

SIEMENS



Electrical Components for the Railway Industry

Catalog
IC 12

Edition
2019

[siemens.com/railway-components](https://www.siemens.com/railway-components)

Related catalogs

Industrial Controls SIRIUS

IC 10



PDF (E86060-K1010-A101-A8-7600)

Low-Voltage Power Distribution and Electrical Installation Technology

LV 10



SENTRON • SIVACON • ALPHA
Protection, Switching, Measuring and Monitoring
Devices, Switchboards and Distribution Systems

PDF (E86060-K8280-A101-A7-7600)

Print (E86060-K8280-A101-A6-7600)

ALPHA FIX

Terminal Blocks

LV 52



PDF (E86060-K1852-A101-A4-7600)

PDF/print (E86060-K1852-A101-A2-7600)

DELTA

Switches and Socket Outlets

ET D1



PDF

3AH47 Vakuum Circuit-Breakers for Traction Applications

HG 11.52

Medium-Voltage Equipment



E50001-K1511-A521-A3-7600

Miscellaneous

Products for Automation and Drives

CA 01

Interactive Catalog
Download



www.siemens.com/ca01download

Industry Mall

Information and Ordering Platform
on the Internet:



www.siemens.com/industrymall

Information and Download Center

Digital versions of the catalogs are available
in the Internet



www.siemens.com/industry/infocenter

Response E-mail

Please send your comments and suggestions
for improvement to

catalogs.industry@siemens.com

(include the catalog name in the subject field)



Trademarks

All product designations may be registered trademarks or product names of Siemens AG or other supplying companies. Third parties using these trademarks or product names for their own purposes may infringe upon the rights of the trademark owners.

Further information about industrial controls:

www.siemens.com/sirius

Technical Assistance

Expert technical assistance
for Industrial controls:

Tel.: +49 (911) 895-5900

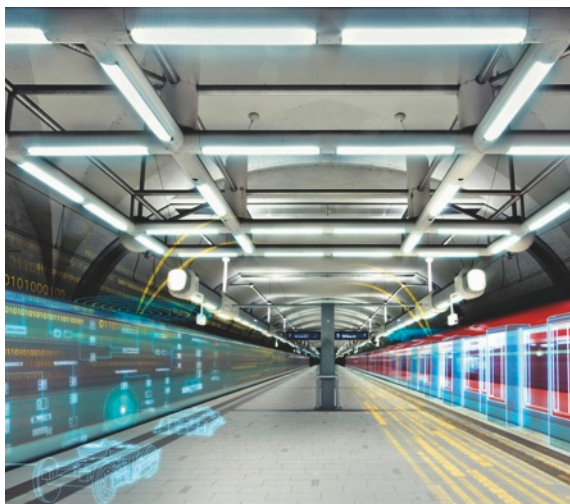
Fax: +49 (911) 895-5907

E-Mail: [technical-](mailto:technical-assistance@siemens.com)

assistance@siemens.com



Electrical Components for the Railway Industry



Catalog IC 12 · 2019

Refer to the Industry Mall for current updates of this catalog:

www.siemens.com/industrymall

The products contained in this catalog can also be found in the Interactive Catalog CA 01.

Article No.: E86060-D4001-A510-D8-7600.

Please contact your local Siemens branch.

© Siemens AG 2019



The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with EN ISO 9001 (For Certified Registration No., see www.siemens.com/system-certificates/cp). The certificate is recognized by all IQNet countries.

SIRIUS	Introduction	1
	Industrial Controls	2
	SIPLUS extreme RAIL and SIDOOR	3
SIPLUS	Low-Voltage Power Distribution	4
SENTRON / DELTA	Medium-Voltage Components	5
	Surge Arresters for Railway Applications	6
	Network Components	7
Network components	Appendix	8

Large temperature fluctuations, condensation, shock, vibration, electromagnetic interference, and more: Electrical and mechanical components for the railway industry must provide safe and reliable operation even under extreme application conditions at all times. This is why, Siemens leaves nothing to chance when developing these components. Right from the start, sound technology, application and service know-how go hand in hand with the highest quality standards.

As a global technology and innovation leader, we continuously push progress and help our customers overcome challenges e.g. by using the so-called digital twin. This cross-domain digital model integrates all data of a physical asset (product, plant or infrastructure systems) from the early design phase to engineering, commissioning, and service. The digital twin offers real value throughout the entire asset lifecycle, reducing over-engineering as well as improving component reliability with predictive engineering system simulation. It also reduces the costs for design, dimensioning and commissioning and accelerates your engineering and project execution.

We have been your reliable partner in the railway industry for decades. Our comprehensive experience in the fields of rolling stock and infrastructure is directly incorporated in the development of our components as is the knowledge we have gained from close cooperation with international standards committees. Therefore, you can rely on our components' guaranteed compliance with railway-specific requirements and standards.



Developed, tested and certified in accordance with current standards and directives

Siemens is a founding member of the IRIS Initiative, and consistently implements its requirements.

Our railway components comply with all the relevant standards, for example: DIN, EN, IEC, IEEE, ISO, EAC/GOST and ANSI, as well as the current fire protection standard EN45545.

With our certified components, we actively support the worldwide vehicle approval process.

Any more questions?

Our experts are there to help you by telephone or e-mail with competent technical advice



Phone: +49 (911) 895-59 00
E-mail: technical-assistance@siemens.com

Competent and fast technical advice regarding:

- Product selection
- Conversion from old to new
- Competitor conversion
- Special versions
- Particular requirements
- Commissioning
- Operation



IC01_00338

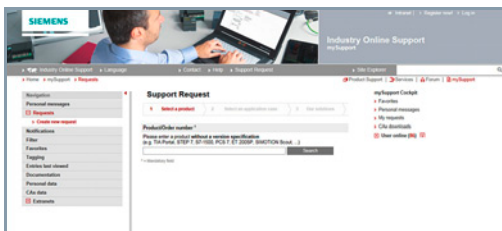
Technical Assistance

One click – and you have all the information you need,
both before and after delivery.



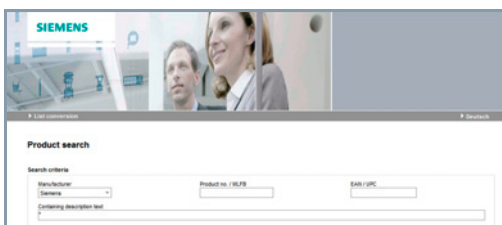
- Industry Online Support – get fast and up-to-date information online
<https://support.industry.siemens.com>

In Industry Online Support you will find FAQs, manuals, certificates, applications & tools, and much more



- Support Request – the fast track to the experts
<https://support.industry.siemens.com/My/ww/en/requests>

Using the Support Request form in Industry Online Support you can send your query directly to Technical Assistance.



- Conversion tool – the easy and efficient way to find successor products
www.siemens.com/sirius/conversion-tool

Introduction



1/2	SIRIUS
1/6	SETRON
1/8	Surge arresters
1/10	SIDOR
1/11	SIPLUS extreme RAIL
1/12	SCALANCE RUGGEDCOM
1/16	Siemens Propulsion System

Introduction

1

Electrical components for the railway industry – SIRIUS

Overview

SIRIUS range of electrical components for the railway industry

Whether for rolling stock or infrastructure applications, we offer a comprehensive portfolio of electrical components for countless applications. One of our portfolio highlights is SIRIUS, the complete range for industrial controls. SIRIUS offers everything required for the switching, protection, or starting of

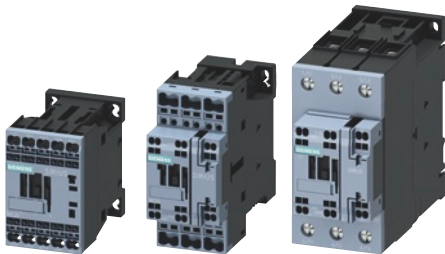
loads, as well as for their monitoring, control, detection, commanding, signaling, or supply. Our portfolio is rounded out by numerous products specifically developed and tested for the railway industry.

SIRIUS 3RV2 motor starter protectors for motor protection



- Spring-loaded or screw-type connection system on the terminals (also ring cable lug connection on request)
- For screw and snap-on mounting on DIN rail
- Short-circuit breaking capacity up to 100 kA
- Trip class 10 (sizes S00-S3)
- Integrated motor protection up to 100 A at +70 °C
- Comprehensive accessories/infeed systems
- Rated current:
 - Up to +60 °C 100 %
 - Up to +70 °C 87 %
- Mechanical service life:
 - 250 to 500 switching cycles

SIRIUS 3RT2 motor contactors up to 45 kW



- Spring-loaded or screw-type connection system on the terminals (also ring cable lug connection on request)
- Coil with suppressor diode or varistor circuit
- For screw and snap-on mounting on DIN rail
- Extended operating range: 0.7 – 1.25 x U_s
- Communication via IO-Link for stationary applications
- Mounting:
 - Electronic coil: clearance up to ambient temperatures of 70 °C is not required
- Contacts:
 - Electronic coil: Auxiliary switches expandable in the same way as standard contactors

SIRIUS 3RT1 motor contactors from 55 to 250 kW



- Screw-type connection system via busbar connection or box terminal
- Optional control via a separate control signal input of 24 to 110 V DC (operating range from 0.7 to 1.25 x U_s)
- Can be used at ambient temperatures up to 70 °C
- Contacts:
 - Two NO contacts and two NC contacts as standard
 - Auxiliary switches expandable in the same way as standard contactors

SIRIUS 3RF solid-state switching devices



- Solid-state switching devices for switching 1- and 3-phase resistive and 3-phase motor loads
- Spring-loaded, screw-type and ring cable lug connection system
- Extremely durable, low-maintenance, rugged, and reliable thanks to long switching service life
- Wear- and noise-free switching, also for noise-sensitive areas
- Expandable functionality through plug-on function modules
- Vibration resistance in accordance with EN 61373 Category 1, Class B

SIRIUS 3TC DC contactors



- 3TC44 for screw and snap-on mounting on DIN rail
- 3TC48 to 3TC78 for screw mounting
- Solenoid coil fitted with varistor
- Extended operating range: $0.7 - 1.25 \times U_s$
- Contactors for switching DC voltages up to 1500 V
- Version with series resistor:
 - Mounting clearance up to ambient temperatures of 70°C is not required
 - Mounting: with size 2 (3TC44) a clearance of 10 mm is required
 - Contacts: auxiliary switches not expandable; two NO contacts and one NC contact as standard



Introduction

1

Electrical components for the railway industry – SIRIUS

SIRIUS 3RH2 contactor relays



- Spring-loaded and screw-type connection system on all terminals (also ring cable lug connection on request)
- Coil with suppressor diode or varistor circuit
- For screw and snap-on mounting on DIN rail
- Extended operating range: 0.7 to 1.25 x Us
- Electronic coil with very low switch-on and holding power
- With electronic coil:
 - Ambient temperature up to 70 °C
 - Mounting without clearance
 - A 4-pole auxiliary switch block can be mounted
- Standard coil (coupling contactors):
 - Ambient temperature > 60 °C
 - Mounting with a clearance of 10 mm
 - It is not possible to mount an auxiliary switch block

SIRIUS 3RH2 latched contactor relays



- Screw-type connection system
- Solenoid coil fitted with varistor
- For screw and snap-on mounting on DIN rail
- Extended operating range: 0.7 – 1.25 x Us
- Electronic coil with very low switch-on and holding power
- With electronic coil:
 - Ambient temperature up to 70 °C
 - Mounting without clearance
 - A 4-pole auxiliary switch block can be mounted

SIRIUS 3TH4 contactor relays with 8 and 10 contacts



- Screw-type connection system
- Solenoid coil fitted with varistor
- For screw and snap-on mounting on DIN rail
- Extended operating range: 0.7 – 1.25 x Us
- The contacts are not expandable
- Mounting:
 - At ambient temperatures between 55 °C and 70 °C a clearance of 10 mm is required for side-by-side mounting

SIRIUS ACT push buttons and signaling devices



- Modern design and flexible concept:
 - 4 design lines in plastic, shiny metal and matte metal in 22/30 mm
 - Actuators, holders, contact module and LED modules can be ordered individually and combined freely
- Broad product range:
 - State-of-the-art functions, such as ID key-operated switches on RFID basis
 - Customized variants, e.g. special tumbler arrangements, labeling, pre-assembled enclosures
- Communication:
 - Communication-enabled due to optional connection to AS-Interface, IO-Link or PROFINET
- Ruggedness:
 - Degree of protection IP69K is our standard

Electrical components for the railway industry – SIRIUS

1

SIRIUS monitoring relays



- Monitoring relays for electrical parameters, thermistor motor protection, temperature, filling level, speed
- All versions with removable terminals, featuring either spring-loaded or screw-type connection system
- Applicability in all networks thanks to wide voltage range
- Variable adjustability
- 3-phase current monitoring integrated in the main circuit
- Communication via IO-Link for stationary applications

SIRIUS 3RQ coupling relays



- SIRIUS 3RQ2 coupling relays in robust industrial housing (22.5 mm width) and 3RQ3 coupling relays in slim design (6.2 mm)
- Coupling technology with power, plug-in and coupling relays in accordance with the railway standard
- Coupling links with two-tier design and connections on two levels
- Versions with removable terminals, featuring either spring-loaded or screw-type connection system
- Versions with very slim design of only 6.2 mm (3RQ3)
- Versions with up to 3 changeover contacts in width of only 22.5 mm (3RQ2), also available with hard gold-plated contacts for switching of small currents
- Low power consumption
- Applicability in all networks thanks to wide voltage range
- Version with solid-state compatible outputs (hard gold-plating)

SIRIUS 3RP2 timing relays



- Electronic timing relays (multifunction) with up to 15 time ranges
- Electronic timing relays with two changeover contacts and positively-driven relay contacts
- Individual or selectable time ranges
- Switch position and voltage indication via LED
- With removable terminals, featuring either spring-loaded or screw-type connection system
- For screw and snap-on mounting on DIN rail
- Electronic timing relays with positively-driven relay contacts:
 - 2 changeover contacts
 - Vibration resistance in accordance with DIN EN 61373 Category 1, Class B
 - Interference immunity in accordance with EN 50121-3-2

SIRIUS 3SK1 safety relays



- Suitable for all safety applications up to SIL 3/PL e
- Modular hardware configuration
- Simple commissioning using DIP switches and software parameter assignment
- Simple selection thanks to a small number of multifunctional devices
- SIRIUS safety relays can be integrated into systems simply and independently of the automation solution
- More functionality and flexibility through freely configurable safety logic
- Vibration resistance in accordance with DIN EN 61373 Category 1, Class B
- Interference immunity in accordance with EN 50121-3-2 Table 1

SIRIUS 3SE5 position switches



- Modular device design with easy plug-in connection system
- Four different enclosure versions in plastic and metal
- Optional LED display for all enclosures
- Positive opening of NC contacts
- Area of application up to SIL 3 in accordance with IEC 62061
- High contact reliability, also with 5 V DC/1 mA
- Safety position switches with separate actuator with/without tumbler
- High degree of protection up to IP 66/IP 67
- Extended temperature range: -40 °C to +85 °C
- Versions with increased corrosion protection

Introduction

1

Electrical components for the railway industry – SENTRON

Overview

SENTRON protection and switching devices

Tested protection and switching devices from the SENTRON portfolio ensure reliable low-voltage power distribution in infrastructure and railway applications.

The perfectly coordinated components offer outstanding flexibility, convenience, and safety for the railway industry.

5SY4 MCBs



- Optional top or bottom infeed thanks to identical terminals
- Convenient entry thanks to large and easily accessible wiring space
- Rapid manual removal from the busbar assembly
- Vibration- and shock-proof in accordance with DIN EN 61373 and DIN EN 50155 "1B"
- Applicability at ambient temperatures from -40 °C to +70 °C, with max. humidity of 95 %
- Rated switching capacity: 10 kA AC
- Vibration resistance:
 - According to IEC 60068-2-6. 50 m/s² with 25 to 150 Hz and 60 m/s² with 35 Hz (4sec)
 - According to EN 61373 Category 1, Class B

5SY5 MCBs



- Optional top or bottom infeed thanks to identical terminals
- Convenient entry thanks to large and easily accessible wiring space
- Rapid manual removal from the busbar assembly
- Vibration- and shock-proof in accordance with DIN EN 61373 and DIN EN 50155 "1B"
- Applicability at ambient temperatures from -40 °C to +70 °C, with max. humidity of 95 %
- Rated switching capacity: 10 kA AC and 1 kA DC
- Vibration resistance:
 - According to IEC 60068-2-6. 50 m/s² with 25 to 150 Hz and 60 m/s² with 35 Hz (4sec)
 - According to EN 61373 Category 1, Class B

5ST3010 auxiliary switches (AS) for MCBs



- 5ST3 add-on components: can be combined with 5SY MCBs and 5SU1 RCBOs
- Signaling of the miniature circuit breaker's contact position by the auxiliary switch (AS) – released by hand or due to fault
- Auxiliary switch version with test button for testing of the control circuit without switching the miniature circuit breaker
- Rated breaking capacity: 60 A
- Ambient temperatures: -25 °C to +55 °C
- Climate resistance: according to IEC 60068-2-30 28 cycles

5SV RCCBs



- Enhanced comfort and safety due to improved design
- Comprehensive uniform accessories for additional functions
- Consistent busbar system concept for all RCCBs with N connection on the right or left
- Easy removal of individual equipment from the linked assembly
- Rated residual current: 30, 300 mA
- Quick and easy replacement thanks to fast manual removal of the RCCBs from the assembly

Electrical components for the railway industry – SENTRON

5SU1 RCBOs



- Clear, visible and controllable connection of the supply line
- Convenient entry thanks to large and easily accessible wiring space
- Peak withstand current (> 1 kA) for safe operation
- Retrofitting of add-on components for miniature circuit breakers on the right side
- Rated residual current: 10, 30, 300 mA, Rated current: 6 to 40 A
- Width: 2 WU
- For all 10 kA versions up to 40 A:
 - Full insulation through integrated, movable terminal covers in the area of conductor entries
 - Replacement time savings thanks to rapid manual removal of the miniature circuit breakers from the assembly when changing the connections

Remote controlled mechanisms 5ST30



- The market's most modular system
- Easy selection between manual/off/RC mode
- Easy connection to RCBOs, RCDs, MCBs, and other devices with adapters
- Rated voltages: 12 ... 30/177 ... 270 V AC or 12...48 V DC
- Width: 2 WU
- Applicability at ambient temperatures from -40 °C to $+70$ °C
- Climate resistance: according to IEC 60068-2-30 28 cycles
- Vibration resistance: according to IEC 60068-2-6. 50 m/s^2 with 10 to 150 Hz

3NA3360, 3NA3812 LV HRC fuse links



- Fuse links with combined indicator: fuse disconnection signaled by color change from red to white
- Insulated metal grip lugs embedded in upper and lower cover of the fuse link in plastic for increased safety during replacement
- Imprinted sign for insulated grip lugs
- Rated breaking capacity: 25 kA DC
- Rated current: 2 to 315 A
- Contact blade: corrosion-free, silver-plated
- Climatic withstand capability: -20 °C up to $+50$ °C with 95% relative humidity

3NH3030 LV HRC fuse bases and accessories



- Made of ceramic material for screw mounting
- With flat connections, screw
- Weight per product unit: 0.217kg

Vacuum interrupters for medium-voltage contactors and circuit breakers



- Extremely safe switching and long service life due to vacuum design
- Many years of manufacturing experience, with more than 5 million interrupters supplied
- Customer-specific development according to OEM customer requirements
- High product variance for different switching applications
- Use in:
 - Medium- and low-voltage switching devices
 - Medium-voltage contactors, circuit breakers, load-break switches and switch disconnectors for railway applications

3AH47 VCB for traction applications



- Rated voltages up to 27.5 kV, frequencies of 16.7 - 60 Hz, Rated current up to 2500 A
- Rated short-circuit breaking current up to 50 kA
- 1-, 2- and 3-pole version
- Vertical pole assembly fixed to operating mechanism via post insulators
- Customer benefits:
 - compact & high mechanically stable design
 - various additional equipment available
 - economical integration
 - competent consultation by our experts

Introduction

1

Electrical components for the railway industry – Surge arresters

Overview

Siemens surge arresters for railway applications – reliable, stable and safe overvoltage protection

Siemens has been designing and manufacturing surge arresters for all kinds of applications since 1925. For more than 80 years we've been manufacturing surge arresters for rail systems. Continuous research and development, the wealth of Siemens know-how, and comprehensive worldwide experience give Siemens surge arresters a leading edge in overvoltage protection. Their uncompromising quality ensures a long service life and the highest reliability in any application.

Siemens surge arresters are an indispensable aid to insulation coordination in electrical power systems. Valuable equipment, such as traction vehicles, is optimally protected against lightning and switching overvoltages. Siemens surge arresters have been designed to meet the requirements of a wide range of common installation environments, from arctic cold to the heat of the desert and the dampness of tropical climates.

All Siemens surge arresters feature a superior sealing system that reliably prevents moisture ingress to ensure the highest possible degree of overvoltage protection and decades of trouble-free service.

3EB4 surge arrester for railway applications



- Housing made of glass fiber reinforced plastic (FRP) tube and silicone rubber sheds
- For AC systems up to 25 kV
- For DC systems up to 3 kV
- Train speeds up to 420 km/h
- Short circuit current capability 50 kA
- Tested according to IEC 60099-4 (AC version) and EN 50526-1 (DC version)
- Fire test according to DIN EN 45545-2
- Shock and vibration test according to IEC 61373
- For use on:
 - High-speed trains and intercity trains
 - Commuter and regional trains
 - (Multi-traction) locomotives
 - Urban transportation (light rail, metros and tram cars)

3EB5 surge arrester for railway applications



- Cage designTM with directly molded silicone rubber housing
- For AC systems up to 25 kV
- For DC systems up to 3 kV
- Travel speed up to 200 km/h
- Short circuit current capability 65 kA
- Tested according to IEC 60099-4 (AC version) and EN 50526-1 (DC version)
- Fire test according to DIN EN 45545-2
- Shock and vibration test according to IEC 61373
- For use on:
 - Intercity trains
 - Commuter and regional trains
 - (Multi-traction) locomotives
 - Urban transportation (light rail, metros and tram cars)



Introduction

1

Electrical components for the railway industry – SIDOOR

Overview

SIDOOR – Innovative door control systems and now also for metro gap filler control systems

In the field of railway applications, we offer SIDOOR automatic control system for platform screen doors (PSDs), train doors and now also for gap fillers.

Safe and convenient operation of the doors or steps is always ensured (friction and energy limitation).

Controller for gap filler – SIDOOR ATE530G coated



- Extends a step until 30 kg within 1 s by a maximum of 163 mm against a fixed stop
- Project specific EC motor
- Ice function: A higher extension force can be created within the first 50 mm (parameterizable)
- Variant with additional, transparent protective coating to prevent impairment or damage by moisture and atmospheric pollutants
- Certified according to: DIN EN 50657: 2017 (Basic Integrity)

Controllers for platform screen doors – SIDOOR ATE530S and SIDOOR ATE531S



- Less mounting and wiring effort thanks to PROFINET. Furthermore, program changes, software updates and the teach-in drive of all SIDOOR systems can be started from a platform or even from the metro line control center. This substantially reduces commissioning times.
- Seamless integration into the TIA system architecture and expansion of the inputs and outputs for additional actuators and sensors, for example by SIPLUS ET 200SP RAIL
- Detailed diagnostics and parameter assignment options
- The 5 inputs and 2 outputs can be individually configured
- Freely configurable unlocking sequences
- Certified according to: IEC 62061 (SIL 2 for named functions), EN 60335-1, EN ISO 13849-1, EN 14752 (power and energy)
- SIDOOR ATE530S coated (fig. without lid)
 - Variant with additional, transparent protective coating to prevent impairment or damage by moisture and atmospheric pollutants
 - Corresponds to EN 50155 chapter 12, chapter 9.4
- SIDOOR ATE531S (fig. without lid)
 - Coated like ATE530S, and with temperature range extended to +70 °C

Motors for platform screen doors – SIDOOR MEG251 and SIDOOR MED280



- Low noise, low heat rise, maintenance-free
- SIDOOR MEG251 left/right:
 - Compact size – EC geared motor for door weights up to 250 kg
 - For retrofit applications (replacement for SIDOOR ATE250S, including SIDOOR MEG250)
- SIDOOR MED280:
 - Gearless EC direct drive for door weights up to 280 kg – provides even higher reliability and energy balance = less wear = long service life
 - Just one motor for different installation orientations = asset minimization

Door drive for interior railway doors – SIDOOR ATD400T with SIDOOR MDG180 DIN EN 45545-2



- Complies with the new fire protection standard for components in rail vehicles according to DIN EN 45545-2 – Hazard Level HL 3
- Certified safety according to DIN EN 14752 (fail-safe limitation of force and energy)
- Extended operating temperature range: -25 °C to +70 °C and for 10 minutes up to +85 °C with reduced track-related speed profile parameters
- SIDOOR MDG180 DIN EN 45545-2 left/right:
 - Compact design – DC geared motor for door weights up to 180 kg
- SIDOOR ATD400T:
 - Including push-to-open and push-to-close function

Electrical components for the railway industry – SIPLUS extreme RAIL

Overview

SIPLUS extreme RAIL – automation with railway approvals

Thanks to their extensive approvals and conformity to railway standards, the new SIPLUS extreme RAIL products are the perfect choice for a wide range of rolling stock and trackside applications. Based on SIMATIC industrial controllers, common

features such as integrated system diagnostics and security and safety are already included. Whether simple, complex or distributed - SIPLUS extreme RAIL offers a durable and robust solution for your automation tasks.

SIPLUS extreme RAIL-Controller



- Basic and advanced controller for use in simple applications such as sanding systems and hygiene cubicles up to complex setups such as HVAC, signaling systems and interlockings
- Compliant to EN 50155, EN 45545 and EN 50124
- Failsafe controller certified for EN 50126, EN 50128, EN 50129 and EN 50159
- Insulation testing for every item
- Conformal Coating
- Temperature classes TX: -40 °C to +85 °C* and T1: -25 °C to +70 °C* (* includes +15 K overtemperature for 10 minutes)
- PROFINET, Ethernet, CAN, OPC UA and PROFISAFE communication
- High electromagnetic immunity to interference (EMC) and mechanical resilience (vibration and shock)
- Integrated system diagnostics and security
- 110 V IOs available

SIPLUS extreme Rail HMI



- HMI Panels for visualization of simple, medium and complex applications
- Compliant to EN 50155, EN 45545 and EN 50124
- Insulation testing for every item
- Conformal Coating
- Temperature class T1: -25 °C to +70 °C* (* includes +15 K overtemperature for 10 minutes)
- PROFINET, Ethernet, CAN, OPC UA and PROFISAFE communication
- High electromagnetic immunity to interference (EMC) and mechanical resilience (vibration and shock)
- Integrated system diagnostics and security
- Horizontal installation

SIPLUS extreme Rail Distributed I/O



- Distributed I/O controller for medium and complex applications
- Compliant to EN 50155, EN 45545 and EN 50124
- Failsafe controller certified for EN 50126, EN 50128, EN 50129 and EN 50159
- Insulation testing for every item
- Conformal Coating
- Temperature classes TX: -40 °C to +85 °C* and T1: -25 °C to +70 °C* (* includes +15 K overtemperature for 10 minutes)
- Seamless integration into the common TIA Portal engineering framework
- PROFINET, Ethernet, CAN, OPC UA and PROFISAFE communication
- High electromagnetic immunity to interference (EMC) and mechanical resilience (vibration and shock)
- Integrated system diagnostics and security

Introduction

1

Electrical components for the railway industry – SCALANCE | RUGGEDCOM

Overview

Communication solutions for railway industry with SCALANCE and RUGGEDCOM

Siemens offers a wide range of communication products and technologies that are specifically designed to give railway operators all the tools they need for continuously trouble-free railway operation based on current security standards – from the integration of legacy infrastructure to long-haul fiber backbones

and widespread wireless connectivity for mobile and stationary applications. Siemens is active worldwide, and has the knowledge and experience to deliver complete, standardized communication solutions to the railway industry.

SCALANCE XC-200



- Meets the railway standard EN 50121-4 (trackside)
- Redundant power supply
- Up to 24 x RJ45 ports 10/100 Mbit/s for mounting in the control cabinet
- Additional versions with optical ports (SC/ST/LC) up to 1 Gbit/s and with conformal coating (XC-200EEC) available
- Slot for optional C-PLUG removable data storage medium for easy device replacement without additional equipment such as a field PG
- Fast mobile network diagnostics by smartphone or tablet via WLAN and NFC (Near Field Communication)

SCALANCE XP208EEC, XP208PoE EEC, XP216EEC and XP216PoE EEC



- Meets the railway standards EN 50155 and EN 45545-2 (train- and trackside)
- Managed Switch, high degree of protection (IP 65) for use outside the control cabinet, temperature range -40 °C to +70 °C with coated PCBs (conformal coating), stable metal enclosure
- Flat type for installing in partitions etc., many mounting options
- Clearly highlighted diagnostic area
- Supports PoE ports (IEEE 802.3 at type 2, 30 W per port)
- Variants:
 - XP208EEC: 8-port managed switch
 - XP208PoE EEC: 8-port managed switch, 4 ports with PoE function
 - XP216EEC: 16-port managed switch
 - XP216PoE EEC: 16-port managed switch, 8 ports with PoE function

SCALANCE XR324-12M TS / XR324-4M PoE TS



- Meets the railway standards EN 50155, EN 45545-2 and EN 50121-4 (train- and trackside)
- Modular, managed Layer 2 Industrial Ethernet 19" rack switches
- Redundancy functions for highly available ring topologies, tried and tested in industrial applications (MRP/HRP), equipped with additional IT functions, e.g. VLAN, RSTP, MSTP
- Gigabit Ethernet support on all 24 ports
- Ambient temperature -40 °C to +70 °C
- Can be used in harsh environments due to vibration-proof/shock-proof plug-in connection
- Variants:
 - SCALANCE XR324-12 M TS: 12 slots for electrical (RJ45 / M12) and/or optical 2-port media modules (multi-mode or single-mode), which are inserted into the media module slots of the basic unit
 - SCALANCE XR324-4M PoE TS:
 - 16 integrated RJ45 ports, of which 8 are PoE-capable
 - 4 slots for electrical (RJ45 / M12) and/or optical 2-port media modules, which are inserted into the media module slots (multi- or single-mode) of the basic unit

SCALANCE XM408-8C with Port Extender PE408PoE



- Meets the railway standard EN 50121-4 (trackside)
- SCALANCE XM408-8C with 8 ports available in total, of which
 - up to 8 x 10/100/1000 Mbit/s are RJ45 ports with retaining collars
 - up to 8 x SFP slots (combo ports), 100 or 1000 Mbit/s of either electric port or SFP slot
- Two port extenders with 8 ports each can be connected to implement a maximum of 24 ports in one switch
- Fast mobile network diagnostics by smartphone or tablet via WLAN and NFC
- High-speed media redundancy through integral redundancy manager even for large networks, for both Gigabit Ethernet and Fast Ethernet
- Opt. activation of the Layer 3 functions in connection with the KEY-PLUG XM-400
- PE408PoE Port Extender for SCALANCE XM-400 managed modular IE switch; extension by 8 x 10/100/1000 Mbit/s RJ45 with up to 8 ports PoE according to IEEE 802.3 at type 2

Electrical components for the railway industry – SCALANCE I RUGGEDCOM

SCALANCE M876-4 + ANT896-6MH



- Meets the railway standards EN 50155 and EN 50121-4
- 3G/LTE router for wireless connection via the mobile radio network – perfect for large bandwidth requirements, e.g. for video transmission, data link for automatic ticket machines, infotainment services, internet on board and telemetry
- Bandwidth up to 100 Mbit/s downlink and 50 Mbit/s uplink (LTE)
- Redundant power supply
- Managed 4-port switch, network management via SNMP
- Integrated firewall and IPsec/OpenVPN
- Ambient temperature -20 °C to +60 °C
- 2G/3G/4G antenna ANT896-6MH for mounting on the vehicle roof

SCALANCE W774-1 M12 EEC and SCALANCE W778-1 M12 EEC



- Meets the railway standards EN 50155 and EN 50121-4
- Industrial Wireless LAN access points for installation in control cabinets or for indoor use with IEEE 802.11a/b/g/n support and data transfer rates up to 300 Mbit/s
- Low-profile, compact aluminum enclosure, shock and vibration-proof, for high mechanical requirements, variants in protection class IP30 and IP65
- M12 connections for 10/100 Mbit/s with PoE
- Coated PCBs (conformal coating) and extended temperature range (-30 °C to +70 °C)
- Mounting outside of the cabinet also possible thanks to IP65 protection class (SCALANCE W778-1 M12)
- Additional functions (iFeatures) can be activated optionally with a KEY-PLUG, e.g. iPRP for reliable redundancy with WLAN

SCALANCE W788-2 M12 EEC and SCALANCE W1788-2 M12 EEC



- Meets the railway standards EN 50155, EN 45545-4 and EN 50121-4
- Industrial Wireless LAN access point for installation in control cabinets or for indoor use with IEEE 802.11a/b/g/n support and data transfer rates up to 450 Mbit/s
- SCALANCE W1788-2 M12 EEC: further 802.11ac support, transfer rates up to 1700 Mbit/s
- Rugged aluminum enclosure, shock and vibration-proof, for high mechanical requirements, protection class IP65, coated PCB (conformal coating)
- M12 connection for 10/100/1000 Mbit/s with PoE
- Antenna positioning optimized for 3 x 3 MIMO technology (W1788: 4 x 4 MIMO); no interference between the antennas for direct mounting on the device
- Ambient temperatures: -40 °C to +70 °C (W788-2 M12 EEC), -20 °C to +60 °C (W1788-2 M12 EEC)
- Additional functions (iFeatures) can be activated optionally with a KEY-PLUG, e.g. iPRP for reliable redundancy with WLAN (for W1788 with CLP in 2019)

SCALANCE W786



- Meets the railway standard EN 50121-4
- IWLAN access points for outdoor use with IEEE 802.11a/b/g/n support and data transfer rates up to 450 Mbit/s, RJ45 or SFP connections for 10/100 Mbit/s with PoE
- Rugged, impact-resistant plastic enclosure, shock and vibration-proof for demanding mechanical requirements, Protection class IP65, resistant to condensation, UV radiation and saltwater spray
- Additional functions (iFeatures) can be activated optionally with a KEY-PLUG, e.g. iPRP for reliable redundancy with WLAN

Introduction

1

Electrical components for the railway industry – SCALANCE I RUGGEDCOM

IWLAN accessories: antennas and cables



- Remote antennas increase the reliability of wireless links by optimizing signal reception and emission
- Use in Industrial Wireless LAN (IWLAN) and WLAN according to IEEE 802.11 with 2.4 GHz and 5 GHz with data transfer rates up to 450 Mbit/s
- The connection cables meet the increased requirements for environmental conditions and fire protection that are required for use in vehicles (including EN 45545-2)

RUGGEDCOM RS900G / RS900GP



- Meets the railway standard EN 50121-4
- Managed Ethernet switch for reliable operation in critical infrastructure
- Multiple fiber connector types (LC, SC, ST, SFP)
- Long-haul optics allow Gigabit uplinks for distances up to 70 km
- Operating temperature from -40 °C to +85 °C
- Variants:
 - RS900G: Managed Ethernet switch with 10 ports, Gigabit fiber-optic uplinks and 128 bit encryption
 - RS900GP: Managed Ethernet switch with 10 ports, of which 8 are Power-over-Ethernet (PoE) ports and 2 Gigabit uplinks, with 128 bit encryption

RUGGEDCOM RSG920P



- Meets the railway standards EN 45545-2 and EN50121-4
- High port density to meet the Ethernet requirements along the track
- Compact layer 2 Gigabit switch with 20 Gigabit ports, including 4 PoE ports and 4 SFP slots and I/Os with PoE supply
- SFP ports for greater flexibility and migration in future Ethernet networks
- 19" switch performance features in compact design to save space
- Application and commissioning with USB console and MicroSD firmware/configuration
- RPS1300 power supply suitable for Power-over-Ethernet devices, max. power 140 W

RUGGEDCOM RSG907R / RSG909R



- Meets the railway standard EN 50121-4
- PRP/HSR coupling functionality to cover all types of redundant network topologies
- 3 x RNA (Redundant Network Access) and coupler Ethernet ports according to IEC 62439-3 (1000BASE-X), plus
 - RSG907R: 4 x SAN (Singly Attached Node) fiber optic ports (LC, 100BASE-FX)
 - RSG909R: 6 x SAN (Singly Attached Node) copper Ethernet (RJ45)
- Power redundancy: Integrated power supply with redundant inputs
 - Universal high voltage range: 88 – 300 VDC or 85 – 264 VA;
 - Universal low voltage power supply range: 10 – 60 VDC

RUGGEDCOM RX1400



- Meets the railway standard EN 50121-4
- Rugged Industrial Ethernet switch and TCP/IP router with LTE and fiber-optic WAN options in compact design
- For safe, cost-effective implementation of extensive communication applications and a high processing performance in harsh industrial environments
- 4 x Fast Ethernet copper ports and 2 x Gigabit SFP slots (Small Form Factor Pluggable)
- Supports multi-mode and single-mode SFPs for distances up to 100 km
- Equipped with GPS input
- Available with or without LTE modem for Europe, North America, the Asia-Pacific Region and Japan
- Operating temperatures from -40 °C to +85 °C; fanless operation
- The RUGGEDCOM VPE1400 provides a virtualized environment to run a guest Linux operating system and third party applications on the RX1400, enabling intelligence at the network edge

Electrical components for the railway industry – SCALANCE I RUGGEDCOM

RUGGEDCOM RX1500



- Meets the railway standards EN 50155 and EN 50121-4
- Modular and field-replaceable layer 2 and layer 3 switch and router
- M12 line modules with very wide range of functions (M12/RJ45, Fast Ethernet / Gigabit, etc.)
- ROX II software features with integrated router/firewall / VPN / VRRP/MPLS
- Input voltage: 24 V DC, 48 V DC, 88 to 300 V DC, and 85 to 264 V AC for worldwide operability
- Operating temperature from -40 °C to +85 °C

RUGGEDCOM RSG2100 / RSG2100P



- Meets the railway standard EN 50121-4
- Modular fully managed Ethernet switch for use in electrically harsh and climatically demanding environments
- Up to 3 Gigabit Ethernet ports and 16 Fast Ethernet ports (copper and /or fiber optic)
- 2-port modules for outstanding flexibility
- Store and forward switching
- Supports many fiber-optic types (multi-mode, single-mode) with diverse connectors (ST, MTRJ, LC, SC, SFP)
- Fully integrated, dual redundant (optional) power supplies
- Variant available with up to 4 ports conforming with IEEE 802.3af (10/100BaseTX)

RUGGEDCOM RSG2300 / RSG2300P



- Meets the railway standard EN 50121-4
- Fully managed Ethernet rack switch with 32 ports and 4 modular Gigabit uplink ports and 24 Fast Ethernet copper ports
- Optional: up to 4 x 1000LX Gigabit Ethernet ports (copper and/or fiber-optic) and up to 8 x 100FX Fast Ethernet ports (copper and/or fiber-optic)
- Non-blocking, store and forward switching
- Supports many fiber-optic types (multi-mode, single-mode) with diverse connectors (ST, MTRJ, LC, SC, SFP)
- Fully integrated, doubly redundant (optional) power supplies
- Variant available with up to four ports conforming with IEEE 802.3af (10/100BaseTX)

RUGGEDCOM RST2228 / RST2228P



- Meets the railway standard EN 50121-4
- 19" Layer 2 rack switch with up to 28 Ports: 4 x 1/10 Gigabit ports (SFP), 24 Gigabit/Fast Ethernet ports (SFP, RJ45, LC)
- Power-over-Ethernet Variant available
- Supports IEEE 8023.at/802.3bt (draft) with max. 60W per port
- Maximum Power budget 500W
- Modular; field-replaceable Ethernet media modules with 4 ports for outstanding flexibility
- Supports IEEE 1588 v2 time synchronization with hardware time stamping and transparent clock
- Non-blocking, store and forward switching
- Integrated dual redundant power supplies

RUGGEDCOM WIN



- First broadband wireless product portfolio designed for private networks delivering the benefits of 4G technology to critical infrastructure applications in harsh environments
- Provides enhanced security, network simplicity and private network feature set
- Mobile WiMAX compliance based on IEEE 802.16e standard and WiMAX Forum Wave2 (MIMO) certification
- Lowest frequency use: leverages OFDMA and built-in GPS to enable users to deploy an entire network on a single frequency channel
- Quality of service: separate traffic types over the air and guarantee latency, minimum bandwidth and jitter, according to application needs
- Stand-alone architecture: does not require an entire network infrastructure to be in place, while maintaining the interoperability and technology advances of broadband wireless
- Improved security: built-in features ensure NERC CIP compliance, such as two-factor mutual authentication and AES encryption
- Operating temperature from -40 °C to +75 °C

Introduction

1

Electrical components for the railway industry – Siemens Propulsion System

Overview

Components for the propulsion system

Siemens, as the inventor of electric traction, has always felt itself obligated to provide efficient, reliable drive systems for high-speed trains, locomotives, EMUs, metros, tram cars, trolley buses and mining trucks.

Following this tradition, we offer tailor-made components which are of course perfectly coordinated with one another (for example as a motor-gear unit). We are innovation drivers of energy efficiency, and offer extensive, worldwide service solutions, including retrofits, from a single source.

Pantograph



- Rated voltage: 0.6 – 25 kV; AC/DC
- Rated current: up to 4000 A
- Operating speed: up to 400 km/h
- (Static) contact force: 60-150 N
- Working height: up to 3200 mm
- Pan profiles: 1450, 1550, 1600, 1800, 1950 mm
- Option:
 - Automatic dropping device (ADD), raised height limit, electronic control for contact force tracking, lowered position monitoring, lowered position locking, monitoring of the wear on the contact strips

Transformers



- Rated voltage: 1.5/3 kV DC; 12/15/25 kV AC and special voltages
- Frequency: 16 2/3 – 60 Hz
- Rated power: up to 12 MVA
- Installation location: Underfloor, roof, machine room
- Feature:
 - Integrated transformer & inductor design, cooling system and expansion tank
 - High-class insulating material for maximum energy density
 - Ester cooling and insulating fluid for the highest environmental and fire protection requirements
- Option:
 - Multi-system transformers for cross-border travel, as well as integrated line filter & 2nd harmonic inductors, HEP/AUX transformers with filter, auxiliary and heating circuit windings according to customer specifications

Traction converter



- Rated voltage: 600/750/1500/3000 V DC
- Rated power: up to 1.6 MW per axle; in group supply up to 2.2 MW
- Efficiency: up to 98%
- Installation location: underfloor, roof, machine room
- Feature:
 - Cooling: Naturally or forced air cooling, water cooling
 - Ambient temperatures: -40 °C to +70 °C
- Option:
 - Single and multi-system configuration; group, bogie and individual axle control including redundancy concept; integrated on-board converter

Battery charger



- Rated voltage: 670/750/1500 V DC
- Rated power: 6 kW to 60 kW
- Output voltage: 24 – 110 V DC
- Feature:
 - Cooling: Naturally or forced air cooling, water cooling
- Option:
 - SiC technology, bidirectional, suitable for deserts and / or low temperatures

Electrical components for the railway industry – Siemens Propulsion System

1

On-board converter



- Rated voltage: 600/750 V DC; 1000 V AC; 1500/3000 V AC/DC
- Rated power: 20 kVA to 500 kVA
- Output voltage: 24 to 110 V DC, 1 AC/3 AC/3 AC+N, fixed/variable frequency
- Efficiency > 92 %
- Installation location: Underfloor, roof, machine room
- Feature:
 - Full and partial redundancy
 - Cooling: Naturally or forced air cooling, water cooling
 - Ambient temperatures: -40 °C to +55 °C
- Option:
 - SiC technology, integrated battery charger, parallel connection of converter without additional synchronous line, suitable for deserts and/or low temperatures

Traction motor



- Rated voltage: 750 – 4200 V DC
- Rated power: up to 1600 kW
- Rated speed: up to 8000 rpm
- Starting torque: up to 42000 Nm
- Cooling: Self-ventilated or forced-cooled, water-cooled
- Feature:
 - Synchronous (permanent-magnet-excited) and asynchronous motors
 - Open or encapsulated
- Type:
 - Semi-, fully suspended, or nose-suspended drive
 - Wheel hub motor

Coupling



- Membrane coupling:
 - Size 200 to 465 for 70% and 100% LF drives (fully suspended), with and without torque limiter
- Cardan joint and wedge-type integrated coupling:
 - Sizes 350 to 370 for 70% LF drives (fully suspended), up to size 680 for locomotive drives
- Guide coupling:
 - Sizes 330 to 365 for 100% LF drives (fully suspended)
- Gear coupling:
 - Metro: Axle-mounted drives, with and without torque limiter
 - EMU/high-speed: Normal and low temperature version, with and without torque limiter
- Steel multiple-disk coupling:
 - Locomotives
- Option:
 - Project-specific design and optimization of the couplings based on the relevant specification and requirement

Gear unit



- Axle loads: up to 32.5 t
- Rated speeds: up to 10.000 rpm
- Power: up to 1300 kW
- Ambient temperatures: -50 °C to +45 °C
- Type:
 - Bevel, bevel helical and helical gear units for semi- and fully suspended drive concepts
- Feature:
 - Gear unit and coupling as optimized system from a single source
 - Design optimized for noise and weight
 - Gear unit manufacture and gearing design and manufacturing competence in one company
- Option:
 - Suitable for deserts and/or low temperatures, specific grounding and/or current insulation solutions, special solutions for integration into digitized logistics systems (e.g. RFID), digital maintenance documentation for optimizing service processes

Introduction

Notes

1

Industrial Controls



2/2	Power Contactors for Switching Motors	2/187	Monitoring and Control Devices
2/12	SIRIUS 3RT contactors, 3-pole up to 250 kW	2/189	Timing relays
2/59	Contactors for Special Applications	2/202	Monitoring relays
2/60	SIRIUS 3RT.4 contactors for resistive loads (AC-1), 3-pole	2/230	Safety technology
2/63	Contactors for Railway Applications	2/231	SIRIUS 3SK Safety Relays
2/63	SIRIUS 3RT contactors with extended operating range, 3-pole	2/238	Basic units
2/68	SIRIUS 3RH2 contactor relays with extended operating range	2/241	Expansion units
2/71	- 3TH4 contactor relays, 8-pole	2/246	Position and Safety Switches
2/72	- 3TC contactors for switching DC voltage, 2-pole	2/248	SIRIUS 3SE5 mechanical position switches
2/73	- 3TC contactors for switching DC voltage, 1-pole and 2-pole	2/260	SIRIUS 3SE5, 3SE2 mechanical safety hinge switches
2/81	Contactor Relays and Relays	2/261	SIRIUS 3SE5 mechanical position switches for ambient temperatures of -40 °C
2/83	Contactor Relais	2/275	SIRIUS ACT pushbuttons and indicator lights
2/98	Coupling Relays	2/289	Actuators and indicators, 22 mm, plastic with metal front ring, matte
2/110	Solid-State switching devices	2/289	- Actuating and signaling elements
2/112	Solid-state switching devices for resistive/inductive loads	2/300	Actuators and indicators, 22 mm, Metal, shiny
2/115	- Solid-state relays	2/300	- Compact units
2/125	- Solid-state contactors	2/300	- Actuating and signaling elements
2/135	- Function Modules	2/301	Actuators and indicators, flat, 30 mm, metal, matte
2/147	Motor Starter Protectors/Circuit Breakers	2/301	- Actuating and signaling elements
2/148	SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers	2/304	Actuators and Indicators, Customized Designs
		2/306	Holders without module/holders with module
		2/307	Modules for actuators and indicators
		2/307	- Contact modules
		2/310	- LED modules
		2/311	Enclosures
		2/318	Accessories

Switching Devices – Contactors and Contactor Assemblies

Power Contactors for Switching Motors

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Home page, see www.siemens.com/sirius

Industry Mall, see www.siemens.com/product?3RT_3TK_3TC

Conversion tool, e.g. from 3RT10 to 3RT20, see www.siemens.com/sirius/conversion-tool

Online configurator for 3RT2 contactors, see www.siemens.com/sirius/configurators

TIA Selection Tool Cloud (TST Cloud), see <https://mall.industry.siemens.com/spice/TSTWeb/?kmat=Contactor>



Size
Type

S00
3RT201

S0
3RT202

3RT20 contactors

Type	3RT2015	3RT2016	3RT2017	3RT2018	3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
AC, DC operation	(p. 2/37, 2/64)				(p. 2/39, 2/65)					

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 (at $I_a = 6 \times I_e$)

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 - Lateral	3RH29, 3RA28	(p. 2/52)	3RH29, 3RA28	(p. 2/52)
		3RH29	(p. 2/56)	3RH29	(p. 2/56)

3RU2 and 3RB3 overload relays

3RU thermal overload relays	3RU2116	0.11 ... 16 A	3RU2126	1.8 ... 40 A
3RB electronic overload relays				
• For standard applications	3RB3016	0.1 ... 16 A	3RB3026	0.1 ... 40 A
	3RB3113		3RB3123	
• For High-Feature applications	3RB22, 3RB23 and 3RB24 with 3RB2906-2.G1 current measuring module	0.3 ... 25 A	3RB22, 3RB23 and 3RB24 with 3RB2906-2.G1 current measuring module	0.3 ... 25 A

3RV20 motor starter protectors

Motor starter protectors	3RV2011	0.11 ... 16 A	3RV2021	0.45 ... 40 A
Link modules	3RA2911		3RA2921	
	3RA1921			

Note:

Safety characteristics for contactors, see www.siemens.com/ic10, Chapter 16 "Standards and Approvals".

3RU2 and 3RB3 overload relays and 3RV20 motor starter protectors, see www.siemens.com/ic10, Chapter 7

Switching Devices – Contactors and Contactor Assemblies

Power Contactors for Switching Motors

Introduction



Size
Type

S2
3RT203

S3
3RT204

3RT20 contactors								
Type		3RT2035	3RT2036	3RT2037	3RT2038	3RT2045	3RT2046	3RT2047
AC, DC operation		(p. 2/41, 2/66)				(p. 2/66)		
AC-3								
I_e /AC-3/400 V	A	40	50	65	80	80	95	110
400 V	kW	18.5	22	30	37	37	45	55
230 V	kW	11	15	18.5	22	22	22	30
690 V	kW	22	22	37	45	55	75	90
1 000 V	kW	--	--	--	--	37	37	37
AC-4 (at $I_a = 6 \times I_e$)								
400 V	kW	18.5	22	30	37	37	45	55
400 V (200 000 operating cycles)	kW	11.6	12.6	14.7	15.8	17.9	22	24.3
AC-1 (40 °C, ≤ 690 V)								
I_e	A	60	70	80	90	125	130	130
Accessories for contactors								
Auxiliary switch blocks	- On front - Lateral	3RH29, 3RA28 3RH29				3RH29, 3RA28 3RH29		
Function modules	- Direct-on-line starting - IO-Link, AS-Interface	3RA283. 3RA271.-.AA00				3RA283. 3RA271.-.AA00		
Surge suppressors		3RT2936				3RT2936 ¹⁾ , 3RT2946		
Terminal covers		3RT2936-4EA2				3RT2946-4EA2		
3RU2 and 3RB overload relays								
3RU thermal overload relays		3RU2136	11 ... 80 A			3RU2146	28 ... 100 A	
3RB electronic overload relays								
For standard applications		3RB3036 3RB3133	12.5 ... 80 A			3RB3046 3RB3143	12.5 ... 115 A	
For High-Feature applications		3RB22, 3RB23 and 3RB24 with 3RB2906-2JG1 current measuring module 10 ... 100 A				3RB22, 3RB23 and 3RB24 with 3RB2906-2JG1 current measuring module 10 ... 100 A		
3RV20 motor starter protectors								
Motor starter protectors		3RV2031, 3RV2032		9.5 ... 80 A		3RV2041, 3RV2042		28 ... 100 A
Link modules		3RA2931				3RA1941		

¹⁾ From product version E03 onwards, 3RT2936-1B/-1E surge suppressors can be used for 3RT2.4 contactors.

Note:

Safety characteristics for contactors, see www.siemens.com/ic10, Chapter 16 "Standards and Approvals".

3RU2 and 3RB overload relays and 3RV20 motor starter protectors, see www.siemens.com/ic10, Chapter 7

Switching Devices – Contactors and Contactor Assemblies

Power Contactors for Switching Motors

Introduction

2



Size	S6				S10			S12	
Type	3RT105				3RT1.6			3RT1.7	
3RT10 contactors, 3RT12 vacuum contactors									
Type	3RT1054		3RT1055	3RT1056	3RT1064	3RT1065	3RT1066	3RT1075	3RT1076
AC, DC operation									
AC-3									
I_e /AC-3/400 V	A	115	150	185	225	265	300	400	500
400 V		55	75	90	110	132	160	200	250
230 V	3RT10	kW	37	45	55	55	75	90	132
690 V	3RT10	kW	110	132	160	200	250	250	400
1 000 V		kW	75	90	90	90/315	132/355	132/400	250/560
AC-4 (at $I_a = 6 \times I_e$)									
400 V	3RT10	kW	55	75	90	110	132	160	200
400 V		kW	29	38	45	54/78	66/93	71/112	84/140
(200 000 operating cycles)									
AC-1 (40 °C, ≤ 690 V)									
I_e	3RT10	A	160	185	215	275/330	330	330	430/610
Accessories for contactors									
Auxiliary switch blocks	• On front • Lateral	3RH19, 3RT1926 3RH19							(p. 2/55) (p. 2/57)
Surge suppressors		3RT1956-1C (RC element)							
Terminal covers		3RT1956-4EA.			3RT1966-4EA.				
Box terminal blocks		3RT1955-4G, 3RT1956-4G			3RT1966-4G				
3RB2 overload relays									
3RB electronic overload relays									
• For standard applications		3RB2056	50 ... 200 A		3RB2066	55 ... 250 A or 160 ... 630 A			
		3RB2153	50 ... 200 A		3RB2163				
• For High-Feature applications		3RB22, 3RB23 and 3RB24			3RB22, 3RB23 and 3RB24				
		with 3RB2956-2TH2 current measuring module			with 3RB2966-2WH2 current measuring module				
			20 ... 200 A			63 ... 630 A			
3RV10 molded case motor starter protectors									
Molded case motor starter protectors		3RV1063	40 ... 200 A		3RV1073	160 ... 400 A		3RV1083	252 ... 630 A

Note:

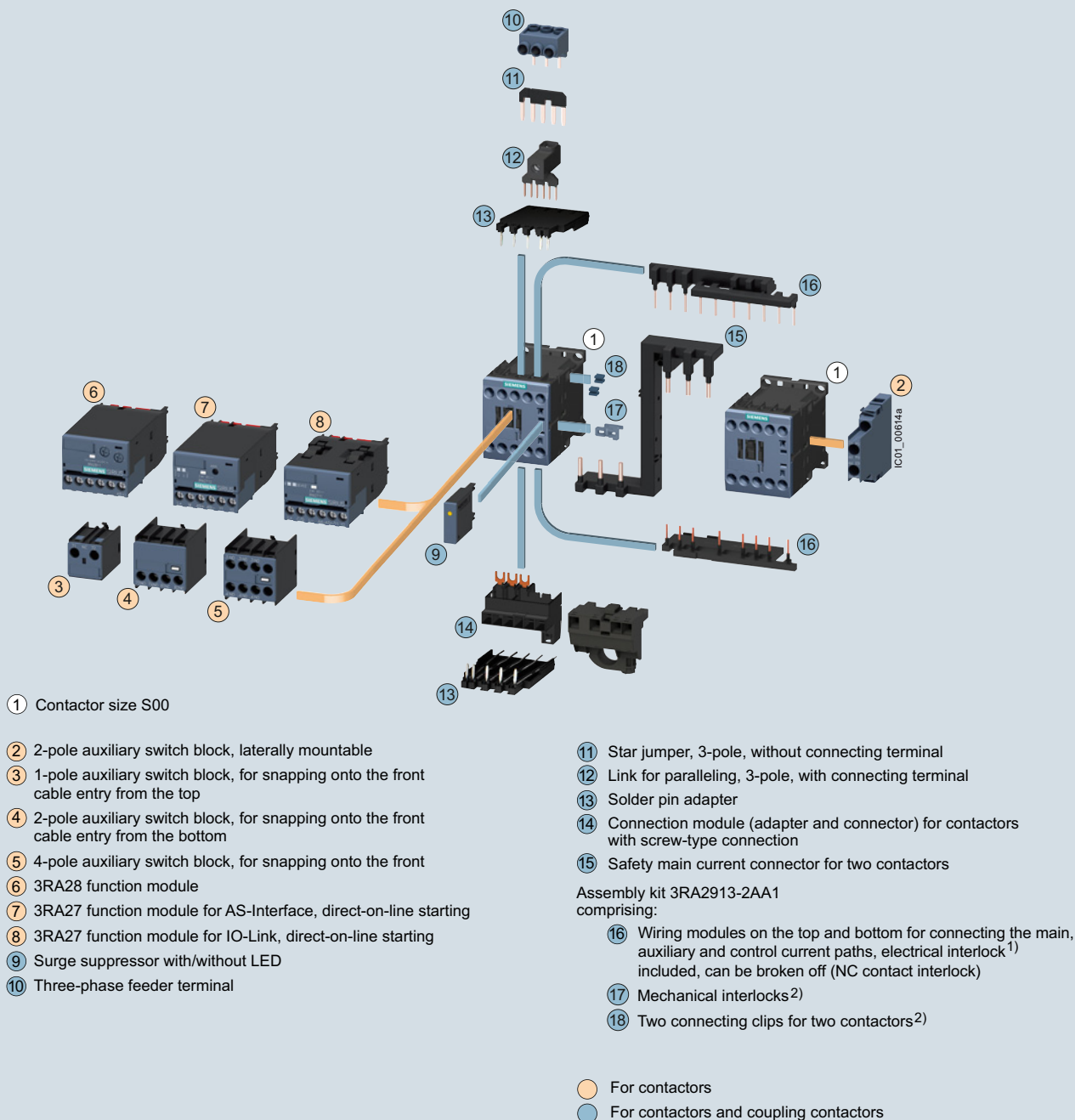
Safety characteristics for contactors, see www.siemens.com/ic10, Chapter 16 "Standards and Approvals".

3RB2 overload relays and 3RV10 molded case circuit breakers, see www.siemens.com/ic10, Chapter 7

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**Size S00 with mountable accessories**

¹⁾ 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.

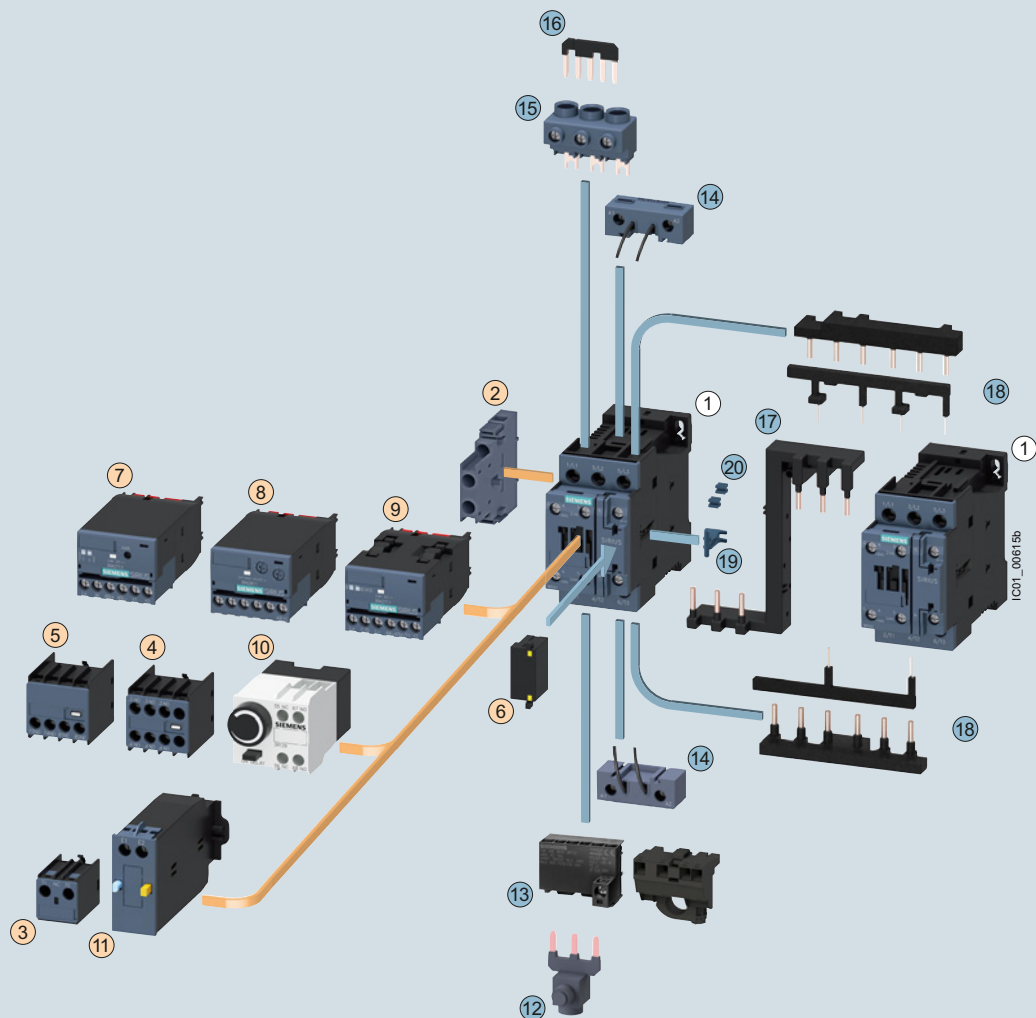
²⁾ The parts ⑰ and ⑱ can only be ordered together as 3RA2912-2H mechanical connectors.

Power Contactors for Switching Motors

General data

3RT2 contactors

Size S0 with mountable accessories



① Contactor size S0

- ② 2-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 cable entry from the bottom
- 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 modules for AS-Interface, direct-on-line starting
- ⑧ 3RA28 function modules
- ⑨ 3RA27 function modules for IO-Link, direct-on-line starting
- ⑩ Pneumatically delayed auxiliary switch 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 Three-phase feeder terminal
- ⑯ Link for paralleling (star jumper), 3-pole, without connecting terminal
- ⑰ Safety main current connector for two contactors

Assembly kit 3RA2923-2AA1 comprising:

- ⑱ Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)
- ⑲ Mechanical interlocks¹⁾
- ⑳ Two connecting clips for two contactors¹⁾

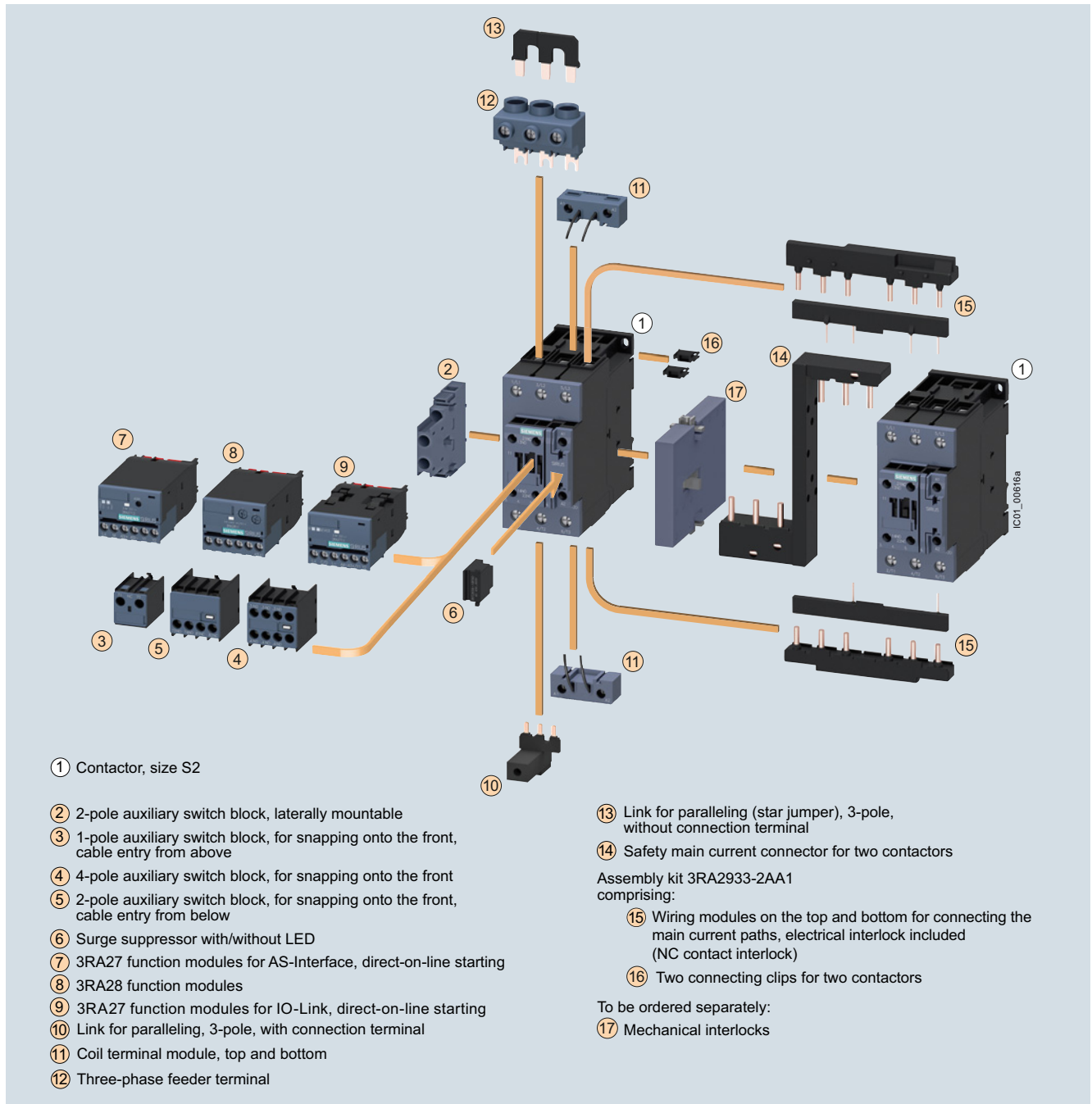
○ For contactors

○ For contactors and coupling contactors

¹⁾ The parts ⑲ and ⑳ can only be ordered together as 3RA2912-2H mechanical connectors.

Accessories and spare parts, [see pages 2/44 to 2/58](#).

3RT2 contactors Size S2 with mountable accessories



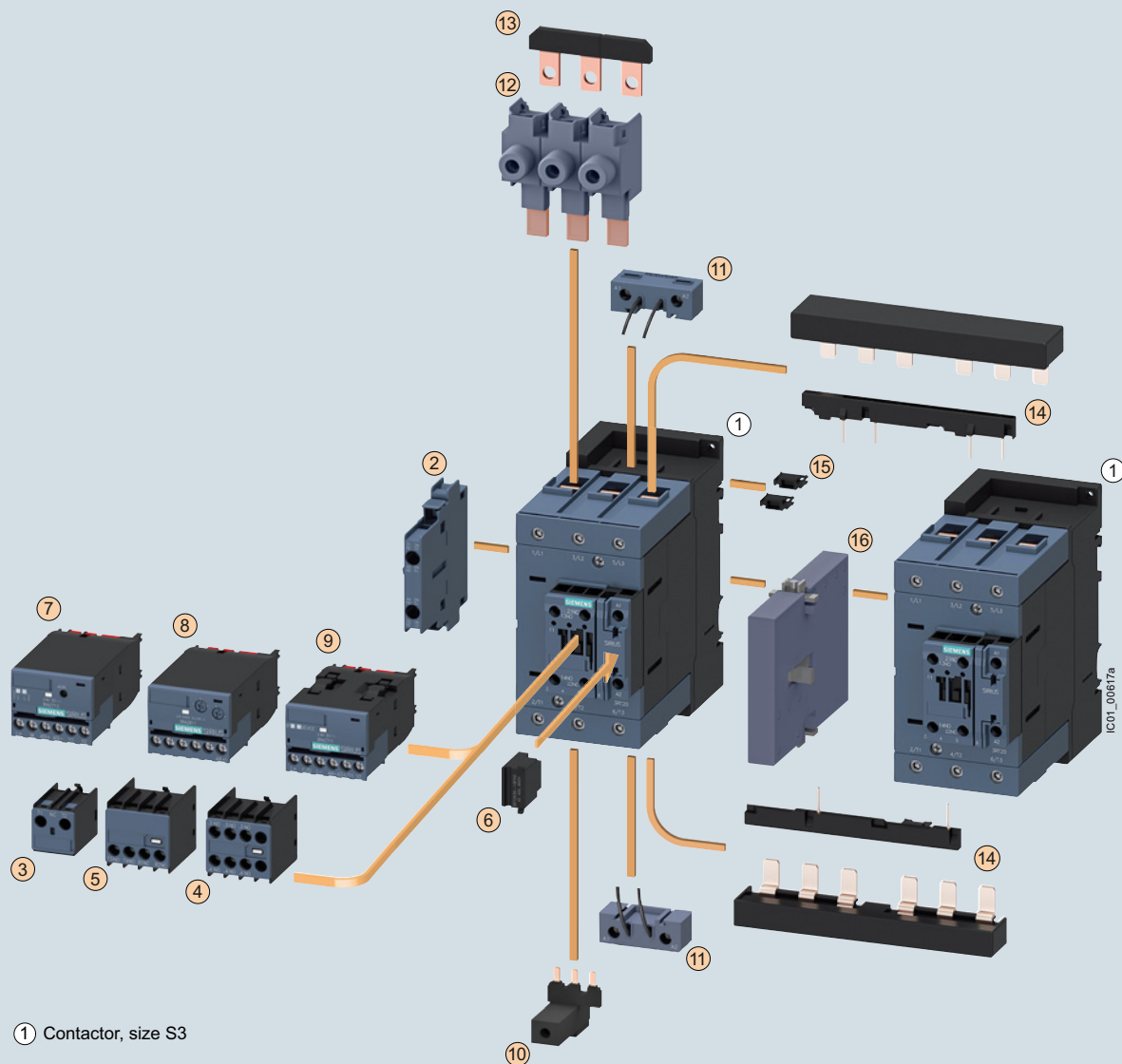
Accessories and spare parts, [see pages 2/44 to 2/58](#).

