible door speed

Reversing ramp OPEN_CLOSE	Travel reverses from the OPEN to the CLOSE direction
Reversing ramp CLOSE_OPEN	Travel reverses from the CLOSE to the OPEN direction

Note:
When reversing from the open to the close direction, the door is braked with the reversing ramp OPEN_CLOSE, and starts the closing movement with the acceleration ramp CLOSE.

Travel curve

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Overview

For elevators
- Passenger elevators
- Freight elevators
- Rising doors and rolling shutters

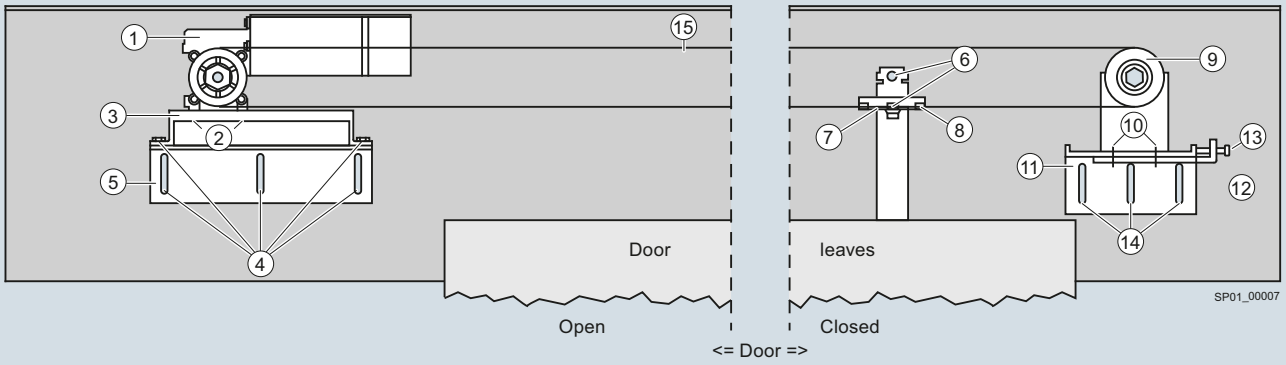
Automatic door controllers for elevators

Overview

The product-specific property of elevator door controllers is based on the fact that the closing weights/closing springs integrated in the shaft doors are also taken into account.

These weights/springs are integrated in the shaft doors so that open doors close automatically if the cabin is not at the relevant floor.

The elevator door drive also serves to move the doors in their opening direction and supports their closing movement.



Complete motor mounting
1. Geared motor
2. 4 x locking hexagonal safety bolts M5 x 10
3. Rubber-metal anti-vibration mount
4. 10 x locking hexagonal safety bolts M6 x 16
5. Mounting bracket for the motor mounting

Mounting material for door clutch holder
6. 2 x locking hexagonal safety bolts M6 x 12
7. Door clutch holder
8. Clamping plate

Deflector unit and clamping device
9. Deflector unit
10. 2 x locking hexagonal safety bolts M6 x 12
11. Mounting bracket for the deflector unit and tensioning device
12. Tensioning lug for the deflector unit and tensioning device
13. Tensioning screw M6 x 30
14. 10 x locking hexagonal safety bolts M6 x 16
15. Toothed belt (length 4 m)

Mounting suggestion for door control systems

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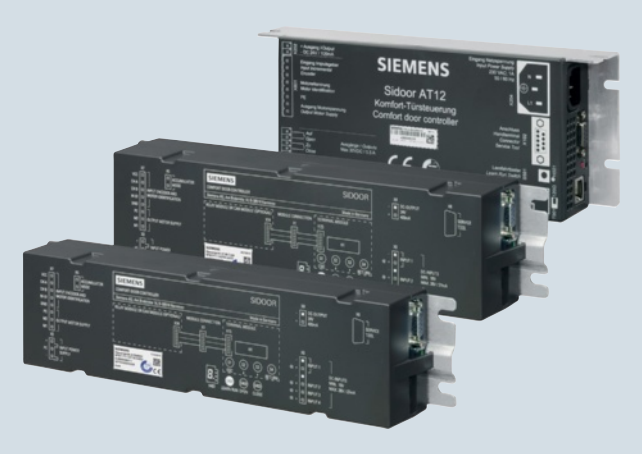
Control devices

Overview



Control devices SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V

SIDOOR control devices are electronic controllers that are connected to the power supply via an internal or external power supply unit and can operate one or more application-specific motors. They are generally connected to the higher-level controller via digital or serial interfaces and can be configured via a user interface.

More information

For an overview of elevator door control devices SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V see page 15/7.

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Control devices: SIDOOR AT12 elevator door drive

Overview

1. Line voltage connection
2. Connection
   - Service Tool or
   - Software Kit
3. Operating state LED
4. Learn run button
5. CANopen connection
6. Connection for input and output signals
7. Connection for motor
8. Connection for 24 V DC/120 mA output voltage

SIDOOR AT12 elevator door drive

SIDOOR AT12 – SIDOOR enables the quick, easy and flexible movement, installation and configuration of a wide range of elevator door systems.

- For dynamic door weights up to 120 kg
- 4 kg maximum counterweight
- Operating temperature 0 to +50 °C
- Opening width 0.3 to 2.4 m
- Integrated switch-mode power supply
- Auxiliary voltage output 24 V DC, 120 mA (short-circuit-proof)
- CANopen interface (integrated in the control device)
- Degree of protection IP20

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR user software (part of the Software Kit, not included in the scope of supply, see page 15/111) enables user-friendly operation and detailed diagnostics.
- Small footprint thanks to compact design
- Automated functions for enhanced safety

Application

The SIDOOR AT12 comfort elevator door drive is an intelligent door control system which enables the opening and closing of cabin and shaft doors at adjustable speeds and accelerations.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing. The SIDOOR M2 geared motor (24 V DC/1.8 A; motor for max. total door weight of 120 kg) must be ordered separately see page 15/115.

Operation of the door drive does not require a limit switch. The door width and the "OPEN" / "CLOSED" positions are determined automatically.

The current operating states are indicated via an LED with a flashing code integrated in the SIDOOR AT12 elevator door drive or externally via the Service Tool, see page 15/112.

Power transmission is via a toothed belt, which passes over a guide pulley and can be fitted with two door clutch holders. These accessories are not included in the scope of supply see page15/116 onward.

This enables it to drive both single-sided and centrally opening doors.

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Control devices: SIDOOR AT12 elevator door drive

Design

The SIDOOR AT12 elevator door drive system consists of several components:

Version	Type	Page
Control devices		
SIDOOR AT12 elevator door drive (with integrated switch-mode power supply)	**6FB1111-1AT20-1AT1**	15/101
The following individual components are ordered separately:		
Additional Units to enable the universal use and maintenance of the door drive system		
• Software Kit • Service Tool	**6FB1105-0AT01-6SW0** **6FB1105-0AT01-6ST0**	15/111 15/112
DC geared motors		
• SIDOOR M2 geared motor (max. door weight of 120 kg)	**6FB1103-0AT1.-5MA0**	15/115
Accessories for the complete system Also see overview diagram, page 15/97		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system - for the SIDOOR M2 geared motor	**6FB1104-0AT02-0AD0**	15/116
• Mounting bracket - for the SIDOOR M2 geared motor for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/117
- for the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/117
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/117
• Deflector unit for the toothed belt STS for attaching to the door system	**6FB1104-0AT03-0AS0**	15/117
• Toothed belt STS as connection between the door system and the final positions of the door		
- 4 m long - 45 m long	**6FB1104-0AT01-0AB0** **6FB1104-0AT02-0AB0**	15/117 15/117

Configuration

During initial commissioning, please note the following:

- For mechanical installation and configuration, see
  - "SIDOOR AT12 Elevator Door Drive" Manual, http://support.automation.siemens.com/WW/view/en/58497029
  - "SIDOOR AT12 Elevator Door Drive – Manufacturer-Specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/59004938
- Electrical configuration and commissioning:
  - Push the door into the "CLOSED" position
  - Plug in the motor connector
  - Plug in the power plug
  - Press and hold the learn run button
  - Switch on line voltage
  - The learn run starts automatically; the learn run button can be released when the door starts moving.
  - On completion of the learn run, the door is in the "CLOSED" position and the LED shows a steady green light.
  - Briefly press the learn run button to open the door fully.
  - Press the button again when the door is in its "OPEN" end position to fully close the door.

Programming

The Software Kit is available as an additional unit (see page 15/111) and allows quick and easy updating of the firmware using the Siemens HCS12 Firmware Loader.

User-friendly parameter setting and oscilloscope function is carried out via the SIDOOR User Software (part of the Software Kit).

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Technical specifications

Type		6FB1111-1AT20-1AT1
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	50 … 60
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	6 … 18
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	120
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
• Overload-proof		Yes
Switching capacity current of the output relay at 30 V		
• At DC	mA	10 … 500
Opening width of door	m	0.3 … 2.4

Type		6FB1111-1AT20-1AT1
Counterweight for M2 motor, max.	kg	4
Ambient temperature		
• During operation	°C	0 … 50
• During storage	°C	-20 … +85
IP degree of protection		IP20
Relative humidity		
• No condensation	%	--
Dimensions		
• Width	mm	260
• Height	mm	45
• Depth	mm	105
Standards		
Type of inspection TÜV prototype tested		Yes
Certificate of suitability		
• According to EN 81		Yes
• CE marking		Yes
Standard		
• For EMC		EN 12015/EN 12016
• For safety		IEC 60950-1:2006
Standard for communication interfaces CANopen, CiA standard 301, profile 417		Yes

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR AT12 elevator door drive							
6FB1111-1AT20-1AT1	**SIDOOR AT12 control device with integrated switch-mode power supply**	C	**6FB1111-1AT20-1AT1**		1	1 unit	478

More information

For further product details, see

- "SIDOOR AT12 Elevator Door Drive" Manual, http://support.automation.siemens.com/WW/view/en/58497029
- "SIDOOR AT12 Elevator Door Drive – Manufacturer-specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/59004938
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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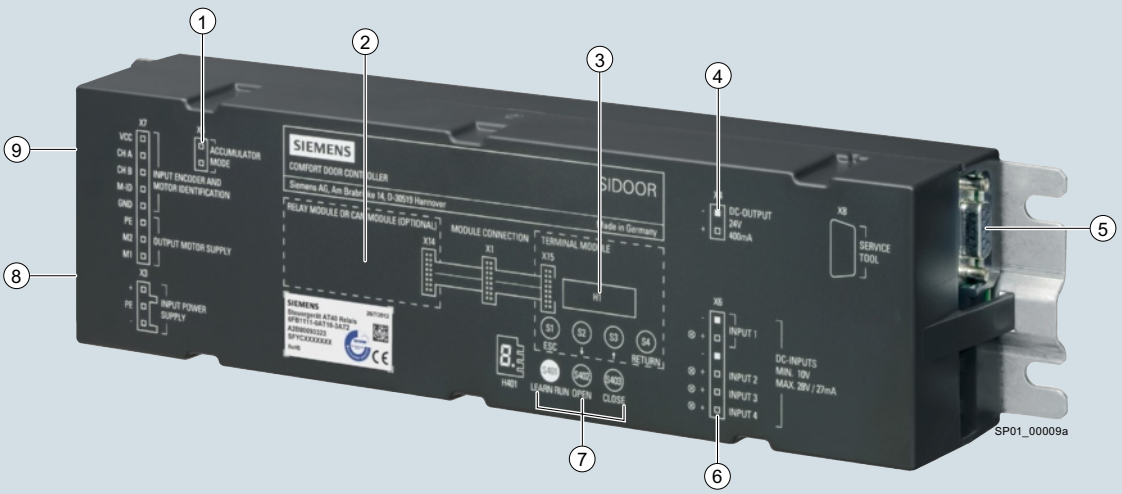
Control devices: SIDOOR AT40 elevator door drive

Overview



1 Connection for emergency power module
2 Relay module
3 Terminal module
4 Connection for 24 V DC/400 mA output voltage
5 Connection
- Software Kit or
- Service Tool
6 Connection for input signals
7 Control panel
8 Connector
- NT40 switch-mode power supply or
- Mains transformer
9 Connection for motor

SIDOOR AT40 elevator door drive (relay module version)

SIDOOR AT40 – SIDOOR enables the quick, easy and flexible movement, installation and configuration of a wide range of elevator door systems.

- Version:
  - Relay module
  - CAN module
- For dynamic door weights up to 400 kg
- Automatic door weight detection
- 4 to 8 kg maximum counterweight (depending on motor version)
- Operating temperature -20 to +50 °C
- Flexible motor management (three different motor types), automatic detection
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Supports power-optimized operation in the elevator cabin
- Vandal-proof
- Degree of protection IP54 for 180 to 400 kg motor versions, gear unit IP40

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR User Software (part of the Software Kit, not included in the scope of supply, see page 15/111) enables user-friendly operation and detailed diagnostics.
- Integrated terminal module enables simple setup and diagnostics via an event and statistics memory
- Small footprint thanks to compact design
- Automated functions for enhanced safety

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Application

The SIDOOR AT40 comfort elevator door drive is an intelligent door control system which enables the opening and closing of cabin and shaft doors at adjustable speeds and accelerations.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

Three different motors are available:

- SIDOOR M2 geared motor (24 V DC/1.8 A; motor for max. overall door leaf weight of 120 kg)
- SIDOOR M3 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 180 kg)
- SIDOOR M4 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 400 kg)

These must be ordered separately, see page 15/115.

Operation of the door drive does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

The current operating states are indicated by a 7-segment display directly in the SIDOOR AT40 elevator door drive. They can also be displayed externally with the aid of the Software Kit or Service Tool, see page 15/111 onward.

Power transmission is via a toothed belt, which passes over a deflector unit and can be fitted with two door clutch holders. These accessories are not included in the scope of supply, see page 15/116 onward.

This enables it to drive both single-sided and centrally opening doors.

Design

The SIDOOR AT40 elevator door drive system consists of several components:

Version	Type	Page
Control devices		
SIDOOR AT40 elevator door drive (incl. terminal module and relay or CAN module)		
• Relay module	**6FB1111-0AT10-3AT2**	15/105
• CAN module	**6FB1111-1AT10-3AT3**	15/105
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/109
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/110
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/111
• Service Tool	**6FB1105-0AT01-6ST0**	15/112
• Emergency power module	**6FB1115-0AT10-4CP0**	15/113
DC geared motors		
• SIDOOR M2 geared motor (max. door weight of 120 kg)	**6FB1103-0AT1.-5MA0**	15/115
• SIDOOR M3 geared motor (max. door weight of 180 kg)	**6FB1103-0AT1.-4MB0**	15/115
• SIDOOR M4 geared motor (max. door weight of 400 kg)	**6FB1103-0AT1.-3MC0**	15/115
Accessories for the complete system Also see overview diagram, page 15/97		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system		
- For the SIDOOR M2 and SIDOOR M3 geared motors	**6FB1104-0AT02-0AD0**	15/116
- For the SIDOOR M4 geared motor	**6FB1104-0AT01-0AD0**	15/116
• Mounting bracket		
- For the SIDOOR M2 to SIDOOR M4 geared motors for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/117
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/117
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/117
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/117
• Toothed belt STS as connection between the door system and the final positions of the door		
- 4 m long	**6FB1104-0AT01-0AB0**	15/117
- 45 m long	**6FB1104-0AT02-0AB0**	15/117

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Control devices: SIDOOR AT40 elevator door drive

Configuration

During initial commissioning, please note the following:

- For mechanical installation and configuration, see
  - "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
  - "SIDOOR Elevator Door Drive AT40 – Manufacturer-specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/58992020
- Electrical configuration and commissioning:
  - Push the door into the "CLOSED" position
  - Open the device cover
  - Plug in the motor connector
  - Connect NT40 switch-mode power supply to 230 V AC mains supply
  - Press and hold the learn run button
  - Connect NT40 switch-mode power supply output to input of the SIDOOR AT40 elevator door drive
  - The learn run starts automatically and the learn run button can be released
  - On completion of the learn run, the door is in the "CLOSED" position and the 7-segment display indicates "u"
  - The door can now be moved via the "OPEN" and "CLOSED" buttons with the default profile

Programming

The Software Kit is available as an additional unit (see page 15/111) and allows quick and easy updating of the firmware using the Siemens HCS12 Firmware Loader.

User-friendly parameter setting and oscilloscope function is carried out via the SIDOOR user software (part of the Software Kit).

Technical specifications

Type		6FB1111-0AT10-3AT2	6FB1111-1AT10-3AT3
General data			
Supply voltage at DC	V	36	
Relative positive tolerance of the supply voltage	%	3	
Input voltage			
• Per DC input	V	10 … 28	
Input current			
• Per DC input	mA	9 … 27	
Product feature			
• Control inputs isolated		Yes	
• Control inputs p-switching		Yes	
Output current at 24 V DC output, maximum	mA	400	
Property of the 24 V DC output			
• Note		CAUTION: Do not supply with external voltage!	
• Short-circuit-proof		Yes	
Product expansion, optional		Emergency power module	
Switching capacity current of output relay			
• At 230 V			
- At AC	mA	10 … 1 000	
• At 50 V			
- At DC	mA	10 … 1 000	
Opening width of door	m	0.3 … 4	
Counterweight			
• For M2 motor max.	kg	4	
• For M3 motor max.	kg	6	
• For M4 motor max.	kg	8	
Ambient temperature			
• During operation	°C	-20 … +50	
• During storage	°C	-40 … +50	
IP degree of protection		IP20	
Relative humidity			
• No condensation	%	10 … 93	
Dimensions			
• Width	mm	320	
• Height	mm	60	
• Depth	mm	80	
Standards			
Type of inspection TÜV prototype tested		Yes	
Certificate of suitability			
• According to EN 81		Yes	
• CE marking		Yes	
Standard			
• For EMC		EN 12015/EN 12016	
• For safety		IEC 60950-1:2006	
Standard for communication interfaces CANopen, CiA standard 301, profile 417		No	Yes

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Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR AT40 elevator door drive							
6FB1111-0AT10-3AT2	**SIDOOR AT40 controller relay**	C	**6FB1111-0AT10-3AT2**		1	1 unit	478
6FB1111-1AT10-3AT3	**SIDOOR AT40 CAN controller**	C	**6FB1111-1AT10-3AT3**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Elevator Door Drive AT40 – Manufacturer-specific CANopen Objects" Compact User Manual, http://support.automation.siemens.com/WW/view/en/58992020
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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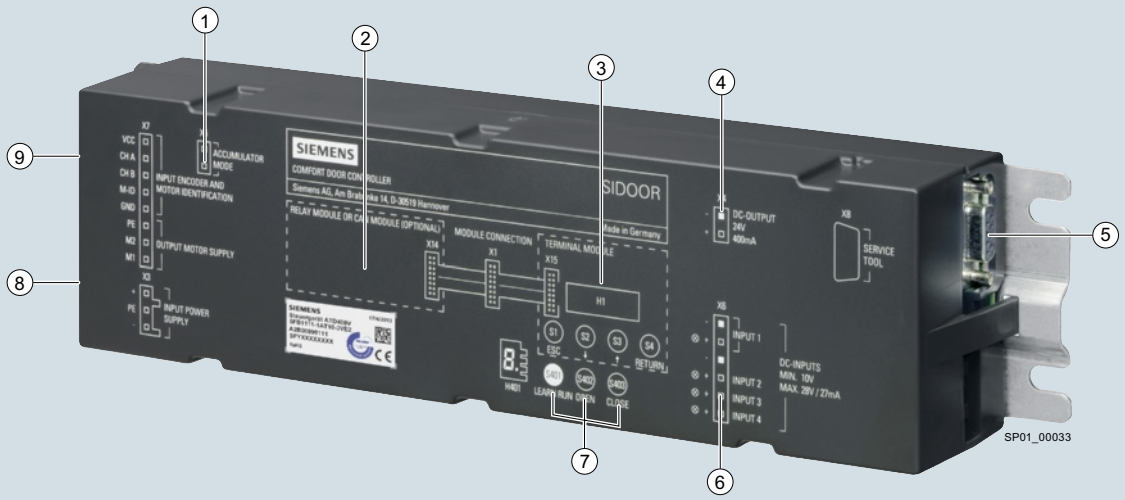
Automatic Door Controls
For Elevators

Control devices:
SIDOOR ATD400V elevator door drive

Overview



1. Emergency power module connection
2. Relay module
3. Terminal module
4. Output voltage 24 V DC/400 mA connection
5. Connection
   - Software Kit or
   - Service Tool
6. Input signal connection
7. Control panel
8. Connection
   - NT40 switch mode power supply or
   - Mains transformer
9. Motor connection

SIDOOR ATD400V elevator door drive

SIDOOR ATD400V – the SIDOOR ATD400V elevator door drive enables the quick, easy and versatile installation, configuration and operation of vertical elevator door systems, such as rising doors and roller shutters.

- Relay module design
- For dynamic door weights up to 400 kg
- Automatic door weight detection
- Operating temperature -20 to +50 °C
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Vandal-proof
- Degree of protection:
  - Motor IP54
  - Gear unit, IP40

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR User Software (part of the Software Kit, not included in the scope of supply, see page 15/111) enables user-friendly operation and detailed diagnostics.
- Integrated terminal module enables simple setup and diagnostics via an event and statistics memory
- Integrated relay module for the "OPEN" position, "CLOSED" position and "Reversing" functions
- Small footprint thanks to compact design
- Automated functions for enhanced safety

Application

The SIDOOR ATD400V elevator door drive for rising doors and rolling shutters is an intelligent door control system that enables the operation of vertical door systems on elevators at adjustable speeds and accelerations.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing. The SIDOOR M4 geared motor (30 V DC/4.0 A; motor for max. dynamic door weight of 400 kg) must be ordered separately, see page 15/115.

Operation of the door drive does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

The current operating states are indicated by a 7-segment display directly in the SIDOOR ATD400V elevator door drive. They can also be displayed externally with the aid of the Software Kit or Service Tool, see page 15/111 onward.

Power transmission is via a toothed belt, which passes over a deflector unit and can be fitted with two door clutch holders. These accessories are not included in the scope of supply, see page 15/116 onward.

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Design

The SIDOOR ATD400V elevator door drive system consists of several components:

Version	Type	Page
Control devices		
SIDOOR ATD400V elevator door drive (incl. terminal module and relay module)	**6FB1111-1AT10-3VE2**	15/108
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/109
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/110
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/111
• Service Tool	**6FB1105-0AT01-6ST0**	15/112
• Emergency power module	**6FB1115-0AT10-4CP0**	15/113
DC geared motors		
• SIDOOR M4 geared motor (max. door weight of 400 kg)	**6FB1103-0AT1.-3MC0**	15/115
Accessories for the complete system Also see overview diagram, page 15/97		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system - For the SIDOOR M4 geared motor	**6FB1104-0AT01-0AD0**	15/116
• Mounting bracket - for the SIDOOR M4 geared motor for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/117
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/117
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/117
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/117
• Toothed belt STS as connection between the door system and the final positions of the door		
- 4 m long	**6FB1104-0AT01-0AB0**	15/117
- 45 m long	**6FB1104-0AT02-0AB0**	15/117

Configuration

During initial commissioning, please note the following:

- Mechanical installation and configuration see "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- Electrical configuration and commissioning:
  - Push the door into the "CLOSED" position
  - Open the device cover
  - Plug in the motor connector
  - Connect NT40 switch-mode power supply to 230 V AC mains supply
  - Press and hold the learn run button
  - Connect NT40 switch-mode power supply output to input of the SIDOOR ATD400V elevator door drive
  - The learn run starts automatically and the learn run button can be released.
  - On completion of the learn run, the door is in the "CLOSED" position and the 7-segment display indicates "u".
  - The door can now be moved via the "OPEN" and "CLOSED" buttons with the default profile.

Programming

The Software Kit is available as an additional unit (see page 15/111) and allows quick and easy updating of the firmware using the Siemens HCS12 Firmware Loader.

User-friendly parameter setting and oscilloscope function is carried out via the SIDOOR user software (part of the Software Kit).

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Control devices: SIDOOR ATD400V elevator door drive

Technical specifications

Type		6FB1111-1AT10-3VE2
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximal	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion optional		Emergency power module
Switching capacity current of output relay		
• At 230 V - At AC	mA	10 … 1 000
• At 50 V - At DC	mA	10 … 1 000

Type		6FB1111-1AT10-3VE2
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection TÜV prototype tested		Yes
Certificate of suitability		
• According to EN 81		Yes
• CE marking		Yes
Standard		
• For EMC		EN 12015/EN 12016
• For safety		IEC 60950-1:2006
Standard for communication interfaces CANopen, CiA standard 301, profile 417		No

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD400V elevator door drive						
6FB1111-1AT10-3VE2 **SIDOOR ATD400V controller relay, vertical rising door/rolling shutter**	C	**6FB1111-1AT10-3VE2**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIDOOR power supplies connect the control devices to the respective country-specific power supply.

These power supplies can be used for the various SIDOOR control devices:

Mains transformer

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drive
- SIDOOR ATD400S platform screen door drive

NT40 switch-mode power supply

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400W machine tool door drive
- SIDOOR ATD400S platform screen door drive

Power supplies: Mains transformer

Overview

Mains transformer 6FB1112-0AT20-2TR0

The mains transformer is a standard power supply unit operated with 230 V AC (± 15 %) 50/60 Hz from the SIDOOR product range and can be used for all control devices that do not have an integrated power supply unit. The SIDOOR AT12 elevator door drive, for example, has an integrated power supply unit.

Technical specifications

Type		6FB1112-0AT20-2TR0
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	50 … 60
Operational current of protection at input during installation, max.	A	10
IP degree of protection		IP54
Output current maximum rated value	A	15.9
Dimensions		
• Height	mm	65
Standards		
Standard		
• For EMC		EMC directive 2004/108/EC, EN 12015, EN 12016

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mains transformer							
6FB1112-0AT20-2TR0	**SIDOOR mains transformer**	C	**6FB1112-0AT20-2TR0**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Power supplies: NT40 switch-mode power supply

Overview

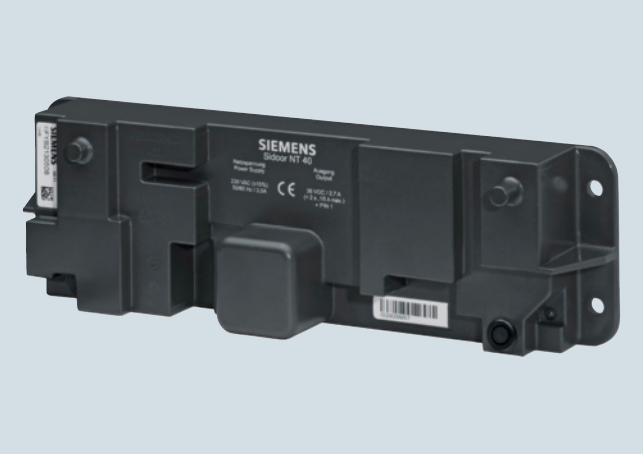
The SIDOOR NT40 switch-mode power supply is operated at 50/60 Hz, 230 V AC (± 15 %) to power the following SIDOOR door controllers:

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400W machine tool door drive
- SIDOOR ATD400S platform screen door drive

It is particularly suited for door systems with high door weights.

On the output side, the power supply unit delivers a voltage of 36 V DC (±3 %) SELV at a rated output power of < 100 W.

In order to enable fast acceleration/deceleration of the doors by the controller, the device can briefly (< 2 s) deliver a current of 15 A (corresponds to a short-time power output of 540 W).



6FB1112-0AT20-3PS0 NT40 switch-mode power supply

Technical specifications

Type		6FB1112-0AT20-3PS0
General data		
Supply voltage at AC	V	230
Relative symmetrical tolerance of the supply voltage	%	15
Supply voltage frequency		
• At AC	Hz	47 … 63
Input current at rated value of input voltage 230 V, rated value	A	0.7
Operational current of protection at input during installation, max.	A	10
Current consumption for 2 s, maximum	A	3.5
Absorbed apparent power, maximum	V·A	650
Efficiency at 100 W emitted active power at 230 V AC	%	90
Equipment protection class		I
Overvoltage category		2
IP degree of protection		IP54
Output voltage for DC rated value	V	36
• Note		SELV
Output current	A	2.5
Active power input, maximum Rated value	W	100
Temporary overload current for a maximum of 2 s	A	15
Ambient temperature		
• During operation	°C	-20 … +55
- Note		No direct exposure to the sun
• During storage	°C	-20 … +50
• During transport	°C	-40 … +70
Relative air humidity		
• No condensation	%	10 … 93
Installation altitude at height above sea level, maximum	m	2 000
Dimensions		
• Width	mm	270
• Height	mm	55
• Depth	mm	80
Standards		
Standard		
• For EMC		EMC directive 2004/108/EC, EN 12015, EN 12016
• For safety		IEC 60950-1:2006

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
NT40 switch-mode power supply						
SIDOOR NT40 switch-mode power supply	C	**6FB1112-0AT20-3PS0**		1	1 unit	478

6FB1112-0AT20-3PS0

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Additional units

Overview

The additional units from SIDOOR meet a range of customer requirements in order to ensure the universal implementation and maintenance of the system.

These additional units are simple to connect to the de-energized controller via the interfaces provided – and are available for use as soon as the power supply is connected.

Up to three additional units are available for the SIDOOR control devices:

- SIDOOR AT12 elevator door drive
  - Service Tool
  - Software Kit
- SIDOOR AT40 and SIDOOR ATD400V elevator door drives, SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drive, SIDOOR ATD400S platform screen door drive
  - Service Tool
  - Software Kit
  - Emergency power module

Additional units: Software Kit

Overview

SIDOOR Software Kit

The SIDOOR Software Kit enables two functionalities:

- The Siemens HCS Firmware Loader lets you update the operating software of the following control devices, i.e. install new firmware:
  - SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V elevator door drives
  - SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drive
  - SIDOOR ATD400S platform screen door drive
- The SIDOOR User Software lets you configure, parameterize and analyze the door control system.