Power Contactors for Switching Motors

General data

3RT2 contactors

Size S3 with mountable accessories



① Contactor, size S3

- ② 2-pole auxiliary switch block, laterally mountable
- ③ 1-pole auxiliary switch block, for snapping onto the front, cable entry from above
- 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 below
- ⑥ Surge suppressor with/without LED
- ⑦ 3RA27 function modules for AS-Interface, direct-on-line starting
- ⑧ 3RA28 function modules
- ⑨ 3RA27 function modules for IO-Link, direct-on-line starting

- ⑩ Links for paralleling, 3-pole, with connection terminal
- ⑪ Coil terminal module, top and bottom
- ⑫ Single-phase infeed terminals (3 units)
- ⑬ Links for paralleling (star jumper), 3-pole without connecting terminal

Assembly kit 3RA2943-2AA1 comprising:

- ⑭ Wiring modules on the top and bottom for connecting the main, auxiliary and control current paths, electrical interlock¹⁾ included, can be broken off (NC contact interlock)
- ⑮ Two connectors for two contactors

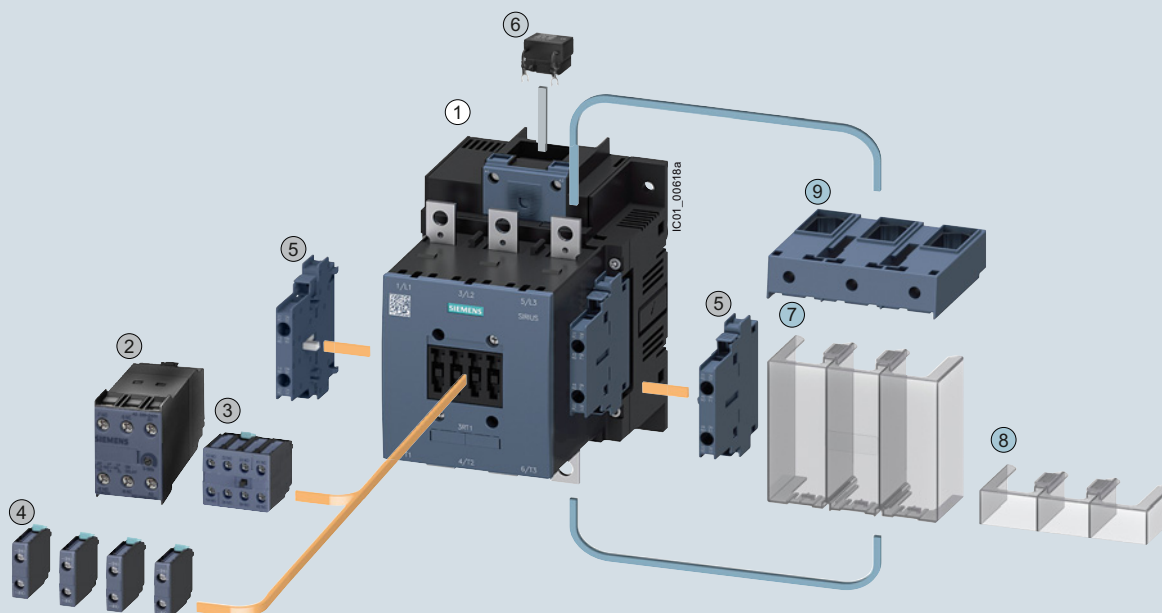
To be ordered separately:

- ⑯ Mechanical interlock

¹⁾ 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.

Accessories and spare parts, [see pages 2/44 to 2/58](#).

3RT1 contactors
Sizes S6 to S12 with mountable accessories
(illustration for basic unit)



① 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12

② Auxiliary switch block, solid-state time-delay (ON or OFF-delay or star-delta (wye-delta) starting)

③ 4-pole auxiliary switch block

④ 1-pole auxiliary switch block (up to 4 can be snapped on)

⑤ 2-pole auxiliary switch block, laterally mountable left or right

⑥ Surge suppressor (RC element) for plugging into top of withdrawable coil

⑦ Terminal cover for cable lug and busbar connection

⑧ Terminal cover for box terminal

⑨ Box terminal block

● Accessories identical for sizes S6 to S12

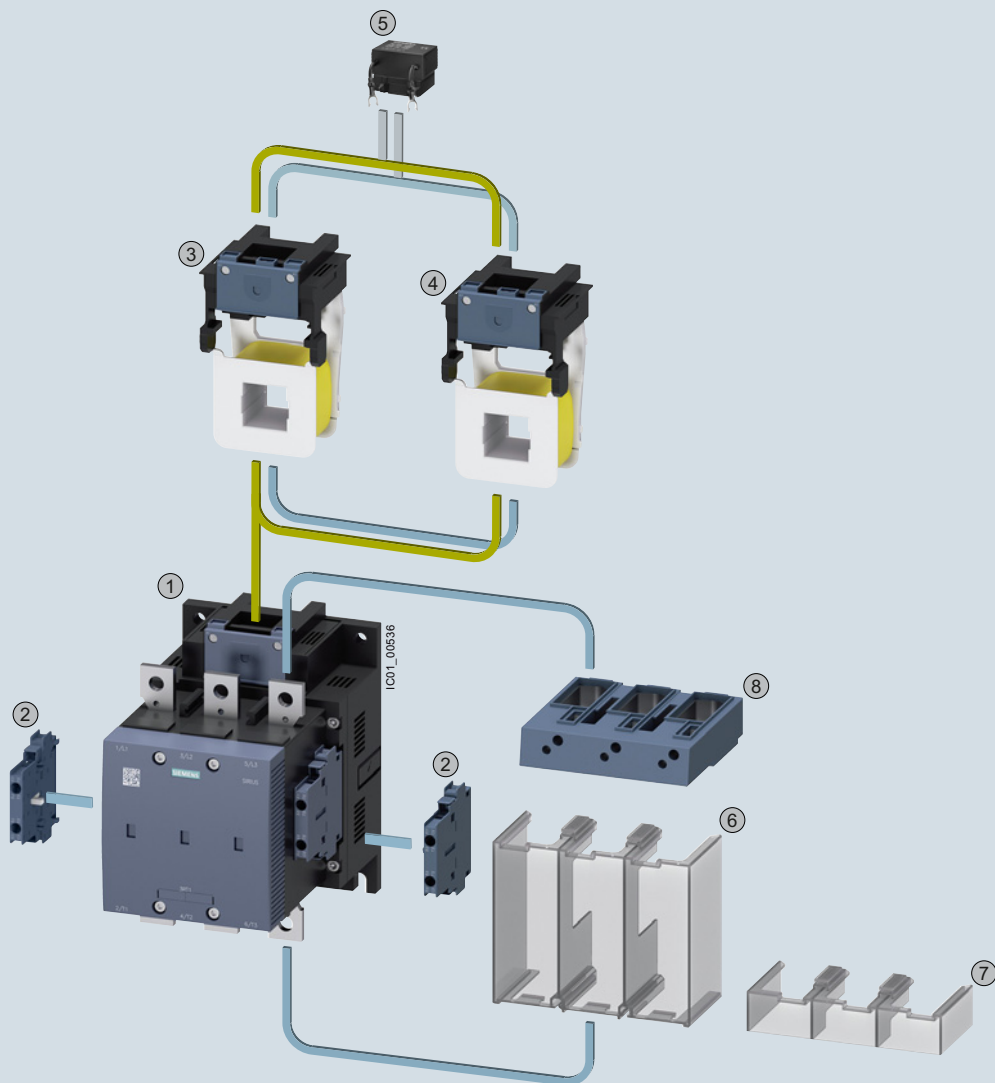
● Different accessories for sizes S6 and S10/S12

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

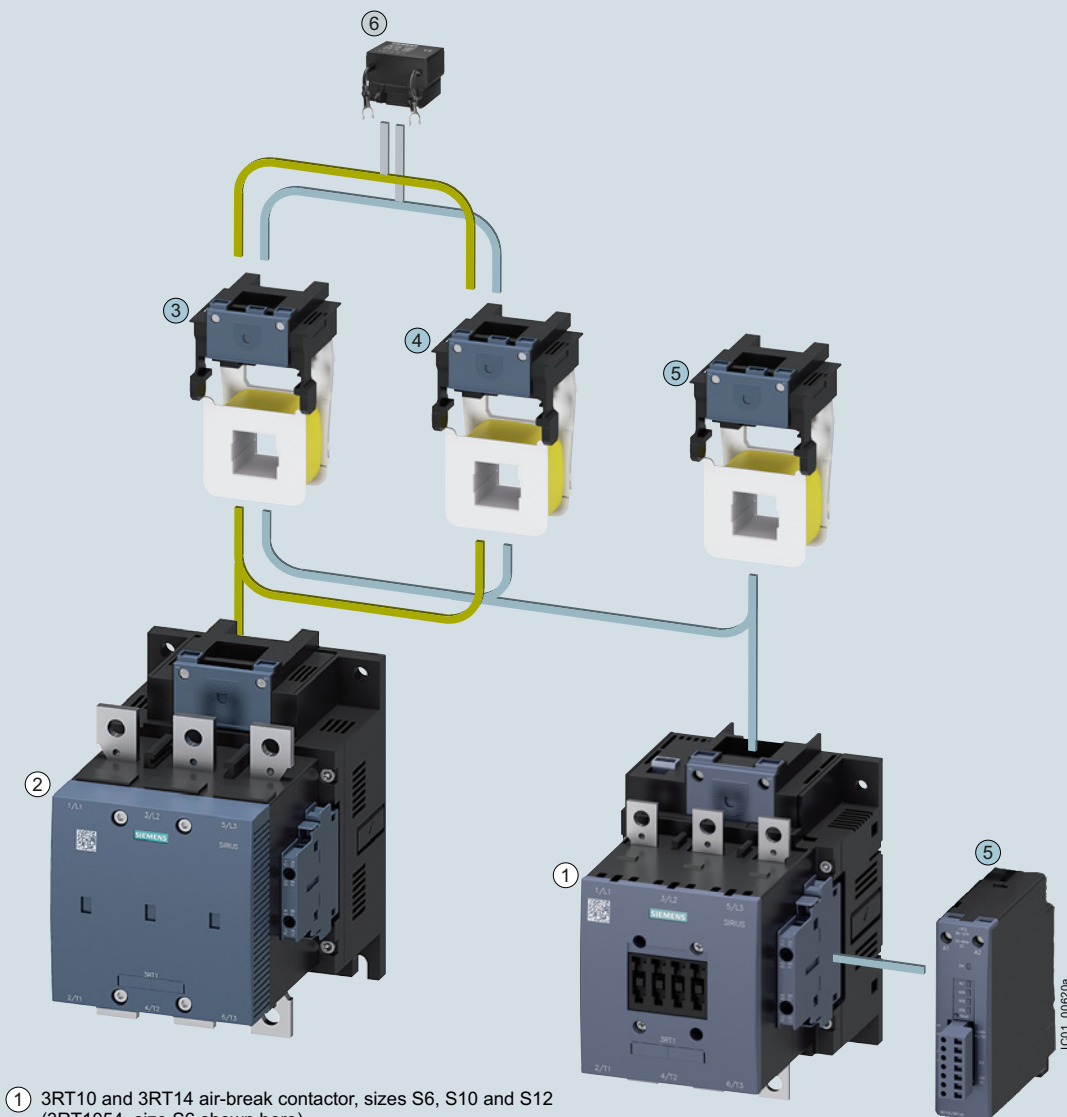
General data

3RT12 vacuum contactors
Sizes S10 to S12 with mountable accessories
(illustration for basic unit)



- ① 3RT12 vacuum contactor, sizes S10 and S12
- ② 2-pole auxiliary switch block, laterally mountable left or right
- ③ Withdrawable coils for 3RT1...-A... contactors with conventional operating mechanism
- ④ Withdrawable coils for 3RT1...-N... contactors with solid-state operating mechanism
- ⑤ Surge suppressor (RC element) for plugging into top of withdrawable coil
- ⑥ Terminal cover for cable lug and busbar connection
- ⑦ Terminal cover for box terminal
- ⑧ Box terminal block

Accessories and spare parts, see pages 2/44 to 2/58.

3RT1 contactors**Sizes S6 to S12 with mountable accessories**

- ① 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12 (3RT1054, size S6 shown here)
- ② 3RT12 vacuum contactor, sizes S10 and S12 (3RT1266, size S10 shown here)
- 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

- Same accessories for sizes S6 to S12
- Different accessories depending on size

For accessories and spare parts for

- 3RT10 contactors, [see page 2/44](#)

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Overview



Contactors with screw terminals: 3RT2 (sizes S00 to S3) and 3RT1 (sizes S6 to S12)

3RT contactors, sizes S00 to S12

Our power range:

- Contactors for switching motors:
 - Size S00: 3RT201 up to 7.5 kW
 - Size S0: 3RT202 up to 18.5 kW
 - Size S2: 3RT203 up to 37 kW
 - Size S3: 3RT204 up to 55 kW
 - Sizes S6 to S12: 3RT10 up to 250 kW
- For vacuum contactors for switching motors, see from page XX/X onwards:
 - Sizes S10 and S12: 3RT12 up to 250 kW
 - Size 14: 3TF6 up to 450 kW

Standards

IEC/EN 60947-1,
IEC/EN 60947-4-1,
IEC/EN 60947-5-1 (auxiliary switches)

Ambient conditions

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,
Tel.: +49 (911) 895-5900
E-mail: technical-assistance@siemens.com

Auxiliary contact complement

- Size S00: An auxiliary contact is integrated in the basic device.
- Sizes S0 to S3: The basic units contain two integrated auxiliary contacts (1 NO + 1 NC).
All basic units, with the exception of coupling relays S00 and S0, can be expanded using auxiliary switch blocks, [see page 2/46 for the permitted selection of auxiliary switches](#).
- Sizes S6 to S12: These contactors are supplied with two laterally mounted auxiliary switch blocks. The fitting of auxiliary switches is possible on the front and on the side (the 3RT12 vacuum contactor is an exception: only lateral fitting of auxiliary switches is possible here).

For detailed information about fitting of auxiliary switches, [see pages 2/46 to 2/51](#).

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of the 3RT contactors or 3RH contactor relays 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.

Connection methodsMain circuit

- Sizes S00 and S0: screw or spring-type terminals, spring-type terminals with convenient plug-in design for device connectors
- Sizes S2 and S3: screw terminals with box terminal; direct connection to the connecting bar possible with cable lugs for S3 when the box terminal is removed.
- Sizes S6 to S12: screw terminals with connecting bars that the cables can be connected to using either cable lugs or flexible or rigid busbars. Alternatively, box terminals are available as accessories.

Auxiliary/control circuit

- Sizes S00 to S12: Screw or spring-type terminals

Electromagnetic compatibility (EMC)

The 3RT contactors fulfill the requirements for environment category A.

Note:

When the contactors are used in an environment with frequency converters, the configuration notes in the Manual "SIRIUS – SIRIUS 3RT Contactors/Contactor Assemblies" must be observed, [see "More information" on page 2/15](#).

Short-circuit protection

Refer to the manuals for details of short-circuit protection of the contactors with overload relays; [see "More information" on page 2/15](#).

Ratings of three-phase motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

The power rating specifications of the contactors in kW (in accordance with IEC 60947-4-1, Table G) are guide values for 4-pole standard motors at 50 Hz AC and specified voltage (e.g. 400 V). The actual starting and rated data of the motor to be switched must be considered when selecting the units. The motor current, motor protection device and the permissible contactor current according to the utilization category must be aligned with each other.

Contactors with voltage tap-off3RT2 contactors

The size S00 to S3 contactors with voltage tap-off are special versions for mounting the SIRIUS 3RA27 function modules for connection to the control system via IO-Link or AS-Interface ([see page 2/12](#)).

Without a function module, these contactors can be used like the standard versions.

For more information on IO-Link and AS-Interface, [see Catalog IC 10 "Industrial Communication", from page 2/1 onwards](#).

Control supply voltage

Different versions of operating mechanisms are available depending on the contactor size:

- AC or DC operation for sizes S00 to S3
- AC/DC operating mechanism for sizes S0 to S12 that can operate on AC (50 to 60 Hz) or DC.

Operating mechanism types3RT2 contactors

3RT2 contactors are available as versions with conventional AC or DC operating mechanisms or as versions with a wide-range solid-state operating mechanism and a universal actuating voltage (AC or DC operation possible).

DC coupling contactors with reduced power consumption are also ideally suited for connection to the controller.

With an operating range between 0.8 to 1.1 x U_s , control takes place via the control supply voltage connection A1 - A2 as is typically the case.

3RT1 contactors

The following control and/or actuator versions are available in sizes S6 to S12:

- Conventional operating mechanisms
- Solid-state operating mechanisms
Overvoltage damping of the operating mechanism coil is already integrated in the electronics for contactors with solid-state operating mechanisms. The operating mechanisms are powered via a supply voltage with an operating range from 0.8 to 1.1 x U_s , optionally also controlled depending on the chosen mode of operation. Alternatively, control is via the separate 24 V DC control signal input. Various rated voltage ranges for AC/DC control are available.

The following versions are available:

- With two operating modes: Direct control or via CPU input
- As above, but additionally with remaining lifetime indication (RLT)
- With fail-safe PLC input for simplification of safety applications (without mode of operation selection)

Solenoid coils/drive units3RT2 contactors

Coil replacement is possible for sizes S0 to S3.

3RT1 contactors

The operating mechanisms for 3RT10...A/-N/-P contactors are removable and can be replaced simply by unlocking and pulling them out.

IMPORTANT: Removal or changing of the operating mechanism is not permitted for 3RT10...S contactors with fail-safe control.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Article No. scheme

Product versions		Article No.											
SIRIUS power contactors		3RT2	☐	☐	☐	☐	-	☐	☐	☐	☐	☐	☐
Device type	e.g. 0 = 3-pole motor contactor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Size of the contactor	e.g. 4 = S3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Power dependent on size	e.g. 5 = 37 kW in the case of S3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Type of electrical connection	e.g. 1 = screw terminals (main and auxiliary circuits)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Operating range/solenoid coil circuit	e.g. A = AC standard/without coil circuit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rated control supply voltage	e.g. P0 = 230 V AC, 50 Hz	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Auxiliary switches	e.g. 0 = in the case of S3: 1 NO + 1 NC integrated	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Special version		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Example		3RT2	0	4	5	-	1	A	P	0	0	0	0

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Technical specifications

More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16134/td>
 FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16134/faq>

Manuals, see

- System Manual "SIRIUS – System Overview",
<https://support.industry.siemens.com/cs/WW/en/view/60311318>
- Manual "SIRIUS – SIRIUS 3RT Contactors/Contactor Assemblies",
<https://support.industry.siemens.com/cs/WW/en/view/60306557>
- Application Manual "SIRIUS Controls with IE3/IE4 motors",
<https://support.industry.siemens.com/cs/ww/en/view/94770820>

Type	3RT20 contactors		3RT10	
Size	S00 to S2	S3	S6 to S12	
Rated data of the auxiliary contacts				
Acc. to IEC/EN 60947-5-1 Data applies to integrated auxiliary contacts and conventional contacts in the auxiliary switch blocks				
Rated insulation voltage U_i (pollution degree 3)	V	690	1 000 (3RT20...-0CC0: 690)	--
• For laterally mountable auxiliary switch blocks	V	690	690	500
• For front mountable auxiliary switch blocks	V	690	690	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⁾	6
	400 V	A	3	3
	500 V	A	2	2
	690 V	A	1	1 ²⁾
DC load				
Rated operational current I_e /DC-12				
• For rated operational voltage U_e	24 V	A	10	10
	60 V	A	6	6
	110 V	A	3	3
	125 V	A	2	2
	220 V	A	1	1
	440 V	A	0.3	0.3
	600 V	A	0.15	0.15 ²⁾
Rated operational current I_e /DC-13				
• For rated operational voltage U_e	24 V	A	10 ¹⁾	10 ³⁾
	60 V	A	2	2
	110 V	A	1	1
	125 V	A	0.9	0.9
	220 V	A	0.3	0.3
	440 V	A	0.14	0.14
	600 V	A	0.1	0.15 ²⁾
Contact reliability at 17 V, 1 mA Acc. to IEC/EN 60947-5-4		Frequency of contact faults < 10 ⁻⁸ i.e. < 1 fault per 100 million operating cycles		

¹⁾ 3RH22, 3RH29, 3RT2...-...4, 3RT2...-...6: I_e = 6 A at AC-15/AC-14 and DC-13.

²⁾ For laterally mountable auxiliary switch blocks, only the rated operational voltages up to 500 V apply.

³⁾ For laterally mountable auxiliary switch blocks, DC-13/at 24 V: max. 6 A.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type

Size

3RT contactors

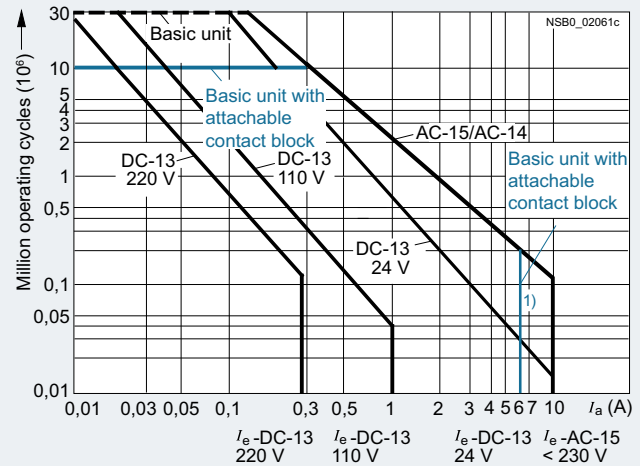
S00 to S12

Contact endurance of the auxiliary contacts

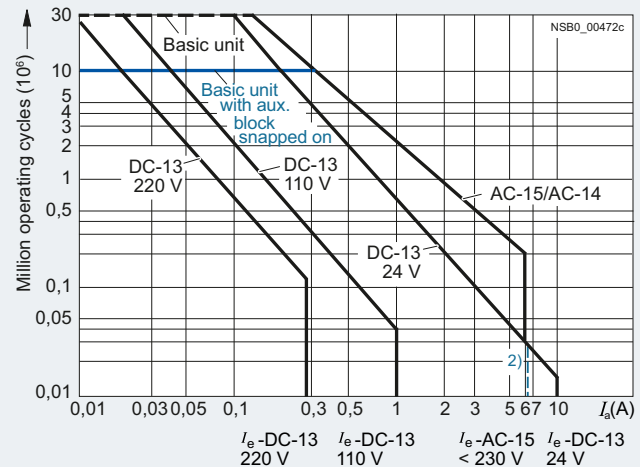
It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

Sizes S00 to S3



Sizes S6 to S12



¹⁾ 3RH22, 3RH29, 3RT2...-...4, 3RT2...-...6: I_e = 6 A for AC-15/AC-14 and DC-13, 3RT2...4: I_e = 6 A for AC-15/AC-14.

²⁾ For laterally mountable auxiliary switch blocks, DC-13/at 24 V: max. 6 A.

³⁾ For laterally mountable auxiliary switch blocks, only the rated operational voltages up to 500 V apply.

Type

3RT2 contactors

Size

S00 and S0

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 6 times the rated operational current) and is intended for a contact endurance of approximately 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:

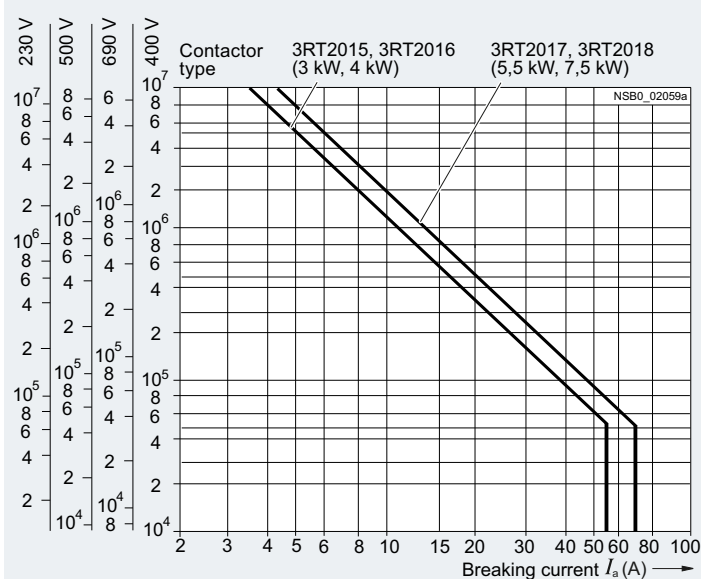
$$X = \frac{A}{1 + \frac{C}{100} \left(\frac{A}{B} - 1 \right)}$$

Characters in the equation:

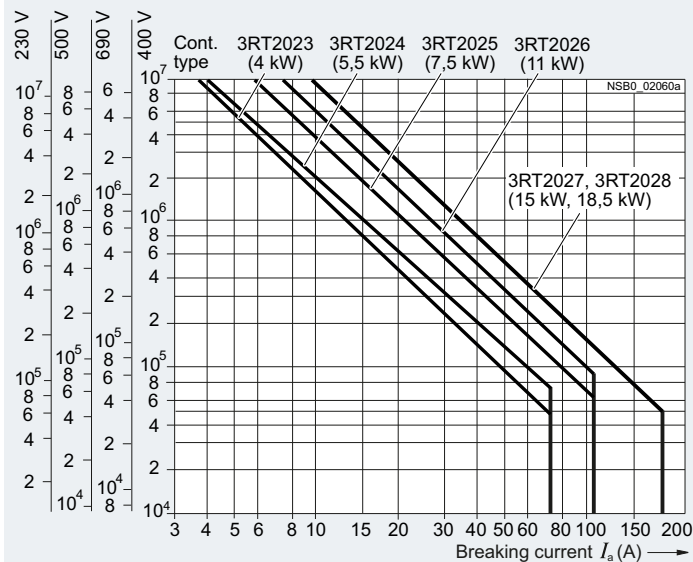
- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching ($I_a = \text{multiple of } I_e$) in operating cycles
- C Inching operations as a percentage of total switching operations

Size S00

Operating cycles at

**Size S0**

Operating cycles at



Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type

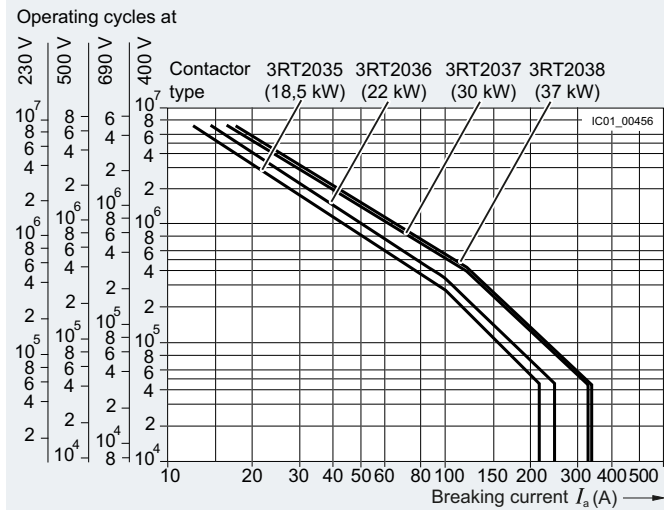
3RT2 contactors

Size

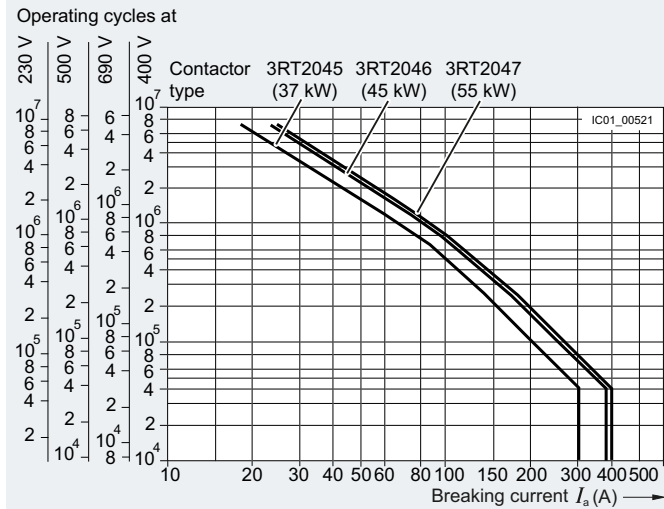
S2 to S12

Contact endurance of the main contacts

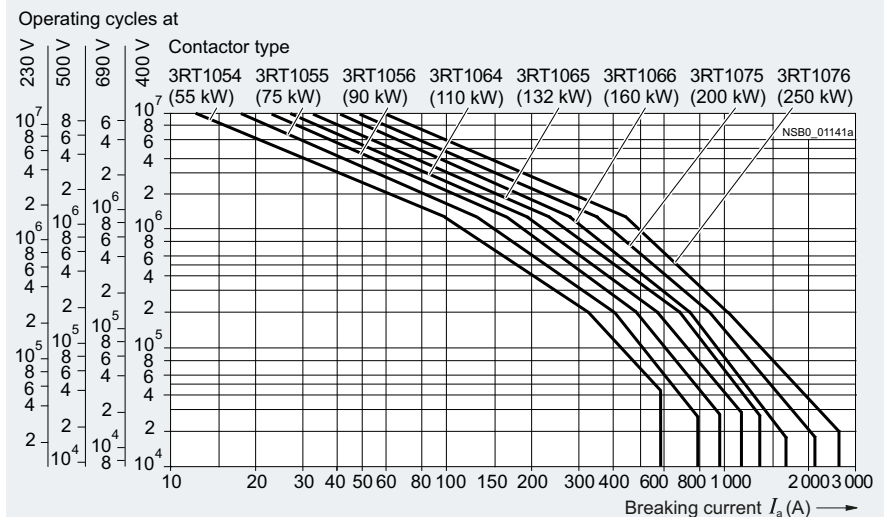
Size S2



Size S3

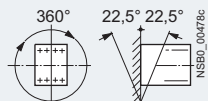


Sizes S6 to S12



Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type Size		Contactors 3RT2015, 3RT2016 S00		3RT2017, 3RT2018
General data				
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.				
Upright mounting position		 Special version required		
Mechanical endurance				
• Basic unit	Operating cycles	30 million		
• Basic unit with mounted auxiliary switch block	Operating cycles	10 million		
• Basic unit with solid-state compatible auxiliary switch block	Operating cycles	5 million		
Electrical endurance		For contact endurance of the main contacts, see page 2/17 .		
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 according 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. • 3RT2.1. (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 Have no mirror contact for size S00		
• 3RH2919-.NF.. solid-state compatible auxiliary switch blocks				
Ambient temperature				
• During operation	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
Degree of protection acc. to IEC 60529				
• On front		IP20 (screw terminals and spring-type terminals)		
• Connecting terminal		IP20 (screw terminals and spring-type terminals)		
Touch protection acc. to IEC 60529		Finger-safe (screw terminals and spring-type terminals)		
Shock resistance				
• Rectangular pulse - AC operation - DC operation	g/ms	6.7/5 and 4.2/10		7.3/5 and 4.7/10
	g/ms	6.7/5 and 4.2/10		7.3/5 and 4.7/10
• Sine pulse - AC operation - DC operation	g/ms	10.5/5 and 6.6/10		11.4/5 and 7.3/10
	g/ms	10.5/5 and 6.6/10		11.4/5 and 7.3/10

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type		Contactors	
Size		3RT2015, 3RT2016	3RT2017, 3RT2018
		S00	
Control			
Solenoid coil operating range			
• AC operation	50 Hz 60 Hz	0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s	
• DC operation	Up to 50 °C Up to 60° C	0.8 ... 1.1 x U_s 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	
- Closed	VA	4.2/3.3	5.7/4.4
- P.f.		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	
• 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	
• DC operation (closing = closed)	W	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 for 1.0 x U_s ²⁾			
Total break time = Opening delay + Arcing time			
• 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	
- Opening delay	ms	7 ... 12	
• Arcing time	ms	10 ... 15	

¹⁾ The 3RT2916-1GA00 additional load module is recommended for higher residual currents.

²⁾ The OFF-delay times of the NO contacts and the ON-delay times of the NC contacts increase if the contactor coils are attenuated against voltage peaks (suppression diode 6x to 10x; diode assembly 2x to 6x; suppression diode +1 to 5 ms; varistor +2 to 5 ms).

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

2

Type	Coupling contactors			
Size	3RT201.-.HB4.	3RT201.-.JB4.	3RT201.-.KB4.	
S00				
Control				
Solenoid coil operating range		0.7 ... 1.25 x U _s		
Power consumption of the solenoid coils (for cold coil) closing = closed		At U _s 24 V DC W 2.8		
Permissible residual current of the electronics (with 0 signal)		< 6 mA x (24 V/U _s)		
Upright mounting position		On request		
Overvoltage configuration of the solenoid coil		No overvoltage damping 	Built-in diode 	Built-in suppressor diode 
Operating times				
• Closing delay				
- ON-delay NO		ms	35 ... 60	
- OFF-delay NC		ms	25 ... 40	
• Opening delay				
- ON-delay NO		ms	7 ... 20	38 ... 65
- OFF-delay NC		ms	20 ... 30	55 ... 75
				7 ... 20
				20 ... 30

Type	Coupling contactors			
Size	3RT201.-1MB4.-0KT0	3RT201.-1VB4.	3RT201.-1SB4.	
S00				
Control				
Solenoid coil operating range		0.85 ... 1.85 x U _s		
Power consumption of the solenoid coils (for cold coil) closing = closed		At U _s 24 V DC W 1.6		
Permissible residual current, upright mounting position		On request		
Overvoltage configuration of the solenoid coil		No overvoltage damping 	Built-in diode 	Built-in suppressor diode 
Operating times				
• Closing delay				
- ON-delay NO		ms	25 ... 90	
- OFF-delay NC		ms	15 ... 80	
• Opening delay				
- ON-delay NO		ms	5 ... 20	20 ... 80
- OFF-delay NC		ms	10 ... 30	30 ... 90
				5 ... 20
				10 ... 30

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

		Contactors			
Type		3RT2015	3RT2016	3RT2017	3RT2018
Size		S00			
Rated data of the main contacts					
Load rating with AC					
Utilization category AC-1, switching resistive load					
• Rated operational currents I_e	At 40 °C up to 690 V	A	18	22	
	At 60 °C up to 690 V	A	16	20	
• Rated power for AC loads ¹⁾ P.f. = 0.95 (at 60 °C)	230 V	kW	6	7.5	
	400 V	kW	10.5	13	
	690 V	kW	18	22	
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm ²	2.5	4	
	At 60 °C	mm ²	2.5		
Utilization categories AC-2 and AC-3					
• Rated operational currents I_e	Up to 400 V	A	7	9	16
	440 V	A	7	9	14
	500 V	A	6	7.7	12.4
	690 V	A	4.9	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	4
	400 V	kW	3	4	7.5
	690 V	kW	4	5.5	7.5
Thermal load capacity	10 s current	A	56	72	96
Power loss per conducting path	At I_e /AC-3	W	0.42	0.7	1.24
Utilization category AC-4 (for $I_a = 6 \times I_e$)²⁾					
• Maximum values					
- Rated operational current I_e	Up to 400 V	A	6.5	8.5	11.5
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	Up to 400 V	kW	3	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	5.5
	690 V	A	1.8	3.3	4.4
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V	kW	0.67	1.1	1.5
	400 V	kW	1.15	2	2.5
	690 V	kW	1.15	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⁾ The data applies to 3RT2516 and 3RT2517 contactors (2 NO + 2NC)
up to a rated operational voltage of 400 V only.

Power Contactors for Switching Motors

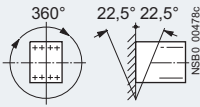
SIRIUS 3RT contactors, 3-pole up to 250 kW

Type Size			Contactors 3RT2015 S00		3RT2016 to 3RT2018
Rated data of main contacts (continued)					
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	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 ($L/R \leq 15$ 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	

¹⁾ Dependence of the switching frequency z' on the operational current I' and operational voltage U' :
 $z' = z \cdot (I_e/I') \cdot (U_e/U')^{1.5} \cdot 1/h$.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type		Contactors	
Size		3RT2023 to 3RT2025	3RT2026 to 3RT2028
General data		S0	
Permissible mounting position			
Upright mounting position		 Special version required, also applies to 3RT202...K.40 coupling contactors	
Mechanical endurance			
Basic unit and basic unit with mounted auxiliary switch block		Operating cycles	10 million
Basic unit with solid-state compatible auxiliary switch block		Operating cycles	5 million
Electrical endurance		For contact endurance of the main contacts, see page 2/17 .	
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 (according 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	
3RT2.2. (removable 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 60529			
On front		IP20 (screw terminals and spring-type terminals)	
Connecting terminal		IP20 (screw terminals and spring-type terminals)	
Touch protection acc. to IEC 60529		Finger-safe (screw terminals and spring-type terminals)	
Shock resistance			
Rectangular pulse			
- AC operation		g/ms	7.5/5 and 4.7/10
- DC operation		g/ms	10/5 and 7.5/10
Sine pulse			
- AC operation		g/ms	11.8/5 and 7.4/10
- DC operation		g/ms	15/5 and 10/10

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type Size			Contactors					
			3RT2023 S0	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
Rated data of the main contacts								
Load rating with AC								
Utilization category AC-1, switching resistive load								
• 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					
	At 60 °C	mm ²	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	
	690 V	A	9		13		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		11		18.5	
Thermal load capacity	10 s current	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 $I_a = 6 \times I_e$)								
• Maximum values:								
- Rated operational current I_e	Up to 400 V	A	8.5	12.5	15.5		22	
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	4	5.5	7.5		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).

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

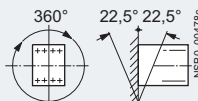
Type			Contactors	
Size			3RT2023 to 3RT2025	
			3RT2026 to 3RT2028	
Rated data of main contacts (continued)			S0	
Load rating with DC				
Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)				
• Rated operational currents I_e (at 60 °C)				
- 1 conducting path	Up to 24 V	A	35	
	60 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 ($L/R \leq 15$ 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	

¹⁾ Dependence of the switching frequency z' on the operational current I' and operational voltage U' :
 $z' = z \cdot (I_e/I') \cdot (U_e/U')^{1.5} \cdot 1/h$.

¹⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

		Contactors			
Type		3RT2035	3RT2036	3RT2037	3RT2038
Size		S2			
General data					
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.					
Upright mounting position					Special version required
Mechanical endurance					
Basic units and basic units with mounted auxiliary switch block	Operating cycles	10 million			
Basic units with solid-state compatible auxiliary switch block	Operating cycles	5 million			
Electrical endurance		For contact endurance of the main contacts, see page 2/18 onwards .			
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 (according 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 3RT2.3. (removable auxiliary switch block)		Yes, acc. to IEC 60947-4-1, Appendix F 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 60529					
On front		IP20			
Connecting terminal		IP00 (for higher degree of protection, use additional terminal covers)			
Touch protection acc. to IEC 60529		Finger-safe for vertical touching from the front			
Shock resistance					
Rectangular pulse					
- AC operation	g/ms	11.8/5 and 7.4/10			
- DC operation	g/ms	7.7/5 and 4.5/10			
Sine pulse					
- AC operation	g/ms	18.5/5 and 11.6/10			
- DC operation	g/ms	12/5 and 7/10			

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

		Contactors				
Type			3RT2035	3RT2036	3RT2037	3RT2038
Size			S2			
Rated data of the main contacts						
Load rating with AC						
Utilization category AC-1, switching resistive load						
• Rated operational current I_e	At 40 °C up to 690 V	A	60	70	80	90
	At 60 °C up to 690 V	A	55	60	70	80
• Rated power for AC loads ¹⁾ P.f. = 0.95 (at 60 °C)	230 V	kW	23	26	30	34
	400 V	kW	39	46	53	59
	690 V	kW	68	79	91	102
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm ²	16	25		35
	At 60 °C	mm ²	16		25	
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e	Up to 400 V	A	40	50	65	80
	440 V	A	40	50	65	80
	500 V	A	40	50	65	80
	690 V	A	24		47	58
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	11	15	18.5	22
	400 V	kW	18.5	22	30	37
	690 V	kW	22		37	45
Thermal load capacity	10 s current	A	400	420	520	640
Power loss per conducting path	At I_e /AC-3	W	2.2	4	3.8	5.7
Utilization category AC-4 (for $I_a = 6 \times I_e$)						
• Maximum values						
- Rated operational current I_e	Up to 400 V	A	35	41	55	
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	18.5	22	30	
• The following applies to a contact endurance of about 200 000 operating cycles:						
- Rated operational currents I_e	Up to 400 V	A	22	24	28	30
	690 V	A	18.5	20	22	24
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 110 V	kW	3.2	3.5	4.1	4.3
	230 V	kW	6.7	7.3	8.5	9.1
	400 V	kW	11.6	12.6	14.7	15.8
	690 V	kW	16.8	18.2	20	21.8

¹⁾ Industrial furnaces and electric heaters with resistance heating, etc.
(increased power consumption on heating up has been taken into account).

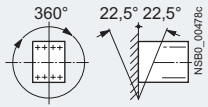
Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type Size	Contactors			
	3RT2035 S2	3RT2036	3RT2037	3RT2038
Rated data of main contacts (continued)				
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	55		
	60 V A	23		
	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	55		
	60 V A	45		
	110 V A	45		
	220 V A	5		
	440 V A	1		
	600 V A	0.8		
- 3 conducting paths in series	Up to 24 V A	55		
	60 V A	55		
	110 V A	55		
	220 V A	45		
	440 V A	2.9		
	600 V A	1.4		
Utilization category DC-3/DC-5, 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	35		
	60 V A	6		
	110 V A	2.5		
	220 V A	1		
	440 V A	0.1		
	600 V A	0.06		
- 2 conducting paths in series	Up to 24 V A	55		
	60 V A	45		
	110 V A	25		
	220 V A	5		
	440 V A	0.27		
	600 V A	0.16		
- 3 conducting paths in series	Up to 24 V A	55		
	60 V A	55		
	110 V A	55		
	220 V A	25		
	440 V A	0.6		
	600 V A	0.35		

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

		Contactors	
Type		3RT2045	3RT2046
Size		S3	3RT2047
General data			
Permissible mounting position			
Upright mounting position		 Special version required	
Mechanical endurance			
• Basic units and basic units with mounted auxiliary switch block		Operating cycles	10 million
• Basic units with solid-state compatible auxiliary switch block		Operating cycles	5 million
Electrical endurance		For contact endurance of the main contacts, see page 2/18 .	
Rated insulation voltage U_i (pollution degree 3)		V	1 000 (3RT20...-0CC0: 690)
Rated impulse withstand voltage U_{imp}		kV	6
Protective separation between the coil and the main contacts (according 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.			
• Integrated auxiliary switches		Yes, acc. to IEC 60947-4-1, Appendix F	
• 3RT2.4. (removable 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 60529			
• On front		IP20	
• Connecting terminal		IP00 (for higher degree of protection, use additional terminal covers)	
Touch protection acc. to IEC 60529		Finger-safe for vertical touching from the front	
Shock resistance			
• Rectangular pulse			
- AC operation		g/ms	10.3/5 and 6.7/10
- DC operation		g/ms	6.7/5 and 4.0/10 (3RT204...-KB40: 6.3/5 and 3.6/10)
• Sine pulse			
- AC operation		g/ms	16.3/5 and 10.5/10
- DC operation		g/ms	10.6/5 and 6.3/10 (3RT204...-KB40: 9.8/5 and 5.6/10)

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type		Contactors		
Size		3RT2045	3RT2046	3RT2047
Rated data of the main contacts		S3		
Load rating with AC				
Utilization category AC-1, switching resistive load				
• Rated operational current I_e	At 40 °C up to 690 V A	125	130	
	At 60 °C up to 690 V A	105	110	
• Rated power for AC loads ¹⁾ P.f. = 0.95 (at 60 °C)	230 V kW	40	42	
	400 V kW	69	72	
	690 V kW	119	125	
• Minimum conductor cross-section for loads with I_e	At 40 °C mm ²	50		
	At 60 °C mm ²	35		
Utilization categories AC-2 and AC-3				
• Rated operational currents I_e	Up to 400 V A	80	95	110
	500 V A	80	95	110
	690 V A	58	78	98
	1 000 V A	30		
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V kW	22	22	30
	400 V kW	37	45	55
	690 V kW	55	75	90
	1 000 V A	37		
Thermal load capacity	10 s current A	760		880
Power loss per conducting path	At I_e /AC-3 W	5.3	6.6	7.9
Utilization category AC-4 (for $I_a = 6 \times I_e$)				
• Maximum values				
- Rated operational current I_e	Up to 400 V A	66	80	97
	At 400 V kW	37	45	55
• The following applies to a contact endurance of about 200 000 operating cycles:				
- Rated operational currents I_e	Up to 400 V A	34	42	46
	690 V A	24	30	36
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 110 V kW	4.9	6.1	6.7
	230 V kW	10.4	12	14
	400 V kW	17.9	22	24.3
	690 V kW	21.8	27.4	32.9

¹⁾ Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

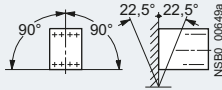
Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type Size	Contactors		
	3RT2045 S3	3RT2046	3RT2047
Rated data of main contacts (continued)			
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 100 60 V A 60 110 V A 9 220 V A 2 440 V A 0.6 600 V A 0.4		
- 2 conducting paths in series	Up to 24 V A 100 60 V A 100 110 V A 100 220 V A 10 440 V A 1.8 600 V A 1.0		
- 3 conducting paths in series	Up to 24 V A 100 60 V A 100 110 V A 100 220 V A 80 440 V A 4.5 600 V A 2.6		
Utilization category DC-3/DC-5, 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 40 60 V A 6 110 V A 2.5 220 V A 1 440 V A 0.15 600 V A 0.06		
- 2 conducting paths in series	Up to 24 V A 100 60 V A 100 110 V A 100 220 V A 7 440 V A 0.42 600 V A 0.16		
- 3 conducting paths in series	Up to 24 V A 100 60 V A 100 110 V A 100 220 V A 35 440 V A 0.8 600 V A 0.35		

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type	3RT1054		3RT1055, 3RT1056	3RT1064, 3RT1065, 3RT1066	3RT1075	3RT1076
Size	S6		S10		S12	
General data						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance			Operating cycles	10 million		
Electrical endurance			For contact endurance of the main contacts, see page 2/18 .			
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 according 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 storage			°C	-55 ... +80		
Degree of protection acc. to IEC 60529						
• On front			IP00 (IP20 with box terminal/cover)			
• Connecting terminal			IP00 (for higher degree of protection, use additional terminal covers)			
Touch protection acc. to IEC 60529			Finger-safe for vertical touching from the front with cover			
Shock resistance						
• Rectangular pulse			g/ms	8.5/5 and 4.2/10		
• Sine pulse			g/ms	13.4/5 and 6.5/10		
Electromagnetic compatibility (EMC)			See page 2/13			

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type			3RT105.	3RT106.	3RT107.
Size			S6	S10	S12
Control					
Operating range of the solenoid operating mechanism AC/DC			$0.8 \times U_{s \min} \dots 1.1 \times U_{s \max}$		
Power consumption of the solenoid operating mechanism (with cold coil and rated range $U_{s \min} \dots U_{s \max}$)					
• <u>Conventional operating mechanisms</u>					
- 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
• <u>Solid-state operating mechanisms</u>					
- 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.	3.5/0.6	5.5/0.5	5.6/0.5
	Closed at $U_{s \max}$	VA/p.f.	4.8/0.6	8.5/0.4	9/0.4
- 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	2.1	2.8	3
	Closed at $U_{s \max}$	W	2.8	3.4	3.6
PLC control input acc. to IEC 60947-1					
• Conventional operating mechanism 3RT10...-A			Type 2		
• Solid-state operating mechanism					
- 3RT10...-N/-P			Type 2		
- 3RT10...-S			Type 1		
• Rated voltage	V DC		24		
• Operating range	V DC		17 ... 30		
• Power consumption	mA		≤ 30		
• Recovery time after mains failure, typical (applicable only for fail-safe version 3RT10...-S)	s		2		
Operating times for rated range $U_{s \min} \dots U_{s \max}$ (Total break time = Opening delay + Arcing time)					
• Conventional operating mechanism (3RT10...-A)	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 (3RT10...-N/-P)	Closing delay	ms	100 ... 120	110 ... 130	125 ... 150
	Opening delay	ms	80 ... 100		
- Actuated via PLC input (3RT10...-N/-P)	Closing delay	ms	40 ... 60	50 ... 65	65 ... 80
	Opening delay	ms	80 ... 100		
- Actuated via F-PLC input (3RT10...-S)	Closing delay	ms	60 ... 75		
	Opening delay	ms	115 ... 130		
• Arcing time	ms		10 ... 15		

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type		3RT1054	3RT1055	3RT1056	3RT1064	3RT1065	3RT1066	3RT1075	3RT1076
Size		S6			S10			S12	
Rated data of the main contacts									
Load rating with AC									
Utilization category AC-1 switching resistive load									
• 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		150		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	
• Minimum conductor cross-section for loads with I_e									
- At 40 °C	mm ²	70	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		68	95		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			132		250	
Thermal load capacity, 10 s current	A	1 100	1 300	1 480	1 800	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 $I_a = 6 \times I_e$)									
Maximum values:									
• Rated operational current I_e									
- Up to 400 V	A	97	132	160	195	230	280	350	430
• Rated power of squirrel-cage motors at 50 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
• Rated power of squirrel-cage motors At 50 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

¹⁾ Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

Type		3RT1054	3RT1055	3RT1056	3RT1064	3RT1065	3RT1066	3RT1075	3RT1076
Size		S6			S10			S12	
Rated data of main contacts (continued)									
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	160			200	300		400	
	60 V A	160			200	300		330	
	110 V A	18				33			
	220 V A	3.4				3.8			
	440 V A	0.8				0.9			
	600 V A	0.5				0.6			
	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				300		400	
	440 V A	3.2				4			
	600 V A	1.6				2			
	Up to 24 V A	160			200	300		400	
	60 V A	160			200	300		400	
	110 V A	160			200	300		400	
- 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				300		400	
	440 V A	3.2				4			
	600 V A	1.6				2			
	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			
	600 V A	4				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 60 °C)									
- 1 conducting path	Up to 24 V A	160			200	300		400	
	60 V A	7.5				11			
	110 V A	2.5				3			
	220 V A	0.6							
	440 V A	0.17				0.18			
	600 V A	0.12				0.125			
	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							
	440 V A	0.65							
	600 V A	0.37							
	Up to 24 V A	160			200	300		400	
	60 V A	160			200	300		400	
	110 V A	160			200	300		400	
- 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							
	600 V A	0.75							

Selection and ordering data

DC operation for direct control from the PLC

- Coupling contactors with adapted power consumption
- Suitable for solid-state PLC/F-PLC outputs
- Cannot be extended with auxiliary switch blocks

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41B



3RT201.-2.B4.

Rated data		Auxiliary contacts	Rated control supply voltage U_s		SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3, t_U : Up to 60° C	AC-1, t_U : 40° C									
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and	Ident No.	Version			Article No.				
400 V	400 V									
A	kW	A	NO	NC	V DC	d				kg

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)

Operating range **0.7 ... 1.25 x U_s** , power consumption of the solenoid coils **2.8 W** at 24 V

7	3	18	10	1	--	24	5	3RT2015-2HB41	1	1 unit	41B	0.317
			01	--	1	24	5	3RT2015-2HB42	1	1 unit	41B	0.317
9	4	22	10	1	--	24	5	3RT2016-2HB41	1	1 unit	41B	0.300
			01	--	1	24	5	3RT2016-2HB42	1	1 unit	41B	0.315
12	5.5 ¹⁾	22	10	1	--	24	5	3RT2017-2HB41	1	1 unit	41B	0.317
			01	--	1	24	5	3RT2017-2HB42	1	1 unit	41B	0.316

Operating range **0.85 ... 1.85 x U_s** , power consumption of the solenoid coils **1.6 W** at 24 V

7	3	18	10	1	--	24	5	3RT2015-2MB41-0KT0	1	1 unit	41B	0.319
			01	--	1	24	5	3RT2015-2MB42-0KT0	1	1 unit	41B	0.317
9	4	22	10	1	--	24	5	3RT2016-2MB41-0KT0	1	1 unit	41B	0.317
			01	--	1	24	5	3RT2016-2MB42-0KT0	1	1 unit	41B	0.316
12	5.5 ¹⁾	22	10	1	--	24	5	3RT2017-2MB41-0KT0	1	1 unit	41B	0.318
			01	--	1	24	5	3RT2017-2MB42-0KT0	1	1 unit	41B	0.317

With integrated coil circuit (diode)¹⁾

(no auxiliary switch blocks can be mounted)

Operating range **0.7 ... 1.25 x U_s** , power consumption of the solenoid coils **2.8 W** at 24 V

7	3	18	10	1	--	24	2	3RT2015-2JB41	1	1 unit	41B	0.315
			01	--	1	24	5	3RT2015-2JB42	1	1 unit	41B	0.316
9	4	22	10	1	--	24	5	3RT2016-2JB41	1	1 unit	41B	0.316
			01	--	1	24	5	3RT2016-2JB42	1	1 unit	41B	0.317
12	5.5 ¹⁾	22	10	1	--	24	5	3RT2017-2JB41	1	1 unit	41B	0.316
			01	--	1	24	5	3RT2017-2JB42	1	1 unit	41B	0.316

Operating range **0.85 ... 1.85 x U_s** , power consumption of the solenoid coils **1.6 W** at 24 V

7	3	18	10	1	--	24	5	3RT2015-2VB41	1	1 unit	41B	0.316
			01	--	1	24	5	3RT2015-2VB42	1	1 unit	41B	0.323
9	4	22	10	1	--	24	5	3RT2016-2VB41	1	1 unit	41B	0.320
			01	--	1	24	5	3RT2016-2VB42	1	1 unit	41B	0.318
12	5.5 ¹⁾	22	10	1	--	24	5	3RT2017-2VB41	1	1 unit	41B	0.320
			01	--	1	24	5	3RT2017-2VB42	1	1 unit	41B	0.320

¹⁾ When using contactors with IE3/IE4 motors, use contactors fitted with varistors instead of diodes. In the case of 5.5 kW coupling contactors of size S00, use 5.5 kW coupling contactors of size S0, see page 2/39.

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

DC operation for direct control from the PLC

- Coupling contactors with adapted power consumption
- Suitable for solid-state PLC/F-PLC outputs
- Cannot be expanded with auxiliary switch blocks

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41B



3RT201.-2.B4.

Rated data		Auxiliary contacts	Rated control supply voltage U_s	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3, t_{ij} : Up to 60° C	AC-1, t_{ij} : 40° C								
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and	Ident No.	Version		Article No.				
400 V	400 V								
A	kW								kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Size S00

With integrated coil circuit (suppressor diode)¹⁾

(no auxiliary switch blocks can be mounted)

Operating range **0.7 ... 1.25 x U_s** , power consumption of the solenoid coils **2.8 W** at 24 V

7	3	18	10	1	--	24	2	3RT2015-2KB41	1	1 unit	41B	0.315
			01	--	1	24	▶	3RT2015-2KB42	1	1 unit	41B	0.318
9	4	22	10	1	--	24	2	3RT2016-2KB41	1	1 unit	41B	0.315
			01	--	1	24	2	3RT2016-2KB42	1	1 unit	41B	0.316
12	5.5¹⁾	22	10	1	--	24	▶	3RT2017-2KB41	1	1 unit	41B	0.316
			01	--	1	24	▶	3RT2017-2KB42	1	1 unit	41B	0.316

Operating range **0.85 ... 1.85 x U_s** , power consumption of the solenoid coils **1.6 W** at 24 V

7	3	18	10	1	--	24	5	3RT2015-2SB41	1	1 unit	41B	0.310
			01	--	1	24	5	3RT2015-2SB42	1	1 unit	41B	0.318
9	4	22	10	1	--	24	5	3RT2016-2SB41	1	1 unit	41B	0.317
			01	--	1	24	5	3RT2016-2SB42	1	1 unit	41B	0.312
12	5.5¹⁾	22	10	1	--	24	5	3RT2017-2SB41	1	1 unit	41B	0.323
			01	--	1	24	5	3RT2017-2SB42	1	1 unit	41B	0.321

¹⁾ When using contactors with IE3/IE4 motors, use contactors fitted with varistors instead of diodes. In the case of 5.5 kW coupling contactors of size S00, use 5.5 kW coupling contactors of size S0, see page 2/39.

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

DC operation for direct control from the PLC

- Coupling contactors with adapted power consumption
- Suitable for solid-state PLC outputs
- Cannot be expanded with auxiliary switch blocks



3RT202.-2KB40

Rated data			Auxiliary contacts		Rated control supply voltage U_s	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3, t_U : Up to 60° C		AC-1, t_U : 40° C	Ident No.	Version							
Operational current I_e up to	Rating of three-phase motors at 50 Hz and	Operational current I_e up to					Article No.				
400 V	400 V	690 V									
A	kW	A	NO	NC	V DC	d					kg

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)

Operating range **0.7 ... 1.25 x U_s** , power consumption of the solenoid coils **4.5 W** at 24 V

9	4	40	11	1	1	24	►	3RT2023-2KB40	1	1 unit	41B	0.635
12	5.5	40	11	1	1	24		3RT2024-2KB40	1	1 unit	41B	0.645
17	7.5	40	11	1	1	24		3RT2025-2KB40	1	1 unit	41B	0.643
25	11	40	11	1	1	24		3RT2026-2KB40	1	1 unit	41B	0.643
32	15	50	11	1	1	24		3RT2027-2KB40	1	1 unit	41B	0.650

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

AC/DC operation (50/60 Hz AC and DC)

- Extended operating range of the solenoid coil 0.7 to $1.3 \times U_s$
- Reduced power consumption when closing and in the closed state



3RT202.-2N.30

Rated data			Auxiliary contacts		Rated control supply voltage U_s	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3, t_{th} : Up to 60° C	Rating of three-phase motors at 50 Hz and	AC-1, t_{th} : 40 °C	Ident No.	Version							
Operational current I_e up to		Operational current I_e up to					Article No.				
400 V	400 V	690 V		 							
A	kW	A		NO NC	V AC/DC	d					kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Size S0

With integrated coil circuit (varistor)

12	5.5	40	11	1	1	21 ... 28 95 ... 130 200 ... 280	5 5 2	3RT2024-2NB30 3RT2024-2NF30 3RT2024-2NP30	1 1 unit 1 1 unit 1 1 unit	41B 41B 41B	0.608 0.581 0.585
17	7.5	40	11	1	1	21 ... 28 95 ... 130 200 ... 280	5 5 2	3RT2025-2NB30 3RT2025-2NF30 3RT2025-2NP30	1 1 unit 1 1 unit 1 1 unit	41B 41B 41B	0.609 0.583 0.586
25	11	40	11	1	1	21 ... 28 95 ... 130 200 ... 280	2 5 5	3RT2026-2NB30 3RT2026-2NF30 3RT2026-2NP30	1 1 unit 1 1 unit 1 1 unit	41B 41B 41B	0.618 0.582 0.587
32	15	50	11	1	1	21 ... 28 95 ... 130 200 ... 280	2 5 5	3RT2027-2NB30 3RT2027-2NF30 3RT2027-2NP30	1 1 unit 1 1 unit 1 1 unit	41B 41B 41B	0.626 0.590 0.595
38	18.5	50	11	1	1	21 ... 28 95 ... 130 200 ... 280	5 5 5	3RT2028-2NB30 3RT2028-2NF30 3RT2028-2NP30	1 1 unit 1 1 unit 1 1 unit	41B 41B 41B	0.619 0.585 0.594

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

AC/DC operation (50/60 Hz AC and DC)

- Extended operating range of the solenoid coil 0.8 to 1.1 x U_s
- Reduced power consumption when closing and in the closed state

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41B



3RT203...3N.30

Rated data			Auxiliary contacts		Rated control supply voltage $U_s^{1)}$	SD	Spring-type terminals	Weight per PU approx.
AC-2 and AC-3, t_u : Up to 60° C	Rating of three-phase motors at 50 Hz and	AC-1, t_u : 40 °C	Ident No.	Version				
Operational current I_e up to		Operational current I_e up to						
400 V	400 V	690 V					Article No.	
A	kW	A		NO NC	V AC/DC	d		kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail**Size S2****With integrated coil circuit (varistor)**

40	18.5	60	11	1	1	20 ... 33 83 ... 155 175 ... 280	► 5 5	3RT2035-3NB30 3RT2035-3NF30 3RT2035-3NP30	1.112 1.112 1.113
50	22	70	11	1	1	20 ... 33 83 ... 155 175 ... 280	► 5 5	3RT2036-3NB30 3RT2036-3NF30 3RT2036-3NP30	1.100 1.115 1.112
65	30	80	11	1	1	20 ... 33 83 ... 155 175 ... 280	► 5 5	3RT2037-3NB30 3RT2037-3NF30 3RT2037-3NP30	1.130 1.127 1.116
80	37	90	11	1	1	20 ... 33 83 ... 155 175 ... 280	► 5 2	3RT2038-3NB30 3RT2038-3NF30 3RT2038-3NP30	1.107 1.121 1.119

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see pages 2/44 to 2/58.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

AC/DC operation (50/60 Hz AC and DC)

- Extended operating range of the solenoid coil 0.8 to 1.1 x U_s
- Reduced power consumption when closing and in the closed state

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41B



3RT204.-3N.30

Rated data			Auxiliary contacts		Rated control supply voltage $U_s^{1)}$		SD	Spring-type terminals	Weight per PU approx.
AC-2 and AC-3, t_{ij} : Up to 60° C	Rating of three-phase motors at 50 Hz and 400 V	AC-1, t_{ij} : 40 °C Operational current I_e up to 690 V	Ident No.	Version					
Operational current I_e up to 400 V									
A	kW	A		NO NC	V AC/DC	d		Article No.	Price per PU

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Size S3

With integrated coil circuit (varistor)

80	37	125	11	1	1	20 ... 33 83 ... 155 175 ... 280	2 5 5	3RT2045-3NB30 3RT2045-3NF30 3RT2045-3NP30	1.830 1.815 1.820
95	45	130	11	1	1	20 ... 33 83 ... 155 175 ... 280	2 5 5	3RT2046-3NB30 3RT2046-3NF30 3RT2046-3NP30	1.834 1.815 1.748
110	55	130	11	1	1	20 ... 33 83 ... 155 175 ... 280	2 5 5	3RT2047-3NB30 3RT2047-3NF30 3RT2047-3NP30	1.833 1.815 1.818

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see www.siemens.com/ic10, Chapter 3.

Power Contactors for Switching Motors

SIRIUS 3RT contactors, 3-pole up to 250 kW

AC/DC operation (50/60 Hz AC 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 terminals¹⁾



3RT105.



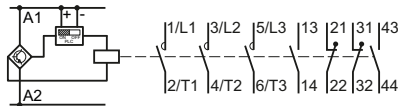
3RT106.



3RT107.

Size	Rated data AC-2 and AC-3, t_{ij} : Up to 60° C					AC-1, t_{ij} : 40 °C	Auxiliary contacts, lateral		Rated control supply voltage U_s	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Operational current I_e up to	Ratings of three-phase motors at 50 Hz and				Operational current I_e up to	Version									
	500 V	230 V	400 V	500 V	690 V	690 V			V AC/DC	d						kg

Solid-state operating mechanisms · with 24 V DC control signal input
e.g. for control by PLC



Spring-type
terminals
for coil and auxiliary
switch terminals



S6	115	37	55	75	110	160	2	2	96 ... 127 200 ... 277	5 5	3RT1054-3NF36 3RT1054-3NP36		1 1	1 unit 1 unit	41B 41B	3.624 3.618
	150	45	75	90	132	185	2	2	96 ... 127 200 ... 277	5 5	3RT1055-2NF36 3RT1055-2NP36		1 1	1 unit 1 unit	41B 41B	3.333 3.350
	185	55	90	110	160	215	2	2	96 ... 127 200 ... 277	5 5	3RT1056-2NF36 3RT1056-2NP36		1 1	1 unit 1 unit	41B 41B	3.353 3.350
S10	225	55	110	160	200	275	2	2	96 ... 127 200 ... 277	5 5	3RT1064-2NF36 3RT1064-2NP36		1 1	1 unit 1 unit	41B 41B	6.610 6.462
	265	75	132	160	250	330	2	2	96 ... 127 200 ... 277	5 5	3RT1065-2NF36 3RT1065-2NP36		1 1	1 unit 1 unit	41B 41B	6.656 6.549
	300	90	160	200	250	330	2	2	96 ... 127 200 ... 277	5 5	3RT1066-2NF36 3RT1066-2NP36		1 1	1 unit 1 unit	41B 41B	6.720 6.599
S12	400	132	200	250	400	430	2	2	96 ... 127 200 ... 277	5 5	3RT1075-2NF36 3RT1075-2NP36		1 1	1 unit 1 unit	41B 41B	10.352 10.095
	500	160	250	355	400	610	2	2	96 ... 127 200 ... 277	5 5	3RT1076-2NF36 3RT1076-2NP36		1 1	1 unit 1 unit	41B 41B	10.501 10.340

¹⁾ Alternatively, the 3RT1054 contactor (55 kW) can also be supplied with busbar connections instead of box terminals.
In the 8th position of the article number, the "1" must be replaced with "6" for screw terminals, e.g. 3RT1054-6N..., for spring-type terminals, the "3" must be replaced with "2", e.g. 3RT1054-2N....

Other voltages, see www.siemens.com/ic10, Chapter 3 on request.

Accessories and spare parts, see www.siemens.com/ic10, Chapter 3.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

General data

Overview

Extensive accessories and spare parts are available for SIRIUS 3RT power contactors and SIRIUS 3RH2 contactor relays.

These components are easily fitted to the contactors without the use of any tools according to requirements.

Overview graphics with mountable accessories

- For 3RT2 contactors, [see pages 2/5 to 2/8](#)
- For 3RT1 contactors, [see pages 2/9 to 2/11](#)
- For 3RH2 contactor relays, [see page 2/84](#)

More information

TIA Selection Tool Cloud (TST Cloud),
see <https://mall.industry.siemens.com/spice/TSTWeb/?kmat=Contactor>

Version	For contactors 3RT2, Sizes S00 to S3; 3RH2, Size S00	3RT1, Sizes S6 to S12	Selection and ordering data Page
Accessories for 3RT contactors and 3RH2 contactor relays			
Auxiliary switch blocks			
Instantaneous	3RH29.1	3RH19.1	
Delayed			
• Pneumatic time-delay auxiliary switch blocks	3RT2926-2P..1	--	
• Solid-state time-delay auxiliary switch blocks	3RA2813, 3RA2814, 3RA2815	3RT1926-2E/-2F/-2G	
Surge suppressors			
• Without LED	3RT29.6-1B/-1C/-1D/-1E	3RT1956-1C	
• With LED	3RT29.6-1J/-1L/-1M	--	
Modules for contactor control			
Coupling links for control by PLC	3RH29.4- GP11	--	
3RA28 function modules			
• For direct on-line starting: ON delay or OFF-delay	3RA2811, 3RA2812, 3RA2831, 3RA2832	--	
• For star-delta (wye-delta) starting	3RA2816	--	
3RA27 function modules for IO-Link or AS-Interface			
• For direct-on-line, reversing or star-delta (wye-delta) starting	3RA271.-.A/.B/.C	--	
Mechanical latching blocks			
	3RT2926-3A.31	--	
OFF-delay devices for contactors with AC/DC and DC operation			
	3RT2916-2B.01	--	
Link modules			
Link modules from motor starter protector to contactor	3RA.9.1	--	
Safety main current connectors for two contactors			
	3RA29.6-1A	--	
Assembly kits			
• For reversing contactor assemblies	3RA29.3-2AA.	3RA19.3-2A	
• For contactor assemblies for star-delta (wye-delta) starting	3RA29...-2BB., 3RA29.3-2C	3RA1953-3G, 3RA19.3-2./-3.	
Single wiring modules			
	3RA.9.3-3.A.	3RA19.3-3.	
Star jumpers (links for paralleling), 3-pole			
	3RT.9.6-4BA3.	3RT19.6-4BA31	
Mechanical interlock kits for two contactors			
	3RA29.2-2H	--	
Mechanical interlocks for contactor assemblies			
	3RA2934-2B	3RA1954-2.	
Mechanical connectors for contactor assemblies			
	3RA29.2-2.	3RA1932-2D	
Terminal modules/adapters			
Links for paralleling for main circuits	3RT.9.6-4BB.1	--	
Single-phase infeed terminals			
	3RA2943-3L	--	
Three-phase infeed terminals			
• With increased clearances and creepage distances	3RA2913-3K, 3RV29.5-5A.	--	
	3RV2935-5E	--	
Three-phase busbars			
	3RV1915-1AB	--	
Box terminal blocks			
• Box terminal for auxiliary conductor connection	--	3RT19...-4G	
	--	3TX7500-0A	
Solder pin adapters for contactor assembly on printed circuit boards			
	3RT1916-4KA.	--	
Coil connection modules for connections from top or from below			
	3RT2926-4R.1.	--	
Motor feeder connector			
	3RT1900-4RE01	--	
Covers			
Terminal covers	3RT29.6-4EA.	3RT19.6-4EA., 3TX65.6-3B	
Sealable covers			
	3RT2916-4MA10	3RT1926-4MA10	

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

General data

Version	For contactors	3RT1, Sizes S6 to S12	Selection and ordering data
	3RT2, Sizes S00 to S3; 3RH2, Size S00		Page
Accessories for 3RT contactors and 3RH2 contactor relays (continued)			
Miscellaneous accessories			
Base plates			
• For reversing contactor assemblies	--	3RT19.2-2A	
• For contactor assemblies for star-delta (wye-delta) starting	3RA29.2-2F	3RA19.2-2.	
Adapters for screw fixing	3RT1926-4P	--	
EMC suppression modules	3RT2916-1P..	--	
Additional load modules	3RT2916-1GA00	--	
LED modules for displaying contactor operation	3RT2926-1QT00	3RT1926-1QT00	
Control kit for manual operation	3RT29..6-4MC00	--	
Insulation stop for securely holding back the conductor insulation for conductors up to 1 mm²	3RT2916-4JA02	3RT1916-4JA02	
Tools for opening spring-type terminals	3RA2908-1A	3RA2908-1A	
Blank labels	3RT2900-1SB..0	3RT1900-1S..0	
Spare parts for 3RT2 contactors			
Solenoid coils	3RT29...-5...1	--	
Withdrawable coils	--	3RT19...-5....	
Contacts with fixing parts	3RT29...-6.	3RT19...-6.	
Arc chambers	--	3RT19...-7.	

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Selection and ordering data

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 3RT2 power contactors as well as for 3RH2 contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables, [see pages 2/47 to 2/51](#).

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 number	Auxiliary contacts	3RT201	3RT201	3RT202 to 3RT204
Version		S00	S00	S0 to S3
NO NC		10	01	11
				
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.
According to EN 50012 ¹⁾				
Auxiliary switch blocks without NO contacts				
3RH2911-□HA01	-- 1		11	02
3RH2911-□HA02	-- 2		12	03
3RH2911-□HA03	-- 3		13	04
3RH2911-□FA04	-- 4		14	--
Auxiliary switch blocks with 1 NO contact				
3RH2911-□HA10	1 --		20	11
				21

1
2

For screw terminals
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)

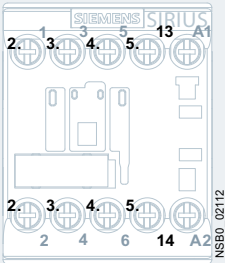
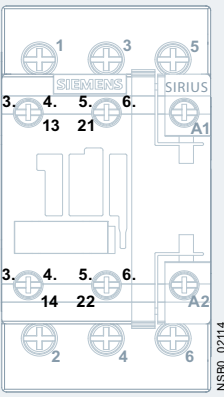
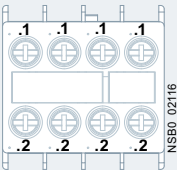
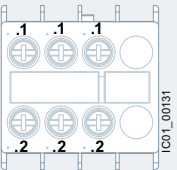
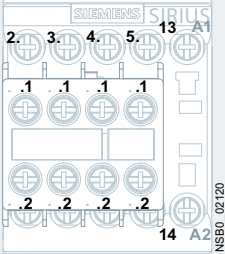
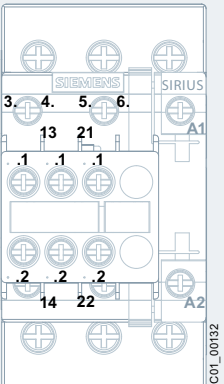
Result: 3RH2911-FA04 auxiliary switch block

Example 2

Basic unit: 3-pole 3RT2023 motor contactor with 1 NO + 1 NC

Required: 1 NO + 4 NC (Ident No. 14)

Result: 3RH2911-HA03 auxiliary switch block

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 blocks with 4 NC, 3RH2911-FA04	Auxiliary switch blocks with 3 NC, 3RH2911-HA03	
			
Function digit	.1 .1 .1 .1 .2 .2 .2 .2	.1 .1 .1 .2 .2 .2	
Combination	3RT20 motor contactor, S00 with aux. switch block	3RT20 motor contactor, S0 with aux. switch block	
			
Terminal designation	13 21 31 41 51 14 22 32 42 52	13 21 31 41 51 14 22 32 42 52	
Result	Ident No. 14	Ident No. 14	

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Article number	Auxiliary contacts Version	S00 3RT201	S0 to S3 3RT202, 3RT203, 3RT204, 3RT244	S00 3RT231	3RT251	S0 to S3 3RT232, 3RT233, 3RT234	3RT252, 3RT253, 3RT254	S00 3RH21, 3RH24			
	NO NC	10 01 11	-- -- 11	-- -- 11	-- -- 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. 3. 4. 5. 6.	1. 2. 3. 4. 1. 2. 3. 4. 3. 4. 5. 6. 3. 4. 5. 6.	5. 6. 7. 8. 3. 4. 5. 6.	5. 6. 7. 8. 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⁾		

Auxiliary switch blocks, front

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.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Article number	Auxiliary contacts Version	S00 3RT201	S0 to S3 3RT202, 3RT203, 3RT204, 3RT244		S00 3RT231	S0 to S3 3RT251	S0 to S3 3RT232, 3RT233, 3RT234	S0 to S3 3RT252, 3RT253, 3RT254	S00 3RH21, 3RH24		
	NO NC	10 01	11		S00	S0 to S3	S0 to S3		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		

Auxiliary switch blocks, front (continued)

With make-before-break¹⁾

3RH2911-□FB11	1	1		21	12	22	11	11	22	22	51	42	33
3RH2911-□FB22	2	2		32	23	33	22	22	33	--	62	53	44
3RH2911-□FC22	2	2		32	23	33	22	22	33	--	62	53	44

Complete inscription with terminals from top or bottom

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⁾ Contacts with make-before-break have no mirror contact function.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Article number	Auxiliary contacts Version	S00 3RT201	S0 to S3 3RT202, 3RT203, 3RT204, 3RT244	S00 3RT231	3RT251	S0 to S3 3RT232, 3RT233, 3RT234	3RT252, 3RT253, 3RT254	S00 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.	5. 6. 7. 8.
		According to EN 50005			According to EN 50005				According to EN 50011 ¹⁾		

Auxiliary switch blocks, front

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	--	--

Complete inscription

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⁾ Selection and ordering data, see page 2/54.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Additional auxiliary switch blocks		3-pole contactors		S0 to S3		Contactor relays		
Article number	Auxiliary contacts Version	S00 3RT201		S0 to S3 3RT202, 3RT203, 3RT2.4		S00 3RH21, 3RH24		
	NO NC	10	01	11		40E	31E	22E
								
		13 14	21 22	13 21 14 22		13 23 33 43 14 24 34 44	13 21 33 43 14 22 34 44	13 21 31 43 14 22 32 44
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.		5. 6. 7. 8	5. 6. 7. 8.	5. 6. 7. 8.
		According to EN 50012 ¹⁾		According to EN 50011 ¹⁾				

Lateral auxiliary switch blocks

For size S00

		Left	Right						
3RH2911-□DA02	--	2		12	--	--	--	--	--
3RH2911-□DA02	--	4		14	--	--	--	--	--
3RH2911-□DA11	1	1		21	--	--	--	--	--
3RH2911-□DA11	2	2		32	--	--	--	--	--
3RH2911-□DA20	2	--		30	--	--	--	--	--
3RH2911-□DA20	4	--		50	--	--	--	--	--
3RH2911-□DA20 + 3RH2911-□DA11	2	--		41	--	--	--	--	--
3RH2911-□DA20 + 3RH2911-□DA02	2	--		32	--	--	--	--	--
3RH2911-□DA11 + 3RH2911-□DA02	1	1		23	--	--	--	--	--

For sizes S0 to S3

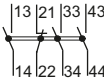
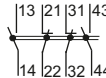
		Left	Right						
3RH2921-□DA02	--	2		12	03	13	--	--	--
3RH2921-□DA02	--	4		14	--	--	--	--	--
3RH2921-□DA11	1	1		21	12	22	--	--	--
3RH2921-□DA11	2	2		32	23	33	--	--	--
3RH2921-□DA20	2	--		30	21	31	--	--	--
3RH2921-□DA20	4	--		50	41	51	--	--	--

¹⁾ Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold** print. All combinations comply with EN 50005.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

Additional auxiliary switch blocks		3-pole contactors		S0 to S3		Contactor relays		
Article number	Auxiliary contacts	S00		S0 to S3		S00		
	Version	3RT201		3RT202, 3RT203, 3RT2.4		3RH21, 3RH24		
	NO NC	10	01	11	40E	31E	22E	
	 							
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	5. 6. 7. 8.	5. 6. 7. 8.	5. 6. 7. 8.	
		According to EN 50012 ¹⁾			According to EN 50011 ¹⁾			
Lateral auxiliary switch blocks								
For sizes S00 to S3		Left	Right					
3RH2921-□DA20	2 --			41	32	42	--	
+ 3RH2921-□DA11	1 1							
3RH2921-□DA20	2 --			32	23	33	--	
+ 3RH2921-□DA02	-- 2							
3RH2921-□DA11	1 1			23	14	24	--	
+ 3RH2921-□DA02	-- 2							
For contactor relays ²⁾		Left						
3RH2921-□DA02	-- 2			--	--	--	42Z	
							33X	
3RH2921-□DA11	1 1			--	--	--	51X	
							42X	
3RH2921-□DA20	2 --			--	--	--	60Z	
							51X	
							42X	
Solid-state compatible								
For size S00		Left	Right					
3RH2911-2DE11	1 1			21	--	--	--	
								
3RH2911-2DE11	2 2			32	--	--	--	
								
For sizes S00 to S3		Left	Right					
3RH2921-2DE11	1 1			21	12	22	--	
								
3RH2921-2DE11	2 2			32	23	33	--	
								
For contactor relays ²⁾		Left						
3RH2921-2DE11	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.

²⁾ Without positively driven operation.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous



3RH2911-2HA22

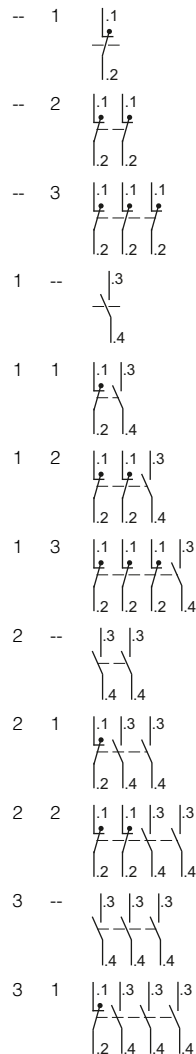
For contactors/ contactor relays ¹⁾	Auxiliary contacts Version	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type	NO NC	d	Article No.				kg

Auxiliary switch blocks for snapping onto the front

Sizes S00 to S3

3RT2.1,
3RT2.2,
3RT2.3,
3RT2.4

3RH21,
3RH24



▶	3RH2911-2HA01	1	1 unit	41B	0.040
▶	3RH2911-2HA02	1	1 unit	41B	0.058
5	3RH2911-2HA03	1	1 unit	41B	0.059
▶	3RH2911-2HA10	1	1 unit	41B	0.052
▶	3RH2911-2HA11	1	1 unit	41B	0.405
▶	3RH2911-2HA12	1	1 unit	41B	0.045
▶	3RH2911-2HA13	1	1 unit	41B	0.058
▶	3RH2911-2HA20	1	1 unit	41B	0.057
▶	3RH2911-2HA21	1	1 unit	41B	0.046
▶	3RH2911-2HA22	1	1 unit	41B	0.057
5	3RH2911-2HA30	1	1 unit	41B	0.058
▶	3RH2911-2HA31	1	1 unit	41B	0.046

¹⁾ For detailed information on use, see [page 2/47](#).

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous



3RH2911-2FC22

For contactors/ contactor relays ¹⁾	Connections Position	Auxiliary contacts Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		NO NC NO NC	d	Article No.				kg

Auxiliary switch blocks for snapping onto the front

Sizes S00 to S3

3RT2.1, 3RT2.2, 3RT2.3, 3RT2.4	--	4	--	--	--		▶	3RH2911-2FA40	1	1 unit	41B	0.049
3RH21, 3RH24	--	2	2	--	--		▶	3RH2911-2FA22	1	1 unit	41B	0.049
	--	--	4	--	--		▶	3RH2911-2FA04	1	1 unit	41B	0.049
	--	--	--	1	1		▶	3RH2911-2FB11	1	1 unit	41B	0.049
	--	1	1	1	1		▶	3RH2911-2FB22	1	1 unit	41B	0.049
	--	--	--	2	2		▶	3RH2911-2FC22	1	1 unit	41B	0.049

¹⁾ For detailed information on use, see pages 2/47 and 2/48.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous



3RH2911-2GA22

For contactor relays ¹⁾	Contactor relay with auxiliary switch block Ident No.	Auxiliary contacts Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		NO NC	d	Article No.				kg

Auxiliary switch blocks for snapping onto the front

Size S00

Blocks for the assembly of contactor relays with 8 contacts

3RH2140,
3RH2440,
Ident No. 40E

80E	4	--	53 63 73 83 54 64 74 84
71E	3	1	53 61 73 83 54 62 74 84
62E	2	2	53 61 71 83 54 62 72 84
53E	1	3	53 61 71 81 54 62 72 82
44E	--	4	51 61 71 81 52 62 72 82

④	3RH2911-2GA40	1	1 unit	41B	0,049
④	3RH2911-2GA31	1	1 unit	41B	0.049
④	3RH2911-2GA22	1	1 unit	41B	0.049
④	3RH2911-2GA13	1	1 unit	41B	0.049
④	3RH2911-2GA04	1	1 unit	41B	0,058

¹⁾ For detailed information on use, see page 2/49.



3RH2911-2XA22-0MA0

For contactors/ contactor relays ¹⁾	Auxiliary contacts Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type	NO NC	d	Article No.				kg

Auxiliary switch blocks for snapping onto the front

Sizes S00 to S3

3RT2. 1,
3RT2. 2,
3RT2. 3,
3RT2. 4

3RH21,
3RH24

4	--	53 63 73 83 54 64 74 84
3	1	53 61 73 83 54 62 74 84
2	2	53 61 71 83 54 62 72 84
--	4	51 61 71 81 52 62 72 82

▶	3RH2911-2XA40-0MA0	1	1 unit	41B	0,049
▶	3RH2911-2XA31-0MA0	1	1 unit	41B	0.049
▶	3RH2911-2XA22-0MA0	1	1 unit	41B	0.049
5	3RH2911-2XA04-0MA0	1	1 unit	41B	0.049

¹⁾ For detailed information on use, see page 2/49.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

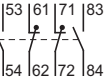


3RH1921-2C...

For contactors	Auxiliary contacts		SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Ident No.	Version		Article No.				
Type		NO NC NO NC	d					kg

Auxiliary switch blocks for snapping onto the front

Sizes S6 to S12

		4-pole auxiliary switch blocks									
		• Acc. to EN 50012									
3RT1.5 ... 3RT1.7	22	2	2	-- --		20	3RH1921-2XA22-0MA0	1	1 unit	41B	0.060
		1-pole auxiliary switch blocks									
		• Acc. to EN 50005 and EN 50012									
3RT1.5 ... 3RT1.7	10	1	--	-- --		▶	3RH1921-2CA10	1	1 unit	41B	0.016
	01	--	1	-- --		▶	3RH1921-2CA01	1	1 unit	41B	0.015

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous



3RH2911-2DA02

For contactors ¹⁾	Auxiliary contacts	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Version		Article No.				
Type	NO NC	d					kg

Laterally mountable auxiliary switch blocks,
mounting on the right and/or on the left,
2-pole

Size S00

		Left	Right				
3RT2.1	-- 2			2	3RH2911-2DA02	1 1 unit	41B 0.050
	1 1			2	3RH2911-2DA11	1 1 unit	41B 0.050
	2 --			2	3RH2911-2DA20	1 1 unit	41B 0.050

Sizes S0 to S3

		Left	Right				
3RT2.2, 3RT2.3 ²⁾ , 3RT2.4	-- 2			2	3RH2921-2DA02	1 1 unit	41B 0.051
	1 1			2	3RH2921-2DA11	1 1 unit	41B 0.050
	2 --			2	3RH2921-2DA20	1 1 unit	41B 0.050

¹⁾ For detailed information on use, see pages 2/50 and 2/51.

²⁾ With 3RT232. and 3RT252. contactors, mountable only on the right.

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous



3RH1921-2DA11,
3RH1921-2JA11,
3RH1921-2EA...,
3RH1921-2KA...

For contactors	Auxiliary contacts	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Version		Article No.				
Type	NO NC	d					kg

**Lateral auxiliary switch blocks,
mounting on the left or right,
2-pole**

Sizes S6 to S12

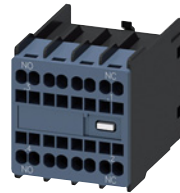
	Left	Right				
First auxiliary switch block						
• Acc. to EN 50012						
3RT1.5 ... 3RT1.7	1 1		▶	3RH1921-2DA11	1 1 unit	41B 0.051
• Acc. to EN 50005						
3RT1.5 ... 3RT1.7	2 --		▶	3RH1921-2EA20	1 1 unit	41B 0.050
	-- 2		▶	3RH1921-2EA02	1 1 unit	41B 0.051
Second auxiliary switch block						
• Acc. to EN 50012						
3RT1.5 ... 3RT1.7	1 1		▶	3RH1921-2JA11	1 1 unit	41B 0.051
• Acc. to EN 50005						
3RT1.5 ... 3RT1.7	2 --		20	3RH1921-2KA20	1 1 unit	41B 0.050
	-- 2		20	3RH1921-2KA02	1 1 unit	41B 0.051

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT Contactors and SIRIUS 3RH2 Contactor Relays

Auxiliary switch blocks, instantaneous

2



3RH2911-2NF..



3RH2911-2DE11

3RH1921-2DE11,
3RH1921-2JE11

For contactors/ contactor relays ¹⁾	Contacts Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			Article No.				
Type	NO NC	d					kg

Solid-state compatible auxiliary switch blocks, 2-pole

- For operation in dusty atmospheres
- For solid-state circuits with rated operational currents I_e /AC-14 and DC-13 from 1 ... 300 mA at 3 ... 60 V
- Hard gold-plated contacts
- Laterally mountable auxiliary switches and auxiliary switches for snapping onto the front for 3RT2 contactors, sizes S0 to S3 are designed as mirror contacts according to IEC 60947-4-1, Appendix F.

Auxiliary switch blocks for snapping onto the front

Sizes S00 to S3

3RT2.1, 3RT2.2, 3RT2.3, 3RT2.4	-- 2		2	3RH2911-2NF02	1	1 unit	41B	0.046
3RH21, 3RH24	1 1		▶	3RH2911-2NF11	1	1 unit	41B	0.047
	2 --		▶	3RH2911-2NF20	1	1 unit	41B	0.047

Lateral auxiliary switch blocks, mounting on the right and/or on the left acc. to EN 50012

Size S00

3RT2.1	1 1	Left Right	2	3RH2911-2DE11	1	1 unit	41B	0.047
--------	-----	----------------------------------	---	---------------	---	--------	-----	-------

Sizes S0 to S3

3RT2.2, 3RT2.3, 3RT2.4	1 1	Left Right	2	3RH2921-2DE11	1	1 unit	41B	0.050
------------------------------	-----	----------------------------------	---	---------------	---	--------	-----	-------

Sizes S6 to S12

3RT1.5 ... 3RT1.7	1 1	Left Right	▶	3RH1921-2DE11	1	1 unit	41B	0.050
3RT1.5 ... 3RT1.7	1 1	Left Right	▶	3RH1921-2JE11	1	1 unit	41B	0.050

¹⁾ For detailed information on use, see pages 2/49 and 2/51.

Switching Devices – Contactors and Contactor Assemblies

Contactors for Special Applications

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Home page, see www.siemens.com/sirius

Industry Mall, see www.siemens.com/product?3RT_3TK_3TC

Conversion tool e.g. from 3RT13 to 3RT23, see www.siemens.com/sirius/conversion-tool

Online configurator for 3RT20 contactors, see www.siemens.com/sirius/configurators



Size
Type

S3
3RT2446, 3RT2448

S6, S10, S12
3RT14.6

4-pole 3RT23, 3RT25, 3RT13 contactors · 3-pole 3RT24, 3RT14 contactors

Type		3RT2446	3RT2448	3RT1456	3RT1466	3RT1476
Number of main contacts		3 NO		3 NO		
AC-1 (≤ 690 V)						
I_e	40 °C A	140	160	275	400	690
	60 °C A	130	140	250	380	650
P at 400 V	40 °C kW	92	105	180	263	454
	At 230 V 40 °C kW	53	61	105	151	261
	At 500 V kW	--	--	225	329	568
	At 690 V 60 °C kW	159	182	310	454	783
	At 1 000 V kW	--	--	165	247	410
AC-2 and AC-3						
I_e/400 V	A	44	44	97	138	170
P at 400 V	kW	22	22	55	75	90
	At 230 V kW	12.7	12.7	30	37	55
	At 500 V kW	29.9	29.9	55	90	110
	At 690 V kW	38.2	38.2	90	132	160

Accessories for contactors

Auxiliary switch blocks	3RH29 (p. 2/52)	3RH19 (p. 2/55)	3RT1926 (p. 2/181)
Terminal covers	3RT2946-4EA2 (p. 2/177)	3RT1956-4EA.	
Surge suppressors	3RT2936 ¹⁾ , 3RT2946	3RT1956-1C (RC element)	

¹⁾ From product version E03 onwards, 3RT2936-1B/-1E surge suppressors can be used for 3RT2.4 contactors.

Note:

Safety characteristics for contactors, see www.siemens.com/ic10, Chapter 16 "Standards and Approvals".

Accessories for contactors, see www.siemens.com/ic10 Chapter 3

Contactors for railway applications

- For SIRIUS 3RT contactors with extended operating range, 3-pole, see page 2/63
- For SIRIUS 3RH2 contactor relays with extended operating range, see page 2/68
- For 3TH4 contactor relays, 8-pole, see page 2/71
- For 3TC contactors for switching DC voltage, 2-pole, see page 2/72

Contactors for Special Applications

SIRIUS 3RT.4 contactors for resistive loads (AC-1), 3-pole

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 IEC 60529.

3RT. 4 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 drives.

The accessories and spare parts of the 3RT contactors can also be used here, [see from page 2/44 onwards](#).

For a general description of 3RT contactors, sizes S3 to S12, [see from page 2/5 onwards](#).

Size S3: AC or AC/DC operation

- Coil circuits (varistors, diodes, etc.) can be retrofitted
- Auxiliary switches can be retrofitted
- Main and control conductors: Screw terminals

Sizes S6 to S12: AC/DC operation (50/60 Hz AC and DC)

- Withdrawable coils with integrated coil circuit (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections

Operating mechanism types

Two types of solenoid operation are available:

- Conventional operating mechanisms
- Solid-state operating mechanisms
 - The operating mechanism for the contactors features solid-state control of the contactor coil. Overvoltage damping of the operating mechanism coil is already integrated in the electronics. The operating mechanisms are powered via a supply voltage with an operating range from 0.7 to $1.25 \times U_s$, optionally also controlled depending on the chosen mode of operation. Alternatively, control is via the separate 24 V DC control signal input. Various rated voltage ranges for AC/DC control are available.
 - This version is additionally available with a 24 V DC PLC relay output and a remaining lifetime indicator (RLT).

Technical specifications

More information

Technical specifications, [see https://support.industry.siemens.com/cs/ww/en/ps/13613/td](https://support.industry.siemens.com/cs/ww/en/ps/13613/td)
FAQs, [see https://support.industry.siemens.com/cs/ww/en/ps/13613/faq](https://support.industry.siemens.com/cs/ww/en/ps/13613/faq)

Manuals, [see](#)

- System Manual "SIRIUS – System Overview", <https://support.industry.siemens.com/cs/WW/en/view/60311318>
- Manual "SIRIUS – SIRIUS 3RT Contactors/Contactor Assemblies", <https://support.industry.siemens.com/cs/WW/en/view/60306557>
- Application Manual "SIRIUS Controls with IE3/IE4 motors", <https://support.industry.siemens.com/cs/ww/en/view/94770820>

Type Size	3RT2446 S3	3RT2448 S6	3RT1456 S6	3RT1466 S10	3RT1476 S12
General data					
Permissible mounting position					
The contactors are designed for operation on a vertical mounting surface.					
					
Upright mounting position					
 Special version required					
Mechanical endurance					
• Basic units and basic units with mounted auxiliary switch block		Operating cycles	10 million		
• Basic units with solid-state compatible auxiliary switch block		Operating cycles	5 million	--	
Electrical endurance for utilization category AC-1, at I_e		Operating cycles	0.5 million		

Contactors for Special Applications

SIRIUS 3RT.4 contactors for resistive loads (AC-1), 3-pole

Type		3RT2446	3RT2448	3RT1456	3RT1466	3RT1476
Size		S3		S6	S10	S12
General data (continued)						
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 according to IEC 60947-1, Appendix N	V	400		690		
Mirror contacts according to IEC 60947-4-1, Appendix F A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with an NO main contact.						
• Integrated auxiliary switches		Yes		--		
• Removable auxiliary switch block		--		Yes		
Permissible ambient temperature						
• During operation	°C	-25 ... +60				
• During storage	°C	-55 ... +80				
Degree of protection acc. to IEC 60529						
• On front		IP20		IP00 (IP20 with box terminal/cover)		
• Connecting terminal		IP00 (for higher degree of protection: use additional terminal covers)				
Touch protection acc. to IEC 60529						
		Finger-safe for vertical touching from the front		Finger-safe for vertical touching from the front with cover		
Shock resistance						
• Rectangular pulse						
- AC operation	g/ms	10.3/5 and 10.5/10		8.5/5 and 4.2/10		
- DC operation	g/ms	6.7/5 and 4.0/10		8.5/5 and 4.2/10		
• Sine pulse						
- AC operation	g/ms	16.3/5 and 10.5/10		13.4/5 and 6.5/10		
- DC operation	g/ms	10.6/5 and 6.3/10		13.4/5 and 6.5/10		

Contactors for Special Applications

SIRIUS 3RT.4 contactors for resistive loads (AC-1), 3-pole

Type		3RT2446	3RT2448	3RT1456	3RT1466	3RT1476
Size		S3		S6	S10	S12
Rated data of the main contacts						
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	160	275	400	690
	At 60 °C up to 690 V A	130	140	250	380	650 ¹⁾
	At 1 000 V A	60	80	100	150	250
• Rated power for AC loads ²⁾	At 230 V kW	49	53	95	145	245
with p.f. = 0.95 (at 60 °C)	400 V kW	86	92	165	250	430
	500 V kW	107	115	205	315	535
	690 V kW	148	159	285	430	740
	1 000 V kW	98	131	165	247	410
• Minimum conductor cross-section for loads with I_e	At 40 °C mm ²	50	70	2 x 70	240	2 x 240
	At 60 °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 currents I_e	Up to 400 V A	44		97	138	170
	Up to 690 V A	44		97	138	170
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V kW	12.7		30	37	55
	400 V kW	37		55	75	90
	500 V kW	39.9		55	90	110
	690 V kW	38.2		90	132	160
Power loss per conducting path	At I_e /AC-1 W	--		20	27	55
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	130	140	250	380	500
	60 V A	80		250	380	500
	110 V A	12		18	33	
	220 V A	2.5		3.4	3.8	
	440 V A	0.8		0.8	0.9	
	600 V A	0.48		0.5	0.6	
- 2 conducting paths in series	Up to 24 V A	130	140	250	380	500
	60 V A	130	140	250	380	500
	110 V A	130	140	250	380	500
	220 V A	13		20	380	500
	440 V A	2.4		3.2	4	
	600 V A	1.3		1.6	2	
- 3 conducting paths in series	Up to 24 V A	130	140	250	380	500
	60 V A	130	140	250	380	500
	110 V A	130	140	250	380	500
	220 V A	130	140	250	380	500
	440 V A	6		11.5	11	
	600 V A	3.4		4	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 60 °C)						
- 1 conducting path	Up to 24 V A	6		250	380	500
	60 V A	3		7.5	11	
	110 V A	1.25		2.5	3	
	220 V A	0.35		0.6		
	440 V A	0.15		0.17	0.18	
	600 V A	0.1		0.12	0.125	
- 2 conducting paths in series	Up to 24 V A	130	140	250	380	500
	60 V A	130	140	250	380	500
	110 V A	130	140	250	380	500
	220 V A	1.75		2.5		
	440 V A	0.42		0.65		
	600 V A	0.27		0.37		
- 3 conducting paths in series	Up to 24 V A	130	140	250	380	500
	60 V A	130	140	250	380	500
	110 V A	130	140	250	380	500
	220 V A	4		250	380	500
	440 V A	0.8		1.4		
	600 V A	0.45		0.75		

Note:

Further information on the products can be found in the Catalog IC 10 catalogue and on the Internet at www.siemens.com/sirius

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).

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RT contactors with extended operating range, 3-pole

Overview

Standards

IEC 60947-4-1, EN 60947-4-1,
IEC 60077-2, EN 60077-2

The contactors are finger-safe according to IEC 60529 (exception: S3 series resistor). The auxiliary conductor and coil terminals are all spring-type terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 to +70 °C.

Performance range

3RT contactors are available in all sizes from S00 to S12 up to 250 kW or 500 A (AC-3 at 400 V).

Operating range of contactor operating mechanisms

Sizes S00 to S3

The solenoid coils of the 3RT2 contactors have an extended coil operating range from max. 0.7 to $1.25 \times U_s$ and are fitted as standard with surge suppressors. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Sizes S6 to S12

The operating mechanism for the 3RT10 contactors features solid-state control of the contactor coil. Overvoltage damping of the operating mechanism coil is already integrated in the electronics. The operating mechanisms are powered via a supply voltage with an operating range of 0.7 to $1.25 \times U_s$, optionally also controlled depending on the chosen mode of operation. Alternatively, control is via the separate 24 to 110 V DC control signal input.

Three rated voltage ranges are available as direct voltage (DC):

- 24 V DC
- 72 V DC
- 110 V DC

Application

Besides standard approval in compliance with IEC 60974-4-1, the contactors with an extended operating range are also approved in compliance with IEC 60077-2, thus fulfilling the requirement for use in railway applications.

Thus, their suitability for increased requirements such as an

- extended temperature range in comparison with the regular standard IEC 60497-4-1 or
- extended operating range of the solenoid coils or also
- increased resistance to mechanical oscillations and vibrations is warranted. The design of the terminals in the spring-type connection system also contributes toward vibration resistance.

3RT20 contactors with conventional coil

Control and auxiliary circuits

These contactors have an extended operating range from 0.7 to $1.25 \times U_s$; on size S00 the 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 $> 60^\circ\text{C} \leq 70^\circ\text{C}$.

3RT201 contactors with series resistor

Control and auxiliary circuits

The solenoid coils of these contactors have an extended coil operating range from 0.7 to $1.25 \times U_s$ (exception 3RT204.-X...-0LA2: 0.7 to $1.2 \times U_s$) and are fitted as standard with a surge suppressor (suppressor diode or varistor as preferred).

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.

3RT201 to 3RT204 contactors with solid-state operating mechanism, extended operating range

Control and auxiliary circuits

The solenoid coils of these contactors have an extended coil operating range from 0.7 to $1.25 \times U_s$ (exception 3RT204.-X...-0LA2: 0.7 to $1.2 \times U_s$) 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 $1.25 \times U_s$ 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 overview diagrams of the 3RT20 contactors from page 2/5 onwards).

Side-by-side mounting

With these contactor versions in sizes S00 and S0, side-by-side mounting is permitted at ambient temperatures up to 70 °C.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RT contactors with extended operating range, 3-pole

Selection and ordering data

DC operation

Spring-type terminals

For screw fixing and snap-on mounting onto standard mounting rails

Solenoid coil fitted with surge suppressor



3RT201.-2K.4.



3RT201.-2K.42-0LA0

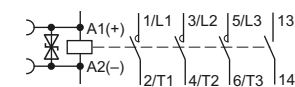
Rated data					Auxiliary contacts		Rated control supply voltage	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3 t_{ij} : 70 °C					Ident No.	Version	U_s						
Operational current I_e at									Article No.				
400 V	230 V	400 V	500 V	690 V									
A	kW	kW	kW	kW	NO	NC	V DC	d					kg

3RT20 contactors for switching motors

Size S00

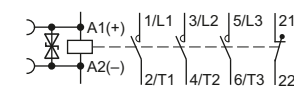
With conventional coil, fitted with suppressor diode (coupling contactors)

• 1 NO, Ident No. 10



12	3	5.5	5.5	5.5
12	3	5.5	5.5	5.5

• 1 NC, Ident No. 01

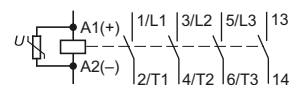


10 ¹⁾	1	--	24	110
01 ¹⁾	--	1	24	110

►	3RT2017-2KB41	1	1 unit	41B	0.316
►	3RT2017-2KF41	1	1 unit	41B	0.316
►	3RT2017-2KB42	1	1 unit	41B	0.316
►	3RT2017-2KF42	1	1 unit	41B	0.316

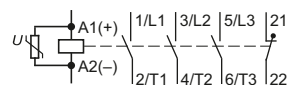
With conventional coil, fitted with varistor

• 1 NO, Ident No. 10



12	3	5.5	5.5	5.5
12	3	5.5	5.5	5.5

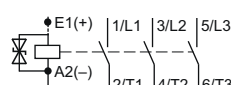
• 1 NC, Ident No. 01



10 ¹⁾	1	--	24	110
01 ¹⁾	--	1	24	110

5	3RT2017-2LB41	1	1 unit	41B	0.317
5	3RT2017-2LF41	1	1 unit	41B	0.318
5	3RT2017-2LB42	1	1 unit	41B	0.319
5	3RT2017-2LF42	1	1 unit	41B	0.319

With series resistor, fitted with suppressor diode

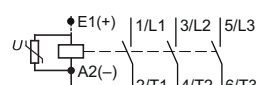


12	3	5.5	5.5	5.5
16	4	7.5	10	11

-- ²⁾	--	1 ³⁾	24	110
-- ²⁾	--	1 ³⁾	24	110

5	3RT2017-2KB42-0LA0	1	1 unit	41B	0.329
5	3RT2017-2KF42-0LA0	1	1 unit	41B	0.322
5	3RT2018-2KB42-0LA0	1	1 unit	41B	0.330
5	3RT2018-2KF42-0LA0	1	1 unit	41B	0.325

With series resistor, fitted with varistor



12	3	5.5	5.5	5.5
16	4	7.5	10	11

-- ²⁾	--	1 ³⁾	24	110
-- ²⁾	--	1 ³⁾	24	110

5	3RT2017-2LB42-0LA0	1	1 unit	41B	0.332
5	3RT2017-2LF42-0LA0	1	1 unit	41B	0.323
5	3RT2018-2LB42-0LA0	1	1 unit	41B	0.333
5	3RT2018-2LF42-0LA0	1	1 unit	41B	0.327

¹⁾ 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.

²⁾ One 4-pole auxiliary switch block according to EN 50005 can be mounted from -40 to 70 °C; no clearance required.

³⁾ NC contact cannot be used because it is used for switching of the series resistor.

Accessories and spare parts, see page 2/44 onwards.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RT contactors with extended operating range, 3-pole

DC operation

Spring-type terminals

For screw fixing and snap-on mounting onto standard mounting rails

Solenoid coil fitted with varistor



3RT201.-2X.41-0LA2



3RT201.-2X.42-0LA2



3RT202.-2K.40



3RT202.-2X.40-0LA2

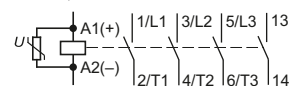
Rated data AC-2 and AC-3 t_{ij} : 70 °C					Auxiliary contacts		Rated control supply voltage U_s		SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
Operational current I_e at	Ratings of three-phase motors at				Ident No.	Version									
															
	400 V	230 V	400 V	500 V	690 V										
A	kW	kW	kW	kW		NO	NC	V DC	d						kg

3RT20 contactors for switching motors

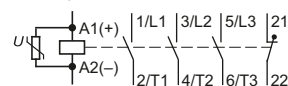
Size S00

With solid-state operating mechanism, with integrated varistor

• 1 NO, Ident No. 10



• 1 NC, Ident No. 01

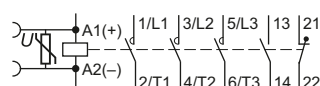


12	3	5.5	5.5	5.5	10 ¹⁾	1	--	24-34 72-125	5	3RT2017-2XB41-0LA2	1	1 unit	41B	0.310
									5	3RT2017-2XF41-0LA2	1	1 unit	41B	0.313
12	3	5.5	5.5	5.5	01 ¹⁾	--	1	24-34 72-125	5	3RT2017-2XB42-0LA2	1	1 unit	41B	0.310
									5	3RT2017-2XF42-0LA2	1	1 unit	41B	0.310
16	4	7.5	10	11	10 ¹⁾	1	--	24-34 72-125	5	3RT2018-2XB41-0LA2	1	1 unit	41B	0.310
									5	3RT2018-2XF41-0LA2	1	1 unit	41B	0.300
16	4	7.5	10	11	01 ¹⁾	--	1	24-34 72-125	5	3RT2018-2XB42-0LA2	1	1 unit	41B	0.340
									5	3RT2018-2XF42-0LA2	1	1 unit	41B	0.310

Size S0

With conventional operating mechanism¹⁾
(coupling contactors)

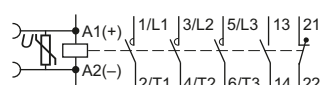
1 NO + 1 NC, Ident No. 11



17	4	7.5	10	11	11	1	1	24 110	2	3RT2025-2KB40	1	1 unit	41B	0.643
									5	3RT2025-2KF40	1	1 unit	41B	0.627
25	5.5	11	11	11	11	1	1	24 110	2	3RT2026-2KB40	1	1 unit	41B	0.643
									5	3RT2026-2KF40	1	1 unit	41B	0.629
32	7.5	15	18.5	18.5	11	1	1	24 110	5	3RT2027-2KB40	1	1 unit	41B	0.650
									5	3RT2027-2KF40	1	1 unit	41B	0.639

With solid-state operating mechanism

1 NO + 1 NC, Ident No. 11



17	4	7.5	10	11	11	1	1	24 110	5	3RT2025-2XB40-0LA2	1	1 unit	41B	0.612
									5	3RT2025-2XF40-0LA2	1	1 unit	41B	0.578
25	5.5	11	11	11	11	1	1	24 110	5	3RT2026-2XB40-0LA2	1	1 unit	41B	0.613
									5	3RT2026-2XF40-0LA2	1	1 unit	41B	0.583
32	7.5	15	18.5	18.5	11	1	1	24 110	5	3RT2027-2XB40-0LA2	1	1 unit	41B	0.617
									5	3RT2027-2XF40-0LA2	1	1 unit	41B	0.591
38	7.5	18.5	18.5	18.5	11	1	1	24 110	5	3RT2028-2XB40-0LA2	1	1 unit	41B	0.620
									5	3RT2028-2XF40-0LA2	1	1 unit	41B	0.594

¹⁾ 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.

Accessories and spare parts, see page 2/44 onwards.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RT contactors with extended operating range, 3-pole

DC operation

Spring-type terminals

For screw fixing and snap-on mounting onto standard mounting rails

Solenoid coil fitted with varistor



3RT203.-3X.40-0LA2



3RT204.-3X.40-0LA2

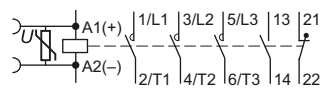
Rated data					Auxiliary contacts		Rated control supply voltage U_s	SD	Spring-type terminals for auxiliary and control circuits	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
AC-2 and AC-3 t_u : 70 °C					Ident No.	Version							
Operational current I_e at													
400 V													
230 V													
400 V													
500 V													
690 V													
A	kW	kW	kW	kW	NO	NC	V DC	d	Article No.				kg

3RT20 contactors for switching motors

Size S2

With solid-state operating mechanism

1 NO + 1 NC, Ident No. 11

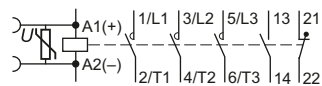


40	11	18.5	22	22	11	1	1	24	5	3RT2035-3XB40-0LA2	1	1 unit	41B	1.109
								110	5	3RT2035-3XF40-0LA2	1	1 unit	41B	1.115
50	15	22	30	22	11	1	1	24	5	3RT2036-3XB40-0LA2	1	1 unit	41B	1.110
								110	5	3RT2036-3XF40-0LA2	1	1 unit	41B	1.115
65	18.5	30	37	37	11	1	1	24	5	3RT2037-3XB40-0LA2	1	1 unit	41B	1.113
								110	5	3RT2037-3XF40-0LA2	1	1 unit	41B	1.117
80	22	37	37	45	11	1	1	24	5	3RT2038-3XB40-0LA2	1	1 unit	41B	1.109
								110	5	3RT2038-3XF40-0LA2	1	1 unit	41B	1.128

Size S3

With solid-state operating mechanism

1 NO + 1 NC, Ident No. 11



80	22	37	45	55	11	1	1	24	5	3RT2045-3XB40-0LA2	1	1 unit	41B	1.824
								110	5	3RT2045-3XF40-0LA2	1	1 unit	41B	1.817
95	22	45	55	75	11	1	1	24	5	3RT2046-3XB40-0LA2	1	1 unit	41B	1.826
								110	5	3RT2046-3XF40-0LA2	1	1 unit	41B	1.820
110	30	55	75	75	11	1	1	24	5	3RT2047-3XB40-0LA2	1	1 unit	41B	1.828
								110	5	3RT2047-3XF40-0LA2	1	1 unit	41B	1.748

Accessories and spare parts, see page 2/44 onwards.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RT contactors with extended operating range, 3-pole

DC operation

Spring-type terminals

For screw fixing onto standard mounting rails

Withdrawable operating mechanisms with integrated circuit (varistor)



3RT1055-2X. 46-0LA2



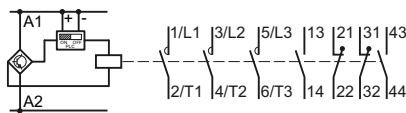
3RT1064-2X. 46-0LA2



3RT1075-2X. 46-0LA2

Size	Rated data according to IEC 60947-4-1 AC-2 and AC-3, t_u : Up to 70 °C Operational current I_e up to 400 V	Ratings of three-phase motors at 50 Hz and 400 V	Auxiliary contacts, lateral Version 	Rated control supply voltage U_s	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	kW		NO NC	V DC	d					kg

Solid-state operating mechanism with 24 ... 110 V DC control signal input
e.g. for control by PLC



Spring-type terminals
for coil and auxiliary
switch terminals



S6	115	55	2	2	24	5	3RT1054-2XB46-0LA2	1	1 unit	41B	3.336
					72	5	3RT1054-2XJ46-0LA2	1	1 unit	41B	3.326
					110	5	3RT1054-2XF46-0LA2	1	1 unit	41B	3.278
	150	75	2	2	24	5	3RT1055-2XB46-0LA2	1	1 unit	41B	3.411
					72	5	3RT1055-2XJ46-0LA2	1	1 unit	41B	3.265
					110	5	3RT1055-2XF46-0LA2	1	1 unit	41B	3.350
	185	90	2	2	24	5	3RT1056-2XB46-0LA2	1	1 unit	41B	3.420
					72	5	3RT1056-2XJ46-0LA2	1	1 unit	41B	3.259
					110	5	3RT1056-2XF46-0LA2	1	1 unit	41B	3.403
S10	225	110	2	2	24	5	3RT1064-2XB46-0LA2	1	1 unit	41B	6.470
					72	5	3RT1064-2XJ46-0LA2	1	1 unit	41B	6.462
					110	5	3RT1064-2XF46-0LA2	1	1 unit	41B	6.530
	265	132	2	2	24	5	3RT1065-2XB46-0LA2	1	1 unit	41B	6.482
					72	5	3RT1065-2XJ46-0LA2	1	1 unit	41B	6.700
					110	5	3RT1065-2XF46-0LA2	1	1 unit	41B	6.610
	300	160	2	2	24	5	3RT1066-2XB46-0LA2	1	1 unit	41B	6.607
					72	5	3RT1066-2XJ46-0LA2	1	1 unit	41B	6.599
					110	5	3RT1066-2XF46-0LA2	1	1 unit	41B	6.618
S12	400	200	2	2	24	5	3RT1075-2XB46-0LA2	1	1 unit	41B	10.340
					72	5	3RT1075-2XJ46-0LA2	1	1 unit	41B	10.095
					110	5	3RT1075-2XF46-0LA2	1	1 unit	41B	10.283
	500	250	2	2	24	5	3RT1076-2XB46-0LA2	1	1 unit	41B	10.850
					72	5	3RT1076-2XJ46-0LA2	1	1 unit	41B	1.034
					110	5	3RT1076-2XF46-0LA2	1	1 unit	41B	10.411

Accessories and spare parts, see page 2/44 onwards.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RH2 contactor relays with extended operating range

Overview

DC operation

IEC 60947-4-1, EN 60947-4-1

The contactor relays are finger-safe according to IEC 60529. 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 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 $1.25 \times U_s$ 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 $1.25 \times U_s$; the coils are fitted with suppressor diodes as standard. 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.

A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

Side-by-side mounting

Side-by-side mounting is permissible at ambient temperatures up to 70 °C.

Contactor relays with solid-state operating mechanism

Control and auxiliary circuits

The solenoid coils of these contactor relays have an extended coil operating range from 0.7 to $1.25 \times U_s$ and are fitted as standard with varistors to provide protection against overvoltage.

The contactor relays are energized via upstream control electronics which ensure the coil operating range of 0.7 to $1.25 \times U_s$ 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.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RH2 contactor relays with extended operating range

Selection and ordering data

DC operation

Spring-type terminals

For screw fixing and snap-on mounting onto standard mounting rails

Solenoid coil with surge suppression



3RH2122-2K.40



3RH2122-2K.40-0LA0

Rated operational current I_N /AC-15/AC-14 t_{01} : 70 °C at				Contacts		Rated control supply voltage U_s	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
230 V	400 V	500 V	690 V	Version								
A	A	A	A	NO	NC	V DC	d	Article No.				kg

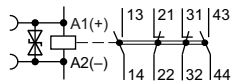
3RH21 contactor relays

Size S00

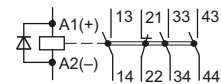
With conventional coil, fitted with suppressor diode

Terminal designations according to EN 50011

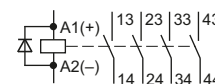
2 NO + 2 NC, Ident No. **22E**



3 NO + 1 NC, Ident No. **31E**



4 NO, Ident No. **40E**

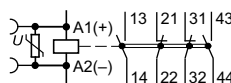


10	3	2	1	2	2 ¹⁾	24	5	3RH2122-2KB40	1	1 unit	41A	0.316
						110	2	3RH2122-2KF40	1	1 unit	41A	0.309
				3	1 ¹⁾	24		3RH2131-2KB40	1	1 unit	41A	0.316
				4	0 ¹⁾	24	5	3RH2140-2KB40	1	1 unit	41A	0.315

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	5	3RH2122-2LB40	1	1 unit	41A	0.320
						110	2	3RH2122-2LF40	1	1 unit	41A	0.317

¹⁾ It is not possible to mount an auxiliary switch block.

Accessories, see page 2/44 onwards.

Other voltages on request.

Contactors for Special Applications

Contactors for Railway Applications

SIRIUS 3RH2 contactor relays with extended operating range

DC operation

Spring-type terminals

For screw fixing 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	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
230 V	400 V	500 V	690 V	Version								
A	A	A	A	NO	NC	V DC	d	Article No.				kg

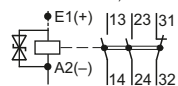
3RH21 contactor relays

Size S00

With series resistor, fitted with suppressor diode

Terminal designations according to EN 50011

2 NO + 1 NC, Ident No. **21X**

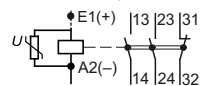


10	3	2	1	2	1 ¹⁾	24 110	5 5	3RH2122-2KB40-0LA0 3RH2122-2KF40-0LA0	1 1	1 unit 1 unit	41A 41A	0.331 0.322
----	---	---	---	---	-----------------	-----------	--------	--	--------	------------------	------------	----------------

With series resistor, fitted with varistor

Terminal designations according to EN 50011

2 NO + 1 NC, Ident No. **21X**

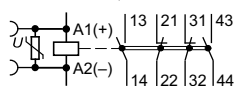


10	3	2	1	2	1 ¹⁾	24 110	2 2	3RH2122-2LB40-0LA0 3RH2122-2LF40-0LA0	1 1	1 unit 1 unit	41A 41A	0.332 0.323
----	---	---	---	---	-----------------	-----------	--------	--	--------	------------------	------------	----------------

With solid-state operating mechanism, with integrated varistor

Terminal designations according to EN 50011

2 NO + 2 NC, Ident No. **22E**



10	3	2	1	2	1 ¹⁾	24-34 72-125	5 5	3RH2122-2XB40-0LA2 3RH2122-2XF40-0LA2	1 1	1 unit 1 unit	41A 41A	0.310 0.310
----	---	---	---	---	-----------------	-----------------	--------	--	--------	------------------	------------	----------------

¹⁾ 4-pole auxiliary switch block according to EN 50005 can be mounted.

Accessories, see page 2/44 onwards.

Other voltages on request.

Contactors for Special Applications Contactors for Railway Applications

3TH4 contactor relays, 8-pole

Overview

Standards

IEC 60947-4-1, EN 60947-4-1

The contactor relays are finger-safe according to IEC 60529. 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 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 installations 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 × 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.

2

Selection and ordering data

Solenoid coil fitted with varistor

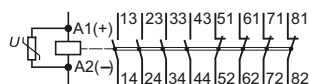


3TH4244-0L..

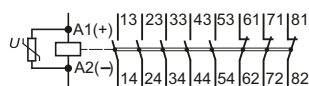
Contacts	Rated operational current				Contacts ¹⁾		Rated control supply voltage U_s	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	$I_e/AC-15/AC-14$				Ident No. acc. to EN 50011	Version							
	230 V	400 V	500 V	690 V					Article No.				
Number	A	A	A	A		NO NC	V DC	d					kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

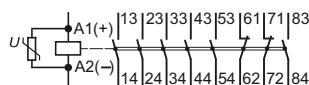
DC operation



8	10	6	4	2	44E	4	4	24 110	▶ 3TH4244-0LB4 ▶ 3TH4244-0LF4	1 1 unit 1 1 unit	41A 41A	0.682 0.644
---	----	---	---	---	-----	---	---	-----------	----------------------------------	----------------------	------------	----------------



8	10	6	4	2	53E	5	3	24 110	▶ 3TH4253-0LB4 ▶ 3TH4253-0LF4	1 1 unit 1 1 unit	41A 41A	0.692 0.648
---	----	---	---	---	-----	---	---	-----------	----------------------------------	----------------------	------------	----------------



8	10	6	4	2	62E	6	2	24 110	▶ 3TH4262-0LB4 ▶ 3TH4262-0LF4	1 1 unit 1 1 unit	41A 41A	0.674 0.660
---	----	---	---	---	-----	---	---	-----------	----------------------------------	----------------------	------------	----------------

¹⁾ Contacts not extendable.

Other voltages on request.

Accessories, see page 2/44 onwards.

Contactors for Special Applications

Contactors 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 IEC 60529 (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.

Ratings of three-phase motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

The power rating specifications of the contactors in kW are guide values for 4-pole standard motors at 50 Hz AC and specified voltage (e.g. 400 V). The actual starting and rated data of the motor to be switched must be considered when selecting the units.

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.

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 installations 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

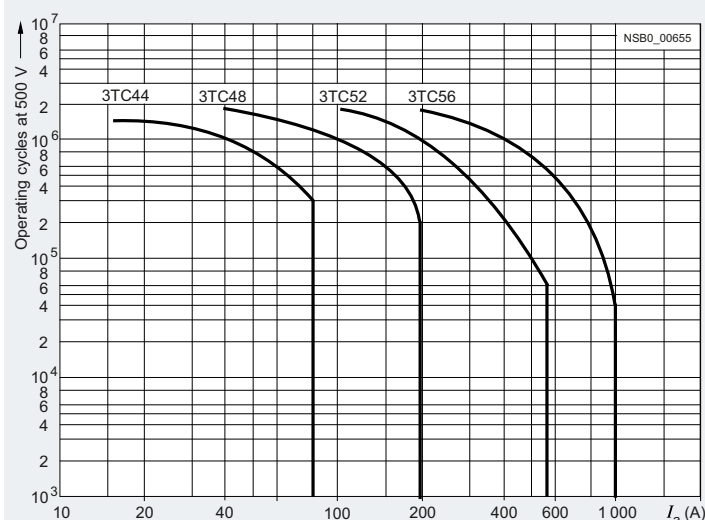
The solenoid coils of the contactors have an extended coil operating range from 0.7 to $1.25 \times U_s$ and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

3TC contactors for switching DC voltage, 1-pole and 2-pole

Type

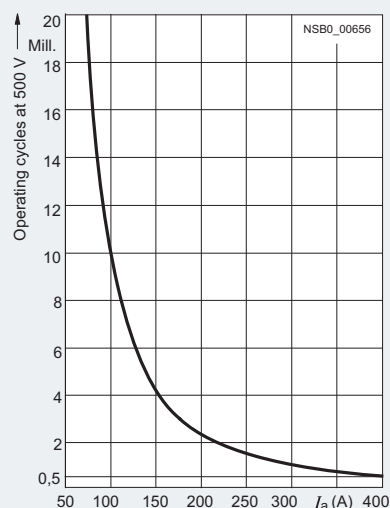
3TC44 to 3TC78

Contact endurance of the main contacts



3TC44 to 3TC56 contactors

Legend for the diagrams:

 I_a = breaking current

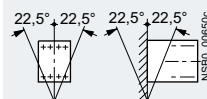
Contactor

Type
Size3TC44
23TC48
43TC52
83TC56
12

General data

Permissible mounting position

The contactors are designed for operation on a vertical mounting surface.



Mechanical endurance

Operating cycles

10 million

Electrical endurance

See endurance diagram above

Rated insulation voltage U_i (pollution degree 3)

V

800

1 000

Protective separation between the coil and the main contacts according to IEC 60947-1, Appendix N

V

Up to 300

Up to 660

Mirror contacts¹⁾

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
- During storage

°C

-25 ... +55

°C

-50 ... +80

Degree of protection acc. to IEC 60529

- Connecting terminals

IP00

Touch protection acc. to IEC 60529

Finger-safe with terminal covers

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

Rated data of the main contacts

Load rating with DC

Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)

- Rated operational currents I_e (at 55 °C)

Up to U_e 750 V A

32

75

220

400

- Minimum conductor cross-section

mm²

6

25

95

240

- Rated power at U_e
(≤ 220 V DC: one conducting path,
> 220 V DC: two conducting paths in series)

At 220 V kW

7

16.5

48

88

440 V kW

14

33

97

176

600 V kW

19.2

45

132

240

750 V kW

24

56

165

300

Utilization categories DC-3 and DC-5, shunt-wound and series-wound motors ($L/R \leq 15$ 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 DC: two conducting paths in series)

220 V kW

5

13

41

70

440 V kW

9

27

82

140

600 V kW

9

38

110

200

750 V kW

4

45

110

250

Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

Selection and ordering data

3TC44: For screw fixing and snap-on mounting onto 35 mm standard mounting rail

3TC48 to 3TC56: For screw fixing

Solenoid coil fitted with varistor

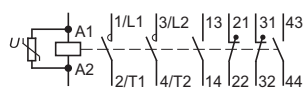


3TC48

Size	Utilization category	Rated operational current I_e at 750 V	Rated power of loads at				Auxiliary contacts ¹⁾ Version	Rated control supply voltage U_s	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			220 V	440 V	600 V	750 V				Article No.				kg
			kW	kW	kW	kW	NO	NC	V DC	d				

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	5	3TC4417-0LB4	1	1 unit	41B	1.322
	DC-3/DC-5	7.5	5	9	9	4			110	10	3TC4417-0LF4	1	1 unit	41B	1.304
4	DC-1	75	16.5	33	45	56	2	1 ²⁾	24	15	3TC4817-0LB4	1	1 unit	41B	4.700
	DC-3/DC-5	75	13	27	38	45			110	15	3TC4817-0LF4	1	1 unit	41B	4.620
8	DC-1	170	48	97	132	165	2	1 ²⁾	24	15	3TC5217-0LB4	1	1 unit	41B	10.435
	DC-3/DC-5	170	41	82	110	110			110	15	3TC5217-0LF4	1	1 unit	41B	10.334
12	DC-1	400	88	176	240	300	2	1 ²⁾	24	15	3TC5617-0LB4	1	1 unit	41B	30.000
	DC-3/DC-5	400	70	140	200	250			110	15	3TC5617-0LF4	1	1 unit	41B	21.837

¹⁾ The number of auxiliary contacts cannot be increased.

²⁾ One NC contact used for series resistor.

Other rated control supply voltages [according to page 2/78](#) on request.

Accessories

Accessories, see [Basic units of the 3TC contactors](#), from [page 2/75 onwards](#).

Spare parts

For contactors	Remarks	Rated control supply voltage U_s	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Size	Type	V DC	d					kg

Arc chutes

For contactors with extended operating range

2	3TC4417-OL..	With cutout for resistor mounting	5	3TY2442-0B	1	1 unit	41B	0.160
---	--------------	-----------------------------------	---	-------------------	---	--------	-----	-------

Solenoid coils

For contactors with extended operating range

2	3TC44	With series resistor, without varistor	24	3TY6443-0LB4	1	1 unit	41B	0.364
			110	3TY6443-0LF4	1	1 unit	41B	0.345
4	3TC48		24	3TY6483-0LB4	1	1 unit	41B	1.239
			110	3TY6483-0LF4	1	1 unit	41B	1.167

All spare parts not mentioned here are identical to those of the basic units of the 3TC contactors, see [page 2/78](#).

3TC contactors for switching DC voltage, 1-pole and 2-pole

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 IEC 60529. 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 "Rated data of the main contacts", page 2/73.

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 and $1.2 \times U_s$.

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 "Rated data of the main contacts", page 2/76.

Application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

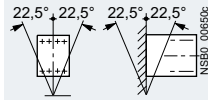
A version with an especially large actuating voltage is available for operation in electrically driven vehicles and in switchgear with a particularly large coil operating range (see page 2/80).

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

Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

Type		3TC74	3TC78
Design		1-pole contactors	2-pole contactors
General data			
Permissible mounting position			
The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance	Operating cycles	30 million	
Electrical endurance		See page 2/73	
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 according to IEC 60947-1, Appendix N	V	630	
Permissible ambient temperature	°C	-25 ... +55	
Degree of protection acc. to IEC 60529		IP00	
• Connecting terminals		Finger-safe with terminal covers	
Touch protection acc. to IEC 60529			
Rated data of the main contacts			
Load rating with DC			
Utilization category DC-1, switching resistive loads ($L/R \leq 1$ ms)			
• Rated operational current I_g /DC-1 (at 55 °C)	A	500	
• Minimum conductor cross-section	mm ²	2 x 150	
• Rated power			
At 220 V	kW	110	
(≤ 750 V DC: one conducting path,	kW	220	
> 750 V DC: two conducting paths in series)	kW	300	
	750 V	375	
	1 200 V	--	
	1 500 V	--	
		600	
		750	
• Critical currents, without arc extinction			
At 440 V	A	≤ 7	
600 V	A	≤ 13	
750 V	A	≤ 15	
	≤ 800 V	A	
	1 200 V	A	
	1 500 V	A	
		≤ 7	
		≤ 13	
		≤ 15	
Utilization categories DC-3 and DC-5, shunt-wound and series-wound motors ($L/R \leq 15$ ms)			
• Rated operational current I_g (at 55 °C)	A	400	
• Rated power at U_g			
At 110 V	kW	35	
220 V	kW	70	
440 V	kW	140	
600 V	kW	200	
750 V	kW	250	
1 200 V	kW	--	
1 500 V	kW	--	
		400	
		500	
Permissible rated current for regenerative braking at 110 ... 600 V	A	400	

Rated data of the auxiliary contacts, [see page 2/75](#).

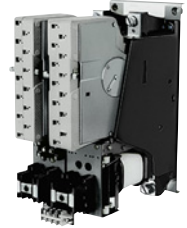
Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

Selection and ordering data



3TC74



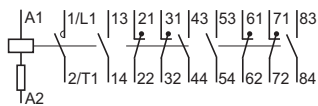
3TC78

Size	Utilization category ¹⁾	Operational current I_e	Ratings of DC motors at								Auxiliary contacts ²⁾	Rated control supply voltage U_s	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			110 V	220 V	440 V	600 V	750 V	1 200 V	1 500 V	Version								
										NO NC V								
			A	kW	kW	kW	kW	kW	kW	kW			d					kg

3TC74 1-pole contactors · Operational voltage up to 750 V

DC operation

Terminal designations acc. to EN 50005

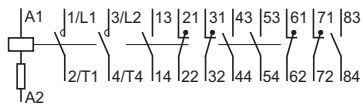


12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	24 DC 110 DC	15	3TC7414-0EB 3TC7414-0EF	1 1	1 unit 1 unit	41B 41B	10.597 10.650
----	------------	-----	----	----	-----	-----	-----	----	----	---	---	--------------	----	----------------------------	--------	------------------	------------	------------------

3TC78 2-pole contactors · Operational voltage up to 1 500 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 110 DC	15	3TC7814-0EB 3TC7814-0EF	1 1	1 unit 1 unit	41B 41B	22.860 23.490
----	------------	-----	----	----	-----	-----	-----	-----	-----	---	---	--------------	----	----------------------------	--------	------------------	------------	------------------

¹⁾ Permissible load for DC-1 utilization category, see detailed technical specifications in the reference manual "Switching Devices – Contactors and Contactor Assemblies", <https://support.industry.siemens.com/cs/ww/en/view/35554359>.

²⁾ The fitting of auxiliary switches cannot be altered on DC-operated contactors.

³⁾ Upper operating range limit at 230 V AC: $1.14 \times U_s$.

Other rated control supply voltages according to page 2/78 on request.

Spare parts, see page 2/80.

Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

Options

Rated control supply voltages, possible on request (change of the 10th and 11th digits of the Article No.)

Delivery time on request

Rated control supply voltage U_s	Contactor type	3TC44	3TC48	3TC52/3TC56	3TC74/3TC78
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 AC: 0.85 to $1.15 \times U_s$;
lower operating range limit according to IEC 60947.

²⁾ Upper operating range limit at 230 V AC: $1.14 \times U_s$.

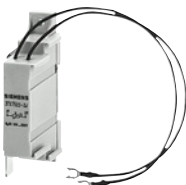
Accessories

For contactors		Version Auxiliary contacts		Auxiliary switch block LeftRight		SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		 					Article No.					
Size	Type	NO	NC			d						kg
Second auxiliary switch blocks (for AC operation only)												
4	3TC48	2nd auxiliary switch block, left				20	3TY6501-1K		1	1 unit	41B	0.047
		1	1		--							
		2nd auxiliary switch block, right				20	3TY6501-1L		1	1 unit	41B	0.042
		1	1	--								
8 and 12	3TC52, 3TC56	2nd auxiliary switch block, left				20	3TY6561-1K		1	1 unit	41B	0.085
		1	1		--							
		2nd auxiliary switch block, right				20	3TY6561-1L		1	1 unit	41B	0.081
		1	1	--								
Solid-state compatible auxiliary switch blocks												
	2 and 4	3TC44, 3TC48	For operation in dusty atmospheres and in solid-state circuits with rated operational currents I_e /AC-14 and DC-13 from 1 ... 300 mA at 3 ... 60 V			5	3TY7561-1UA00		1	1 unit	41B	0.055
			2nd auxiliary switch block, left or right (replacement for 3TY6561-1U, 3TY6561-1V)									
			1 CO contact									
5TY7561-1.												

5TY7561-1.

Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

For contactors		Version	Rated control supply voltage U_s		SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg		
Size	Type		V AC	V DC	d							
Surge suppressors · Varistors												
	2	3TC44 ¹⁾	Varistors²⁾ With line spacer, for mounting onto the coil terminal	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	24 ... 70 70 ... 150 150 ... 250 -- --	2 2 2 20 20	3TX7402-3G 3TX7402-3H 3TX7402-3J 3TX7402-3K 3TX7402-3L	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.014 0.015 0.015 0.023 0.023	
	4	3TC48	Varistors²⁾ For sticking onto the contactor base or for mounting separately	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	24 ... 70 70 ... 150 150 ... 250 -- --	2 5 2 5 5	3TX7462-3G 3TX7462-3H 3TX7462-3J 3TX7462-3K 3TX7462-3L	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.014 0.014 0.015 0.016 0.016	
	8 and 12	3TC52, 3TC56	Varistors For sticking onto the contactor base or for mounting separately	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	-- -- -- -- --	2 5 2 5 5	3TX7462-3G 3TX7462-3H 3TX7462-3J 3TX7462-3K 3TX7462-3L	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.014 0.014 0.015 0.016 0.016	
	8 and 12	3TC52, 3TC56	Varistors²⁾ For separate screw fixing or snapping onto TH 35 standard mounting rail	-- -- --	24 ... 70 70 ... 150 150 ... 250	5 5 5	3TX7522-3G 3TX7522-3H 3TX7522-3J	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B	0.090 0.072 0.089	
Surge suppressors · RC elements												
	4	3TC48	RC elements For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48 -- 48 ... 127 -- 127 ... 240 -- 240 ... 400 400 ... 600	-- 24 ... 70 -- 70 ... 150 -- 150 ... 250 -- --	20 5 2 5 2 5 2 5	3TX7462-3R 3TX7522-3R 3TX7462-3S 3TX7522-3S 3TX7462-3T 3TX7522-3T 3TX7462-3U 3TX7462-3V	1 1 1 1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B 41B 41B 41B	0.084 0.085 0.088 0.090 0.091 0.089 0.095 0.089	
	8 and 12	3TC52, 3TC56	RC elements For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	-- -- -- -- --	5 5 5 5 5	3TX7522-3R 3TX7522-3S 3TX7522-3T 3TX7522-3U 3TX7522-3V	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.085 0.090 0.089 0.088 0.084	
Surge suppressors · Diodes												
	4 to 12	3TC48, 3TC52, 3TC56	Diode assemblies³⁾ (Diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	2	3TX7462-3D	1	1 unit	41B	0.014	

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		Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.		
Size	Type		d					kg		
Terminal covers										
	6	3TC48	For protection against inadvertent contact with exposed busbar connections	M6	5	3TX6506-3B	1	1 unit	41B	0.076
	8 and 12	3TC52, 3TC56	Can be screwed on free screw end; covers one busbar connection (1 set = 6 units)	M10	5	3TX6546-3B	1	1 unit	41B	0.278

3TX6526-3B

Contactors for Special Applications

3TC contactors for switching DC voltage, 1-pole and 2-pole

Spare parts

For contactors	Version	Auxiliary contacts	Auxiliary switch block Left	Right	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Size	Type	NO	NC		d	Article No.				kg

Auxiliary switch blocks

3TY6561-1A

For lateral mounting

2 and 4	3TC44, 3TC48	Auxiliary switch block (replacement for 3TY6 501- 1A/-1B)	1	1		20	3TY6501-1AA00	1	1 unit	41B	0.055
8 and 12	3TC52, 3TC56	Auxiliary switch block, left	1	1		20	3TY6561-1A	1	1 unit	41B	0.081
		Auxiliary switch block, right	1	1	--		20	3TY6561-1B	1	1 unit	41B
12	3TC74	Auxiliary switch block	4	4		5	3TY2741-2J	1	1 unit	41B	0.271
12	3TC78	Auxiliary switch block, left	2	2		20	3TY2781-2C	1	1 unit	41B	0.193
		Auxiliary switch block, right	2	2	--		15	3TY2781-2D	1	1 unit	41B

For contactors	Version	Rated control supply voltage U_s	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		V AC/DC	d					kg

Surge suppressors · Varistors

12	3TC7	For sticking onto the contactor base	24 110	15 10	3TX2746-2F 3TX2746-2G	1 1	1 unit 1 unit	41B 41B	0.012 0.050
----	------	---	-----------	----------	--	--------	------------------	------------	----------------

For contactors	Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Size	Type	d					kg

Solenoid coils

DC operation¹⁾

2	3TC44	--	3TY6443-0B..				
4	3TC48		3TY6483-0B..				
8	3TC52		3TY6523-0B..				
12	3TC56		3TY6563-0B..				

AC operation¹⁾

2	3TC44	--	3TY7403-0A..				
4	3TC48		3TY6483-0A..				
8	3TC52		3TY6523-0A..				
12	3TC56		3TY6566-0A..				

Contacts with fixing parts



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)	5	3TY2440-0A	1	1 unit	41B	0.065
4	3TC48		5	3TY2480-0A	1	1 unit	41B	0.102
8	3TC52		5	3TY2520-0A	1	1 unit	41B	0.233
12	3TC56		5	3TY2560-0A	1	1 unit	41B	0.421
12	3TC7	Main contacts (1 set) For 3TC78: 2 units required per contactor	5	3TY2740-0E	1	1 unit	41B	0.357

Arc chutes

	2	3TC44	Arc chutes, 2-pole	15	3TY2442-0A	1	1 unit	41B	0.160
	4	3TC48		15	3TY2482-0A	1	1 unit	41B	0.470
	8	3TC52		15	3TY2522-0A	1	1 unit	41B	1.100
	12	3TC56		15	3TY2562-0A	1	1 unit	41B	2.080
	12	3TC7	For 3TC78: 2 units required per contactor	15	3TY2742-0C	1	1 unit	41B	3.856

¹⁾ For rated control supply voltages, see page 2/78.

The 10th and 11th digits of the article number must be supplemented accordingly.

Switching Devices – Contactors and Contactor Assemblies

Contactor Relays and Relays

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components
 Catalog IC 10, see www.siemens.com/ic10
 Home page, see www.siemens.com/sirius

Industry Mall, see www.siemens.com/product?3RH_3TH
 Conversion tool, see www.siemens.com/sirius/conversion-tool

The advantages at a glance



S00
3RH21



3TH42



3TH43

Size
Type

SIRIUS 3RH2 contactor relays

4-pole • Screw or spring-type terminals

8-pole

4-pole, latched

Coupling contactor relays • Coils for control by PLC

Contactor relays for railway applications • Coils with extended voltage range

Article No.

Page

3RH21 [2/88](#)

3RH22 [2/88](#)

3RH24 [2/88](#)

3RH21 [2/89](#)

3RH21

3TH4 contactor relays

8-pole • Screw terminals

10-pole

Contactor relays for railway applications • Coils with extended voltage range

3TH42 [2/94](#)

3TH43 [2/95](#)

3TH42

Accessories for SIRIUS 3RH2 contactor relays

Auxiliary switch blocks • On front
• Lateral

3RH29 [2/52](#)

3RH29 [2/56](#)

Surge suppressors • On front

3RT2916

Additional load module • On front

3RT2916

Note:

Safety characteristics for contactors, see www.siemens.com/ic10, Chapter 16 "Standards and approvals".

Accessories for SIRIUS 3RH2 contactor relays, see www.siemens.com/ic10 Chapter 3

Switching Devices – Contactors and Contactor Assemblies

Contactor Relays and Relays

Introduction

The advantages at a glance



3RQ3



3RS18

Type

Article No.

Page

SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with relay output (not plug-in)

- Width 6.2 mm, 1 CO, versions with hard gold-plated contacts optionally available
 - Output coupling links
 - Input coupling links

3RQ301
3RQ303
[2/104](#)
[2/104](#)

Coupling relays with plug-in relays

- Width 6.2 mm, 1 CO, versions with hard gold-plated contacts optionally available
 - Output coupling links

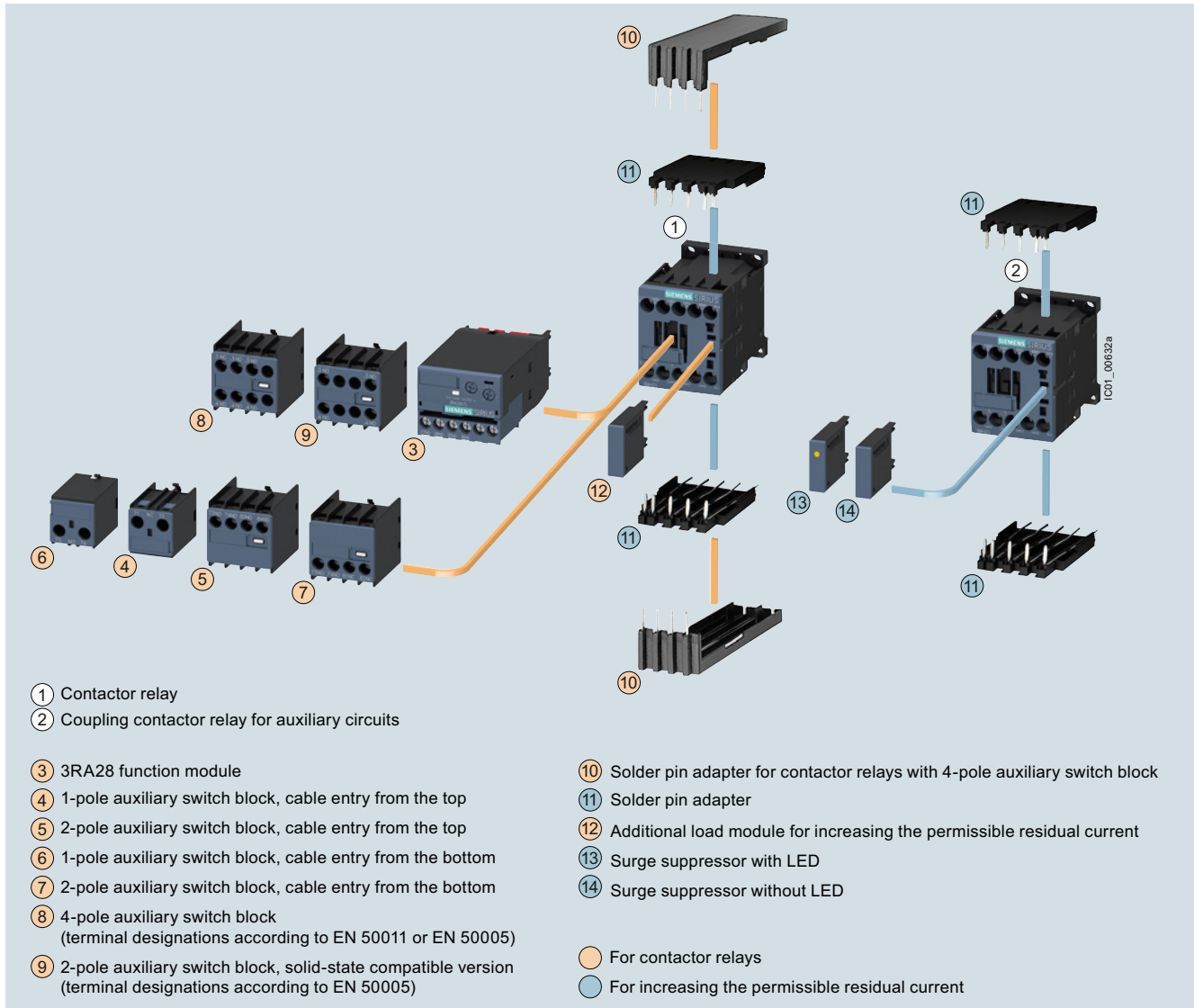
3RQ311[2/104](#)

Coupling relays with semiconductor output (not plug-in)

- Width 6.2 mm, output 1 semiconductor, triac or transistor
 - Output coupling links
 - Input coupling links

3RQ305, 3RQ306
3RQ307
[2/104](#)
[2/104](#)

Overview

Contactor relays
Size S00 with accessories


Contactor Relays

SIRIUS 3RH2 contactor relays, 4-pole 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 are available with screw 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 IEC 60529.

The 3RH21 coupling contactor relays for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

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.

Coupling contactor relays have a low power consumption and an extended solenoid coil operating range.

Depending on the version, the solenoid coils of the coupling contactor relays are supplied without overvoltage damping (versions 3RH21...-HB40 or 3RH21...-MB40-0KT0) or with a diode or suppressor diode connected as standard.

Accessories

The accessories for the 3RT2 contactors in size S00 can also be used for the 3RH2 contactor relays ([see from page 2/44 onwards](#)).

Auxiliary switch blocks

The 3RH21 contactor relays (with the exception of coupling contactor relays) can be expanded by up to four contacts by the addition of mounted 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.