The Software Kit contains a USB adapter for connecting the SIDOOR controller to another device, such as a a PC.

Design

The Software Kit consists of:

- SIDOOR User Software: User-friendly parameter adjustment and oscilloscope function
- Siemens HCS12 Firmware Loader: Updating the firmware
- USB adapters: The hardware interface for the control device
- Accessories: Connection cable and manual

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Software Kit						
6FB1105-0AT01-6SW0 **SIDOOR Software Kit with USB adapter**	C	**6FB1105-0AT01-6SW0**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351
- "SIDOOR User Software" Operating Instructions, http://support.automation.siemens.com/WW/view/en/58572375

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Additional units: Service Tool

Overview

SIDOOR Service Tool

The Service Tool can be used to input run commands, change run parameters and read out learned parameters, door states, input/output signals and service data.

The Service Tool is connected to the various control devices by the respective cable:

- SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drive
- SIDOOR ATD400S platform screen door drive

You do not need to open the cover of the control device to do this.

Note:

If the Service Tool is in the "Quick adjustment" or "Total adjustment" menu, the run commands of the control device are blocked via the commend inputs.

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Service Tool							
6FB1105-0AT01-6ST0	**SIDOOR Service Tool**	C	**6FB1105-0AT01-6ST0**		1	1 unit	478

More information

Further product details, see "SIDOOR Service Tool" Compact User Manual, http://support.automation.siemens.com/WW/view/en/60136636.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SIDOOR emergency power module

The emergency power module is connected between the power supply unit and the voltage input of the control devices:

- SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drive
- SIDOOR ATD400S platform screen door drive

In the event of a power failure, this module switches the power supply from the switch mode power supply to the 24 V DC emergency power supply (battery).

During the switchover, the controller receives the command to reduce the travel speed of the door to initial speed in order to prevent excessive discharging of the connected batteries.

Technical specifications

Type		6FB1115-0AT10-4CP0
Supply voltage from emergency power supply at DC	V	24
Relative symmetrical tolerance of the supply voltage from emergency power supply	%	15
Current of emergency power supply, rated value	A	1.6
Energy demand for one opening and closing cycle, max.	W·h	2.4
Battery capacity		
• Recommended	A·h	2
• For one opening and closing cycle at 24 V	A·h	0.1
Operating current of fuse protection at input of battery during installation slow-blow	A	6
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
Dimensions		
• Width	mm	105
• Height	mm	35
• Depth	mm	71

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Emergency power module							
6FB1115-0AT10-4CP0	**SIDOOR emergency power module**	C	**6FB1115-0AT10-4CP0**		1	1 unit	478

More information

For further product details see "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Geared motors

Overview

SIDOOR geared motors are a combination of gear unit, motor, and sensor. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

The geared motors must be selected according to the dynamic door weight. There are two different versions each of the SIDOOR M2 to M4 geared motors respectively:

- SIDOOR M2 geared motors (max. door weight of 120 kg)
  - Pinion left 6FB1103-0AT10-5MA0
  - Pinion right 6FB1103-0AT11-5MA0
- SIDOOR M3 geared motors (max. door weight of 180 kg)
  - Pinion left 6FB1103-0AT10-4MB0
  - Pinion right 6FB1103-0AT11-4MB0
- SIDOOR M4 geared motors (max. door weight of 400 kg)
  - Pinion left 6FB1103-0AT10-3MC0
  - Pinion right 6FB1103-0AT11-3MC0

The gear outlet direction is defined as left or right when viewing the gear unit from the front.

Picture below:
SIDOOR M2 geared motor 6FB1103-0AT10-5MA0 (pinion left)

Picture center:
SIDOOR M3 geared motor 6FB1103-0AT10-4MB0 (pinion left)

Picture above:
SIDOOR M4 geared motor 6FB1103-0AT10-3MC0 (pinion left)

Technical specifications

Type		6FB1103-0AT10-5MA0, 6FB1103-0AT11-5MA0	6FB1103-0AT10-4MB0, 6FB1103-0AT11-4MB0	6FB1103-0AT10-3MC0, 6FB1103-0AT11-3MC0
Product designation		SIDOOR geared motors		
		M2	M3	M4
Supply voltage at DC	V	24	30	30
Velocity maximum	m/s	0.5	0.65	0.75
IP degree of protection				
• Of gear unit		IP20	IP40	IP40
• Of motor		IP20	IP54	IP54
Gear ratio		15	15	15
Number of pulses per revolution, maximum		100	100	100
Operational current rated value	A	1.8	4	4
Weight of door, max.	kg	120	180	400
Ambient temperature				
• During operation	°C	-20 … +50	-20 … +50	-20 … +50
• During storage	°C	-40 … +85	-40 … +85	-40 … +85
Dimensions				
• Length of the motor	mm	206.5	236	275
• Height of motor	mm	90	98	115
• Diameter of motor	mm	48	63	63
• Width of gear unit including drive pinion	mm	90	85	105

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Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR M2 geared motors						
6FB1103-0AT10-5MA0 (version pinion left)						
SIDOOR M2 geared motor for max. door weight of 120 kg						
• With pinion left	C	**6FB1103-0AT10-5MA0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-5MA0**		1	1 unit	478
SIDOOR M3 geared motors						
6FB1103-0AT10-4MB0 (version pinion left)						
SIDOOR M3 geared motor for max. door weight of 180 kg						
• With pinion left	C	**6FB1103-0AT10-4MB0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-4MB0**		1	1 unit	478
SIDOOR M4 geared motors						
6FB1103-0AT10-3MC0 (version pinion left)						
SIDOOR M4 geared motor for max. door weight of 400 kg						
• With pinion left	C	**6FB1103-0AT10-3MC0**		1	1 unit	478
• With pinion right	C	**6FB1103-0AT11-3MC0**		1	1 unit	478

Accessories

The following accessories are available for the SIDOOR M2 to SIDOOR M4 geared motors:

- Rubber-metal anti-vibration mount for low-noise door operation
  - 6FB1104-0AT02-0AD0 for SIDOOR M2 and SIDOOR M3 geared motors (door weights up to 180 kg)
  - 6FB1104-0AT01-0AD0 for SIDOOR M4 geared motor (door weights up to 400 kg)
- Mounting bracket 6FB1104-0AT01-0AS0 for the geared motor mount for flexible accommodation of the rubber-bonded metal

Accessories see page 15/116 onwards.

More information

For further product details, see Manuals

- "SIDOOR AT12 Elevator Door Drive", http://support.automation.siemens.com/WW/view/en/58497029
- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W", http://support.automation.siemens.com/WW/view/en/58531074

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Overview

A comprehensive range of accessories is available for the SIDOOR elevator door systems.

This is necessary to ensure low-noise operation of the door by the controller. The geared motors can be optimally integrated into the respective door drive system.

Rubber-metal anti-vibration mounts for geared motors

To ensure low-noise door operation, the SIDOOR geared motors are integrated in the door system using rubber-metal anti-vibration mounts.

- Rubber-metal anti-vibration mount 6FB1104-0AT02-0AD0 for SIDOOR M2 and SIDOOR M3 geared motors (door weights up to 180 kg)
- Rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0 for SIDOOR M4 geared motors (door weights up to 400 kg)

Mounting bracket

Two different mounting brackets are available with elongated holes:

- Mounting bracket 6FB1104-0AT01-0AS0 for the SIDOOR M2 to SIDOOR M4 geared motors for flexible accommodation of the rubber-bonded metal
- Mounting bracket 6FB1104-0AT02-0AS0 for the deflector unit. This enables the toothed belt to be set to the required belt tension.

Door clutch holder

The door clutch holder 6FB1104-0AT01-0CP0 serves to connect the respective door leaf by means of a toothed belt while also functioning as a toothed-belt lock. One door clutch holder per door leaf is required.

The toothed-belt lock can accommodate both open ends of the toothed belt.

Deflector unit

The deflector unit 6FB1104-0AT03-0AS0 contains an embedded belt pulley and can be mounted on the door system.

The toothed belt STS is redirected via this deflector unit.

Toothed belt STS

The door system is moved between the final positions of the door using the toothed belt STS 6FB1104-0AT0.-0AB0. Two different toothed belt lengths are available.

Technical specifications

Rubber-metal anti-vibration mounts for geared motors

Type		6FB1104-0AT02-0AD0	6FB1104-0AT01-0AD0
Product designation		SIDOOR rubber-metal anti-vibration mount	
		For M2, M3 geared motor for door weights up to 180 kg	For M4 geared motor for door weights up to 400 kg
Dimensions			
• Length of the rubber-bonded metal	mm	230	230
• Width of the rubber-bonded metal	mm	78	78
• Height of the rubber-bonded metal	mm	35	78

Mounting bracket

Type		6FB1104-0AT01-0AS0	6FB1104-0AT02-0AS0
Product designation		SIDOOR mounting bracket	
		For geared motor	With tensioning device for deflector pulley
Dimensions			
• Length	mm	230	135
• Width	mm	90	100
• Height	mm	60	60

Door clutch holder

Type		6FB1104-0AT01-0CP0
Dimensions		
• Length	mm	68
• Width	mm	40
• Height	mm	43

Deflector unit

Type		6FB1104-0AT03-0AS0
Dimensions		
• Diameter of belt pulley incl. shoulder ring	mm	61
• Width of belt pulley incl. shoulder ring	mm	25
• Height of holder incl. belt pulley	mm	100
• Width of holder incl. belt pulley	mm	55
• Length of holder	mm	70

Toothed belt STS

Type		6FB1104-0AT01-0AB0	6FB1104-0AT02-0AB0
		STS-S8M	
Length	m	4	45

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rubber-metal anti-vibration mounts for geared motors						
SIDOOR rubber-metal anti-vibration mount For low-noise operation of the door drive system						
 6FB1104-0AT02-0AD0 • For M2, M3 geared motor door weights up to 180 kg	C	**6FB1104-0AT02-0AD0**		1	1 unit	478
 6FB1104-0AT01-0AD0 • For M4 geared motor for door weights up to 400 kg	C	**6FB1104-0AT01-0AD0**		1	1 unit	478

* You can order this quantity or a multiple thereof.

Illustrations are approximate

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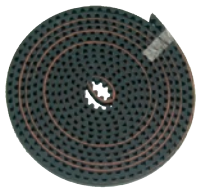
	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mounting bracket							
6FB1104-0AT01-0AS0	**SIDOOR mounting bracket** • For geared motors for flexible accommodation of the rubber-bonded metal	C	**6FB1104-0AT01-0AS0**		1	1 unit	478
6FB1104-0AT02-0AS0	• With take-up for guide pulley for the deflector unit for the toothed belt to be set to the required belt tension	C	**6FB1104-0AT02-0AS0**		1	1 unit	478
Door clutch holder							
6FB1104-0AT01-0CP0	**SIDOOR door clutch holder** For connecting the respective door leaf with the toothed belt	C	**6FB1104-0AT01-0CP0**		1	1 unit	478
Deflector unit							
6FB1104-0AT03-0AS0	**SIDOOR deflector unit** For the toothed belt STS for attaching to the door system	C	**6FB1104-0AT03-0AS0**		1	1 unit	478
Toothed belt STS							
	SIDOOR toothed belt STS As connection between the door system and the final positions of the door						
 6FB1104-0AT01-0AB0	• 4 m long	C	**6FB1104-0AT01-0AB0**		1	1 unit	478
6FB1104-0AT02-0AB0	• 45 m long	C	**6FB1104-0AT02-0AB0**		1	1 unit	478

More information

Further product details:

- For the rubber-metal anti-vibration mount 6FB1104-0AT02-0AD0 (for SIDOOR M2 and SIDOOR M3 geared motors) see Manuals
  - "SIDOOR AT12 Elevator Door Drive", http://support.automation.siemens.com/WW/view/en/58497029
  - "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W", http://support.automation.siemens.com/WW/view/en/58531074
- For the rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0 (for SIDOOR M4 geared motor) see Manual
  - "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W", http://support.automation.siemens.com/WW/view/en/58531074
- For mounting bracket, door clutch holder, deflector unit and toothed belt, see Manuals
  - "SIDOOR AT12 Elevator Door Drive", http://support.automation.siemens.com/WW/view/en/58497029
  - "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W", http://support.automation.siemens.com/WW/view/en/58531074

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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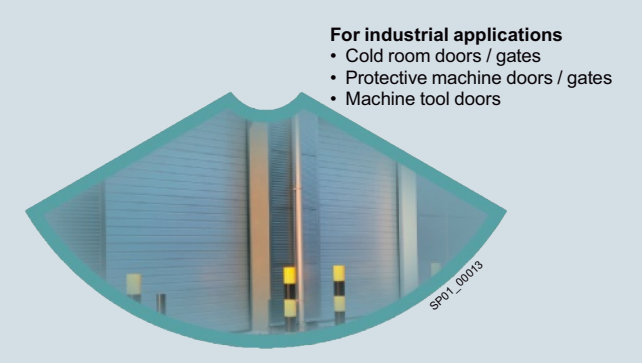
General data

Overview



Automatic door controllers for industrial applications

The product-specific application/requirement lies in complying with the special industrial requirements regarding functional safety and the door closing mechanisms. Protective machine doors and power-actuated doors and gates comply with the safety standard ISO 13849-1 (Safety of Machinery and Machinery Directive).

Control devices

Overview

SIDOOR control devices are electronic controllers that are connected to the power supply via an external power supply unit and can operate one or more application-specific motors.

They are generally connected to the higher-level application via digital or serial interfaces and can be configured via a user interface.

More information

Overview of SIDOOR ATD400K cold room gate drives and SIDOOR ATD400W machine tool door drives, see page 15/7.

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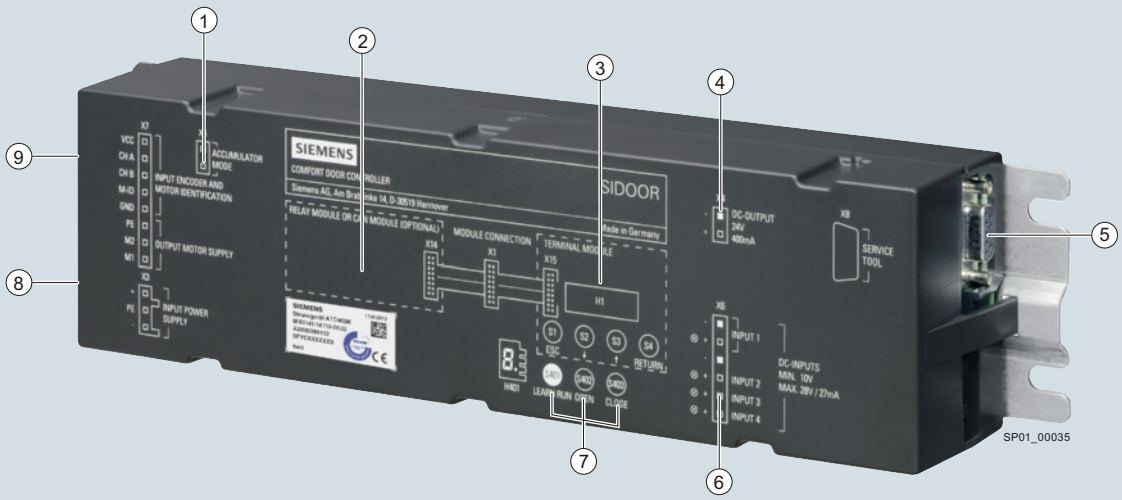
Overview



1 Emergency power module connection
2 Relay module
3 Terminal module
4 Output voltage 24 V DC/400 mA connection
5 Connection
- Software Kit or
- Service Tool
6 Input signal connection
7 Control panel
8 Mains transformer connection
9 Motor connection

SIDOOR ATD400K cold room gate drive (type Basic)

The SIDOOR ATD400K cold room gate drive enables the quick, easy and flexible movement, installation and configuration of a wide range of cold room gate systems.

Two different actuator versions are available, in which digital input 1 is assigned a different functionality.

- Relay module version
  - Type Basic for connection of a light barrier
  - Type 1 for connection of a gate interlock
- For dynamic door weights up to 400 kg
- Automatic door weight detection
- Operating temperature -20 to +50 °C
- Flexible motor management (two different motor types), automatic detection
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Vandal-proof
- Degree of protection IP54 for 180 to 400 kg motor versions, gear unit IP40
- The "cable-operated switch" function is supported. Pulling the cable opens the door to an adjustable opening width.
- Pulse mode: The function remains active until a new command arrives.
- Hold-open time can be parameterized
- A higher force can be set for the first 10 cm of the opening movement (lifting the gate)

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR User Software (Part of the Software Kit, not included in the scope of supply, see page 15/111) enables user-friendly operation and detailed diagnostics
- Integrated terminal module enables simple setup and diagnostics via an event and statistics memory
- Small footprint thanks to compact design
- Automated functions for enhanced safety

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Control devices: SIDOOR ATD400K cold room gate drive

Application

The SIDOOR ATD400K cold room gate drive is an intelligent door control system which enables cold room gates to be opened and closed at adjustable speeds and accelerations.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

Two different motors are available:

- SIDOOR M3 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 180 kg)
- SIDOOR M4 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 400 kg)

These must be ordered separately, see page 15/115.

Operation of the door drive does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

The current operating states are indicated by a 7-segment display directly in the SIDOOR ATD400K cold room gate drive. They can also be displayed externally with the aid of the Software Kit or Service Tool, see page 15/111 onward.

Power transmission is via a toothed belt, which passes over a deflector unit and can be fitted with two door clutch holders. These accessories are not included in the scope of supply, see page 15/116 onward.

This enables it to drive both single-sided and centrally opening doors.

Design

The SIDOOR ATD400K cold room gate drive system is made up of several components:

Version	Type	Page
Control devices		
SIDOOR ATD400K cold room gate drives (including terminal module and relay module)		
• Type Basic supports the light barrier function	**6FB1141-1AT10-3KU2**	15/122
• Type 1 supports the gate interlock function	**6FB1141-1AT11-3KU2**	15/122
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/109
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/111
• Service Tool	**6FB1105-0AT01-6ST0**	15/112
• Emergency power module	**6FB1115-0AT10-4CP0**	15/113
DC geared motors		
• SIDOOR M3 geared motor (max. door weight of 180 kg)	**6FB1103-0AT1.-4MB0**	15/115
• SIDOOR M4 geared motor (max. door weight of 400 kg)	**6FB1103-0AT1.-3MC0**	15/115
Accessories for the complete system Also see overview diagram, page 15/97		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system		
- For the SIDOOR M3 geared motor	**6FB1104-0AT02-0AD0**	15/116
- For the SIDOOR M4 geared motor	**6FB1104-0AT01-0AD0**	15/116
• Mounting bracket		
- For the SIDOOR M4 geared motor for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/117
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/117
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/117
• Deflector unit for the toothed belt STS for attaching to the door system	**6FB1104-0AT03-0AS0**	15/117
• Toothed belt STS as connection between the door system and the final positions of the door		
- 4 m long	**6FB1104-0AT01-0AB0**	15/117
- 45 m long	**6FB1104-0AT02-0AB0**	15/117

Configuration

During initial commissioning, please note the following:

- Mechanical installation and configuration see "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- Electrical configuration and commissioning:
  - Push the door into the "CLOSED" position
  - Open the device cover
  - Plug in the motor connector
  - Press and hold the learn run button
  - The learn run starts automatically and the learn run button can be released
  - On completion of the learn run, the door is in the "CLOSED" position and the 7-segment display indicates "u"
  - The gate can now be moved via the "OPEN" and "CLOSED" buttons with the default profile

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Programming

The Software Kit is available as an additional unit (see page 15/111) and allows quick and easy updating of the firmware using the Siemens HCS12 Firmware Loader.

User-friendly parameter setting and oscilloscope function is carried out via the SIDOOR User Software (part of the Software Kit).

Technical specifications

Type		6FB1141-1AT10-3KU2, 6FB1141-1AT11-3KU2
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion, optional		Emergency power module
Switching capacity current of output relay		
• At 230 V		
- At AC	mA	10 … 1 000
• At 50 V		
- At DC	mA	10 … 1 000
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection TÜV prototype tested		Yes
Certificate of suitability CE marking		Yes
Standard		
• For EMC		IEC 61000-6-2/IEC 61000-6-3
• For safety		IEC 60335-1:2010
Performance level (PL) according to ISO 13849-1		d
Category according to ISO 13849-1		2

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Control devices: SIDOOR ATD400K cold room gate drive

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD400K cold room gate drive							
6FB1141-1AT10-3KU2	**SIDOOR ATD400K control device for cold room gate** • Type Basic with relay module	C	**6FB1141-1AT10-3KU2**		1	1 unit	478
6FB1141-1AT11-3KU2	• Type 1 with relay module	C	**6FB1141-1AT11-3KU2**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

Additional components for the SIDOOR ATD400K cold room gate drive:

- Power supplies see page 15/109 onwards.
- Additional units see page 15/111 onwards.
- Geared motors see page 15/115.
- Accessories see page 15/116 onwards.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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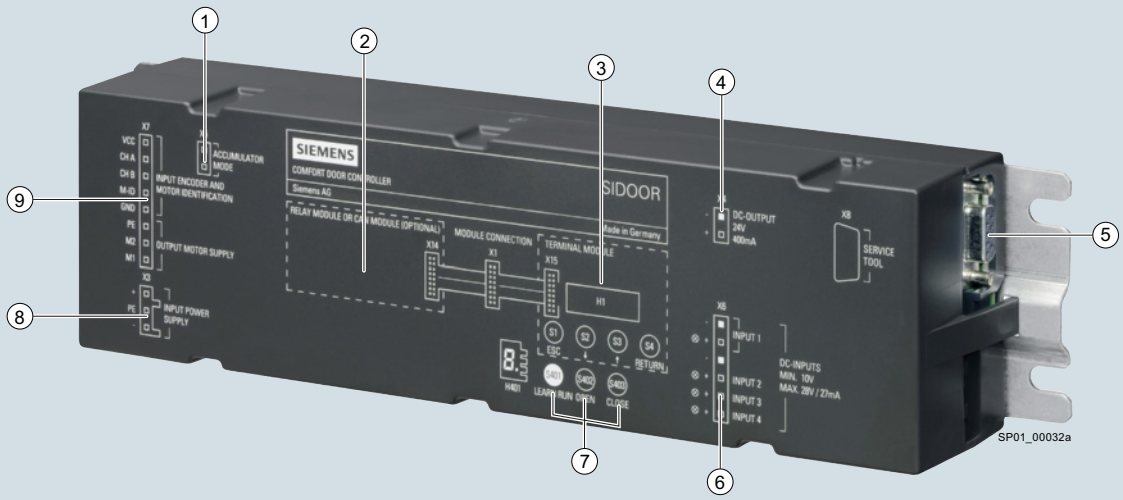
Overview



1 Emergency power module connection
2 Relay module
3 Terminal module
4 Output voltage 24 V DC/400 mA connection
5 Connection
- Software Kit or
- Service Tool
6 Input signal connection
7 Control panel
8 Connection
- NT40 switch mode power supply
- Mains transformer
9 Motor connection

SIDOOR ATD400W machine tool door drive

The SIDOOR ATD400W machine tool door drive enables the quick, easy and flexible movement, installation and configuration of a wide range of industrial door drive systems.

- Relay module version
- For dynamic door weights up to 400 kg
- Automatic door weight detection
- Operating temperature -20 to +50 °C
- Flexible motor management (three different motor types), automatic detection
- Opening width 0.3 to 4 m
- Emergency power input via special emergency power module 24 V DC ± 15 %
- Auxiliary voltage output 24 V DC ± 15 %; 0.4 A (short-circuit-proof)
- Output stage short-circuit-proof
- Vandal-proof
- Degree of protection IP54 for 180 to 400 kg motor versions, gear unit IP40

Benefits

- 1-button operation for the entire commissioning process
- Optimum and stable drive characteristics
- Reduced service requirements and costs
- SIDOOR User Software (Part of the Software Kit, not included in the scope of supply, see page 15/111) enables user-friendly operation and detailed diagnostics
- Integrated terminal module enables simple setup and diagnostics via an event and statistics memory
- Small footprint thanks to compact design
- Automated functions for enhanced safety

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Control devices: SIDOOR ATD400W machine tool door drive

Application

The SIDOOR ATD400W machine tool door drive is an intelligent door control system which enables protective doors for machine tools to be opened and closed at adjustable speeds and accelerations.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

Three different motors are available:

- SIDOOR M2 geared motor (24 V DC/1.8 A; motor for max. overall door leaf weight of 120 kg)
- SIDOOR M3 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 180 kg)
- SIDOOR M4 geared motor (30 V DC/4.0 A; motor for max. overall door leaf weight of 400 kg)

These must be ordered separately, see page 15/115.

Operation of the door drive does not require a limit switch. The door width and the "OPEN/CLOSED" positions are determined automatically.

The current operating states are indicated by a 7-segment display directly in the SIDOOR ATD400W machine tool door drive. They can also be displayed externally with the aid of the Software Kit or Service Tool, see page 15/111 onward.

Power transmission is via a toothed belt, which passes over a deflector unit and can be fitted with two door clutch holders. These accessories are not included in the scope of supply, see page15/116 onward.

This enables it to drive both single-sided and centrally opening doors.

Design

The SIDOOR ATD400W machine tool door control drive system is made up of several components:

Version	Type	Page
Control devices		
SIDOOR ATD400W machine tool door drive (incl. terminal module and relay module)	**6FB1141-1AT10-3WE2**	15/126
The following individual components must be ordered separately:		
Power supplies		
• Mains transformer	**6FB1112-0AT20-2TR0**	15/109
• NT40 switch-mode power supply	**6FB1112-0AT20-3PS0**	15/110
Additional units to enable the universal use and maintenance of the door drive system		
• Software Kit	**6FB1105-0AT01-6SW0**	15/111
• Service Tool	**6FB1105-0AT01-6ST0**	15/112
• Emergency power module	**6FB1115-0AT10-4CP0**	15/113
DC geared motors		
• SIDOOR M2 geared motor (max. door weight of 120 kg)	**6FB1103-0AT1.-5MA0**	15/115
• SIDOOR M3 geared motor (max. door weight of 180 kg)	**6FB1103-0AT1.-4MB0**	15/115
• SIDOOR M4 geared motor (max. door weight of 400 kg)	**6FB1103-0AT1.-3MC0**	15/115
Accessories for the complete system Also see overview diagram, page 15/97		
• Rubber-metal anti-vibration mount for low-noise operation of the door drive system		
- For the SIDOOR M3 geared motor	**6FB1104-0AT02-0AD0**	15/116
- For the SIDOOR M4 geared motor	**6FB1104-0AT01-0AD0**	15/116
• Mounting bracket		
- For the SIDOOR M4 geared motor for flexible accommodation of the rubber-bonded metal	**6FB1104-0AT01-0AS0**	15/117
- For the deflector unit for the toothed belt to be set to the required belt tension	**6FB1104-0AT02-0AS0**	15/117
• Door clutch holder for connecting the respective door leaf by means of a toothed belt	**6FB1104-0AT01-0CP0**	15/117
• Deflector unit for the toothed belt STS for attaching on the door system	**6FB1104-0AT03-0AS0**	15/117
• Toothed belt STS as connection between the door system and the final positions of the door		
- 4 m long	**6FB1104-0AT01-0AB0**	15/117
- 45 m long	**6FB1104-0AT02-0AB0**	15/117

Configuration

During initial commissioning, please note the following:

- Mechanical installation and configuration see Manual "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W", http://support.automation.siemens.com/WW/view/de/58531074
- Electrical configuration and commissioning:
  - Push the door into the "CLOSED" position
  - Open the device cover
  - Plug in the motor connector
  - Connect NT40 switch-mode power supply unit to 230 V AC mains supply
  - Press and hold the learn run button
  - Connect NT40 switch-mode power supply output to input of the SIDOOR ATD400W machine tool door drive
  - The learn run starts automatically and the learn run button can be released
  - On completion of the learn run, the door is in the "CLOSED" position and the 7-segment display indicates "u"
  - The door can now be moved via the "OPEN" and "CLOSED" buttons with the default profile

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Programming

The Software Kit is available as an additional unit (see page 15/111) and allows quick and easy updating of the firmware using the Siemens HCS12 Firmware Loader.

User-friendly parameter setting and oscilloscope function is carried out via the SIDOOR User Software (part of the Software Kit).

Technical specifications

Type		6FB1141-1AT10-3WE2
General data		
Supply voltage at DC	V	36
Relative positive tolerance of the supply voltage	%	3
Input voltage		
• Per DC input	V	10 … 28
Input current		
• Per DC input	mA	9 … 27
Product feature		
• Control inputs isolated		Yes
• Control inputs p-switching		Yes
Output current at 24 V DC output, maximum	mA	400
Property of the 24 V DC output		
• Note		CAUTION: Do not supply with external voltage!
• Short-circuit-proof		Yes
Product expansion optional		Emergency power module
Switching capacity current of output relay		
• At 230 V		
- At AC	mA	10 … 1 000
• At 50 V		
- At DC	mA	10 … 1 000
Opening width of door	m	0.3 … 4
Ambient temperature		
• During operation	°C	-20 … +50
• During storage	°C	-40 … +50
IP degree of protection		IP20
Relative humidity		
• No condensation	%	10 … 93
Dimensions		
• Width	mm	320
• Height	mm	60
• Depth	mm	80
Standards		
Type of inspection TÜV prototype tested		Yes
Certificate of suitability CE marking		Yes
Standard		
• For EMC		IEC 61000-6-2/IEC 61000-6-4
• For safety		IEC 60950-1:2006
Performance level (PL) according to ISO 13849-1		d
Category according to ISO 13849-1		2

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Control devices: SIDOOR ATD400W machine tool door drive

Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIDOOR ATD400W machine tool door drives						
6FB1141-1AT10-3WE2 **SIDOOR ATD400W control device for machine tool doors with relay module**	C	**6FB1141-1AT10-3WE2**		1	1 unit	478

More information

For further product details, see

- "SIDOOR Door Control Systems AT40, ATD400K, ATD400S, ATD400V, ATD400W" Manual, http://support.automation.siemens.com/WW/view/en/58531074
- "SIDOOR Software Kit" Installation Instructions, http://support.automation.siemens.com/WW/view/en/58572351

Additional components for the SIDOOR ATD400W machine tool door control drive system:

- Power supplies see page 15/109 onwards.
- Additional units see page 15/111 onwards.
- Geared motors see page 15/115.
- Accessories see page 15/116 onwards.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Condition Monitoring Systems

With the Condition Monitoring System from Siemens you can constantly monitor your machines and plants. Maintenance procedures can be planned better and only performed when they are actually necessary – predictive maintenance.