The conventional front auxiliary contacts fulfill the characteristics of positively driven operation and are therefore suitable for safety applications.

Article No. scheme

Product versions		Article number													
SIRIUS contactor relays		3RH2 ☐ ☐ ☐ - ☐ ☐ ☐ ☐ 0 - ☐ ☐ ☐ ☐													
Device type	e.g. 1 = 4-pole motor contactor	☐	☐	☐	-	☐	☐	☐	☐	0	-	☐	☐	☐	☐
Number of NO contacts	e.g. 2 = 2 NO	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Number of NC contacts	e.g. 2 = 2 NC	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Type of electrical connection	Screw terminals							1	☐	☐	☐	☐	☐	☐	☐
	Spring-type terminals							2	☐	☐	☐	☐	☐	☐	☐
Operating range/solenoid coil circuit	e.g. A = AC standard/without coil circuit							☐	☐	☐	☐	☐	☐	☐	☐
Rated control supply voltage	e.g. P0 = 50/60 Hz 230 V AC								☐	☐	☐	☐	☐	☐	☐
Special version													☐	☐	☐
Example		3RH2	1	2	2	-	1	A	P	0	0				

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

Technical specifications

More information

Technical specifications, see <https://support.industry.siemens.com/cs/ww/en/ps/16188/td>
 FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16188/faq>

Manuals, see

- System Manual "SIRIUS – System Overview", <https://support.industry.siemens.com/cs/de/en/view/60311318>
- Manual "SIRIUS – SIRIUS 3RT Contactors/Contactor Assemblies", <https://support.industry.siemens.com/cs/de/en/view/60306557>

Type

Size

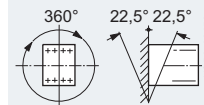
Contactor relays

3RH2

S00

Permissible mounting position

The contactor relays are designed for operation on a vertical mounting surface.



Upright mounting position



Special version required

with the exception of 3RH21*X* and 3RT201*X*

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:

- ZH1/457
- 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 mounted auxiliary switch block (permanently mounted) according to:

- ZH1/457
- 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, control circuit devices and switching elements; 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 freewheel diodes.

The characteristic curves apply to:

- 3RH21/3RH22 contactor relays¹⁾
- 3RH24 latched contactor relays
- 3RH2911 auxiliary switch blocks¹⁾
- Auxiliary switch blocks for snapping onto the front, max. 4-pole, and for mounting onto the side in size S00

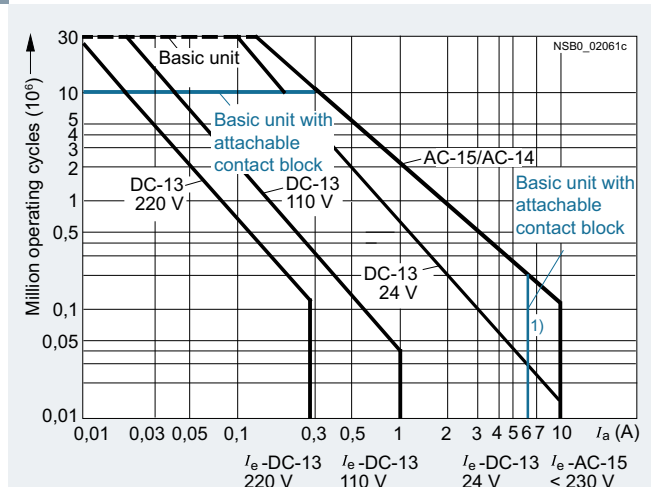


Diagram legend:

I_a = Breaking current

I_e = Rated operational current

¹⁾ 3RH22, 3RH2911: I_e = 6 A for AC-15/AC-14 and DC-13.

Contactor Relays

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

		Contactor relays		
Type		3RH21	3RH22	3RH24
Size		S00		
General data				
Mechanical endurance				
• Basic units	Operating cycles	30 million		5 million
• Basic unit with mounted 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 coil and contacts in the basic unit, according 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 60529				
• On front		IP20 (screw terminals and spring-type terminals)		
• Connecting terminal		IP20 (screw terminals and spring-type terminals)		
Touch protection acc. to IEC 60529		Finger-safe (screw terminals and spring-type terminals)		
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		

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

			Contactor relays	
Type	3RH2			
Size	S00			
Rated data of the auxiliary contacts				
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	

Contactor Relays

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

Selection and ordering data

DC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



3RH2422-1X.40

Rated operational current I_e /AC-15/AC-14 at 230 V	Contacts		Rated control supply voltage U_s	SD	Screw terminals		SD	Spring-type terminals		Weight per PU approx.
	Ident No.	Version								
					Article No.			Article No.		
A		NO NC V DC		d			d			kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

• Latched

Terminal designations according to EN 50011

10	22E	2	2	24	5	3RH2422-1XB40-0LA2	--	0.584
				110	5	3RH2422-1XF40-0LA2	--	0.584

Other voltages on request.

Accessories, [see page 2/44 onwards](#).

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

DC operation for direct control from the PLC

- Coupling contactor relays with adapted power consumption
- Suitable for solid-state PLC outputs
- Cannot be expanded with auxiliary switch blocks



3RH21...-2..B40

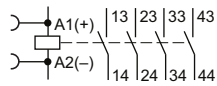
Rated operational current I_e /AC-15/ AC-14 at 230 V	Auxiliary contacts Ident No. acc. to EN 50011	Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Article No.				
A	NO	NC	d					kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

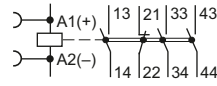
Size S00**Diode, varistor or RC element, attachable**

Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)

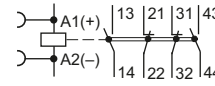
4 NO, Ident No. **40E**



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	--	5	3RH2140-2HB40	1	1 unit	41A	0.314
	31E	3	1	5	3RH2131-2HB40	1	1 unit	41A	0.316
	22E	2	2	5	3RH2122-2HB40	1	1 unit	41A	0.312

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	--	5	3RH2140-2MB40-0KT0	1	1 unit	41A	0.319
	31E	3	1	5	3RH2131-2MB40-0KT0	1	1 unit	41A	0.319
	22E	2	2	5	3RH2122-2MB40-0KT0	1	1 unit	41A	0.314

Contactor Relays

SIRIUS 3RH2 contactor relays, 4-pole and 8-pole

DC operation for direct control from the PLC

- Coupling contactor relays with adapted power consumption
- Suitable for solid-state PLC outputs
- Cannot be expanded with auxiliary switch blocks



3RH21...-2..B40

Rated operational current I_{th} /AC-15/ AC-14 at 230 V	Auxiliary contacts Ident No. acc. to EN 50011	Version	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Article No.				kg
A		NO NC	d					

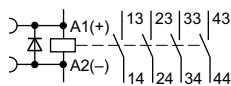
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Size S00

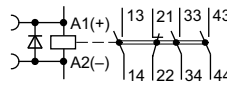
With integrated coil circuit (diode)

Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)

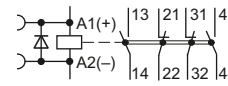
4 NO, Ident No. **40E**



3 NO + 1 NC, Ident No. **31E**



2 NO + 2 NC, Ident No. **22E**



Rated control supply voltage $U_s = 24 \text{ V DC}$,

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	--	►	3RH2140-2JB40	1	1 unit	41A	0.315
	31E	3	1	►	3RH2131-2JB40	1	1 unit	41A	0.317
	22E	2	2	►	3RH2122-2JB40	1	1 unit	41A	0.316

Rated control supply voltage $U_s = 24 \text{ V DC}$,

Operating range **0.85 to 1.85 x U_s**

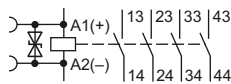
Power consumption of the solenoid coils **1.6 W** at 24 V

10	40E	4	--	5	3RH2140-2VB40	1	1 unit	41A	0.319
	31E	3	1	5	3RH2131-2VB40	1	1 unit	41A	0.320
	22E	2	2	5	3RH2122-2VB40	1	1 unit	41A	0.330

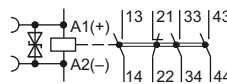
With integrated coil circuit (suppressor diode)

Terminal designations according to EN 50011 (auxiliary switch blocks cannot be mounted)

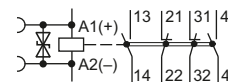
4 NO, Ident No. **40E**



3 NO + 1 NC, Ident No. **31E**



2 NO + 2 NC, Ident No. **22E**



Rated control supply voltage $U_s = 24 \text{ V DC}$,

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	--	5	3RH2140-2KB40	1	1 unit	41A	0.315
	31E	3	1	►	3RH2131-2KB40	1	1 unit	41A	0.316
	22E	2	2	►	3RH2122-2KB40	1	1 unit	41A	0.316

Rated control supply voltage $U_s = 24 \text{ V DC}$,

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	--	5	3RH2140-2SB40	1	1 unit	41A	0.316
	31E	3	1	5	3RH2131-2SB40	1	1 unit	41A	0.314
	22E	2	2	5	3RH2122-2SB40	1	1 unit	41A	0.320

Other voltages on request.

Accessories, [see page 2/44 onwards](#).

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 IEC 60529.

Note:

The 3TH42 and 3TH43 contactor relays feature positively-driven operation in accordance with IEC 60947-5-1, Ed. 3.1.

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 particular contactor relays.

Contact reliability

High contact stability at low voltages and currents as a result of 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 page 2/97).

Note:

The OFF-delay times of the NO contacts and the ON-delay times of the NC contacts increase if the contactor coils are attenuated against voltage peaks (suppression diode 6x to 10x; diode assembly 2x to 6x, varistor +2 to 5 ms).

Mounting

Note:

With 3TH4 contactor relays with AC operation, an overvoltage of $1.1 \times U_s$, an ambient temperature $\geq 45^\circ\text{C}$ and 100% ON-period of all contactors, a minimum clearance of 5 mm between the contactors shall be observed in the case of side-by-side mounting.

Technical specifications

Contactor relays

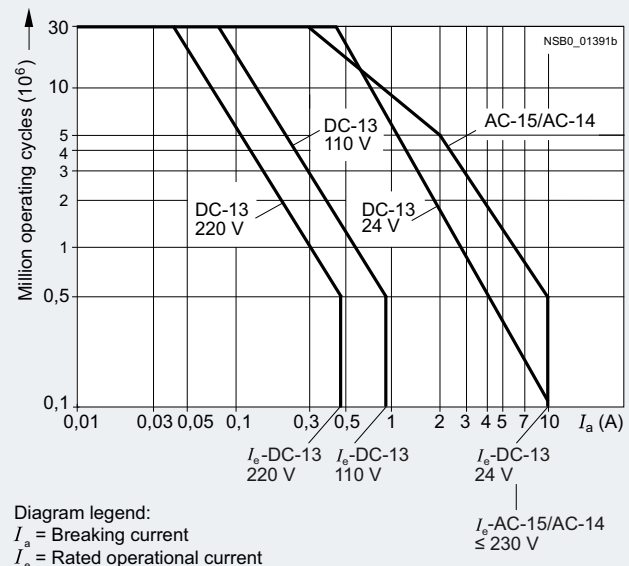
Type **3TH42, 3TH43**

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.

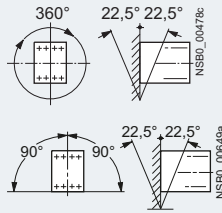
If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary.

RC elements or freewheel diodes are suitable as protective measures for the circuits.



Contactor Relays

3TH4 contactor relays, 8-pole and 10-pole

Contactor relays		Type	3TH42	3TH43
General data				
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 According to IEC 60947-1, Appendix N		V	Up to 500	
Permissible ambient temperature • During operation • During storage		°C	-25 ... +55	
		°C	-55 ... +80	
Degree of protection acc. to IEC 60529 • On front • Connecting terminal			IP20 (with screw terminals) IP20 (with screw terminals)	
Touch protection acc. to IEC 60529			Finger-safe (for screw terminals)	
Shock resistance • Rectangular pulse - AC operation - DC operation • Sine pulse - AC operation - DC operation		$\frac{g}{ms}$ $\frac{g}{ms}$ $\frac{g}{ms}$ $\frac{g}{ms}$	7.7/5 and 4.4/10 9.3/5 and 5.4/10 12/5 and 6.8/10 14.7/5 and 8.5/10	

3TH4 contactor relays, 8-pole and 10-pole

Contactor relays	Type	3TH42, 3TH43	
Rated data of the auxiliary contacts			
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			
According 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	

Contactor Relays

3TH4 contactor relays, 8-pole and 10-pole

Selection and ordering data

8-pole contactor relays

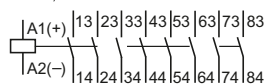
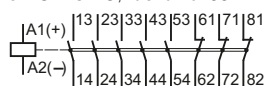
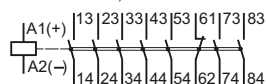
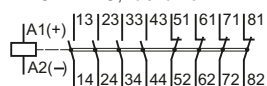
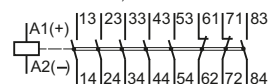
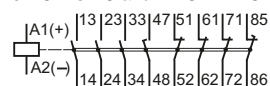


3TH4244-0BB4

Contacts	Rated operational current I_e /AC-15/AC-14 at				Contacts		SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident No. acc. to EN 50011	Version						
Number	A	A	A	A				Article No.				kg
						NO NC NO NC d						

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

8 NO, Ident No. **80E**5 NO + 3 NC, Ident No. **53E**7 NO + 1 NC, Ident No. **71E**4 NO + 4 NC, Ident No. **44E**6 NO + 2 NC, Ident No. **62E**3 NO + 3 NC and 1 NO + 1 NC make-before-break, Ident No. **44E, U**

DC operation, rated control supply voltage $U_s = 24$ V DC

8	10	6	4	2								
					80E	8	--	--	--	▶	3TH4280-0BB4	1 1 unit 41A 0.663
					71E	7	1	--	--	▶	3TH4271-0BB4	1 1 unit 41A 0.640
					62E	6	2	--	--	▶	3TH4262-0BB4	1 1 unit 41A 0.656
					53E	5	3	--	--	▶	3TH4253-0BB4	1 1 unit 41A 0.649
					44E	4	4	--	--	▶	3TH4244-0BB4	1 1 unit 41A 0.666
					44E, U	3	3	1	1	▶	3TH4293-0BB4	1 1 unit 41A 0.660

¹⁾ Operating range at 220 V: 0.85 to 1.1 x U_{Si} ;
lower operating range limit according to IEC 60947.

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.

Other voltages according to page 2/96 on request.

Accessories, see page 2/97.

3TH4 contactor relays, 8-pole and 10-pole

10-pole contactor relays

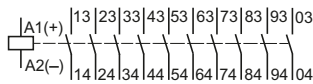
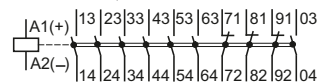
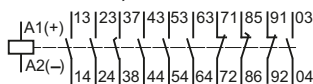


3TH4355-0B..

Contacts	Rated operational current I_e /AC-15/AC-14 at				Contacts	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	230 V	400 V	500 V	690 V							
					Ident No. acc. to EN 50011	Version	Article No.				
Number	A	A	A	A							kg

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

10 NO, Ident No. **100E**7 NO + 3 NC, Ident No. **73E**6 NO + 2 NC and 1 NO + 1 NC make-before-break,
Ident No. **73E, U**DC operation, rated control supply voltage $U_s = 24$ V DC

10	10	6	4	2	100E	10	--	--	--	▶	3TH4310-0BB4	1	1 unit	41A	0.709
					91E	9	1	--	--	▶	3TH4391-0BB4	1	1 unit	41A	0.706
					82E	8	2	--	--	▶	3TH4382-0BB4	1	1 unit	41A	0.702
					73E	7	3	--	--	▶	3TH4373-0BB4	1	1 unit	41A	0.692
					73E, U	6	2	1	1	▶	3TH4346-0BB4	1	1 unit	41A	0.708
					64E	6	4	--	--	▶	3TH4364-0BB4	1	1 unit	41A	0.727
					55E	5	5	--	--	▶	3TH4355-0BB4	1	1 unit	41A	0.702
					55E, U	4	4	1	1	▶	3TH4394-0BB4	1	1 unit	41A	0.703

¹⁾ Operating range at 220 V: 0.85 to 1.1 x U_s ;
lower operating range limit according to IEC 60947.

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.

Other voltages according to page 2/96 on request.

Accessories, see page 2/97.

Contactor Relays

3TH4 contactor relays, 8-pole and 10-pole

Options

Rated control supply voltages, possible on request (change of the 10th and 11th digits of the Article No.)

Delivery time on request

	Contactor type	3TH42/3TH43
Rated control supply voltage U_s	Control supply voltage at	

AC operation

Solenoid coils for 50 Hz AC

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⁾

Solenoid coils for 50 and 60 Hz AC

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

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 .

	Contactor type	3TH42/3TH43
Rated control supply voltage U_s		

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

Contactor Relays 3TH4 Contactor Relays, 8-pole and 4-pole

Accessories for 3TH4 contactor relays

Selection and ordering data

Version	Rated control supply voltage U_s	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	AC V	DC V	d				kg

Surge suppressors¹⁾ for 3TH4 contactor relays



3TX7402-3.

Noise suppression diodes With line spacer, for mounting onto the coil terminal	--	24 ... 250	2	3TX7402-3A	1	1 unit	41B	0.014
Diode assemblies (Diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal	--	24 ... 250	2	3TX7402-3D	1	1 unit	41B	0.015
Varistors²⁾ With line spacer, for mounting onto the coil terminal	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	24 ... 70 70 ... 150 150 ... 250 -- --	2 2 2 20 20	3TX7402-3G 3TX7402-3H 3TX7402-3J 3TX7402-3K 3TX7402-3L	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.014 0.015 0.015 0.023 0.023
RC elements With line spacer, for mounting onto the coil terminal	24 ... 48 48 ... 127 127 ... 240 240 ... 400 400 ... 600	24 ... 70 70 ... 150 150 ... 250 -- --	2 2 2 5 20	3TX7402-3R 3TX7402-3S 3TX7402-3T 3TX7402-3U 3TX7402-3V	1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B 41B	0.025 0.024 0.021 0.024 0.024
Covers for switch position indicator	--	--	X	3TX4210-0P	1	1 unit	41B	0.001

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 (suppression diode 6x to 10x; diode assembly 2x to 6x, varistor +2 to 5 ms).

²⁾ Includes the peak value of the alternating voltage on the DC side.

For contactors	Version	Rated control supply voltage U_s 50/60 Hz AC	Time setting range (minimum times)	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		V	s	d	Article No.				kg

ON-delay devices



3TX4180-0A

3TH42, 3TH43	NTC thermistors Time tolerance +100 %, -50 %	220 ... 230	0.1	5	3TX4180-0A	1	1 unit	41B	0.012
-----------------	---	-------------	-----	---	-------------------	---	--------	-----	-------

Coupling links for control by PLC for 3TH4 contactor relays

3TX4090
Mounted on contactor

3TH42, 3TH43	Operating range: 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC • for direct mounting on the contactor coil - Without surge suppressor - With surge suppressor			15 2	3TX4090-0C 3TX4090-0D	1 1	1 unit 1 unit	41B 41B	0.055 0.057
-----------------	--	--	--	---------	--	--------	------------------	------------	----------------

For contactors	Rated control supply voltage U_s	OFF-delay (minimum times)	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type	50/60 Hz AC V	DC V	s	d	Article No.			kg

OFF-delay devices for contactors with DC operation



3TX4701-0AN1

Bridging of voltage interruptions up to 1.2 sec										
3TH42...-0BF4	110	--	0.15 or 0.3	2	3TX4701-0AN1	1	1 unit	41B	0.168	
3TH43...-0BF4										
3TH42...-0BM4	220	--	0.6 or 1.2	2		3TX4701-0AN1	1	1 unit	41B	0.168
3TH43...-0BM4										
3TH42...-0BP4	230	--	0.6 or 1.2	2	3TX4701-0AN1	1	1 unit	41B	0.168	
3TH43...-0BP4										
3TH42...-0BB4	--	24	0.4 or 0.8	15	3TX4701-0BB4	1	1 unit	41B	0.180	
3TH43...-0BB4										

* You can order this quantity or a multiple thereof.

Coupling Relays

SIRIUS 3RQ3 coupling relays, narrow design

Overview



SIRIUS 3RQ3 coupling relays

SIRIUS 3RQ3 coupling relays in narrow design are used for coupling control signals from and to a controller, and they are available in different versions:

- Coupling relays with relay output (not plug-in)
- Coupling relays with plug-in relays
- Coupling relays with semiconductor output (not plug-in)

Coupling relays with relay output (not plug-in)

AC and DC operation

IEC 60947-5-1, EN 60947-5-1

The input and output coupling relays differ with regard to the positioning of the terminals and the LEDs.

Coupling relays with plug-in relays

AC and DC operation

IEC 60947-1

The coupling relays are plug-in, so the relay can be replaced quickly at the end of its service life without detaching the wiring.

Coupling relays with semiconductor output (not plug-in)

AC and DC operation

IEC 60947-1, EN 60664-1 and EN 50005;
coupling relays with semiconductor output: EN 60747-5;
Programmable controllers: IEC 61131-2

The input and output coupling relays differ with regard to the positioning of the terminals and the LEDs.

The coupling relays with semiconductor output have extremely high contact reliability, so they are especially suitable for electronic systems.

For test purposes, versions are available with manual-0-automatic switches.

SIRIUS 3RQ3 coupling relays, narrow design

Article No. scheme

Product versions		Article number	
Coupling relays with relay output (not plug-in)		3RQ30 □ 8 – □ A □ 0 □	
Design and type of output	Output coupler, without manual/automatic switch	1	
	Input coupler	3	
Type of electrical connection	Screw terminals	1	
	Spring-type terminals (push-in)	2	
Control supply voltage	24 V AC/DC		B
	115 V AC/DC		E
	230 V AC/DC		F
Material of switching contacts	e.g.		
	0 = AgSnO2		□
	1 = AgSnO2 hard gold-plated		□
Example		3RQ30 1 8 – 1 A B 0 1	
Product versions		Article number	
Coupling relays with relay output (not plug-in)		3RQ30 1 8 – 2 A □ 0 8 – 0 A A 0	
Railway version with extended operating range 0.7 ... 1.2 x U _S			
Control supply voltage	24 V DC		M
	110 V DC		N
Example		3RQ30 1 8 – 2 A M 0 8 – 0 A A 0	
Product versions		Article number	
Coupling relays with plug-in relays		3RQ31 1 8 – □ A □ 0 □	
Type of electrical connection	Screw terminals	1	
	Spring-type terminals (push-in)	2	
Control supply voltage	24 V AC/DC		B
	115 V AC/DC		E
	230 V AC/DC		F
	24 V DC		M
Material of switching contacts	AgSnO2		0
	AgSnO2 hard gold-plated		1
Example		3RQ31 1 8 – 1 A B 0 1	
Product versions		Article number	
Coupling relays with semiconductor output (not plug-in)		3RQ30 □ □ – □ S □ □ 0	
	Current carrying capacity of the semiconductor output		Control supply voltage
			Switching voltage of the semiconductor output
Output coupler	• Without manual/automatic switch		
	1 mA ... 0.5 A	3RQ30 5 0 – □ S M 5 0	11 ... 30 V DC
	5 mA ... 2 A	3RQ30 5 2 – □ S M 3 0	11 ... 30 V DC
	1 mA ... 2 A	3RQ30 5 2 – □ S M 4 0	11 ... 30 V DC
	5 mA ... 2 A	3RQ30 5 2 – □ S M 5 0	11 ... 30 V DC
	1 mA ... 3 A	3RQ30 5 3 – □ S G 3 0	110 ... 230 V AC/DC
	5 mA ... 5 A	3RQ30 5 5 – □ S M 3 0	11 ... 30 V DC
	• With manual/automatic switch	3RQ30 6 5 – □ S M 3 0	11 ... 30 V DC
	5 mA ... 5 A		
Input coupler	10 mA ... 0.5 A	3RQ30 7 0 – □ S B 3 0	11 ... 30 V AC/DC
		3RQ30 7 0 – □ S G 3 0	110 ... 230 V AC/DC
Type of electrical connection	Screw terminals	1	
	Spring-type terminals (push-in)	2	
Example		3RQ30 7 0 – 1 S B 3 0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Coupling Relays

SIRIUS 3RQ3 coupling relays, narrow design

Benefits

General

- All versions with screw or spring-type terminals (push-in technology)
- TOP wiring with spring-type terminals (push-in) for quick and reliable wiring
- Reduced space requirement in the control cabinet thanks to a consistent width of 6.2 mm
- Reduced inventory due to fewer variants
- Clearly visible functional state of the coupling relay by green LED
- Integrated reverse polarity protection and EMC arc-suppression diode
- Standardized accessories across the entire 3RQ3 series
- Universal bridging option using connecting combs for all terminals
- Galvanic isolation plate for isolating different voltages for neighboring units
- Clip-on labels available as set for individual labeling

Coupling relays with relay output (not plug-in)

- Permanently soldered relays for enhanced contact reliability
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

Coupling relays with plug-in relays

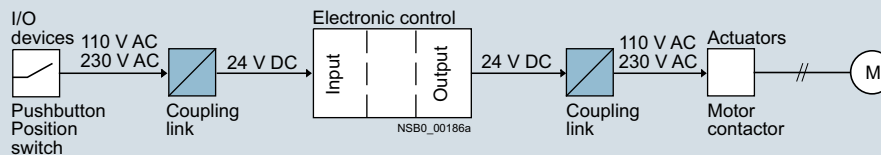
- Fast replacement of the relays with existing wiring
- Tested complete units → lower assembly time
- Individual relays available as spare parts
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

Coupling relays with semiconductor output (not plug-in)

- Long service life since there is no mechanical wear
- High switching frequency thanks to short make-break times
- Vibration-resistant
- No contact bounce
- Extremely high contact reliability
- Noise-free switching
- Low control power required
- Switching of DC and capacitive loads

Application

- Electrical separation between the input and output circuit
- Adjustment of different signal levels
- Signal amplification



Application example motor controller

Technical specifications

More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16198/td>
 Operating instructions, see
<https://support.industry.siemens.com/cs/ww/en/ps/16198/man>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16198/faq>

Coupling relays with relay output (not plug-in)

Article number		3RQ30.8- .AB00	3RQ30.8- .AB01	3RQ30.8- .AE00	3RQ30.8- .AE01	3RQ30.8- .AF00	3RQ30.8- .AF01	3RQ3018- 2AM08-0AA0	3RQ3018- 2AN08-0AA0
General technical specifications:									
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3	V	300							
Max. permissible voltage for protective separation between control circuit and auxiliary circuit	V	300							
Ambient temperature									
• During operation	°C	-25 ... +60							-40 ... +70
• During storage	°C	-40 ... +85							
IP degree of protection		IP20							
Version of the fuse link required for short-circuit protection of the auxiliary switch		Fuse gG: 4 A							
Operational current of the auxiliary contacts									
• At AC-15									
- At 24 V	A	3							
- At 250 V	A	3							
• At DC-13									
- At 24 V	A	1							
- At 125 V	A	0.2							
- At 250 V	A	0.1							
Contact reliability of the auxiliary contacts (one contact failure per 100 million)		17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	
Mechanical endurance (operating cycles) typical		10 000 000							
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000							
Operating range factor of the control supply voltage, rated value									
• At AC, at 50 Hz		0.8 ... 1.25							--
• At DC		0.8 ... 1.25							0.7 ... 1.25
Active power input	W	0.3		0.5		1		0.3	0.6
Thermal current	A	6							

Coupling Relays

SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with plug-in relay

Article number		3RQ3118- .AB00	3RQ3118- .AB01	3RQ3118- .AE00	3RQ3118- .AE01	3RQ3118- .AF00	3RQ3118- .AF01	3RQ3118- .AM00	3RQ3118- .AM01
General technical specifications:									
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3	V	300							
Max. permissible voltage for protective separation between control circuit and auxiliary circuit	V	300							
Ambient temperature									
• During operation	°C	-25 ... +60							
• During storage	°C	-40 ... +85							
IP degree of protection		IP20							
Version of the fuse link required for short-circuit protection of the auxiliary switch		Fuse gG: 4 A							
Operational current of the auxiliary contacts									
• At AC-15									
- At 24 V	A	3							
- At 250 V	A	3							
• At DC-13									
- At 24 V	A	1							
- At 125 V	A	0.2							
- At 250 V	A	0.1							
Contact reliability of the auxiliary contacts (one contact failure per 100 million)		17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	5 V, 1 mA	17 V, 1 mA	5 V, 1 mA
Mechanical endurance (operating cycles) typical		10 000 000							
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000							
Operating range factor of the control supply voltage, rated value									
• At AC, at 50 Hz		0.8 ... 1.25		0.8 ... 1.1				--	
• At DC		0.8 ... 1.25		0.8 ... 1.1				0.8 ... 1.25	
Active power input	W	0.3		0.5		1		0.3	
Thermal current	A	6							

SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with semiconductor output (not plug-in)

Article number	3RQ3050- .SM50	3RQ3052- .SM30	3RQ3052- .SM40	3RQ3052- .SM50	3RQ3053- .SG30	3RQ30.5- .SM30	3RQ3070- .SB30	3RQ3070- .SG30
General technical specifications:								
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3	50 V			300 V		50 V		--
Ambient temperature								
• During operation	-25 ... +60 °C							
• During storage	-40 ... +85 °C							
IP degree of protection	IP20							
Switching voltage of the semiconductor output								
• At AC	--				20 ... 264 V	--		
• At DC	10 ... 60 V	10 ... 30 V	10 ... 60 V	--	10 ... 30 V			
Current carrying capacity of the semiconductor output								
• At AC	--				5 mA ... 2 A	--		
• At DC	1 mA ... 0.5 A	5 mA ... 2 A	1 mA ... 2 A	--	1 mA ... 3 A	5 mA ... 5 A	10 mA ... 0.5 A	
Operating range factor of the control supply voltage, rated value								
• At AC, at 50 Hz	--				1 ... 1	--	1 ... 1	
• At DC	1 ... 1							
Active power input	0.3 W			0.25 W	0.3 W		0.5 W	
Thermal current	0.5 A	2 A				3 A	5 A	0.5 A

Article number	3RQ3...-1....	3RQ3...-2....
Type of electrical connection for auxiliary and control circuit	 Screw terminals	 Spring-type terminals (push-in)
Type of connectable conductor cross-sections		
• Solid	1x (0.25 ... 2.5) mm²	
• Finely stranded		
- Without end sleeves	--	1x (0.25 ... 2.5) mm²
- With end sleeves	1x (0.25 ... 1.5) mm²	
• Solid for AWG cables	1x (20 ... 14)	

Coupling Relays

SIRIUS 3RQ3 coupling relays, narrow design

Selection and ordering data

Type of voltage	Control supply voltage			Number of CO contacts for auxiliary contacts	Material of switching contacts	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	at AC at 50 Hz	at 60 Hz	at DC								
	V	V	V			d					kg

Coupling relays with relay output (not plug-in)

Output coupling links

 3RQ30.8-2....	AC/DC	24	24	24	1	AgSnO2	3RQ3018-□AB00	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3018-□AB01	1	5 units	41H	0.035
		115	115	115	1	AgSnO2	3RQ3018-□AE00	1	5 units	41H	0.036
	DC	230	230	230	1	AgSnO2	3RQ3018-□AF00	1	5 units	41H	0.036
		--	--	24	1	AgSnO2	3RQ3018-2AM08-0AA0	1	5 units	41H	0.033
				110	1	AgSnO2	3RQ3018-2AN08-0AA0	1	5 units	41H	0.033

Input coupling links

 3RQ3038-2....	AC/DC	24	24	24	1	AgSnO2	3RQ3038-□AB00	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3038-□AB01	1	5 units	41H	0.035
		115	115	115	1	AgSnO2	3RQ3038-□AE00	1	5 units	41H	0.035
	DC	230	230	230	1	AgSnO2	3RQ3038-□AE01	1	5 units	41H	0.034
						AgSnO2 hard gold-plated	3RQ3038-□AF00	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3038-□AF01	1	5 units	41H	0.035

Coupling relays with plug-in relays

Output coupling links

 3RQ3118-2....	AC/DC	24	24	24	1	AgSnO2	3RQ3118-□AB00	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3118-□AB01	1	5 units	41H	0.035
		115	115	115	1	AgSnO2	3RQ3118-□AE00	1	5 units	41H	0.035
	DC	230	230	230	1	AgSnO2	3RQ3118-□AE01	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3118-□AF00	1	5 units	41H	0.035
						AgSnO2 hard gold-plated	3RQ3118-□AF01	1	5 units	41H	0.035

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

Type of voltage	Control supply voltage			Current carrying capacity of the semiconductor output	Operating mode selectable via switch position	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	at AC at 50 Hz	at 60 Hz	at DC	at AC	at DC						
						d					kg

Coupling relays with semiconductor output (not plug-in)

Output coupling links

DC	--	--	11 ... 30 V	--	1 mA ... 0.5 A	--	3RQ3050-□SM50	1	5 units	41H	0.031	
					5 mA ... 2 A	--	3RQ3052-□SM30	1	5 units	41H	0.032	
					1 mA ... 2 A	--	3RQ3052-□SM40	1	5 units	41H	0.031	
					5 mA ... 2 A	--	3RQ3052-□SM50	1	5 units	41H	0.034	
					--	5 mA ... 5 A	--	3RQ3055-□SM30	1	5 units	41H	0.032
							Manual/ Off/ Automatic	3RQ3065-□SM30	1	5 units	41H	0.032
AC/DC	110 ... 230 V	110 ... 230 V	110 ... 230 V	--	1 mA ... 3 A	--	3RQ3053-□SG30	1	5 units	41H	0.033	

Input coupling links

3RQ3070-□SB30	AC/DC	11 ... 30 V	11 ... 30 V	11 ... 30 V	--	10 mA ... 0.5 A	--	3RQ3070-□SB30	1	5 units	41H	0.031
3RQ3070-□SG30	AC/DC	110 ... 230 V	110 ... 230 V	110 ... 230 V	--	10 mA ... 0.5 A	--	3RQ3070-□SG30	1	5 units	41H	0.032

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

SIRIUS 3RQ3 coupling relays, narrow design

Accessories

Version				SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.			
				d					kg			
Galvanic isolation plates												
	For electrical separation of different potentials when devices of different types are installed side by side			2	3RQ3900-0A	1	10 units	41H	0.014			
	3RQ3900-0A											
Connecting combs												
	For linking the same potentials, current carrying capacity for infeed max. 6 A			2	3RQ3901-0A	1	10 units	41H	0.001			
	• 2-pole			2	3RQ3901-0B	1	10 units	41H	0.001			
	• 4-pole			2	3RQ3901-0C	1	10 units	41H	0.002			
	• 8-pole			2	3RQ3901-0D	1	10 units	41H	0.004			
• 16-pole			2									
Clip-on labels												
For terminal marking and equipment labeling, white				2	3RQ3902-0A	100	2000 units	41H	0.009			
• 5 x 5 mm				2	3RQ3902-0B	100	1200 units	41H	0.020			
• 6 x 12 mm												
Tools for opening spring-type terminals												
	Screwdrivers			2	Spring-type terminals (push-in)							
	For all SIRIUS devices with spring-type terminals, 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated				3RA2908-1A	1	1 unit	41B	0.050			
3RA2908-1A												
Coupling relays with plug-in relays				Control supply voltage	Material of switching contacts	Number of CO contacts For auxiliary contacts	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type				V			d					kg
Replacement modules for 3RQ3118 coupling relays with plug-in relay												
3RQ3118-.AM00				24 DC	AgSnO2	1	2	3TX7014-7BM00	1	15 units	41H	0.007
3RQ3118-.AM01					AgSnO2 hard gold-plated		2	3TX7014-7BM02	1	15 units	41H	0.007
3RQ3118-.AB00				24 AC/DC	AgSnO2	1	2	3TX7014-7BQ00	1	15 units	41H	0.007
3RQ3118-.AB01					AgSnO2 hard gold-plated		2	3TX7014-7BQ02	1	15 units	41H	0.007
3RQ3118-.AE00				115 AC/DC	AgSnO2	1	2	3TX7014-7BP00	1	15 units	41H	0.006
3RQ3118-.AF00				230 AC/DC	AgSnO2 hard gold-plated							
3RQ3118-.AE01				115 AC/DC	AgSnO2	1	2	3TX7014-7BP02	1	15 units	41H	0.006
3RQ3118-.AF01				230 AC/DC	AgSnO2 hard gold-plated							

Coupling Relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

Overview



SIRIUS 3RQ2 coupling relays, screw terminals, 3 changeover contacts

More information

Homepage, see <https://www.siemens.com/relais>

Industry Mall see www.siemens.com/product?3RQ2

Conversion tool, e.g. from 3RS181 to 3RQ3, see <http://www.siemens.com/sirius/conversion-tool>

3RQ2 coupling relays in their 22.5 mm industrial enclosure serve to couple control signals to and from a controller and replace the 3RS18 coupling relays. The 3RQ2 has an impressively high-quality industrial enclosure finished in modern titanium gray so that it fits in visually with the SIRIUS series of relays.

The series consists of devices with up to three changeover contacts with screw or spring-type terminals (push-in) and, with its wide voltage range from 24 to 240 V AC/DC, is a genuine highlight in the coupling relay market.

Thanks to terminal assignment that is identical to the previous version, existing products can easily be converted.

The reduced variety of components simplifies product selection and standardization.

Numerous accessories are available for the 3RQ2 coupling relays, for example replacement terminals, push-in lugs for wall mounting and coding pins.

Article No. scheme

Product versions		Article number			
Coupling relays, standard		3RQ2000 –			
Connection method	Screw terminals	1			
	Spring-type terminals (push-in)	2			
Outputs	1 changeover contact	A			
	2 changeover contacts	B			
	3 changeover contacts	C			
Rated control supply voltage	24 ... 240 V AC/DC		W		
Material of switching contacts	0 = AgSnO ₂			0	
	1 = AgNi + Au			1	
Example		3RQ2000 – 1 C W 0 1			

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

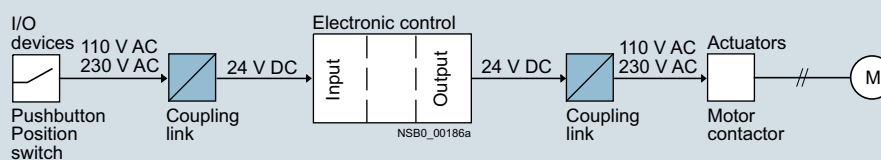
For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

- Permanent wiring due to removable terminals in screw or spring-type technology (push-in)
- Replacement of individual terminals minimizes wiring effort
- A product for all voltages from 24 to 240 V AC/DC
- Reduced costs thanks to fewer versions
- Especially high contact reliability even at low currents thanks to versions with hard gold-plated contacts
- International standards and certifications including CE, UL/CSA, EAC and confirmations for rail, and more

Application

- Galvanic isolation between input and output circuit
- Signal amplification
- Adjustment of different signal levels
- Contact multiplication



Motor control application example

SIRIUS 3RQ2 coupling relays with industrial enclosure

Technical specifications

More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16203/td>

Operating instructions, see
<https://support.industry.siemens.com/cs/ww/en/ps/16203/man>

Article number

3RQ2000-AW00
3RQ2000-BW00
3RQ2000-CW00
3RQ2000-CW01

General data

Width x Height x Depth mm 22.5 x 100 x 90

Insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 V 300

maximum permissible voltage for safe isolation between control and auxiliary circuit acc. to IEC 60947-1 V 300
Ambient temperature

- during operation °C -25 ... +60
- during storage °C -40 ... +80

Protection class IP IP20

Control circuit

Control supply voltage V AC/DC 24 ... 240 50/60 Hz**Operating range factor control supply voltage rated value** 0.7 ... 1.1

Main circuit

Thermal current of the switching element with contacts maximum A 5**Ampacity of the output relay**

- at AC-15 at 250 V A 3
- at DC-13 at 24 V A 1
- at DC-13 at 125 V A 0.2
- at DC-13 at 250 V A 0.1

Mechanical service life (switching cycles) typical 10 000 000**Electrical endurance (switching cycles) at AC-15 at 230 V typical** 100 000**Material of switching contacts** AgSnO2 AgNi + Au

Article number

3RQ2000-1**3RQ2000-2****Type of electrical connection**
 **screw-type terminals**
 **push-in terminals**
Type of connectable conductor cross-sections

- solid mm² 1x (0.5 ... 4.0 mm²), 2x (0.5 ... 2.5 mm²) 0.5 ... 4 mm²
- finely stranded with core end processing mm² 1x (0.5 ... 4 mm²), 2x (0.5 ... 1.5 mm²) 0.5 ... 2.5 mm²
- at AWG conductors solid AWG 1x (20 ... 12), 2x (20 ... 14) 20 ... 12

Tightening torque Nm 0.6 ... 0.8 --

Coupling Relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Control supply voltage at AC at 50 Hz	Control supply voltage at DC	Number of CO contacts for auxiliary contacts	Material of switching contacts	SD
---	---------------------------------	---	--------------------------------------	----

screw-type terminals



SD

push-in terminals



Article number

Article number

Coupling relays in industrial enclosure, 22.5 mm



V	V	W	d
24 ... 240	24 ... 240	1	AgSnO ₂
		2	AgSnO ₂
		3	AgSnO ₂
		3	AgNi + Au

2	3RQ2000-1AW00
2	3RQ2000-1BW00
2	3RQ2000-1CW00
2	3RQ2000-1CW01

2	3RQ2000-2AW00
2	3RQ2000-2BW00
2	3RQ2000-2CW00
2	3RQ2000-2CW01

Accessories

More information

Operating instructions, see
<https://support.industry.siemens.com/cs/ww/en/ps/25158/man>

Conversion tool, see
<http://www.siemens.com/sirius/conversion-tool>

Product designation	SD	Article No.	PU (UNIT, SET, M)	PS*	PG
---------------------	----	-------------	-------------------------	-----	----

Terminals for SIRIUS devices in the industrial standard mounting rail enclosure



3ZY1122-1BA00

Removable terminals

- 2-pole, up to max. 2 x 2.5 mm² or 1 x 4 mm²

2

Screw terminals



3ZY1122-1BA00

1

6 units

41L

- 2-pole, up to max. 1 x 4 mm² or 2 x 1.5 mm²

2

Spring-type terminals (push-in)



3ZY1122-2BA00

1

6 units

41L

Accessories for enclosures



3ZY1311-0AA00

Push-in lugs

For wall mounting

2

3ZY1311-0AA00

1

10 units

41L



3ZY1440-1AA00

Coding pins

For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable mechanical coding of terminals

2

3ZY1440-1AA00

1

12 units

41L

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, 2 partially insulated

2

Spring-type terminals (push-in)



3RA2908-1A

1

1 units

41B

SIRIUS 3RQ2 coupling relays with industrial enclosure

More information

Code conversion table

SIRIUS 3RS18 coupling relays				Comparison type SIRIUS 3RQ2 coupling relays			
Screw terminals	Spring-type terminals	Version	Contacts	Screw terminals	Spring-type terminals (push-in)	Version	Contacts
3RS1800-1AQ00	3RS1800-2AQ00	24 V AC/DC; 110 ... 120 V AC	1 change-over contact	3RQ2000-1AW00	3RQ2000-2AW00	24 ... 240 V AC/DC	1 change-over contact
3RS1800-1AP00	3RS1800-2AP00	24 V AC/DC; 220 ... 240 V AC					
3RS1800-1BW00	3RS1800-2BW00	24 ... 240 V AC/DC	2 change-over contacts	3RQ2000-1BW00	3RQ2000-2BW00	24 ... 240 V AC/DC	2 change-over contacts
3RS1800-1BQ00	3RS1800-2BQ00	24 V AC/DC; 110 ... 120 V AC					
3RS1800-1BP00	3RS1800-2BP00	24 V AC/DC; 220 ... 240 V AC	3 change-over contacts	3RQ2000-1CW00	3RQ2000-2CW00	24 ... 240 V AC/DC	3 change-over contacts
3RS1800-1HW00	3RS1800-2HW00	24 ... 240 V AC/DC					
3RS1800-1HQ00	3RS1800-2HQ00	24 V AC/DC; 110 ... 120 V AC	3 change-over contacts, hard gold-plated	3RQ2000-1CW01	3RQ2000-2CW01	24 ... 240 V AC/DC	3 change-over contacts, hard gold-plated
3RS1800-1HP00	3RS1800-2HP00	24 V AC/DC; 220 ... 240 V AC					
3RS1800-1HW01	3RS1800-2HW01	24 ... 240 V AC/DC					
3RS1800-1HQ01	3RS1800-2HQ01	24 V AC/DC; 110 ... 120 V AC					
3RS1800-1HP01	3RS1800-2HP01	24 V AC/DC; 220 ... 240 V AC					

Switching Devices - Solid-State Switching Devices

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Home page, see www.siemens.com/soft-starter

Industry Mall, see www.siemens.com/product?3RW

Online configurator, see www.siemens.com/sirius/configurators

Simulation Tool for Soft Starters (STS), see <https://support.industry.siemens.com/cs/ww/en/view/101494917>



3RF21



3RF20



3RF23



3RF29

		Article No.	Page
SIRIUS solid-state switching devices for switching resistive/inductive 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	2/116 2/121
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 for inductive loads "instantaneous switching" - Special versions "low noise" and "short-circuit proof"	3RF23 3RF22	2/126 2/124
Function modules			
Converters	For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications: Converters used for converting an analog input signal into an on/off ratio; can also be used on 3RF22 three-phase switching devices	3RF2900-0EA18	2/140
Load monitoring	For load monitoring of one or more loads (partial loads)	3RF29...0FA08, 3RF29.0-0GA..	2/140
Heating current monitoring	For load monitoring of one or more loads (partial loads); remote teach	3RF29...0JA..	2/140
Power controllers	The power controller sets 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.	2/140
Power regulators	The power regulator regulates 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..	2/140

Use of SIRIUS solid-state switching devices for switching motors in conjunction with IE3/IE4 motors

Note:

When using SIRIUS solid-state switching devices for switching motors in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring, see "Configuration Manual for SIRIUS Controls with IE3 Motors", <https://support.industry.siemens.com/cs/ww/en/view/94770820>.

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.

Proven 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.



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 connection

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Solid-State Switching Devices for Resistive/Inductive Loads

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 controlgear	✓	--	✓	✓	✓	--	✓	✓	✓	✓	✓
Connection of load circuit from above	--	✓	--	--	--	--	--	--	--	--	--

✓ Function available

☐ Function possible

-- Function not possible

1) The converter can also be used with three-phase devices.

Solid-State Switching Devices for Resistive/Inductive Loads

General data

Article No. scheme

Product versions		Article number	
Solid-state switching devices for resistive/inductive loads	Solid-state relays	3RF20 □ □ – □ □ □ □ □	Single-phase, 45-mm width
		3RF21 □ □ – □ □ □ □ □	Single-phase, 22.5-mm width
	Solid-state contactors	3RF23 □ □ – □ □ □ □ □	Single-phase
Type current	e.g. 10 = 10.5 A	□ □	
Connection type	Screw terminals Spring-type terminals Ring terminal lug connection	1 2 3	
Switching function	Zero-point switching Instantaneous switching Zero-point switching Zero-point switching	A B C D	Low Noise Short-circuit-proof with B MCB
Single-phase or number of controlled phases	Single-phase Two-phase Three-phase Reversing contactor	A B C D	
Rated control supply voltage U_s	24 V DC 24 V AC/DC 110 ... 230 V AC 110 V AC 4 ... 30 V DC 230 V AC	0 1 2 3 4 5	
Rated operational voltage U_e	24 ... 230 V AC 48 ... 460 V AC 48 ... 600 V AC 48 ... 600 V AC	2 4 5 6	Blocking voltage 1600 V
Example	3RF21 2 0 – 1 A A 0 5		

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

Features

- 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 3RF2 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 3RF2 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.

Solid-State Switching Devices for Resistive/Inductive Loads

General data

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 3RF2 solid-state relays and contactors.

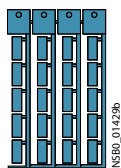
A special version of the solid-state contactors can be protected against damage in the case of a short circuit with a miniature circuit breaker with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switchgear.

Selection and ordering data

Inscription labels for 3RF2 series

Designation	Labeling area (W x H)	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm x mm		d					kg

Blank labels



3RT19 00-1SB20
(1 frame = 20 units)

Unit labeling plates for SIRIUS¹⁾ Adhesive labels for SIRIUS	10 x 7	Pastel turquoise	15	3RT1900-1SB10	100	816 units	41B	0.027
	20 x 7	Pastel turquoise	20	3RT1900-1SB20	100	340 units	41B	0.062
	19 x 6	Pastel turquoise	15	3RT1900-1SB60	100	3060 units	41B	15.300
	19 x 6	Zinc yellow	15	3RT1900-1SD60	100	3060 units	41B	0.005

¹⁾ PC labeling system for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH, see www.siemens.com/ic10, Chapter 16.

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 in the product data sheets, see <https://support.industry.siemens.com/cs/ww/en/ps/16222>.

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 SITOP solid-state 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 <https://support.industry.siemens.com/cs/ww/en/ps/16222>.

For additional information, please enter the article number of the required device under the tab "Product List".

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 is not exceeded even for 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 mm, 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.

Mounting solid-state relays directly on a mounting plate made of sheet steel is inadequate in terms of heat dissipation.

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

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Overview

Single-phase solid-state relays (without heat sink) with a width of 22.5 mm

With its compact design and a width of just 22.5 mm, which is not exceeded even for 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

More information

System Manual and Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/60311318>
<https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16224/faq>

Type		3RF21...-1....	3RF21...-2....	3RF21...-3....
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		IP00 (IP20 when using the terminal cover 3RA2900-3PA88)
Electromagnetic compatibility (EMC)				
• Emitted interference		Class A for industrial applications		
- Conducted interference voltage acc. to IEC 60947-4-3		Class B for residential, business and commercial applications		
- Emitted, high-frequency interference voltage acc. to IEC 60947-4-3				
• Interference immunity				
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields acc. 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 (not included in the scope of supply)		2 x M4		
• Tightening torque	Nm	1.5		

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type	$I_{\max}^{1)}$ at $R_{\text{thja}}/T_u = 40\text{ °C}$		I_e acc. to IEC 60947-4-3 at $R_{\text{thja}}/T_u = 40\text{ °C}$		I_e acc. to UL/CSA at $R_{\text{thja}}/T_u = 50\text{ °C}$		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 2/114, "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 ² s
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	1 800
3RF2170-...A.2	1 200	7 200
3RF2170-...A.4	1 200	7 200
3RF2170-...A.5	1 200	7 200
3RF2170-...A.6	1 150	6 600
3RF2190-.....	1 150	6 600

Type		3RF21...-...2	3RF21...-...4	3RF21...-...5	3RF21...-...6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460		
• Operating range	V AC	20 ... 253	40 ... 506	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		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	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 "Low Power" version 3RF21...-AA...-0KN0.

²⁾ Only for zero-point switching devices.

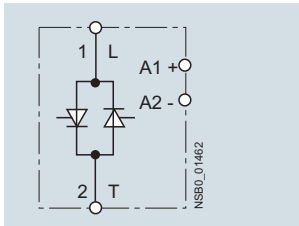
Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

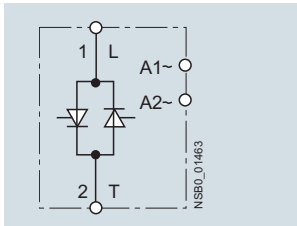
SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Circuit diagrams

DC control supply voltage



AC control supply voltage



Selection and ordering data

Single-phase solid-state relays (without heat sink) with a width of 22.5 mm

Type current/ performance capacity ¹⁾	Rated control supply voltage U_s	SD	Screw terminals ²⁾		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
A	V	d	Article No.					kg	
Zero-point switching, rated operational voltage U_e 24 ... 230 V AC									
	20	24 DC	2	3RF2120-1AA02	1	1 unit	41C	0.072	
	30		2	3RF2130-1AA02	1	1 unit	41C	0.071	
	50		2	3RF2150-1AA02	1	1 unit	41C	0.080	
	70		2	3RF2170-1AA02	1	1 unit	41C	0.071	
	90		5	3RF2190-1AA02	1	1 unit	41C	0.070	
	20	4 ... 30 DC	2	3RF2120-1AA42	1	1 unit	41C	0.071	
	30		2	3RF2130-1AA42	1	1 unit	41C	0.074	
	Zero-point switching, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	2	3RF2120-1AA04	1	1 unit	41C	0.072	
30		2	3RF2130-1AA04	1	1 unit	41C	0.072		
50		2	3RF2150-1AA04	1	1 unit	41C	0.067		
70		2	3RF2170-1AA04	1	1 unit	41C	0.100		
90		2	3RF2190-1AA04	1	1 unit	41C	0.087		
Zero-point switching, rated operational voltage U_e 48 ... 600 V AC									
70	24 DC Low Power	5	3RF2170-1AA05-0KN0	1	1 unit	41C	0.070		
20	4 ... 30 DC	5	3RF2120-1AA45	1	1 unit	41C	0.072		
30		5	3RF2130-1AA45	1	1 unit	41C	0.071		
50		5	3RF2150-1AA45	1	1 unit	41C	0.074		
70		2	3RF2170-1AA45	1	1 unit	41C	0.070		
90		5	3RF2190-1AA45	1	1 unit	41C	0.072		
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC									
30	24 DC	2	3RF2130-1AA06	1	1 unit	41C	0.070		
50		2	3RF2150-1AA06	1	1 unit	41C	0.114		
70		5	3RF2170-1AA06	1	1 unit	41C	0.074		
90		5	3RF2190-1AA06	1	1 unit	41C	0.063		
Instantaneous switching, rated operational voltage U_e 48 ... 460 V AC									
20	24 DC	5	3RF2120-1BA04	1	1 unit	41C	0.068		
30		5	3RF2130-1BA04	1	1 unit	41C	0.067		
50		5	3RF2150-1BA04	1	1 unit	41C	0.069		
70		5	3RF2170-1BA04	1	1 unit	41C	0.072		
90		5	3RF2190-1BA04	1	1 unit	41C	0.073		
Instantaneous switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC									
50	24 DC	5	3RF2150-1BA06	1	1 unit	41C	0.070		
Low Noise ³⁾ · Zero-point switching, rated operational voltage U_e 48 ... 460 V AC									
70	24 DC	5	3RF2170-1CA04	1	1 unit	41C	0.074		

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.

³⁾ See page 2/115.

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current/ performance capacity ¹⁾	Rated control supply voltage U_s	SD	Spring-type terminals ²⁾ 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
A	V	d	Article No.				kg	
Zero-point switching, rated operational voltage U_e 24 ... 230 V AC								
	20	24 DC	2	3RF2120-2AA02	1	1 unit	41C	0.068
	50		5	3RF2150-2AA02	1	1 unit	41C	0.068
	90		5	3RF2190-2AA02	1	1 unit	41C	0.068
	20	4 ... 30 DC	5	3RF2120-2AA42	1	1 unit	41C	0.068
Zero-point switching, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	2	3RF2120-2AA04	1	1 unit	41C	0.066
	50		5	3RF2150-2AA04	1	1 unit	41C	0.071
	90		5	3RF2190-2AA04	1	1 unit	41C	0.075
	50	24 AC/DC	5	3RF2150-2AA14	1	1 unit	41C	0.071
Zero-point switching, rated operational voltage U_e 48 ... 600 V AC								
	20	4 ... 30 DC	5	3RF2120-2AA45	1	1 unit	41C	0.075
Zero-point switching · Blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC								
	50	24 DC	5	3RF2150-2AA06	1	1 unit	41C	0.070
	90		5	3RF2190-2AA06	1	1 unit	41C	0.067

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 mm². Higher currents can be achieved by connecting two conductors per terminal.

Other rated control supply voltages on request.

Type current/ performance capacity ¹⁾	Rated control supply voltage U_s	SD	Ring terminal lug connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
A	V	d	Article No.				kg	
Zero-point switching, rated operational voltage U_e 24 ... 230 V AC								
	20	24 DC	5	3RF2120-3AA02 3RF2150-3AA02 3RF2190-3AA02	1	1 unit	41C	0.077
	50		5		1	1 unit	41C	0.077
	90		5		1	1 unit	41C	0.070
3RF2120-3AA02								
Zero-point switching, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	5	3RF2120-3AA04 3RF2150-3AA04 3RF2190-3AA04	1	1 unit	41C	0.074
	50		5		1	1 unit	41C	0.070
	90		5		1	1 unit	41C	0.072
	90	4 ... 30 DC	5		3RF2190-3AA44	1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC								
	50	24 DC	5	3RF2150-3AA06 3RF2190-3AA06	1	1 unit	41C	0.074
	90		5		1	1 unit	41C	0.088

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.

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Optional accessories

 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	2	Spring-type terminals  3RA2908-1A	1	1 unit	41B	0.050
	Terminal covers For 3RF21 solid-state relays and 3RF23 solid-state contactors with ring terminal lug connection (With this terminal cover, degree of protection IP20 can be achieved in the terminal compartment in the case of ring terminal lug connections. It can also be used for screw terminals after simple adaptation)	2	Ring terminal lug connection  3RF2900-3PA88	1	10 units	41C	0.004
Control connectors							
 3RF2900-3PA88	Replacement control connectors For 3RF20/21/22 and 3RF23/24 Screw terminals	5	Screw terminals  3RF2900-1TA88	1	50 units	41C	0.004
	Replacement control connectors For 3RF20/21/22 and 3RF23/24 Spring-type terminals	5	Spring-type terminals  3RF2900-2TA88	1	50 units	41C	0.004
	Control connectors For 3RF20/21/22 and 3RF23/24 Spring-type terminals with two clamping points per contact	5	3RF2900-2TB88	1	10 units	41C	0.004

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Overview

Single-phase solid-state relays (without heat sink) 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.

Technical specifications

More information

System Manual and Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/60311318>
<https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16225/faq>

Type		3RF20..-1....	3RF20..-4....
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 acc. to IEC 60947-4-3		Class A for industrial applications	
- Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class B for residential, business and commercial applications	
• Interference immunity			
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2	
- Induced RF fields acc. 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 (not included in the scope of supply)		2 x M4	
• Tightening torque	Nm	1.5	

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Type	$I_{\max}^{1)}$ at $R_{\text{thja}}/T_u = 40^\circ\text{C}$		I_e acc. to IEC 60947-4-3 at $R_{\text{thja}}/T_u = 40^\circ\text{C}$		I_e acc. to UL/CSA at $R_{\text{thja}}/T_u = 50^\circ\text{C}$		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 2/114, "More Information"). The minimum thickness values for the mounting surface must be observed.

Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A²s
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

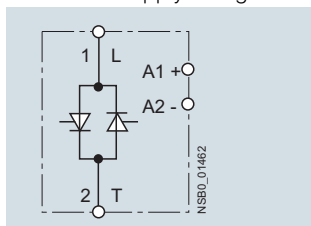
Type		3RF20.0-1.A.2	3RF20.0-1.A.4	3RF20.0-1.A.5	3RF20.0-1.A.6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	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 frequency 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

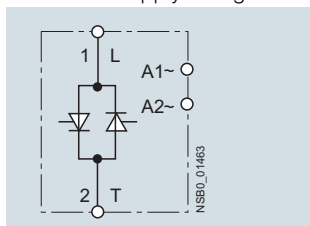
¹⁾ Only for zero-point switching devices.

Circuit diagrams

DC control supply voltage



AC control supply voltage



Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Relays

SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Selection and ordering data

Single-phase solid-state relays (without heat sink) with a width of 45 mm

Type current/ performance capacity ¹⁾	Rated control supply voltage U_s	SD	Screw terminals ²⁾		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
A	V	d	Article No.					kg	
Zero-point switching, rated operational voltage U_e 24 ... 230 V AC									
	20	24 DC	2	3RF2020-1AA02	1	1 unit	41C	0.088	
	30		2	3RF2030-1AA02	1	1 unit	41C	0.093	
	50		2	3RF2050-1AA02	1	1 unit	41C	0.080	
	70		2	3RF2070-1AA02	1	1 unit	41C	0.085	
	90		2	3RF2090-1AA02	1	1 unit	41C	0.102	
	20	4 ... 30 DC	5	3RF2020-1AA42	1	1 unit	41C	0.087	
	30		5	3RF2030-1AA42	1	1 unit	41C	0.089	
	Zero-point switching, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	2	3RF2020-1AA04	1	1 unit	41C	0.099	
30		2	3RF2030-1AA04	1	1 unit	41C	0.084		
50		2	3RF2050-1AA04	1	1 unit	41C	0.085		
70		2	3RF2070-1AA04	1	1 unit	41C	0.080		
90		2	3RF2090-1AA04	1	1 unit	41C	0.101		
50	4 ... 30 DC	2	3RF2050-1AA44	1	1 unit	41C	0.085		
Zero-point switching, rated operational voltage U_e 48 ... 600 V AC									
20	4 ... 30 DC	5	3RF2020-1AA45	1	1 unit	41C	0.080		
50		5	3RF2050-1AA45	1	1 unit	41C	0.094		
70		2	3RF2070-1AA45	1	1 unit	41C	0.085		
90		5	3RF2090-1AA45	1	1 unit	41C	0.085		
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC									
30	24 DC	5	3RF2030-1AA06	1	1 unit	41C	0.090		
50		5	3RF2050-1AA06	1	1 unit	41C	0.090		
70		5	3RF2070-1AA06	1	1 unit	41C	0.085		
90		5	3RF2090-1AA06	1	1 unit	41C	0.090		
Instantaneous switching, rated operational voltage U_e 48 ... 460 V AC									
30	24 DC	5	3RF2030-1BA04	1	1 unit	41C	0.085		

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.

Type current/ performance capacity ¹⁾	Rated control supply voltage U_s	SD	Screw terminals + spring-type terminals (control current side)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
A	V	d	Article No.				kg	
Zero-point switching, rated operational voltage U_e 24 ... 230 V AC								
	50	24 DC	5	3RF2050-4AA02	1	1 unit	41C	0.086

3RF2050-4AA02

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.

Solid-State Switching Devices for Resistive/Inductive Loads

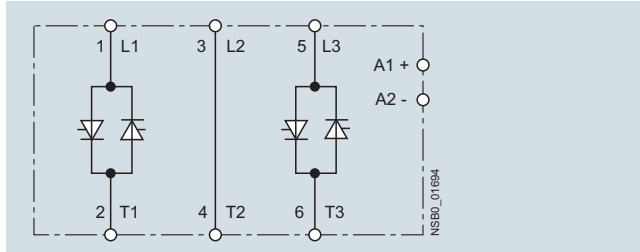
Solid-State Relays

SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

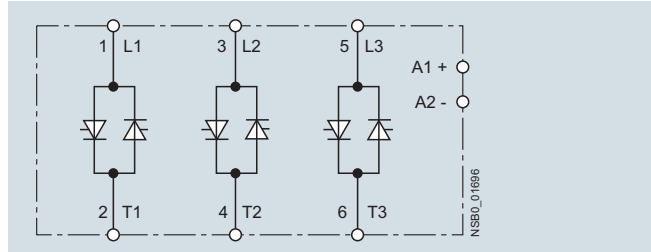
Overview

Circuit diagrams

Two-phase controlled,
DC control supply voltage



Three-phase controlled,
DC control supply voltage



Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

General data

Overview

Solid-state contactors (with integrated 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 70 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

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

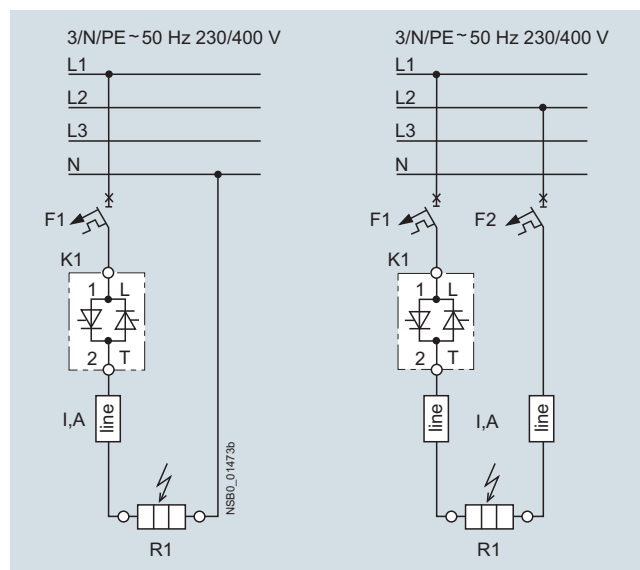
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit resistant 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	5SY4106-6	1 mm ²	5 m
10 A	5SY4110-6	1.5 mm ²	8 m
16 A	5SY4116-6	1.5 mm ²	12 m
		2.5 mm ²	20 m
20 A	5SY4120-6	2.5 mm ²	20 m
25 A	5SY4125-6	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 A²s.

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

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

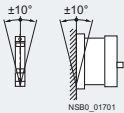
Technical specifications

More information

System Manual and Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/60311318>
<https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16228/faq>

Type		3RF23...-A...	3RF23...-B...	3RF23...-C...	3RF23...-D...		
Dimensions (W x H x D)							
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 (for ring terminal lug connection when using the terminal cover 3RA2900-3PA88, otherwise IP00)					
Electromagnetic compatibility (EMC)							
• Emitted interference according to IEC 60947-4-3		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	
- Conducted interference voltage							
- Emitted, high-frequency interference voltage		Class B for residential, business and commercial applications					
• Interference immunity							
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2					
- Induced RF fields acc. 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			
Grounding stud (not included in the scope of supply)			
• Size (standard screw)	M5		
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.

Type	3RF23...-....2	3RF23...-....4	3RF23...-....5	3RF23...-....6
Main circuit				
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	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		

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

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 "Low Power" version 3RF23...-AA...**0KN0**.

²⁾ Only for zero-point switching devices.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

Type	Type current AC-51/performance capacity ¹⁾			Power loss at $I_{\max}$	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	at $I_{\max}$ at 40 °C	acc. to IEC 60947-4-3 at 40 °C	acc. to UL/CSA at 50 °C					
	A	A	A	W	A	mA	A	A ² s
Main circuit								
3RF2310-AA.2 3RF2310-AA.4 3RF2310-AA.5 3RF2310-AA.6	10.5	7.5	9.6	11	0.1	10	200	200
3RF2320-AA.2 3RF2320-AA.4 3RF2320-AA.5 3RF2320-AA.6	20	13.2	17.6	20	0.5	10	600	1 800
3RF2320-CA.2 3RF2320-CA.4						25	600	1 800
3RF2320-DA.2 3RF2320-DA.4						10	1 150	6 600
3RF2330-AA.2 3RF2330-AA.4 3RF2330-AA.5 3RF2330-AA.6	30	22	27	33	0.5	10	600	1 800
3RF2330-CA.2 3RF2330-DA.4		18.5	26	33	0.5	10	1 150	6 600
3RF2340-AA.2 3RF2340-AA.4 3RF2340-AA.5 3RF2340-AA.6	40	33	36	44	0.5	10	1 200	7 200
3RF2350-AA.2 3RF2350-AA.4 3RF2350-AA.5 3RF2350-AA.6	50	36	45	54	0.5	10	1 150	6 600
3RF2370-AA.2 3RF2370-AA.4 3RF2370-AA.5 3RF2370-AA.6	70	70	62	83	0.5	10	1 150	6 600

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 installation conditions.

Type	Type current AC-51/performance capacity ¹⁾			Type current AC-15/performance capacity ¹⁾		Power loss at $I_{\max}$	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	at $I_{\max}$ at 40 °C	acc. to IEC 60947-4-3 at 40 °C	acc. to UL/CSA at 50 °C	10 × I_e for 60 ms	Parameters					
	A	A	A	A		W	A	mA	A	A ² s
Main circuit										
3RF2310-BA.2 3RF2310-BA.4 3RF2310-BA.6	10.5	7.5	9.6	6	1200 1/h 50% ON period	11	0.1	10	200	200
3RF2320-BA.2 3RF2320-BA.4 3RF2320-BA.6	20	13.2	17.6	12	1200 1/h 50% ON period	20	0.5	10	600	1 800
3RF2330-BA.2 3RF2330-BA.4 3RF2330-BA.6	30	22	27	15	1200 1/h 50% ON period	33	0.5	10	600	1 800
3RF2340-BA.2 3RF2340-BA.4 3RF2340-BA.6	40	33	36	20	1200 1/h 50% ON period	44	0.5	10	1 200	7 200
3RF2350-BA.2 3RF2350-BA.4 3RF2350-BA.6	50	36	45	25	1200 1/h 50% ON period	54	0.5	10	1 150	6 600
3RF2370-BA.2 3RF2370-BA.4 3RF2370-BA.6	70	70	62	27.5	1200 1/h 50% ON period	83	0.5	10	1 150	6 600

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 installation conditions.

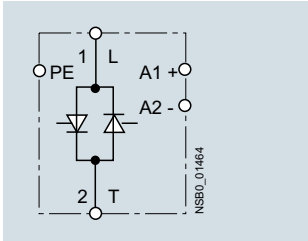
Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

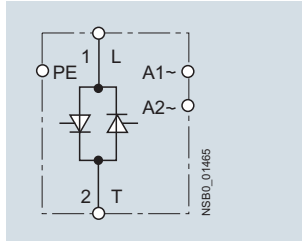
SIRIUS 3RF23 solid-state contactors, single-phase

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/ performance capacity ¹⁾ I_{max}	Rated control supply voltage U_s	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V	d	Article No.				kg
Zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC							
10.5	24 DC	2	3RF2310-1AA02	1	1 unit	41C	0.140
20		2	3RF2320-1AA02	1	1 unit	41C	0.195
30		2	3RF2330-1AA02	1	1 unit	41C	0.300
40		2	3RF2340-1AA02	1	1 unit	41C	0.470
50		2	3RF2350-1AA02	1	1 unit	41C	0.470
20	24 DC Low Power	2	3RF2320-1AA02-0KN0	1	1 unit	41C	0.225
10.5	24 AC/DC	2	3RF2310-1AA12	1	1 unit	41C	0.140
Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC							
10.5	24 DC	2	3RF2310-1AA04	1	1 unit	41C	0.140
20		2	3RF2320-1AA04	1	1 unit	41C	0.200
30		2	3RF2330-1AA04	1	1 unit	41C	0.300
40		2	3RF2340-1AA04	1	1 unit	41C	0.470
50		2	3RF2350-1AA04	1	1 unit	41C	0.470
10.5	24 DC Low Power	2	3RF2310-1AA04-0KN0	1	1 unit	41C	0.140
10.5	4 ... 30 DC	2	3RF2310-1AA44	1	1 unit	41C	0.140
20		2	3RF2320-1AA44	1	1 unit	41C	0.190
30		2	3RF2330-1AA44	1	1 unit	41C	0.320
Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 600 V AC							
10.5	4 ... 30 DC	5	3RF2310-1AA45	1	1 unit	41C	0.140
20		5	3RF2320-1AA45	1	1 unit	41C	0.190
30		2	3RF2330-1AA45	1	1 unit	41C	0.300
40		2	3RF2340-1AA45	1	1 unit	41C	0.480
50		2	3RF2350-1AA45	1	1 unit	41C	0.480

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 installation conditions. For derating characteristic curves, see page 2/114, "More information".

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current/ performance capacity ¹⁾ I_{max}	Rated control supply voltage U_s	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	V	d	Article No.				kg
Zero-point switching · Integrated heat sink, blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC								
	10.5	24 DC	5	3RF2310-1AA06	1	1 unit	41C	0.154
	20		2	3RF2320-1AA06	1	1 unit	41C	0.185
	30		2	3RF2330-1AA06	1	1 unit	41C	0.300
	40		5	3RF2340-1AA06	1	1 unit	41C	0.480
	50		5	3RF2350-1AA06	1	1 unit	41C	0.470
Low Noise²⁾, zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC								
	20	24 DC	5	3RF2320-1CA02	1	1 unit	41C	0.235
	30		5	3RF2330-1CA02	1	1 unit	41C	0.407
Low Noise²⁾, zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	5	3RF2320-1CA04	1	1 unit	41C	0.180
	20	4 ... 30 DC	2	3RF2320-1CA44	1	1 unit	41C	0.190
Short-circuit-proof with B MCB · Zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC								
	20	24 DC	2	3RF2320-1DA02	1	1 unit	41C	0.180
Short-circuit-proof with B MCB · Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC								
	20	24 DC	2	3RF2320-1DA04	1	1 unit	41C	0.190
	20	4 ... 30 DC	2	3RF2320-1DA44	1	1 unit	41C	0.190
	30		2	3RF2330-1DA44	1	1 unit	41C	0.190

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 installation conditions. For derating characteristic curves, see page 2/114, "More information".

²⁾ See page 2/125.

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current/ performance capacity ¹⁾ $I_{\max}$	Operational current I_e /AC-15 ²⁾	Rated control supply voltage U_s	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	A	V	d	Article No.				kg
Instantaneous switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC									
	10.5	6	24 DC	2	3RF2310-1BA02	1	1 unit	41C	0.140
	20	12		2	3RF2320-1BA02	1	1 unit	41C	0.190
	30	15		5	3RF2330-1BA02	1	1 unit	41C	0.300
	40	20		5	3RF2340-1BA02	1	1 unit	41C	0.480
	50	25		5	3RF2350-1BA02	1	1 unit	41C	0.470
	50	27.5		5	3RF2370-1BA02	1	1 unit	41C	1.243
Instantaneous switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC									
	10.5	6	24 DC	2	3RF2310-1BA04	1	1 unit	41C	0.159
	20	12		2	3RF2320-1BA04	1	1 unit	41C	0.190
	30	15		2	3RF2330-1BA04	1	1 unit	41C	0.300
	40	20		5	3RF2340-1BA04	1	1 unit	41C	0.470
	50	25		5	3RF2350-1BA04	1	1 unit	41C	0.470
	50	27.5		5	3RF2370-1BA04	1	1 unit	41C	0.690
	20	12	4 ... 30 DC	5	3RF2320-1BA44	1	1 unit	41C	0.225
	30	15		5	3RF2330-1BA44	1	1 unit	41C	0.300
	50	25		5	3RF2350-1BA44	1	1 unit	41C	0.470
Instantaneous switching · Integrated heat sink, blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC									
	10.5	6	24 DC	5	3RF2310-1BA06	1	1 unit	41C	0.167
	20	12		2	3RF2320-1BA06	1	1 unit	41C	0.190
	30	15		5	3RF2330-1BA06	1	1 unit	41C	0.445
	40	20		5	3RF2340-1BA06	1	1 unit	41C	0.480
	50	25		5	3RF2350-1BA06	1	1 unit	41C	0.470
	50	27.5		5	3RF2370-1BA06	1	1 unit	41C	1.250

3RF2310-1

3RF2320-1

3RF2340-1

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 installation conditions. For derating characteristic curves, see page 2/114, "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.

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

Type current/ performance capacity ¹⁾ I_{max}	Rated control supply voltage U_s	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V	d	Article No.				kg
Zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC							
10.5	24 DC	5	3RF2310-2AA02	1	1 unit	41C	0.140
20		2	3RF2320-2AA02	1	1 unit	41C	0.180
Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC							
10.5	24 DC	2	3RF2310-2AA04	1	1 unit	41C	0.206
20		2	3RF2320-2AA04	1	1 unit	41C	0.190
Zero-point switching · Integrated heat sink, blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC							
10.5	24 DC	5	3RF2310-2AA06	1	1 unit	41C	0.140
20		2	3RF2320-2AA06	1	1 unit	41C	0.180
Low Noise²⁾, zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC							
20	24 DC	5	3RF2320-2CA02	1	1 unit	41C	0.225
Low Noise²⁾, zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	5	3RF2320-2CA04	1	1 unit	41C	0.190
Short-circuit-proof with B MCB, zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC							
20	24 DC	5	3RF2320-2DA04	1	1 unit	41C	0.190

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 installation conditions. For derating characteristic curves, see page 2/114, "More information".

²⁾ See page 2/125.

Other rated control supply voltages on request.



3RF2320-2

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

Type current/ performance capacity ¹⁾ <i>I</i> _{max}	Rated control supply voltage <i>U</i> _s	SD	Ring terminal lug connection		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V	d	Article No.					kg
Zero-point switching · Integrated heat sink, rated operational voltage <i>U</i> _e 24 ... 230 V AC								
	10.5	24 DC	5	3RF2310-3AA02	1	1 unit	41C	0.167
	20		5	3RF2320-3AA02	1	1 unit	41C	0.225
	30		5	3RF2330-3AA02	1	1 unit	41C	0.405
	40		5	3RF2340-3AA02	1	1 unit	41C	0.589
	50		5	3RF2350-3AA02	1	1 unit	41C	0.564
	70		2	3RF2370-3AA02	1	1 unit	41C	0.680
3RF2350-3								
Zero-point switching · Integrated heat sink, rated operational voltage <i>U</i> _e 48 ... 460 V AC								
	10.5	24 DC	5	3RF2310-3AA04	1	1 unit	41C	0.173
	20		5	3RF2320-3AA04	1	1 unit	41C	0.190
	30		2	3RF2330-3AA04	1	1 unit	41C	0.300
	40		5	3RF2340-3AA04	1	1 unit	41C	0.470
	50		2	3RF2350-3AA04	1	1 unit	41C	0.480
	70		2	3RF2370-3AA04	1	1 unit	41C	0.680
	20	4 ... 30 DC	5	3RF2320-3AA44	1	1 unit	41C	0.242
	30		5	3RF2330-3AA44	1	1 unit	41C	0.389
	50		5	3RF2350-3AA44	1	1 unit	41C	0.480
	3RF2330-3, covers optional							
Zero-point switching · Integrated heat sink, rated operational voltage <i>U</i> _e 48 ... 600 V AC								
40	4 ... 30 DC	5	3RF2340-3AA45	1	1 unit	41C	0.480	
70		2	3RF2370-3AA45	1	1 unit	41C	0.690	
Zero-point switching · Integrated heat sink, blocking voltage 1 600 V, rated operational voltage <i>U</i> _e 48 ... 600 V AC								
10.5	24 DC	5	3RF2310-3AA06	1	1 unit	41C	0.175	
20		5	3RF2320-3AA06	1	1 unit	41C	0.195	
30		5	3RF2330-3AA06	1	1 unit	41C	0.389	
40		5	3RF2340-3AA06	1	1 unit	41C	0.470	
50		5	3RF2350-3AA06	1	1 unit	41C	0.460	
70		5	3RF2370-3AA06	1	1 unit	41C	0.680	

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 installation conditions. For derating characteristic curves, see page 2/114, "More information".

Other rated control supply voltages on request.

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-state Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

Type current/ performance capacity ¹⁾ I_{max}	Operational current I_e /AC-15 ²⁾	Rated control supply voltage U_s	SD	Ring terminal lug connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	A	V	d	Article No.				kg
Instantaneous switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC								
70	27.5	24 DC	5	3RF2370-3BA02	1	1 unit	41C	1.230
Instantaneous switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC								
70	27.5	24 DC	5	3RF2370-3BA04	1	1 unit	41C	1.251
Instantaneous switching · Integrated heat sink, blocking voltage 1 600 V, rated operational voltage U_e 48 ... 600 V AC								
70	27.5	24 DC	5	3RF2370-3BA06	1	1 unit	41C	1.236
Short-circuit-proof with B MCB Zero-point switching · Integrated heat sink, rated operational voltage U_e 24 ... 230 V AC								
20	--	24 DC	5	3RF2320-3DA02	1	1 unit	41C	0.239
Short-circuit-proof with B MCB Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 460 V AC								
20	--	24 DC	5	3RF2320-3DA04	1	1 unit	41C	0.243

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 installation conditions. For derating characteristic curves, see page 2/114, "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.

Other rated control supply voltages on request.

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg
Optional accessories						
 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 3RA2908-1A	2	Spring-type terminals 3RA2908-1A	1	1 unit	41B	0.050
	2	Ring terminal lug connection 3RF2900-3PA88	1	10 units	41C	0.004
 Terminal covers For 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection (With this terminal cover, degree of protection IP20 can be achieved in the terminal compartment in the case of ring terminal lug connections. It can also be used for screw terminals after simple adaptation) 3RF2900-3PA88	2	Control connectors				
Replacement control connectors						
For 3RF20/21/22 and 3RF23/24 Screw terminals	5	Screw terminals 3RF2900-1TA88	1	50 units	41C	0.004
Replacement control connectors						
For 3RF20/21/22 and 3RF23/24 Spring-type terminals	5	Spring-type terminals 3RF2900-2TA88	1	50 units	41C	0.004
Control connectors						
For 3RF20/21/22 and 3RF23/24 Spring-type terminals with two clamping points per contact	5	3RF2900-2TB88	1	10 units	41C	0.004

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

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 Basic	Extended ¹⁾	Heating current monitoring ¹⁾	Power controllers ¹⁾	Power regulators 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...-0A13 function modules can also be combined with more voltage-resistant versions of the solid-state relays (3RF21...-....4, -....5 or -....6).

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

General data

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...-0A13 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 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...-0A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23...-....4, -....5 or -....6).

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

General data

Type	Accessories					
	Converters	Load monitoring Basic	Extended ¹⁾	Heating current monitoring ¹⁾	Power controllers ¹⁾	Power regulators ¹⁾
Type current $I_e = 10.5 \text{ A}$						
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 $I_e = 20 \text{ A}$						
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...-0A13 function modules can also be combined with more voltage-resistant versions of the solid-state contactors (3RF23...-....4, -....5 or -....6).

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

General data

Type	Accessories					
	Converters	Load monitoring Basis ¹⁾	Extended ²⁾	Heating current monitoring ²⁾	Power controllers ²⁾	Power regulators ²⁾
Type current $I_e = 20\text{ A}$						
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 $I_e = 30\text{ A}$						
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 $I_e = 40\text{ A}$						
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 $I_e = 50\text{ A}$						
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).

Solid-State Switching Devices for Resistive/Inductive Loads

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

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).

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

General data

Technical specifications

More information

System Manual and Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/60311318>
<https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16231/faq>

Type		3RF29...0EA..	3RF29...0FA..	3RF29...0GA..	3RF29...0HA..	3RF29...0JA..	3RF29...0KA..
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 acc. 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 acc. to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2				
- Induced RF fields acc. 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				

Type	3RF29...0EA18	3RF29...0FA08	3RF29...0GA.3	3RF29...0GA.6
Main circuit				
Rated operational voltage U_e	V AC	-- ¹⁾		110 ... 230
• Operating range	V AC	--		93.5 ... 253
• Rated frequency	Hz	--		50/60
Rated insulation voltage U_i	V	--		600
Voltage measuring				
• Measuring range	V	--		93.5 ... 253
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
• Operating range	V AC	93.5 ... 253	340 ... 660	93.5 ... 253
• Rated frequency	Hz	50/60		340 ... 660
Rated insulation voltage U_i	V	600		
Voltage measuring				
• Measuring range	V	93.5 ... 253	340 ... 660	93.5 ... 253
Mains voltage, fluctuation compensation	%	20		

Type	3RF29...-...0.	3RF29...-...1.	3RF29...-...3.
Control circuit			
Method of operation		DC operation	AC/DC operation
Rated control supply voltage U_s	V	24	110
Rated control current	mA	15	
Rated frequency of the control supply voltage	Hz	--	50/60
Actuating voltage, max.	V	30	121
Rated control current	mA	15	
At maximum voltage			
Response voltage	V	15	90
• For operating current	mA	2	
Drop-out voltage	V	5	15

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

General data

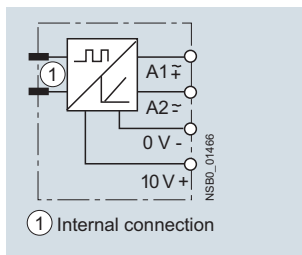
Type		3RF2906-0FA08	3RF2920-0FA08	3RF2920-0GA..	3RF2950-0GA..	3RF2990-0GA..
Current measurement						
Rated operational current I_e	A	6	20		50	90
Current measurement						
• Teach range	A	0.25 ... 6	0.65 ... 20	0.56 ... 20	1.62 ... 50	2.93 ... 90
• Measuring range	A	0 ... 6.6	0 ... 22		0 ... 55	0 ... 99
• Minimum partial load current	A	0.25	0.65		1.6	2.9
Number of partial loads		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	

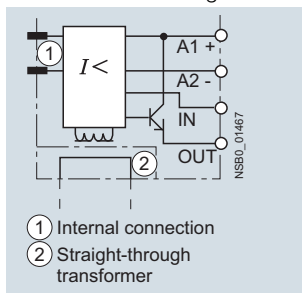
Type		3RF2904-0KA..	3RF2920-0KA..	3RF2950-0KA..	3RF2990-0KA..
Current measurement					
Rated operational current I_e	A	4	20	50	90
Current measurement					
• Teach range	A	0.15 ... 4	0.65 ... 20	1.6 ... 50	2.9 ... 90
• Measuring range	A	0 ... 4	0 ... 22	0 ... 55	0 ... 99
• Minimum partial load current	A	--	0.65	1.6	2.9
Number of partial loads		--	1 ... 6		

Circuit diagrams

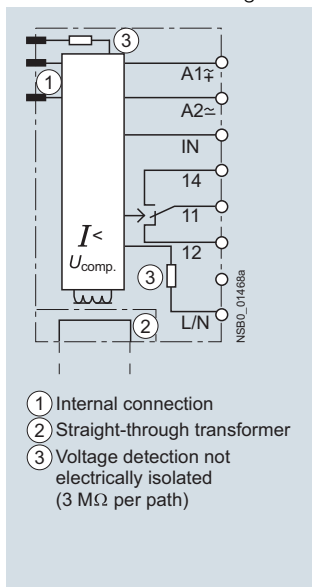
Converters



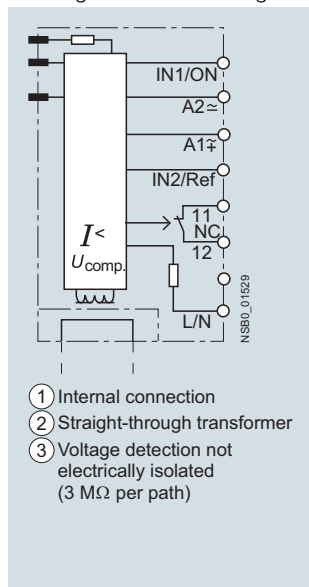
Basic load monitoring



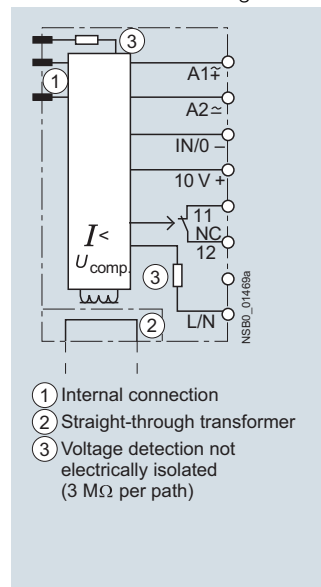
Extended load monitoring



Heating current monitoring



Power controller and regulator



Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

SIRIUS converters for 3RF2

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 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		SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	A	V		d						
Converters						Article No.				
	Rated control supply voltage 24 V AC/DC									
	--	--		2	3RF2900-0EA18	1	1 unit	41C	0.024	

3RF2900-0EA18

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

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 commissioning 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.

2

Selection and ordering data

Rated operational current I_e		Rated operational voltage U_e		SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A		V		d	Article No.				kg
Basic load monitoring									
Rated control supply voltage 24 V DC									
6		--		2	3RF2906-0FA08	1	1 unit	41C	0.047
20		--		2	3RF2920-0FA08	1	1 unit	41C	0.047
• With mounted 3RF2900-0RA88 cover									
6		--		2	3RF2906-0FA08-0KH0	1	1 unit	41C	0.069
20		--		2	3RF2920-0FA08-0KH0	1	1 unit	41C	0.070
Extended load monitoring									
Rated control supply voltage 24 V AC/DC									
20		110 ... 230		2	3RF2920-0GA13	1	1 unit	41C	0.128
20		400 ... 600		2	3RF2920-0GA16	1	1 unit	41C	0.128
50		110 ... 230		2	3RF2950-0GA13	1	1 unit	41C	0.128
50		400 ... 600		2	3RF2950-0GA16	1	1 unit	41C	0.128
90		110 ... 230		2	3RF2990-0GA13	1	1 unit	41C	0.128
90		400 ... 600		2	3RF2990-0GA16	1	1 unit	41C	0.128



3RF29



3RF29

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg
Optional accessories						
 3RF2900-0RA88	Sealable covers for function modules (not for converters)	5	3RF2900-0RA88	1	10 units	41C 0.001



3RF2900-0RA88

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

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 commissioning. 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 version:

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 SD		Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
A	V		d					
Heating current monitoring¹⁾				Article No.				
Rated control supply voltage 24 V AC/DC								
16	110 ... 230		2	3RF2916-0JA13	1	1 unit	41C	0.130
16	110 ... 230		5	3RF2916-0JA13-1KK0	1	1 unit	41C	0.130
16	400 ... 600		2	3RF2916-0JA16-1KK0	1	1 unit	41C	0.130
32	110 ... 230		2	3RF2932-0JA13-1KK0	1	1 unit	41C	0.130
32	400 ... 600		2	3RF2932-0JA16	1	1 unit	41C	0.130
32	400 ... 600		2	3RF2932-0JA16-1KK0	1	1 unit	41C	0.130



3RF29

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).

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	d					
Optional accessories						
	Sealable covers for function modules (not for converters)	5	3RF2900-0RA88	1 10 units	41C	0.001



3RF2900-0RA88

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

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 version: Deviations from the standard version

3RF2904-0KA13-0KC0

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 partial-load monitoring!

3RF29...-0KA1.-0KT0

No partial-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_P), it is controlled according to the principle of full-wave control or generalized phase control.

Note:

In the case of resistive 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 2/142.

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 μ H.

Selection and ordering data

	Rated operational current I_e	Rated operational voltage U_e	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	A	V	d	Article No.				
Power controllers								
	Rated control supply voltage 24 V AC/DC							
	4	110 ... 230	2	3RF2904-0KA13-0KC0	1	1 unit	41C	0.130
	4		2	3RF2904-0KA13-0KT0	1	1 unit	41C	0.130
	20		2	3RF2920-0KA13	1	1 unit	41C	0.130
	50		2	3RF2950-0KA13	1	1 unit	41C	0.130
	90		2	3RF2990-0KA13	1	1 unit	41C	0.130
	20	400 ... 600	2	3RF2920-0KA16	1	1 unit	41C	0.130
	50		2	3RF2950-0KA16	1	1 unit	41C	0.130
	50		2	3RF2950-0KA16-0KT0	1	1 unit	41C	0.130
	90		2	3RF2990-0KA16	1	1 unit	41C	0.130

Accessories

	Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
		d					
Optional accessories							
	Sealable covers for function modules (not for converters)	5	3RF2900-0RA88	1	10 units	41C	0.001

3RF2900-0RA88

* You can order this quantity or a multiple thereof.

Solid-State Switching Devices for Resistive/Inductive Loads

Function Modules

SIRIUS power regulators for 3RF2

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 for 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. Partial load monitoring is not possible. Load fluctuations are compensated.

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 resistive 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 2/142.

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 μ H.

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

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V	d	Article No.				kg
Power regulators							
Rated control supply voltage 24 V AC/DC							
20	110 ... 230	2	3RF2920-0HA13	1	1 unit	41C	0.130
20	400 ... 600	2	3RF2920-0HA16	1	1 unit	41C	0.130
50	110 ... 230	2	3RF2950-0HA13	1	1 unit	41C	0.130
50	400 ... 600	2	3RF2950-0HA16	1	1 unit	41C	0.130
90	110 ... 230	2	3RF2990-0HA13	1	1 unit	41C	0.130
90	400 ... 600	2	3RF2990-0HA16	1	1 unit	41C	0.130



3RF29

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg
Optional accessories						
Sealable covers for function modules (not for converters)	5	3RF2900-0RA88	1	10 units	41C	0.001



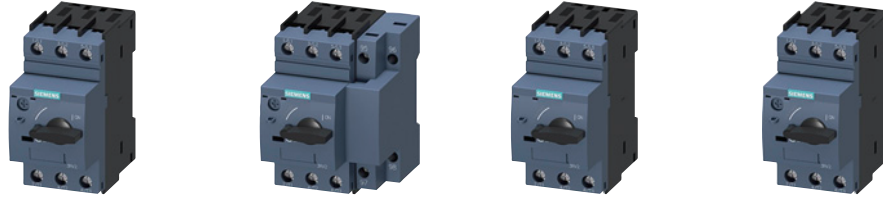
3RF2900-0RA88

Motor Starter Protectors/Circuit Breakers

Motor Starter Protectors/Circuit Breakers

Introduction

Overview



Type	3RV20	3RV21	3RV23	3RV24
SIRIUS 3RV2 motor starter protectors/circuit breakers				
Applications				
• System protection	✓ ¹⁾	✓ ¹⁾	--	--
• Motor protection	✓	--	--	--
• Motor protection with overload relay function	--	✓	--	--
• Starter combinations	--	--	✓	--
• Transformer protection	--	--	--	✓
Size	S00, S0, S2, S3	S00, S0, S2, S3	S00, S0, S2, S3	S00, S0, S2
Rated current I_n				
• Size S00	A Up to 16	Up to 16	Up to 16	Up to 16
• Size S0	A Up to 40	Up to 32	Up to 40	Up to 25
• Size S2	A Up to 80	Up to 80	Up to 80	Up to 65
• Size S3	A Up to 100	Up to 100	Up to 100	--
Rated operational voltage U_e acc. to IEC	V 690 AC ²⁾	690 AC ²⁾	690 AC ²⁾	690 AC ²⁾
Rated frequency	Hz 50/60	50/60	50/60	50/60
Trip class	CLASS 10 (S00 ... S3), CLASS 20 (S2, S3)	CLASS 10	--	CLASS 10
Thermal overload releases	A 0.11 ... 0.16 to 80 ... 100 A	0.11 ... 0.16 to 80 ... 100	None ³⁾	0.11 ... 0.16 to 54 ... 65
Electronic releases				
A multiple of the rated current	13 times	13 times	13 times	20 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA 20/55/65/100	55/65/100	20/55/65/100	55/65/100
Pages	2/162 ... 2/165	2/166	2/168, 2/169	2/170

Accessories															
For sizes	S00	S0	S2	S3	S00	S0	S2	S3	S00	S0	S2	S3	S00	S0	S2
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	✓	✓	✓	--	✓	✓	✓	--	✓	✓	✓	--	✓	✓	✓
Enclosure for flush mounting	✓	✓	--	--	✓	✓	--	--	✓	✓	--	--	✓	✓	--
Front plates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Infeed system	✓	✓	--	--	--	--	--	--	✓	✓	--	--	✓	✓	--
Sealable scale covers for setting knobs	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	✓	✓	✓
Remote motorized operating mechanisms	--	--	--	✓	--	--	--	✓	--	--	--	✓	--	--	--

Pages 2/171 ... 2/181

- ✓ Has this function or can use this accessory
 -- Does not have this function or cannot use this accessory

³⁾ For overload protection of the motors, appropriate overload relays must be used.

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 2/158.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Industry Mall, see www.siemens.com/product?3RV2

Configuration manual for SIRIUS controls with IE3 motors, see <https://support.industry.siemens.com/cs/ww/en/view/94770820>

System Manual "SIRIUS Innovations – System Overview", see <https://support.industry.siemens.com/cs/ww/en/view/60311318>

Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", see <https://support.industry.siemens.com/cs/ww/en/view/60279172>

Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", see <https://support.industry.siemens.com/cs/ww/en/view/60279172>

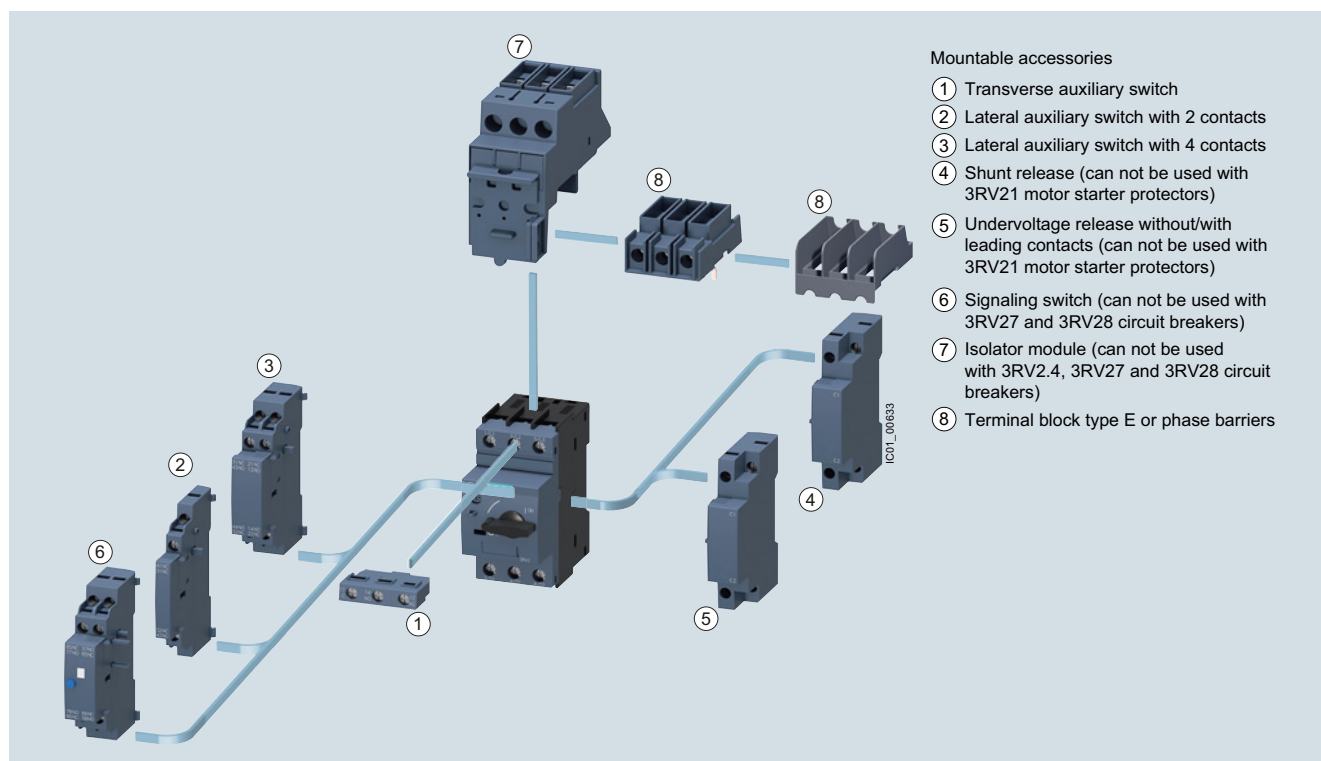
Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", see <https://support.industry.siemens.com/cs/ww/en/view/35681461>

UL reports of the individual devices, see www.siemens.com/sirius/manuals

Certificates, see <https://support.industry.siemens.com/cs/ww/en/ps/16245/cert>

The following illustration shows 3RV2 motor starter protectors/circuit breakers with the accessories which can be mounted for the sizes S00 to S3, see also "Introduction" → "Overview", page 2/147.

Accessories, see page 2/171 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 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 breaker 2/151s are used for switching and protecting three-phase motors of up to 55/45 kW at 400 V AC and for other loads with rated currents of up to 100 A.

The new 3RV2 motor starter protectors/circuit breakers are usually approved according to IEC and UL/CSA. According to UL 508/UL 60947-4-1, the 3RV2 motor starter protectors/circuit breakers in sizes S00 to S3 are approved 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 or phase barriers. For more information, see www.siemens.com/ic10, Chapter 7 "Accessories".

Corresponding short-circuit values, see pages 2/151 to 2/154.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

Type of construction

The 3RV2 motor starter protectors are available in four 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
- Size S2 – width 55 mm, max. rated current 80 A, at 400 V AC suitable for three-phase motors up to 37 kW
- Size S3 – width 70 mm, max. rated current 100 A, at 400 V AC suitable for three-phase motors up to 45/55 kW

Connection methods

The 3RV2 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.

Use in hazardous areas

The 3RV20 motor starter protectors for motor protection in sizes S00, S0, S2 and S3 have certification in accordance with both the European explosion protection directive ATEX and the international explosion protection standard (IECEx).

In accordance with the European directive (ATEX), the 3RV20 are able to switch and protect explosion-proof motors of type of protection "Increased Safety EEx e".

In accordance with the international guideline (IECEx), the 3RV20 are able to switch and protect motors of the types "Increased Safety Ex e" or "Flameproof enclosure Ex d"

Article No. scheme

Product versions		Article number									
Motor starter protectors/circuit breakers		3RV2 □ □ □ – □ □ □ □ – □ □ □ □									
Type of motor starter protector/circuit breaker	e.g. 0 = for motor protection/system protection	□	□	□	–	□	□	□	□	–	□ □ □ □
Size	e.g. 1 = 16 A (7.5 kW) for size S00	□	□	□	–	□	□	□	□	–	□ □ □ □
Breaking capacity	e.g. 1 = standard switching capacity	□	□	□	–	□	□	□	□	–	□ □ □ □
Setting range for overload release	e.g. 1A = 1.1 ... 1.6 A	□	□	□	–	□	□	□	□	–	□ □ □ □
Trip class (CLASS)	e.g. A = a (adjustable CLASS 10) / n (13 or 20 x I_n)	□	□	□	–	□	□	□	□	–	□ □ □ □
Connection methods	e.g. 1 = screw terminals	□	□	□	–	□	□	□	□	–	□ □ □ □
With or without auxiliary switch	e.g. 0 = without	□	□	□	–	□	□	□	□	–	□ □ □ □
Special versions		□	□	□	–	□	□	□	□	–	□ □ □ □
Example		3RV2 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.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

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.

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 2/153](#).

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 startup 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 3RV 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 operation in IT systems (IT networks)
- For switching of DC currents
- In areas subject to explosion hazard (ATEX)

Special versions of 3RV2 motor starter protectors/circuit breakers can be used for low ambient temperatures down to -50°C or also for system protection. More detailed information is available on request.

Use of SIRIUS protection devices in conjunction with IE3/IE4 motors

Note:

For the use of 3RV2 motor starter protectors/circuit breakers in conjunction with highly energy-efficient IE3/IE4 motors, please observe the information on dimensioning and configuring, [see "Configuration Manual for SIRIUS Controls with IE3 Motors"](#) <https://support.industry.siemens.com/cs/ww/en/view/94770820>.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

Technical specifications

More information

Home page, see www.siemens.com/railway-components
 Catalog IC 10, see www.siemens.com/ic10
 Industry Mall, see www.siemens.com/product?3RV2

Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers", see <https://support.industry.siemens.com/cs/ww/en/view/35681461>

UL reports of the individual devices, see www.siemens.com/sirius/manuals

Short-circuit breaking capacity I_{cu} , I_{cs} 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} of the 3RV2 motor starter protectors/circuit breakers with different operational 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/contactors assemblies for short-circuit currents up to 150 kA can be ordered as fuseless load feeders, see www.siemens.com/ic10, 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	12.5	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	12.5	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 short-circuit current at the place of installation is $> I_{cu}$.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

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 S2																
3RV2.31	14; 17	100	100	--	65	30	100	50	25	100	12	6	63	5	3	63
	20	100	100	--	65	30	100	50	25	100	12	6	80	5	3	80
	25	100	100	--	65	30	100	50	15	100	12	6	80	5	3	80
	32; 36	100	100	--	65	30	125	50	15	125	10	5	100	4	2	100
	40; 45	100	100	--	65	30	160	50	15	125	10	5	100	4	2	100
	52	100	100	--	65	30	160	50	15	125	10	5	125	4	2	125
	59; 65	100	100	--	65	30	160	50	15	160	8	4	125	4	2	125
	73; 80	100	100	--	65	30	200	50	15	200	8	4	160	4	2	125
Size S2, with increased switching capacity																
3RV2.32	14; 17	100	100	--	100	50	--	65	30	100	18	10	63	8	5	63
	20; 25	100	100	--	100	50	--	65	30	100	18	10	80	8	5	80
	32 ... 45	100	100	--	100	50	--	65	30	125	15	8	100	6	4	100
	52	100	100	--	100	50	--	65	30	125	15	8	125	6	4	125
	59; 65	100	100	--	100	50	--	50	15	160	10	5	125	6	4	125
	73; 80	100	100	--	100	50	--	50	15	200	10	5	160	6	4	125
Size S3																
3RV2.41	40	100	100	--	65	30	125	65	30	125	12	6	100	6	3	63
	50	100	100	--	65	30	125	65	30	125	12	6	100	6	3	80
	63	100	100	--	65	30	160	65	30	160	12	6	100	6	3	80
	75	100	100	--	65	30	160	65	30	160	8	4	125	5	3	100
	84 ... 100	100	100	--	65	30	160	65	30	160	8	4	125	5	3	125
Size S3, with increased switching capacity																
3RV2.42	40	100	100	--	100	50	--	100	50	--	18	9	160	12	6	80
	50	100	100	--	100	50	--	100	50	--	15	7.5	160	10	5	100
	63	100	100	--	100	50	--	70	50	200	15	7.5	160	7.5	4	100
	75	100	100	--	100	50	--	70	50	200	10	5	160	6	3	125
	84 ... 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 short-circuit current at the place of installation is $> I_{cu}$.

4) Alternatively, fuseless limiter combinations for 690 V AC can also be used.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

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 the 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 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 440 V AC ^{1)/} 460 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⁾	I_{cuIT}	Max. fuse (gG) ³⁾
Type	A	kA	A	kA	A	kA	A	kA	A	kA	A
Size S00											
3RV2.11	0.16 ... 0.4	100	--	100	--	100	--	100	--	100	--
	0.5	100	--	100	--	100	--	100	--	0.5	4
	0.63; 0.8	100	--	100	--	100	--	100	--	0.5	6
	1	100	--	100	--	2	10	2	10	1.5	10
	1.25	100	--	100	--	2	16	2	16	1.5	16
	1.6	100	--	100	--	2	20	2	20	1.5	16
	2; 2.5	100	--	8	25	2	25	2	25	1.5	20
	3.2	100	--	8	32	2	32	2	32	1.5	25
	4; 5	100	--	4	32	1.5	32	1.5	32	1.5	25
	6.3; 8	100	--	4	50	1	40	1	40	1	35
	10	100	--	4	50	1	40	1	40	1	40
	12.5	100	--	4	63	1	50	1	50	1	40
	16	55	80	4	63	1	50	1	50	1	40
Size S0											
3RV2.21	0.16 ... 0.4	100	--	100	--	100	--	100	--	100	--
	0.5	100	--	100	--	100	--	100	--	0.5	4
	0.63; 0.8	100	--	100	--	100	--	100	--	0.5	6
	1	100	--	100	--	2	10	2	10	1.5	10
	1.25	100	--	100	--	2	16	2	16	1.5	16
	1.6	100	--	100	--	2	20	2	20	1.5	16
	2; 2.5	100	--	8	25	2	25	2	25	1.5	20
	3.2	100	--	8	32	2	32	2	32	1.5	25
	4; 5	100	--	4	32	1.5	32	1.5	32	1.5	25
	6.3; 8	100	--	4	50	1	40	1	40	1	35
	10	100	--	4	50	1	40	1	40	1	40
	12.5	100	--	4	63	1	50	1	50	1	40
	16	55	80	4	63	1	50	1	50	1	40
	20 ... 25	55	80	4	63	1	50	1	50	1	50
	28; 32	55	80	2	63	1	63	1	63	1	63
	36; 40	20	80	2	63	1	63	1	63	1	63

-- No back-up fuse required, since short-circuit resistant up to 100 kA

1) 5 % overvoltage.

2) Without overvoltage.

3) Back-up fuse only required if short-circuit current at installation location is $> I_{cuIT}$.

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.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

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⁾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⁾	I_{cuIT}	Max. fuse (gG) ³⁾
Type	A	kA	A	kA	A	kA	A	kA	A	kA	A
Size S2											
3RV2031, 3RV2131, 3RV2331	14 ... 25	100	--	8	100	6	80	6	80	4	63
	32 ... 45	100	--	6	125	4	100	4	100	3	80
	52 ... 80	100	--	4	160	3	125	3	125	2	100
Size S2, with increased switching capacity											
3RV2032, 3RV2332	14 ... 25	100	--	8	100	6	80	6	80	4	63
	32 ... 45	100	--	6	125	6	100	6	100	4	80
	52	100	--	6	160	6	125	6	125	4	100
	59 ... 80	100	--	6	160	4	125	4	125	4	100
Size S3											
3RV2.41	40	65	125	10	63	5	50	5	50	5	50
	50	65	125	8	80	3	63	3	63	3	63
	63	65	160	6	80	3	63	3	63	3	63
	75	65	160	5	100	2	80	2	80	2	80
	90; 100	65	160	5	125	2	100	2	100	2	100
Size S3, with increased switching capacity											
3RV2.42	40	100	--	12	80	6	63	6	63	6	63
	50	100	--	10	100	4	80	4	80	4	80
	63	100	--	7.5	100	4	80	4	80	4	80
	75	100	--	6	125	3	100	3	100	3	100
	90; 100	100	--	6	160	3	125	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 installation location is $> I_{cuIT}$.

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/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 breaker. Short-circuit proof wiring between the motor starter protectors/circuit breaker 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} kA	I_{CS} kA	I_{CU} kA	I_{CS} kA
Type	Type	A				
Size S00						
3RV2011	Size S0: 3RV2321-4EC10 $I_n = 32$ A	2 ... 6.3 8 10 ... 16	-- 100 100	-- 50 50	50 20 20 ³⁾	25 10 10 ³⁾
	Size S2: 3RV2331-4WC10 $I_n = 52$ A	10 ... 16	--	--	50	25
Size S0						
3RV2021	Size S0: 3RV2321-4EC10 $I_n = 32$ A	16 ... 32	100	50	20 ³⁾	10 ³⁾
	Size S2: 3RV2331-4WC10 $I_n = 52$ A	16 ... 32	--	--	50	20
Size S2, with increased switching capacity						
3RV2032	Size S2: 3RV2332-4RC10 $I_n = 80$ A	14... 80	100	50	70	35
Size S3, with increased switching capacity						
3RV2042	Size S3 ⁴⁾ : 3RV2342-4MC10 $I_n = 100$ A	40 ... 100	100	50	50	25

-- No limiter required

1) 10 % overvoltage.

2) 5 % overvoltage.

3) Infeed to the limiter is always on the side 1L1/3L2/5L3.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

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/UL 60947-4-1 and CSA C22.2 No. 14/CSA C22.2 No. 60947-4-1 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).

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 a circuit breaker according to UL 489/CSA C22.2 No. 5 may be used for this purpose. 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

Motor starter protectors/ circuit breakers		hp rating ¹⁾ for FLA ²⁾ max.		Rated current I_n	240 V AC		480 V AC		600 V AC	
Type	V	Single- phase	3-phase	A	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA	UL $I_{bc}^{(3)}$ kA	CSA $I_{bc}^{(3)}$ kA
Size S00										
3RV2011, 3RV2111, 3RV2311, 3RV2411				0.16 ... 12.5 16	65	65	65	65	30	30
FLA ²⁾ max.	115/120	1	2		65	65	65	65	--	--
16 A, 480 V	200/208	2	3							
12.5 A, 600 V	230/240	2	5							
	460/480	--	10							
	575/600	--	10							
3RV1611-0BD10				0.2	65	65	65	65	10	10
Size S0										
3RV2021, 3RV2121, 3RV2321, 3RV2421				0.16 ... 12.5 16 ... 25 28, 32 36, 40	65	65	65	65	30 --/(30) ⁴⁾	30 --/(30) ⁴⁾
FLA ²⁾ max.	115/120	3	5		65	65	65	65	--	--
40 A, 480 V	200/208	5	10		65	65	50	50	--	--
12.5 A, 600 V	230/240	7 1/2	10		65	65	12	12	--	--
	460/480	--	30							
	575/600	--	--							
Size S2										
3RV2031, 3RV2331				14 ... 36 40 ... 52 59 ... 65 73 ... 80	65	65	65	65	25 22 20 ⁵⁾ 20 ⁵⁾	25 22 20 ⁵⁾ 20 ⁵⁾
FLA ²⁾ max.	115/120	7.5	10		65	65	65 ⁵⁾	65 ⁵⁾	25	25
80 A, 600 V	200/208	15	25		65	65	65 ⁵⁾	65 ⁵⁾	22	22
	230/240	15	30		65	65	65 ⁵⁾	65 ⁵⁾	20 ⁵⁾	20 ⁵⁾
	460/480	--	60							
	575/600	--	75							
Size S2, with increased switching capacity										
3RV2032, 3RV2332				14 ... 36 40 ... 52 59 ... 65 73 ... 80	100	100	100	100	25 22 25 ⁵⁾ 25 ⁵⁾	25 22 25 ⁵⁾ 25 ⁵⁾
FLA ²⁾ max.	115/120	7.5	10		100	100	100 ⁵⁾	100 ⁵⁾	25 ⁵⁾	25 ⁵⁾
80 A, 600 V	200/208	15	25		100	100	100 ⁵⁾	100 ⁵⁾	25 ⁵⁾	25 ⁵⁾
	230/240	15	30		100	100	100 ⁵⁾	100 ⁵⁾	25 ⁵⁾	25 ⁵⁾
	460/480	--	60							
	575/600	--	75							
Size S3										
3RV2.41, 3RV2.42				40 ... 75 84 ... 100	65	65	65	65	30 10/30 ⁶⁾	30 10/30 ⁶⁾
FLA ²⁾ max.	115/120	7.5	15		65	65	65	65		
100 A, 600 V	200/208	15	30							
	230/240	20	40							
	460/480	--	75							
	575/600	--	100							

-- 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⁾ Values in brackets only apply to 3RV2.23 motor starter protectors.

⁵⁾ With Class J fuse.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

3RV20 motor starter protectors (up to 100 A) 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 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/ circuit breakers		hp rating ¹⁾ for FLA ²⁾ max.		Rated current I_n	240 V AC UL I_{bc} ³⁾ kA	480 Y/277 V AC UL I_{bc} ³⁾ kA	600 Y/347 V AC UL I_{bc} ³⁾ kA
Type	V	Single- phase	3-phase	A			
Size S00							
3RV2011				0.16 ... 12.5 16	65 65	65 65	30 --
FLA ²⁾ max.	115/120	1	2				
16 A, 480 V	200/208	2	3				
12.5 A, 600 V	230/240	2	5				
	460/480	--	10				
	575/600	--	10				
Size S0							
3RV2021				0.16 ... 12.5 16 ... 25 28; 32	65 65 50	65 65 50	30 -- --
FLA ²⁾ max.	115/120	2	5				
32 A, 480 V	200/208	3	10				
12.5 A, 600 V	230/240	5	10				
	460/480	--	20				
	575/600	--	--				
Size S2							
3RV2031				14 ... 36 40 ... 52 59 ... 65 73 80	65 65 65 65 65	65 65 30 20 10	25 22 -- -- --
FLA ²⁾ max.	115/120	7.5	10				
80 A, 480 V	200/208	15	25				
52 A, 600 V	230/240	15	30				
	460/480	--	60				
	575/600	--	75				
Size S2, with increased switching capacity							
3RV2032				14 ... 36 40 ... 52 59 ... 65 73 80	100 100 100 100 100	100 100 42 30 10	25 22 -- -- --
FLA ²⁾ max.	115/120	7.5	10				
80 A, 480 V	200/208	15	25				
52 A, 600 V	230/240	15	30				
	460/480	--	60				
	575/600	--	75				
Size S3							
3RV204.				40 ... 75 84 ... 100	65 65	65 65	30 --
FLA ²⁾ max.	115/120	7.5	15				
100 A, 480 V	200/208	15	30				
75 A, 600 V	230/240	20	40				
	460/480	--	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.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

3RV20 motor starter protectors (up to 100 A) as "Self-Protected Combination Motor Controllers (Type E)"

UL 508/UL 60947-4-1 approval demands 1-inch through air spacing and 2-inch over surface spacing at line side for "Self-Protected Combination Motor Controllers".

Therefore, 3RV20 motor starter protectors of sizes S00 to S3 are approved according to UL 508/UL 60947-4-1 in combination with the terminal blocks listed below.

CSA does not require these extended clearances. 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/ circuit breakers		hp rating ¹⁾ for FLA ²⁾ max.		Rated current I_n A	Up to 240 V AC		Up to 480 V/277 V AC		Up to 600 V/347 V AC	
		Single- phase	3-phase		UL $I_{bc}^{3)}$ kA	CSA $I_{bc}^{3)}$ kA	UL $I_{bc}^{3)}$ kA	CSA $I_{bc}^{3)}$ kA	UL $I_{bc}^{3)}$ kA	CSA $I_{bc}^{3)}$ kA
Type	V									
Size S00										
3RV2011 + 3RV2928-1H⁴⁾⁵⁾				0.16 ... 12.5 16	65 65	65 65	65 65	65 65	30 --	30 --
FLA ²⁾ max.	115/120	1	2							
16 A, 480 V;	200/208	2	3							
12.5 A, 600 V	230/240	2	5							
	460/480	--	10							
	575/600	--	10							
Size S0										
3RV2021 + 3RV2928-1H⁴⁾⁵⁾				0.16 ... 12.5 16 ... 25 28; 32	65 65 50	65 65 50	65 65 50	65 65 50	30 -- --	30 -- --
FLA ²⁾ max.	115/120	2	5							
32 A, 480 V	200/208	3	10							
12.5 A, 600 V	230/240	5	10							
	460/480	--	20							
	575/600	--	--							
Size S2										
3RV2031+ 3RV2938-1K⁴⁾				14 ... 36 40 ... 52 59 ... 73	65 65 65	65 65 65	65 65 20	65 65 20	25 22 --	25 22 --
FLA ²⁾ max.	115/120	7.5	10							
73 A, 480 V	200/208	15	25							
52 A, 600 V	230/240	15	30							
	460/480	--	60							
	575/600	--	75							
Size S2, with increased switching capacity										
3RV2032 + 3RV2938-1K⁴⁾				14 ... 36 40 ... 52 59 ... 73	100 100 100	100 100 100	100 100 30	100 100 30	25 22 --	25 22 --
FLA ²⁾ max.	115/120	7.5	10							
73 A, 480 V	200/208	15	25							
52 A, 600 V	230/240	15	30							
	460/480	--	60							
	575/600	--	75							
Size S3										
3RV2041/2042 + 3RT2946-4GA07⁴⁾				40 ... 75 84 ... 100	65 65	65 65	65 65	65 65	30 --	30 --
FLA ²⁾ max.	115/120	7.5	15							
100 A, 480 V	200/208	15	30							
75 A, 600 V	230/240	20	40							
	460/480	--	75							
	575/600	--	75							

-- No approval

¹⁾ hp rating = Power rating in horse power (maximum motor rating).
Alternatively phase barrier 3RV2928-1K can be used.

²⁾ FLA = Full Load Amps/motor full load current.

³⁾ Corresponds to "short-circuit breaking capacity" according to UL/CSA.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

General data					
Type		3RV2.1.	3RV2.2.	3RV2.3.	3RV2.4.
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) • UL 508/UL 60947-4-1, CSA C22.2 No. 14/ CSA C22.2 No. 60947-4-1		Yes			
		Yes			
		Yes			
		Yes			
Number of poles		3			
Max. rated current $I_{n \max}$ (= max. rated operational current I_e)	A	16	40	80	100
Permissible ambient temperature • Storage/transport • Operation	I_n : 0.16 ... 32 A	°C –50 ... +80 °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.)	--	--
	I_n : 14 ... 80 A	°C --		–20 ... +70 (current reduction above +60 °C)	--
	I_n : 40 ... 100 A	°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 to motor starter protector/circuit breaker inside enclosure: S0/S00 ≤ 32 A, S2 ≤ 52 A)					
• +35 °C	%	100		100	100
• +60 °C	%	87		--	87
Rated operational voltage U_e					
• Acc. to IEC	V AC	690 (when a molded-plastic enclosure is used only 500 V)			
• Acc. to UL/CSA	V AC	600			
Rated frequency	Hz	50/60			
Rated insulation voltage U_i	V	690			1000
Rated impulse withstand voltage U_{imp}	kV	6			8
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	--		10/20	
DC short-circuit breaking capacity (time constant $t = 5$ ms)					
• 1 conducting path 150 V DC	kA	10		On request	
• 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					
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		--	
Dependent on rated current I_n (upper setting range)					
I_n : 14 ... 16 A	W	--	7	10	--
I_n : 17 ... 25 A	W	--	8	12	--
I_n : 28 ... 32 A	W	--	11	14	--
I_n : 36 ... 40 A	W	--	14	15	--
I_n : 45 ... 52 A	W	--	--	17	--
I_n : 59 ... 65 A	W	--	--	19	--
I_n : 73 ... 80 A	W	--	--	21	--
I_n : 40 ... 50 A	W	--	--	--	21
I_n : 63 ... 75 A	W	--	--	--	21
I_n : 84 ... 93 A	W	--	--	--	32
I_n : 100 A	W	--	--	--	38
Shock resistance					
Acc. to IEC 60068-2-27	g/ms	25/11 (square and sine pulse)			

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

General data					
Type		3RV2.1.	3RV2.2.	3RV2.3.	3RV2.4.
Degree of protection	Acc. to IEC 60529	IP20		• IP20 on front side • Terminal IP00 (use additional terminal covers use additional terminal covers)	
Touch protection	Acc. to IEC 60529	Finger-safe		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 (not for 3RV23 motor starter protectors)			
Protection of motors in hazardous environments		Yes (only for 3RV20 motor starter protectors)			
• EC type-examination certificate number according to European Directive 2014/34/EU (ATEX)		DMT 02 ATEX F 001  II (2) GD			
• According to international standard IECEx		IECEx BVS14.0102 [Ex]			
Isolating function	Acc. to IEC 60947-2	Yes			
Main and EMERGENCY-STOP switch characteristics (with corresponding accessories)	Acc. to DIN EN 60204-1 VDE 0113	Yes			
Protective separation between main and auxiliary circuits required for PELV applications	Acc. to IEC 60947-1	Yes			
• Up to 400 V +10 % • 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		52 A: 50 000, 80 A: 20 000	25 000
Electrical endurance (operating cycles)		100 000		52 A: 50 000, 80 A: 20 000	25 000
Max. switching frequency per hour (motor starts)	1/h	15			

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 switch	Transverse auxiliary switch 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		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	1 NO + 1 NC, 2 NO
Rated operational current I_e			
• At AC-15, alternating voltage	- 24 V	A	4
	- 230 V	A	3
• At AC-12 = I_{th} , alternating voltage	- 24 V	A	10
	- 230 V	A	10
• At DC-13, direct voltage L/R 200 ms	- 24 V	A	1
	- 48 V	A	--
	- 60 V	A	0.3
	- 110 V	A	0.15
	- 110 V	A	--
	- 220 V	A	--
Minimum load capacity	V mA	17 1	

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

Front transverse solid-state 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 mA		5 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 mA			17 1

Auxiliary releases

		Undervoltage releases	Shunt release
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 × U_s	0.7 ... 1.1 × U_s
• Pick-up	V	0.85 ... 1.1 × U_s	--
Opening time maximum	ms	20	

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

General data

Connection modules for motor starter protectors/circuit breakers with screw terminals			
Version	Type	3RT1900-4RE01 Connector S0	3RT1926-4RD01 Adapter S0
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	
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 on front side	

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

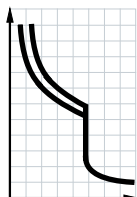
For motor protection

Selection and ordering data

CLASS 10, without auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E

2



3RV2011-0AA10



3RV2011-0EA20



3RV2021-4AA10



3RV2021-4AA20

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	SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
I_n				I_{cu}	d	Article No.	d	Article No.	kg
A	kW	A	A	kA					
Size S00									
0.16	0.04	0.11 ... 0.16	2.1	100	▶	3RV2011-0AA10	▶	3RV2011-0AA20	0.294
0.2	0.06	0.14 ... 0.2	2.6	100	▶	3RV2011-0BA10	▶	3RV2011-0BA20	0.296
0.25	0.06	0.18 ... 0.25	3.3	100	▶	3RV2011-0CA10	▶	3RV2011-0CA20	0.296
0.32	0.09	0.22 ... 0.32	4.2	100	▶	3RV2011-0DA10	▶	3RV2011-0DA20	0.295
0.4	0.09	0.28 ... 0.4	5.2	100	▶	3RV2011-0EA10	▶	3RV2011-0EA20	0.297
0.5	0.12	0.35 ... 0.5	6.5	100	▶	3RV2011-0FA10	▶	3RV2011-0FA20	0.294
0.63	0.18	0.45 ... 0.63	8.2	100	▶	3RV2011-0GA10	▶	3RV2011-0GA20	0.300
0.8	0.18	0.55 ... 0.8	10	100	▶	3RV2011-0HA10	▶	3RV2011-0HA20	0.296
1	0.25	0.7 ... 1	13	100	▶	3RV2011-0JA10	▶	3RV2011-0JA20	0.361
1.25	0.37	0.9 ... 1.25	16	100	▶	3RV2011-0KA10	▶	3RV2011-0KA20	0.366
1.6	0.55	1.1 ... 1.6	21	100	▶	3RV2011-1AA10	▶	3RV2011-1AA20	0.362
2	0.75	1.4 ... 2	26	100	▶	3RV2011-1BA10	▶	3RV2011-1BA20	0.366
2.5	0.75	1.8 ... 2.5	33	100	▶	3RV2011-1CA10	▶	3RV2011-1CA20	0.360
3.2	1.1	2.2 ... 3.2	42	100	▶	3RV2011-1DA10	▶	3RV2011-1DA20	0.367
4	1.5	2.8 ... 4	52	100	▶	3RV2011-1EA10	▶	3RV2011-1EA20	0.367
5	1.5	3.5 ... 5	65	100	▶	3RV2011-1FA10	▶	3RV2011-1FA20	0.369
6.3	2.2	4.5 ... 6.3	82	100	▶	3RV2011-1GA10	▶	3RV2011-1GA20	0.374
8	3	5.5 ... 8	104	100	▶	3RV2011-1HA10	▶	3RV2011-1HA20	0.373
10	4	7 ... 10	130	100	▶	3RV2011-1JA10	▶	3RV2011-1JA20	0.370
12.5	5.5	9 ... 12.5	163	100	▶	3RV2011-1KA10	▶	3RV2011-1KA20	0.371
16	7.5	10 ²⁾ ... 16	208	55	▶	3RV2011-4AA10	▶	3RV2011-4AA20	0.398
Size S0									
0.63	0.18	0.45 ... 0.63	8.2	100	2	3RV2021-0GA10	2	3RV2021-0GA20	0.333
0.8	0.18	0.55 ... 0.8	10	100	2	3RV2021-0HA10	2	3RV2021-0HA20	0.330
1	0.25	0.7 ... 1	13	100	2	3RV2021-0JA10	2	3RV2021-0JA20	0.395
1.25	0.37	0.9 ... 1.25	16	100	2	3RV2021-0KA10	2	3RV2021-0KA20	0.403
1.6	0.55	1.1 ... 1.6	21	100	2	3RV2021-1AA10	2	3RV2021-1AA20	0.404
2	0.75	1.4 ... 2	26	100	2	3RV2021-1BA10	2	3RV2021-1BA20	0.402
2.5	0.75	1.8 ... 2.5	33	100	2	3RV2021-1CA10	2	3RV2021-1CA20	0.402
3.2	1.1	2.2 ... 3.2	42	100	2	3RV2021-1DA10	2	3RV2021-1DA20	0.406
4	1.5	2.8 ... 4	52	100	2	3RV2021-1EA10	2	3RV2021-1EA20	0.400
5	1.5	3.5 ... 5	65	100	2	3RV2021-1FA10	2	3RV2021-1FA20	0.408
6.3	2.2	4.5 ... 6.3	82	100	2	3RV2021-1GA10	2	3RV2021-1GA20	0.411
8	3	5.5 ... 8	104	100	2	3RV2021-1HA10	2	3RV2021-1HA20	0.408
10	4	7 ... 10	130	100	2	3RV2021-1JA10	2	3RV2021-1JA20	0.410
12.5	5.5	9 ... 12.5	163	100	2	3RV2021-1KA10	2	3RV2021-1KA20	0.407
16	7.5	10 ²⁾ ... 16	208	55	▶	3RV2021-4AA10	▶	3RV2021-4AA20	0.417
20	7.5	13 ²⁾ ... 20	260	55	▶	3RV2021-4BA10	▶	3RV2021-4BA20	0.410
22	11	16 ²⁾ ... 22	286	55	▶	3RV2021-4CA10	▶	3RV2021-4CA20	0.413
25	11	18 ²⁾ ... 25	325	55	▶	3RV2021-4DA10	▶	3RV2021-4DA20	0.422
28	15	23 ... 28	364	55	▶	3RV2021-4NA10	▶	3RV2021-4NA20	0.453
32 ³⁾	15	27 ... 32	400	55	▶	3RV2021-4EA10	▶	3RV2021-4EA20	0.430
36 ⁴⁾	18.5	30 ... 36	432	20	▶	3RV2021-4PA10	--	--	0.383
40 ⁴⁾	18.5	34 ... 40	480	20	▶	3RV2021-4FA10	--	--	0.384

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 setting range of the thermal overload releases has been extended.

³⁾ Suitable for use with IE3 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.

⁴⁾ 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. For use with IE3 motors we recommend using 3RV2 motor starter protectors size S2.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For motor protection

CLASS 10, without auxiliary switches

3RV2031-4SA10

3RV2032-4RA10

3RV2042-4MA10

Rated current I_n	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	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	kW	A	A	kA	d	Article No.				kg
Size S2										
14	5.5	9.5 ... 14	208	65	▶	3RV2031-4SA10	1	1 unit	41E	1.092
17	7.5	12 ... 17	260	65	▶	3RV2031-4TA10	1	1 unit	41E	1.081
20	7.5	14 ... 20	260	65	▶	3RV2031-4BA10	1	1 unit	41E	1.067
25	11	18 ... 25	325	65	▶	3RV2031-4DA10	1	1 unit	41E	1.054
32	15	22 ... 32	416	65	▶	3RV2031-4EA10	1	1 unit	41E	1.058
36	18.5	28 ... 36	520	65	▶	3RV2031-4PA10	1	1 unit	41E	1.080
40	18.5	32 ... 40	585	65	▶	3RV2031-4UA10	1	1 unit	41E	1.074
45	22	35 ... 45	650	65	▶	3RV2031-4VA10	1	1 unit	41E	1.071
52	22	42 ... 52	741	65	▶	3RV2031-4WA10	1	1 unit	41E	1.166
59	30	49 ... 59	845	65	▶	3RV2031-4XA10	1	1 unit	41E	1.182
65	30	54 ... 65	845	65	▶	3RV2031-4JA10	1	1 unit	41E	1.178
73	37	62 ... 73	949	65	▶	3RV2031-4KA10	1	1 unit	41E	1.172
80 ²⁾	37	70 ... 80	1 040	65	▶	3RV2031-4RA10	1	1 unit	41E	1.180
Size S2, with increased switching capacity										
14	5.5	9.5 ... 14	208	100	▶	3RV2032-4SA10	1	1 unit	41E	1.134
17	7.5	12 ... 17	260	100	▶	3RV2032-4TA10	1	1 unit	41E	1.139
20	7.5	14 ... 20	260	100	▶	3RV2032-4BA10	1	1 unit	41E	1.134
25	11	18 ... 25	325	100	▶	3RV2032-4DA10	1	1 unit	41E	1.114
32	15	22 ... 32	416	100	▶	3RV2032-4EA10	1	1 unit	41E	1.114
36	18.5	28 ... 36	520	100	▶	3RV2032-4PA10	1	1 unit	41E	1.133
40	18.5	32 ... 40	585	100	▶	3RV2032-4UA10	1	1 unit	41E	1.149
45	22	35 ... 45	650	100	▶	3RV2032-4VA10	1	1 unit	41E	1.157
52	22	42 ... 52	741	100	▶	3RV2032-4WA10	1	1 unit	41E	1.167
59	30	49 ... 59	845	100	▶	3RV2032-4XA10	1	1 unit	41E	1.181
65	30	54 ... 65	845	100	▶	3RV2032-4JA10	1	1 unit	41E	1.179
73	37	62 ... 73	949	100	▶	3RV2032-4KA10	1	1 unit	41E	1.170
80 ²⁾	37	70 ... 80	1 040	100	▶	3RV2032-4RA10	1	1 unit	41E	1.180
Size S3										
40	18.5	28 ... 40	520	65	1	3RV2041-4FA10	1	1 unit	41E	2.190
50	22	36 ... 50	650	65	1	3RV2041-4HA10	1	1 unit	41E	2.229
63	30	45 ... 63	819	65	1	3RV2041-4JA10	1	1 unit	41E	2.234
75	37	57 ... 75	975	65	1	3RV2041-4KA10	1	1 unit	41E	2.235
84	45	65 ... 84	1 170	65	▶	3RV2031-4RA10	1	1 unit	41E	1.180
93	45	75 ... 93	1 300	65	1	3RV2041-4YA10	1	1 unit	41E	2.280
100 ³⁾	45, 55	80 ... 100	1 300	65	1	3RV2041-4MA10	1	1 unit	41E	2.268
Size S3, with increased switching capacity										
40	18.5	28 ... 40	520	100	1	3RV2042-4FA10	1	1 unit	41E	2.193
50	22	36 ... 50	650	100	1	3RV2042-4HA10	1	1 unit	41E	2.219
63	30	45 ... 63	819	100	1	3RV2042-4JA10	1	1 unit	41E	2.243
75	37	57 ... 75	975	100	1	3RV2042-4KA10	1	1 unit	41E	2.253
84	45	65 ... 84	1 170	100	1	3RV2042-4RA10	1	1 unit	41E	2.263
93	45	75 ... 93	1 300	100	1	3RV2042-4YA10	1	1 unit	41E	2.279
100 ³⁾	45, 55	80 ... 100	1 300	100	1	3RV2042-4MA10	1	1 unit	41E	2.266

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⁾ Suitable for use with IE3 motors up to a starting current of 720 A. For higher starting currents we recommend using size S3 motor starter protectors.

³⁾ Suitable for use with IE3/IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers (see Catalog LV 10).

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

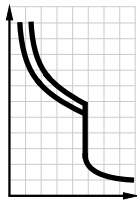
Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

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	SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
I_n			$I >$	I_{cu}	d	Article No.	d	Article No.	kg
A	kW	A	A	kA					
Size S00									
0.16	0.04	0.11 ... 0.16	2.1	100	▶	3RV2011-0AA15	▶	3RV2011-0AA25	0.310
0.2	0.06	0.14 ... 0.2	2.6	100	▶	3RV2011-0BA15	▶	3RV2011-0BA25	0.311
0.25	0.06	0.18 ... 0.25	3.3	100	▶	3RV2011-0CA15	▶	3RV2011-0CA25	0.307
0.32	0.09	0.22 ... 0.32	4.2	100	▶	3RV2011-0DA15	▶	3RV2011-0DA25	0.314
0.4	0.09	0.28 ... 0.4	5.2	100	▶	3RV2011-0EA15	▶	3RV2011-0EA25	0.310
0.5	0.12	0.35 ... 0.5	6.5	100	▶	3RV2011-0FA15	▶	3RV2011-0FA25	0.311
0.63	0.18	0.45 ... 0.63	8.2	100	▶	3RV2011-0GA15	▶	3RV2011-0GA25	0.311
0.8	0.18	0.55 ... 0.8	10	100	▶	3RV2011-0HA15	▶	3RV2011-0HA25	0.308
1	0.25	0.7 ... 1	13	100	▶	3RV2011-0JA15	▶	3RV2011-0JA25	0.375
1.25	0.37	0.9 ... 1.25	16	100	▶	3RV2011-0KA15	▶	3RV2011-0KA25	0.382
1.6	0.55	1.1 ... 1.6	21	100	▶	3RV2011-1AA15	▶	3RV2011-1AA25	0.382
2	0.75	1.4 ... 2	26	100	▶	3RV2011-1BA15	▶	3RV2011-1BA25	0.400
2.5	0.75	1.8 ... 2.5	33	100	▶	3RV2011-1CA15	▶	3RV2011-1CA25	0.403
3.2	1.1	2.2 ... 3.2	42	100	▶	3RV2011-1DA15	▶	3RV2011-1DA25	0.384
4	1.5	2.8 ... 4	52	100	▶	3RV2011-1EA15	▶	3RV2011-1EA25	0.380
5	1.5	3.5 ... 5	65	100	▶	3RV2011-1FA15	▶	3RV2011-1FA25	0.387
6.3	2.2	4.5 ... 6.3	82	100	▶	3RV2011-1GA15	▶	3RV2011-1GA25	0.386
8	3	5.5 ... 8	104	100	▶	3RV2011-1HA15	▶	3RV2011-1HA25	0.387
10	4	7 ... 10	130	100	▶	3RV2011-1JA15	▶	3RV2011-1JA25	0.390
12.5	5.5	9 ... 12.5	163	100	▶	3RV2011-1KA15	▶	3RV2011-1KA25	0.384
16	7.5	10 ²⁾ ... 16	208	55	▶	3RV2011-4AA15	▶	3RV2011-4AA25	0.392
Size S0									
16	7.5	10 ²⁾ ... 16	208	55	▶	3RV2021-4AA15	▶	3RV2021-4AA25	0.430
20	7.5	13 ²⁾ ... 20	260	55	▶	3RV2021-4BA15	▶	3RV2021-4BA25	0.450
22	11	16 ²⁾ ... 22	286	55	▶	3RV2021-4CA15	▶	3RV2021-4CA25	0.429
25	11	18 ²⁾ ... 25	325	55	▶	3RV2021-4DA15	▶	3RV2021-4DA25	0.437
28	15	23 ... 28	364	55	▶	3RV2021-4NA15	▶	3RV2021-4NA25	0.445
32 ³⁾	15	27 ... 32	400	55	▶	3RV2021-4EA15	▶	3RV2021-4EA25	0.446
36 ⁴⁾	18.5	30 ... 36	432	20	▶	3RV2021-4PA15	▶	--	0.399
40 ⁴⁾	18.5	34 ... 40	480	20	▶	3RV2021-4FA15	▶	--	0.387

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 setting range of the thermal overload releases has been extended.

³⁾ Suitable for use with IE3 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.

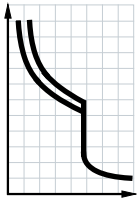
⁴⁾ The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required. For use with IE3 motors we recommend using 3RV2 motor starter protectors size S2.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For motor protection

CLASS 20, without auxiliary switches

3RV2031-4SB10



3RV2031-4WB10



3RV2042-4FB10



3RV2042-4KB10

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	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
I_n				I_{cu}		Article No.				
A	kW	A	A	kA	d					kg
Size S2										
14	5.5	9.5 ... 14	208	65	2	3RV2031-4SB10	1	1 unit	41E	1.088
17	7.5	12 ... 17	260	65	2	3RV2031-4TB10	1	1 unit	41E	1.108
20	7.5	14 ... 20	260	65	▶	3RV2031-4BB10	1	1 unit	41E	1.082
25	11	18 ... 25	325	65	▶	3RV2031-4DB10	1	1 unit	41E	1.080
32	15	22 ... 32	416	65	▶	3RV2031-4EB10	1	1 unit	41E	1.084
36	18.5	28 ... 36	520	65	▶	3RV2031-4PB10	1	1 unit	41E	1.105
40	18.5	32 ... 40	585	65	▶	3RV2031-4UB10	1	1 unit	41E	1.114
45	22	35 ... 45	650	65	▶	3RV2031-4VB10	1	1 unit	41E	1.112
52	22	42 ... 52	741	65	▶	3RV2031-4WB10	1	1 unit	41E	1.212
59	30	49 ... 59	845	65	▶	3RV2031-4XB10	1	1 unit	41E	1.214
65	30	54 ... 65	845	65	▶	3RV2031-4JB10	1	1 unit	41E	1.220
Size S3, with increased switching capacity										
40	18.5	28 ... 40	520	100	2	3RV2042-4FB10	1	1 unit	41E	2.200
50	22	36 ... 50	650	100	2	3RV2042-4HB10	1	1 unit	41E	2.229
63	30	45 ... 63	819	100	2	3RV2042-4JB10	1	1 unit	41E	2.246
75	37	57 ... 75	975	100	2	3RV2042-4KB10	1	1 unit	41E	2.268
84	45	65 ... 84	1 170	100	2	3RV2042-4RB10	1	1 unit	41E	2.300
93	45	75 ... 93	1300	100	2	3RV2042-4YB10	1	1 unit	41E	2.307
100 ²⁾	45, 55	80 ... 100	1300	100	2	3RV2042-4MB10	1	1 unit	41E	2.281

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⁾ Suitable for use with IE3/IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers (see Catalog LV 10).

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

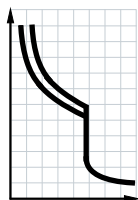
SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For motor protection with overload relay function

Selection and ordering data

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches

2



3RV2111-4FA10



3RV2111-0BA10



3RV2131-4WB10



3RV2142-4FA10

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	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
I_n				I_{cu}		Article No.				kg
A	kW	A	A	kA	d					
Size S00²⁾										
0.16	0.04	0.11 ... 0.16	2.1	100	2	3RV2111-0AA10	1	1 unit	41E	0.335
0.2	0.06	0.14 ... 0.2	2.6	100	2	3RV2111-0BA10	1	1 unit	41E	0.337
0.25	0.06	0.18 ... 0.25	3.3	100	2	3RV2111-0CA10	1	1 unit	41E	0.334
0.32	0.09	0.22 ... 0.32	4.2	100	2	3RV2111-0DA10	1	1 unit	41E	0.337
0.4	0.09	0.28 ... 0.4	5.2	100	2	3RV2111-0EA10	1	1 unit	41E	0.339
0.5	0.12	0.35 ... 0.5	6.5	100	2	3RV2111-0FA10	1	1 unit	41E	0.341
0.63	0.18	0.45 ... 0.63	8.2	100	2	3RV2111-0GA10	1	1 unit	41E	0.338
0.8	0.18	0.55 ... 0.8	10	100	2	3RV2111-0HA10	1	1 unit	41E	0.338
1	0.25	0.7 ... 1	13	100	2	3RV2111-0JA10	1	1 unit	41E	0.401
1.25	0.37	0.9 ... 1.25	16	100	2	3RV2111-0KA10	1	1 unit	41E	0.404
1.6	0.55	1.1 ... 1.6	21	100	2	3RV2111-1AA10	1	1 unit	41E	0.407
2	0.75	1.4 ... 2	26	100	2	3RV2111-1BA10	1	1 unit	41E	0.407
2.5	0.75	1.8 ... 2.5	33	100	2	3RV2111-1CA10	1	1 unit	41E	0.406
3.2	1.1	2.2 ... 3.2	42	100	2	3RV2111-1DA10	1	1 unit	41E	0.407
4	1.5	2.8 ... 4	52	100	2	3RV2111-1EA10	1	1 unit	41E	0.406
5	1.5	3.5 ... 5	65	100	2	3RV2111-1FA10	1	1 unit	41E	0.411
6.3	2.2	4.5 ... 6.3	82	100	2	3RV2111-1GA10	1	1 unit	41E	0.411
8	3	5.5 ... 8	104	100	2	3RV2111-1HA10	1	1 unit	41E	0.410
10	4	7 ... 10	130	100	2	3RV2111-1JA10	1	1 unit	41E	0.412
12.5	5.5	9 ... 12.5	163	100	2	3RV2111-1KA10	1	1 unit	41E	0.409
16	7.5	10 ³⁾ ... 16	208	55	2	3RV2111-4AA10	1	1 unit	41E	0.414
Size S0²⁾										
16	7.5	10 ³⁾ ... 16	208	55	2	3RV2121-4AA10	1	1 unit	41E	0.424
20	7.5	13 ³⁾ ... 20	260	55	2	3RV2121-4BA10	1	1 unit	41E	0.420
22	11	16 ³⁾ ... 22	286	55	2	3RV2121-4CA10	1	1 unit	41E	0.422
25	11	18 ³⁾ ... 25	325	55	2	3RV2121-4DA10	1	1 unit	41E	0.429
28	15	23 ... 28	364	55	2	3RV2121-4NA10	1	1 unit	41E	0.439
32 ⁴⁾	15	27 ... 32	400	55	2	3RV2121-4EA10	1	1 unit	41E	0.436
Size S2²⁾										
14	5.5	9.5 ... 14	208	65	2	3RV2131-4SA10	1	1 unit	41E	1.143
17	7.5	12 ... 17	260	65	2	3RV2131-4TA10	1	1 unit	41E	1.142
20	7.5	14 ... 20	260	65	2	3RV2131-4BA10	1	1 unit	41E	1.135
25	11	18 ... 25	325	65	2	3RV2131-4DA10	1	1 unit	41E	1.122
32	15	22 ... 32	416	65	2	3RV2131-4EA10	1	1 unit	41E	1.122
36	18.5	28 ... 36	520	65	2	3RV2131-4PA10	1	1 unit	41E	1.131
40	18.5	32 ... 40	585	65	2	3RV2131-4UA10	1	1 unit	41E	1.129
45	22	35 ... 45	650	65	2	3RV2131-4VA10	1	1 unit	41E	1.124
52	32	42 ... 52	741	65	2	3RV2131-4WA10	1	1 unit	41E	1.220
59	30	49 ... 59	845	65	2	3RV2131-4XA10	1	1 unit	41E	1.247
65	30	54 ... 65	845	65	2	3RV2131-4JA10	1	1 unit	41E	1.241
73	37	62 ... 73	949	65	2	3RV2131-4KA10	1	1 unit	41E	1.235
80 ⁵⁾	37	70 ... 80	1040	65	2	3RV2131-4RA10	1	1 unit	41E	1.245

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.