For an overview of Condition Monitoring Systems see page15/8.

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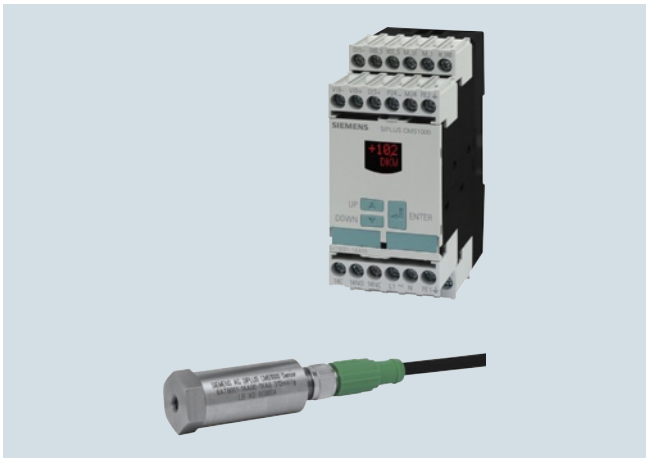
General data

Overview



Bearing guard and sensor with connecting cable

Requiring absolutely no expert knowledge, SIPLUS CMS1000 offers an easy introduction to condition monitoring.
In monitoring, the SIPLUS CMS1000 condition monitoring system works on the basis of characteristic values.

Additional advantages at a glance:

- Permanent monitoring for protection of machines
- Effective monitoring of important processes and systems
- Energy efficiency support
- Early detection of damage
- Planned maintenance instead of spontaneous repairs
- Reduction in maintenance costs
- Increased plant availability
- Optimum utilization of the service life of the units

Application

SIPLUS CMS1000 is the entry-level system for condition monitoring of roller bearings in an industrial environment.

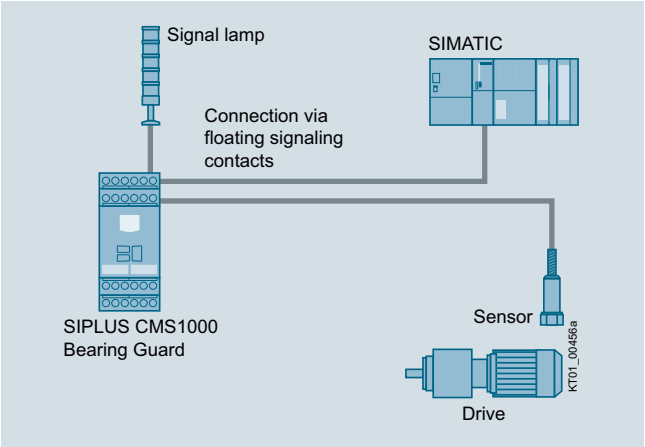
With the SIPLUS CMS1000 condition monitoring system, mechanical components such as motors, generators, fans or pumps can be monitored on the basis of characteristic values. Mechanical wear and other damage-related causes can thus be detected in time before a total failure of the mechanical component in the plant occurs.

SIPLUS CMS1000 can be integrated into the Totally Integrated Automation (TIA) architecture.

Design

SIPLUS CMS1000 consists of two components:

- SIPLUS CMS1000 Bearing Guard
- SIPLUS CMS1000 Sensor



System configuration with SIPLUS CMS1000

Mode of operation

The bearing guard analyzes the measured values according to VDI 3832 procedures (DKW) and DIN ISO 10816-3 (RMS) and signals a limit violation on the display and via floating contacts.

The sensor detects vibration acceleration of the monitored roller bearing as well as general component and machine vibrations.

More information

For further product details, see

- "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516
- www.siemens.com/siplus-cms

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Overview

Bearing Guard 6AT8001-1AA00

The compact design of the SIPLUS CMS1000 Bearing Guard is the core component of the complete system.

It analyses the measured signals from the sensor:

- For analysis of the condition of rolling-contact bearings according to VDI 3832 (DKW)
- Machine monitoring RMS according to DIN ISO 10816-3
- Signaling of limit violations via floating contacts

Design

The bearing guard consists of four terminal blocks A, B, C and D, a display and corresponding control elements. The terminal blocks are coded and therefore constitute non-interchangeable connection elements.

Function

The bearing guard reliably analyzes the status condition of machines and roller bearings and signals limit violations via floating contacts.

Functions:

- A cost-efficient solution for monitoring roller bearings
- Diagnostics procedure according to VDI 3832 and DIN ISO 10816-3
- Monitoring motors with fixed speed
- Teach mode for easy commissioning (learning mode) via LCD
- Adjustable limit values for warning and alarm
- Limit signaling via two floating contacts

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Bearing Guard

Technical specifications

Type		6AT8001-1AA00
Product designation		SIPLUS CMS1000 Bearing Guard
Product description		Device for monitoring mechanical vibrations based on characteristic values
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-25 … +60
• During storage	°C	-25 … +60
• During transport	°C	-25 … +60
Relative humidity without condensation during operation	%	5 … 95
Current typically consumed at 24 V with DC	A	0.21
Total active power loss, typical	W	3.5
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		AC/DC
Supply voltage 1		
• At DC	V	24
• At 50 Hz		
- At AC	V	115 … 240
• At 60 Hz		
- At AC	V	115 … 240
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	86
Inputs/outputs		
Number of sensor inputs		
• For IEPE sensors		--
• For MEMS sensors		1
Number of disable inputs		1
Number of speed inputs		1
Number of signaling outputs		2
Design of switching input of the disable inputs 24 V DC		Yes
Input voltage at speed input 24 V DC digital		Yes
Range of input voltage at speed input -10 V ... +10 V		Yes
Range of input current at speed input		
• 0 mA ... 20 mA		No
• 4 mA ... 20 mA		Yes
Type of switching output of the signaling outputs		Relay outputs

Type		6AT8001-1AA00
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals
Terminals		
Product function		
• Removable terminal for main circuit		Yes
• Removable terminal for auxiliary and control circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Product function bus communication		No
Structural design		
Distance to be maintained with side-by-side mounting		
• At the top	mm	25
• At the front	mm	80
• At the side	mm	0
• At the bottom	mm	25
Material of the enclosure		Plastic
Design of thread of connection screw		M3
Size of screwdriver bit		Size 2 and Pozidriv 2
Tightening torque for screw terminals	Nm	0.8 … 1.2
Standards and approvals		
Standard		
• For interference immunity		IEC 61326-1, IEC 61326-2-3
• For safety		IEC 61010-1
Certificate of suitability		CE

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Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS CMS1000 Bearing Guard						
For analysis of the state of roller bearings in accordance with VDI 3832 and signaling of limit violations	C	**6AT8001-1AA00**		1	1 unit	477

6AT8001-1AA00

More information

For more product details refer to the "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516.

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Accessories

Overview

The following accessories, to be ordered separately, are available for the SIPLUS CMS1000 condition monitoring system:

- Sensor for detection of vibration acceleration of roller bearings
- Cable for connection of bearing guards and sensors
  - 4 m long
  - 10 m long
  - 30 m long
- Adapters for connection of the sensor to various motors
  - M6/M6, M6/M8
  - M6/SPM

Design

Sensor

Sensor 6AT8001-1AA00-1XA0

SIPLUS CMS1000 Sensor is designed with ground insulation. It consists of one M12 sensor cable connector and an M6 thread for adaptation to the machine chassis.

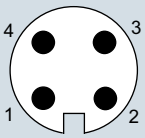
Technical features:

- Industry-standard design
- Sensor on the basis of MEMS technology (Micro Electro Mechanical Systems)
- Quick and easy installation (e.g. on fans, pumps and motors)
- High degree of protection IP67

The sensor reliably records the vibration acceleration of rolling-contact bearings and converts this into an analog, differential voltage signal.

Cable

The SIPLUS CMS1000 Bearing Guard and Sensor are connected via the sensor cable. For connection of the sensor, the cable is configured with an M12 connector socket that matches the sensor.



Pin	Assignment	Core color
1	VCC_S	Brown
2	GND_S	White
3	VIB-	Blue
4	VIB+	Black
	Shield	Knurled nut

KT01_00457

Terminal assignment M12 connector socket

Adapters

Two different adapters are available for installing the SIPLUS CMS1000 Sensor in the correct measuring position:

- M6/M6 or M6/M8 adapters
  for motors with a condition monitoring for bearings connection with M6 or M8 threads
- M6/SPM adapters
  for IEC squirrel-cage motors with the option of bearing monitoring Q01/G50. A measuring nipple is mounted here for SPM shock pulse measurement to check bearing vibration.

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Technical specifications

Sensor

Type		6AT8001-1AA00-1XA0
Product designation		SIPLUS CMS1000 SENSOR
Product description		Vibration acceleration sensor for the SIPLUS CMS1000 Bearing Guard
General data		
Material of the enclosure		Stainless steel
IP degree of protection		IP67
Ambient temperature		
• During operation	°C	-40 … +120
• During storage	°C	-40 … +120
• During transport	°C	-40 … +120
Relative humidity with condensation		
• During operation	%	5 … 95
Measuring range vibration acceleration	*g*	-5 … +5
Measuring range vibration frequency	Hz	0 … 6 500
Sensitivity of the vibration acceleration sensor typical	mV/*g*	312
Total active power loss, typical	W	0.02
Reference designations		
• According to IEC 61346-2		B
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		B
Type of power supply		Through basic unit
Installation/fixing/dimensions		
Installation and mounting instructions		In the load zone of the bearing, radial to the drive axis
Type of mounting		Screw via M6 thread
Dimensions		
• Length	mm	64
• Diameter	mm	22
Connections		
Type of the switching output		Electronics
Type of the electric connection of the inputs and outputs		4-pole socket M12
Communications		
Product function bus communication		No
Standards/approvals/certificates		
Standard		
• For safety		IEC 61010-1
• For interference immunity		IEC 61326-1
Certificate of suitability		CE

Cable

Type		6AT8001-1AA00-1AA4	6AT8001-1AA00-1AB1	6AT8001-1AA00-1AB3
Product designation		SIPLUS CMS1000 CABLE-MEMS-44-0004	SIPLUS CMS1000 CABLE-MEMS-44-0010	SIPLUS CMS1000 CABLE-MEMS-44-0030
Product description		4 x 0.34 mm² PUR cable shielded, M12, open end		
General data				
Cable length	m	4	10	30

Adapters

Type	6AT8001-2AA10-1AM0	6AT8001-2AA10-1SA0
Product designation	SIPLUS CMS1000 Adapter M6/M6, M6/M8	SIPLUS CMS1000 Adapter M6/SPM
Product description	Thread adapter for mounting the SIPLUS CMS1000 Sensor	SPM adapter for IEC squirrel-cage motors with the option of bearing monitoring Q01, G50
General data		
Design of thread	M6/M6, M6/M8	M6/SPM

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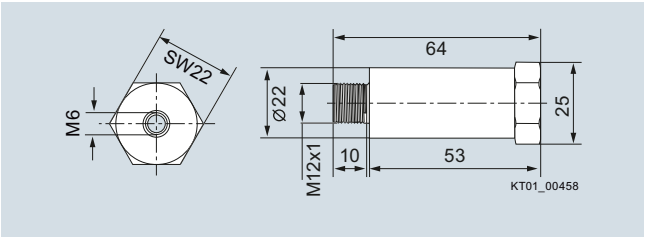
Accessories

Selection and ordering data

	Product designation	Cable length	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sensor								
6AT8001-1AA00-1XA0	**SIPLUS CMS1000 SENSOR** Vibration acceleration sensor for the SIPLUS CMS1000 Bearing Guard	--	C	**6AT8001-1AA00-1XA0**		1	1 unit	477
Cable								
	SIPLUS CMS1000 CABLE-MEMS-44-0004 4 x 0.34 mm² PUR cable shielded, M12, open end	4	X	**6AT8001-1AA00-1AA4**		1	1 unit	477
	SIPLUS CMS1000 CABLE-MEMS-44-0010 4 x 0.34 mm² PUR cable shielded, M12, open end	10	X	**6AT8001-1AA00-1AB1**		1	1 unit	477
	SIPLUS CMS1000 CABLE-MEMS-44-0030 4 x 0.34 mm² PUR cable shielded, M12, open end	30	D	**6AT8001-1AA00-1AB3**		1	1 unit	477
Adapter								
	SIPLUS CMS1000 Adapter M6/M6, M6/M8 Thread adapter for mounting the SIPLUS CMS1000 Sensor	--	D	**6AT8001-2AA10-1AM0**		1	1 unit	477
	SIPLUS CMS1000 Adapter M6/SPM SPM adapter for IEC squirrel-cage motors with the option of bearing monitoring Q01, G50	--	D	**6AT8001-2AA10-1SA0**		1	1 unit	477

Dimensional drawings



Sensor 6AT8001-1AA00-1XA0

More information

For more product details refer to the "SIPLUS CMS1000" Operating Instructions, http://support.automation.siemens.com/WW/view/en/42469516.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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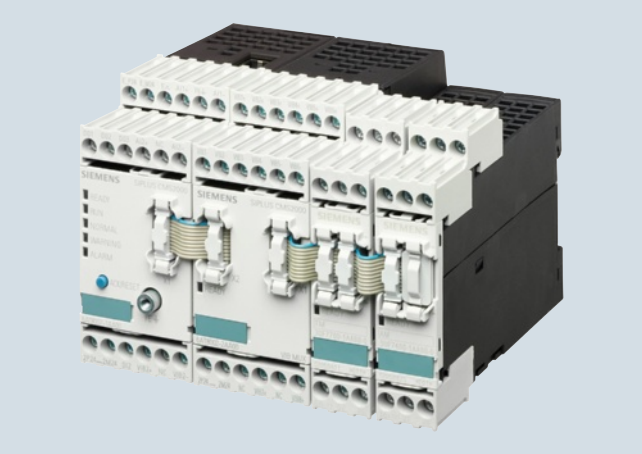
Overview



SIPLUS CMS2000 condition monitoring system

The modular and configurable SIPLUS CMS2000 condition monitoring system is a web-based system which can be easily parameterized.

It provides the following benefits:

- Analysis of the condition of roller bearings according to VDI 3832 (DKW)
- Machine monitoring RMS according to DIN ISO 10816-3
- Detailed identification of damage with frequency-selective diagnostics
- Raw data recording and export to SIPLUS CMS X-Tools
- Trend recording and analysis
- Monitoring of process variables
- Reporting of upper limit violations
- Permanent monitoring for protection of machines
- Effective monitoring of important processes and systems
- Energy efficiency support
- Early detection of damage
- Planned maintenance instead of spontaneous repairs
- Reduction in maintenance costs
- Increased plant availability
- Optimum utilization of the service life of the units

The SIPLUS CMS2000 condition monitoring system can be expanded on a modular basis, e.g. with the

- SIPLUS CMS2000 VIB-MUX expansion module for expanding the IEPE vibration channels
- Temperature module for direct connection of temperature sensors (Pt100, Pt1000, …)

Benefits

Visualization and parameterization of the SIPLUS CMS2000 are easily performed using a web browser, without the need for additional software. Handling has therefore been considerably simplified for the service personnel.

Additional advantages:

- Monitoring of everything from individual machines to complex drive trains
- No additional software is required for parameterization and visualization
- Proactive maintenance through detailed and early localization of damage
- Fast full diagnostics at a glance
- Event-triggered notification to the service center
- Expert analysis based on raw data

Application

In addition to the productivity of a plant, lifecycle costs are increasingly becoming the focus of attention. Increasing plant availability is an important topic in all areas where machines are used.

Continuous plant monitoring and thus the early detection of impending failures are a suitable measure to minimize downtimes. Status-oriented maintenance permits an increase in availability with a simultaneous reduction of lifecycle costs.

Visualization and parameterization of the SIPLUS CMS2000 are easily performed using a web browser, without the need for additional software. Handling has therefore been considerably simplified for the service personnel – both locally as well as in remote operation.

SIPLUS CMS2000 is modularly expandable, e.g. with the SIPLUS CMS2000 VIB-MUX expansion module and with the temperature module from the SIMOCODE range.

Design

The SIPLUS CMS2000 is a compact condition monitoring system that can be operated as a stand-alone or in combination with a remote service center (LAN interface).

The SIPLUS CMS2000 condition monitoring system comprises:

- SIPLUS CMS2000 Basic Unit VIB
- A maximum of two SIPLUS CMS2000 VIB-MUX expansion modules and/or additionally a maximum of two temperature modules

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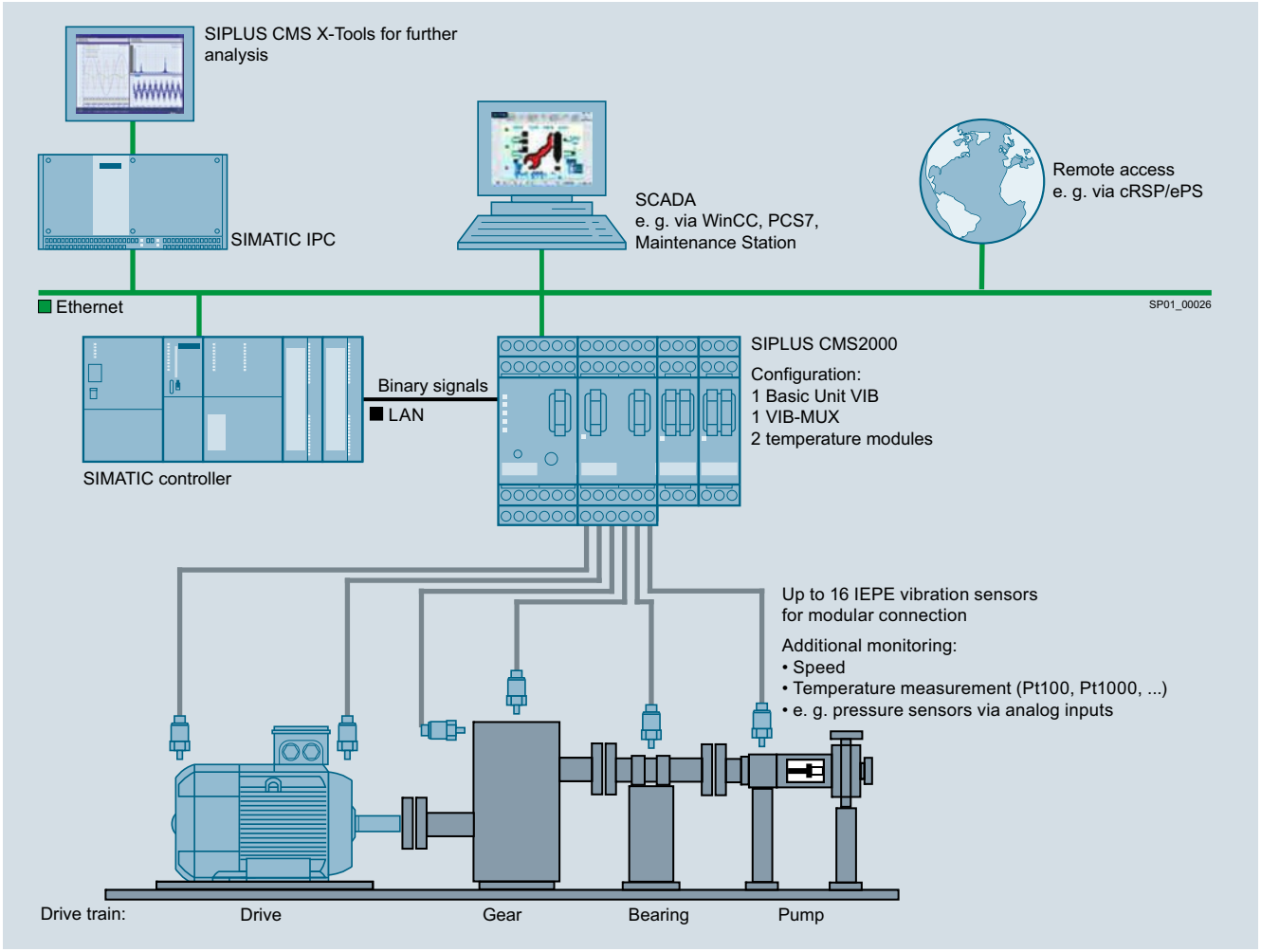
General data



System configuration with SIPLUS CMS2000

Mode of operation

Application	
Mechanical components	Motors, generators, fans, pumps, etc.
Damage analysis	Imbalance, misalignment, roller bearings, etc.
Analysis methods	
Characteristic values	
• Bearing monitoring	DKW, based on K(t) according to VDI 3832
• Vibration monitoring	RMS based on DIN ISO 10816-3
Vibration analysis	FFT, envelope curve, fingerprint comparison, trend analysis parameterizable
Monitoring function	
Characteristic values	Adjustable limit values for DKW and RMS: Warning, alarm
Frequency spectra	Adjustable warning and alarm bands
Analog inputs	Limit value monitoring
Temperature inputs	Limit value monitoring
Recording function	
Saving	Raw data recording: Manually or event-triggered, snapshot of the FFT, characteristic values, long-term trend recording
Output	
Outputs	Binary outputs e.g. for traffic light status indicator
Parameterization and visualization	Web browser

More information

For further product details, see

- "SIPLUS CMS2000 Condition Monitoring Systems" Operating Instructions , http://support.automation.siemens.com/WW/view/en/56901901
- www.siemens.com/siplus-cms

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Overview

SIPLUS CMS2000 Basic Unit VIB

The SIPLUS CMS2000 Basic Unit VIB is used for:

- Monitoring of motors, generators, pumps, fans or other mechanical components
- Recording and analysis of vibrations, speed and temperature

It is modularly expandable via the system interface, e.g. using SIPLUS CMS2000 VIB-MUX expansion modules and temperature modules.

Design

The SIPLUS CMS2000 Basic Unit VIB comprises:

- Integrated diagnostics software
- Two IEPE interfaces for vibration sensors
- Two analog inputs, one of which can be parameterized as a speed input
- One speed input
- Two digital inputs, three digital outputs

The following accessories can also be ordered:

- Shield support for grounding the cable ends
- VIB-SENSOR vibration sensor for recording vibrations
- SIMOCODE connection cable and CABLE-MIL connecting cable in different lengths

Accessories see page 15/145.

Function

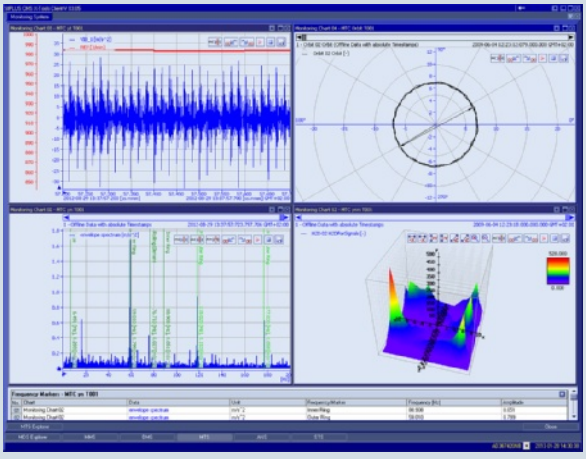
The following range of functions is available by default in the SIPLUS CMS2000 Basic Unit VIB:

- Characteristic values (bearing monitoring, vibration monitoring)
- Frequency-selective analysis using FFT, H-FFT
- Trend analysis
- Limit monitoring of frequency bands, process variables, temperature
- Recording with time stamp of trend values, raw data, frequency spectra, alarm log
- Easy damage localization based on fingerprint comparison
- Output of system and status messages
- Extraction of raw data for further diagnostics
- Web server and e-mail notification
- Time synchronization via LAN
- Diagnostics suppression via inhibit input

SIPLUS CMS X-Tools – the powerful analysis software

The raw data recorded on the SIPLUS CMS2000 Basic Unit VIB can be forwarded to the SIPLUS CMS X-Tools analysis software for detailed diagnostics (not included in the scope of supply, see http://support.automation.siemens.com/WW/view/en/46617980/133200 or www.siemens.com/siplus-cms).

SIPLUS CMS X-Tools can be used to logically combine the various parameters and signals – as the basis for expert diagnostics. The interface to management systems can be structured flexibly.



Representation via SIPLUS CMS X-Tools with raw signal, envelope curves spectrum, orbit representation and 2D histogram

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Basic units:
SIPLUS CMS2000 Basic Unit VIB

Technical specifications

Type		6AT8002-1AA00
Product designation		SIPLUS CMS2000 Basic Unit VIB
Product description		Basic unit for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-20 … +65
• During storage	°C	-20 … +85
• During transport	°C	-20 … +85
Relative humidity without condensation during operation	%	5 … 95
Total active power loss, typical	W	2.6
Physical measurement principle		Vibration acceleration
Measuring range vibration frequency	kHz	0.002 … 10
Scanning frequency maximum	kHz	46.875
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1		
• At DC		24
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	124
Inputs/outputs		
Number of analog inputs		2
Number of disable inputs		1
Number of speed inputs		1
Number of signaling outputs		3
Number of sensor inputs		
• For IEPE sensors		2
• For MEMS sensors		0
Number of trigger inputs		1
Product function monitoring of sensor inputs		Yes
Input voltage		
• At disable input with 24 V DC		Yes
• At speed input 24 V DC digital		Yes
• At trigger input with 24 V DC		Yes
Range of input voltage		
• At analog input -10 V ... +10 V		Yes
• At speed input -10 V ... +10 V		No
Range of input current		
• At analog input		
- 0 mA ... 20 mA		No
- 4 mA ... 20 mA		Yes
• At speed input		
- 0 mA ... 20 mA		No
- 4 mA ... 20 mA		No
Type of switching output of the signaling outputs		Electronic
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals

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Type		6AT8002-1AA00
Product designation		SIPLUS CMS2000 Basic Unit VIB
Product description		Basic unit for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions
Terminals		
Product function		
• Removable terminal for main circuit		Yes
• Removable terminal for auxiliary and control circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Product function bus communication		Yes
Type of data transmission		Exporting of raw data as WAV file for further analyses (e.g. using SIPLUS CMS X-Tools) can be downloaded via browser
Interface version		
• Ethernet interface		Yes
• SIMOCODE interface		Yes
Software/services		
Browser software required		Web browser
Service		
• As web server HTTP		Yes
• For open IE communication TCP/IP		Yes
Product function diagnostics via email		Yes
Structural design		
Type of hardware configuration		Modular construction, basic unit can be expanded by means of expansion modules
Material of the enclosure		Plastic
Memory capacity total	Giga-byte	1
Approvals		
Certificate of suitability		CE, UL 508, CSA C22.2 No. 142, C-Tick

Selection and ordering data

	Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic units							
6AT8002-1AA00	**SIPLUS CMS2000 Basic Unit VIB** Basic unit for monitoring mechanical plant components through recording and analysis of vibrations, speed and temperature	D	**6AT8002-1AA00**		1	1 unit	477

More information

For more product details refer to the "SIPLUS CMS2000 Basic Unit VIB" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56902401.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Expansion modules: SIPLUS CMS2000 VIB-MUX, temperature modules

Overview

SIPLUS CMS2000 VIB-MUX expansion modules and temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB via the SIMOCODE system interface.

SIPLUS CMS2000 VIB-MUX expansion modules

Up to two SIPLUS CMS2000 VIB-MUX expansion modules can be connected to SIPLUS CMS2000 Basic Unit VIB to expand the vibration channels. In this way, the number of vibration channels can be expanded modularly from 2 to a maximum of 16 channels.

The following configuration options are possible:

- Basic unit without expansion:
  2 time-synchronous, continuously sampled vibration channels
- Basic unit with one SIPLUS CMS2000 VIB-MUX:
  8 + 1: 8 channels via the SIPLUS CMS2000 VIB-MUX in multiplex mode, 1 channel continuous and independent of the channels connected to the SIPLUS CMS2000 VIB-MUX
- Basic unit with two SIPLUS CMS2000 VIB-MUX:
  16 vibration channels in multiplex mode

SIMOCODE connection cable for connecting the SIPLUS CMS2000 Basic Unit VIB to the SIPLUS CMS2000 VIB-MUX, see page 15/145.

SIPLUS CMS2000 VIB-MUX expansion module 6AT8002-2AA00

Temperature modules

Up to two temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB.

Each temperature module has three inputs for the connection of up to three analog temperature sensors (sensor types: Pt100/Pt1000, KTY83/KTY84 or NTC).

SIMOCODE connection cable for connecting the SIPLUS CMS2000 Basic Unit VIB to the temperature modules, see page 15/145.