³⁾ The setting range of the thermal overload releases has been extended.

⁴⁾ Suitable for use with IE3 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.

⁵⁾ Suitable for use with IE3 motors up to a starting current of 720 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S3.

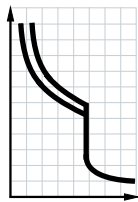
Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For motor protection with overload relay function

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches (continued)



3RV2111-4FA10



3RV2111-0BA10



3RV2131-4WB10



3RV2142-4FA10

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	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
I_n				I_{cu}		Article No.				kg
A	kW	A	A	kA	d					
Size S3, with increased switching capacity²⁾										
40	18.5	28 ... 40	520	100	2	3RV2142-4FA10	1	1 unit	41E	2.260
50	22	36 ... 50	650	100	2	3RV2142-4HA10	1	1 unit	41E	2.301
63	30	45 ... 63	819	100	2	3RV2142-4JA10	1	1 unit	41E	2.293
75	37	57 ... 75	975	100	2	3RV2142-4KA10	1	1 unit	41E	2.301
84	45	65 ... 84	1 170	100	2	3RV2142-4RA10	1	1 unit	41E	2.339
93	45	75 ... 93	1 300	100	2	3RV2142-4YA10	1	1 unit	41E	2.341
100 ³⁾	45, 55	80 ... 100	1 300	100	2	3RV2142-4MA10	1	1 unit	41E	2.325

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.

³⁾ Suitable for use with IE3/IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers (see Catalog LV 10).

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

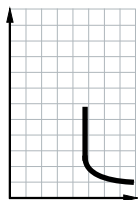
SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

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 releases ²⁾	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
I_n			$I >$	I_{cu}	d	Article No.	d	Article No.	kg
A	kW	A	A	kA					
Size S00									
0.16	0.04	Without	2.1	100	5	3RV2311-0AC10	5	3RV2311-0AC20	0.292
0.2	0.06	Without	2.6	100	5	3RV2311-0BC10	5	3RV2311-0BC20	0.293
0.25	0.06	Without	3.3	100	5	3RV2311-0CC10	5	3RV2311-0CC20	0.293
0.32	0.09	Without	4.2	100	5	3RV2311-0DC10	5	3RV2311-0DC20	0.293
0.4	0.09	Without	5.2	100	5	3RV2311-0EC10	5	3RV2311-0EC20	0.292
0.5	0.12	Without	6.5	100	5	3RV2311-0FC10	5	3RV2311-0FC20	0.293
0.63	0.18	Without	8.2	100	5	3RV2311-0GC10	5	3RV2311-0GC20	0.292
0.8	0.18	Without	10	100	5	3RV2311-0HC10	5	3RV2311-0HC20	0.293
1	0.25	Without	13	100	2	3RV2311-0JC10	5	3RV2311-0JC20	0.360
1.25	0.37	Without	16	100	2	3RV2311-0KC10	5	3RV2311-0KC20	0.360
1.6	0.55	Without	21	100	2	3RV2311-1AC10	5	3RV2311-1AC20	0.364
2	0.75	Without	26	100	2	3RV2311-1BC10	5	3RV2311-1BC20	0.363
2.5	0.75	Without	33	100	2	3RV2311-1CC10	5	3RV2311-1CC20	0.364
3.2	1.1	Without	42	100	2	3RV2311-1DC10	5	3RV2311-1DC20	0.364
4	1.5	Without	52	100	2	3RV2311-1EC10	5	3RV2311-1EC20	0.361
5	1.5	Without	65	100	2	3RV2311-1FC10	5	3RV2311-1FC20	0.367
6.3	2.2	Without	82	100	2	3RV2311-1GC10	5	3RV2311-1GC20	0.375
8	3	Without	104	100	2	3RV2311-1HC10	2	3RV2311-1HC20	0.368
10	4	Without	130	100	2	3RV2311-1JC10	2	3RV2311-1JC20	0.371
12.5	5.5	Without	163	100	2	3RV2311-1KC10	2	3RV2311-1KC20	0.380
16	7.5	Without	208	55	2	3RV2311-4AC10	2	3RV2311-4AC20	0.375
Size S0									
1.6	0.55	Without	21	100	5	3RV2321-1AC10	5	3RV2321-1AC20	0.408
2	0.75	Without	26	100	5	3RV2321-1BC10	5	3RV2321-1BC20	0.401
2.5	0.75	Without	33	100	5	3RV2321-1CC10	5	3RV2321-1CC20	0.399
3.2	1.1	Without	42	100	5	3RV2321-1DC10	5	3RV2321-1DC20	0.403
4	1.5	Without	52	100	5	3RV2321-1EC10	5	3RV2321-1EC20	0.396
5	1.5	Without	65	100	5	3RV2321-1FC10	5	3RV2321-1FC20	0.404
6.3	2.2	Without	82	100	2	3RV2321-1GC10	5	3RV2321-1GC20	0.407
8	3	Without	104	100	2	3RV2321-1HC10	5	3RV2321-1HC20	0.403
10	4	Without	130	100	2	3RV2321-1JC10	5	3RV2321-1JC20	0.407
12.5	5.5	Without	163	100	2	3RV2321-1KC10	5	3RV2321-1KC20	0.390
16	7.5	Without	208	55	2	3RV2321-4AC10	2	3RV2321-4AC20	0.412
20	7.5	Without	260	55	2	3RV2321-4BC10	2	3RV2321-4BC20	0.409
22	11	Without	286	55	2	3RV2321-4CC10	5	3RV2321-4CC20	0.410
25	11	Without	325	55	2	3RV2321-4DC10	2	3RV2321-4DC20	0.414
28	15	Without	364	55	5	3RV2321-4NC10	5	3RV2321-4NC20	0.423
32 ³⁾	15	Without	400	55	2	3RV2321-4EC10	2	3RV2321-4EC20	0.410
36 ⁴⁾	18.5	Without	432	20	2	3RV2321-4PC10	--	--	0.380
40 ⁴⁾	18.5	Without	480	20	2	3RV2321-4FC10	--	--	0.370

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⁾ Suitable for use with IE3 motors up to a starting current of 256 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S2.

⁴⁾ 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. For use with IE3 motors we recommend using 3RV2 motor starter protectors size S2.

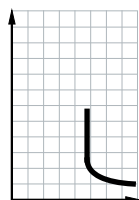
Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For starter combinations

Without auxiliary switches (continued)



3RV2331-4SC10



3RV2331-4WC10



3RV2332-4SC10



3RV2332-4WC10



3RV2341-4FC10

Rated current	Suitable for three-phase motors ¹⁾ with P	Thermal overload releases ²⁾	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
I_n				I_{cu}		Article No.				kg
A	kW	A	A	kA	d					
Size S2										
14	5.5	Without	208	65	2	3RV2331-4SC10	1	1 unit	41E	1.056
17	7.5	Without	260	65	2	3RV2331-4TC10	1	1 unit	41E	1.070
20	7.5	Without	260	65	2	3RV2331-4BC10	1	1 unit	41E	1.061
25	11	Without	325	65	2	3RV2331-4DC10	1	1 unit	41E	1.044
32	15	Without	416	65	2	3RV2331-4EC10	1	1 unit	41E	1.040
36	18.5	Without	520	65	2	3RV2331-4PC10	1	1 unit	41E	1.052
40	18.5	Without	585	65	2	3RV2331-4UC10	1	1 unit	41E	1.052
45	22	Without	650	65	2	3RV2331-4VC10	1	1 unit	41E	1.050
52	22	Without	741	65	2	3RV2331-4WC10	1	1 unit	41E	1.152
59	30	Without	845	65	2	3RV2331-4XC10	1	1 unit	41E	1.173
65	30	Without	845	65	2	3RV2331-4JC10	1	1 unit	41E	1.165
73	37	Without	949	65	2	3RV2331-4KC10	1	1 unit	41E	1.162
80 ³⁾	37	Without	1 040	65	2	3RV2331-4RC10	1	1 unit	41E	1.168
Size S2, with increased switching capacity										
14	5.5	Without	208	100	2	3RV2332-4SC10	1	1 unit	41E	1.132
17	7.5	Without	260	100	2	3RV2332-4TC10	1	1 unit	41E	1.130
20	7.5	Without	260	100	2	3RV2332-4BC10	1	1 unit	41E	1.121
25	11	Without	325	100	2	3RV2332-4DC10	1	1 unit	41E	1.103
32	15	Without	416	100	2	3RV2332-4EC10	1	1 unit	41E	1.111
36	18.5	Without	520	100	2	3RV2332-4PC10	1	1 unit	41E	1.131
40	18.5	Without	585	100	2	3RV2332-4UC10	1	1 unit	41E	1.138
45	22	Without	650	100	2	3RV2332-4VC10	1	1 unit	41E	1.148
52	22	Without	741	100	2	3RV2332-4WC10	1	1 unit	41E	1.149
59	30	Without	845	100	2	3RV2332-4XC10	1	1 unit	41E	1.169
65	30	Without	845	100	2	3RV2332-4JC10	1	1 unit	41E	1.167
73	37	Without	949	100	2	3RV2332-4KC10	1	1 unit	41E	1.163
80 ³⁾	37	Without	1 040	100	2	3RV2332-4RC10	1	1 unit	41E	1.167
Size S3										
40	18.5	Without	520	65	2	3RV2341-4FC10	1	1 unit	41E	2.175
50	22	Without	650	65	2	3RV2341-4HC10	1	1 unit	41E	2.209
63	30	Without	819	65	2	3RV2341-4JC10	1	1 unit	41E	2.208
75	37	Without	975	65	2	3RV2341-4KC10	1	1 unit	41E	2.236
84	45	Without	1 170	65	2	3RV2341-4RC10	1	1 unit	41E	2.248
93	45	Without	1 300	65	2	3RV2341-4YC10	1	1 unit	41E	2.269
100 ⁴⁾	45, 55	Without	1 300	65	2	3RV2341-4MC10	1	1 unit	41E	2.251
Size S3, with increased switching capacity										
40	18.5	Without	520	100	2	3RV2342-4FC10	1	1 unit	41E	2.175
50	22	Without	650	100	2	3RV2342-4HC10	1	1 unit	41E	2.208
63	30	Without	819	100	2	3RV2342-4JC10	1	1 unit	41E	2.216
75	37	Without	975	100	2	3RV2342-4KC10	1	1 unit	41E	2.234
84	45	Without	1 170	100	2	3RV2342-4RC10	1	1 unit	41E	2.240
93	45	Without	1 300	100	2	3RV2342-4YC10	1	1 unit	41E	2.259
100 ⁴⁾	45, 55	Without	1 300	100	2	3RV2342-4MC10	1	1 unit	41E	2.252

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⁾ Suitable for use with IE3 motors up to a starting current of 720 A. For higher starting currents we recommend using 3RV2 motor starter protectors size S3.

⁴⁾ Suitable for use with IE3/IE4 motors up to a starting current of 780 A. For higher starting currents we recommend using 3VA circuit breakers (see Catalog LV 10).

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

For transformer protection

Selection and ordering data

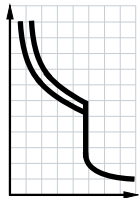
CLASS 10, without auxiliary switches

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



3RV2431-4WA10

Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
I_n		$I >$	I_{cu}	d	Article No.	d	Article No.	kg
A	A	A	kA					
Size S00								
0.16	0.11 ... 0.16	3.3	100	▶	3RV2411-0AA10	2	3RV2411-0AA20	0.297
0.2	0.14 ... 0.2	4.2	100	2	3RV2411-0BA10	2	3RV2411-0BA20	0.295
0.25	0.18 ... 0.25	5.2	100	2	3RV2411-0CA10	2	3RV2411-0CA20	0.298
0.32	0.22 ... 0.32	6.5	100	2	3RV2411-0DA10	2	3RV2411-0DA20	0.297
0.4	0.28 ... 0.4	8.2	100	▶	3RV2411-0EA10	2	3RV2411-0EA20	0.299
0.5	0.35 ... 0.5	10	100	▶	3RV2411-0FA10	2	3RV2411-0FA20	0.298
0.63	0.45 ... 0.63	13	100	▶	3RV2411-0GA10	2	3RV2411-0GA20	0.363
0.8	0.55 ... 0.8	16	100	▶	3RV2411-0HA10	2	3RV2411-0HA20	0.364
1	0.7 ... 1	21	100	▶	3RV2411-0JA10	2	3RV2411-0JA20	0.366
1.25	0.9 ... 1.25	26	100	▶	3RV2411-0KA10	2	3RV2411-0KA20	0.365
1.6	1.1 ... 1.6	33	100	▶	3RV2411-1AA10	2	3RV2411-1AA20	0.366
2	1.4 ... 2	42	100	▶	3RV2411-1BA10	2	3RV2411-1BA20	0.368
2.5	1.8 ... 2.5	52	100	▶	3RV2411-1CA10	2	3RV2411-1CA20	0.364
3.2	2.2 ... 3.2	65	100	▶	3RV2411-1DA10	2	3RV2411-1DA20	0.371
4	2.8 ... 4	82	100	▶	3RV2411-1EA10	2	3RV2411-1EA20	0.366
5	3.5 ... 5	104	100	▶	3RV2411-1FA10	2	3RV2411-1FA20	0.369
6.3	4.5 ... 6.3	130	100	▶	3RV2411-1GA10	2	3RV2411-1GA20	0.373
8	5.5 ... 8	163	100	▶	3RV2411-1HA10	2	3RV2411-1HA20	0.375
10	7 ... 10	208	100	▶	3RV2411-1JA10	2	3RV2411-1JA20	0.378
12.5	9 ... 12.5	260	100	▶	3RV2411-1KA10	2	3RV2411-1KA20	0.371
16	10 ¹⁾ ... 16	286	55	▶	3RV2411-4AA10	2	3RV2411-4AA20	0.377
Size S0								
16	10 ¹⁾ ... 16	286	55	▶	3RV2421-4AA10	2	3RV2421-4AA20	0.413
20	13 ¹⁾ ... 20	325	55	▶	3RV2421-4BA10	▶	3RV2421-4BA20	0.415
22	16 ¹⁾ ... 22	364	55	▶	3RV2421-4CA10	2	3RV2421-4CA20	0.425
25	18 ¹⁾ ... 25	400	55	▶	3RV2421-4DA10	2	3RV2421-4DA20	0.428
Size S2								
14	9.5 ... 14	328	65	2	3RV2431-4SA10	--	--	1.067
17	12 ... 17	410	65	2	3RV2431-4TA10	--	--	1.058
20	14 ... 20	410	65	2	3RV2431-4BA10	--	--	1.063
25	18 ... 25	512	65	2	3RV2431-4DA10	--	--	1.072
32	22 ... 32	656	65	▶	3RV2431-4EA10	--	--	1.056
36	28 ... 36	820	65	2	3RV2431-4PA10	--	--	1.054
40	32 ... 40	820	65	2	3RV2431-4UA10	--	--	1.052
45	35 ... 45	922	65	2	3RV2431-4VA10	--	--	1.162
52	42 ... 52	1 025	65	2	3RV2431-4WA10	--	--	1.151
59	49 ... 59	1040	65	2	3RV2431-4XA10	--	--	1.186
65	54 ... 65	1040	65	2	3RV2431-4JA10	--	--	1.182

¹⁾ The setting range of the thermal overload releases has been extended.

Auxiliary switches and other accessories can be ordered separately (see "Accessories" from page 2/171 onwards).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

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 2/148](#).

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, solid-state 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.

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 actuator.

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 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 for size S2
 - can only be used with 3RV2 motor starter protectors/circuit breakers up to max. 65 A
 - cannot be used with the transverse auxiliary switch
- 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 2/147](#).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

Accessories

Mountable accessories

Selection and ordering data

PU (UNIT, SET, M) = 1

PS* = 1 unit (unless otherwise specified)

PG = 41E

Version	For mo- tor starter protectors/ circuit breakers	SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
			Article No.		Article No.	kg

Auxiliary switches¹⁾



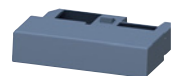
3RV2901-1E



3RV2901-2E



3RV2901-1G



3RV2901-0H



3RV2901-1A

3RV2901-2A

Transverse auxiliary switches

For mounting on the front

1 CO
1 NO + 1 NC
2 NO

S00 ... S3 ▶
▶
▶

3RV2901-1D
3RV2901-1E
3RV2901-1F

▶
▶
▶

--
3RV2901-2E
3RV2901-2F

0.016
0.017
0.018

Solid-state compatible transverse auxiliary switches

For mounting on the front, for operation in dusty atmospheres and in solid-state circuits with low operating currents

1 CO

S00 ... S3 2

3RV2901-1G

--

0.016

Covers for transverse auxiliary switches

Auxiliary switches (PS* = 10 units)

S00 ... S3 2

3RV2901-0H

--

0.006

Lateral auxiliary switches

For mounting on the left

1 NO + 1 NC
2 NO
2 NC
2 NO + 2 NC

S00 ... S3 ▶
▶
▶
2

3RV2901-1A
3RV2901-1B
3RV2901-1C
3RV2901-1J

▶
▶
▶
--

3RV2901-2A
3RV2901-2B
3RV2901-2C
--

0.045
0.045
0.045
0.086

Signaling switches²⁾



3RV2921-1M



3RV2921-2M

Signaling switches

S00 ... S3 ▶

3RV2921-1M

▶

3RV2921-2M

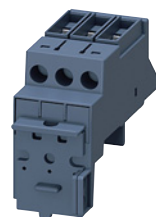
0.100

One signaling switch can be mounted on the left per motor starter protector.
Separate tripped and short-circuit alarms, 1 NO + 1 NC each

Isolator modules



3RV2928-1A



3RV2938-1A

Isolator modules²⁾

S00, S0
S2³⁾ ▶

3RV2928-1A
3RV2938-1A

--
--

0.159
0.368

Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position

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 isolator module for size S2 can be used only with 3RV2 motor starter protectors/circuit breakers up to max. 65 A. Similarly, it cannot be used with the transverse auxiliary switch.

³⁾ The isolator module for size S2 can be used only with 3RV2 motor starter protectors/circuit breakers up to max. 65 A. Similarly, it cannot be used with the transverse auxiliary switch.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

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	SD	Screw terminals 	SD	Spring-type terminals 	Weight per PU approx.
AC 50 Hz	AC 60 Hz	AC 50/60 Hz	AC/DC 50/60 Hz, DC 5 s ON period ¹⁾	DC						
V	V	V	V	V	Size	d	Article No.	d	Article No.	kg
Auxiliary releases³⁾										
Undervoltage releases										
--	--	--	--	24	S00 ... S3	2	3RV2902-1AB4	--		0.142
24	--	--	--	--	S00 ... S3	2	3RV2902-1AB0	--		0.139
110	120	--	--	--	S00 ... S3	2	3RV2902-1AF0	--		0.138
--	208	--	--	--	S00 ... S3	2	3RV2902-1AM1	--		0.135
230	240	--	--	--	S00 ... S3	▶	3RV2902-1AP0	▶	3RV2902-2AP0	0.133
400	440	--	--	--	S00 ... S3	▶	3RV2902-1AV0	▶	3RV2902-2AV0	0.132
415	480	--	--	--	S00 ... S3	2	3RV2902-1AV1	--		0.135
500	600	--	--	--	S00 ... S3	2	3RV2902-1AS0	--		0.131
Undervoltage releases with leading auxiliary contacts 2 NO										
24	24	--	--	--	S00 ... S3	5	3RV2922-1CB0	--		0.149
230	240	--	--	--	S00 ... S3	2	3RV2922-1CP0	2	3RV2922-2CP0	0.136
400	440	--	--	--	S00 ... S3	2	3RV2922-1CV0	2	3RV2922-2CV0	0.138
415	480	--	--	--	S00 ... S3	2	3RV2922-1CV1	2	3RV2922-2CV1	0.139
Shunt releases										
--	--	20 ... 24	20 ... 70	--	S00 ... S3	▶	3RV2902-1DB0	▶	3RV2902-2DB0	0.136
--	--	90 ... 110	70 ... 190	--	S00 ... S3	2	3RV2902-1DF0	2	3RV2902-2DF0	0.138
--	--	210 ... 240	190 ... 330	--	S00 ... S3	▶	3RV2902-1DP0	▶	3RV2902-2DP0	0.134
--	--	350 ... 415	330 ... 500	--	S00 ... S3	2	3RV2902-1DV0	--		0.133
--	--	500	500	--	S00 ... S3	2	3RV2902-1DS0	--		0.132

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).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers Accessories

Busbar accessories

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. Different versions are available for sizes S00 to S2 and can be used for the various different types of motor starter protectors/circuit breakers (size S0 up to 32 A).

The 3RV1915 and 3RV1935 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function 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 size S00 and S0 is possible. The motor starter protectors/circuit breakers are supplied by appropriate infeed terminals.

8US busbar adapters for 60 mm systems

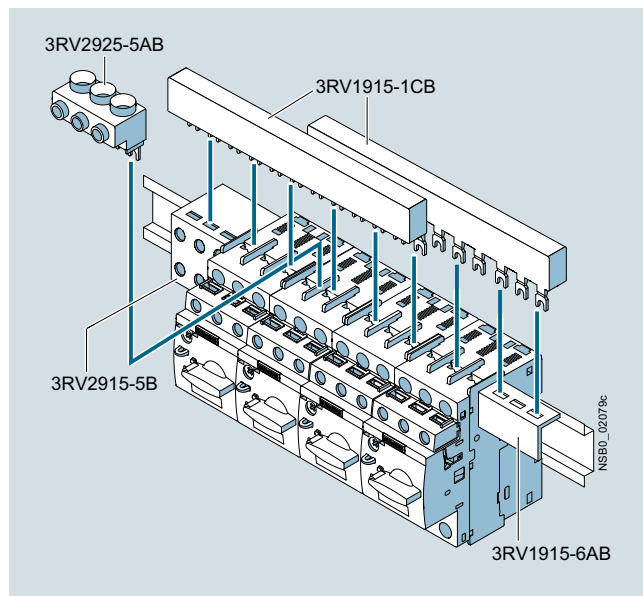
The motor starter protectors/circuit breakers are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

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.

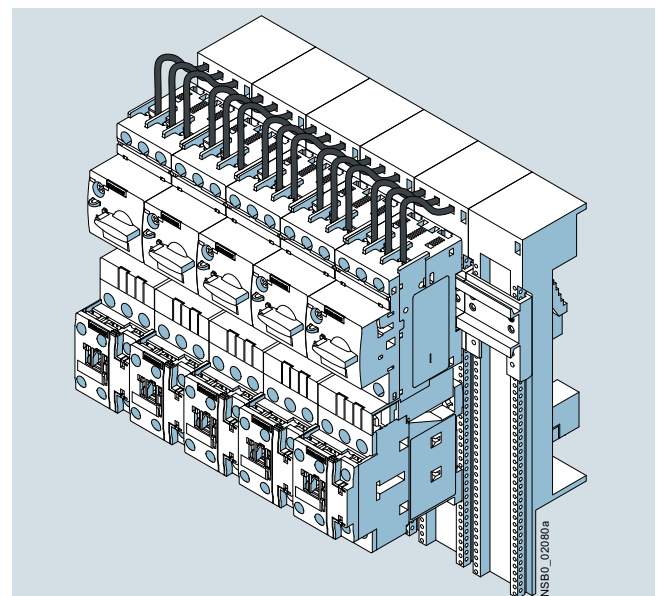
The motor starter protectors/circuit breakers are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals

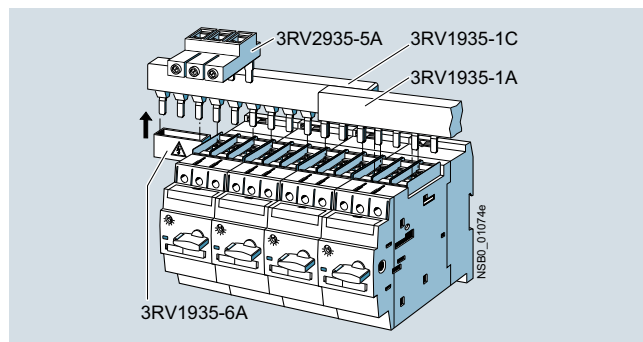
For outgoing terminals, flat copper profile, etc., see [Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology"](#).



SIRIUS three-phase busbar system size S00/S0



SIRIUS load feeders with busbar adapters snapped onto busbars



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" according to UL/CSA. Special infeed terminals must be used for this purpose, however (see ["Selection and Ordering Data"](#), page 2/175).

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

Accessories

Busbar accessories

Selection and ordering data

	Modular spacing	Number of motor starter protectors that can be connected			Rated current I_n at 690 V	For motor starter protectors	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Without lateral accessories	With lateral auxiliary switch	incl. auxiliary releases								
	mm				A	Size	d					kg
Three-phase busbars¹⁾												
For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection												
 3RV1915-1AB	45 ³⁾	2	--	--	63	S00, S0 ²⁾	▶	3RV1915-1AB	1	1 unit	41E	0.044
		3	--	--	63	S00, S0 ²⁾	▶	3RV1915-1BB	1	1 unit	41E	0.071
		4	--	--	63	S00, S0 ²⁾	▶	3RV1915-1CB	1	1 unit	41E	0.097
		5	--	--	63	S00, S0 ²⁾	▶	3RV1915-1DB	1	1 unit	41E	0.124
 3RV1915-1BB	55 ⁴⁾	--	2	--	63	S00, S0 ²⁾	▶	3RV1915-2AB	1	1 unit	41E	0.051
		--	3	--	63	S00, S0 ²⁾	▶	3RV1915-2BB	1	1 unit	41E	0.079
		--	4	--	63	S00, S0 ²⁾	▶	3RV1915-2CB	1	1 unit	41E	0.111
		--	5	--	63	S00, S0 ²⁾	▶	3RV1915-2DB	1	1 unit	41E	0.140
 3RV1915-1CB		2	--	--	108	S2	▶	3RV1935-1A	1	1 unit	41E	0.134
		3	--	--	108	S2	▶	3RV1935-1B	1	1 unit	41E	0.207
		4	--	--	108	S2	▶	3RV1935-1C	1	1 unit	41E	0.291
 3RV1915-1DB	63 ⁵⁾	--	--	2	63	S00, S0 ²⁾	▶	3RV1915-3AB	1	1 unit	41E	0.052
		--	--	4	63	S00, S0 ²⁾	▶	3RV1915-3CB	1	1 unit	41E	0.121
	75 ⁵⁾	--	2	2	108	S2	▶	3RV1935-3A	1	1 unit	41E	0.155
		--	3	3	108	S2	▶	3RV1935-3B	1	1 unit	41E	0.263
		--	4	4	108	S2	▶	3RV1935-3C	1	1 unit	41E	0.369

¹⁾ Not suitable for 3RV21 motor starter protectors for motor protection with overload relay function.

²⁾ Approved for motor starter protectors size S0 with $I_n \leq 32$ A.

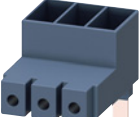
³⁾ For 3RV2 motor starter protectors without accessories mounted on the side.

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).

Conductor cross-section						SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded	Tightening torque	For motor starter protectors/ circuit breakers							
mm²	mm²	AWG	Nm	Size	d						kg
Three-phase infeed terminals											
Connection from top											
 3RV2925-5AB	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	▶	3RV2925-5AB	1	1 unit	41E	0.044
	2 x (2.5 ... 50) ¹⁾ , 1 x (2.5 ... 70) ¹⁾	2 x (2.5 ... 35) ¹⁾ , 1 x (2.5 ... 50) ¹⁾	2 x (10 ... 1/0) ¹⁾ , 1 x (10 ... 2/0) ¹⁾	4 ... 6	S2	▶	3RV2935-5A	1	1 unit	41E	0.180
 3RV2935-5A											
Connection from below											
This terminal is connected in place of a switch; please take the space requirement into account.											
 3RV2915-5B	2.5 ... 25	2.5 ... 16	10 ... 4	Input: 4, Output: 2 ... 2.5	S00, S0	▶	3RV2915-5B	1	1 unit	41E	0.109

Three-phase infeed terminals for constructing "Type E Starters"

Connection from top											
 3RV2925-5EB	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	2	3RV2925-5EB	1	1 unit	41E	0.054
	2 x (2.5 ... 50) ¹⁾ , 1 x (2.5 ... 70) ¹⁾	2 x (2.5 ... 35) ¹⁾ , 1 x (2.5 ... 50) ¹⁾	2 x (10 ... 1/0) ¹⁾ , 1 x (10 ... 2/0) ¹⁾	4 ... 6	S2	▶	3RV2935-5E	1	1 unit	41E	0.193
 3RV2935-5E											

¹⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must be in the range specified.

* You can order this quantity or a multiple thereof.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers Accessories

Busbar accessories

Version	For motor starter protectors/circuit breakers	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Size		d					kg

Covers for connection tags



3RV1915-6AB

Touch protection for empty positions

S00, S0
S2

3RV1915-6AB

1 10 units 41E 0.003

3RV1935-6A

1 5 units 41E 0.006

Busbar adapters



8US1251-5DS10



8US1251-5DT11



8US1250-5AS10



8US1250-5AT10



8US1211-4RT00

For motor starter protectors/circuit breakers	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Size	A	AWG	mm	mm	V	d					kg

Busbar adapters for 60 mm systems

For copper busbars 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

S00, S0 ²⁾	25	12	200	45	690	2	8US1251-5DS10	1	1 unit	1CU	0.308
S00, S0 NEW	25	12	260	45	690	2	8US1251-5DT10	1	1 unit	1CU	0.331
S0 NEW	32	10	200	45	690	3	8US1251-5NS10	1	1 unit	1CU	0.319
S0 ²⁾	32	10	260	45	690	2	8US1251-5NT10	1	1 unit	1CU	0.334
S2	80	4	200	55	690	5	8US1261-5MS13	1	1 unit	1CU	0.508
S2	80	4	260	55	690	5	8US1261-6MT10	1	1 unit	1CU	0.572
S2 ¹⁾	80	4	260	118	690	5	8US1211-6MT10	1	1 unit	1CU	0.873
S3	100/70 ³⁾	4	215	72	690/600 ³⁾	2	8US1211-4TR00	1	1 unit	1CU	0.620

- For motor starter protectors/circuit breakers with spring-type terminals

S00, S0 ²⁾	25	12	200	45	690	2	8US1251-5DS11	1	1 unit	1CU	0.316
S00, S0 ²⁾	25	12	260	45	690	2	8US1251-5DT11	1	1 unit	1CU	0.330
S0 NEW	32	10	200	45	690	5	8US1251-5NS11	1	1 unit	1CU	0.319
S0 ²⁾	32	10	260	45	690	2	8US1251-5NT11	1	1 unit	1CU	0.352

Accessories

Device holders	--	--	200	45	--	2	8US1250-5AS10	1	1 unit	1CU	0.243
For lateral mounting to busbar adapters	--	--	260	45	--	2	8US1250-5AT10	1	1 unit	1CU	0.264

Side modules	--	--	200	9	--	2	8US1998-2BJ10	1	10 units	1CU	0.020
For widening of busbar adapters											

Vibration and shock kits

For high vibration and shock loads

S00/S0	--	--	--	--	--	2	8US1998-1CA10	1	2 units	1CU	0.008
S2	--	--	--	--	--	5	8US1998-1DA10	1	1 unit	1CU	0.097

¹⁾ For the assembly of feeders for reversing starters comprising a motor starter protector and two contactors.

²⁾ 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.

For additional busbar adapters, see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology".

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

Accessories

Mounting accessories

Selection and ordering data

Accessories

Version	For motor starter protectors/ circuit breakers	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Size	d					kg
Covers							
	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)	S2	5	3RT1946-4EA1	1	1 unit	41B 0.036
3RV2 (size S3) with 3RT1946-4EA1 (left)							
	Scale covers Sealable, for covering the set current scale	3RV20, 3RV21, 3RV24: S00 ... S3	▶	3RV2908-0P	100	10 units	41E 0.051
3RV2908-0P							
	Covers for devices with screw terminals (box terminals) Additional touch protection for fastening to the box terminals (2 units required per device) • Main current level	S2	▶	3RT2936-4EA2	1	1 unit	41B 0.014
3RT2936-4EA2		S3	▶	3RT2946-4EA2	1	1 unit	41B 0.018
Fixing accessories							
	Push-in lugs For screwing the motor starter protector onto mounting plates Two units are required for each motor starter protector.	S00, S0	2	3RV2928-0B	100	10 units	41E 0.200
3RV2928-0B							
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	S00 ... S3	2	3RA2908-1A	1	1 unit	41B 0.050
3RA2908-1A							

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers Accessories

Mounting accessories

Version	For motor starter protectors/ circuit breakers	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Size	d					kg

Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1

Note:

UL 508/UL 60947-4-1 approval demands 1-inch through air spacing and 2-inch over surface spacing for "Self-Protected Combination Motor Controllers (Type E)". The following terminal blocks or phase barriers must be used for the 3RV20 motor starter protectors with screw terminals. 3RV20 motor starter protectors with spring-type terminals must be assembled with the 3RV29 infeed system for approval as "Self-Protected Combination Motor Controllers (Type E)" according to UL 508/UL 60947-4-1.

The terminal block or phase barriers cannot be used in combination with the 3RV19.5 three-phase busbars.

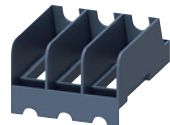
For construction with three-phase busbars, see "Busbar Accessories", from page 2/174 onwards.



3RV2928-1H



3RT2946-4GA07



3RV2928-1K



3RV2938-1K

Terminal blocks type E
For extended clearances
(1 and 2 inch)

S00, S0 ▶
S3 5

3RV2928-1H
3RT2946-4GA07

1 1 unit 41E 0.083
1 1 unit 41B 0.151

Phase barriers
For extended clearances
(1 and 2 inch)

S00, S0 ▶
S2 ▶

3RV2928-1K
3RV2938-1K

1 1 unit 41E 0.010
1 1 unit 41E 0.028

Auxiliary terminals, 3-pole



3RT2946-4F

For connection of auxiliary and control
cables to the main conductor connections
(for one side)

S3 5

3RT2946-4F

1 1 unit 41B 0.033

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

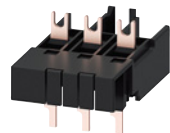
Accessories

Mounting accessories

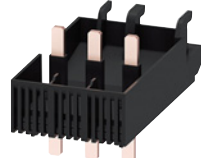
Link modules

Actuating voltage of contactor	Size	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	3RT2 contactors	3RV2 motor starter protectors/ circuit breakers					

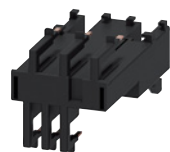
Link modules for motor starter protector to contactor¹⁾



3RA2921-1AA00



3RA2931-1AA00



3RA2911-2AA00



3RA2911-1CA00

For mechanical and electrical connection between motor starter protector and contactor with screw terminals

Single-unit packaging

AC/DC	S00	S00/S0	►
AC	S0	S00/S0	2
DC	S0	S00/S0	2
AC/DC	S2	S2	►
AC/DC	S3	S3	►

Multi-unit packaging

AC/DC	S00	S00/S0	►
AC	S0	S00/S0	2
DC	S0	S00/S0	2
AC/DC	S2	S2	►
AC/DC	S3	S3	►

Screw terminals



3RA1921-1DA00	1	1 unit	41B	0.030
3RA2921-1AA00	1	1 unit	41B	0.046
3RA2921-1BA00	1	1 unit	41B	0.055
3RA2931-1AA00	1	1 unit	41B	0.104
3RA1941-1AA00	1	1 unit	41B	0.090
3RA1921-1D	1	10 units	41B	0.020
3RA2921-1A	1	10 units	41B	0.045
3RA2921-1B	1	10 units	41B	0.053
3RA2931-1A	1	5 units	41B	0.071
3RA1941-1A	1	5 units	41B	0.073

For mechanical and electrical connection between motor starter protector and contactor with spring-type terminals

Single-unit packaging

AC/DC	S00	S00	►
AC ²⁾	S0	S0	►
DC	S0	S0	►

Multi-unit packaging

AC/DC	S00	S00	►
AC ²⁾	S0	S0	►
DC	S0	S0	►

Spring-type terminals



3RA2911-2AA00	1	1 unit	41B	0.058
3RA2921-2AA00	1	1 unit	41B	0.100
3RA2921-2AA00	1	1 unit	41B	0.100
3RA2911-2A	1	10 units	41B	0.055
3RA2921-2A	1	10 units	41B	0.091
3RA2921-2A	1	10 units	41B	0.091

Spacers²⁾

For compensating the height on AC contactors

Single-unit packaging	S0	S0	2
Multi-unit packaging	S0	S0	2

3RA2911-1CA00	1	1 unit	41B	0.016
3RA2911-1C	1	5 units	41B	0.015

Note:

Link modules can be used in

- Size S00 up to 16 A
- Size S0 up to 32 A
- Size S2 up to 65 A

¹⁾ The link modules from motor starter protector to contactor cannot be used for the 3RV2.21-4PA1., 3RV2.21-4FA1., 3RV2.31-4K.1., 3RV2.31-4R.1., 3RV2.32-4K.1. and 3RV2.32-4R.1. motor starter protectors/circuit breakers.

²⁾ A spacer for height compensation on AC contactors size S0 is optionally available.

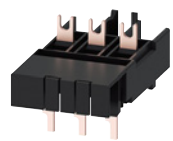
Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers Accessories

Mounting accessories

Size	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
3RW30, 3RW40 soft starters						
3RV2 motor starter protectors/circuit breakers	d					kg

Link modules for motor starter protector to soft starter¹⁾ and motor starter protector to solid-state contactor



3RA2921-1BA00

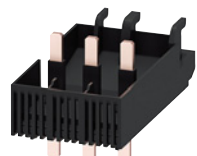
Connection between motor starter protector and soft starter /
solid-state contactor with screw terminals

Single-unit packaging

S00	S00/S0	2
S0	S00/S0	2
S2 ²⁾	S2	▶
S3 ³⁾	S3 ³⁾	▶

Multi-unit packaging

S00	S00/S0	2
S0	S00/S0	2
S2 ²⁾	S2	▶
S3 ³⁾	S3 ³⁾	▶



3RA2931-1AA00

Screw terminals



3RA2921-1BA00	1	1 unit	41B	0.055
3RA2921-1BA00	1	1 unit	41B	0.055
3RA2931-1AA00	1	1 unit	41B	0.104
3RA1941-1AA00	1	1 unit	41B	0.090
3RA2921-1B	1	10 units	41B	0.053
3RA2921-1B	1	10 units	41B	0.053
3RA2931-1A	1	5 units	41B	0.071
3RA1941-1A	1	5 units	41B	0.073



3RA2921-2GA00

Connection between motor starter protector and soft starter
spring-type terminals

Single-unit packaging

S00	S00	2
S0	S0	2

Spring-type terminals



3RA2911-2GA00	1	1 unit	41B	0.057
3RA2921-2GA00	1	1 unit	41B	0.090

Note:

Link modules can be used in

- Size S00 up to 16 A
- Size S0 up to 32 A
- Size S2 up to 65 A

- ¹⁾ The link modules from 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., 3RV2.31-4K.1., 3RV2.31-4R.1., 3RV2.32-4K.1. and 3RV2.32-4R.1. motor starter protectors/circuit breakers.
- ²⁾ To assemble the feeder between a motor starter protector and a soft starter in size S2, the 3RA2932-1CA00 standard mounting rail adapter must be used.
- ³⁾ It is only permissible to assemble the feeder between the motor starter protector and the soft starter in size S3 on a mounting plate.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

Accessories

Mounting accessories

Actuating voltage of contactor	Size	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	3RT2 contactors	3RV2 motor starter protectors/circuit breakers					kg
		d					

Hybrid link modules for motor starter protector to contactor¹⁾

	Electrical and mechanical link between motor starter protector with screw terminals and contactor with spring-type terminals									
3RA2911-2FA00	Single-unit packaging									
	AC/DC	S00	S00	▶	3RA2911-2FA00	1	1 unit	41B	0.047	
	AC ²⁾ /DC	S0	S0	▶	3RA2921-2FA00	1	1 unit	41B	0.074	
	Multi-unit packaging									
3RA2921-2FA00	AC/DC	S00	S00	▶	3RA2911-2F	1	10 units	41B	0.042	
	AC ²⁾ /DC	S0	S0	2	3RA2921-2F	1	10 units	41B	0.070	
3RA2911-1CA00	Spacers²⁾									
	For compensating the height on AC contactors									
	Single-unit packaging	S0	S0	2	3RA2911-1CA00	1	1 unit	41B	0.016	
	Multi-unit packaging	S0	S0	2	3RA2911-1C	1	5 units	41B	0.015	

Note:

Hybrid link modules in size S00 can be used up to max. 16 A and in size S0 up to max. 32 A.

¹⁾ The hybrid link modules for motor starter protector to contactor cannot be used for 3RV2.21-4PA1. and 3RV2.21-4FA1. motor starter protectors/circuit breakers. They are only suitable for constructing direct-on-line starters.

²⁾ A spacer for height compensation on AC contactors size S0 is optionally available.

For motor starter protectors/circuit breakers	Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		d					kg

Connection modules for motor starter protectors/circuit breakers with screw terminals

 3RT1926-4RD01	3RV2.2	Adapters for motor starter protectors/circuit breakers Ambient temperature $T_{u \max.} = 60^\circ\text{C}$ Size S0, rated operational current I_θ at AC-3/400 V: 25 A	5	Screw terminals  3RT1926-4RD01	1	1 unit	41B	0.036
	3RV2.2	Motor feeder connectors for motor starter protectors/circuit breakers Size S0	5	3RT1900-4RE01	1	1 unit	41B	0.042
 3RT1900-4RE01								

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

3RV29 infeed system

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Industry Mall, see www.siemens.com/product?3RV2

Manual "SIRIUS Innovations – SIRIUS 3RV2 Motor Starter Protectors", see <https://support.industry.siemens.com/cs/ww/en/view/60279172>

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 3RV21 motor starter protectors).

Motor starter protectors or load feeders with a rated current of maximum 32 A each can be used.

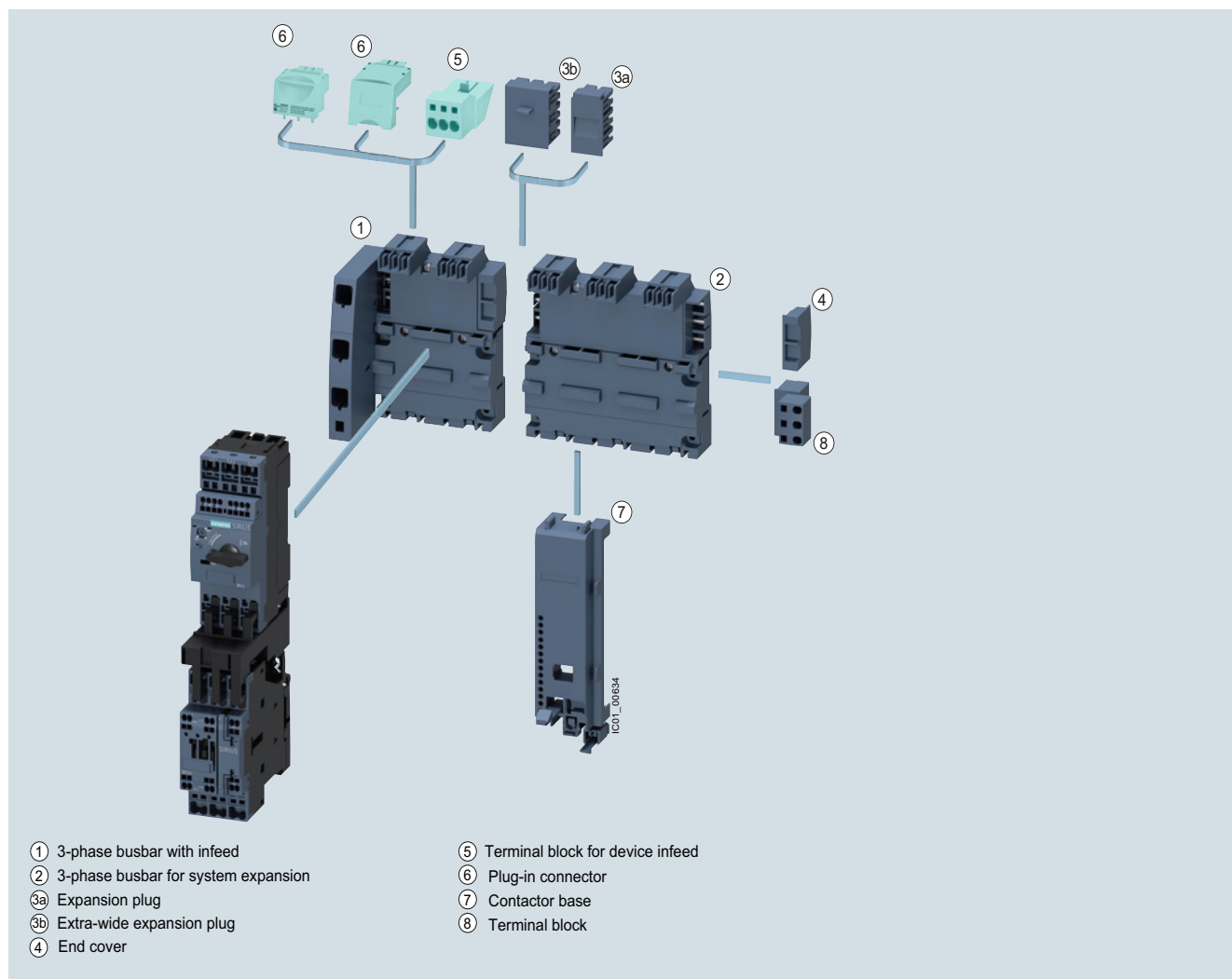
The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left, depending on the version, and can be supplied with a maximum conductor cross-section of 25 mm² (with end sleeve). A basic module has two sockets onto each of which a motor starter protector can be snapped.

Expansion modules (three-phase busbars for system expansion) are available for extending the system. 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 system

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

3RV29 infeed system

2

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 mm² with end sleeve. An end cover is supplied with each module.

② Three-phase busbars for system expansion

The three-phase busbars for system expansion allow the system to be expanded. 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 Terminal block for device infeed

A new addition to the system is a connector for outfeeding to a device slot within a module. This offers the option not only of connecting three-phase loads to the system, but also of integrating single-phase loads into the infeed system.

⑥ 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.

⑦ 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.

⑧ 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.

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

3RV29 infeed system

Technical specifications

General data					
Type					3RV29.7
Size					S00, S0
Standards					
• IEC 60947-2					✓
• IEC 60947-4-1					✓
• UL 508/UL 60947-4-1					✓
Rated current I_n					A 63
Permissible rated current at inside temperature of control cabinet					
Motor starter protectors/ circuit breakers	Size	Rated current	Inside temperature of control cabinet		
• 3RV2.11	S00	... 14 A	60 °C	%	100
		> 14 ... 16 A	40 °C	%	100
			60 °C	%	87
• 3RV2.21	S0	... 16 A	60 °C	%	100
		> 16 ... 25 A	40 °C	%	100
			60 °C	%	87
		> 25 ... 32 A	40 °C	%	87
Permissible ambient temperature					
• Storage/transport				°C	–50 ... +80
• Operation				°C	–20 ... +60
Rated operational voltage U_e					
• Acc. to IEC	10% overvoltage		V AC	500	
	5% overvoltage		V AC	525	
• Acc. to UL/CSA			V AC	600	
Rated frequency				Hz	50/60
Rated impulse withstand voltage U_{imp}				kV	6
Short-circuit strength					Corresponds to the mounted motor starter protector or load feeder
Degree of protection acc. to IEC 60529					IP20 (In the terminal compartment of the infeed without connected IP00 conductor)
Touch protection acc. to IEC 60529					Finger-safe

✓ Yes

Motor Starter Protectors/Circuit Breakers

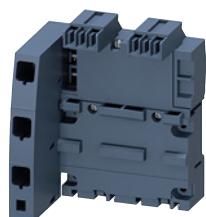
SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

3RV29 infeed system

Selection and ordering data

Type	Version	For 3RV20, 3RV23, 3RV24 motor starter protectors	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Size	d					kg

Three-phase busbars with infeed



3RV2917-1A

Three-phase busbars with infeed

For 2 motor starter protectors with screw or spring-type terminals

- With infeed on the left
- With infeed on the right

S00, S0
S00, S0

2
2

3RV2917-1A
3RV2917-1E

1
1

1 unit
1 unit

41E
41E

0.435
0.435

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
- For 3 motor starter protectors

S00, S0
S00, S0

2
2

3RV2917-4A
3RV2917-4B

1
1

1 unit
1 unit

41E
41E

0.435
0.435

Plug-in connectors



3RV2917-5AA00

Plug-in connectors

to make contact with motor starter protectors

- For spring-type terminals

- Single-unit packaging
- Multi-unit packaging

S00¹⁾
S0²⁾
S00¹⁾
S0²⁾

2
2
2
2

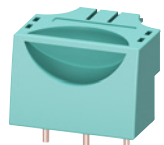
Spring-type terminals
3RV2917-5AA00
3RV2927-5AA00
3RV2917-5A
3RV2927-5A

1
1
1
1

1 unit
1 unit
10 units
10 units

41E
41E
41E
41E

0.059
0.065
0.053
0.065



3RV2917-5CA00

- For screw terminals

- Single-unit packaging
- Multi-unit packaging

S00¹⁾
S0²⁾
S00¹⁾
S0²⁾

2
2
2
2

Screw terminals
3RV2917-5CA00
3RV1927-5AA00
3RV2917-5C
3RV1927-5A

1
1
1
1

1 unit
1 unit
10 units
10 units

41E
41E
41E
41E

0.039
0.041
0.035
0.037

¹⁾ $I > 14$ A, please note derating.

²⁾ $I > 16$ A, please note derating.

Type	Version	For contactors	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Size	d					kg

Contactor bases



3RV2927-7AA00

Contactor bases

for mounting direct-on-line or reversing starters

Single-unit packaging

S00
S00, S0

2
2

3RV2917-7AA00
3RV2927-7AA00

1
1

1 unit
1 unit

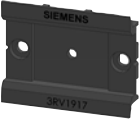
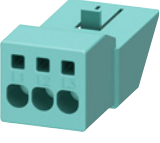
41E
41E

0.067
0.082

Motor Starter Protectors/Circuit Breakers

SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers

3RV29 infeed system

Type	Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Terminal blocks							
	Terminal blocks For integration of single-phase, two-phase and three-phase components	Single-unit packaging	2	3RV2917-5D	1	1 unit	41E 0.061
TH 35 standard mounting rails, width 45 mm							
	TH 35 standard mounting rails Acc. to IEC 60715, width 45 mm For mounting onto three-phase busbars	Single-unit packaging	2	3RV1917-7B	1	1 unit	41E 0.014
Extra-wide expansion plugs							
	Extra-wide expansion plugs As accessory	Single-unit packaging	2	3RV2917-5E	1	1 unit	41E 0.044
Expansion plugs							
	Expansion plugs¹⁾ As spare part	Single-unit packaging	2	3RV2917-5BA00	1	1 unit	41E 0.035
End covers							
	End covers²⁾ As spare part	Multi-unit packaging	2	3RV2917-6A	100	10 units	41E 0.600
Terminal blocks for device infeed							
	Terminal blocks for device infeed	Single-unit packaging	2	3RV2917-5FA00	1	1 unit	41E 0.010

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.

Overview

More information

Home page, see www.siemens.com/railway-components
 Catalog IC 10, see www.siemens.com/ic10

Home page, see www.siemens.com/relays
 Industry Mall, see www.siemens.com/product?3RP



Type **3RP25**

Timing relays

Enclosures:

- 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 --

Page

2/190

✓ Corresponds to or possible

-- Does not correspond to or not possible



Type

**3UG451.,
3UG461.****3UG463.****3UG4621,
3UG4622****3UG4641****3UG4625
with 3UL23****3UG458.****3UG4651****Page**

Monitoring relays

Line monitoring	✓	--	--	--	--	--	2/202
Voltage monitoring	--	✓	--	--	--	--	2/208
Current monitoring	--	--	✓	--	--	--	2/211
Active current monitoring	--	--	✓	✓	--	--	2/213
Power factor monitoring	--	--	--	✓	--	--	2/213
Residual current monitoring	--	--	--	--	✓	--	2/216
Insulation monitoring	--	--	--	--	--	✓	2/219
Speed monitoring	--	--	--	--	--	✓	2/226

✓ Available

-- Not available

Monitoring and Control Devices

Introduction

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 3RN2 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.

Overview



7PV15, SIRIUS 3RP25 timing relays

Electronic 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
- Timing relays suitable for the 3RT miniature contactors allow smaller tier spacing
- Versions with screw terminals or alternatively with spring-type terminals

Application

Timing relays with ON-delay

- Interference pulse suppression (gating of interference pulses)
- Gradual startup 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 relays

- Switching over motors from wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

Multifunctional timing relays

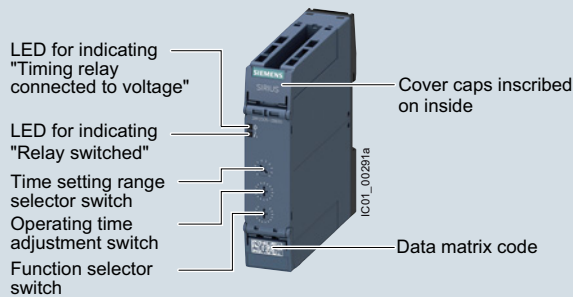
- Maximum flexibility, with a device for every application
- Available with relay and semiconductor output

Relays

Timing Relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Overview



SIRIUS 3RP25 timing relays

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Industry Mall, see www.siemens.com/product?3RP25

Conversion tool, e.g. from 3RP15 to 3RP25, see www.siemens.com/sirius/conversion-tool

Electronic timing relays for general use in control systems and mechanical engineering with:

- 1 or 2 CO, 1 NO (semiconductor) or 3 NO
- Monofunction or multifunction
- Combination voltage or wide voltage range
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

Article No. scheme

Product versions		Article number	
Timing relays		3RP25	□ □ – □ □ □ 0
Product function/ time setting ranges	Multifunction	0 5	7 time ranges 0.05 s ... 100 h
	With ON-delay	1 1	1 time range 0.5 ... 10 s
		1 2	1 time range 1 ... 30 s
		1 3	1 time range 5 ... 100 s
		2 5	7 time ranges 0.05 s ... 100 h
	OFF-delay with control signal	2 7	4 time ranges 0.05 s ... 240 s
		3 5	7 time ranges 0.05 s ... 100 h
		4 0	7 time ranges 0.05 s ... 600 h
	OFF-delay without control signal, non-volatile, passing make contact	5 5	7 time ranges 0.05 s ... 100 h
	Clock-pulse relay, flashing, asymmetrical	6 0	Wye-delta 1 ... 20 s, coasting time (idling) 600 s
Connection type	Wye-delta function with coasting function (idling)	7 4	1 time range 1 ... 20 s
	Wye-delta function	7 6	1 time range 3 ... 60 s
	Screw terminals	1	
	Spring-type terminals (push-in)	2	
Contacts	1 CO	A	
	2 CO	B	
	Semiconductors (transistor NPN)	C	
	Semiconductors (thyristor), two-wire	E	
	1 NO + 1 NO (wye-delta)	N	
	2 CO positively driven	R	
	3 NO	O	
Control supply voltage	24 V AC/DC	B 3	
	200 ... 240 V/380 ... 440 V AC	M 2	
	400 ... 440 V AC	T 2	
	12 ... 240 V AC/DC or 24 ... 240 V AC/DC (3RP2505-.RW30)	W 3	
Example		3RP25 0 5 – 1 A B 3 0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

3RP2505 multifunctional timing relays

Two setting options for implementing the multifunctions (A-M):



- ① Determination of 13 functions by the setting A to M, with 1 CO, 1 NO, 2 CO that switch in parallel.
- ② Extended function variance by selecting the time range and determining, whether 2 CO switch in parallel or whether 1 CO switches with delay + 1 CO switches immediately (1 CO + 1 CO)

Setting the functions on the device

The functions of the 3RP2505 multifunctional timing relays can be set by means of the function selector switch. Whether both CO contacts are switched in parallel or one CO contact with a delay and one instantaneously and the choice of time setting range are set by means of the time setting range selector switch. The exact operating time can be adjusted with the operating time switch.

Overview of functions

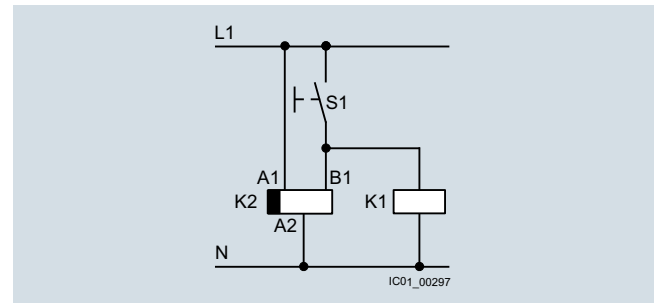
Identifica- tion letter	13 functions	27 functions
	1 CO, 1 NO (semiconductor), 2 CO switched in parallel, or 2 CO positively driven and switched in parallel with delay	13 functions (A - M) 2 CO switched in parallel + 13 functions (A - M) 1 CO delayed + 1 CO instantaneous (1 CO + 1 CO) and wye-delta function
A	With ON-delay	ON-delay and instantaneous contact
B	OFF-delay with control signal	OFF-delay with control signal and instantaneous contact
C	ON-delay/OFF-delay with control signal	ON-delay/OFF-delay with control signal and instantaneous contact
D	Flashing, symmetrical, starting with interval	Flashing, symmetrical, starting with interval and instantaneous contact
E	Passing make contact, interval relay	Passing make contact, interval relay and instantaneous contact
F	Retriggerable interval relay with deactivated control signal (passing break contact with control signal)	Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact
G	Passing make contact, with control signal, not retriggerable (pulse-forming with control signal)	Passing make contact, with control signal, not retriggerable (pulse-forming with control signal) and instantaneous contact
H	Additive ON-delay, instantaneous OFF with control signal	Additive ON-delay, instantaneous OFF with control signal and instantaneous contact
I	Additive ON-delay with control signal	Additive ON-delay with control signal and instantaneous contact
J	Flashing, symmetrical, starting with pulse	Flashing, symmetrical, starting with pulse and instantaneous contact
K	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
L	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
M	Retriggerable interval relay with activated control signal (watchdog)	Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)
--	--	Wye-delta function

The timing relay can be clearly labeled with the selectable functions using a set of labels. This is included in the scope of supply of the multifunctional relay.

The same potential must be applied to terminals A. and B.

Note:

The activation of loads parallel to the start input is permissible when using AC control voltage (see circuit diagram).



Circuit diagram

Relays

Timing Relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Benefits

- Easy stock keeping and logistics thanks to low variance of devices
- Reduced space requirement in the control cabinet thanks to variants in width 17.5 mm and 22 mm
- Consistent for all functions thanks to wide voltage range from 12 to 240 V AC/DC
- Up to 27 functions according to IEC 61812 in the multifunctional timing relay with wide voltage range
- Multifunctional timing relay with semiconductor output for high switching frequencies, bounce-free and wear-free switching

Standards and approvals

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2, IEC 61000-6-3 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"

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

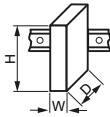
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing.

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm
Technical specifications
More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16354/td>
 Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/103532830>

Internal circuit diagrams, see
<https://support.industry.siemens.com/cs/ww/en/view/103532830>
 FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16354/faq>

Article number	3RP2505-.A, 3RP2505-.C, 3RP251., 3RP2525-.A, 3RP2527, 3RP253., 3RP255.	3RP2505-.B, 3RP2505-.R, 3RP2525-.B, 3RP254., 3RP256., 3RP257.
Width x height x depth	17.5 x 100 x 90	22.5 x 100 x 90



Article number	3RP25...-AB30, 3RP25...-AW30, 3RP25...-BB30, 3RP25...-BW30, 3RP25...-NW30, 3RP25...-SW30	3RP25...-BT20, 3RP25...-NM20	3RP25...-CW30	3RP25...-EW30	3RP25...-RW30
----------------	---	---	----------------------	----------------------	----------------------

General technical specifications:					
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3, rated value	V AC	300	500	300	--
Ambient temperature					
• During operation	°C	-25 ... +60			-40 ... +70
• During storage	°C	-40 ... +85			
Operating range factor of the control supply voltage, rated value					
• At AC					
- At 50 Hz		0.85 ... 1.1			0.7 ... 1.1
- At 60 Hz		0.85 ... 1.1			0.7 ... 1.1
• At DC		0.85 ... 1.1	--	0.85 ... 1.1	0.7 ... 1.1
Switching capacity current with inductive load	A	0.01 ... 3	0.01 ... 3	0.01 ... 1	0.01 ... 0.6
Operational current of the auxiliary contacts					
• At AC-15					
- At 24 V	A	3	3	1	--
- At 250 V	A	3	3	1	--
- At 400 V	A	--	3	--	--
• At DC-12					
- At 24 V	A	--	--	1	--
- At 125 V	A	--	--	1	--
- At 250 V	A	--	--	1	--
• At DC-13					
- At 24 V	A	1	1	--	1
- At 125 V	A	0.2	0.2	--	0.2
- At 250 V	A	0.1	0.1	--	0.1
Thermal current	A	5	5	1	0.6
Mechanical endurance operating cycles, typical		10 000 000			
Electrical endurance (operating cycles) for AC-15 at 230 V, typical		100 000		300 000	100 000

Article number	3RP25...-1....	3RP25...-2....
Type of electrical connection for auxiliary and control circuits	Screw terminals	Spring-type terminals (push-in)
Design of thread of connection screw	M3	--
Tightening torque	0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections		
• Solid	1x (0.5 ... 4 mm²), 2x (0.5 ... 2.5 mm²)	1x (0.5 ... 4 mm²)
• Finely stranded with end sleeve	1x (0.5 ... 4 mm²), 2x (0.5 ... 1.5 mm²)	1x (0.5 ... 2.5 mm²)
• For AWG cables		
- Solid	1x (20 ... 12), 2x (20 ... 14)	1x (20 ... 12)
- Stranded	1x (20 ... 12), 2x (20 ... 14)	--

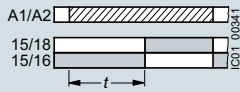
Relays

Timing Relays

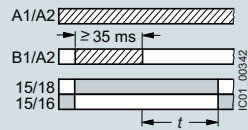
SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

3RP25 function diagrams

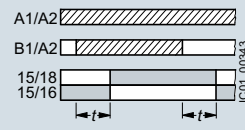
Multifunction 3RP2505-.A, 1 CO, 13 functions and 3RP2505-.C, 1 NO (semiconductor), 13 functions



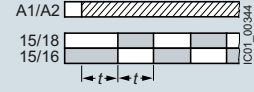
A
With ON-delay



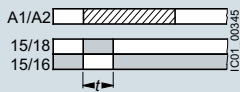
B
OFF-delay with control signal



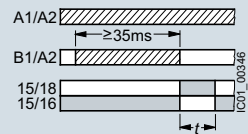
C
ON-delay/OFF-delay with control signal



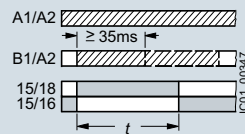
D
Flashing, symmetrical, starting with interval



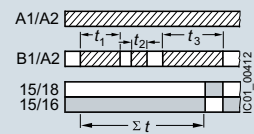
E
Passing make contact, interval relay



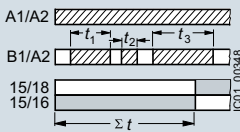
F
Retriggerable interval relay with deactivated control signal (passing break contact with control signal)



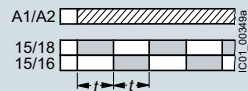
G
Passing make contact with control signal, not retriggerable (pulse-forming with control signal)



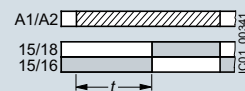
H
Additive ON-delay, instantaneous OFF with control signal



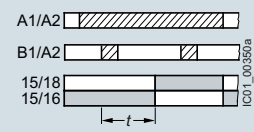
I
Additive ON-delay, with control signal



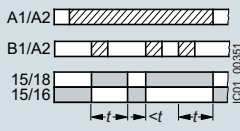
J
Flashing, symmetrical, starting with pulse



K
Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)



L
Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)



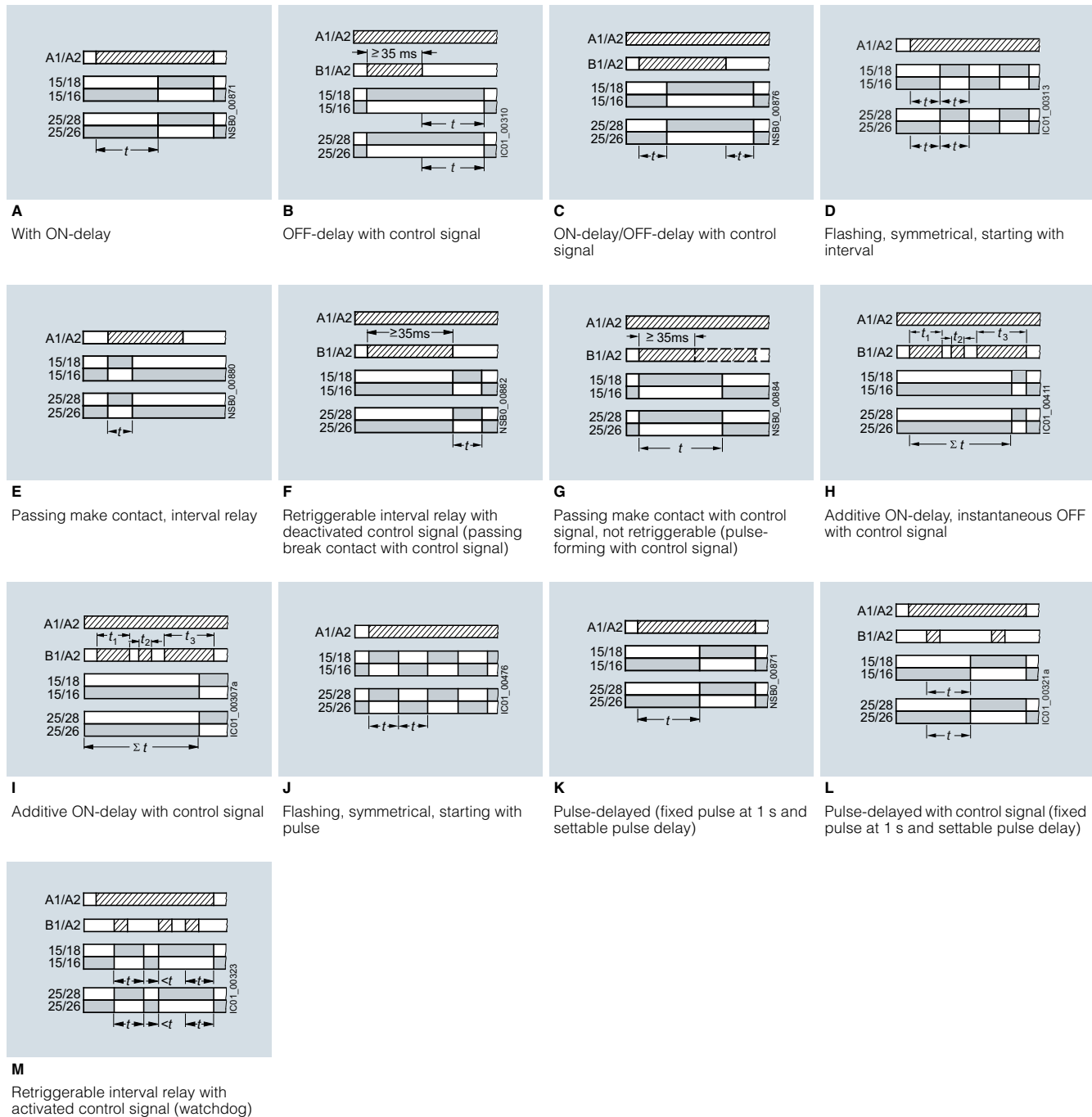
M
Retriggerable interval relay with activated control signal (watchdog)

Legend

- A ... M** identification letters
- Timing relay energized
- Contact closed
- Contact open

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Multifunction 3RP2505-B, 13 functions, 2 CO positively driven and switched in parallel with delay



Legend

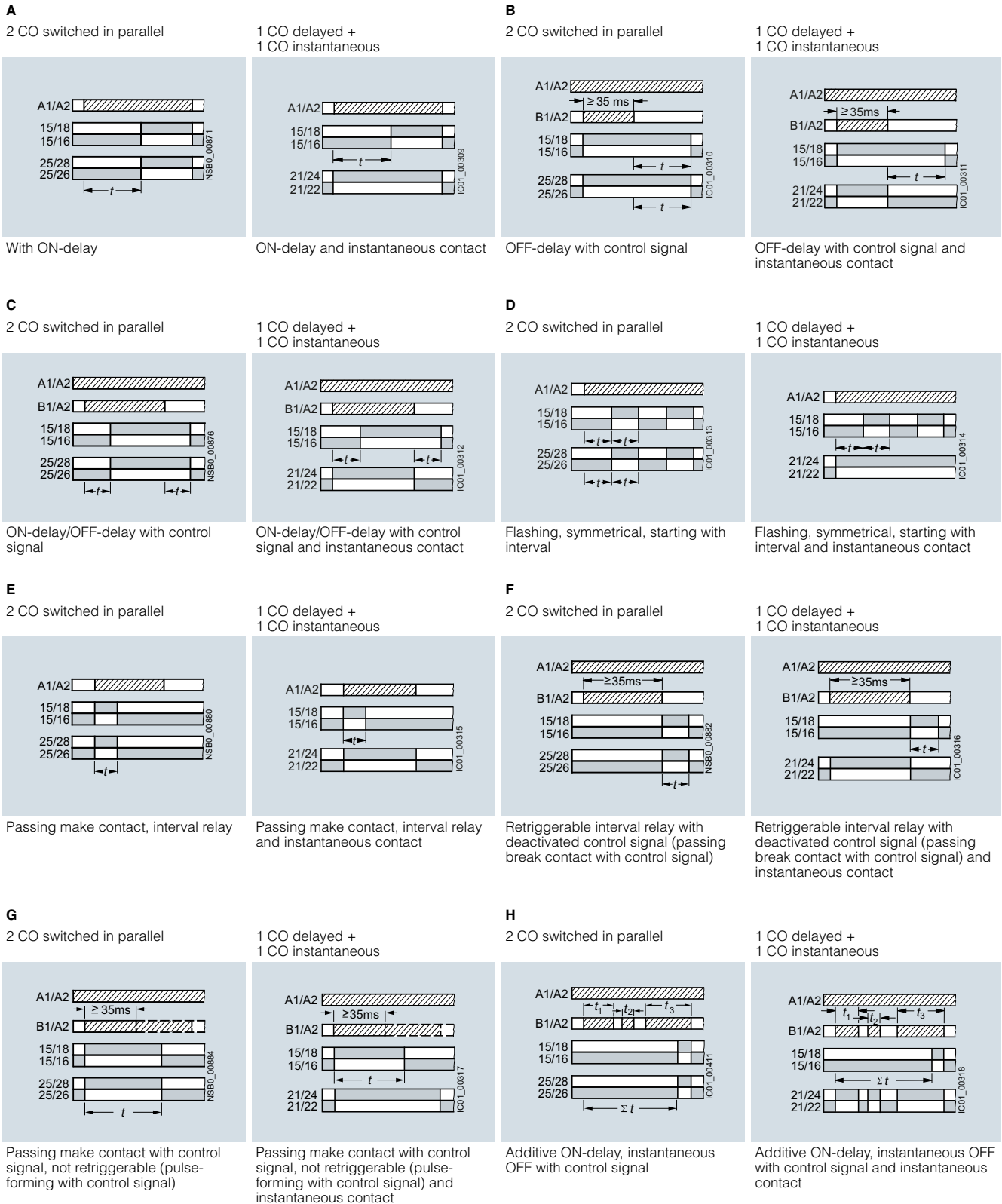
- A ... M** identification letters
- ▨ Timing relay energized
- Contact closed
- Contact open

Relays

Timing Relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Multifunction 3RP2505-B, 27 functions, 2 CO



Legend

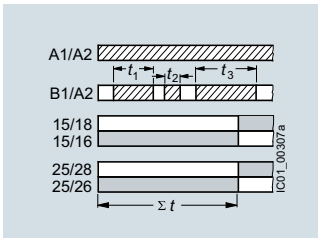
- A ... H** identification letters
 Timing relay energized
 Contact closed
 Contact open

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

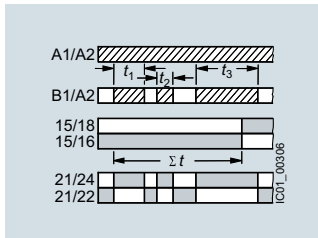
Multifunction 3RP2505-.B, 27 functions, 2 CO (continued)

I

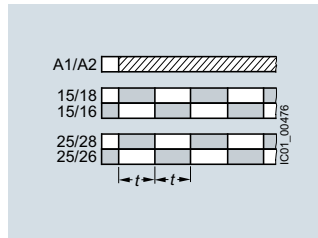
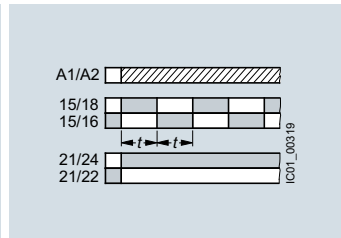
2 CO switched in parallel



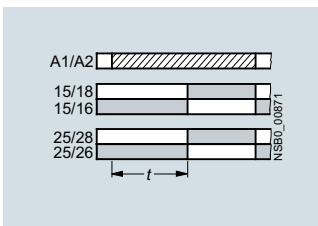
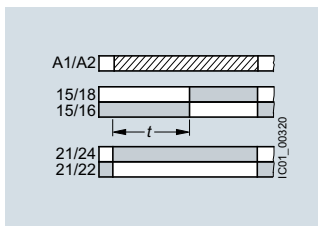
Additive ON-delay with control signal

1 CO delayed +
1 CO instantaneousAdditive ON-delay with control signal
and instantaneous contact**J**

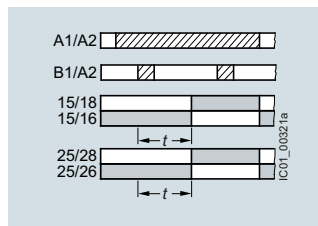
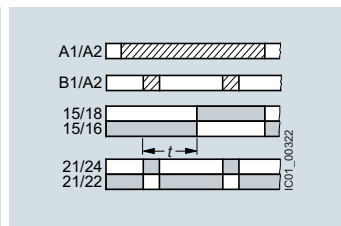
2 CO switched in parallel

Flashing, symmetrical, starting with
pulse1 CO delayed +
1 CO instantaneousFlashing, symmetrical, starting with
pulse and instantaneous contact**K**

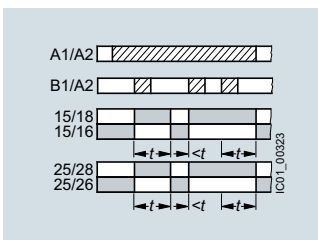
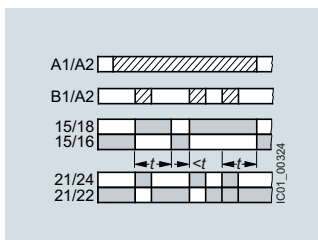
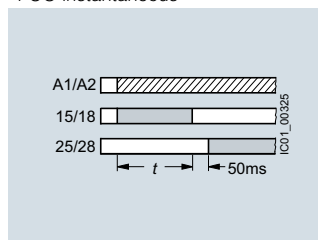
2 CO switched in parallel

Pulse-delayed (fixed pulse at 1 s and
settable pulse delay)1 CO delayed +
1 CO instantaneousPulse-delayed (fixed pulse at 1 s and
settable pulse delay) and
instantaneous contact**L**

2 CO switched in parallel

Pulse-delayed with control signal
(fixed pulse at 1 s and settable pulse
delay)1 CO delayed +
1 CO instantaneousPulse-delayed with control signal (fixed
pulse at 1 s and settable pulse delay)
and instantaneous contact**M**

2 CO switched in parallel

Retriggerable interval relay with
activated control signal (watchdog)1 CO delayed +
1 CO instantaneousRetriggerable interval relay with
activated control signal and
instantaneous contact (watchdog)**YΔ**2 CO switched in parallel or 1 CO
delayed +
1 CO instantaneous

Wye-delta function

Legend

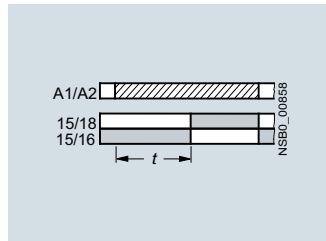
- I ... M** identification letters
- Timing relay energized
- Contact closed
- Contact open

Relays

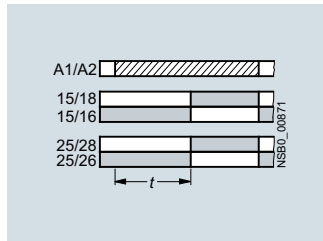
Timing Relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

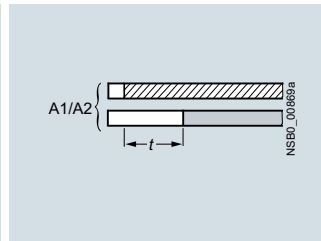
Monofunctions 3RP251. to 3RP257.¹⁾



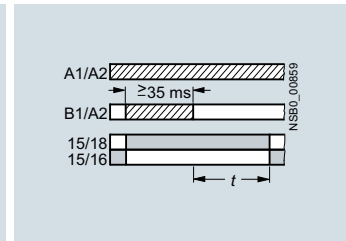
3RP251-.AW30, 1 CO, ON-delay



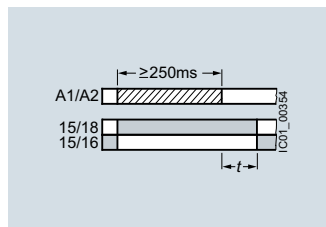
3RP2525-.W30, 2 CO, ON-delay



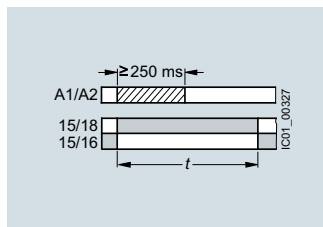
3RP2527-.EW30, 1 NO (semiconductor), ON-delay



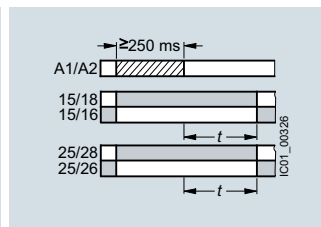
3RP2535-.AW30, 1 CO, OFF-delay with control signal



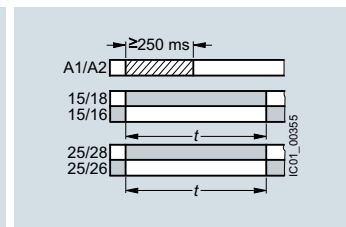
3RP2540-.A.30, 1 CO, OFF-delay (N)¹⁾



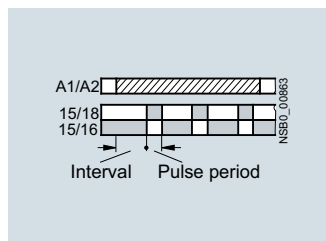
3RP2540-.A.30, 1 CO, positive passing make contact (O)¹⁾



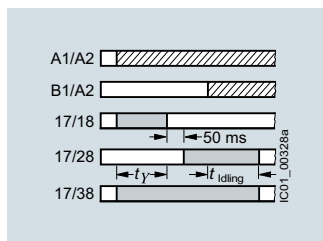
3RP2540-.B.30, 2 CO, OFF-delay (N)¹⁾



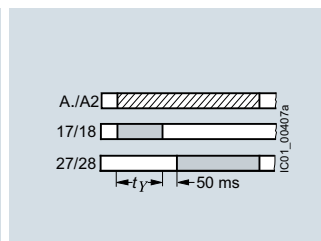
3RP2540-.B.30, 2 CO, positive passing make contact (O)¹⁾



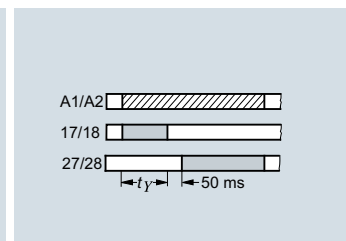
3RP2555-.AW30, 1 CO, flashing, asymmetrical, starting with interval (clock-pulse relay)



3RP2560-.SW30, 3 NO, wye-delta function with overtravel function (idling)



3RP257-.NM20, 2 NO, wye-delta function



3RP257-.NM30, 2 NO, wye-delta function

Legend

- Timing relay energized
- Contact closed
- Contact open

¹⁾ 3RP2540 has a double function:
Function N = OFF-delay
Function O = Positive passing make contact.