Temperature module 3UF7700-1AA00-0

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Technical specifications

SIPLUS CMS2000 VIB-MUX expansion modules

Type		6AT8002-2AA00
Product designation		SIPLUS CMS2000 VIB-MUX
Product description		Circuit of 8 IEPE measurement inputs on one IEPE output in multiplex operation; channel control through the basic unit via the system interface
General data		
IP degree of protection		IP20
Ambient temperature		
• During operation	°C	-20 … +65
• During storage	°C	-25 … +85
• During transport	°C	-25 … +85
Relative humidity without condensation		
• During operation	%	5 … 95
Physical measurement principle		Vibration acceleration
Measuring range vibration frequency	kHz	0.002 … 10
Reference designations		
• According to DIN 40719 expanded according to IEC 204-2 according to IEC 750		P
• According to IEC 61346-2		P
Supply voltage		
Type of voltage of the supply voltage		DC
Supply voltage 1 at DC, rated value	V	24
Active power input, maximum	W	2.4
Installation/fixing/dimensions		
Mounting position		Vertical
• Recommended		Vertical
Type of mounting		Standard mounting rails
Dimensions		
• Width	mm	45
• Height	mm	106
• Depth	mm	124
Inputs/outputs		
Number of sensor inputs		
• For IEPE sensors		8
Number of outputs		1
Connections		
Type of electrical connection		
• Of the inputs and outputs		Screw terminals
• For auxiliary and control circuit		Screw terminals
Terminals		
Product function		
• Removable terminal for auxiliary and control circuit		Yes
• Removable terminal for main circuit		Yes
Connectable conductor cross-section for auxiliary contacts		
• Solid	mm^2	0.5 … 4
• Finely stranded		
- With end sleeves	mm^2	0.5 … 2.5
- Without end sleeves	mm^2	0.5 … 2.5
Communications		
Type of interface SIMOCODE interface		Yes
Structural design		
Material of the enclosure		Plastic
Approvals		
Certificate of suitability		CE, UL 508, CSA C22.2 No. 142, C-Tick

Temperature modules

Technical specifications see Chapter 10 "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices" → "SIMOCODE pro 3UF7 Motor Management and Control Devices".

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Expansion modules: SIPLUS CMS2000 VIB-MUX, temperature modules

Selection and ordering data

	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS CMS2000 VIB-MUX expansion modules							
6AT8002-2AA00	Up to two SIPLUS CMS2000 VIB-MUX expansion modules can be connected to SIPLUS CMS2000 Basic Unit VIB. Up to 8 IEPE vibration channels can be connected to each expansion module.	D	**6AT8002-2AA00**		1	1 unit	477
Temperature modules							
3UF7700-1AA00-0	Up to two temperature modules can be connected to the SIPLUS CMS2000 Basic Unit VIB. Each temperature module has three inputs for the connection of up to three temperature sensors.	►	**3UF7700-1AA00-0**		1	1 unit	42J

More information

For more product details see "SIPLUS CMS2000 Condition Monitoring Systems" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56901901.

For more information about the 3UF7700-1AA00-0 temperature module see Chapter 10 "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices" → "SIMOCODE pro 3UF7 Motor Management and Control Devices".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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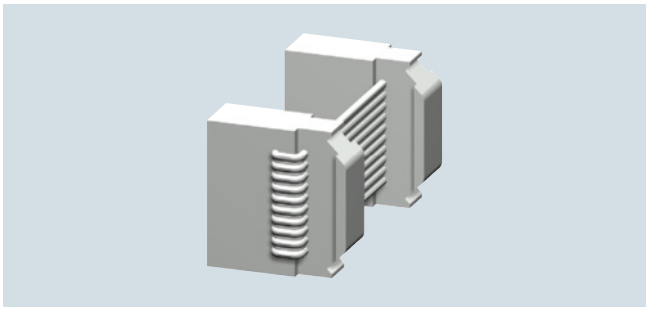
Overview

SIMOCODE connection cable

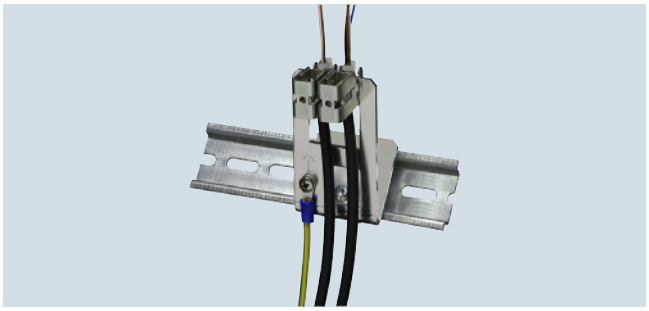


SIMOCODE connection cable 3UF7930-0AA00-0

The connection cable is used for connecting the SIPLUS CMS2000 Basic Unit VIB to the SIPLUS CMS2000 VIB-MUX expansion modules and the temperature modules via the SIMOCODE system bus interface.

The connection cable with a length of 0.025 m must be used for side-by-side mounting of the basic unit with SIPLUS CMS2000 VIB-MUX expansion modules or temperature modules on a TH 35-15 standard mounting rail according to IEC 60715.

Shield support



Shield support 6AT8002-4AA00

A separate shield support must be ordered for the EMC-compliant connection of signal and encoder cables to the SIPLUS CMS2000 Basic Unit VIB and the SIPLUS CMS2000 VIB-MUX expansion module.

The shield support comprises two shield clamps and five clamp terminals. One shield clamp is attached to the standard mounting rail above and below the basic unit. The sensor cable shields are connected to the sensor leads by means of the terminal clamps.

VIB-SENSOR S01 vibration sensor

VIB-SENSOR S01 vibration sensor 6AT8002-4AB00

The VIB-SENSOR S01 vibration sensor with IEPE (Integrated Electronics Piezo-Electric) interface can be connected directly to the SIPLUS CMS2000 Basic Unit VIB and the SIPLUS CMS2000 VIB-MUX expansion module.

The sensor detects vibration accelerations in the frequency range from 0.5 Hz to 15 kHz with a resolution of 100 mV/*g*.

A threaded screw with an M8 male thread for mounting at the measuring point is included in the scope of supply.
The connection cable is connected to the vibration sensor via the MIL connector.

CABLE-MIL connection cable

CABLE-MIL connection cables 6AT8002-4AC03, 6AT8002-4AC10

The VIB-SENSOR S01 vibration sensor is connected to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module by means of the CABLE-MIL connection cable.

This high-quality industrial cable is made of black polyurethane and is preassembled on one end with a MIL connector (MIL-C5015). The open cable end of the shielded two-wire cable is connected directly to the screw terminals of the basic unit.

The connection cable is available in lengths of 3 and 10 m.

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Accessories

Technical specifications

SIMOCODE connection cable

Type		3UF7930-0AA00-0
Product brand name		SIRIUS
Product designation		Connection cable
General data		
Ambient temperature		
• During operation	°C	-25 … +60
• During storage	°C	-40 … +80
• During transport	°C	-40 … +80
Relative humidity		
• During operation	%	5 … 95

Shield support

Type		6AT8002-4AA00
Product brand name		SIPLUS CMS
Product designation		SIPLUS CMS2000 shield support
General data		
Type of mounting		Standard mounting rails
Number of signal cables connectable to the shield support		3

VIB-SENSOR S01 vibration sensor

Type		6AT8002-4AB00
Product brand name		SIPLUS CMS
Product designation		VIB-SENSOR S01
General data		
Physical measurement principle		Piezo-quartz sensor with integrated evaluation electronics
Frequency of the sensor application		
• At ± 3 dB	Hz	0.5 … 15 000
Sensitivity of the vibration acceleration sensor, typical	mV/*g*	100
Resolution of measured value of vibration acceleration of sensor, minimum	*g*	0.002
Measuring range vibration acceleration Full-scale value	*g*	50
Resonance frequency	kHz	23
Signal voltage		
• At DC	V	10 … 14
Type of power supply		IEPE 2 to 10 mA
Type of connection method		MIL-C5015
Cable length maximum	m	80
Ambient conditions		
IP degree of protection		IP65
Operating temperature	°C	-50 … +120
Design		
Material of the enclosure		Stainless steel
Mounting type other mounting **Note**		Including mounting bolts UNF1/4-28 on M8

CABLE-MIL connection cable

Type		6AT8002-4AC03	6AT8002-4AC10
Product brand name		SIPLUS CMS	
Product designation		CABLE-MIL-300 connection cable	CABLE-MIL-1000 connection cable
Product category		Industrial cables	
General data			
Type of connection method		MIL-C5015/open cable end	
Type of insulation		Black polyurethane	
Type of shield		Braided shielding with stranded drain wire	
Operating temperature	°C	-25 … +122	
Cable length	m	3	10

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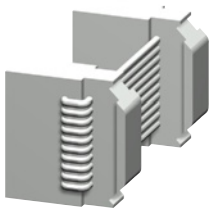
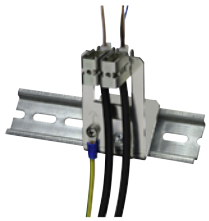
Selection and ordering data

Product designation	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE connection cable						
 3UF7930-0AA00-0	**Connection cable** ► For side-by-side mounting of SIPLUS CMS2000 Basic Unit VIB and SIPLUS CMS2000 VIB-MUX expansion modules or 3UF7700-1AA00-0 temperature modules		**3UF7930-0AA00-0**	1	1 unit	42J
Shield support						
 6AT8002-4AA00	**SIPLUS CMS2000 shield support** For the EMC-compliant connection of signal and encoder cables to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module	X	**6AT8002-4AA00**	1	1 unit	477
VIB-SENSOR S01 vibration sensor						
6AT8002-4AB00	**VIB-SENSOR S01** Piezoelectric sensor for connection to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module	D	**6AT8002-4AB00**	1	1 unit	477
CABLE-MIL connection cable						
6AT8002-4AC03	For connection of VIB-SENSOR S01 vibration sensors to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module					
	• **CABLE-MIL-300 connection cable** Length 3 m	D	**6AT8002-4AC03**	1	1 unit	477
	• **CABLE-MIL-1000 connection cable** Length 10 m	D	**6AT8002-4AC10**	1	1 unit	477

More information

For more product details see "SIPLUS CMS2000 Condition Monitoring Systems" Operating Instructions, http://support.automation.siemens.com/WW/view/en/56901901.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

The SIPLUS Electrical Charging Components (ECC) range covers products for the charging of batteries for various applications, e.g. charging controllers for the installation of an electric vehicle charging infrastructure.

Charging controllers and function units for electric vehicle charging solutions

The success of electric vehicles (EVs) depends on the availability of a reliable charging infrastructure!

SIPLUS ECC offers specific components for EV charging solutions which supplement the tried-and-tested Siemens industrial automation and control portfolio. In addition SIPLUS ECC comprises prefabricated function units for the installation of reliable and standards-conform electric vehicle charging stations.

The SIPLUS ECC portfolio:

- Charging controllers
  (according to IEC 61851 charging mode type 3)
- Preassembled, tested and ready-to-fit function units

For an overview of Electrical Charging Components, see page 15/8.

More information

For more information see www.siemens.com/siplus-ecc.

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Overview

SIPLUS ECC1000 and ECC2000 charging controllers

The charging controller is the central component in electric vehicle charging stations. SIPLUS ECC charging controllers comply with the charging standard IEC 61851 Mode 3.

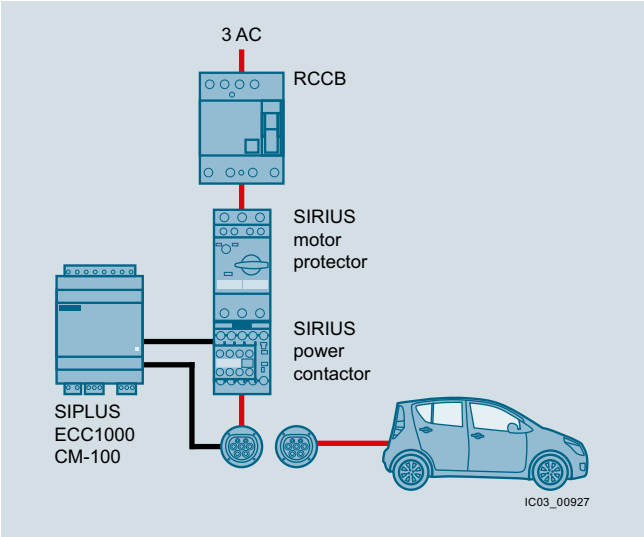
They perform the following functions:

- Transferring the maximum charging current from the charging station to the electric vehicle
- Detecting the charging cable and its reliable current carrying capacity
- Safety functions
- Evaluating the status signals from the electric vehicle
- Controlling the load tap-off
- Signaling the charging states by means of LEDs

SIPLUS ECC charging controllers are available in various versions:

CM-100

Compact, low-cost charging controller for home charging applications. The versions available cover all the charging currents defined in IEC/EN 61851.



Charging system with SIPLUS ECC1000

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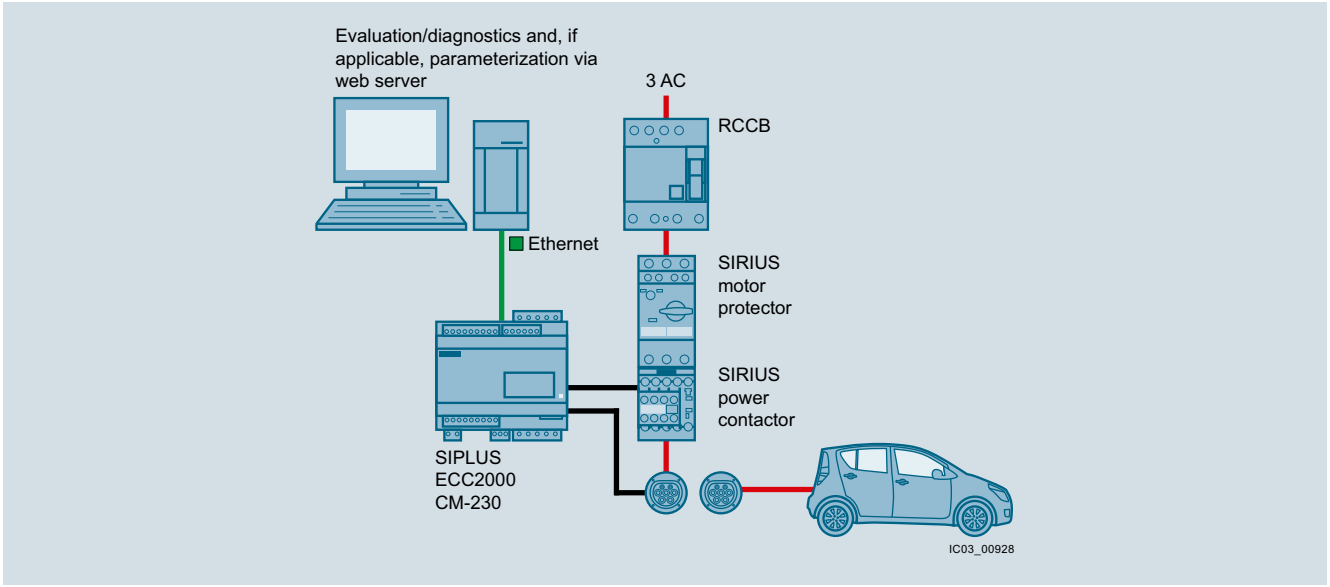
SIPLUS ECC1000 and ECC2000 charging controllers

CM-230/CM-230-C standalone version

This charging controller with Ethernet connection is used for home and public charging applications. The controllers' parameters can be changed and current information about the state of the charging operation viewed through the web interface. The build-in sensor technology on the CM-230 standalone version enables the monitoring of humidity and temperature.



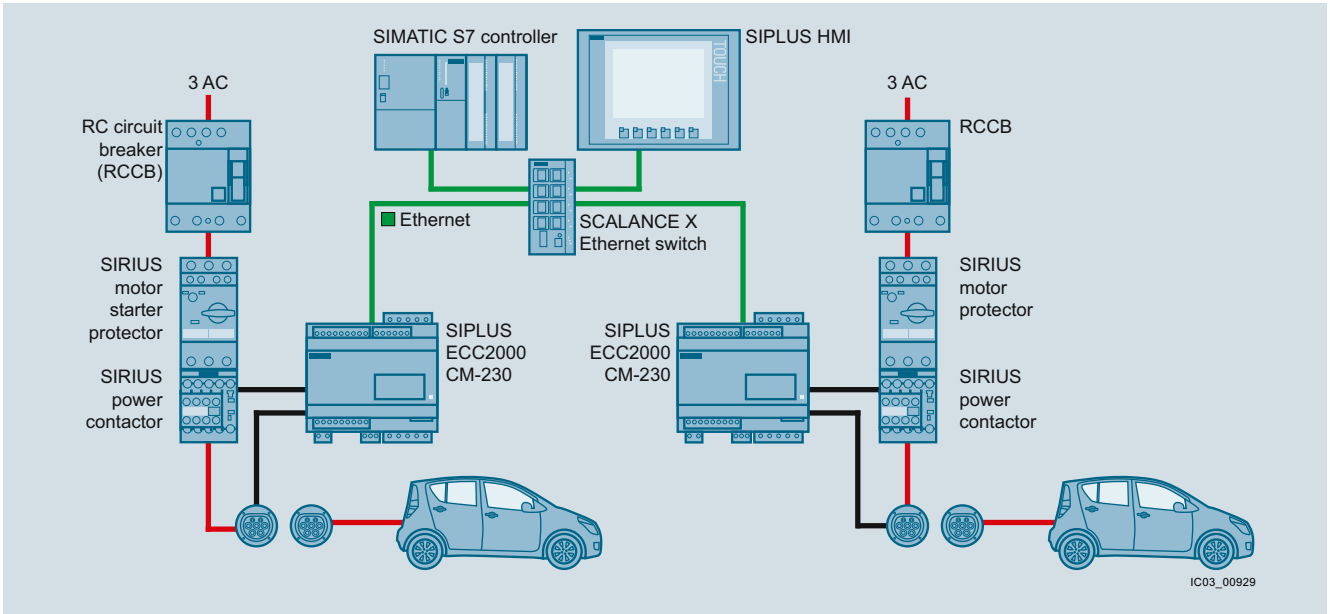
Charging system with SIPLUS ECC2000

CM-230 managed version

This charging controller with Ethernet connection is used for complex public charging applications. The controller is typically used as a separate I/O module in combination with other charging controllers which are integrated through Ethernet in a higher-level control system.

The managed version offers greater flexibility for the system integrator/operating company, e.g. individual controlling of free I/O modules.

A function block (FB) is available for linking to SIMATIC controllers.



Multiple charging system with SIPLUS ECC2000

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Technical specifications

Type		5TT3200-2KK30	1KK20, 2KK20, 3KK20, 4KK20, 6KK20	6FE1021-3CM10-1AA0	3CM10-2AA0	3CM10-3AA0
Product brand name		SIPLUS ECC1000		SIPLUS ECC2000		
Product designation		CM-100		CM-230		CM-230-C
		DC version	AC version	Managed version	Standalone version	Standalone version, DC version
General data						
Product description		Controlling and monitoring of the energy-related components in the charging station, used in communicating with the electric vehicle according to IEC 61851, Mode 3				
Suitability for use		Simple AC charging systems		Simple/complex AC charging systems		
Type of sensor		--		Humidity/temperature		--
Product function						
• Load management		No		Yes		
• Bus communication		No		Yes		
• Removable terminal for auxiliary and control circuit		Yes				
Ambient temperature						
• During operation	°C	-25 … +60		-25 … +55		
Installation altitude at height above sea level, maximum	m	2 000				
IP degree of protection at the front		IP20				
Pollution degree		3, according to IEC/EN 61010-1				
Type of mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715				
Standard for safety		According to IEC 61010-1		According to IEC 61010-1/EN 61010-1 (2nd edition) or UL 61010-1 (2nd edition)		
Dimensions						
• Width	mm	72		108		
• Height	mm	91				
• Depth	mm	71		72		

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Accessories

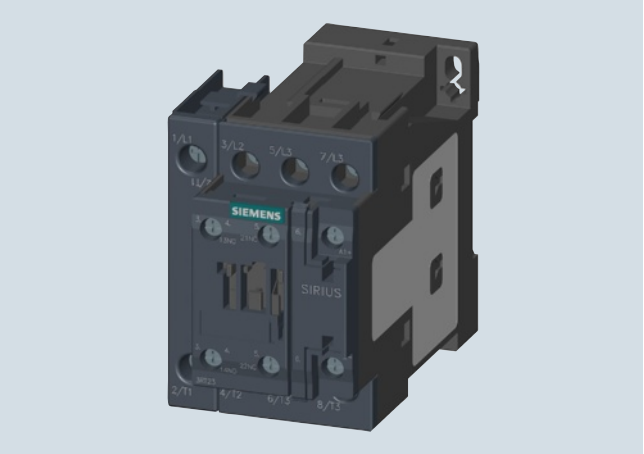
SIRIUS switching and protection equipment is suitable in particular for three-phase charging stations, even under demanding ambient conditions. They enable perfect switching and protection in SIPLUS ECC1000 and SIPLUS ECC2000 charging systems.

Advantages:

- Modular system with coordinated components and a standardized range of accessories
- Switching and protection equipment in service-proven industry quality
- Uniform connection systems:
  Screw terminals, spring-type terminals and ring terminal lug connections
- Environmentally-friendly production and materials, recycling capability, low power loss
- Ambient operating temperatures: -25 °C to +60 °C (+70 °C with derating)

SIRIUS switchgear

SIRIUS 3RT2 power contactors: Reliable startup and shutdown of the supply voltage for the charging process



3RT2 power contactor

SIRIUS protection equipment

SIRIUS 3RV2 motor starter protectors for plant protection: Safe protection against overload and short circuit

Motor starter protector for plant protection

More information

For more information on these and other components that are suitable in particular for the design of charging systems with SIPLUS ECC1000 and SIPLUS ECC2000 can be found under:

- SIRIUS switching and protection equipment:
  - Contactors for special applications, see Chapter 4 "Switching Devices – Contactors and Contactor Assemblies – Special Applications"
  - Power contactors for switching motors, see Chapter 3 "Switching Devices – Contactors and Contactor Assemblies – for Switching Motors"
  - Motor starter protectors / circuit breakers, see Chapter 7, "Protection Equipment"
- Protection, switching, measuring and monitoring devices, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology":
  - 5SM3 RCCB circuit breakers
  - 7KT PAC and 7KM PAC measuring devices
  - 5SD7 surge arresters
- Power supplies:
  - 6EP1 LOGO!Power and SIPLUS extreme 7AG1 power supplies see Catalog KT 10.1 "SITOP Power Supply"

For operating instructions and other technical specifications see http://support.automation.siemens.com/WW/view/en/46476435/133200.

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Technical specifications

Type		5TT3200-1KK20	2KK20	3KK20	4KK20	6KK20	2KK30
Product brand name		SIPLUS ECC1000					
Product designation		CM-100					
General data							
Version of the control element of the charging station		Charging mode 3 according to IEC 61851					
Product description		Controlling and monitoring of the energy-related components in the charging station, used in communicating with the electric vehicle according to IEC 61851					
Charging current maximum	A	13	16	20	32		16
IP degree of protection at the front		IP20					
Pollution degree		3, according to IEC/EN 61010-1					
Insulation voltage with pollution degree 3, rated value	V	230					
Supply voltage							
Type of voltage of the supply voltage		AC					DC
Supply voltage							
• At 50 Hz							
- Rated value	V	230					--
- Rated value for AC	V	184 … 264					--
• At 60 Hz							
- Rated value	V	110					--
- Rated value for AC	V	88 … 126					--
Supply voltage							
• At DC, rated value	V	--					24
• At DC	V	--					18 … 28
Symmetrical tolerance of the mains frequency							
• At 50 Hz	Hz	47.5 … 52.5					--
• At 60 Hz	Hz	57 … 63					--
Consumed current at rated value of the supply voltage	mA	100					300
Communications							
Product function bus communication		No					
Protocol is supported							
• Vehicle communication according to IEC 61851		Yes					
• Ethernet protocol		No					
• EIB/KNX protocol		No					
Display							
Number of LEDs		1					
Display version							
• For normal operation		Green, blinking/permanently lit, waiting for EV/charging operation active					
• As status display of the inputs/outputs		Orange, blinking (1 Hz), unit waiting for enabling					
• For fault signal		Red, blinking/flashing, fault					
Inputs/outputs							
Number of interfaces according to IEC 61851		1					
Number of digital inputs		2					
Type of voltage for the input voltages		DC					
Input voltage	V	0 … 5					
Number of digital outputs		0					
Auxiliary circuit							
Number of NO contacts for auxiliary contacts		4					
Operational current of the auxiliary contacts							
• At 230 V at AC	A	0.75					
• At 110 V at AC	A	0.75					
• At 24 V at DC	A	1					

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CM-100 charging controllers according to IEC 61851

Type		5TT3200- 1KK20	2KK20	3KK20	4KK20	6KK20	2KK30
Product brand name		SIPLUS ECC1000					
Product designation		CM-100					
Terminals							
Contact assignment							
• Of socket 1 at PIN 1		L: 110/230 V AC connection					I+24 V: 24 V DC connection (SELV)
• Of socket 1 at PIN 2		N: 110/230 V AC connection					M: 24 V DC connection (SELV)
Contact assignment							
• Of socket 2 at PIN 1		FE: Functional ground (part of the vehicle interface, plug connection according to IEC 61851)					
• Of socket 2 at PIN 2		PX: Proximity (part of the vehicle interface, plug connection according to IEC 61851)					
• Of socket 2 at PIN 3		CP: Control Pilot (part of the vehicle interface, plug connection according to IEC 61851)					
Contact assignment							
• Of socket 3 at PIN 1		AV: Auxiliary voltage (readout voltage for own digital inputs)					
• Of socket 3 at PIN 2		EN: Enable (digital input for module release)					
• Of socket 3 at PIN 3		HL: Hatch Lock (digital input for connector lock status)					
Contact assignment							
• Of socket 4 at PIN 1		P1: "Power" relay contact for switching load contactor				P1: "Power" relay contact for switching load contactor 13A branch	P1: "Power" relay contact for switching load contactor
• Of socket 4 at PIN 2		P2: "Power" relay contact for switching load contactor				P2: "Power" relay contact for switching load contactor 13A branch	P2: "Power" relay contact for switching load contactor
• Of socket 4 at PIN 3		V1: Ventilation relay contact for switching fan					
• Of socket 4 at PIN 4		V2: Ventilation relay contact for switching fan					
• Of socket 4 at PIN 5		H1: Hatch relay contact for switching interlock					
• Of socket 4 at PIN 6		H2: Hatch relay contact for switching interlock					
• Of socket 4 at PIN 7		S1: Signal relay contact for fault messages					
• Of socket 4 at PIN 8		S2: Signal relay contact for fault messages					
Ambient conditions							
Installation altitude at height above sea level maximum	m	2 000					
Ambient temperature							
• During storage	°C	-25 … +70					
• During operation	°C	-25 … +60					
• During transport	°C	-25 … +70					
Relative air humidity							
• During operation	%	0 … 95					

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Type		5TT3200-1KK20	2KK20	3KK20	4KK20	6KK20	2KK30
Product brand name		SIPLUS ECC1000					
Product designation		CM-100					
Electromagnetic compatibility							
EMC emitted interference according to IEC 61000-6-3		Suitable for operation in a residential, public and industrial environment					
EMC interference immunity according to IEC 61000-6-2		Suitable for use in industrial and residential areas					
Conducted interference injection BURST according to IEC 61000-4-4		4 kV/5 kHz AC supply cables and functional ground, 2 kV/5 kHz control cables and relay outputs					2 kV/5 kHz DC supply cables, 2 kV/5 kHz control cables and relay outputs
Conducted interference injection SURGE according to IEC 61000-4-5		• Asymmetrical: AC supply cable 4 kV/12 Ω; Control cables and functional ground 2 kV/42 Ω; relay outputs 4 kV/12 Ω; assessment criterion B • Symmetrical: AC supply cables 2 kV/2 Ω; relay outputs 2 kV/2 Ω; assessment criterion B					• Asymmetrical: DC supply cable 0.5 kV/12 Ω, 1 kV/42 Ω; Control cables and functional ground 2 kV/42 Ω; relay outputs 4 kV/12 Ω; assessment criterion B • Symmetrical: DC supply cables 0.5 kV/2 Ω, 1 kV/42 Ω; relay outputs 2 kV/2 Ω; assessment criterion B
Field-related interference according to IEC 61000-4-3		80 MHz ... 1 GHz 10 V/m, 1.4 ...2 GHz 3 V/m, 2 ... 2.7 GHz 1 V/m, assessment criterion A					
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge, assessment criterion B					
Shock resistance							
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks per axis					
• During transport according to IEC 60068-2-29		1 000 shocks/axis, 25 *g*, 6 ms half-sine					
Vibration resistance							
• During transport according to IEC 60068-2-6		5 ... 8.4 Hz/3.5 mm deflection, 8.4 ... 500 Hz/1 *g*					
• During operation according to IEC 60068-2-6		5 ... 8.4 Hz/3.5 mm deflection, 8.4 ... 150 Hz/1 *g*					
Impulse withstand voltage rated value		4 kV					
Conducted interference injection as high-frequency interference according to IEC 61000-4-6	V	3 V effective in the frequency range 0.15 ... 80.0 MHz, modulation 80 % AM with 1 kHz, assessment criterion A					
Interference immunity against magnetic fields with energy-related frequencies according to IEC 61000-4-8	A/m	100 at 50 Hz and 60 Hz, assessment criterion A					
Total active power loss, typical	W	6					4
Touch protection against electric shock		Finger-safe					
Contact reliability	Operating cycles	80 000 at 1 A, inductive load					
Installation/fixing/dimensions							
Mounting position		Vertical, on horizontal standard mounting rail					
Material of the enclosure		Wellamid 6600-PA66-GV 30 HWV0CP					
Type of mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715					
Dimensions							
• Width	mm	72					
• Height	mm	91					
• Depth	mm	71					

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CM-100 charging controllers according to IEC 61851

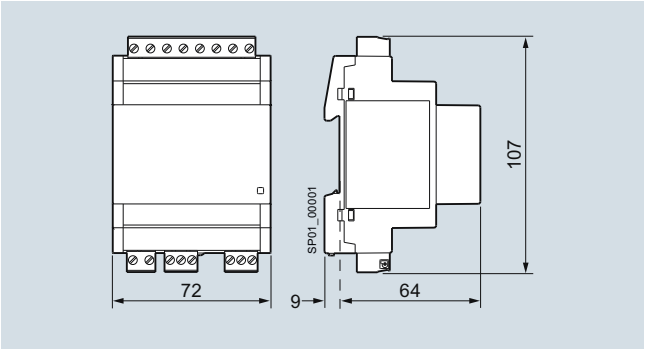
Type		5TT3200-1KK20	2KK20	3KK20	4KK20	6KK20	2KK30
Product brand name		SIPLUS ECC1000					
Product designation		CM-100					
Connections							
Type of electrical connection							
• Of the inputs and outputs		Combicon connection GMSTB 2.5					
• For auxiliary and control circuit		Combicon connection MSTB 2.5					
Version of connector assignment							
• Of the outputs		Combicon connection MSTB 2.5					
• Of the inputs		Combicon connection MSTB 2.5					
Product function: removable terminal for the auxiliary and control circuit		Yes					
Connectable conductor cross-section							
• Solid	mm²	0.5 … 2.5					
• Finely stranded							
- Without end sleeves	mm²	0.5 … 2.5					
- With end sleeves	mm²	0.5 … 2.5					
AWG number							
• As coded connectable conductor cross-section		20 … 14					