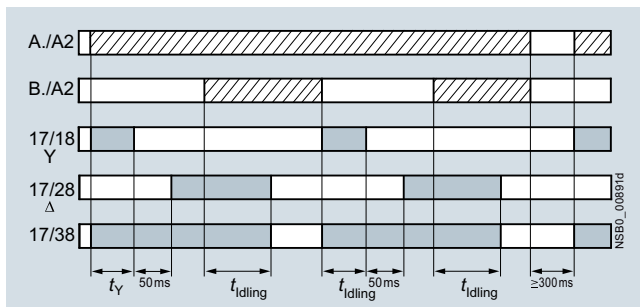
Possibilities of operation of the 3RP2560-.SW30 timing relay

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 $\Upsilon\Delta$ 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 (17/38 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.

Note:

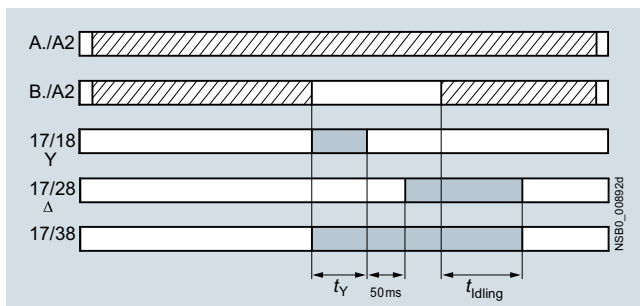
Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.



Operation 1

Operation 2: Start contact B./A2 is closed when control supply voltage A./A2 is applied

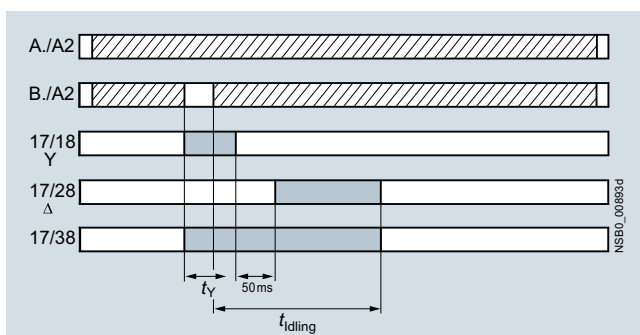
if the control signal B./A2 is already present when the control supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.



Operation 2

Operation 3: Start contact B./A2 closes while star time is running

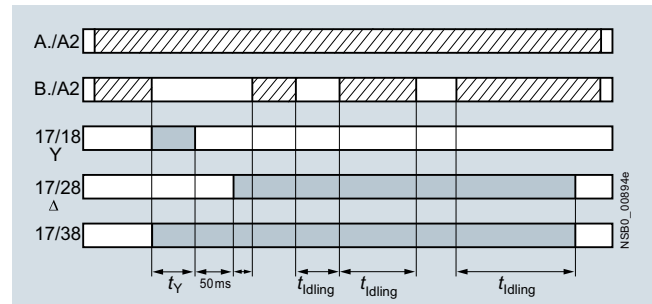
If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.



Operation 3

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.



Operation 4

Legend

- Timing relay energized
- Contact closed
- Contact open

t_Y = Star time 1 ... 20 s

t_{idling} = Idling time (coasting time) 30 ... 600 s

Note:

The following applies to all operations: The pressure switch controls the timing via B./A2.

Application example based on standard operation

(Operation 1): For example, use of 3RP2560 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 $\Upsilon\Delta$ 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).

Relays

Timing Relays

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm

Selection and ordering data



3RP2525-2AW30



3RP2540-2AW30



3RP2555-2AW30



3RP2576-2NW30

Number of NO contacts		Number of CO contacts		Semi-conduct or output	Adjustable time	Control supply voltage		SD	Spring-type terminals (push-in)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Instantaneous switching	Delayed switching	Instantaneous switching	Delayed switching			At AC 50/60 Hz	At DC						
						V	V	d	Article No.				kg
13 functions													
0	0	0	1	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2505-2AW30	1	1 unit	41H	0.140
0	1	0	0	Yes	0.05 s ... 100 h	12 ... 240	12 ... 240	2	3RP2505-2CW30	1	1 unit	41H	0.141
13 functions, suitable for railway applications													
0	0	--	2 ¹⁾	No	0.05 s ... 100 h	24 ... 240	24 ... 240	2	3RP2505-2RW30	1	1 unit	41H	0.173
27 functions													
0	0	--	2 ²⁾	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2505-2BW30	1	1 unit	41H	0.172
ON-delay													
0	0	0	1	No	0.5 ... 10 s	12 ... 240	12 ... 240	▶	3RP2511-2AW30	1	1 unit	41H	0.129
					1 ... 30 s	12 ... 240	12 ... 240	▶	3RP2512-2AW30	1	1 unit	41H	0.130
					5 ... 100 s	12 ... 240	12 ... 240	2	3RP2513-2AW30	1	1 unit	41H	0.131
					0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2525-2AW30	1	1 unit	41H	0.130
0	0	0	2	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2525-2BW30	1	1 unit	41H	0.160
0	1	0	0	Yes	0.05 s ... 240 s	12 ... 240	12 ... 240	2	3RP2527-2EW30	1	1 unit	41H	0.113
OFF-delay with control signal													
0	0	0	1	No	0.05 s ... 100 h	12 ... 240	12 ... 240	▶	3RP2535-2AW30	1	1 unit	41H	0.138
OFF-delay without control signal, non-volatile, passing make contact													
0	0	0	1	No	0.05 s ... 600 s	12 ... 240	12 ... 240	2	3RP2540-2AW30	1	1 unit	41H	0.161
0	0	0	2	No	0.05 s ... 600 s	12 ... 240	12 ... 240	2	3RP2540-2BW30	1	1 unit	41H	0.168
Clock-pulse relay, flashing, asymmetrical													
0	0	0	1	No	0.05 s ... 100 h	12 ... 240	12 ... 240	2	3RP2555-2AW30	1	1 unit	41H	0.130
Wye-delta function with coasting function (idling)													
1	2	0	0	No	1 ... 20 s	12 ... 240	12 ... 240	2	3RP2560-2SW30	1	1 unit	41H	0.175
Wye-delta function													
1	1	0	0	No	1 ... 20 s	12 ... 240	12 ... 240	▶	3RP2574-2NW30	1	1 unit	41H	0.150
1	1	0	0	No	3 ... 60 s	12 ... 240	12 ... 240	2	3RP2576-2NW30	1	1 unit	41H	0.152

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

¹⁾ Positively-driven contacts.

²⁾ Optionally 1 CO delayed + 1 CO instantaneous.

Notes:

Accessories, [see page 2/201](#).

In the case of 3RP2505, the functions can be adjusted by means of function selector switches on the device. The timing relay can be clearly labeled with the selectable functions using a set of labels. This is included in the scope of supply. The same potential must be applied to terminals A. and B.

For functions, [see the overview of functions on page 2/191](#).

SIRIUS 3RP25 timing relays, 17.5 mm and 22.5 mm
Accessories
More information

You can find information on configuring and dimensioning the accessories in the manual, see <https://support.industry.siemens.com/cs/ww/en/view/103532830>

Version		SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
		d					
Accessories for enclosures							
	Sealing covers • 17.5 mm	2	3ZY1321-1AA00	1	5 units	41L	0.002
	• 22.5 mm	2	3ZY1321-2AA00	1	5 units	41L	0.003
	Push-in lugs For wall mounting	2	3ZY1311-0AA00	1	10 units	41L	0.001
	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable mechanical coding of terminals	2	3ZY1440-1AA00	1	12 units	41L	0.001
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure							
	Removable terminals • 2-pole, 1 x 4 mm²	2	3ZY1122-1BA00	1	6 units	41L	0.010
	• 2-pole, 1 x 4 mm²	2	3ZY1122-2BA00	1	6 units	41L	0.050
Tools for opening spring-type terminals							
	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	2	3RA2908-1A	1	1 unit	41B	0.050

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

General data

Overview



SIRIUS 3UG4 monitoring relay

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

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Industry Mall, see www.siemens.com/product?3UG45

Conversion tool, e.g. from 3UG3 to 3UG4, see www.siemens.com/sirius/conversion-tool

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).

Article No. scheme

Product versions		Article number	
Monitoring relays		3UG4	☐ ☐ ☐ - ☐ ☐ ☐ ☐ 0
Type of setting	e.g. analogically adjustable	5	
Functions	e.g. line monitoring	4 5	
Connection type	Screw terminals		1
	Spring-type terminals (push-in)		2
Contacts	e.g. 1 CO contact		A
Supply voltage	160 ... 260 V AC		N 2
Example		3UG4	5 1 1 - 1 A N 2 0

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

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 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 unbalance, 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 overshoot 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

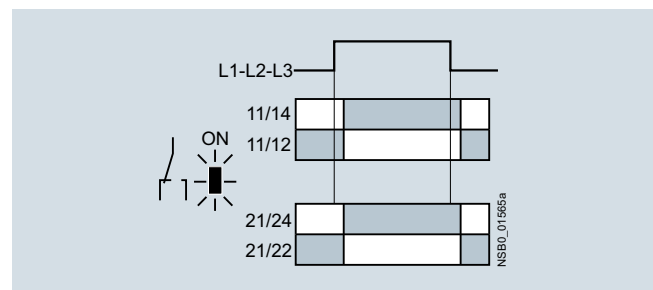
3UG4511 monitoring relays

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.

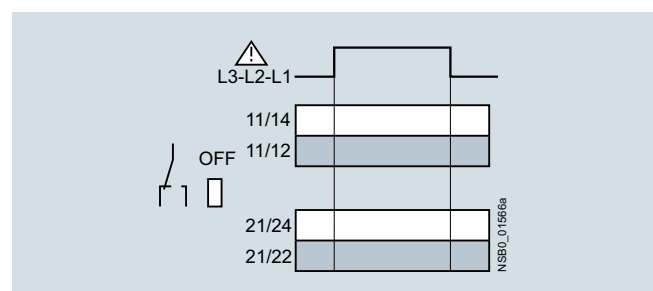
Note:

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



Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Line monitoring

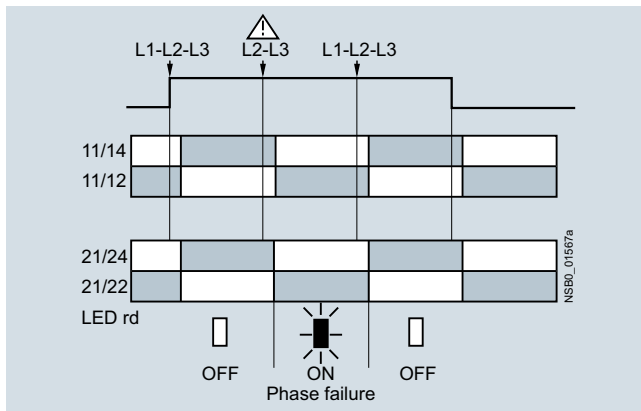
3UG4512 monitoring relays

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. If the line voltage is switched on, the green LED will light up. 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.

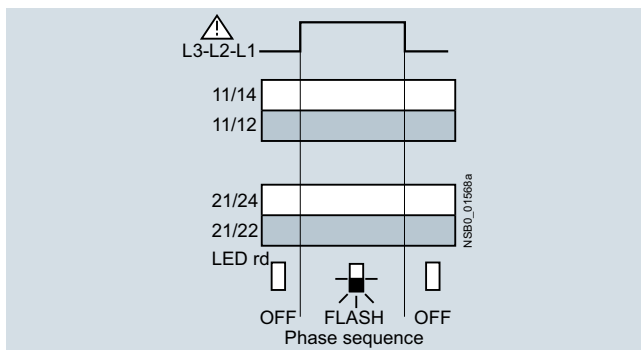
Note:

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



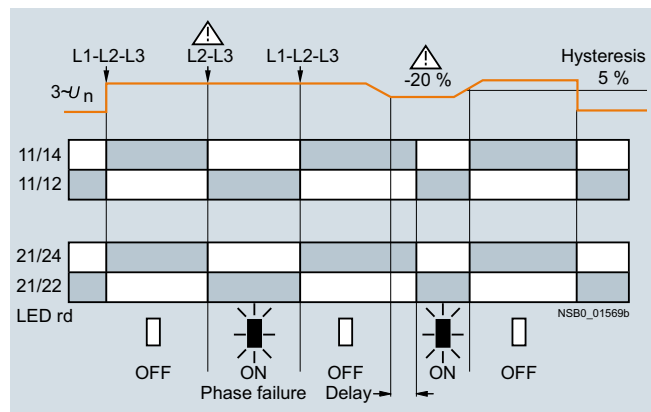
3UG4513 monitoring relays

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%. If the line voltage is switched on, the green LED will light up. 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.

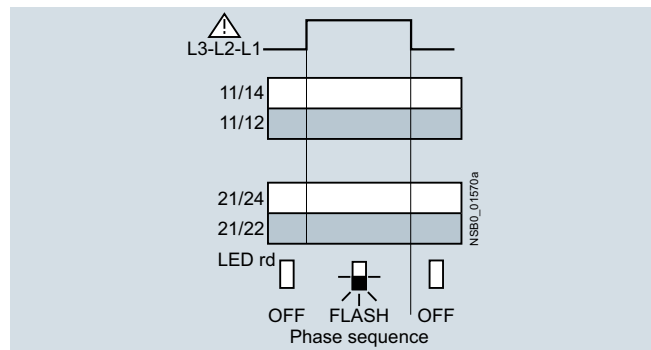
Note:

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



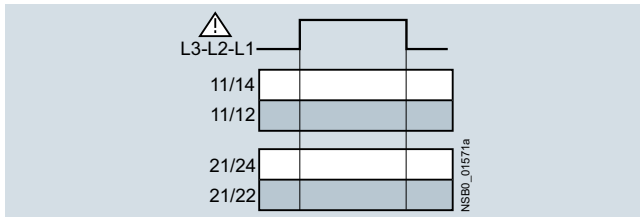
3UG4614 monitoring relays

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%.

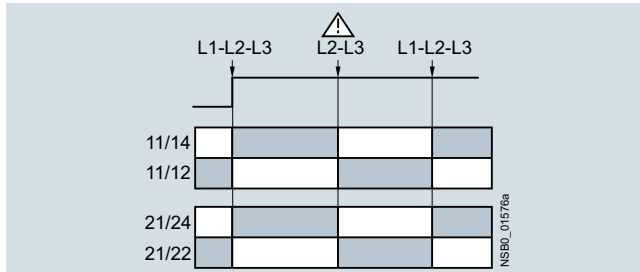
The 3UG4614 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET.

With the closed-circuit principle selected

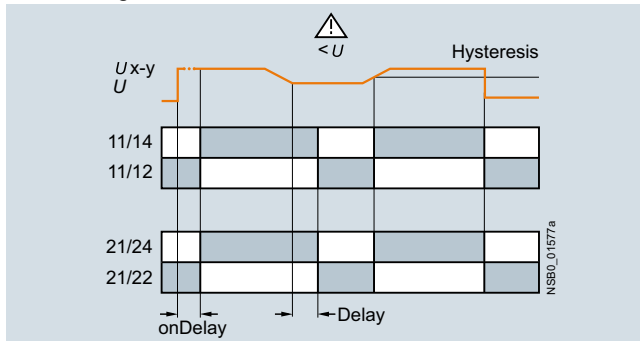
Wrong phase sequence



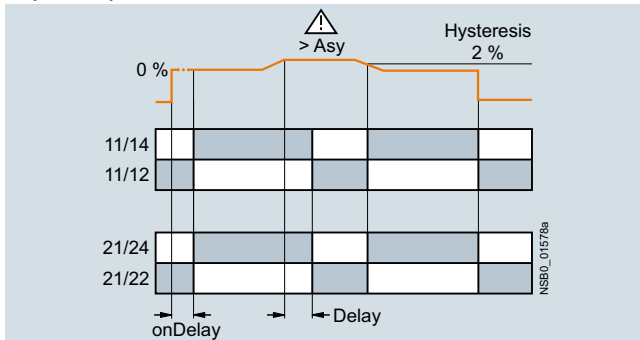
Phase failure



Undervoltage



Asymmetry

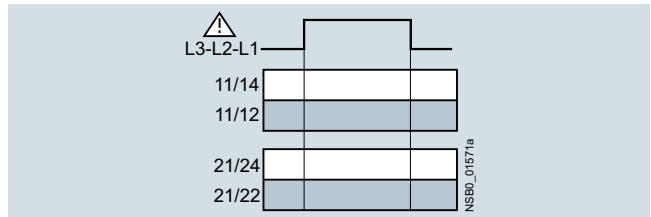
**3UG4615/3UG4616 monitoring relays**

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%.

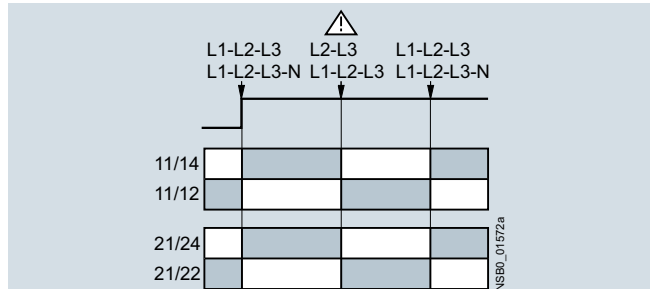
The 3UG4615/3UG4616 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or Auto RESET.

With the closed-circuit principle selected

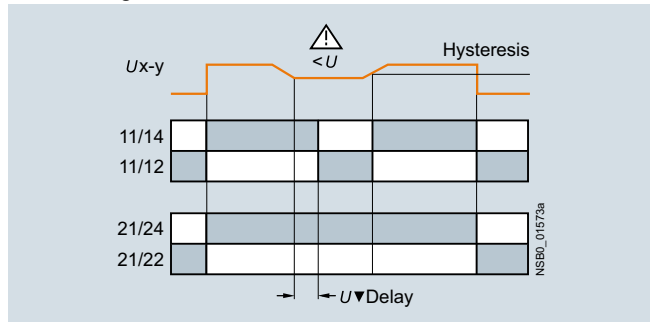
Wrong phase sequence



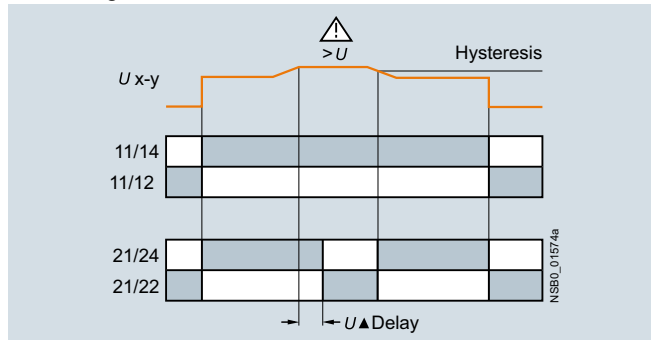
Phase failure



Undervoltage



Overvoltage



Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Line monitoring

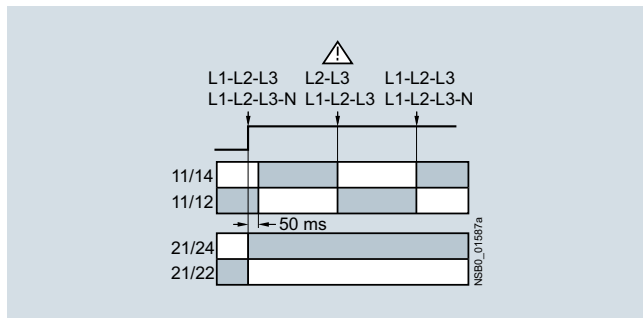
3UG4617/3UG4618 monitoring relays

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.

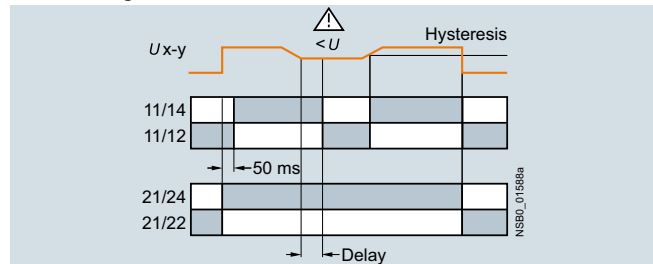
The one changeover contact is used for warning or disconnection in the event of power system faults (voltage, asymmetry), the other responds only to a wrong phase sequence. In conjunction with a contactor reversing assembly it is thus possible to change the direction automatically.

With the closed-circuit principle selected

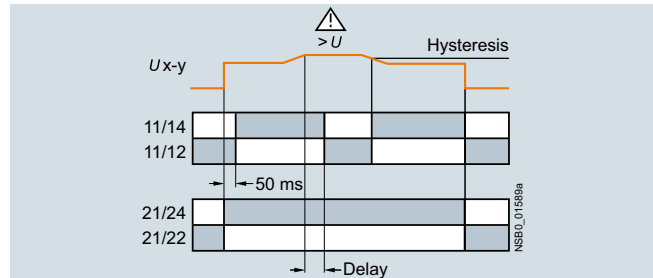
Phase failure



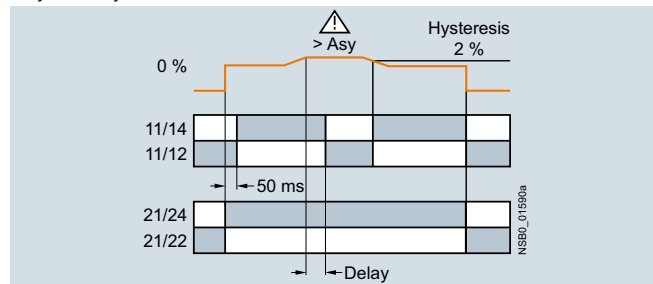
Undervoltage



Overvoltage



Asymmetry



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		
• 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
Electrical endurance AC-15	Million oper- ating cycles	0.1
Mechanical endurance	Million oper- ating cycles	10

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 unit
 PG = 41H



3UG4511-2BP20



3UG4512-2BR20

Adjustable hysteresis	Under-voltage detection	Over-voltage detection	Stabilization time adjustable stDEL	Tripping delay time adjustable Del	Version of auxiliary contacts	Measurable line voltage ¹⁾	SD	Spring-type terminals		Weight per PU approx.	
			s	s	CO contact	V	d	Article No.		kg	
Monitoring of phase sequence											
Auto RESET											
--	--	--	--	--	1	160 ... 260 AC	2	3UG4511-2AN20 3UG4511-2BN20		0.112	
					2		2			0.126	
					1	320 ... 500 AC	2	3UG4511-2AP20 3UG4511-2BP20		0.114	
					2		2			0.127	
					1	420 ... 690 AC	5	3UG4511-2AQ20 3UG4511-2BQ20		0.119	
					2		5			0.133	
Monitoring of phase sequence, phase failure and phase unbalance											
Auto RESET, closed-circuit principle, asymmetry threshold permanently 10%											
--	--	--	--	--	1	160 ... 690 AC	2	3UG4512-2AR20 3UG4512-2BR20		0.114	
					2		2			0.135	
Monitoring of phase sequence, phase failure, asymmetry and undervoltage											
Analogically adjustable, Auto RESET, closed-circuit principle, asymmetry and undervoltage threshold permanently 20%											
5% of set value	✓	--	--	0.1 ... 20	2	160 ... 690 AC	2	3UG4513-2BR20		0.137	
Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle											
Asymmetry threshold 0 or 5 ... 20%											
Adjustable 1 ... 20 V	✓	--	0.1 ... 20	0.1 ... 20	2	160 ... 690 AC	2	3UG4614-2BR20		0.138	
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	2	3UG4615-2CR20		0.140	
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	2	3UG4616-2CR20		0.150	
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, asymmetry, overvoltage and undervoltage											
Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle, asymmetry threshold 0 or 5 ... 20%											
Adjustable 1 ... 20 V	✓	✓	--	0.1 ... 20	2 ³⁾	160 ... 690 AC	2	3UG4617-2CR20		0.140	
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, asymmetry, overvoltage and undervoltage											
Digitally adjustable, Auto RESET or Manual RESET, open-circuit or closed-circuit principle, asymmetry threshold 0 or 5 ... 20%											
Adjustable 1 ... 20 V	✓	✓	--	0.1 ... 20	2 ³⁾	90 ... 400 AC against N	2	3UG4618-2CR20		0.149	

✓ Function available

-- Function not available

¹⁾ Absolute limit values.²⁾ 1 CO contact each and one tripping delay time each for $U_{\min}$ and $U_{\max}$.³⁾ 1 CO contact each for power system fault and phase sequence correction.

Accessories, see page 2/229.

Relays

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

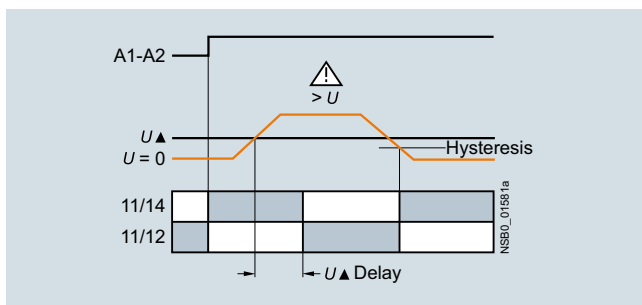
The 3UG4631/3UG4632 voltage monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

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 adjusted between 0.1 s and 20 s.

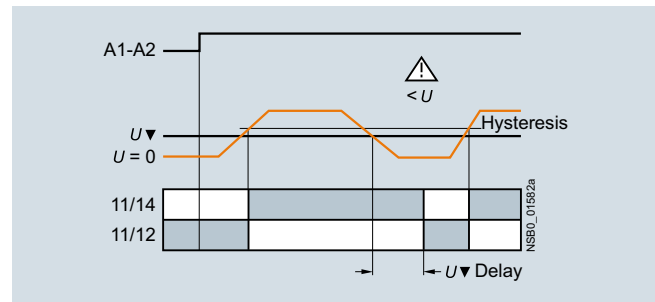
The hysteresis is adjustable from 0.1 to 30 V or 0.1 to 300 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

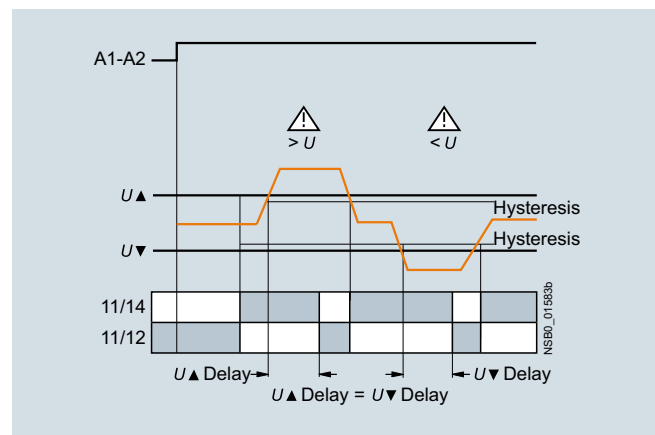
Overvoltage



Undervoltage



Range monitoring



3UG4633 monitoring relays

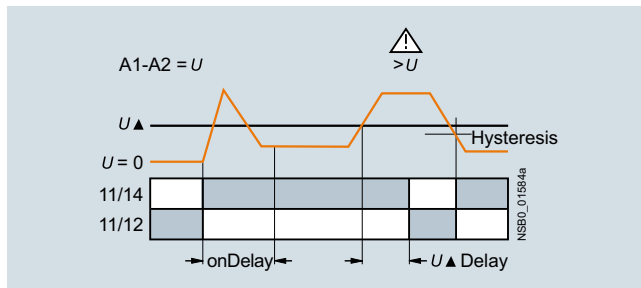
The 3UG4633 voltage monitoring relay has an internal power supply and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

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 also be adjusted, just like the ON-delay time on_{Del} , from 0.1 to 20 s.

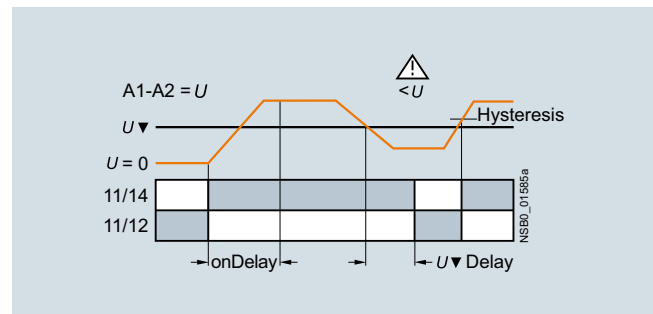
The hysteresis is adjustable from 0.1 to 150 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with Manual or Auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

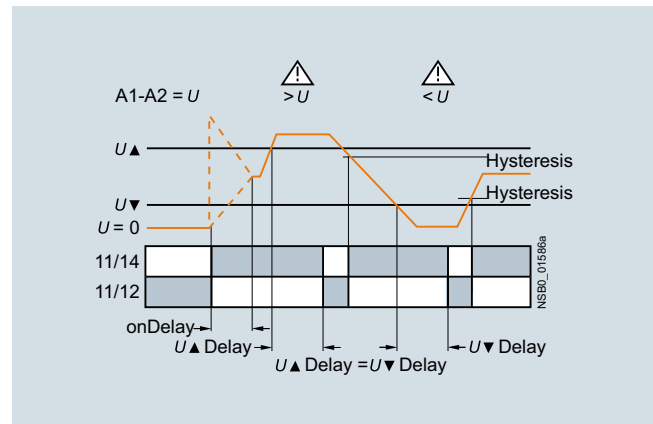
Overvoltage



Undervoltage



Range monitoring



Type		3UG4631	3UG4632	3UG4633
General data				
Rated insulation voltage U_i	V	690		
Pollution degree 3 Overvoltage category III acc. to VDE 0110				
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
Measuring frequency	Hz	40 ... 500		
Setting range single-phase voltage	V	0.1 ... 60	10 ... 600	17 ... 275
Control circuit				
Load capacity of the output relay				
• 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		

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Voltage monitoring

Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact



3UG4633-2AL30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	V	d	Article No.				kg
Internal power supply, without auxiliary voltage, separately adjustable ON-delay and tripping delay 0.1 ... 20 s								
17 ... 275 AC/DC	0.1 ... 150	17 ... 275 AC/DC ¹⁾	2	3UG4633-2AL30	1	1 unit	41H	0.130
Supplied from an external auxiliary voltage, tripping delay adjustable 0.1 ... 20 s								
0.1 ... 60 AC/DC	0.1 ... 30	24 ... 240 AC/DC	2	3UG4631-2AW30	1	1 unit	41H	0.139
10 ... 600 AC/DC	0.1 ... 300		2	3UG4632-2AW30	1	1 unit	41H	0.135

¹⁾ Absolute limit values.

Accessories, [see page 2/229](#).

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

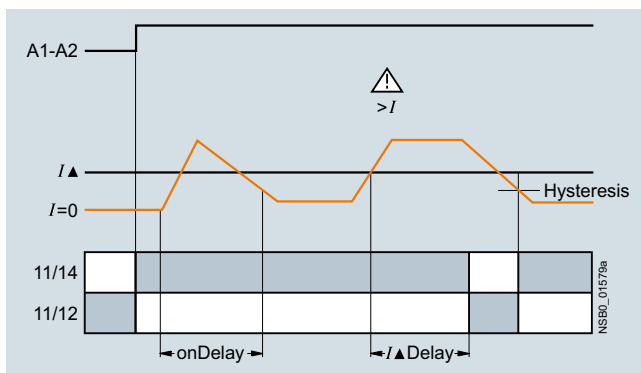
The 3UG4621 or 3UG4622 current monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the current depending on parameterization. The device is equipped with a display and is parameterized using three buttons.

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.

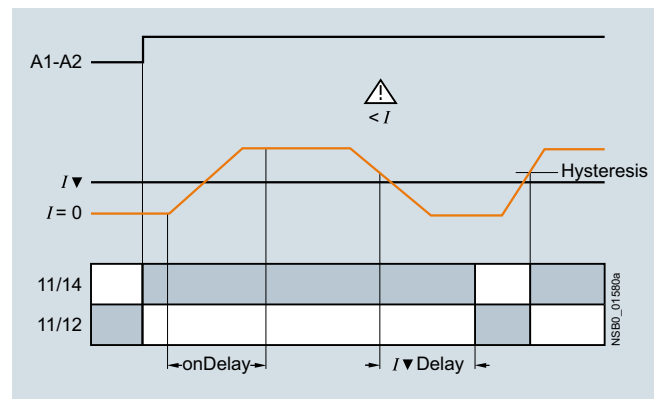
The hysteresis is adjustable from 0.1 to 250 mA or 0.01 to 5 A. The device can be operated with Manual or Auto RESET and on the basis of either the open-circuit or closed-circuit principle. The following options are available: response of the output relay when the control supply voltage U_s = ON is applied 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

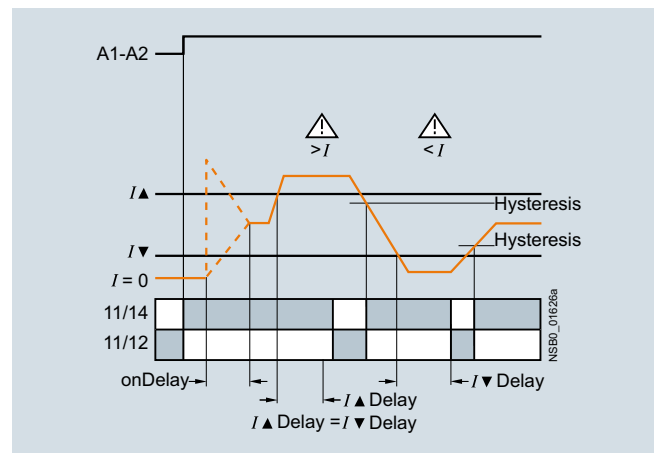
Current overshoot



Current undershoot



Range monitoring



Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

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 for single-phase AC/DC current	A	0.003 ... 0.6		0.05 ... 15	
Measuring frequency	Hz	40 ... 500			
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 • 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.

Selection and ordering data

- Digitally adjustable, with illuminated LCD
- Auto or Manual RESET
- Open or closed-circuit principle
- 1 CO contact



3UG4622-2AW30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		V	d	Article No.				kg
Monitoring of undercurrent and overcurrent, separately adjustable ON-delay and tripping delay 0.1 ... 20 s								
3 ... 500 mA AC/DC	0.1 ... 250 mA	24 ... 240 AC/DC ²⁾	2	3UG4621-2AW30	1	1 unit	41H	0.138
0.05 ... 10 A AC/DC	0.01 ... 5 A		2	3UG4622-2AW30	1	1 unit	41H	0.140

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.

Accessories, see page 2/229.

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".

Overview



SIRIUS 3UG4641 monitoring relay

The 3UG4641 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor (p.f.) 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
- P.f. or I_{res} (active current) can be selected as the 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-end 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 power factor 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} it is 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show $I < 0.2$ A 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 power factor 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 monitoring for active current undershoot is switched off ($I_{res} \nabla = \text{OFF}$), and if the load current undershoots the lower measuring range threshold (0.2 A), 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.

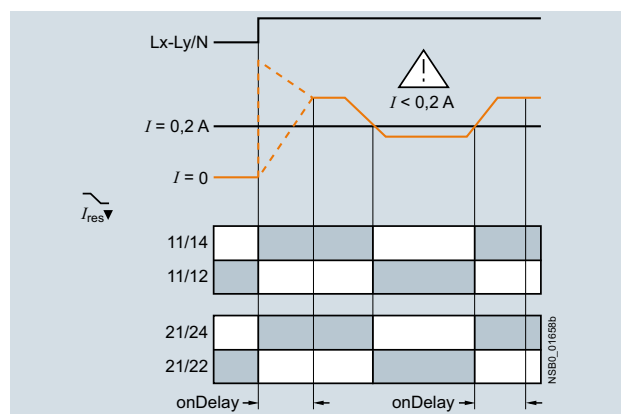
The relay operates either according to the open-circuit or closed-circuit principle. If the device is set to Auto RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

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 continue 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▼ keys for 2 seconds, or by switching the supply voltage off and back on again.

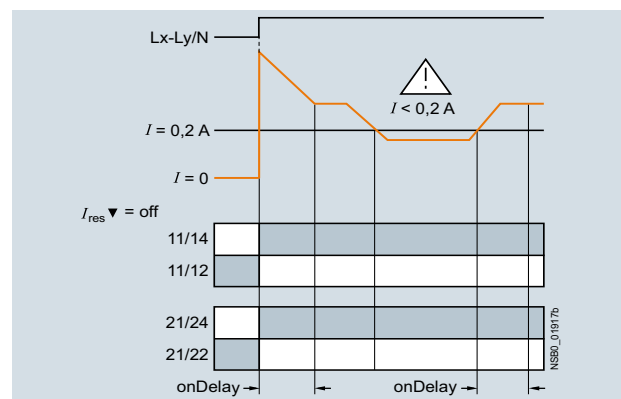
With the closed-circuit principle selected

Response in the event of undershooting the measuring range limit

- With activated monitoring of $I_{res} \nabla$



- With deactivated monitoring of active current undershooting

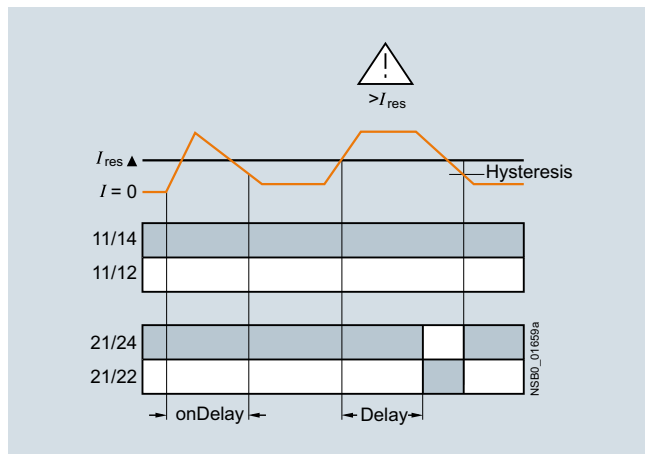


Relays

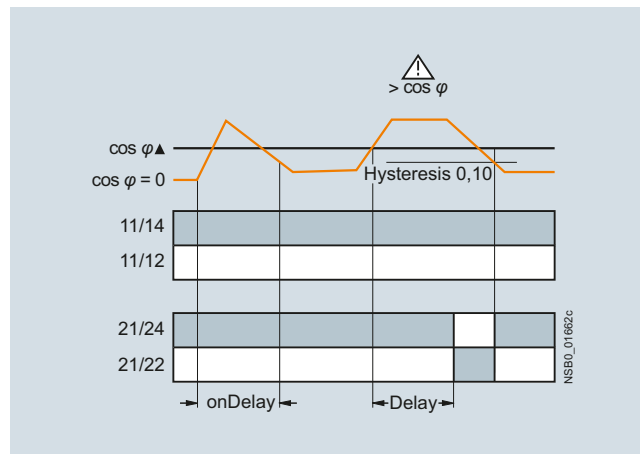
SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Power factor and active current monitoring

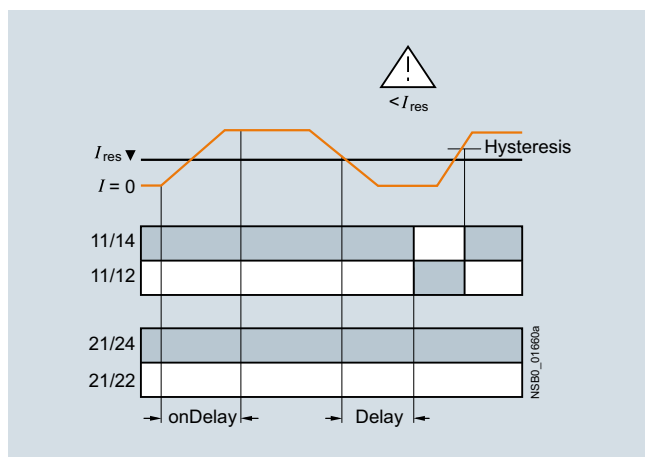
Overshooting of active current



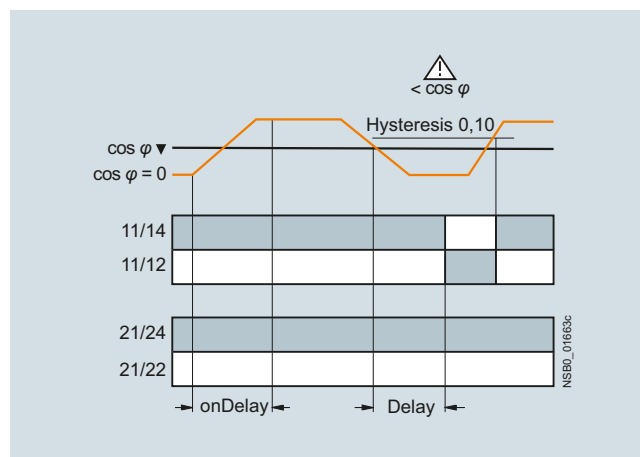
Overshooting of power factor



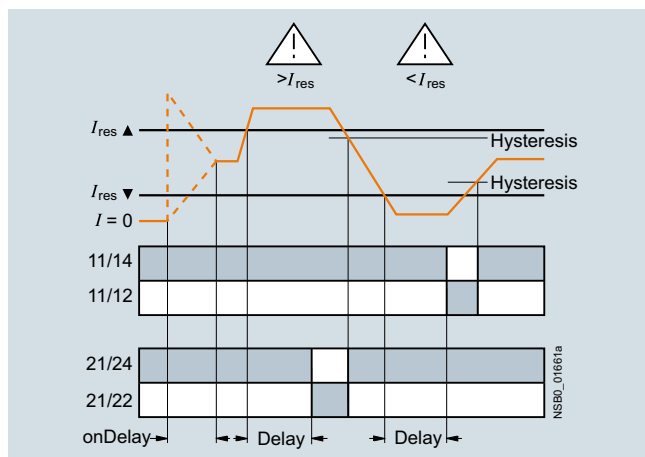
Undershooting of active current



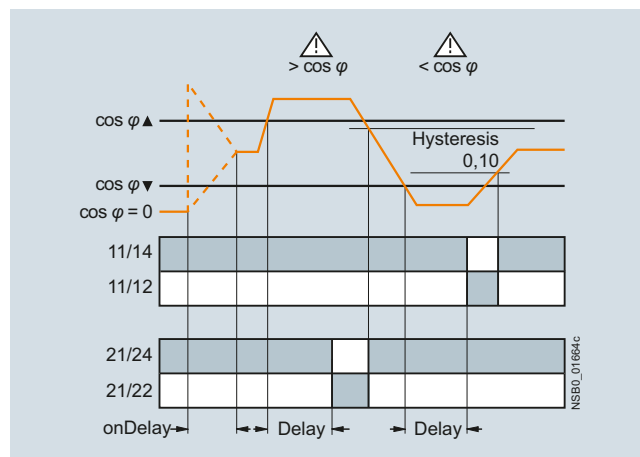
Undershooting of power factor



Range monitoring of active current



Range monitoring of power factor



SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

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 • 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

Selection and ordering data

- For monitoring the power factor and the active current I_{res} (p.f. $\times I$)
- 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		Hysteresis adjustable		ON-delay time adjustable onDel	Tripping delay time adjustable $I\Delta Del / I\nabla Del, \varphi\Delta Del / \varphi\nabla Del$	Rated control supply voltage $U_s^{1)}$ 50 AC/60 Hz	SD	Screw terminals 	SD	Spring-type terminals 	Weight per PU approx.
For power factor	For active current I_{res}	For power factor	For active current I_{res}								
P.f.	A	P.f.	A	s	s	V	d	Article No.	d	Article No.	kg
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	2	3UG4641-1CS20	2	3UG4641-2CS20	0.151

¹⁾ Absolute limit values.

Accessories, [see page 2/229](#).

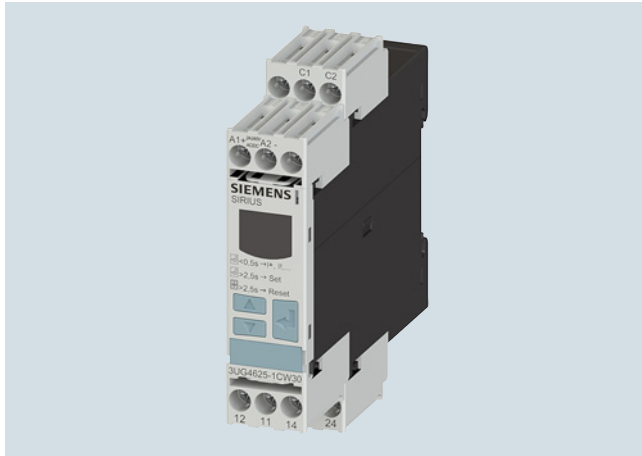
With AC active currents $I_{res} > 10$ A it is possible to use 4NC current transformers as an accessory, [see Catalog LV 10 "Low-Voltage Power Distribution and Electrical Installation Technology"](#).

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Residual Current Monitoring

Residual-current monitoring relays

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 $\pm 7.5\%$
- 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 overshoot.

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.

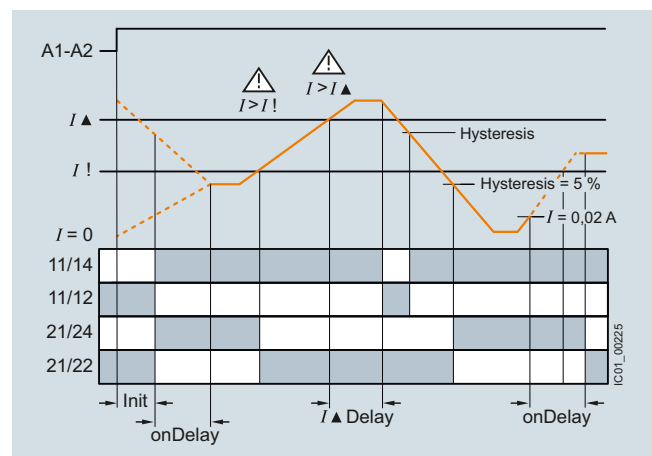
ON-delay time for motor start

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 overshoot 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.

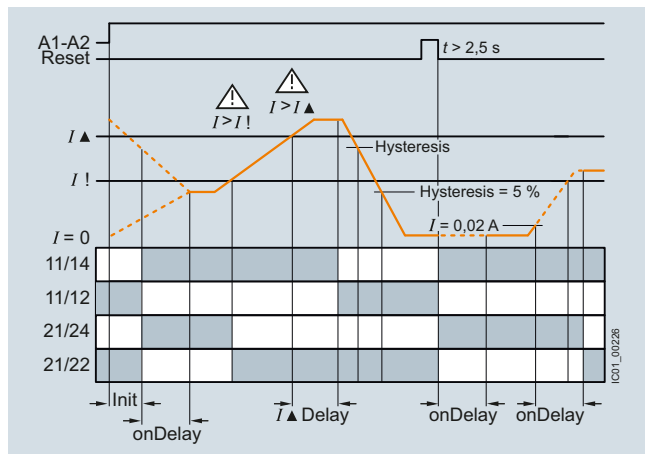
Any overshoots are therefore not stored.

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

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▼ keys simultaneously for > 2 seconds, or by switching the supply voltage off and back on again.

Note:

Do not ground the neutral conductor downstream of the residual-current transformer as otherwise residual current monitoring functions can no longer be ensured.

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

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			SD	Screw terminals	SD	Spring-type terminals	Weight per PU approx.
A	A	%	s	At AC At 50 Hz rated value	At AC At 60 Hz rated value	At DC rated value	d	Article No.	d	Article No.	kg
0.01 ... 43	0.03 ... 40	0 ... 50	0 ... 20	24 ... 240	24 ... 240	24 ... 240	2	3UG4625-1CW30	2	3UG4625-2CW30	0.151

Accessories, see page 2/229.

3UL23 residual-current transformers, see page 2/218.

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Residual Current Monitoring

3UL23 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.

Selection and ordering data

Diameter of the bushing opening	Connectable cross-section of the connecting terminal	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
mm	mm ²	d	Article No.				kg
Residual-current transformers (essential accessory for 3UG4625, 3UG4825 or SIMOCODE 3UF)							
35	2.5	2	3UL2302-1A	1	1 unit	41H	0.131
55	2.5	2	3UL2303-1A	1	1 unit	41H	0.207
80	2.5	2	3UL2304-1A	1	1 unit	41H	0.340
110	2.5	2	3UL2305-1A	1	1 unit	41H	0.480
140	2.5	2	3UL2306-1A	1	1 unit	41H	0.808
210	4	2	3UL2307-1A	1	1 unit	41H	1.720

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg
Adapters						
 Adapters For mounting onto standard rail for 3UL23 to diameter 55 mm	2	3UL2900	1	2 units	41H	0.005

3UL2900

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Insulation Monitoring

General data

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 device 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 startup
- 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

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Insulation Monitoring

General data

Technical specifications

More information

Manuals, see
<https://support.industry.siemens.com/cs/ww/en/view/54382552>
<https://support.industry.siemens.com/cs/ww/en/view/54382528>

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 0 ... 300 V DC 0 ... 600 V DC 0 ... 1 000 V DC	-- ✓ -- -- -- --	✓ -- -- ✓ -- --	-- ✓ ✓ ¹⁾ -- ✓ ¹⁾ ✓ 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

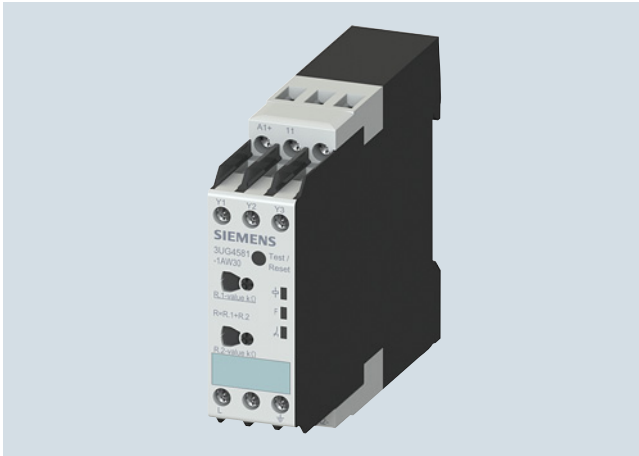
-- Not available

¹⁾ With voltage reducer module.

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Insulation Monitoring

For ungrounded AC networks

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.

2

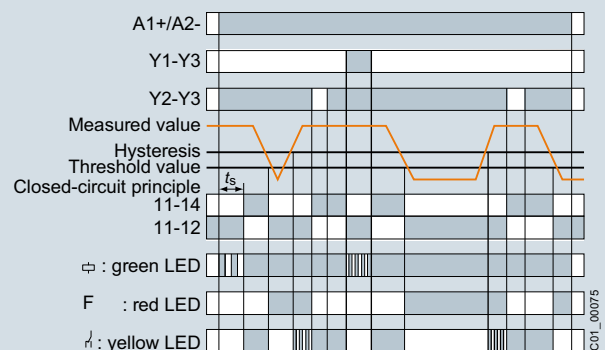
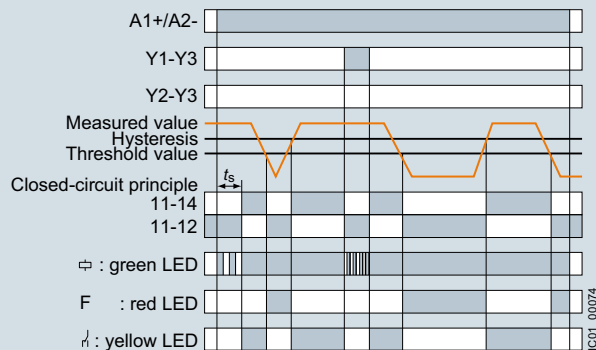
Technical specifications

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



Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Insulation Monitoring

For ungrounded AC networks

Type	3UG4581	
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 line 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 • 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

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 line voltage U_n	Measuring range U_e	Rated control supply voltage U_s	System leakage capacitance	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V AC	k Ω	V	μ F	d	Article No.				kg

Insulation monitors for ungrounded AC networks

0 ... 400	1 ... 100	24 ... 240 AC/DC	Max. 10	5	3UG4581-1AW30	1	1 unit	41H	0.153
-----------	-----------	------------------	---------	---	----------------------	---	--------	-----	-------



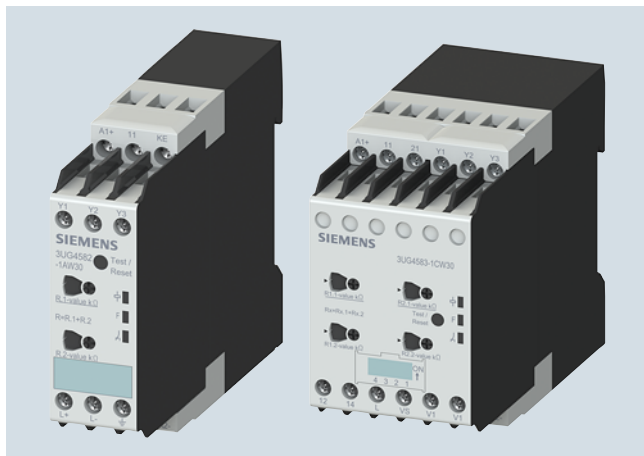
3UG4581-1AW30

Accessories, see page 2/229.

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

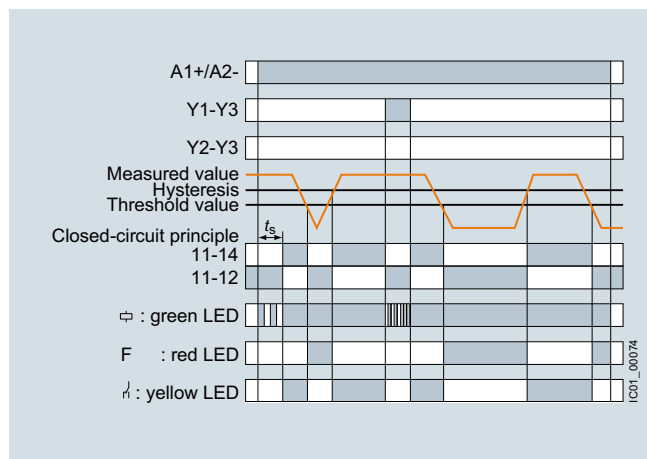
The 3UG4983 passive voltage reducer module can be used to allow the 3UG4583 insulation monitoring relay to be used for insulation monitoring of IT networks with rated voltages of up to 690 V AC and 1 000 V DC.

Technical specifications

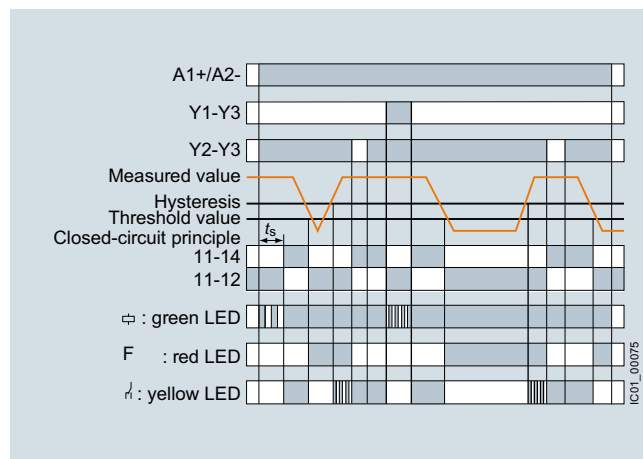
3UG4582 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with Auto RESET



Insulation resistance monitoring with fault storage and Manual RESET



Relays

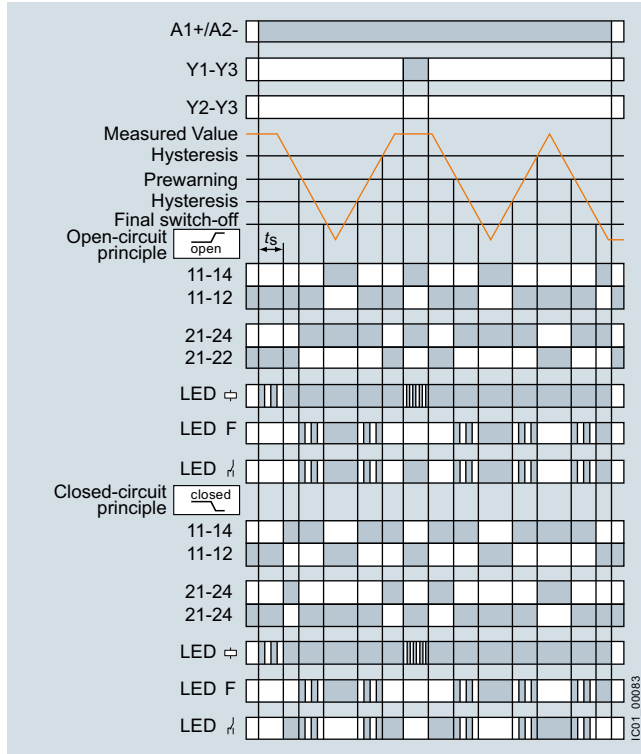
SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation Insulation Monitoring

For ungrounded DC and AC networks

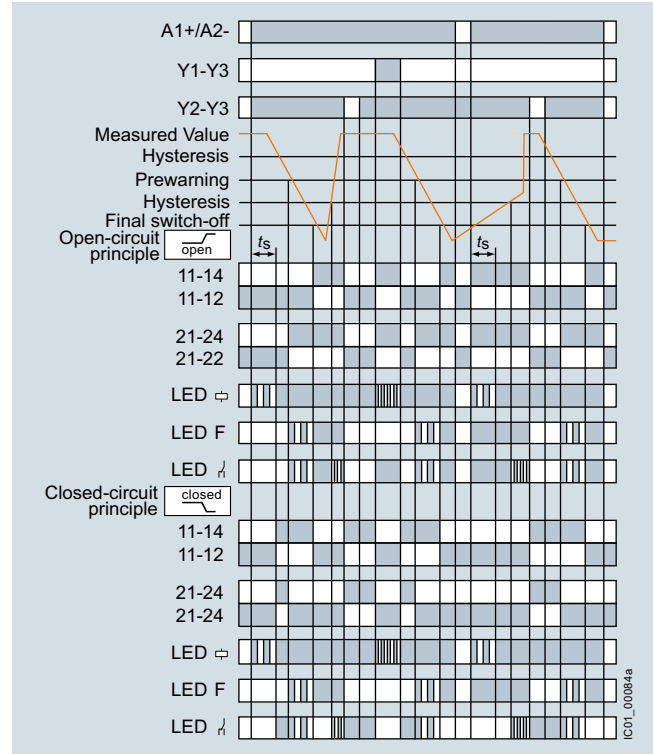
3UG4583 monitoring relays

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
General data			
Rated insulation voltage U_i	V	400 supply circuit/measuring circuit, 300 supply circuit/output circuit	400 supply circuit/measuring circuit, 300 supply circuit/output circuit
Pollution degree 3			
Overvoltage category III acc. to IEC 60664			
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 line voltage of the network being monitored	V	0 ... 250 AC	0 ... 300 AC, 0 ... 690 AC with 3UG49 83
	V	0 ... 300 DC	0 ... 600 DC, 0 ... 1 000 DC with 3UG49 83
Rated frequency of the network being monitored	Hz	DC or 15 ... 400	
Setting range for insulation resistance	k Ω	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			
• Thermal current I_{th}	A	4	
Rated operational current I_e at			
• AC-15/24 ... 400 V	A	3	
• DC-13/24 V	A	2	
Minimum contact load at 24 V DC	mA	10	

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 voltages of up to 690 V AC and 1 000 V DC is possible, [see below](#).

	Rated line voltage U_n	System leakage capacitance	Output relays	Measuring range U_e	Broken wire detection in the measuring range	SD	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	μF		k Ω		d	Article No.				kg
 3UG4582-1AW30	3UG4582 insulation monitors										
	0 ... 250 AC, 0 ... 300 DC	Max. 10	1 CO	1 ... 100	✓	5	3UG4582-1AW30	1	1 unit	41H	0.160
 3UG4583-1CW30	3UG4583 insulation monitors										
	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	5	3UG4583-1CW30	1	1 unit	41H	0.269
 3UG4983-1A ✓ Available	Voltage reducer modules for 3UG4583										
	For extending the line voltage range to max. 690 V AC and 1 000 V DC					5	3UG4983-1A	1	1 unit	41H	0.208

¹⁾ With 3UG4983-1A voltage reducer module suitable also for the insulation monitoring of IT networks of up to 690 V AC and 1 000 V DC.

Accessories, [see page 2/229](#).