Selection and ordering data

Supply voltage	Charging current	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V	A						
SIPLUS ECC1000 (CM-100) charging controller							
110 ... 230 AC	13	A	**5TT3200-1KK20**		1	1 unit	15A
	16	A	**5TT3200-2KK20**		1	1 unit	15A
	20	A	**5TT3200-3KK20**		1	1 unit	15A
	32	A	**5TT3200-4KK20**		1	1 unit	15A
	13/32	A	**5TT3200-6KK20**		1	1 unit	15A
24 DC	16	A	**5TT3200-2KK30**		1	1 unit	15A

5TT3200-.KK.0

Dimensional drawings



SIPLUS ECC1000 (CM-100) charging controllers
5TT3200-1KK20,
5TT3200-2KK20,
5TT3200-2KK30,
5TT3200-3KK20,
5TT3200-4KK20,
5TT3200-6KK20

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Technical specifications

Type		6FE1021-3CM10-1AA0	6FE1021-3CM10-2AA0	6FE1021-3CM10-3AA0
Product brand name		SIPLUS ECC2000		
Product designation		CM-230 managed version	CM-230 stand-alone version	CM-230-C standalone version
General data				
Charging current				
• Typical	A	16		
Adjustable charging current	A	6 … 80		
Product function load management		Yes		
Product description		Controlling and monitoring of the energy-related components in the charging station, used in communicating with the electric vehicle according to IEC 61851		
Suitability for use		Simple/complex AC charging systems		
Standard for charging mode electric vehicle		IEC/ISO 61851		
Standard for safety		According to IEC 61010-1/EN 61010-1 (2nd edition) or UL 61010-1 (2nd edition)		
IP degree of protection at the front		IP20		
Pollution degree		3, according to IEC/EN 61010-1		
Type of sensor		Humidity/temperature		--
Insulation voltage with pollution degree 3, rated value	V	230		
Supply voltage				
Type of voltage of the supply voltage		DC		
Supply voltage				
• At DC, rated value	V	24		
• At DC	V	18 … 28		
Consumed current at rated value of the supply voltage	mA	300		
Communications				
Product function bus communication		Yes		
Type of data transmission to the I&C system		Ethernet		
Protocol is supported				
• Vehicle communication according to IEC 61851		Yes		
• Ethernet protocol		Yes		
• EIB/KNX protocol		No		
Display				
Number of LEDs		1		
Display version				
• For normal operation		Green, blinking/permanently lit, waiting for EV/charging operation active		
• As status display of the inputs/outputs		--	Orange, blinking (1 Hz/5 Hz), unit waiting for enabling/ pre-heat charging post	
• For fault signal		Red, blinking/flashing, fault (see "SIPLUS ECC CM-230 Operating Instructions", http://support.automation.siemens.com/WW/view/en/48460217)		
Inputs/outputs				
Number of interfaces according to IEC 61851		1		
Number of digital inputs		8		
Type of voltage for the input voltages		DC		
Input voltage	V	0 … 28		
Number of digital outputs		9	8	
Type of voltage for the output voltages		DC		
Output voltage	V	18 … 28		
Output current at digital output when signal <1> rated value	A	0.3		
Property of the output short-circuit-proof		Yes		
Product function control plug interlock		Yes		
• Note	V	24 (solenoid)		
Auxiliary circuit				
Number of NO contacts for auxiliary contacts		8		
Operational current of the auxiliary contacts				
• At 230 V at AC	A	0.75		
• At 110 V at AC	A	0.75		
• At 24 V at DC	A	1		

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CM-230 charging controllers acc. to IEC 61851 with Ethernet connection

Type	6FE1021-3CM10-1AA0	6FE1021-3CM10-2AA0	6FE1021-3CM10-3AA0
Product brand name	SIPLUS ECC2000		
Product designation	CM-230 managed version	CM-230 stand-alone version	CM-230-C standalone version
Terminals			
Contact assignment			
• Of socket 1 at PIN 1	L+24 V: 24 V DC connection (SELV)		
• Of socket 1 at PIN 2	M: 24 V DC connection (SELV)		
Contact assignment			
• Of socket 2 at PIN 1	FE: Functional ground (part of the vehicle interface, plug connection according to IEC 61851)		
• Of socket 2 at PIN 2	PX: Proximity (part of the vehicle interface, plug connection according to IEC 61851)		
• Of socket 2 at PIN 3	CP: Control Pilot (part of the vehicle interface, plug connection according to IEC 61851)		
Contact assignment			
• Of socket 3 at PIN 1	1L: Root R1 ... R4		
• Of socket 3 at PIN 2	R1: Relay Output 1	R1 (P): Power tap-off enabling relay	
• Of socket 3 at PIN 3	R2: Relay Output 2	R2 (V): Fan relay	
• Of socket 3 at PIN 4	R3: Relay Output 3	R3 (H): Interlock relay	
• Of socket 3 at PIN 5	R4: Relay Output 4	R4 (S): Signaling relay	
Contact assignment			
• Of socket 4 at PIN 1	2L: Root R5 ... R8		
• Of socket 4 at PIN 2	R5: Relay Output 5	R5 (HT): Heating relay	R5 (P): Relay Output 5
• Of socket 4 at PIN 3	R6: Relay Output 6		
• Of socket 4 at PIN 4	R7: Relay Output 7		
• Of socket 4 at PIN 5	R8: Relay Output 8		
Contact assignment			
• Of socket 5 at PIN 1	24 V: Infeed for 24 V outputs TR, O1 ... O8	24 V: Infeed for 24 V outputs O1 ... O8	
• Of socket 5 at PIN 2	TR: Trip, 24 V output	Not used	
• Of socket 5 at PIN 3	RX: Receive line (RS 232)		
• Of socket 5 at PIN 4	TX: Send line (RS 232)		
• Of socket 5 at PIN 5	1M: 24 V DC negative (SELV/PELV)		
• O socket 5 at PIN 6	24 V: 24 V DC Plus (SELV/PELV) connection		
Contact assignment			
• Of socket 6 at PIN 1	O1: 24 V switching output 1	O1 (RC): 24 V-switching output status charging tap-off (ready to charge)	
• Of socket 6 at PIN 2	O2: 24 V switching output 2	O2 (E): 24 V-switching output error status (error)	
• Of socket 6 at PIN 3	O3: 24 V switching output 3	O3 (CS): 24 V switching output status cable connected (cable status)	
• Of socket 6 at PIN 4	O4: 24 V switching output 4	O4 (V): 24 V-switching output status vehicle connected (vehicle connected)	
• Of socket 6 at PIN 5	O5: 24 V switching output 5	O5 (VC): 24 V switching output charging status (vehicle charging)	
• Of socket 6 at PIN 6	O6: 24 V switching output 6		
• Of socket 6 at PIN 7	O7: 24 V switching output 7		
• Of socket 6 at PIN 8	O8: 24 V switching output 8		
• Of socket 6 at PIN 9	3M: Reference point 24 V outputs O1 ... O8		
Contact assignment			
• Of socket 7 at PIN 1	I1: 24 V input 1	I1 (EN): 24 V input module enabling	
• Of socket 7 at PIN 2	I2: 24 V input 2	I2 (HL): 24 V input status interlock	
• Of socket 7 at PIN 3	I3: 24 V input 3	I3 (CB): 24 V input circuit breaker status	
• Of socket 7 at PIN 4	I4: 24 V input 4	I3 (RCCB): 24 V input RCCB switch	
• Of socket 7 at PIN 5	I5: 24 V input 5	I4 (IO): 24 V input emergency release	
• Of socket 7 at PIN 6	I6: 24 V input 6		
• Of socket 7 at PIN 7	I7: 24 V input 7		
• Of socket 7 at PIN 8	I8: 24 V input 8		
• Of socket 7 at PIN 9	2M: Reference point 24 V inputs I1 ... I8		
Contact assignment			
• Of socket 8 at PIN 1	RJ45: Ethernet 10/100		

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CM-230 charging controllers acc. to IEC 61851 with Ethernet connection

Type		6FE1021-3CM10-1AA0	6FE1021-3CM10-2AA0	6FE1021-3CM10-3AA0
Product brand name		SIPLUS ECC2000		
Product designation		CM-230 managed version	CM-230 stand-alone version	CM-230-C standalone version
Ambient conditions				
Installation altitude at height above sea level maximum	m	2 000		
Ambient temperature				
• During storage	°C	-25 … +70		
• During operation	°C	-25 … +55		
• During transport	°C	-25 … +70		
Relative humidity				
• During operation	%	0 … 95		
Electromagnetic compatibility				
EMC emitted interference according to IEC 61000-6-3		Suitable for operation in a residential, public and industrial environment		
EMC interference immunity according to IEC 61000-6-2		Suitable for use in industrial and residential areas		
Conducted interference injection BURST according to IEC 61000-4-4		2 kV/5 kHz DC supply cables, 1 kV/5 kHz control cables, relay outputs, RS 232 and Ethernet, assessment criterion B		
Conducted interference injection SURGE according to IEC 61000-4-5		• Asymmetrical: DC supply cables 0.5 kV/12 Ω; Control cables, functional ground, RS 232 interface 1 kV/42 Ω; Relay outputs 2 kV/12 Ω; Ethernet-cable (shield) 1 kV direct; assessment criterion B • Symmetrical: DC supply cable 0.5 kV/2 Ω; assessment criterion B		
Field-related interference according to IEC 61000-4-3		• 80 MHz ... 1 GHz 10 V/m, modulation 80 % AM with 1 kHz, assessment criterion B • 80 MHz ... 1 GHz 3 V/m, 1.4 ... 2 GHz 3 V/m, 2.0 ... 2.7 GHz 1 V/m, modulation 80 % AM with 1 kHz, assessment criterion A		
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge, assessment criterion B		
Shock resistance				
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis		
• During transport according to IEC 60068-2-29		1 000 shocks/axis, 25 *g*, 6 ms half-sine		
Vibration resistance				
• During transport according to IEC 60068-2-6		5 ... 8.4 Hz/3.5 mm deflection, 8.4 ... 500 Hz/1 *g*		
• During operation according to IEC 60068-2-6		5 ... 8.4 Hz/3.5 mm deflection, 8.4 ... 150 Hz/1 *g*		
Conducted interference injection as high-frequency interference according to IEC 61000-4-6		3 V effective in the frequency range 0.15 ... 80.0 MHz, modulation 80 % AM with 1 kHz, assessment criterion A		
Interference immunity against magnetic fields with energy-related frequencies according to IEC 61000-4-8	A/m	100 at 50 Hz and 60 Hz, assessment criterion A		
Total active power loss, typical	W	4		
Touch protection against electric shock		Finger-safe		
Contact reliability	Operating cycles	80 000 at 1 A, inductive load		
Installation/fixing/dimensions				
Mounting position		Vertical, on horizontal standard mounting rail		
Material of the enclosure		Wellamid 6600-PA66-GV 30 HWV0CP		Lexan 915R
Type of mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715		
Dimensions				
• Width	mm	108		
• Height	mm	91		
• Depth	mm	72		
Connections				
Type of electrical connection				
• Of the inputs and outputs		Combicon connection GMSTB 2.5		
• For auxiliary and control circuit		Combicon connection MSTB 2.5		
Version of connector assignment				
• Of the outputs		Combicon connection MSTB 2.5		
• Of the inputs		Combicon connection MSTB 2.5		
Product function: removable terminal for the auxiliary and control circuit		Yes		
Connectable conductor cross-section				
• Solid	mm²	0.5 … 2.5		
• Finely stranded				
- Without end sleeves	mm²	0.5 … 2.5		
- With end sleeves	mm²	0.5 … 2.5		
AWG number				
• As coded connectable conductor cross-section		20 … 14		

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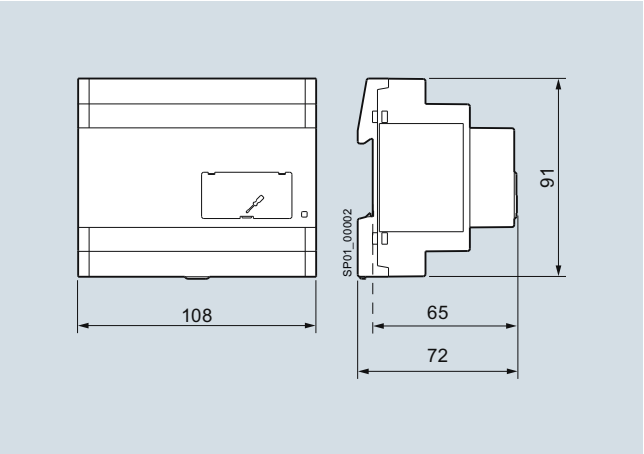
CM-230 charging controllers acc. to IEC 61851 with Ethernet connection

Selection and ordering data

Version	Supply voltage	Charging current	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	A						
SIPLUS ECC2000 charging controllers (CM-230/CM-230-C)								
6FE1021-3CM10-.AA0								
CM-230	24 DC	6 … 80 (adjustable through web interface)						
• Managed			X	**6FE1021-3CM10-1AA0**		1	1 unit	477
• Standalone			X	**6FE1021-3CM10-2AA0**		1	1 unit	477
CM-230-C	24 DC	6 … 80 (adjustable through web interface)						
• Standalone			X	**6FE1021-3CM10-3AA0**		1	1 unit	477

Dimensional drawings



SIPLUS ECC2000 charging controllers (CM-230/CM-230-C)
6FE1021-3CM10-1AA0,
6FE1021-3CM10-2AA0,
6FE1021-3CM10-3AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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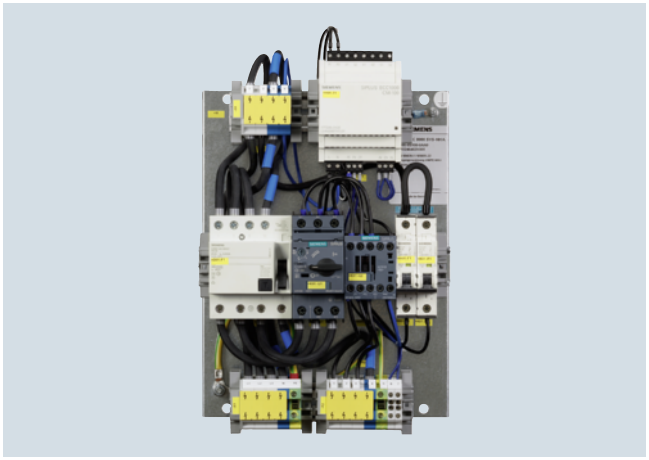
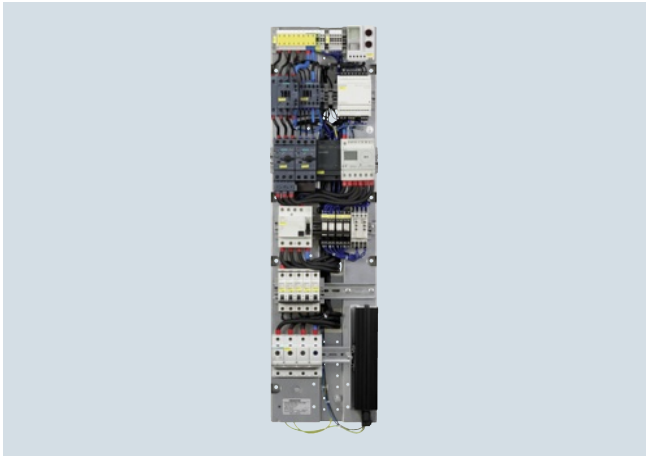
Overview

Function units are pre-wired, tested and ready-to-fit subsystems for electric vehicle charging stations. The function units comprise not only the charging controller but also the complete power tap-off with RCCB, circuit breaker and load contactor.

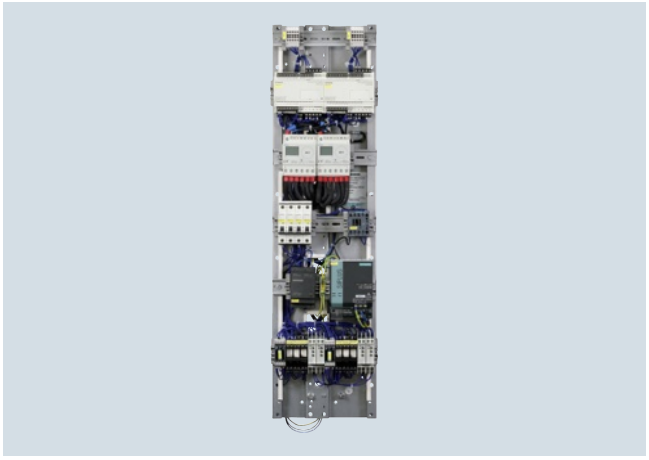
Other components are also included in the function units according to the intended application, e.g. electric heaters to extend the permissible temperature range, controllers for the charging plug interlock, and calibrated power meters. Switch disconnectors and terminal strip connections enable easy commissioning and reduce the amount of work during servicing calls.



SIPLUS ECC8000 SYS-101A function unit



SIPLUS ECC8000 SYS-102A function unit



SIPLUS ECC8000 SYS-202A function unit

Benefits

The prefabricated and certified function units enable the quick installation of standards-conform charging stations for system integrators.

Customer-specific adaptations are possible (on request).

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SIPLUS ECC8000 prefabricated function units

Technical specifications

Type		6FE1086-0SY00-0AA0	6FE1086-0SY00-1AA0	6FE1086-3SY00-0AA0
Product brand name		SIPLUS ECC8000		
Product designation		SYS-101A	SYS-102A	SYS-202A
General data				
Product description		Prefabricated function unit for installation in wall box enclosures in a residential environment (e.g. garage)	Prefabricated function unit for installation in a simple charging post	Prefabricated function unit for installation in a public/semi-public charging posts
Suitability for use		Function unit for charging stations at home (home charging)	Function unit for wall boxes or simple charging posts	Function unit for professional charging posts in the public area
Product component charging tap-offs		Yes		
Number of charging tap-offs		1		2
Number of interfaces according to IEC 61851		1		2
Charging current	A	16	13 / 32 (automatic switchover)	32 each
Product function				
• Load management		No		Yes
• Control plug interlock		No		Yes
- Note		--		24 V/12 V (motor)
• Energy measurement		No	Yes	
Number of energy measuring stations		0	1	2
Standard for charging mode electric vehicle		IEC/ISO 61851		
Pollution degree		2 (cabinet requirement)		
Type of sensor		--		Humidity/temperature
IP degree of protection		IP00		
Overvoltage category		2		
RCCB type		Type A		
Installation altitude at height above sea level, maximum	m	1 000		
Ambient temperature				
• During storage	°C	-40 … +75	-20 … +60	
• During operation	°C	-20 … +45	-5 … +45	
• During transport	°C	-40 … +75	-20 … +60	
Relative humidity during operation, maximum	%	95		
Product component heating		No	Yes	
Product function overvoltage protection		No		
Inputs				
Type of voltage of the supply voltage		AC		
Operational voltage rated value for AC	V	400		
Input voltage	V	360 … 440		
Mains frequency 1, rated value	Hz	50		
Insulation voltage, rated value	V	440		
Suitability of use for network form		TNS		
Current at AC, rated value	A	18	35	72
Outputs				
Phase number of outputs		3		

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SIPLUS ECC8000 prefabricated function units

Type		6FE1086-0SY00-0AA0	6FE1086-0SY00-1AA0	6FE1086-3SY00-0AA0
Product brand name		SIPLUS ECC8000		
Product designation		SYS-101A	SYS-102A	SYS-202A
Communications				
Product function bus communication		No		Yes
Type of data transmission to the I&C system		--		Ethernet
Protocol is supported				
• Vehicle communication according to IEC 61851		Yes		
• Ethernet protocol		No		Yes
Conducted interference injection BURST according to IEC 61000-4-4		2 kV/5 kHz AC supply cables and functional ground, 1 kV/5 kHz control cables and input/output signals		
Conducted interference injection SURGE according to IEC 61000-4-5		• Asymmetrical: Supply cables 2 kV, signal cables > 30 m 1 kV, assessment criterion B • Symmetrical: Supply cables 1 kV, assessment criterion B		
Field-related interference according to IEC 61000-4-3		• 80 MHz ... 1 GHz 3 V/m, 1.4 ... 2 GHz 3 V/m, assessment criterion A • 80 MHz ... 1 GHz 10 V/m assessment criterion B • 2.0 ... 2.7 GHz 1 V/m		
Electrostatic discharge according to IEC 61000-4-2		4 kV contact discharge/8 kV air discharge, assessment criterion B		
Conducted interference injection as high-frequency interference according to IEC 61000-4-6		3 V effective in the frequency range 0.15 ... 80.0 MHz, assessment criterion A		
Interference immunity against magnetic fields with energy-related frequencies according to IEC 61000-4-8	A/m	100 at 50 Hz and 60 Hz, assessment criterion A		
EMC emitted interference according to IEC 61000-6-3		Suitable for operation in a residential, public and industrial environment		
Shock resistance				
• According to IEC 60068-2-27		15 *g*/11 ms/3 shocks/axis		
• During transport according to IEC 60068-2-29		1 000 shocks/axis, 25 *g*, 6 ms		
Vibration resistance				
• During transport according to IEC 60068-2-6		5 ... 500 Hz/1 *g*/10 cycles		
• During operation according to IEC 60068-2-6		5 ... 150 Hz/1 *g*/10 cycles		
Mechanical data				
Mounting position		Vertical		
Type of mounting		Screw mounting		
Dimensions				
• Height	mm	370	900	
• Width	mm	230	240	
• Depth	mm	150	200	270

Selection and ordering data

	Product designation	Type of voltage of the supply voltage	Input voltage	Charging current 1	Charging current 2	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
			V	A	A						
SIPLUS ECC8000											
6FE1086-0SY00-0AA0	**SYS-101A**	AC	360 … 440	16	--	X	**6FE1086-0SY00-0AA0**		1	1 unit	477
	SYS-102A	AC	360 … 440	13	32	X	**6FE1086-0SY00-1AA0**		1	1 unit	477
	SYS-202A	AC	360 … 440	32	--	X	**6FE1086-3SY00-0AA0**		1	1 unit	477

More information

For operating instructions and other technical specifications see http://support.automation.siemens.com/WW/view/en/46476547/133200.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Notes

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Glossary

"a" release

Short designation for a current-sensitive delayed overload release.

"n" release

Short designation for an instantaneous electromagnetic electronic release.

8US busbar adapters

8US busbar adapters enable the mechanical mounting and electrical contacting of motor starter protectors/circuit breakers, load feeders or compact starters on a single busbar system.

Adapters for screw fixing

Adapters for screw fixing can be used for mounting a compact starter onto a flat surface.

Approvals

Approval of controls and switchgears on the basis of sometimes mandatory national standards which exist in addition to sets of rules such as "IEC", "CENELEC" and "CEE". For example, UL certification or CSA certification are required for the North American market (USA, Canada). Additional marking is also mandatory in such cases, i.e. the certification symbol must be applied as an inscription to the device.

Arc quenching space

During a control's switching operations, in particular during disconnection of highly inductive load currents or short-circuit currents, the ionized gases produced by the arc are forced out through the arc chute openings. To ensure that the concentration of these ionized gases does not reach a hazardous level, a certain clearance is required above or in front of the device. This arc quenching space is quoted by the manufacturer (normally on the dimensional drawings) and depends on the presence of exposed live conductors (e.g. busbars), conducting structures and insulation partitions at the control. Arc chute attachments can be mounted onto large motor starter protectors in order to reduce the clearance and therefore the space required in the control cabinet. No arc quenching space is required for vacuum circuit breakers and vacuum contactors because the arc does not leave the vacuum chute and no ionized gases are released.

AS-Interface

AS-Interface is an open, international standard according to EN 50295 and IEC 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

Auxiliary switch blocks for compact feeders

Optional auxiliary switch blocks in versions with 2 NO, 2 NC or 1 NO plus 1 NC.

AWG (American Wire Gauge)

A standard wire size used in the USA, which is based on the cross-sectional area of the conductor or wire. With each AWG number the cross-sectional area is incremented by 26 %. The thicker the wire, the smaller the AWG number.

Basic module

Function modules are comprised of at least one basic module, supplemented by coupling modules as required. The basic module includes the control logic and, in the case of wye-delta modules, the time setting for ramp-up in star mode, and a 10-pin plug connector for accommodating the plug of the coupling modules.

Bypass operation

When a motor ramp-up is completed, the thyristors on SIRIUS soft starters are fully operated and the complete mains voltage is applied therefore to the motor terminals. As no controlling of the motor voltage is necessary during operation, the thyristors are bridged by internal bypass contacts designed for AC1 current. The waste heat arising during uninterrupted duty due to thyristor power loss is thus reduced. This reduces heating of the switchgear environment.

CLASS (time)

See also Trip class (CLASS).

Closed power

This refers to the power consumption of a contactor's solenoid coil which results from the continuously absorbed current and is required to hold the magnetic system in the closed state.

Connection methods

SIRIUS offers the right connection method for every environment: Screw terminals, spring-type terminals or ring terminal lug connections.

Contactor

A switching device with only one off position, usually without mechanical lock, which is not operated manually and which, under normal conditions, can switch on, transmit and switch off the circuit, including normal overload currents. Contactors are preferably used for high switching frequencies. A distinction is made between contactors for switching motors (motor load switches) and contactor relays for control.

Control kit

An aid for manually closing the main contacts by actuating a handle.

Coupling module

Function modules are comprised of at least one basic module, supplemented by coupling modules as required. The coupling module includes one NO contact and a 10-pole connecting cable with plugs to the coupling module and the basic module; it is used for the mutual interlocking of wye and delta operation. The communication-capable version transmits the signals of the other contactors and realizes the electrical interlocking (reversing/wye-delta starting); there is no integrated connecting cable.

Current limiting with soft starters

SIRIUS 3RW40 soft starters continuously measure the phase current (motor current) by means of integrated current transformers. During the start-up operation, the flowing motor current can be actively limited by the soft starter. The current limiting function is superimposed on the voltage ramp function. This means that as soon as a parameterized current limit value is reached, the voltage ramp is aborted and the motor is started with the current limiting function until the ramp-up is completed.

On SIRIUS 3RW40 soft starters the current limiting is always active. If the current limiting potentiometer is set to the far right (maximum), the starting current is limited to the factor 5 of the set rated motor current.

The current limit value is set as a factor of the rated motor current to the required current during start-up. Due to the current unbalance in the start-up operation, the set current corresponds to the arithmetic mean over the 3 phases.

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Current monitoring relay

Current monitoring relays are used for underload monitoring and overload monitoring of motors or other loads. The level of current permits extensive conclusions to be drawn about the powered process or plant, e.g. a torn belt, no-load operation of a pump, tool wear, hoist overload or blockage. With multi-phase monitoring it is possible in addition to perform phase sequence, phase failure or residual current monitoring. If the measured current values lies outside the defined range there will follow an instant or time-delayed alarm or disconnection.

Current setting range (of an electronic release)

Range between the smallest and the biggest value of the current to which the release can be set.

Door-coupling rotary operating mechanisms

Door-coupling rotary operating mechanisms enable the operation of motor starter protectors/circuit breakers and compact starters with closed control cabinet doors.

Electrical interlock

The electrical interdependence of controls through circuit-related measures. Customary for contactor controls: For example, a contactor is only allowed to be switched on when another contactor was switched off first. Auxiliary contacts or auxiliary switches are used to implement an electrical interlock.

Endurance

The period in which the control works problem-free under normal operating conditions. It is expressed in numbers of operating cycles (operating cycles), electrical endurance (contact erosion of the contacts) and mechanical endurance (operating cycles without load).

Explosion protection

Essential for the use of electrical equipment in potentially explosive atmospheres according to EN 50014 (VDE 0170 / 0171). Explosion protection requires equipment which is liable to produce ignition-capable electric arcs (plasma) during operation to be enclosed in a flameproof casing. The explosive mix can enter the enclosure, but an ignition-capable flame produced during an explosion inside the casing is prevented from escaping to the outside.

Fast short-circuit trip unit

A motor starter protector/circuit breaker's release which provides short-circuit protection for the downstream load or cable. In the event of a short circuit, the fast short-circuit trip unit must disconnect all poles of the motor starter protector/circuit breaker instantaneously or with a short-time delay.

Function module

Function modules are differentiated according to their use:

- For direct-on-line starting
- For reversing starting
- For wye-delta starting

Function modules are also available in communication-capable versions with AS-i or IO-Link in order to create a link to a higher-level control system.

Function module for direct-on-line starting

These function modules are used for the time-delayed switching of contactors.

Function module for reversing starting

Function modules for reversing starting are used for operating reversing starters. The version without a fieldbus interface is comprised of bridge modules, the version for AS-Interface or IO-Link has one basic module and one coupling module. In all three cases the electrical interlocks of the two directional contactors are already included.

Function module for wye-delta starting

Function modules for wye-delta starting are used for changing over from star mode to delta mode. They are comprised of one basic module and two coupling modules. The electrical interlocks are already included in the modules.

Heavy starting

Heavy starting exists if a motor requires more than 10 to 15 s from being switched on to reaching its rated speed on account of its special load conditions. When heavy starting exists, the load torque of the machine to be driven is greater during start-up than in rated operation. It takes longer to reach the rated speed because large centrifugal masses need to be accelerated (e.g. on rolling mills, centrifuges, etc.). The protection of heavy-starting motors requires special overload relays (heavy-starting relays, solid-state overload relays) or thermistor motor protection devices.

Heavy starting with soft starters

According to the specific boundary conditions, the SIRIUS soft starter has to be selected for heavy starting characteristics (CLASS 20 start-up) at least one power level higher than the rating of the motor used. Sample set values and device sizes are listed in tables in the product manual list.

Infeed systems for 3RA6

The infeed system for 3RA6 enables several compact starters to be fed in through one modular infeed system with permanent wiring.

Intrinsic device protection for soft starters

SIRIUS 3RW40 soft starters have integrated intrinsic device protection which prevents thermal overloading of the thyristors. This is realized on the one hand by current measurement using transformers in the three phases and additionally by temperature measurement using thermal sensors on the thyristor heat sink. If the internal permanently set switch-off value is exceeded, the soft starter will switch off automatically.

Inverse-time delayed overload trip unit ("a" release)

A thermal overload release which works with a time delay that decreases as the current increases.

IO-Link

IO-Link is a new communication standard for sensors and actuators - defined by the PROFIBUS User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system. As such it is not a bus system but an upgrade of the classic point-to-point connection. Extensive parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensor and actuators. The connection method is based on a three-pole standard cable or 3 individual wires.

Leakage current

When the current flow is controlled by means of semiconductors, there can be no electrical separation in the device. A small residual current, i.e. leakage current, still flows therefore in the disconnected state when a load is connected.

Low-voltage switchgear and controlgear assembly

A switchgear and controlgear assembly is a combination of one or more low-voltage controls with related units for controlling, measuring and indicating, plus the related protective and control devices. It must be fully assembled under the manufacturer's responsibility, with all internal electrical and mechanical connections and structural parts.

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Glossary

Main control switch

Every industrial machine covered by IEC 60204 Part 1 (VDE 0113, Part 1) must be fitted with a main control switch which disconnects the entire electrical equipment from the mains for the duration of cleaning work, maintenance, repairs and lengthy downtimes. Usually a switch which can be operated by hand is stipulated in order to prevent electrical or mechanical hazards. A main control switch can also be an emergency-stop device.

The following requirements must be met:

1. Handle can be reached from the outside
2. Only one "Off" position and one "On" position with allocated stops
3. Identification of the two positions with "0" and "I"
4. "Off" can be locked
5. Mains terminals with cover to prevent touching by accident
6. The switching capacity must comply with AC-23 in the case of motor load switches and AC-22 in the case of load-break switches (utilization category)
7. Positive indication of the switch position

Mirror contact for power contactors

A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact (according to EN 60947-5-1, Appendix F).

Modular systems

The SIRIUS modular system offers everything that you need for switching, starting, protecting and monitoring motors and industrial systems. It is a modular selection of standard components which are optimally coordinated, can be combined with ease and use the same accessories.

Motor protection

Protection of induction motors against overload and short circuit, i.e. protection of the winding insulation against unacceptable heating.

Motor Starter Protectors/Circuit Breakers

Generally key-operated switching devices that switch on, control and switch off currents in circuits under normal operating conditions. Under prescribed conditions that are not normal through to short circuit, they can also switch on the current, control it for a specified interval and interrupt it.

Mounting methods

SIRIUS offers a maximum of configuration flexibility. The system components can be configured on a feeder-oriented or line-oriented basis.

Off-delay

The time span effected by a timing relay or timer (e.g. on contactors) between the opening command for the contacts of the timing relay or timer and the actual reaching of their original position.

ON period in %

The relative ON period in % is the ratio between load period and cycle duration for loads which are frequently disconnected and switched on.

Operating range

The range in which a contactor's actuating voltage is allowed to deviate from the rated actuating voltage without the reliable operation of the control being impaired (e.g. dropping out of the contactor).

Overload release

An overload trip unit is an electronic release for protecting against overload.

Phase control for soft starters

With phase control of two inverse-parallel switched thyristor pairs, the rms value of the motor voltage on SIRIUS soft starters is increased within a selectable starting time from a selectable starting voltage to the rated motor voltage.

The motor current changes in proportion to the voltage applied to the motor. The starting current is thus reduced by the factor of the voltage applied to the motor.

The torque changes in squared proportion to the voltage applied to the motor. The starting torque is thus reduced in squared proportion to the voltage applied to the motor.

Phase failure sensitivity

A product feature which enables a protective device to respond also during single-phase operation of a three-phase asynchronous motor before the motor suffers thermal damage (DIN VDE 0660 Part 102).

Pick-up power

The pick-up power is the power consumption of a contactor's solenoid coils which is required to set the magnetic system in motion. With alternating current operation this is usually higher than the closed power. With direct current operation on SIRIUS contactors, the pick-up power equals the closed power.

Polarity balancing for soft starters

On two-phase controlled SIRIUS 3RW30 and 3RW40 soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. The advantages of two-phase control lie in the more compact size, compared for example to a three-phase solution, and in the lower device costs.

A negative physical effect of the two-phase control during start-up is the occurrence of DC components due to the leading-edge phase and the superimposition of the phase currents, which can lead to severe noise generation on the motor. The SIEMENS patented "Polarity Balancing" control method was developed to prevent the DC components during start-up.

"Polarity Balancing" reliably eliminates these direct current components during the ramp-up phase. It creates a motor ramp-up that is uniform in speed, torque and current rise. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled starting operation. This is made possible by the on-going dynamic harmonizing or balancing of current half-waves of different polarity during the motor ramp-up.

Positively-driven contact in contactor relays

Positively-driven contact elements are a combination of "n" NO contact and "m" NC contact which are designed such that they cannot be closed simultaneously (EN 60947-5-1, Appendix L).

Preferred circuit for wye-delta starters

In the preferred circuit for a clockwise rotating motor the motor terminals are correctly connected when phase L1 is connected to motor terminals U1 and V2, L2 to V1 and W2, and L3 to W1 and U2. This order should be observed during installation in order to minimize the changeover current peak in a clockwise rotating motor when switching over from wye to delta.

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Protection technology

Basically a distinction is drawn between two current-based protection technologies: Thermal and solid-state protection. Motor starter protectors and thermal overload relays protect with bimetal trip units; solid-state overload relays, 3RW40 soft starters and 3RA6 compact starters protect on a solid-state basis. The electronic options feature not only a far lower power loss but also a wide setting range of 1:4, which means that they offer a far smaller variance than the thermal releases. The SIRIUS modular system has the right solution for each switching technology.

Ramp time

With SIRIUS soft starters, the length of the set ramp time defines in which time the motor voltage is raised from a selected starting voltage to the mains voltage. This has an influence on the motor's acceleration moment, which drives the load during the ramp-up operation. As the result, a longer ramp time has a smaller acceleration moment throughout the motor ramp-up. The latter is therefore longer and smoother. The length of the ramp time should be selected such that the motor reaches its rated speed within this period. If the time selected is too short, i.e. if the ramp time ends before the motor ramp-up is finished, a very high starting current will arise at this moment and can reach the value of the direct-on-line starting current at this speed.

Ramp-down time

On SIRIUS 3RW40 soft starters the "ramp-down time" potentiometer can be used to define how long the power supply to the motor is to be upheld after the ON command is removed. During this ramp-down time the torque generated in the motor is reduced using a voltage ramp function and the application is brought to a smooth halt.

Rated conditional short-circuit current I_q

Guaranteed short-circuit breaking capacity of controlgear assemblies and load feeders, also referred to as the rated conditional short-circuit current.

Rated data of the control circuit

The most important rated data of the control circuit for selecting a contactor are the rated control supply voltage U_s (the voltage of the coil connection) with related frequency (e.g. 50 Hz) and the power consumption of the coil (pick-up power and closed power).

Rated data of the main circuit

The most important rated data of the main circuit for selecting a contactor are the rated operational current I_e (the current which is defined by the conditions of use) or the rated power (motor rating) and the corresponding rated voltage U_e.

Rated impulse withstand voltage (U_{imp})

The peak value of a surge voltage of specified form and polarity to which, under specified test conditions, electrical equipment can be subjected without failing and to which the clearances refers. The rated impulse withstand voltage of a device must correspond to, or be greater than, the transient overvoltages that occur in the system in which the equipment is installed.

Rated insulation voltage U_i

The voltage value which specifies the insulation resistance of the control or accessory part and to which the insulation tests and creepage and clearances refer. On no account must the highest rated operational voltage exceed the rated insulation voltage.

Rated service short-circuit breaking capacity I_{cs}

Compared to the rated ultimate short-circuit breaking capacity I_{cu}, the test conditions are more exacting and the short-circuit current is usually lower. Determined with test sequence II, switching sequence O-t-CO-t-CO (O = Open , t = Time , CO = Close-Open). After the test, the motor starter protector/circuit breaker must be unrestricted in its functions.

Rated short-circuit breaking capacity I_{cn}

The rated short-circuit breaking capacity of a motor starter protector/circuit breaker is (according to IEC 60947-2 and EN 60947-2) the value of the short-circuit current that it can switch off at the rated operational voltage, rated frequency and specified power factor (or specified time constant). The value of the prospective current applies (in the case of alternating current: rms value of the AC components) as specified by the manufacturer. With AC motor starter protectors/circuit breakers the rated short-circuit breaking capacity must be independent of the size of the DC components (DC component). The rated short-circuit breaking capacity means that the motor starter protector/circuit breaker can disconnect any current up to the rated short-circuit breaking capacity at a line-frequency recovery voltage of 110 % of the rated operational voltage.

This applies

- for alternating current with every value of the power factor, but not lower than specified in the respective testing guidelines,
- for direct current, unless otherwise stated by the manufacturer, with every time constant but not greater than defined in the respective testing directive.

The short-circuit breaking capacity does not apply for line-frequency recovery voltage of more than 110 % of the rated operational voltage.

Rated ultimate short-circuit breaking capacity I_{cu}

The maximum short-circuit current I_k (limit value of the rated short-circuit breaking capacity) which the motor starter protector/circuit breaker can disconnect under defined conditions. Determined with test sequence III, switching sequence O-t-CO (O = Open, t = Time, CO = Close-Open). After the test, the motor starter protector/circuit breaker may be restricted in its functions.

Recovery time

After a protection function in a control (e.g. motor starter protector/circuit breaker, soft starter, overload relay or current monitoring relay) has tripped, the motor cannot be restarted until a recovery time has elapsed. The recovery time varies in length according to the cause of the fault. Details can be found in the related product documentation.

Response delay

The response delay is the time from the beginning of a command's entry to the first making of the contact, e.g. at the contactor.

RoHS

EC Directive 2002/95/EC concerning the restriction of certain dangerous substances in electrical and electronic devices regulates the use of hazardous substances in devices and components. The directive and its respective implementation in national law is known for short by the abbreviation RoHS (Restriction of the use of certain Hazardous Substances).

Short-circuit strength

Resistance of a control in the closed state with its parts (e.g. releases) or of a complete switchgear against the electrodynamic (dynamic short-circuit strength) and thermal (thermal short-circuit strength) stress that occurs in the event of a short circuit. The characteristic for the dynamic stress is the peak short-circuit current as the highest instantaneous value of the short-circuit current. The characteristic for the thermal stress of the short-circuit current is the rms value of the short-circuit current for its duration.

SIL (Safety Integrity Level)

A discrete level (one of three possible levels) for defining the requirements to be met by the safety integrity of safety-related control functions. SIL 3 is the highest and SIL 1 the lowest safety integrity level.

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Glossary

Smooth ramp-down

The same principle is used during the ramp-down operation as for soft starting. This way the torque generated in the motor is slowly reduced, thus enabling a smooth ramp-down of the application.

During a smooth ramp-down, the free or natural ramp-down of the load is prolonged. This function is set if there is a need to prevent the load from being stopped abruptly. Applications involving small mass inertia values or high counter-rotating torques are typical examples.

Soft starters

A motor starter which reduces the motor's starting torque (tightening torque) and starting current in order to reduce vibrations on the driven machine and current peaks in the line supply. The starting torque is reduced because the control supply voltage at the beginning is lower than the motor's rated voltage (the starting torque is proportional to the square of the applied voltage). The terminal voltage can be increased as soon as the motor is running. Classic methods for reducing the terminal voltage are for example wye-delta starting, start-up through resistors in the stator and starting with an autotransformer. The use of solid-state motor controllers with switched thyristor circuits for controlling the terminal voltage on squirrel-cage motors is becoming increasingly widespread. See also Soft starting and Smooth ramp-down.

Soft starting

During the start-up operation, the absorbed starting current and the starting torque generated in the motor are regulated by a solid-state soft starter on the basis of the motor voltage control (phase control).

Starting current

Three-phase asynchronous motors have a high direct-on-line starting current. Depending on the motor version it can amount to between three times and fifteen times the rated operational current. Seven to eight times the rated motor current can be taken as a typical value.

Starting voltage

With SIRIUS soft starters, the level of the starting voltage defines the switch-on torque of the motor. A lower starting voltage results in a lower tightening torque and a lower starting current. The starting voltage should be selected such that the motor starts up immediately and smoothly once the start command goes to the soft starter.

Start-up detection on soft starters

SIRIUS 3RW40 soft starters feature internal start-up detection. When a motor ramp-up is detected, the motor voltage is increased immediately to 100 % of the mains voltage. The internal bypass contacts close and the thyristors are bridged.

Switching frequency

Number of operating cycles per unit of time (e.g. 15 operations per hour).

To prevent thermal overloading of the SIRIUS soft starters, it is imperative to comply with the maximum permissible switching frequency. The switching frequency of SIRIUS soft starters size S0 to S3 can be increased by using an optional auxiliary fan.

Switching technology

Basically a distinction is drawn between two switching technologies: On the electromechanical side there are contactors, contactor assemblies and compact starters which can be used to implement solutions for direct-on-line starting, reversing starting and wye-delta starting. Frequent switching or reversing, soft starting and smooth ramp-down are performed on the other hand with solid-state controls: solid-state switching devices and soft starters. The SIRIUS modular system has the right solution for each switching technology.

Temperature compensation

On inverse-time (thermally) delayed overload releases and relays, the tripping time is influenced not only by the current but also by the ambient temperature. The effect of the ambient temperature is compensated by an additional bimetal strip which is not heated by the current. Solid-state compensation is possible for solid-state overload relays.

Terminals for "Self-Protected Combination Motor Controller (Type E)"

The terminals comply with the required clearance and creepage distances according to UL 508 (type E).

Thermistor motor protection

Protection of the motor through temperature sensors fitted in the windings (PTC sensors). These directly monitor the winding temperature.

Three-phase busbars

The three-phase busbar enables several motor starter protectors/circuit breakers or compact starters to be fed in through one feeder terminal.

Tightening torque

The tightening torque and the breakdown torque can normally be assumed to amount to between two and four times the rated torque. For the loaded machine this means that the start-up and acceleration forces give rise to a higher mechanical load on the machine and the goods being conveyed than compared to operation at rated values.

Time-delayed auxiliary switch

A component which unites various auxiliary switch combinations and as a general rule can also be retrofitted to a control.

Timing relays

A control with solid-state time delay which opens or closes contacts after a delay according to the set time.

Trip class (CLASS)

The trip class of an inverse-time delayed overload relay (including thermal and solid-state overload relays and releases) indicates the maximum tripping time under a given load from cold. The trip class number (e.g. CLASS 10, 20, 30) stands for the maximum permissible tripping time in seconds when the relay is loaded with symmetrical 3-pole loading from cold with 7.2 times the current setting (IEC 947-4-1; DIN VDE 0660 Part 107). Trip classes 20 and 30 are used for example for motor protection in heavy starting conditions.

Tripping characteristic

The graphical representation of the connection between the tripping time and the influencing variable is shown in the tripping characteristic curve. The time/current diagram shows for example how long the release or the tripping relay takes to respond to a specific current.

Tripping current (of an overload release)

Value of the current at which a trip releases within a specified time.

Two-phase control

Two of three active phases are controlled by means of semiconductors. With SIRIUS 3RW30 and 3RW40 soft starters, for example, two inverse-parallel switched thyristors lie in each of the phases L1 and L3. Phase L2 is passed through the starter as an uncontrolled phase using a copper link and is connected directly to the corresponding output terminal.

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Types of coordination

EN 60947-4-1 (VDE 0660 Part 102) and IEC 60947-4-1 make a distinction between two different types of coordination which are referred to as type of coordination "1" and type of coordination "2". Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

With type of coordination "1" the fuseless load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible. For 3RA2 load feeders, the motor starter protector itself always achieves type of coordination "2".

By contrast, with type of coordination "2" there must be no damage to the overload release or to any other component after a short circuit has been cleared. The 3RA2 fuseless load feeder can resume operation without needing to be partially renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

Utilization categories

According to EN 60947-4-1, the intended use and stress of power contactors can be identified by specifying the utilization category in conjunction with the rated operational current or motor rating and the rated voltage. An example of this is utilization category AC-3 for starting and switching off squirrel-cage motors.

Voltage ramp

With SIRIUS 3RW30 and 3RW40 soft starters, soft starting is achieved using a voltage ramp. The motor's terminal voltage is raised during an adjustable starting time from a parameterizable starting voltage to the mains voltage.

Wye-delta contactor assembly

A contactor assembly which during start-up switches the motor into a star circuit (one third the starting current compared to delta starting) and after a while changes over to the delta circuit. Wye-delta contactor assemblies are used where a high starting current has to be prevented in order to reduce the effects on the mechanical components or mains.

Wye-delta starter

See Wye-delta contactor assembly

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Highlights Siemens Industry Training

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. This training approach will give you all the confidence you need.

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With a total of about 300 local attendance courses, we train the complete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: We will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: Blended learning

"Blended learning" is a combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.

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Things you should know about Catalog IC 10

	Catalog IC 10 contains all selection and order-relevant data.	
Delivery time class (DT)		
► Preferred type A 1 or 2 working days B 3 to 5 working days C 6 to 15 working days D 16 to 30 working days X On request	Preferred types are available immediately from stock, i.e. are dispatched within 24 hours. Normal quantities of the products are usually delivered within the specified time following receipt of your order at our branch. In exceptional cases, the actual delivery time may differ from that specified.	The delivery times apply up to the ramp at Siemens AG (products ready for dispatch). The transport times depend on the destination and type of shipping. The standard transport time for Germany is 1 day. The delivery times specified here represent the situation in October 2013. They are continuously optimized. For more up-to-the-minute information, please visit our site at www.siemens.com/sirius/mall. Note: Delivery time classes for "Products for specific requirements" see page 15/9.
Price units (PU)		
	The price unit defines the number of units, sets or meters to which the specified price applies.	
Packaging sizes (PS)		
	The packaging size defines the number, e.g. of units, sets or meters, for outer packaging. Only the quantity defined by the packaging size or a multiple thereof can be ordered.	For multi-unit packing and reusable packaging see page 16/13.
Price groups (PG)		
	Each product is assigned to a price group.	
Dimensions		
	All dimensions in mm.	

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Ordering notes

Symbols

In Catalog IC 10 you will find the symbols and their explanations listed alongside.

They are used in conjunction with an orange background to mark and highlight special selection criteria (e.g. connections, types of coordination, etc.).

Connections	Combicon connection
	Insulation piercing method
	Straight-through transformers
	Fast Connect
	Spring-type terminals
	Flat connectors
	Solder pin connections
	Ring terminal lug connections
	Bus connections
	Screw terminals
Types of coordination	Type of coordination "1"
	Type of coordination "2"
Distinguishing between units	Complete units
	Modular system
Support function	Configurator available in the Industry Mall

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Logistics

General

With regard to delivery service, communications and environmental protection, our logistics service ensures "quality from the moment of ordering right through to delivery". By designing our infrastructure according to customer requirements and implementing electronic order processing, we have successfully optimized our logistics processes.

We are proud of our personal consulting service, on-time deliveries and 1-day transport within Germany.

To achieve this, we supply the preferred types marked with ► ex warehouse.

We regard the DIN ISO 9001 certification and consistent quality checks as an integral part of our services.

Electronic order processing is fast, cost-efficient and error-free. Please contact us if you want to benefit from these advantages.

Packaging, packing units

The packaging in which our equipment is dispatched provides protection against dust and mechanical damage during transport, thus ensuring that you receive our products in a perfect state.

We select our packaging for maximum environmental compatibility and reusability (e.g. crumpled paper for protection during transport in packages up to 32 kg) and, in particular, with a view to reducing waste.

With our multi-unit packaging and reusable packaging, we offer you specific types of packaging that are both kind to the environment and tailored to your requirements:

Your advantages at a glance:

- Lower order costs
- Cost savings through uniform-type packaging: low/no disposal costs
- Reduced time and cost thanks to short unpacking times
- "Just-in-time" delivery directly to the production line helps reduce stock: cost savings through reduction of storage area. Cost savings through reduction of storage area
- Fast assembly thanks to supply in sets
- Standard Euro boxes – corresponding to the Euro pallet modular system – suitable for most conveyor systems
- Active contribution to environmental protection

Unless stated otherwise in the "Selection and ordering data" of this catalog, our products are supplied individually packed.

For small parts/accessories, we offer you economical packaging units as standard packs containing more than one item, e.g. 5, 10, 50 or 100 units. It is essential that whole number multiples of these quantities be ordered to ensure satisfactory quality of the products and problem-free order processing.

The products are delivered in a neutral carton. The label includes warning notices, the CE mark and product description information in English and German.

In addition to the Article No. (MLFB) and the packed number of items in the packaging the Instr. Article No. is also specified for the operating instructions. It can be obtained from your local Siemens representative (you will find a list of your local Siemens contacts at www.siemens.com/automation/partner).

The device Article No. of most devices can also be acquired through the EAN barcode to simplify ordering and storage logistics.

The related master data are available from your local Siemens representative.

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Ordering notes

Multi-unit and reusable packagings

The devices listed in the table on page 16/13 can be ordered in multi-unit or reusable packagings (further versions on request).

If ordering multi-unit or reusable packagings for the first time, please first consult your local Siemens representative with regard to pack type, quantity, delivery time and the precise order designation. Use of the reusable packaging is reserved solely for customers that have signed a packaging return agreement with their Siemens representative in advance.

Multi-unit and reusable packagings are not available as a pack type for all products. Some products are unsuited for this pack type and would only involve an increased risk of damage in transit.

For both pack types, the quantity of devices ordered (per Article No.) must be divisible by the pack quantity. If this is not the case, the electronic order processing system rounds up to the next integer multiple of packagings.

Multi-unit packaging

Products in a quantity sufficient to fill a multi-unit packaging: 1/2 (W96) and 1/4 (W97) ENK

As standard, multi-unit packs contain uniform-type, unpacked single devices (1 device type) in an appropriately sized carton made of recyclable cardboard. The products of the SIRIUS range can be ordered in units of 1/1, 1/2, 1/4 and 1/8 standard Euro boxes (ENK).

Reusable packaging (uniform type)

Standard Euro box (ENK) made of durable molded plastic with foam inserts

Standard reusable packagings contain uniform-type, non-packed individual products (1 device type) in a reusable standard Euro box (ENK) made of durable molded plastic with foam inserts for protection during transport.

The standard Euro box (ENK) also serves as transport packaging. The reusable packagings (ENK) plus foam inserts are returned by the customer (free of charge) to the supply base.

Please contact your Siemens representative to clarify the delivery details or conditions for set supply or delivery in reusable packaging (ENK) (to find Siemens representatives, see www.siemens.com/automation/partner). Suitable arrangements will then be agreed with you.

Set deliveries (reusable, different devices)

On request, we also deliver order-related packs of larger quantities of devices in a standard Euro box (ENK).

Please contact your Siemens representative to clarify the delivery details or conditions for set supply or delivery in reusable packagings. Suitable arrangements will then be agreed with you.

Packaging dimensions

Packing material	Length mm	Height mm	Width mm
ENK	598	220	396
W95	576	192	380
W96	380	187	290
W97	290	187	190
W98	290	98	190

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Multi-unit and reusable packaging, quantity in units, supplied in indivisible pack quantities

Devices	Size	Reusable	Multi-unit			
		X95 (1/1 ENK)	**W95** (1/1 ENK)	**W96** (1/2 ENK)	**W97** (1/4 ENK)	**W98** (1/8 ENK)
Contactors						
3RT201.–1A..1/2	S00	144	--	72	40	--
3RT201.–1B..1/2	S00	72	--	72	40	--
3RT201.–2 A/B…	S00	120	--	60	32	--
3RT202.–1 A/B ..0	S0	48	--	24	12	--
3RT202.–2 A/B ..0	S0	40	--	18	8	--
3RT103.–.A..0/4	S2	30	30	15	--	--
3RT103.–.B..0	S2	24	24	15	--	--
3RT103.–.B..4	S2	24	24	15	--	--
Snap-on auxiliary switch blocks						
3RH2911–1F./GA/HA ..	--	351	--	240	120	60
3RH2911-2	--	321	--	196	100	50
Contactor relays						
3RH21 ..–1A ..0	S00	144	--	72	40	--
3RH21 ..–1B ..0	S00	72	--	72	40	--
3RH21 ..–2A/B ..0	S00	120	--	60	32	--
Motor starter protectors						
3RV2011–…1 /0/5	S00	43	--	24	12	--
3RV2011–…2 /0/5	S00	34	--	16	8	--
3RV2021–…1 /0/5	S0	43	--	24	12	--
3RV2021–…2 /0/5	S0	34	--	16	8	--
3RV1031–... 0/5	S2	24/24	24/--	12/12	5/--	2/--
Thermally delayed overload relays						
3RU2116–..B0	S00	64	--	32	16	--
3RU2116–..C0	S00	56	--	24	12	--
3RU2126–..B0	S0	56	--	32	16	--
3RU2126–..C0	S0	48	--	24	12	--
3RU1136–..B0	S2	36	36	18	9	5
Solid-state timing relays						
3RP1505–...20	--	--	137	--	27	16
3RP1505–...30	--	137	137	--	27	16
3RP151/2.–.A.30	--	192	--	96	48	24
3RP152.–.B.30	--	137	--	--	--	16
3RP154.–.B.31	--	137	--	--	--	--
3RP1574 –.N.30	--	192	--	--	48	--

Devices	Reusable	Multi-unit		
	X95	**X90**	**W95**	**W96**
3SB pushbuttons and indicator lights				
Complete units and actuators (except EMERGENCY-STOP, mushroom pushbuttons and key-operated switches)	--	50	--	--
Complete units and actuators (EMERGENCY-STOP, mushroom pushbuttons and key-operated switches)	--	20	--	--
Contact blocks	--	150	--	--
Holder	--	100	--	--
Supports, blanking plugs	--	50	--	--

When ordering products in multi-unit packagings, the Article No. of the product concerned must be supplemented with **"–Z"** and, in addition, the order code **X90**, or for products from the SIRIUS range, the order code **W9.**.

Example:
3RT2024–1AB00–Z W96
+ quantity: 24

For products packed in reusable packaging, the Article No. must be supplemented with **"–Z"** and the order code **X95**.

Example:
3RT2024–1AB00–Z X95
+ quantity: 48

Ordering special versions

For ordering products that differ from the versions listed in the catalog, the article number specified in the catalog must be supplemented with **"–Z"**; the required features must be specified by means of the alphanumeric order codes or in plain text.

Small orders

When small orders are placed, the costs associated with order processing are greater than the order value. We recommend therefore that you combine several small orders. Where this is not possible, we unfortunately have to charge a processing supplement of € 20.00 to cover our costs for order processing and invoicing for all orders with a net goods value of less than € 250.00.

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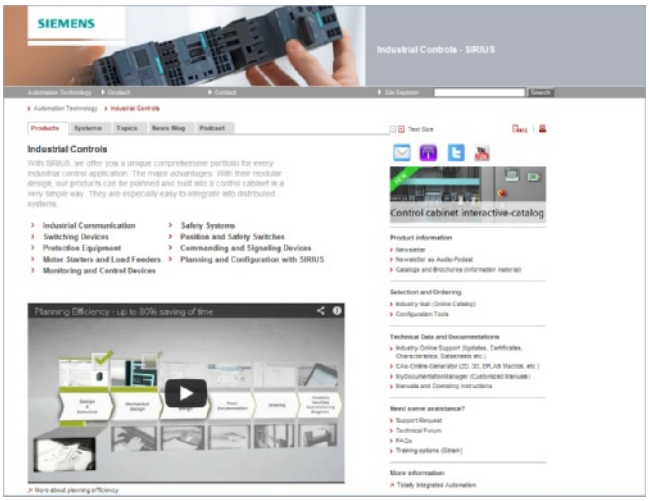
Further documentation

Overview



Industrial controls

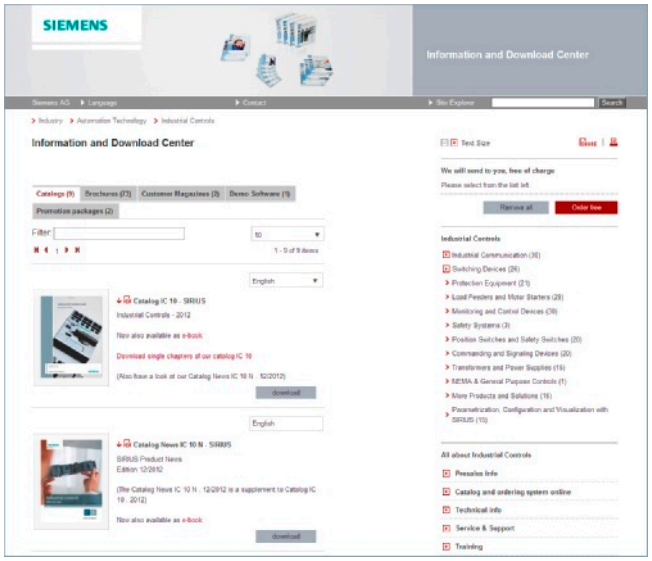
We regard product support as just as important as the products and systems themselves.

Visit our site on the Internet for a comprehensive range of material on SIRIUS Industrial Controls, such as

- Overview of the entire product portfolio
- Always up to date with newsletters, podcasts, blogs and twitter
- Access to interesting videos on the YouTube channel
- Access to contact persons in more than 190 countries
- Operating instructions and manuals for direct download

and much, much more – all conveniently and easily accessible at:

www.siemens.com/sirius



Information and download center

You will find information material such as catalogs, customer magazines, brochures and trial versions of software for Industrial Controls on the Internet at:

www.siemens.com/sirius/infocenter

You can order the available documents or download them in popular file formats (PDF, ZIP) from this site.

Catalogs are now also available as e-books.

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Manual package SIRIUS Innovations – Modular System

This manual package contains all important SIRIUS Innovations manuals.

You can download the individual manuals from the Internet. Please switch over to the website in the language you require.

Products	Manual / title	Article number	Download from
SIRIUS Innovations System Overview	System manual "SIRIUS Innovations – System Overview"	3ZX1012-0RA01-5AB1	http://support.automation.siemens.com/WW/view/en/60311318
Contactors and contactor assemblies 3RT2, 3RH2 and 3RA23/24	Manual "SIRIUS Innovations – SIRIUS 3RT2 Contactors/Contactor Assemblies"	3ZX1012-0RT20-5AB1	http://support.automation.siemens.com/WW/view/en/60306557
Solid-state switching devices 3RF34	Manual "SIRIUS Innovations – SIRIUS 3RF34 Solid-State Switching Devices"	3ZX1012-0RF34-5AB1	http://support.automation.siemens.com/WW/view/en/60298187
Soft starters 3RW	Manual "SIRIUS 3RW30/3RW40 Soft Starters"	3ZX1012-0RW30-1AB1	http://support.automation.siemens.com/WW/view/en/38752095
	Manual "SIRIUS 3RW44 Soft Starters"	3ZX1012-0RW44-1AB1	http://support.automation.siemens.com/WW/view/en/21772518
Motor starter protectors/ circuit breakers 3RV2	Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors"	3ZX1012-0RV20-5AB1	http://support.automation.siemens.com/WW/view/en/60279172
Overload relays 3RU2, 3RB30/31	Manual "SIRIUS Innovations – SIRIUS 3RU2/3RB3 Overload Relays"	3ZX1012-0RU20-5AB1	http://support.automation.siemens.com/WW/view/en/60298164
Solid-state overload relays 3RB24	Manual "3RB24 Solid-State Overload Relays for IO-Link"	3ZX1012-0RB24-0AB0	http://support.automation.siemens.com/WW/view/en/46165627
Monitoring relays 3UG4/3RR2	Manual "3UG4/3RR2 Monitoring Relays"	3ZX1012-0UG40-0AB0	http://support.automation.siemens.com/WW/view/en/54397927
Monitoring relays 3UG48/3RR24	Manual "3UG48/3RR24 Monitoring Relays for IO-Link"	3ZX1012-0UG48-0AB1	http://support.automation.siemens.com/WW/view/en/54375430
Temperature monitoring relays 3RS1/3RS2	Manual "3RS1/3RS2 Temperature Monitoring Relays"	3ZX1012-0RS10-1AB1	http://support.automation.siemens.com/WW/view/en/54999309
Temperature monitoring relays 3RS14/3RS15	Manual "3RS14/3RS15 Temperature Monitoring Relays for IO-Link"	3ZX1012-0RS14-0AB0	http://support.automation.siemens.com/WW/view/en/54375463
Load feeders 3RA21/22	Manual "SIRIUS Innovations – SIRIUS 3RA21/22 Load Feeders"	3ZX1012-0RA21-5AB1	http://support.automation.siemens.com/WW/view/en/60284351
Compact feeders 3RA6	System manual "SIRIUS 3RA6 Compact Feeders"	3RA6991-0A	http://support.automation.siemens.com/WW/view/en/27865747
Function modules 3RA28 for mounting on contactors	Manual "SIRIUS Innovations – SIRIUS 3RA28 Function Modules for Mounting on 3RT2 Contactors"	3ZX1012-0RA28-5AB1	http://support.automation.siemens.com/WW/view/en/60279150
Function modules 3RA27 for connection to the higher-level control	Manual "SIRIUS Function Modules for AS-Interface"	3ZX1012-0RA27-0AB0	http://support.automation.siemens.com/WW/view/en/39318922
	Manual "SIRIUS Function Modules for IO-Link"	3ZX1012-0RA27-1AB1	http://support.automation.siemens.com/WW/view/en/39319600
Electronic modules 4SI SIRIUS	Manual "Distributed I/O System ET 200S – SIRIUS 4SI Electronic Modules (3RK1005-0LB00-0AA0)"	3ZX1012-0LB00-0AA0	http://support.automation.siemens.com/WW/view/en/37856470
Selection data for load feeders	Configuration manual "Configuring SIRIUS Innovations – Selection Data for Fuseless and Fused Load Feeders"	3ZX1012-0RA21-1AB0	http://support.automation.siemens.com/WW/view/en/39714188
	Configuration manual "Configuring SIRIUS Innovations for UL – Selection Data for Fuseless and Fused Load Feeders"	3ZX1012-0RA21-3AB0	http://support.automation.siemens.com/WW/view/en/53433538

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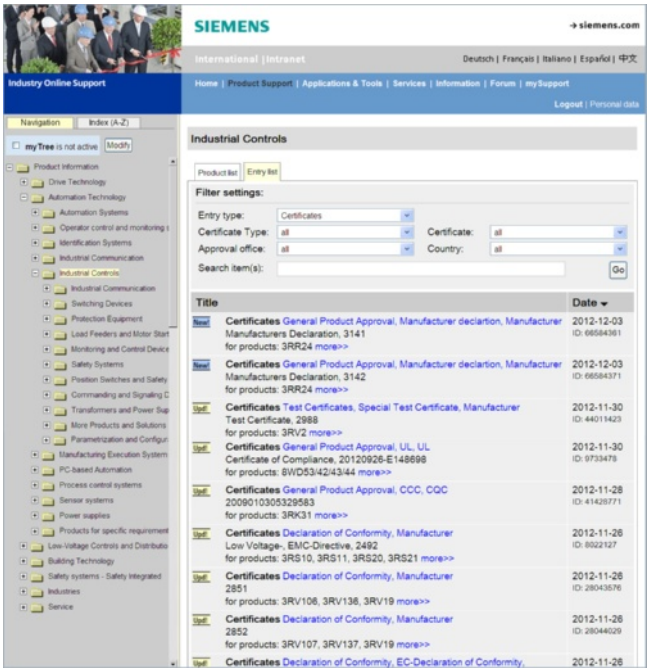
Standards and approvals

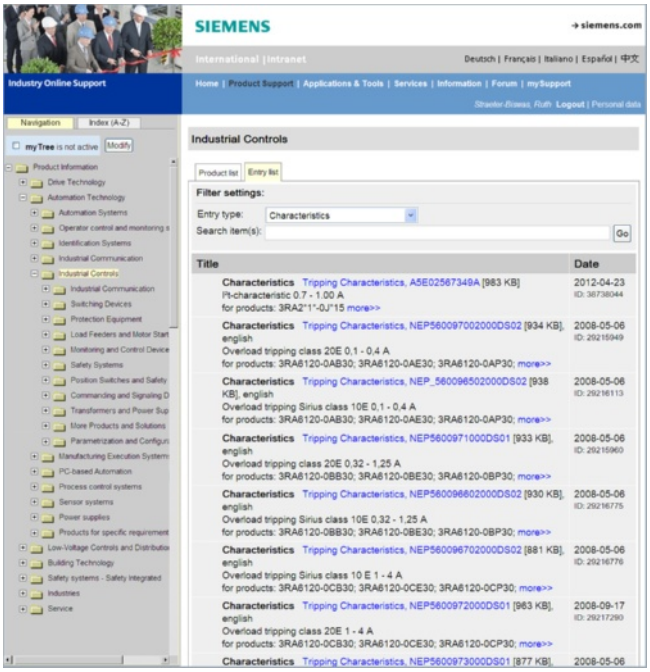
Approvals, test certificates, characteristic curves

An overview of the certificates available for Industrial Control products along with more technical documentation can be consulted daily on the Internet at:

www.siemens.com/sirius/approvals



Product support: Approvals/certificates



Product support: Characteristics

Safety characteristics

In the following standards, the so-called B10 values for calculating the safety integrity or safety integrity level (SIL) in functional safety at a high or continuous demand rate are required also for electromechanical switchgear:

- IEC 62061 "Safety of machines – Functional safety of safety-related electrical, electronic and programmable electronic control systems",
- ISO 13849-1 "Safety of machines – Safety-related components of controls – Part 1: General principles".

Failure rates of electromechanical components are required for calculating the safety integrity or safety integrity level (SIL) in functional safety:
- in the manufacturing industry at a high demand rate
- in the process industry at a low demand rate

Further requirements are laid down in IEC 61511-1 "Functional safety – Safety instrumented systems for the process industry sector – Part 1: Framework, definitions, system, hardware and software requirements".

The German versions of the above standards are:

- EN 62061 (VDE 0113-50), October 2005, which since 31.12.2005 has been harmonized as EN 62061 under the Machinery Directive,
- EN ISO 13849-1:2008,
- EN 61511-1 (VDE 810-1).

The TÜV-tested Safety Evaluation Tool assists in calculating the safety function as verification for the machine documentation. It is available on the Internet at www.siemens.com/safety-evaluation-tool.

At www.siemens.com/safety-integrated you will also find examples of functions with calculations according to the current standards.

Definitions

$\lambda\,(t)\,dt$ is the probability that a unit which has not failed by a certain time t will fail in the following interval $(t;\ t+dt)$.
Failure rates have the dimension 1/time unit, e.g. 1/h.
Failure rates for components are often specified in FIT (failures in time unit): 1 FIT equals 10^{-9}/h.
From the failure rate it is possible to derive a (mathematical) distribution function of the failure probability:

$F(t) = 1 - \exp(-\lambda t)$, with λ as constant failure rate

- The mean value of this exponential distribution is also referred to as:
  - Mean Time To Failure (MTTF) in the case of irreparable components; 63.2 % of components fail by the MTTF.
  - Mean Operating Time Between Failures (MTBF) in the case of reparable components.
- $MTTF = 1/\lambda$
  (MTTF is a statistical mean value but no guarantee for endurance)

Electromechanical components are often irreparable components. In general, the failure rate of monitored units changes with age.

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The B10 value for devices subject to wear is expressed in number of operating cycles:

- it is the number of operating cycles after which 10 % of the test specimens fail in the course of an endurance test (or: the number of operating cycles after which 10 % of the devices have failed).

For low demand rates (mainly in the process industry), the failure rate and not the B10 value is used to determine the failure probability.

Standard B10 values at a high demand rate

With the help of the B10 value and a simplified formula (see section 6.7.8.2.1 of EN 62061), the user can then calculate the total failure rate of an electromechanical component:

$\lambda = 0.1 \times C/B10$

with C = operating cycles per hour. C is specified by the user.

The failure rate is made up of safe (λ_S) and dangerous (λ_D) failures:

$\lambda = \lambda_S + \lambda_D$

or

λ_D = [share of dangerous failures in %] x λ

λ_S = [share of safe failures in %] x λ

The failure rate of the dangerous failures λ_D of the components used is needed for further calculations.

Listed in the following table are the standard B10 values and the share of dangerous failures for SIRIUS product groups at a high demand rate.

Standard B10 values (at a high demand rate)

SIRIUS product group (electromechanical components)	Standard B10 value[1] (operating cycles)	Share of dangerous failures
EMERGENCY-STOP control devices (with positive-opening contacts)		
- pulled to unlatch	30 000	20 %
- rotated to unlatch (also with lock)	100 000	20 %
Cable-operated switches for EMERGENCY-STOP function (with positive-opening contacts)	100 000	50 %
Standard position switches/basic switches (with positive-opening contacts)	10 000 000	20 %
Position switches with separate actuator (with positive-opening contacts)	1 000 000	20 %
Position switches with tumbler (with positive-opening contacts)	1 000 000	20 %
Hinge switches (with positive-opening contacts)	1 000 000	20 %
Pushbuttons (non-latching), with positive-opening contacts)	10 000 000	20 %
Contactors/motor starters for switching motors:		
- 3RT/3TF6/3TB	1 000 000[2]	73 %
- 3TC	1 000 000[2]	73 %
Contactor relays and auxiliary switches (with positively driven contacts, and at $I < 0.3 \cdot I_e$)	1 000 000	73 %

[1] Only applies under the conditions specified in the technical specifications.

[2] Calculation of the B10 values was based on 66 % of the rated current value I_e.

The $B10_d$ value used in EN ISO 13849-1:2008 is determined as follows:

$$B10_d = \frac{B10}{\text{Share of dangerous failures}}$$

Calculation example

A protective door is monitored by a position switch with a separate actuator.

The protective door is opened 4 times an hour.

The overall failure rate of the position switch is:

$\lambda = 0.1 \cdot C/B10$ [failures/h]
$\lambda = 0.1 \cdot 4/1000000 = 4 \cdot 10^{-7}$ [failures/h]

The dangerous failure rate is calculated with:

λ_D = 20 % of $\lambda = 0.2 \cdot 4 \cdot 10^{-7}$ [failures/h]
$\lambda_D = 8 \cdot 10^{-8}$ [failures/h]

Standard failure rates (at a low demand rate)

On the basis of the failure rates, it is possible to calculate the average probability of failure on demand (PFD_{avg}) of a PLT protective device.

A so-called low demand rate is assumed, meaning the rate of demand on the safety-related system amounts to no more than once a year and is not greater than double the frequency of the repeat test.

A repeat test once a year is recommended for electromechanical components in order to reveal passive faults.

For special applications it is possible, in agreement with the inspecting institution (e.g. a technical inspectorate, government agency or the like) to extend the test intervals by using suitable solutions (e.g. a multi-channel version etc.).

Listed in the following table are the standard failure rates and the share of dangerous failures for SIRIUS product groups at a low demand rate.

Standard failure rates at a low demand rate

SIRIUS product group (electromechanical components)	Standard failure rates (in FIT)[1]	Share of dangerous failures[2]
EMERGENCY-STOP control devices (with positive-opening contacts)	100	20 %
Cable-operated switches for EMERGENCY-STOP function (with positive-opening contacts)	100	20 %
Standard position switches/basic switches (with positive-opening contacts)	100	20 %
Position switches with separate actuator (with positive-opening contacts)	100	20 %
Position switches with tumbler (with positive-opening contacts)	100	20 %
Hinge switches (with positive-opening contacts)	100	20 %
Pushbuttons (non-latching) (with positive-opening contacts)	100	20 %
Contactors/motor starters (with positively-driven contacts or mirror contacts)	100	< 40 %

[1] The failure rates specified in the table were limited to 100 FIT.

[2] Valid only under the previously mentioned conditions.

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Standards and approvals

Standards

IEC	EN	DIN VDE	Title
60947-1	60947-1	--	Low-voltage switchgear and controlgear: General rules
60947-2	60947-2	--	• Circuit-breakers
60947-3	60947-3	--	• Switches, disconnectors, switch-disconnectors and fuse-combination units
60947-4-1	60947-4-1	--	• Contactors and motor starters - Electromechanical contactors and motor starters
60947-4-2	60947-4-2	--	• Contactors and motor-starters - AC semiconductor motor controllers and starter
60947-4-3	60947-4-3	--	• Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads
60947-5-1	60947-5-1	--	• Control circuit devices and switching elements - Electromechanical control circuit devices
60947-5-2	60947-5-2	--	• Control circuitdevices and switching elements - Proximity switches
60947-5-3	60947-5-3	--	• Control circuit devices and switching elements - Requirements for proximity devices with defined behaviour under fault conditions (PDDB)
60947-5-5	60947-5-5	--	• Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function
60947-5-6	60947-5-6	--	• Control circuit devices and switching elements - DC interface for proximity sensors and switching amplifiers (NAMUR)
60947-5-7	60947-5-7	--	• Control circuit devices and switching elements - Requirements for proximity devices with analogue output
60947-5-8	60947-5-8	--	• Control circuit devices and switching elements - Three-position enabling switches
60947-5-9	60947-5-9	--	• Control circuit devices and switching elements - Flow rate switches
60947-6-1	60947-6-1	--	• Multiple function equipment - Transfer switching equipment
60947-6-2	60947-6-2	--	• Multiple function equipment - Control and protective switching devices (or equipment) (CPS)
60947-7-1	60947-7-1	--	• Ancillary equipment - Terminal blocks for copper conductors
60947-7-2	60947-7-2	--	• Ancillary equipment - Protective conductor terminal blocks for copper conductors
60947-7-3	60947-7-3	--	• Ancillary equipment - Safety requirements for fuse terminal blocks
60947-8	60947-8	--	• Control units for built-in thermal protection (PTC) for rotating electrical machines
62026-2	50295	--	Low-voltage switchgear and controlgear - Controller-device interfaces (CDIs): Actuator sensor interface (AS-i)
60269-1	60269-1	0636-1	Low-voltage fuses: General requirements
60269-4	60269-4	--	Low-voltage fuses: Supplementary requirements for fuse-links for the protection of semiconductor devices
60050-441	--	--	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses
61439-1	61439-1	--	Low-voltage switchgear and controlgear assemblies: General rules
61439-2	61439-2	--	Low-voltage switchgear and controlgear assemblies: Power switchgear and controlgear assemblies
--	50274	--	Low-voltage switchgear and controlgear assemblies - Protection against electric shock - Protection against unintentional direct contact with hazardous live parts
61140	61140	--	Protection against electric shock - Common aspects for installation and equipment
60664-1	60664-1	--	Insulation coordination for electrical equipment in low-voltage systems: Principles, requirements and tests
60204-1	60204-1	--	Safety of machinery – Electrical equipment of machines: General requirements
--	50178	--	Electronic equipment for use in power installations
60079-14	60079-14	--	Electrical apparatus for explosive gas atmospheres: Electrical installations in hazardous areas (other than mines)
60079-2	60079-2	--	Electrical apparatus for explosive gas atmospheres: Pressurized Enclosures “p”
61810-1	61810-1	--	Electromechanical elementary relays: General requirements
61812-1	61812-1	--	Time relays for industrial and residential use: Requirements and tests
60999-1	60999-1	--	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)
61558-1	61558-1	0570-1[1)]	Safety of power transformers, power supplies, reactors and similar products • General requirements and tests
61558-2-1	61558-2-1	0570-2-1[1)]	• Particular requirements and tests for separating transformers and power supplies incorporating separating transformers for general applications
61558-2-2	61558-2-2	0570-2-2[1)]	• Particular requirements and tests for control transformers and power supplies incorporating control transformers
61558-2-4	61558-2-4	0570-2-4[1)]	• Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers
61558-2-6	61558-2-6	0570-2-6[1)]	• Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers
61558-2-9	61558-2-9	0570-2-9[1)]	• Particular requirements and tests for transformers and power supply units for class III handlamps for tungsten filament lamps
61558-2-12	61558-2-12	0570-2-12[1)]	• Particular requirements and tests for constant voltage transformers and power supply units for constant voltage
61558-2-13	61558-2-13	0570-2-13[1)]	• Particular requirements and tests for auto transformers and power supply units incorporating auto transformers
61558-2-15	61558-2-15	0570-2-15[1)]	• Particular requirements and tests for isolating transformers for the supply of medical locations
61558-2-20	61558-2-20	0570-2-20[1)]	• Particular requirements and tests for small reactors
62041	62041	0570-10[1)]	Safety of transformers, reactors, power supply units and combinations thereof - EMC requirements
60076-11	60076-11	--	Power transformers: Dry-type Transformers
61000-4-1	61000-4-1	--	Electromagnetic compatibility (EMC): Testing and measuring techniques - Overview of IEC 61000-4 series
61000-6-2	61000-6-2	0839-6-2	Electromagnetic compatibility (EMC); Generic standards - Immunity for industrial environments
61000-6-3	61000-6-3	--	Electromagnetic compatibility (EMC): Generic standards - Emission standard for residential, commercial and light-industrial environments
61000-6-4	61000-6-4	--	Electromagnetic compatibility (EMC): Generic standards - Emission standard for industrial environments
60044-1	60044-1	--	Instrument transformers: Current transformers

[1)] VDE classification.

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UL	CSA C22.2	ASME	JIS	Title
506	--	--	--	Specialty transformers
508	--	--	--	Industrial control equipment
60947-1	--	--	--	Low-voltage switchgear and controlgear - Part 1: General rules
60947-4-1A	--	--	--	Low-voltage switchgear and controlgear - Part 4-1: Contactor and motor starters - Electromechanical contactors and motor starters
489	--	--	--	Molded case circuit breakers, molded case switches, and circuit breaker enclosures
1012	--	--	--	Power units other than CLASS 2
1561	--	--	--	Dry-type general purpose and power transformers
5085	--	--	--	Low-voltage transformers
60601-1	--	--	--	Medical electrical equipment, Part 1: General requirements for safety (IEC 60601, EN 60601, VDE 0750-1)
1604	--	--	--	Electrical equipment for use in CLASS I and II, Division 2 and CLASS III hazardous (Classified) locations
1059	--	--	--	Terminal blocks
486A-486B	--	--	--	Wire connectors
486E	--	--	--	Equipment wiring terminals for use with aluminum and/or copper conductors
50	--	--	--	Enclosures for electrical equipment. Non-environmental considerations
50E	--	--	--	Enclosures for electrical equipment - Environmental considerations
--	No. 66	--	--	Specialty transformers
--	No. 14	--	--	Industrial control equipment
	No. 60947-1	--	--	Low-voltage switchgear and controlgear - Part 1: General rules
	No. 60947-4-1A	--	--	Low-voltage switchgear and controlgear - Part 4-1: Contactor and motor starters – Electromechanical contactors and motor starters
--	No. 5	--	--	Molded case circuit breakers, molded case switches and circuit breaker enclosures
--	No. 107-1	--	--	General use power supplies
--	--	A17.5 / B 44.1	--	Elevator and escalator electrical equipment
--	--	--	C 8201-4-1	Low-voltage switchgear and controlgear; Contactors and motor-starters

Approval requirements valid in different countries

Siemens low-voltage switchgear and controlgear are designed, manufactured and tested according to the relevant German standards (DIN and VDE), IEC publications and European standards (EN) as well as CSA and UL standards. The standards assigned to the single devices are stated in the relevant parts of this catalog.

As far as is economically viable, the requirements of the various standards valid in other countries are also taken into account in the design of the equipment.

In some countries (see table below), an approval is required for certain low-voltage switchgear and controlgear components. Depending on the market requirements, these components have been submitted for approval to the authorized testing institutes.

In some cases, CSA for Canada and UL for the USA only approve special switchgear versions. Such special versions are listed separately from the standard versions in the individual parts of this catalog.

For this equipment, partial limitations of the maximum permissible voltages, currents and ratings can be imposed, or special approval and, in some cases, special identification is required.

For use on board ship, the specifications of the marine classification societies must be observed (see table below). In some cases, they require type tests of the components to be approved.

Testing bodies, approval identification and approval requirements

Country	Canada [1]	USA [1]	China
Government-appointed or private, officially recognized testing bodies	CSA UL (USA)	UL	CQC
Mark of conformity	c UL c c c	c c	
Approval requirement	+	+	+
Remarks	UL and CSA are authorized to grant approval certificates in accordance with Canadian and North American regulations. Please note: These approvals are not recognized in many cases and must be covered by additional approvals issued by the national testing agency.		CCC

More information about UL and CSA see page 16/22.

[1] For guide numbers and file numbers for approvals, please visit www.siemens.com/automation/support and select "Product Support".

Marine classification societies

Country	Germany	United Kingdom	France	Norway	CIS	Italy	Poland	USA
Name	Germanischer Lloyd	Lloyds Register of Shipping	Bureau Veritas	Det Norske Veritas	Russian Maritime Register of Shipping	Registro Italiano Navale	Polski Rejestre Statków	American Bureau of Shipping
Codes	GL [1]	LRS	BV	DNV [1]	RMRS	RINA	PRS	ABS

[1] DNV and GL have merged and call themselves the DNV/GL Group.

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Standards and approvals

CE marking

Manufacturers of products which fall within the subject area to which EC directives apply must identify their products, operating instructions or packaging with a CE mark of conformity.

By attaching the CE marking, the manufacturer confirms that the product conforms to the relevant basic requirements of all directives applicable to the product. The mark of conformity is a mandatory requirement for putting products into circulation throughout the EC.

All the products in this catalog are in conformance with the EC directives and bear the CE mark of conformity.

- Low-voltage directive
- EMC directive
- Machinery directive
- Ex protection directive

The CE marking: CE.

ALPHA/LOVAG

Siemens AG sits in the ALPHA committee of "ALPHA im VDE".

The responsibility of manufacturers and the high quality of products are promoted by "ALPHA im VDE" by means of supportive procedural guidelines for testing equipment according to the currently valid standards.

Providing specific conditions are fulfilled, "ALPHA im VDE" can also issue officially recognized product certificates if required. As a member of LOVAG, "ALPHA im VDE" is also working towards obtaining international recognition for declarations of conformity and certificates.

LOVAG (Low-Voltage Agreement Group) is a body comprising international specialists from certification bodies and industry who are working together to create a standardized European certificate.

List of LOVAG members

SGS BELGIUM NV Division SGS CEBEC	Belgium
ALPHA in VDE	Germany
ASEFA	France
ACAE IMQ S.p.A	Italy
Intertek Semko AB	Sweden
APPLUSS + CTC	Spain

Accident prevention

Test certificates and approvals from IFA (institute for occupational safety and health of the German social accident insurance), SUVA (Swiss institute for accident prevention), BG ETEM (German trade association for energy, textiles, electrical goods and media products) and VDE are available for some devices in safety control systems. For details, see the respective product descriptions.

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Ex protection certificates for SIRIUS controls

Motor protection devices that protect a motor installed in a potentially explosive atmosphere against overloading must comply with certain special requirements. These requirements are laid down in the following standards:

- EN 60079-0
- EN 60079-1
- EN 60079-7
- EN 60079-14
- EN 60079-17
- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60947-8

Certification

July 1, 2003 saw the dawning of a new era in the field of explosion protection. Since this date, only those devices and protection systems that have been certified for operation in potentially explosive atmospheres according to directive 94/9/EC can be brought into circulation within the European Union.

Only those motor protection devices that have been constructed according to the above-mentioned standards and which have a declaration of conformity from the manufacturer based on a prototype test certificate may be brought into circulation within the member states of the EC.

The quality management system of the manufacturer is also subjected to certain requirements and a "QM certificate" must be obtained for the manufacturer from a recognized authority.

Certification of the QM system

A certificate of approval for quality assurance production has been issued by DEKRA EXAM GmbH[1)] with the number BVS 11 ATEX ZQS/E111 of DEKRA EXAM GmbH[1)] according to Directive 94/9/EC.

This certificate is valid for equipment groups I and II and categories M2 and 2: Safety and control devices for electrical equipment.

Certificates

For the 3RV, 3RU, 3RB, 3UF, 3RN and 3RW motor protection devices, the corresponding declarations of conformity and prototype test certificates for Category M2, 2G, and in some cases 2D, are available and can be supplied on request.

Declarations of conformity and prototype test certificates are available at www.siemens.com/sirius/support for viewing and downloading.

Selection box

Description of certificate with view and download option

Identifying markings

All equipment must be marked in according to the ATEX guideline. The ATEX identification code contains the equipment group, the approved environment, the number of the certification authority and other technical data that was determined from the type test.

1) DEKRA EXAM GmbH
The certification authority of the "DEKRA EXAM GmbH" numbered as authority number 0158 according to Article 9 of Directive 94/9/EC of the European Parliament and Council dated March 23, 1994, certifies that Siemens Amberg and Cham maintains a quality system for production that satisfies Appendix IV of this Directive.

Certificate of the AS-International Association for AS-Interface products

AS-Interface products are tested and certified by the AS-International Association. The products have been tested in an accredited test laboratory according to testing guidelines.

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Standards and approvals

Special standards for the USA and Canada

In the USA and Canada, for machine tools and processing machines in particular, supply lines are laid using rubber insulated cable enclosed in heavy-duty steel piping similar to that used for gas or water pipe systems.

The tubing system must be completely watertight and electrically conductive (especially sleeving and elbows). Since the tubing system can also be grounded, the cable entries of enclosed units equipped with heavy-gauge or metric threads must be fitted with metal adapters between these threads and the tube thread. The necessary adapters are specified for the switchgear as accessories; they should be ordered separately unless otherwise specified.

Low-voltage switchgear and controlgear for auxiliary circuits (e.g. contactor relays, commanding and signaling devices and auxiliary switches/auxiliary contacts in general) are generally only approved by CSA and UL for **"Heavy Duty"** or **"Standard Duty"** and are identified either with these specifications in addition to the maximum permissible voltage or by using an abbreviation.

The abbreviations are harmonized with IEC 60947-5-1 Appendix 1 Table A.1 and correspond to the stated utilization categories.

For various switching devices detailed in the catalog, a note has been included to the effect that, above a certain voltage, the auxiliary switches/auxiliary contacts can only be used if they have the same polarity. This means that the input terminals can only be connected to the same pole of the actuating voltage, e.g. "600 V AC above 300 V AC same polarity".

Different features of UL approvals (for USA and Canada)

Recognized Component	Listed Product
Devices are identified on the rating plate using the "UL recognition mark": USA: , c us Canada: c , c us	Devices are identified using the "UL listing mark" on the rating plate e.g. USA: LISTED XXX IND. CONT. EQ. Canada: c LISTED XXX IND. CONT. EQ. (XXX stands for: UL Code Classification Number)
Devices are approved as modules for "factory wiring", i.e.: as devices for installation in control systems, which are selected, installed, wired and tested entirely by trained personnel in factories, workshops or elsewhere, **according to the operating conditions**.	Devices are approved for "field wiring", i.e.: • As devices for installation in control systems, which are completely wired by trained personnel in factories, workshops or elsewhere. • As single devices for sale in retail outlets in the USA/Canada.
If devices are or c approved as "listed products", they are also approved as or c "recognized components".	

More information about UL and CSA see page 16/19.

Special standards for Russia, Australia and China

EAC approval for Russia

EAC mark

GOST mark

Since 15.02.2013 Russia, Kazakhstan and Belarus have been united in the EAC customs union. An EAC approval as replacement for the GOST mark is required for all products that are to be sold in Russia.

All devices delivered to any part of the Russian Federation must have this customs certification.

The provisional transition period in which the GOST mark will remain valid ends on 15.03.2015.

C-Tick licensing for Australia

New C-Tick mark

Old C-Tick mark

The C-Tick license is required for marketing Siemens components in Australia. Electronic devices must provide proof of EMC clearance in Australia, similar to the CE mark of conformity laid down by the EMC directive applicable in the EC and bear the "C-Tick" mark. These requirements have been in force since October 1st, 1999.

A new C-Tick mark has been introduced on 01.03.2013. The transition period in which the old C-Tick mark will remain valid is three years.

CCC approval

Since August 1, 2003, CCC approval is required for many products that are marketed in China.

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Quality management

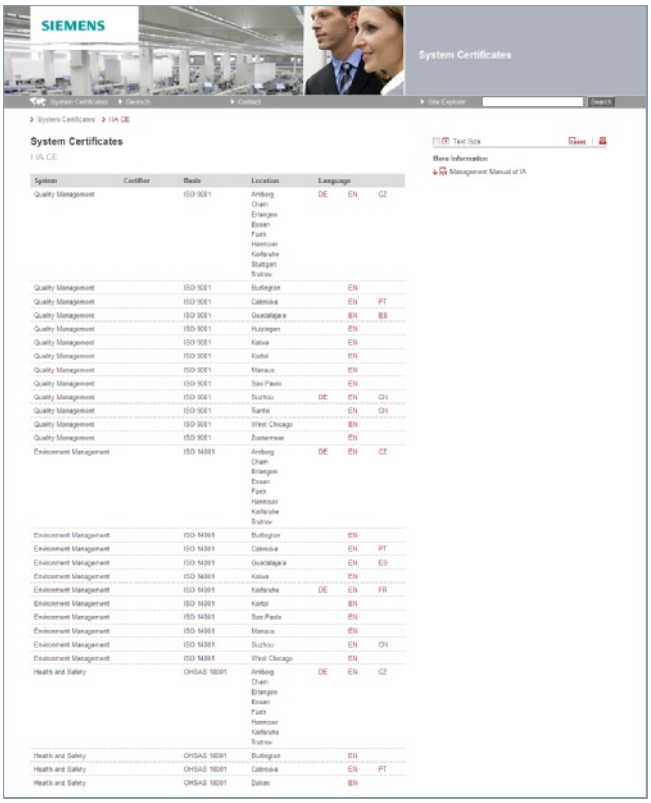
The quality management system of our "Control Components and Systems Engineering" Business Unit of the "Industry Automation" Division complies with the international standard EN ISO 9001.

The products and systems described in this catalog are developed, manufactured and sold under application of a certified quality management system according to ISO 9001. The certificates are recognized in all IQ Net countries.

Certificates

For information about available certifications of the quality management system for Industrial Controls products, please visit website address:

www.siemens.com/system-certificates/ce



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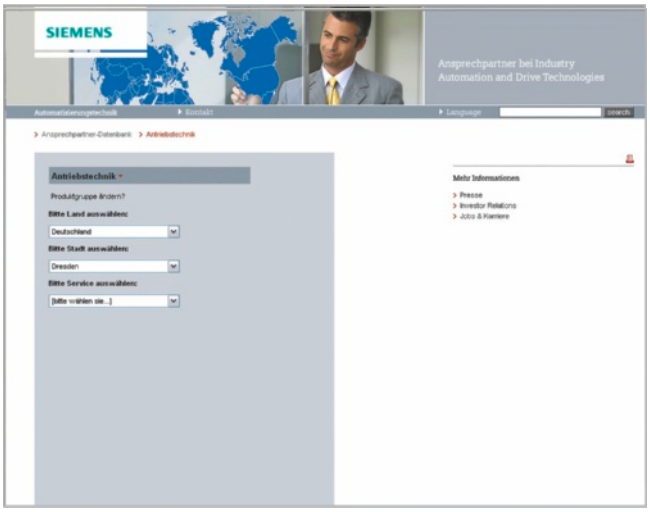
Siemens Contacts

Partners at Industry Automation and Drive Technologies



At Siemens Industry Automation and Drive Technologies, more than 85 000 people are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at: www.siemens.com/automation/partner

You start by selecting a

- Product group,
- Country,
- City,
- Service.

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Overview

Siemens Solution Partner Automation

Solution Partner: Highest quality - guaranteed

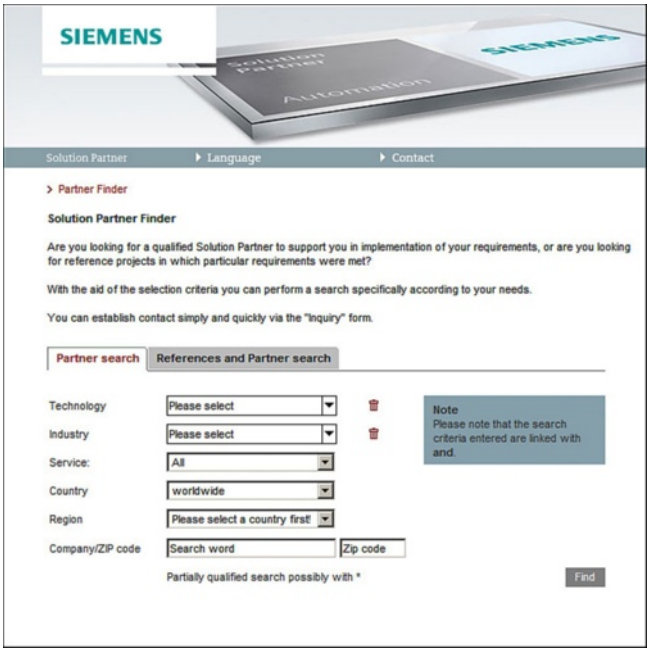
The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name of Siemens Solution Partner Automation, selected system integrators around the world act as uniformly qualified solution providers for the Siemens range of products and services in the fields of automation and drives. Day after day, they utilize their qualified product and system know-how as well as their excellent industry expertise to your advantage – for all requirements.

The partner emblem is the guarantee and indicator of proven quality. The basis for this are defined quality features that identify Solution Partners as reliable and competent solution providers:

- Solution quality
  Always a good result with tried and tested solutions expertise.
- Expert quality
  Certified technical competence ensures maximum efficiency.
- Project quality
  With proven project experience straight to the target.
- Portfolio quality
  Comprehensive portfolio for state-of-the-art solutions from a single source.

Solution Partner Finder



The Siemens Solution Partner Program helps you to find the optimum partner for your specific requirements.

Support is provided by the Solution Partner Finder, a comprehensive online platform that showcases the profiles of all our solution partners. You can convince yourself of the competence of the respective Solution Partner by means of the references provided. Various search criteria are available for this purpose.

Once you have located a partner, you are only one small step away from contacting them.

Find the right partner here for your specific task and convince yourself of the solution competence provided:

www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/automation/solutionpartner

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External partners

Our partner companies – Your partners

- **AXELENT GmbH**
  Sigmaringer Straße 112
  D-70567 Stuttgart
  Tel.: +49 (711) 252 509-0
  Fax.: +49 (711) 252 509-49
  E-Mail: sales@axelent.de

- **Franz Binder GmbH & Co.**
  Postfach 1152
  D-74148 Neckarsulm
  Katalog Steckverbinder
  Tel.: +49 (7132) 325-0
  Fax: +49 (7132) 325-190
  E-Mail: info@binder-connector.de

- **Hans Georg Brühl GmbH**
  Waldstraße 63 b
  D-57250 Netphen
  Tel.: +49 (2737) 5934-45
  Fax: +49 (2737) 5919-46
  E-Mail: info@schutzeinrichtungen.com

- **EPHY-Mess**
  Gesellschaft für Elektro-Physikalische Messgeräte mbH
  Berta-Cramer-Ring 1
  D-65205 Wiesbaden-Delkenheim
  Tel.: +49 (6122) 9228-0
  Fax: +49 (6122) 9228-99
  E-Mail: info@ephy-mess.de
  Internet: www.ephy-mess.de

- **FESTO AG & Co**
  Ruiterstr. 82
  D-73734 Esslingen
  Tel.: +49 (711) 347-0
  Fax: +49 (711) 347-2144
  E-Mail: info@festo.de

- **GMC-I Messtechnik GmbH**
  Thomas-Mann-Str. 16-20
  D-90471 Nürnberg
  Tel.: +49 (911) 8602-111
  Fax: +49 (911) 8602-777
  E-Mail: info@gossenmetrawatt.com

- **Harting Deutschland GmbH & Co. KG**
  Simeonscarrè 1
  D-32427 Minden
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  Fax: +49 (571) 8896-282
  E-Mail: solution-partner@harting.com

- **HEITEC AG**
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  Tel.: +49 (9131) 877-0
  Fax: +49 (9131) 877-199
  E-Mail: info@heitec.com
  Internet: www.heitec.de

- **KnorrTec**
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  Tel.: +49 (9493) 951 96 90
  Fax: +49 (9493) 951 96 79
  E-Mail: solution-partner@knorrtec.de

- **KUPEK GmbH**
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  Cortendorfer Straße 94
  D-96450 Coburg
  Tel: +49 (9561) 2346-0
  Fax: +49 (9561) 2346-20
  E-Mail: info@kupek.de

- **Lumberg GmbH & Co.**
  Im Gewerbepark 2
  D-58579 Schalksmühle
  Tel.: +49 (2355) 83-01
  Fax: +49 (2355) 83-263
  E-Mail: info@lumberg.de

- **mat – Maschinen- und Anlagentechnik**
  Dr. Becker GmbH
  Rudolf-Diesel-Straße 22
  D-22941 Bargteheide
  Tel.: +49 (4532) 2021-01
  Fax: +49 (4532) 2021-21
  E-Mail: info@m-a-t.de
  Internet: www.m-a-t.de

- **mdexx GmbH**
  Richard-Dunkel-Straße 120
  D-28199 Bremen
  Tel.: +49 (421) 5125-0
  Fax: +49 (421) 5125-333
  E-Mail: Transformatoren@mdexx.com
  Internet: www.mdexx.com

- **Murrplastik Systemtechnik GmbH**
  Fabrikstraße 10
  D-71570 Oppenweiler
  Tel.: +49 (7191) 482-0
  Fax: +49 (7191) 482-280
  E-Mail: info@murrplastik.de
  Internet: www.murrplastik.de

- **Murrelektronik GmbH**
  Falkenstraße 3
  D-71570 Oppenweiler
  Tel.: +49 (7191) 47-0
  Fax: +49 (7191) 47-130
  E-Mail: info@murrelektronik.com

- **Pepperl+Fuchs Vertrieb Deutschland GmbH**
  Lilienthalstraße 200
  D-68307 Mannheim
  Tel.: +49 (621) 776 111
  Fax: +49 (621) 776 271 111
  E-Mail: info@de.pepperl-fuchs.com

- **Siebert Industrieelektronik GmbH**
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  Tel.: +49 (6806) 980-0
  Fax: +49 (6806) 980-999
  Internet: www.siebert.de

- **WAGO Kontakttechnik GmbH & Co. KG**
  Hansastraße 27
  D-32423 Minden
  Tel.: +49 (571) 887-0
  Fax: +49 (571) 887-169
  E-Mail: info@wago.com

- **Weidmüller GmbH & Co. KG**
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  D-32758 Detmold
  Tel.: +49 (5231) 1428-0
  Fax: +49 (5231) 1428-159
  E-Mail: solution-partner@weidmueller.com

- **WITTWER Industrielle Elektronik**
  Hembacher Str. 4, Postfach 1147
  D-90588 Schwarzenbruck-Lindelburg
  Tel.: +49 (9183) 90 105-0
  Fax: +49 (9183) 90 105-55
  E-Mail: info@wittwer.com

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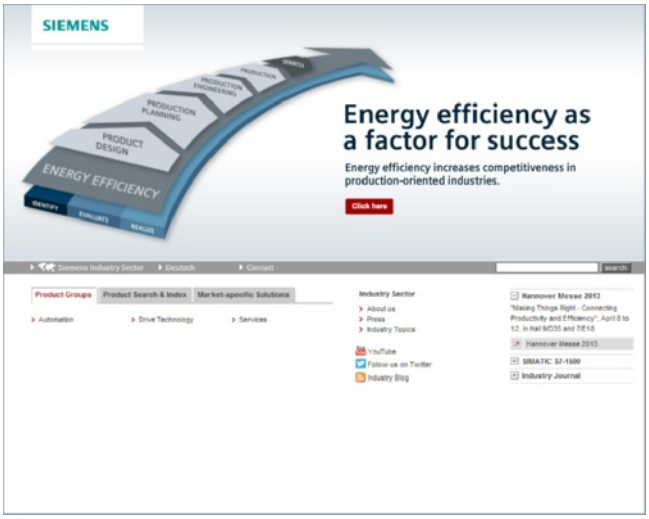
Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry

Detailed information together with convenient interactive functions:
The interactive catalog CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives.
All information is linked into a user interface which is easy to work with and intuitive.

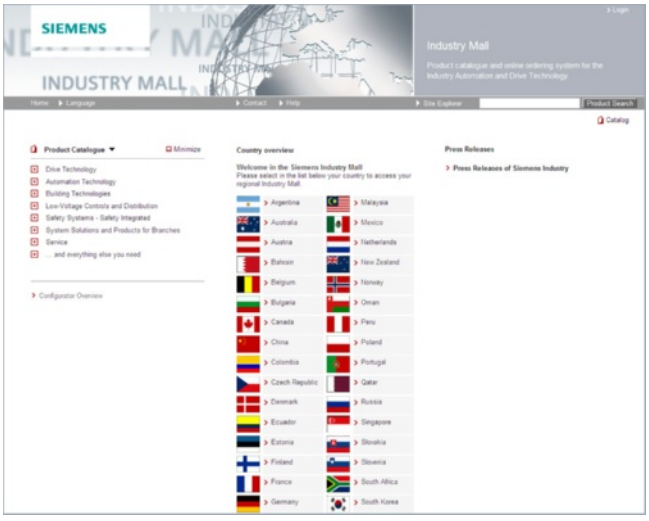
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the virtual department store of Siemens AG on the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

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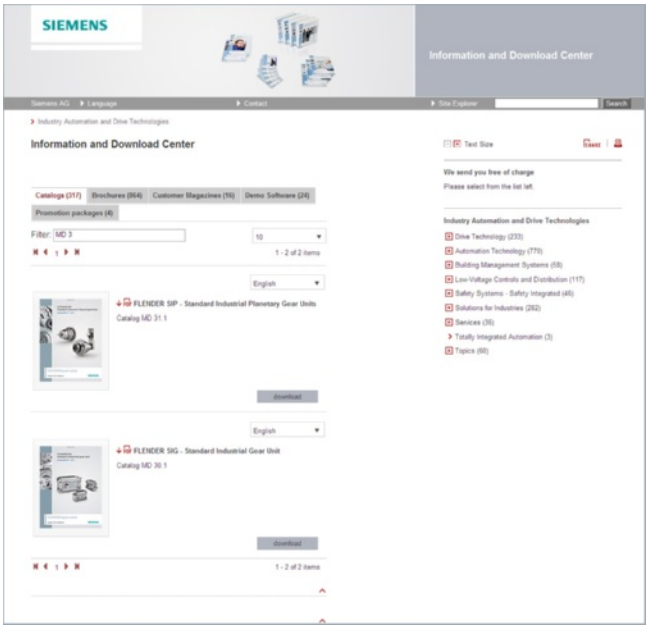
Information and Download Center
Social Media, Mobile Media

Downloading Catalogs



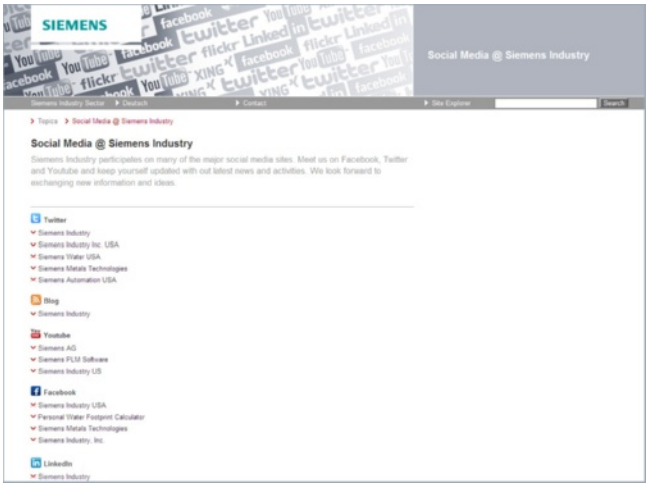
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. Without having to register, you can download these catalogs in PDF format or increasingly as digital page-turning e-books.

The filter dialog box above the first catalog displayed makes it possible to carry out targeted searches. If you enter “MD 3” for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter “ST 70” both the ST 70 catalog and the associated news or add-ons are displayed.

Visit us on the web at:

www.siemens.com/industry/infocenter

Social Media



Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

Connect with Siemens Industry at our central access point:

www.siemens.com/industry/socialmedia

Or via our product pages at:

www.siemens.com/automation

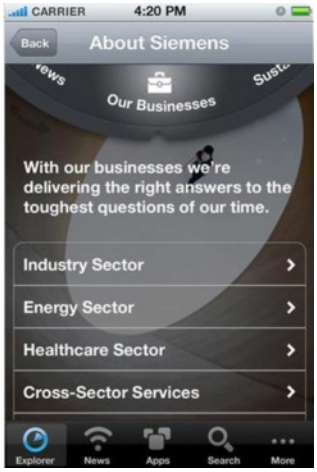
or

www.siemens.com/drives

To find out more about Siemens' current social media activities visit us at:

www.siemens.com/socialmedia

Mobile Media



Discover the world of Siemens.

We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the app store (iOS) or at Google Play (Android).

The Siemens app, for example, tells you all about the history, latest developments and future plans of the company – with informative pictures, fascinating reports and the most recent press releases.

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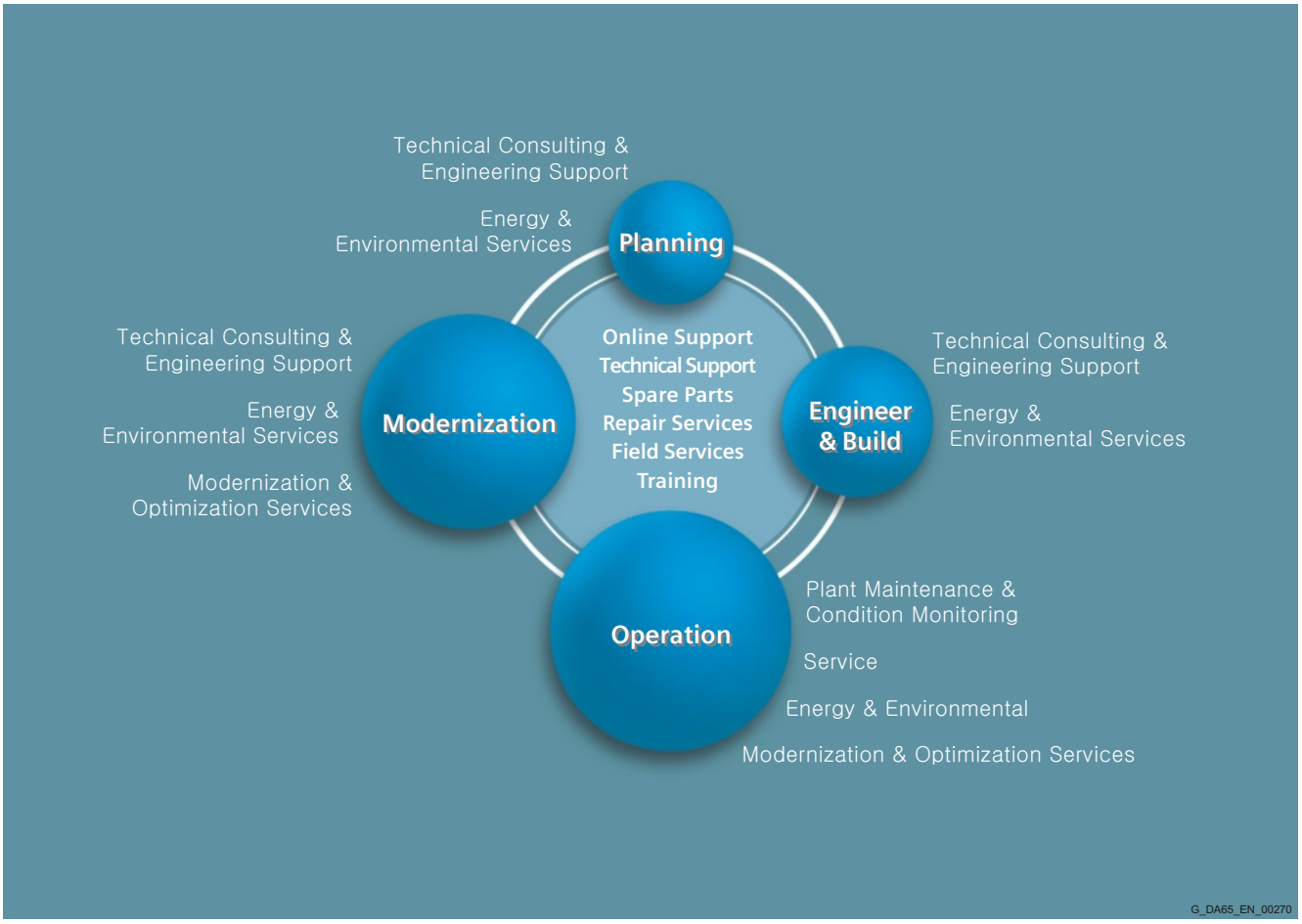
Your machines and plant can do more – with Industry Services.

Whether it is production or process industry - in view of rising cost pressure, growing energy costs, and increasingly stringent environmental regulations, services for industry are a crucial competitive factor in manufacturing as well as in process industries.

All over the world Siemens supports its customers with product, system, and application-related services throughout the entire life cycle of a plant. Right from the earliest stages of planning, engineering, and building, all the way to operation and modernization. These services enable customers to benefit from the Siemens experts' unique technological and product knowledge and industry expertise.

Thus downtimes are reduced and the utilization of resources is optimized. The bottom line: increased plant productivity, flexibility, and efficiency, plus reduced overall costs.

Discover all advantages of our service portfolio:
www.siemens.com/industry-services



Siemens supports its clients with technology based Services across a plants entire life cycle.

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Industry Services for the entire life cycle

Online Support

Online support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

The content, in six languages, is increasingly multimediabased – and now also available as a mobile app. Online support's "Technical Forum" offers users the opportunity to share information with each other. The "Support Request" option can be used to contact Siemens' technical support experts. The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

www.siemens.com/industry/onlinesupport

Online Support App

Using the Online Support app, you can access over 300,000 documents covering all Siemens industrial products - anywhere, any time. Regardless of whether you need help implementing your project, fault-finding, expanding your system or are planning a new machine.

You have access to FAQs, manuals, certificates, characteristics curves, application examples, product notices (e.g. announcements of new products) and information on successor products in the event that a product is discontinued.

Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance. The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under "mySupport". You also receive selected news on new functions, important articles or events in the News section.

Scan the QR code for information on our Online Support app.

The app is available free of charge from the Apple App Store (iOS) or from Google Play (Android).

www.siemens.com/industry/onlinesupportapp

Technical Support

The ability to quickly analyze system and error messages and take appropriate action are key factors in ensuring that plants run safely and efficiently. Questions can arise at any time and in any industry, whether it's an individual product or a complete automation solution. Siemens technical support offers individual technical assistance in matters related to functionality, how to operate, applications, and fault clearance in industrial products and systems – at any time and globally, over the phone, by e-mail, or via remote access. Experienced experts from Siemens answer incoming questions promptly. Depending on the requirements, they first consult specialists in the areas of development, on-site services, and sales. Technical support is also available for discontinued products that are no longer available. Using the support request number, any inquiry can be clearly identified and systematically tracked.

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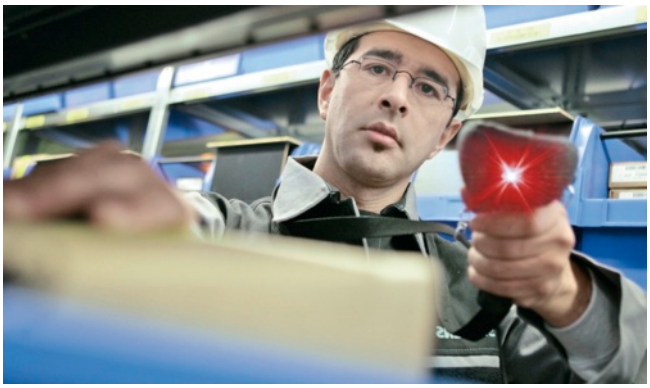
Spare Parts

Drive and automation systems must be available at all times. Even a single missing spare part can bring the entire plant to a standstill – and result in substantial financial losses for the operator. The spare parts services from Siemens protects against such losses – with the aid of quickly available, original spare parts that ensure smooth interaction with all other system components. Spare parts are kept on hand for up to ten years; defective parts can be returned. For many products and solutions, individual spare parts packages ensure a preventive stock of spare parts on-site. The spare parts services is available around the world and around the clock. Optimum supply chain logistics ensure that replacement components reach their destination as quickly as possible. Siemens' logistics experts take care of planning and management as well as procurement, transportation, customs handling, warehousing, and complete order management for spare parts.



Repair Services

Reliable electrical and electronic equipment is crucial for operating continuous processes. That is why it is essential that motors and converters always undergo highly specialized repair and maintenance. Siemens offers complete customer and repair services – on site and in repair centers – as well as technical emergency services worldwide. The repair services include all measures necessary to quickly restore the functionality of defective units. In addition, services such as spare parts logistics, spare parts storage and rapid manufacturing are available to plant operators in all verticals. With a global network of certified repair shops operated by Siemens as well as third parties, Siemens handles the maintenance and overhaul of motors, converters, and other devices as an authorized service partner.

Field Services

It's a top priority in all industries: the availability of plants and equipment. Siemens offers specialized maintenance services such as inspection and upkeep as well as rapid fault clearance in industrial plants – worldwide, continuously, and even with emergency services as needed. The services include startup as well as maintenance and fault clearance during operation. The startup service includes checking the installation, function tests, parameterization, integration tests for machines and plants, trial operation, final acceptance, and employee training. All services, including remote maintenance of drives, are also available as elements of customized service contracts.

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Industry Services for the entire life cycle

Training

Increasingly, up-to-date knowledge is becoming a determining factor in success. One of the key resources of any company is well-trained staff that can make the right decision at the right moment and take full advantage of the potential. With SITRAIN – Training for Industry, Siemens offers comprehensive advanced training programs. The technical training courses convey expertise and practical knowledge directly from the manufacturer. SITRAIN covers Siemens' entire product and system portfolio in the field of automation and drives. Together with the customer, Siemens determines the company's individual training needs and then develops an advanced training program tailored to the desired requirements. Additional services guarantee that the knowledge of all Siemens partners and their employees is always up-to-date.

Technical Consulting & Engineering Support

The efficiency of plants and processes leads to sustainable economic success. Individual services from Siemens help save substantial time and money while also guaranteeing maximum safety. Technical consulting covers the selection of products and systems for efficient industrial plants. The services include planning, consulting, and conceptual design as well as product training, application support, and configuration verification – in all phases of a plant's lifecycle and in all questions related to product safety. Engineering support offers competent assistance throughout the entire project, from developing a precise structure for startup to product-specific preparation for implementation as well as support services in areas such as prototype development, testing and acceptance.

Energy & Environmental Services

Efficient energy use and resource conservation – these top sustainability concerns pay off – both for the environment and for companies. Siemens offers integrated solutions that unlock all technical and organizational potential for successful environmental management. Customized consulting services are aimed at sustainably lowering the cost of energy and environmental protection and thus increasing plant efficiency and availability. The experts provide support in the conceptual design and implementation of systematic solutions in energy and environmental management, enabling maximum energy efficiency and optimized water consumption throughout the entire company. Improved data transparency makes it possible to identify savings potential, reduce emissions, optimize production processes, and thereby noticeably cut costs.

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Modernization & Optimization Services

High machine availability, expanded functionality and selective energy savings – in all industries, these are decisive factors for increasing productivity and lowering costs. Whether a company wants to modernize individual machines, optimize drive systems, or upgrade entire plants, Siemens' experts support the projects from planning to commissioning.

Expert consulting and project management with solution responsibility lead to security and make it possible to specifically identify savings potential in production. This secures investments over the long term and increases economic efficiency in operation.

Plant Maintenance & Condition Monitoring

Modern industrial plants are complex and highly automated. They must operate efficiently in order to ensure the company's competitive strength. In addition, the steadily increasing networking of machines and plants require consistent security concepts. Maintenance and status monitoring as well as the implementation of integrated security concepts by Siemens' experts support optimum plant use and avoid downtime. The services include maintenance management as well as consulting on maintenance concepts, including the complete handling and execution of the necessary measures. Complete solutions also cover remote services, including analysis, remote diagnosis, and remote monitoring. These are based on the Siemens Remote Services platform with certified IT security.

Service Contracts

Making maintenance costs calculable, reducing interfaces, speeding up response times, and unburdening the company's resources – the reduced downtimes that these measures achieve increase the productivity of a plant. Service contracts from Siemens make maintenance and repairs more cost-effective and efficient. The service packages include local and remote maintenance for a system or product group in automation and drive technology. Whether you need extended service periods, defined response times, or special maintenance intervals, the services are compiled individually and according to need. They can be adjusted flexibly at any time and used independently of each other. The expertise of Siemens' specialists and the capabilities of remote maintenance thus ensure reliable and fast maintenance processes throughout a plant's entire lifecycle.

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Software Licenses

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

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