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Speed monitoring

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 rotation for extremely slowly rotating motors
- 2- or 3-wire sensors and sensors with a mechanical switching output or semiconductor 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)

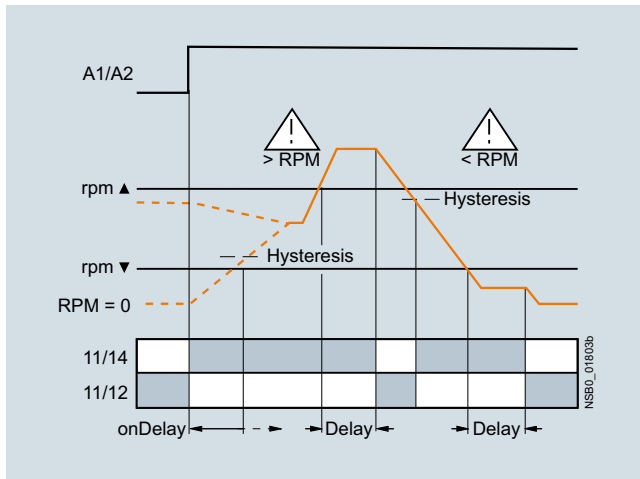
If the device is set to Auto RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 0.1 to 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

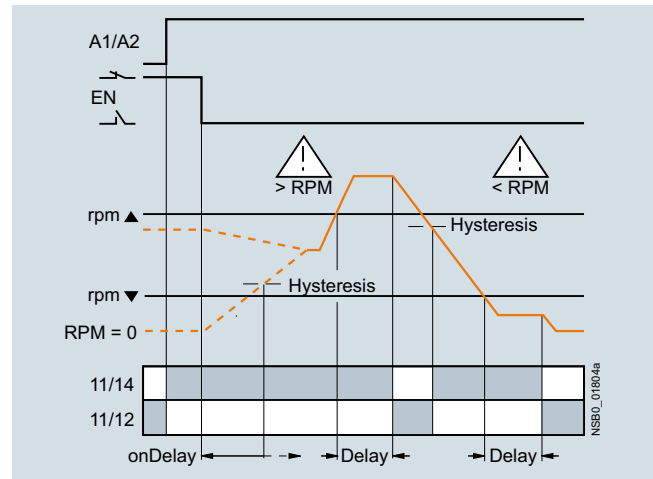
If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continue to flash, even when the speed returns to a permissible value. This stored fault status can be reset by pressing the UP▲ or DOWN▼ keys 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.

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	V	300
Pollution degree 3 Overvoltage category III acc. to VDE 0110		
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, 3-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		
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

Relays

SIRIUS 3UG45, 3UG46 Monitoring Relays for Stand-Alone Installation

Speed monitoring

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

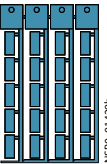
PS* = 1 unit

PG = 41H

Measuring range	Hysteresis	ON-delay time	Tripping time	Pulses per revolution	Rated control supply voltage U_s	SD	Spring-type terminals 	Weight per PU approx.
rpm	rpm	s	s		AC/DC V	d	Article No.	kg
0.1 ... 2 200	OFF 0.1 ... 99.9	0 ... 900	0.1 ... 99.9	1 ... 10	24 ... 240	2	3UG4651-2AW30	0.145

Accessories, [see page 2/229](#).

Selection and ordering data

Use	Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels							
	For 3UG4	Unit labeling plates For SIRIUS devices 20 mm x 7 mm, pastel turquoise ¹⁾	20	3RT1900-1SB20	100	340 units	41B 0.062
	For 3UG4	Adhesive labels for SIRIUS devices					
		• 19 mm x 6 mm, pastel turquoise	15	3RT1900-1SB60	100	3060 units	41B 15.300
		• 19 mm x 6 mm, zinc yellow	15	3RT1900-1SD60	100	3060 units	41B 0.005
Push-in lugs and covers							
	For 3UG4	Push-in lugs For screw fixing, 2 units are required for each device	5	3RP1903	1	10 units	41H 0.002
	For 3UG4	Sealable covers For securing against unauthorized adjustment of setting knobs	5	3RP1902	1	5 units	41H 0.003
	For 3UG45	Sealing foil For securing against unauthorized adjustment of setting knobs	2	3TK2820-0AA00	1	1 unit	41L 0.003
Covers for insulation monitoring relays							
Sealable, transparent covers							
	For 3UG4581 and 3UG4582		5	3UG4981-0C	1	1 unit	41H 0.007
	For 3UG4583		5	3UG4983-0C	1	1 unit	41H 0.010
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	2	3RA2908-1A	1	1 unit	41B 0.050

¹⁾ PC labeling system for individual inscription
of unit labeling plates available from:
murrplastik Systemtechnik GmbH,
[see www.siemens.com/ic10](http://www.siemens.com/ic10), Chapter 16.

Notes:

For products for mechanical bearing monitoring,
e.g. condition monitoring systems,
[see www.siemens.com/sjplus-cms](http://www.siemens.com/sjplus-cms).

Safety Technology

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components
 Catalog IC 10, see www.siemens.com/ic10
 Home page, see www.siemens.com/safety-relays

Industry Mall, see www.siemens.com/product?3SK
 Conversion tool e.g. from 3TK28 to 3SK, see www.siemens.com/sirius/conversion-tool

2

	Article No.	Page
SIRIUS Safety Integrated		
 3SK111.	3SK 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	
	SIRIUS 3SK1 Standard basic units • Simple, compact devices for all important requirements for monitoring safety sensors and actuators	
	SIRIUS 3SK1 Advanced basic units • Multifunctional series of safety relays with safe relay outputs, 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	
	SIRIUS 3SK2 basic units • Series of safety relays that can be parameterized by software, with semiconductor outputs and independent output functions for: - EMERGENCY-STOP monitoring - Protective door monitoring - Protective door monitoring with tumbler - 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 - Muting	
	Expansion units • 3RO and 4RO output expansions for SIRIUS 3SK1 Standard basic units, SIRIUS 3SK1 Advanced basic units and SIRIUS 3SK2 basic units • Input expansion for SIRIUS 3SK1 Advanced basic units • Power supply for SIRIUS 3SK1 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 SIRIUS 3SK1 and SIRIUS 3SK2 Advanced device series by means of wiring or without wiring outlay by means of 3ZY12 device connectors	
 3SK112.	3SK111	2/238
 3SK112.	3SK112	2/239
 3SK2	3SK2	2/240
 3SK121.	3SK121, 3SK122, 3SK123	2/241, 2/242

Connection methods

The 3SK safety relays are available with screw or spring-type terminals (push-in).

The 3TK2810 safety relays and the 3RK3 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.

3SK safety relays: Spring-type terminals (push-in)

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 finely-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.

Overview



SIRIUS 3SK safety relays

SIRIUS 3SK safety relays are the key elements of a consistent, cost-effective safety chain. Whether you need EMERGENCY-STOP functionality, protective door monitoring, light arrays, laser scanners or the protection of presses or punches – slimline SIRIUS safety relays enable all safety applications to be implemented in the best possible way 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 3SK safety relays are approved for applications up to SIL 3 (IEC 61508/IEC 62061) or PL e (EN ISO 13849-1).

Device series

SIRIUS 3SK safety relays stand out due to their flexibility for both parameterization and system designs with several evaluation units. Optimized solutions when selecting components are facilitated by a clearly structured component range:

- 3SK1 Standard basic units
- 3SK1 Advanced basic units
- 3SK2 basic units
- 3SK output expansions
- 3SK1 input expansions
- Accessories

3SK1 Standard basic units

The 3SK1 Standard basic units are characterized by the following features:

- Compact design
- Simple operation
- Relay and semiconductor outputs
- Economical solution

3SK1 Advanced basic units

The 3SK1 Advanced basic units also offer:

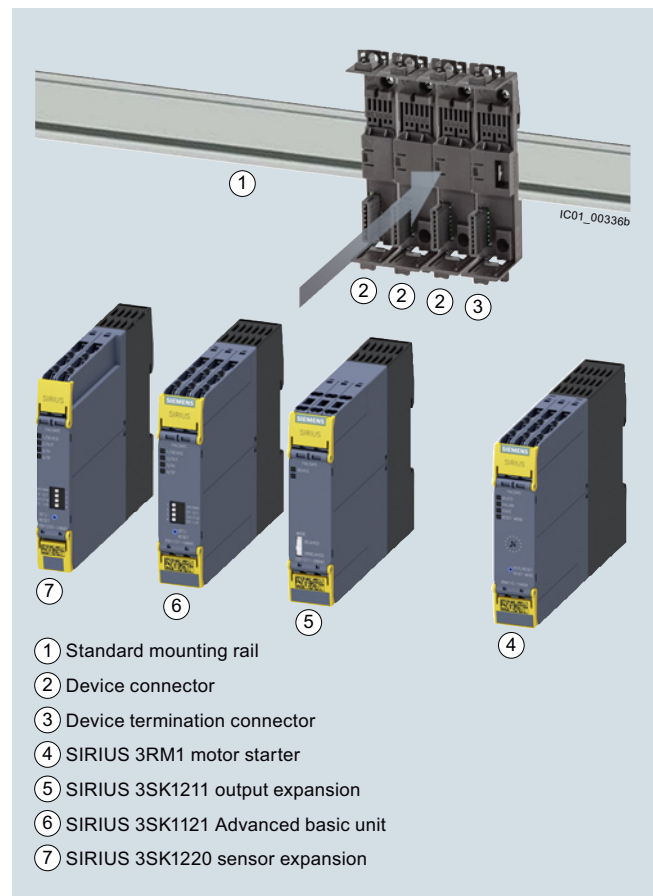
- Universal application opportunities thanks to multifunctionality
- Time-delayed outputs
- Expansion of inputs and outputs

3SK2 basic units

The 3SK2 basic units also offer:

- Up to six fail-safe, independent shutdown functions
- Flexible application thanks to software parameterization
- Powerful semiconductor outputs
- User-friendly diagnostics using diagnostics display and configuring software

In the case of 3SK1 Advanced basic units or 3SK2 basic units, the 3ZY12 device connector allows safety functions involving several sensors and actuators to be constructed very quickly.



System configuration example

The 3SK1 and 3SK2 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 exception to this are the 3TK2810 devices.

Safety Relays

SIRIUS 3SK Safety Relays

General data

Overview of functions of the 3SK series

Type	3SK1 Standard basic units		3SK1 Advanced basic units		3SK2 basic units	
	Safe relay outputs	Safe semiconductor outputs	Safe relay outputs	Safe semiconductor outputs	22.5 mm Safe semiconductor outputs	45 mm Safe semiconductor outputs
Sensors						
• Mechanical	✓	✓	✓	✓	✓	✓
• Non-floating	✓ ¹⁾	✓	✓	✓	✓	✓
• Antivalent	--	--	✓	✓	✓	✓
• Expandable	--	✓ by means of cascading	✓	✓	--	--
Inputs						
• Freely parameterizable	--	--	--	--	10 single-channel, 5 two-channel	20 single-channel, 10 two-channel
Parameters						
• Start (auto/monitored)	✓	✓	✓	✓	A variety of functions can be set for each input/output by means of software parameterization.	
• 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 according to EN 574	--	--	✓	✓		
• Pressure-sensitive mat	--	--	✓	✓		
Safe outputs						
• Instantaneous	✓	✓	✓	✓	Parameterizable	Parameterizable
• Time-delayed	--	--	✓	✓	Parameterizable	Parameterizable
• Expandable with safe relay outputs	✓ by means of wiring	✓ by means of wiring	✓	✓	✓	✓
• Independent	--	--	--	--	✓ ⁴⁾	✓ ⁵⁾
• Device connectors	--	--	✓	✓	✓	✓
Options						
• External memory module	--	--	--	--	--	✓
• Display on the device	--	--	--	--	--	✓
• External diagnostics module can be connected	--	--	--	--	✓	✓
Control supply voltage						
• 24 V DC	✓ ²⁾	✓	✓ ³⁾	✓	✓	✓
• 110 ... 240 V AC/DC	✓	✓ ⁶⁾	✓ ³⁾	✓ ³⁾	--	--

✓ Available

-- Not available

¹⁾ 24 V basic units only.²⁾ 24 V AC/DC.³⁾ Possible using 3SK1230 power supply via device connector.⁴⁾ Up to 4 independent safe outputs, two of which via device connectors.⁵⁾ Up to 6 independent safe outputs, two of which via device connectors.⁶⁾ Possible using 3SK1230 power supply by means of wiring.

Parameter assignment

3SK112 and 3SK1112 with DIP switch

The 3SK112 and 3SK1112 safety relays are configurable safety relays. They are used as evaluation units for typical safety chains (detect, evaluate, respond). A number of functions can be set using the DIP switches on the front. 3SK112 and 3SK1112 are therefore universally applicable.

DIP switch No.	OFF	ON	Schematic
1	Autostart sensor input	Sensor input Monitored start	
2	Without crossover monitoring	With crossover monitoring	
3	2 x single-channel sensor connection	1 x 2-channel sensor connection	
4	With start test	Without start test	

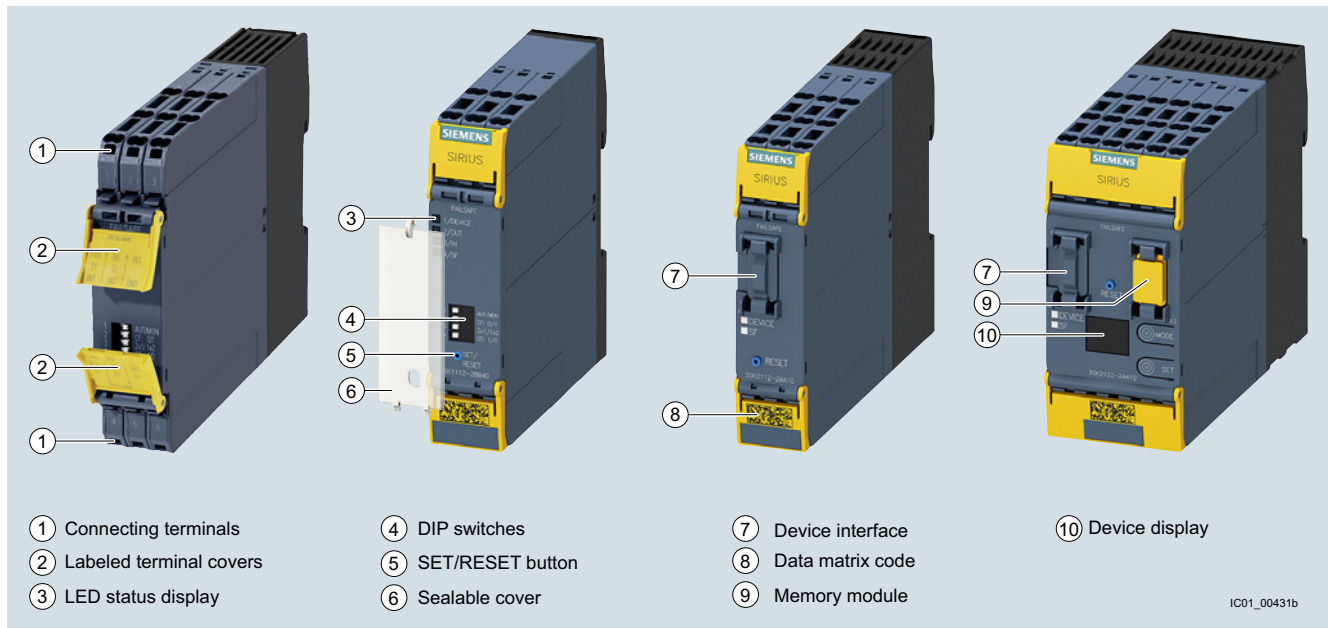
3SK2 with software

The 3SK2 safety relays are configured with the SIRIUS Safety ES software. The behavior of a 3SK2 device as well as the functioning of the individual safe outputs can thus be parameterized simply and conveniently in the logic diagram. In addition, the configuration can be printed out for documentation purposes. The software also supports the user during commissioning and troubleshooting by means of online diagnostics and the option of being able to "force" signals in the logic plan. The 3SK2 safety relays thus offer maximum flexibility and universal application options.

Note:

For SIRIUS Safety ES, see www.siemens.com/ic10, Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS".

Enclosure concept



Innovative enclosure concept for SIRIUS 3SK safety relays

Connection methods

The 3SK safety relays are available with screw or spring-type terminals (push-in).

Spring-type terminals (push-in)

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 finely-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.

Safety Relays

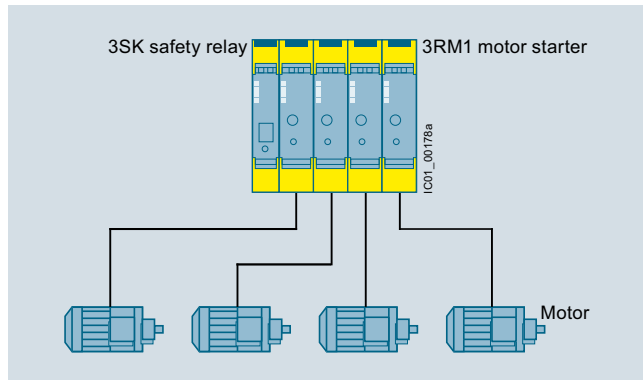
SIRIUS 3SK Safety Relays

General data

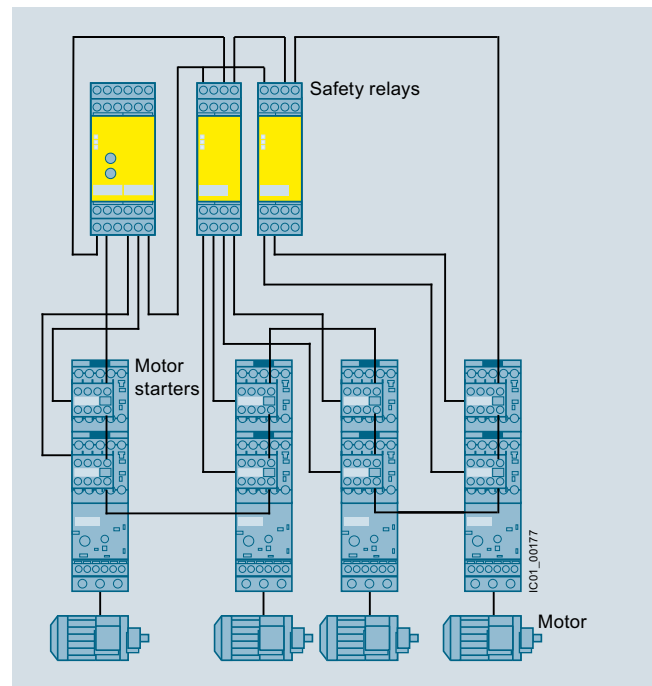
Expansion option by adding the 3RM1 motor starter

With previous safety relay and motor feeder configurations, a huge amount of wiring was required to monitor motor feeders in safety applications.

With the integration of the SIRIUS 3RM1 motor starter into the SIRIUS 3SK safety relay system family, this wiring has been minimized for the first time. Motor starters up to 3 kW can easily be integrated into the safety relay system using SIRIUS 3ZY12 device connectors, without additional wiring between the evaluation unit and the motor starter.



System design using 3SK and 3RM1



Conventional system configuration

Article No. scheme

Product versions		Article number			
3SK1 safety relays		3SK1	☐	☐	☐
Device variant	Basic unit	1			
	Expansion unit	2			
Device version, e.g.	3SK11: Standard; 3SK12: Output expansion	1			
	3SK11: Advanced; 3SK12: Input expansion	2			
Type of outputs	Relay outputs	1			
	Semiconductor outputs	2			
	Power outputs	3			
Connection type	Screw terminals	1			
	Spring-type terminals (push-in)	2			
Control circuit/actuation, e.g.	3SK11: 3 enabling circuits	A			
	3SK11: 2 enabling circuits	B			
	3SK11: 4 enabling circuits	C			
Type of control supply voltage e.g.	3SK1213: 24 V AC, 50/60 Hz	B 0			
	3SK1: 24 V AC/DC, 50/60 Hz	B 3			
	3SK1: 24 V DC	B 4			
	3SK1213: 115 V AC, 50/60 Hz	J 2			
	3SK1213: 230 V AC, 50/60 Hz	L 2			
	3SK1: 110 ... 240 V AC/DC; 50/60 Hz	W 2			
Time delay	None	0			
	0.05 ... 3 s	1			
	0.5 ... 30 s	2			
	5 ... 300 s	4			
Example		3SK1 1 1 1 - 1 A B 3 0			

Product versions		Article number			
3SK2 safety relays		3SK2	☐	☐	☐
Device version	10 F-DI, 2 F-DQ, width 22.5 mm	1			
	20 F-DI, 4 F-DQ, width 45 mm	2			
Connection type	Screw terminals	1			
	Spring-type terminals (push-in)	2			
Example		3SK2 1 1 2 - 1 A A 1 0			

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering 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 up to 2 000 m long allows it to be used in extensive plants

Relay outputs

- Different voltages can be switched through the floating contacts.
- The power relay contacts allow currents of up to 5 A at AC-15/DC-13 to be connected.

Semiconductor outputs

- Wear-free
- Suitable for operation in frequently 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-15/6 A DC-13 to be switched.
- High mechanical and electrical endurance
- Protective separation between safe outputs and electronics

Expansion option by adding the 3RM1 motor starter

SIRIUS 3SK safety relays are ideal for combining with the SIRIUS 3RM1 motor starters.

Combinations are made by means of

- SIRIUS 3ZY12 device connectors (in combination with 3SK1 Advanced/3SK2) or
- Conventional wiring (for all 3SK1 and 3SK2 basic units)

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:

For SIRIUS 3RM1 motor starters, see www.siemens.com/ic10, Chapter 8.

3ZY12 device connectors

Using 3ZY12 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.

Configuration and stock keeping

Variable setting options by means of DIP switches or software, a wide voltage range (3SK1111) and a special power supply unit (3SK1 only) reduce the cost of keeping stocks and the considerations involved in configuration where the evaluation units to be selected are concerned.

Application

3SK1 safety relays

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.

3SK2 safety relays

SIRIUS 3SK2 safety relays are used primarily in autonomous, more complex safety applications for which the functional scope of the 3SK1 devices is no longer sufficient, such as in the implementation of independent shutdown functions. 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.

Safety Relays

SIRIUS 3SK Safety Relays

General data

Technical specifications

More information

3SK1 manual, [see](https://support.industry.siemens.com/cs/ww/en/view/67585885)
<https://support.industry.siemens.com/cs/ww/en/view/67585885>
 3SK1230 technical specifications, [see](https://support.industry.siemens.com/cs/ww/en/ps/16389/td)
<https://support.industry.siemens.com/cs/ww/en/ps/16389/td>

3SK2 manual, [see](https://support.industry.siemens.com/cs/ww/en/view/109444336)
<https://support.industry.siemens.com/cs/ww/en/view/109444336>
 FAQs, [see](https://support.industry.siemens.com/cs/ww/en/ps/16382/faq)
<https://support.industry.siemens.com/cs/ww/en/ps/16382/faq>

SIRIUS 3SK1 safety relays

Article number	3SK1111- .AB30, 3SK1211- .BB00, 3SK1211- .BB40	3SK1111- .AW20, 3SK1121, 3SK1211- .BW20	3SK1112	3SK1120	3SK1122	3SK1213	3SK1220
General data:							
Ambient temperature							
• During operation	°C	-25 ... +60					
• During storage	°C	-40 ... +80					
Installation altitude at height above sea level maximum	m	2 000					
Air pressure according to SN 31205	kPa	90 ... 106					
Shock resistance		10 g / 11 ms				5 g / 10 ms	10 g / 11 ms
Vibration resistance according 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					
Rated insulation voltage	V	300		50		300	50
Impulse withstand voltage rated value	V	4 000		500		4 000	800
Safety integrity level (SIL) according to IEC 61508		SIL 3					
Performance Level (PL) according to EN ISO 13849-1		e					
T1 value for proof test interval or service duration according to IEC 61508	y	20					
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		Yes					
• TÜV approval		Yes					

Article number	3SK1111, 3SK1121-.AB40, 3SK1211	3SK1112, 3SK1122	3SK1120	3SK1121-.CB4.	3SK1213
Switching capacity current of the NO contacts of the relay outputs					
• At AC-15 at 230 V	A	5	--	3	10
• At DC-13 at 24 V	A	5	--	3	6
Switching capacity current of the semiconductor outputs at DC-13 at 24 V	A	--	2	0.5	--

Article number	3SK1111- .AB30, 3SK1211	3SK1111- .AW20	3SK1112, 3SK1220	3SK1120, 3SK1122- .AB40	3SK1121- .AB40	3SK1121- .CB4.	3SK1122- .CB4.	3SK1213
PFHD with high demand rate according to EN 62061	1/h	1.7×10^{-9}	1.5×10^{-9}	1.0×10^{-9}	1.3×10^{-9}	2.5×10^{-9}	3.7×10^{-9}	1.5×10^{-9}
PFDAvg at low demand rate according to IEC 61508		1.0×10^{-6}		7.0×10^{-6}				1.0×10^{-6}

SIRIUS 3SK2 safety relays

Article number		3SK2112- .AA10	3SK2122- .AA10
General data:			
Ambient temperature			
• During operation	°C	-25 ... +60	
• During storage	°C	-40 ... +80	
Installation altitude at height above sea level maximum	m	2 000	
Air pressure according to SN 31205	kPa	90 ... 106	
Shock resistance		15 g / 11 ms	
Vibration resistance according 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	50	
Impulse withstand voltage Rated value	V	800	
Safety integrity level (SIL) according to IEC 61508		SIL 3	
Performance Level (PL) according to EN ISO 13849-1		e	
T1 value for proof test interval or service duration according to IEC 61508	y	20	
EMC emitted interference according to IEC 60947-1		Class A	
Certificate of suitability			
• UL certification		Yes	
• TÜV approval		Yes	
Switching capacity current of the semiconductor outputs at DC-13 at 24 V		4	
PFHD with high demand rate according to EN 62061	1/h	1.0×10^{-8}	1.2×10^{-8}
PFDavg at low demand rate according to IEC 61508		1.5×10^{-5}	1.8×10^{-5}

Safety Relays

SIRIUS 3SK Safety Relays

Basic Units

SIRIUS 3SK1 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:

Use of device connectors not possible.

Selection and ordering data



3SK1111-1AB30



3SK1111-1AW20



3SK1112-1BB40

Control supply voltage		Number of outputs			As contactless semiconductor contact block			SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
At AC At 50 Hz	At DC	As contacting contact block	As NO contact, instantaneous switching	As NO contact, delayed switching	For signaling function, instantaneous switching	Instantaneous switching	Delayed switching						
V	V							d					kg
Standard basic units													
24	24	3	0	1	0	0	0	▶	3SK1111-□AB30	1	1 unit	41L	0.275
110 ... 240	110 ... 240	3	0	1	0	0	0		3SK1111-□AW20	1	1 unit	41L	0.288
--	24	0	0	0	2	0	1		3SK1112-□BB40	1	1 unit	41L	0.200

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

1
2

Overview



3SK112 Advanced basic units

The 3SK112 Advanced basic units form an innovative system landscape that allows even complex safety functions with large numbers of sensors and outputs to be built up using the device connectors. It is possible to increase both the number of inputs for sensors and the number of safe outputs of the basic unit without the need for wiring outlay between the devices.

Note:

Use of device connectors possible.

2

Selection and ordering data



3SK1121-1AB40



3SK1120-1AB40



3SK1122-1AB40



3SK1122-1CB41

Control supply voltage at DC	Number of outputs			As contactless semiconductor contact block			Adjustable OFF-delay time	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	As contacting contact block	As NO contact, instantaneous switching	As NO contact, delayed switching	As NC contact for signaling function, instantaneous switching	Instantaneous switching	Delayed switching	For signaling function, instantaneous switching	s	d				kg
Advanced basic units													
24	3	0	1	0	0	0	--	▶	3SK1121-□AB40	1	1 unit	41L	0.283
	2	2	0	0	0	0	0.05 ... 3		3SK1121-□CB41	1	1 unit	41L	0.263
							0.5 ... 30		3SK1121-□CB42	1	1 unit	41L	0.270
							5 ... 300		3SK1121-□CB44	1	1 unit	41L	0.293
24	0	0	0	1	0	0	--		3SK1120-□AB40	1	1 unit	41L	0.193
				3	0	1	--		3SK1122-□AB40	1	1 unit	41L	0.210
				2	2	0	0.05 ... 3		3SK1122-□CB41	1	1 unit	41L	0.210
							0.5 ... 30		3SK1122-□CB42	1	1 unit	41L	0.216
							5 ... 300		3SK1122-□CB44	1	1 unit	41L	0.215

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

1
2

Safety Relays

SIRIUS 3SK Safety Relays

Basic Units

SIRIUS 3SK2 basic units

Overview

2



3SK2 basic units

The 3SK2 basic units have a large number of inputs and outputs within a narrow width. In addition, demanding safety applications can be implemented simply with several independent safety functions. Flexible application options are enabled by powerful semiconductor outputs, as well as by expandability with additional 3SK output expansions and 3RM1 Failsafe motor starters. Flexible time functions and diagnostics options are available.



Starter Kit

Starter Kit

The Starter Kit is a favorably-priced complete package for the simple creation of complex safety applications and comprises:

- 3SK2112-2AA10 basic unit, 22.5 mm wide, with spring-loaded terminal (push-in)
- SIRIUS Safety ES Standard software for configuring, commissioning, operating and diagnosing
- USB PC cable for easy transmission of the configuration to the device by means of USB

Selection and ordering data



3SK2112



3SK2122

Control supply voltage at DC	Number of outputs as contactless semiconductor contact block, safety-related 2-channel	Number of outputs as contactless semiconductor contact block, non-safety-related, 2-channel	Number of outputs to the device connector, safety-related	Width	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V				mm	d					kg
3SK2 basic units										
24	2	1	2	22.5		3SK2112-□AA10	1	1 unit	41L	0.230
	4	2	2	45		3SK2122-□AA10	1	1 unit	41L	0.406

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

1
2

Control supply voltage at DC	Number of outputs as contactless semiconductor contact block safety-related 2-channel	Number of outputs as contactless semiconductor contact block, non-safety-related, 2-channel	Number of outputs to the device connector, safety-related	Width	SD	Spring-type terminals (push-in)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V				mm	d	Article No.				kg
3SK2 starter kits										
Contains 3SK2112-2AA10 basic unit, SIRIUS Safety ES Standard and USB PC cable 3UF7941-0AA00-0										
24	2	1	2	22.5	2	3SK2941-2AA10	1	1 unit	4N1	0.638

Overview



3SK121 output expansion

The 3SK121 output expansions can be used to expand all 3SK basic units.

3SK1211 output expansion

The 3SK1211 output expansion is used to expand the safe outputs of a basic unit by adding another four safe outputs. These outputs have a switching capacity of AC-15 5 A at a switching voltage of 230 V. The devices can be connected to any 3SK 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 and 3SK2 basic units by means of the 3ZY12 device connectors.

3SK1213 output expansion

The 3SK1213 output expansion is used to expand the safe outputs of a basic unit by adding three safe outputs with high switching capacity. These outputs have a switching capacity of AC-15 10 A at a switching voltage of 230 V. The devices can be connected to any 3SK basic unit by means of wiring. As with the 3SK1211, the devices with a 24 V DC control supply voltage can also be connected to 3SK1 Advanced and 3SK2 basic units by means of the 3ZY12 device connectors.

Note:

It is only possible to expand the Standard basic units by means of wiring. Advanced basic units and 3SK2 basic units can be expanded using the 3ZY12 device connector.

Benefits

- Perfect adaptation of the number of inputs
- Simple expansion of instantaneous and time-delayed safe outputs of the Advanced basic units using device connectors
- When using the device connector the outputs on the terminals of the basic device can still be used
- Another two freely parameterizable shutdown functions on 3SK2 basic units when using device connectors
- Expansion with power contacts for high AC-15/DC-13 currents in the control circuit
- No wiring of the feedback circuit to the basic units is required when using device connectors
- Shorter installation times
- Less configuring and testing required

Selection and ordering data



3SK1211-1BB40



3SK1213-1AB40

Control supply voltage		Number of outputs As contacting contact block			3ZY12 device con- nectors	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
At AC At 50 Hz	At DC	As NO contact, instantaneous switching	As NO contact, delayed switching	As NC contact for signaling function, instantaneous switching							
V	V					d					kg
Output expansions											
24	--	4	0	0	No		3SK1211-□BB00	1	1 unit	41L	0.248
--	24	4	0	0	Yes		3SK1211-□BB40	1	1 unit	41L	0.231
110 ... 240	110 ... 240	4	0	0	No		3SK1211-□BW20	1	1 unit	41L	0.247
--	24	3	0	0	Yes		3SK1213-□AB40	1	1 unit	41L	1.000
115	--	3	0	0	No		3SK1213-□AJ20	1	1 unit	41L	1.000
230	--	3	0	0	No		3SK1213-□AL20	1	1 unit	41L	1.000

Type of electrical connection

- Screw terminals
- Spring-type terminals (push-in)

1
2

Safety Relays

SIRIUS 3SK Safety Relays

Expansion Units

Input expansions

Overview



3SK1220 sensor expansion

With the input expansions

- 3SK1220 sensor expansion
- 3SK1230 power supply

the 3SK1 Advanced basic units can be made more flexible.

3SK1220 sensor expansion

The 3SK1220 input expansion allows additional sensors to be integrated easily and flexibly. The device monitors two 1-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 3SK1 Advanced basic units by means of the 3ZY12 device connector, [see page 2/243](#).

3SK1230 power supply

The 3SK1230 power supply makes the 3SK1 devices universally usable, whatever control supply voltage is to be used.

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
- Universal use thanks to the wide range of adjustable parameters for sensor expansion (parameters as for 3SK1 Advanced basic units)

Selection and ordering data



3SK1220-1AB40



3SK1230-1AW20

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Input expansions						
Sensor expansion For safety-related expansion of the 3SK1 Advanced basic units by adding a further 2-channel sensor or two 1-channel sensors		3SK1220-□AB40	1	1 unit	41L	0.166
Power supply For supplying 3SK1 Advanced basic units via 3ZY12 device connectors at voltages of 110 ... 240 V AC/DC		3SK1230-□AW20	1	1 unit	41L	0.195
Type of electrical connection						
• Screw terminals • Spring-type terminals (push-in)						

1
2

Overview

Numerous accessories are available for 3SK, such as device connectors, terminals, cables, adapters, covers, memory and diagnostics modules or software.

Device connectors for 3SK112., 3SK12.. and 3SK2

The device connector can be used to connect devices of the 3SK/3RM1 system together, with the last device in a system configuration being placed on a device termination connector. Use of device connectors not possible with 3SK1 standard.

Device connectors are available in various versions specifically for the 3SK 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)	3ZY1212-2GA00 (for 3SK2, width 22.5 mm)	3ZY1212-4GA01 (for 3SK2, width 45 mm)	3ZY1212-2DA00 (for 3SK1, width 22.5 mm)	3ZY1212-0FA01 (for 3SK1, set for enclosures ≥ 45 mm)
3SK1 Advanced basic units						
3SK1120	✓	--	--	--	--	--
3SK1121	--	✓	--	--	✓	--
3SK1122	--	✓	--	--	✓	--
3SK2 basic units						
3SK2112	--	--	✓	--	--	--
3SK2122	--	--	--	✓	--	--
Output expansions						
3SK1211	--	✓	--	--	✓	--
3SK1213	--	--	--	--	--	✓
Input expansions						
3SK1220	✓	--	--	--	--	--
3SK1230	--	✓	--	--	--	--

✓ Available

-- Not available

Removable terminals for 3SK

The following removable terminals are available for the 3SK safety relays for pre-wiring of the terminals in the control cabinet, or for replacing terminals:

For type	Removable terminals		Spring-type terminals (push-in)	
	Screw terminals			
	2-pole 3ZY1121-1BA00	3-pole 3ZY1131-1BA00	2-pole 3ZY1121-2BA00	3-pole 3ZY1131-2BA00
3SK1 basic units				
3SK1111	--	✓	--	✓
3SK1112	✓	--	✓	--
3SK1120	--	✓	--	✓
3SK1121	--	✓	--	✓
3SK1122	✓ bottom	✓ top	✓ bottom	✓ top
3SK2 basic units				
3SK2112	--	✓	--	✓
3SK2122	--	✓ ¹⁾	--	✓ ¹⁾
Output expansions				
3SK1211	✓	--	✓	--
3SK1213	--	--	--	--
Input expansions				
3SK1220	--	✓ top	--	✓ top
3SK1230	✓ bottom	--	✓ bottom	--

✓ Available

-- Not available

¹⁾ Two sets of terminals are required for 3SK2122.

Selection and ordering data

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure



Device connectors for 3SK1

- Width 17.5 mm
- Width 22.5 mm

Device connectors for 3SK2

- Width 22.5 mm
- Width 45 mm

Device termination connectors

For 3SK1, width 22.5 mm

Note:

Observe positions of the slide switch, see Manual "3SK1 Safety Relays", <https://support.industry.siemens.com/cs/ww/en/view/67585885>

Device daisy chain connectors

For 3RM1 and 3SK, 24 V DC, 22.5 mm, for implementation of distances between devices according to the installation guidelines

Device connectors

For height adjustment for devices without electrical connection via device connector, with a width of 22.5 mm or greater

Device termination connector sets

For 3SK1213, width > 45 mm, comprising 3ZY1212-2FA00 and 3ZY1210-2AA00

2	3ZY1212-1BA00	1	1 unit	41L	0.050
2	3ZY1212-2BA00	1	1 unit	41L	0.050
2	3ZY1212-2GA00	1	1 unit	41L	0.678
2	3ZY1212-4GA01	1	1 unit	41L	0.678
2	3ZY1212-2DA00	1	1 unit	41L	0.050
2	3ZY1212-2AB00	1	1 unit	41L	0.050
2	3ZY1210-2AA00	1	1 unit	41L	0.050
2	3ZY1212-0FA01	1	1 unit	41L	0.050

Safety Relays

SIRIUS 3SK Safety Relays

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Terminals for SIRIUS devices in the industrial standard mounting rail enclosure



Removable terminals

- 2-pole, up to 2 x 1.5 mm² or 1 x 2.5 mm²
- 3-pole, up to 2 x 1.5 mm² or 1 x 2.5 mm² ¹⁾

3ZY1121-1BA00

- 2-pole, up to 2 x 1.5 mm²
- 3-pole, up to 2 x 1.5 mm² ¹⁾

Screw terminals



3ZY1121-1BA00

1 6 units 41L 0.013

3ZY1131-1BA00

1 6 units 41L 0.013

Spring-type terminals (push-in)



3ZY1121-2BA00

1 6 units 41L 0.007

3ZY1131-2BA00

1 6 units 41L 0.010

PC cables and adapters for 3SK2 (essential accessories)



3UF7941-0AA00-0

USB PC cables

For connecting to the USB interface of a PC/PG, for communication with 3SK2 through the system interface, recommended for use in connection with 3SK2

3UF7941-0AA00-0

1 1 unit 42J 0.093

USB/serial adapters

For connecting an RS 232 PC cable to the USB interface of a PC

5

3UF7946-0AA00-0

1 1 unit 42J 0.210

Connecting cables for 3SK2 (essential accessory for diagnostics module)



3UF7932-0AA00-0

Connecting cables

For connecting diagnostics module to 3SK2 basic unit

- Length 0.1 m (flat)
- Length 0.3 m (flat)
- Length 0.5 m (flat)
- Length 0.5 m (round)
- Length 1.0 m (round)
- Length 2.5 m (round)

►

3UF7931-0AA00-0

1 1 unit 42J 0.012

►

3UF7935-0AA00-0

1 1 unit 42J 0.019

►

3UF7932-0AA00-0

1 1 unit 42J 0.023

►

3UF7932-0BA00-0

1 1 unit 42J 0.035

►

3UF7937-0BA00-0

1 1 unit 42J 0.059

►

3UF7933-0BA00-0

1 1 unit 42J 0.121

Operating and monitoring modules for 3SK2



3SK2611-3AA00

Diagnostics modules

2

3SK2611-3AA00

1 1 unit 41L 0.107

For direct display of errors, e.g. of cross-circuits

Note:

The 3RK3611-3AA00 diagnostics module cannot be operated on the 3SK2 devices.

Door adapters for 3SK2



3UF7920-0AA00-0

Door adapters

►

3UF7920-0AA00-0

1 1 unit 42J 0.014

For external connection of the system interface, e.g. outside a control cabinet

Interface covers for 3SK2



3UF7950-0AA00-0

Interface covers

►

3UF7950-0AA00-0

1 5 units 42J 0.001

For system interface

Memory modules for 3SK2



3RK3931-0AA00

Memory modules

2

3RK3931-0AA00

1 1 unit 42C 0.004

For backing up the complete parameterization of the 3SK2 safety system without a PC/PG through the system interface

Software for 3SK2



3ZS1316-.C.10-0Y.5

SIRIUS Safety ES

Software for configuring, commissioning, operating and diagnosing of 3SK2 and 3RK3, see www.siemens.com/ic10, Chapter 14 "Parameterization, Configuration and Visualization with SIRIUS" or Industry Mall.

Safety Relays

SIRIUS 3SK Safety Relays

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Accessories for enclosures



3ZY1321-2AA00

Sealing covers

- 17.5 mm (for 3SK1120 and 3SK1220)
- 22.5 mm (for all 3SK1 devices except 3SK1120 and 3SK1220)

2

3ZY1321-1AA00

1 5 units 41L 0.002

2

3ZY1321-2AA00

1 5 units 41L 0.003



3ZY1311-0AA00

Push-in lugs

For wall mounting

2

3ZY1311-0AA00

1 10 units 41L 0.001



3ZY1440-0AA00

Coding pins

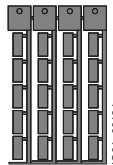
For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable mechanical coding of terminals, see Manual "3SK1 safety relays", <https://support.industry.siemens.com/cs/ww/en/view/67585885>

2

3ZY1440-1AA00

1 12 units 41L 0.001

Blank labels



3RT2900-1SB20

Unit labeling plates

For SIRIUS devices
20 mm x 7 mm, titanium gray¹⁾

20

3RT2900-1SB20

100 340 units 41B 0.062

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

2

Spring-type terminals (push-in)

**3RA2908-1A**

1 1 unit 41B 0.050

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH, see www.siemens.com/ic10, Chapter 16 Partners*

Position and Safety Switches

Introduction

Overview

More information

Home page, see www.siemens.com/railway-components

Catalog IC 10, see www.siemens.com/ic10

Home page, see www.siemens.com/sirius-detecting

Industry Mall, see www.siemens.com/product?3SE

Configurator, see www.siemens.com/sirius/configurators

System Manual, see <https://support.industry.siemens.com/cs/ww/en/view/43920150>

Conversion tool, see www.siemens.com/sirius/conversion-tool



**3SE523.
3SE521.**



3SE524.,



**3SE513.,
3SE511.**



3SE512.



3SE516.



**3SE5413,
3SE5423**



3SE5250

	Position switches, standard					Compact design	Open-type
Enclosure							
Plastic	✓	✓	✓	--	--	--	✓
Metal	✓	--	✓	✓	✓	✓	
Degree of protection	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP10 or IP20
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
Approvals	CE, TÜV, UL, CSA, CCC,		CE, TÜV, UL, CSA, CCC			CE, UL, CSA, CCC	CE, TÜV, 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)	--	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	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		--	--	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)	--	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	400 V
Conventional thermal current I_{the}	6 A/10 A (3-/2-pole)		6 A/10 A (3-/2-pole)			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	✓	✓	✓	✓	✓	✓	--
Connector socket, 6-pole + PE	--	--	✓	✓	--	--	--
Molded cables	--	--	--	--	--	✓	--
Actuators							
Rounded plungers and roller plungers	✓		✓		✓	--	--
Roller levers and angular roller levers	✓		✓		✓	--	--
Spring rod	✓		✓		--	--	--
Twist levers and rod actuators	✓		✓		✓	--	--
Fork lever	--		✓		--	--	--
Hinge switches	--		--		--	--	--
Plungers, twist levers	--		--		--	✓	✓
Page							
Ambient temperature –40 °C	2/261, 2/268	2/264	2/267, 2/270	2/271	2/271	--	--

✓ Available

-- Not available



	Safety hinge switches		Safety switches with separate actuator		Safety switches with tumbler
Enclosure					
Plastic	✓	✓	✓	✓	✓
Metal	✓	✓	✓	✓	✓
Degree of protection	IP65, IP66/IP67	IP66/IP67	IP65, IP66/IP67	IP66/IP67	IP66/IP67, IP69K
Standards					
IEC 60947-5-1	Mounting and operating points acc. to EN 50047	Mounting and operating points acc. to EN 50041	Mounting acc. to EN 50047	Mounting acc. to EN 50041,	EN ISO 14119
Approvals	CE, TÜV, UL, CSA, CCC		CE, TÜV, UL, CSA, CCC		CE, TÜV, UL, CSA, CCC
Contact blocks/outputs					
2 slow-action contacts	--		1 NO + 1 NC, 2 NC		--
2 snap-action contacts	1 NO + 1 NC		--		--
• Short stroke	--				
• With 2 × 2 mm contact gap	--				
3 slow-action contacts	--		1 NO + 2 NC		2 × (1 NO + 2 NC)
• With make-before-break	--				
3 snap-action contacts	1 NO + 2 NC		--		--
Electron. safety outputs	--		--		--
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		6 A
Connections					
Cable entry	1 × M20 × 1.5	1 × M20 × 1.5	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	--		✓	✓	✓
Hinge switches	✓		--	--	--
Page					
Complete units	2/263	--	--	--	--
Modular system	--	--	--	--	--
Ambient temperature -40 °C	2/273	--	2/273	--	2/274

✓ Available

-- Not available

Note:Safety characteristics, see www.siemens.com/ic10, Chapter 16.

SIRIUS 3SE5 Mechanical Position Switches

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 is the 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.

Simple plug-in mounting 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 for 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 versions

Various basic switches can be selected for the enclosures of the 3SE5 series:

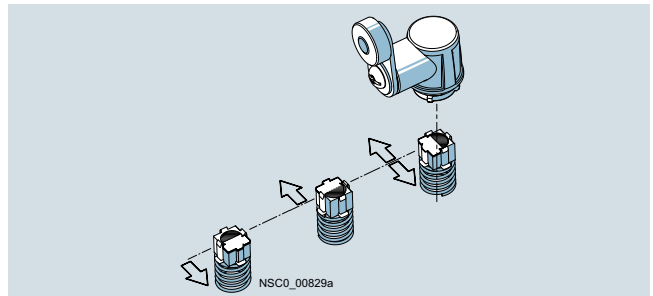
- With contact blocks with two or three contacts (screw terminals) designed as slow-action or snap-action contacts; the slow-action contacts also with make-before-break
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Versions with increased corrosion protection
- Versions for operating temperature down to -40°C
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see www.siemens.com/ic10, Chapter 12)

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 lever actuator
- Fork levers with twist lever actuator

The actuator rollers are available with various materials and diameters.



Twist actuators for twist levers and rod levers, with setting of switching direction to right, left, or right/left (standard for all twist lever actuators except fork levers)

Cover design

The mechanical position switches have a turquoise cover, and the mechanical safety switches have a yellow cover.



On request the switches can be delivered ex works with a yellow cover. The cover does not have any effect on the way the switch works. Both versions can be used in safety applications.

Diverse 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

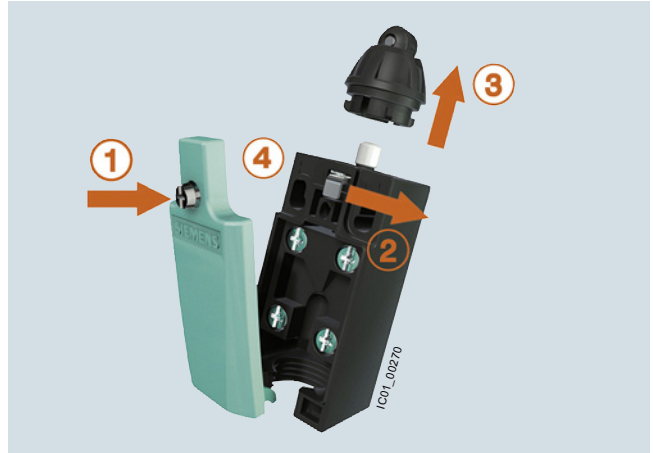
The contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

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

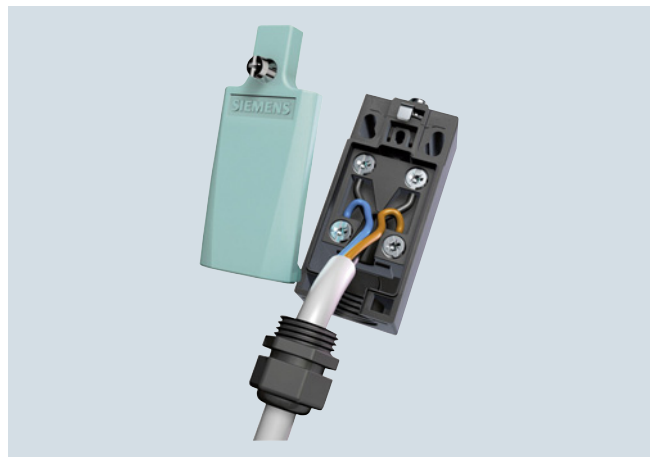
Simple plug-in mounting for fast replacement of the actuator heads



- Open the cover (1)
- Actuate the locking lever (2)
- Replace the head (rotatable by 16 x 22.5°) (3)
- Lock and close the cover (4)

Quick-connect technology

For plastic enclosure 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.

Optional LED indicators

LED indicators are available for all enclosure sizes except for XL. The enclosures are supplied with an LED signaling indicator (1 x green + 1 x yellow). This is the first time that optical signaling equipment is also available for small standard enclosures according to EN 50047. The LEDs are implemented in 24 V DC and 230 V AC.

SIRIUS 3SE5 Mechanical Position Switches

General data

Article No. scheme

Product versions													
SIRIUS position and safety switches		3	S	E					-				
Series		5											
Standard	EN 50041		1										
	EN 50047		2										
	With tumbler		3										
Enclosure material and width	e.g. 1 = metal, narrow												
Connection	Cable entry, connector sockets				2								
					4/5								
LEDs	None							0					
	24 V DC							1					
	115 V AC							2					
	230 V AC							3					
Version of contacts	e.g. C = snap-action 1 NO + 1 NC												
Version of operating mechanism	e.g. C02 = rounded plunger												
Example		3	S	E	5	1	1	2	-	0	C	C	0 2

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering 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 2/249).
- 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 2/249).
- All enclosure variants have an integrated chlorinated rubber diaphragm for high functional safety in cold and aggressive environments.
- All contact blocks are replaceable.
- The three-pole contact blocks are available for all enclosure sizes (see picture, page 2/249).
- 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 saves approx. 20 to 25 % of the time when connecting (see picture, page 2/249).
- The ASIsafe electronic component is integrated in the enclosure for the versions with AS-Interface connection (see www.siemens.com/ic10, Chapter 12); 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. They comply with the standard EN ISO 14119. A TÜV certificate is available. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

Standards IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts. In other words, 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 in accordance with 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 connected. Example: 3SK or 3TK28 safety relays or the corresponding devices from the ASIsafe, SIMATIC or SINUMERIK programs. 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 every application

- **Snap-action contacts:** NC and NO contacts switch simultaneously – regardless of the actuating speed ($v_{\min} = 0.01 \text{ m/s}$) 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 ($v_{\min} = 0.4 \text{ m/s}$).
- **Slow-action contacts with make-before-break:** e.g. suitable for adding a second function to a sequence control.

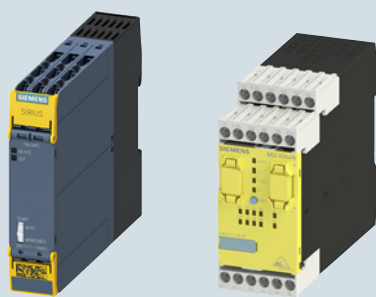
Operating mechanisms for every applicationStandard, rounded and roller plungers

- 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.

Monitoring with fail-safe evaluation units from the 3SK and 3RK3 series

Safe evaluation units		Maximum achievable safety level according to type of switch				
		Compact	Standard	Hinge	Separate actuator	Tumbler
 3SK3RK3		 3SE54	 3SE51 / 3SE52	 3SE51 / 3SE52	 3SE51 / 3SE52	 3SE53
Use of only one position switch/safety switch		SIL 1 / PL c				
Monitoring with 1 contact: 1 x NC contact		SIL 1 / PL c				
Monitoring with 2 contacts: 2 x NC contact or 1 x NC contact + 1 x NO contact		SIL 2 / PL d				
Use of a second position switch/safety switch		SIL 3 / PL e				
Standard switch	3SE51 / 3SE52	SIL 3 / PL e				
Safety switch / hinge switch	3SE51 / 3SE52	SIL 3 / PL e				
Safety switch with separate actuator	3SE51 / 3SE52	SIL 3 / PL e				
Safety switches with tumbler	3SE53	SIL 3 / PL e				

Note:

Taking account of certain fault exclusions (e.g. actuator breakage), use of just one hinge switch or a switch with separate actuator with or without tumbler up to SIL 2 or PL d is possible as described in the table.

Since the machine manufacturer must provide proof of fault exclusion, the component manufacturer is unable to carry out a definitive assessment of the measures taken.

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 ($v = 1.5 \text{ m/s}$)
- 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

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/35443942>.

The maximum achievable SIL or PL always depends on other assumptions as well. Factors to be taken into account include the DC (declaration), the CCF, and the number of actuations.

For information on the safe evaluation units and an introduction to safety systems, see www.siemens.com/ic10, Chapter 11.

SIRIUS 3SE5 Mechanical Position Switches

General data

Technical specifications

Type		3SE51..., 3SE52..	3SE541.	3SE542.
General data				
Standards		IEC 60947-5-1, EN 60947-5-1, EN ISO 14119		
Rated insulation voltage U_i	V	400 ¹⁾	400	
Degree of pollution according to IEC 60664-1		Class 3	Class 3	
Rated impulse withstand voltage U_{imp}	kV	6	4	
Rated operational voltage U_e	V	400 AC; over 300 V AC Same potential only ²⁾	300 AC	
Conventional thermal current I_{th}	A	10	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
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		100 000 operating cycles	--	--
• With utilization category DC-12/DC-13		For direct current depending on the loading of the switch		

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 same potential only.

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)	--	--
Tightening torque, contact block		Nm	0.8 ... 1.0						
Protective conductor connection inside enclosure		--				M3.5		--	--

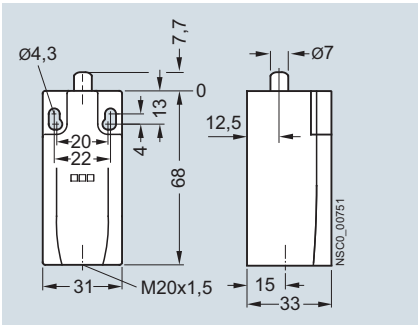
¹⁾ For twist actuators with spring rod and rod actuators: IP65/IP67.

SIRIUS 3SE5 Mechanical Position Switches

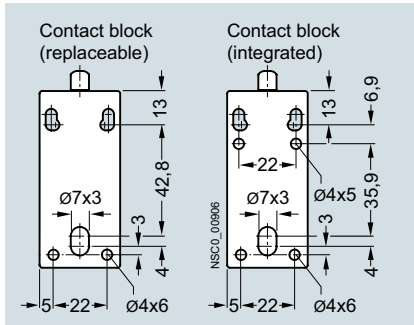
General data

Dimensions of the basic switches

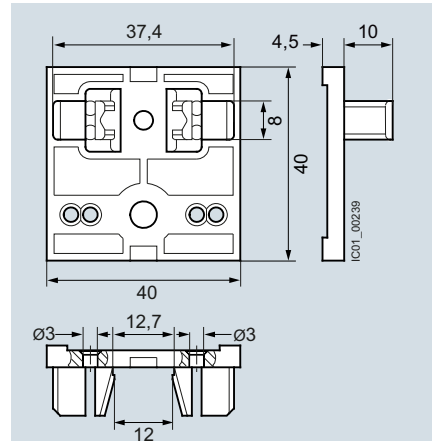
Enclosure width 31 mm, EN 50047,
with connecting thread M20 × 1.5
3SE5232, 3SE5212



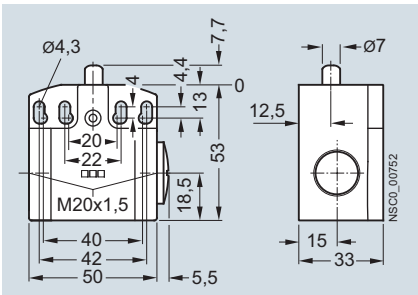
Enclosure width 31 mm, EN 50047,
rear side with fixing drill holes
3SE5232, 3SE5212



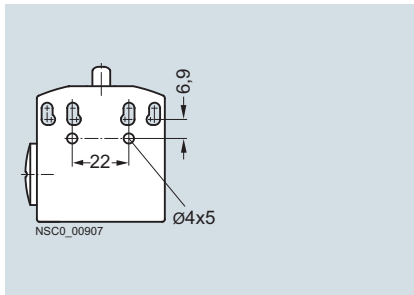
Mounting plate
for 3SE5232, 3SE5212 position switches
3SX5100-1A



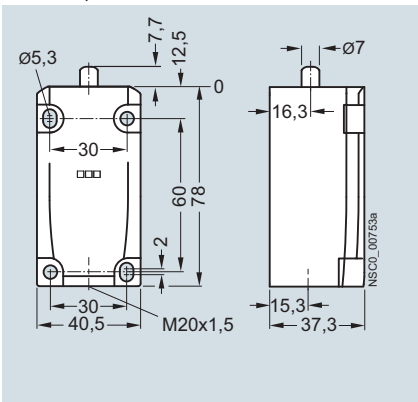
Enclosure width 50 mm,
with connecting thread M20 × 1.5
3SE5242



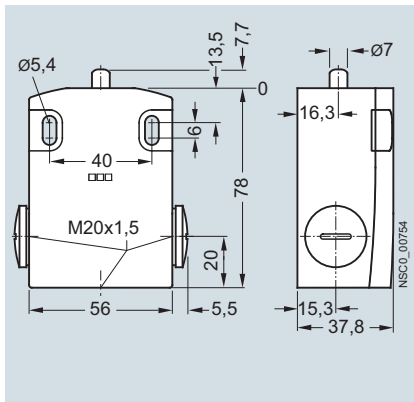
Enclosure width 50 mm,
rear side with fixing drill holes
3SE5242



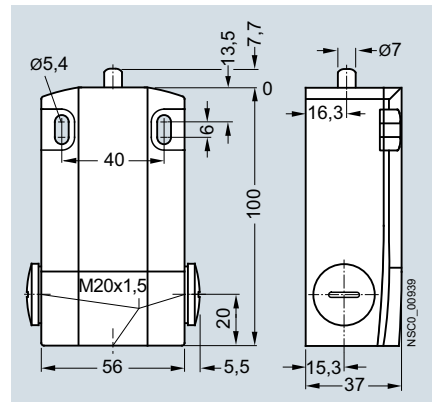
Enclosure width 40 mm, EN 50041,
with connecting thread M20 × 1.5
3SE5112, 3SE5132



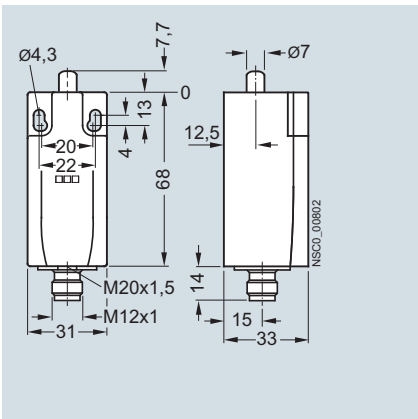
Enclosure width 56 mm,
with connecting thread M20 × 1.5
3SE5122



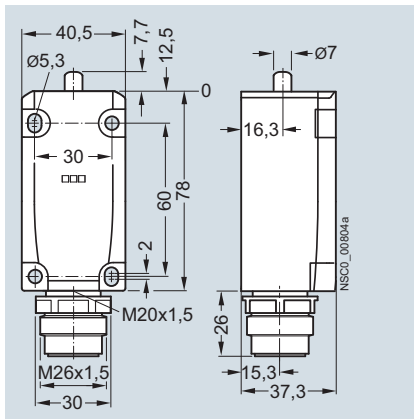
XL enclosures, width 56 mm,
with connecting thread M20 × 1.5
3SE5162



Enclosure width 31 mm, EN 50047,
with M12 connector socket
3SE5234, 3SE5214



Enclosure width 40 mm, EN 50041,
with plug connector, 6-pole
3SE5115



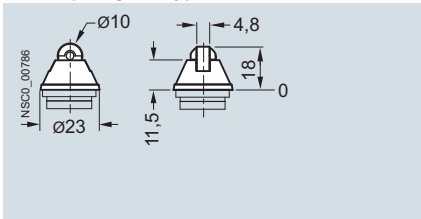
Operating mechanisms for basic switches, see pages 2/254 and 2/255.

SIRIUS 3SE5 Mechanical Position Switches

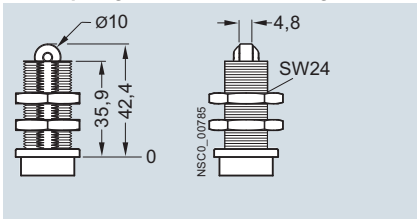
General data

Operating mechanisms for enclosure width 31 mm and 50 mm

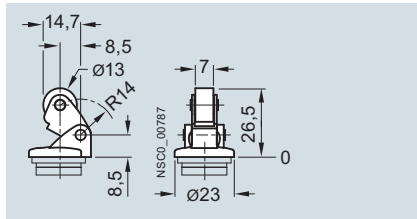
Roller plungers, type C, acc. to EN 50047



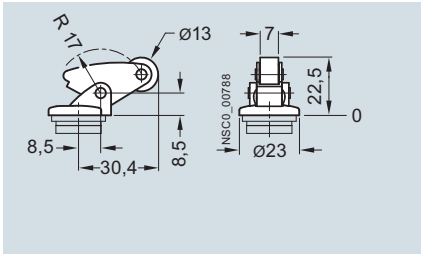
Roller plungers with central fixing



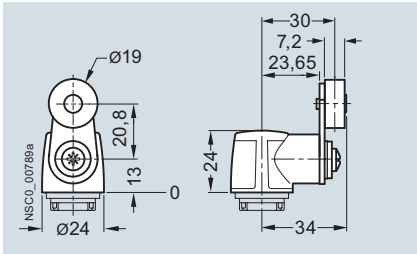
Roller levers, type E, acc. to EN 50047



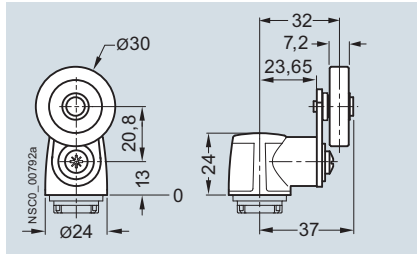
Angular roller levers



Twist levers, type A, acc. to EN 50047

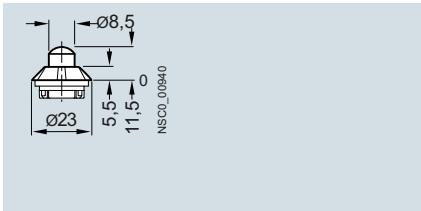


Twist levers, roller 30 mm

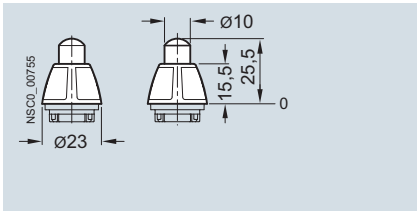


Operating mechanisms for enclosure width 40 mm and 56 mm

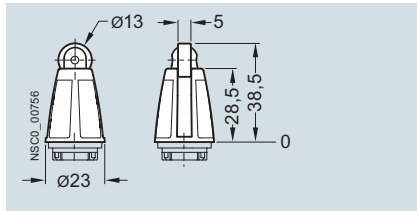
Plain plungers



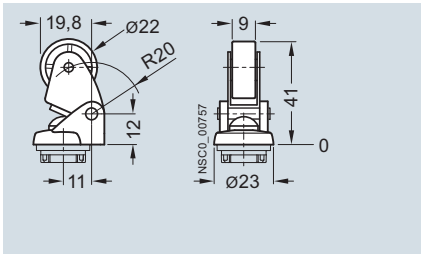
Rounded plungers, type B, acc. to EN 50041



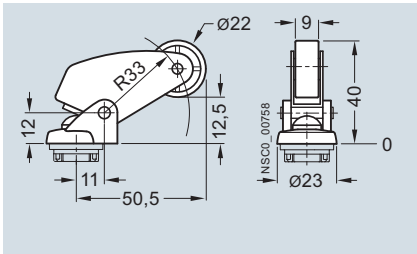
Roller plungers, type C, acc. to EN 50041



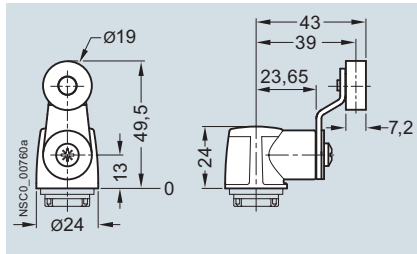
Roller levers



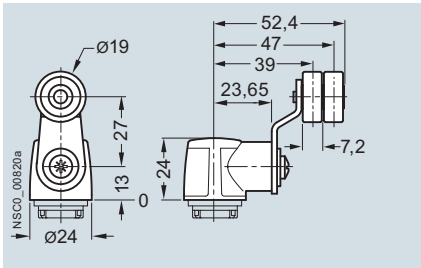
Angular roller levers



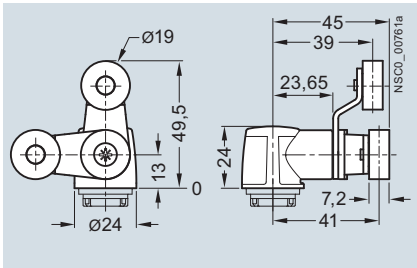
Twist levers, type A, acc. to EN 50041



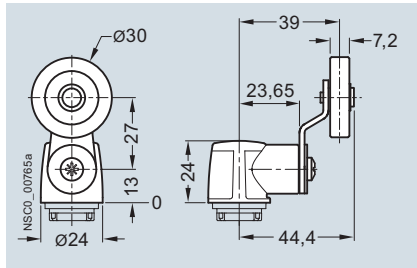
Twist levers, 2 rollers 19 mm



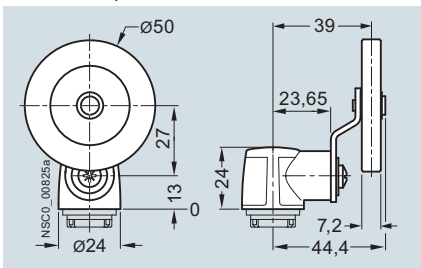
Fork levers, roller 19 mm



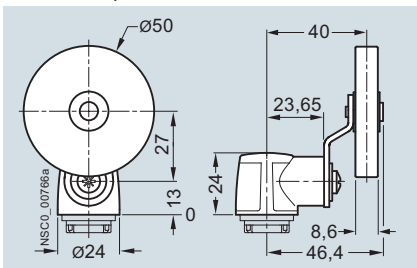
Twist levers, roller 30 mm



Twist levers, roller 50 mm



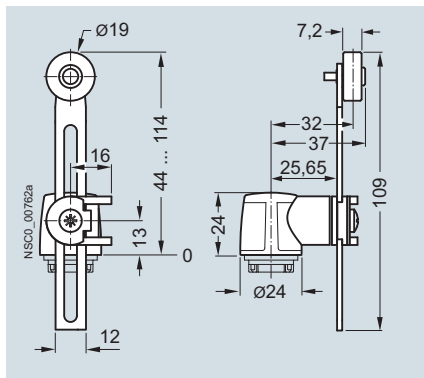
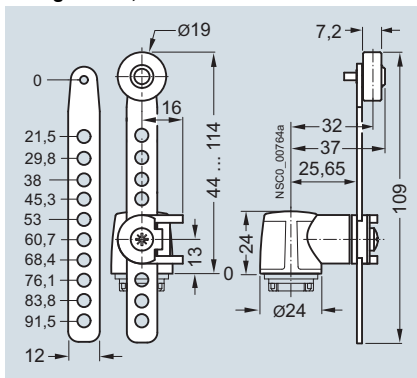
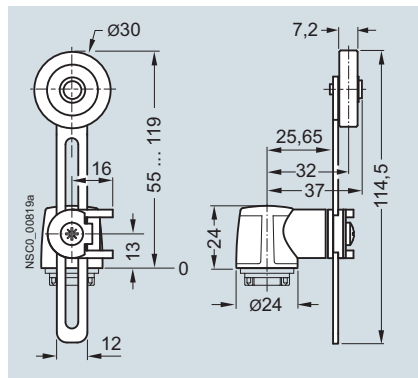
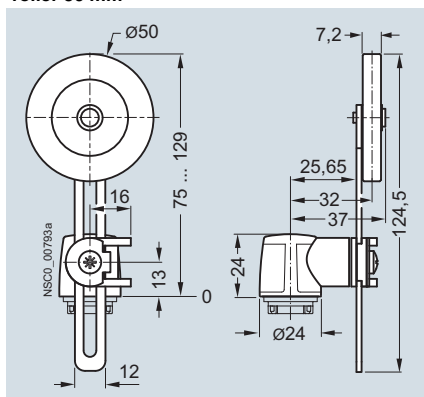
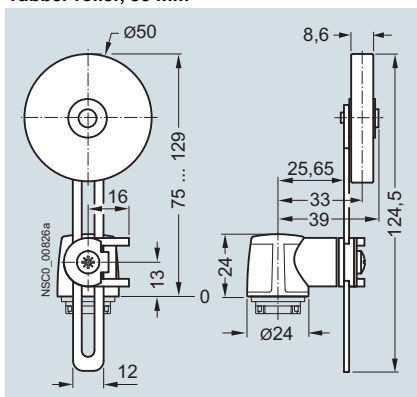
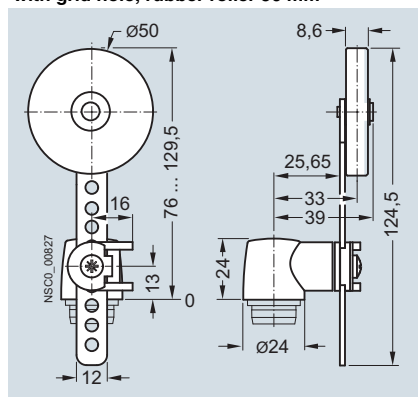
Twist levers, rubber roller 50 mm



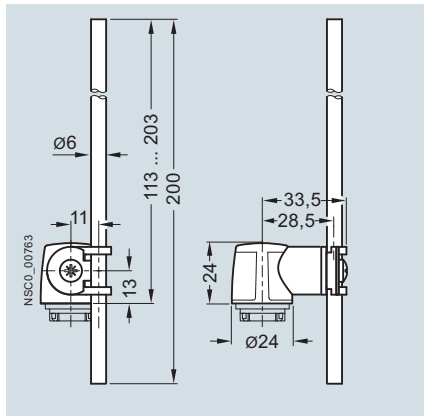
SIRIUS 3SE5 Mechanical Position Switches

General data

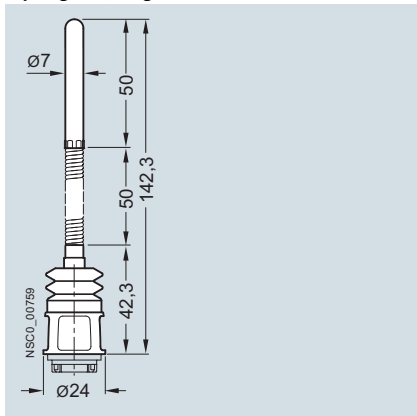
Operating mechanisms for all enclosure widths

Twist levers, adjustable length,
roller 19 mmTwist levers, adjustable length,
with grid hole, roller 19 mmTwist levers, adjustable length,
roller 30 mmTwist levers, adjustable length,
roller 50 mmTwist levers, adjustable length,
rubber roller, 50 mmTwist levers, adjustable length,
with grid hole, rubber roller 50 mm

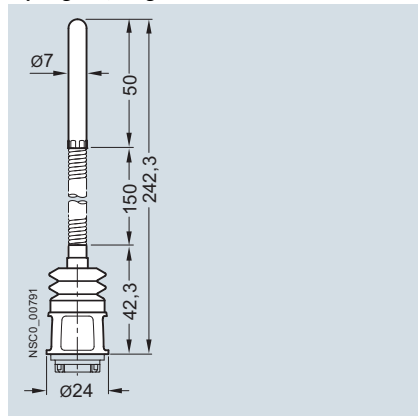
Rod actuator



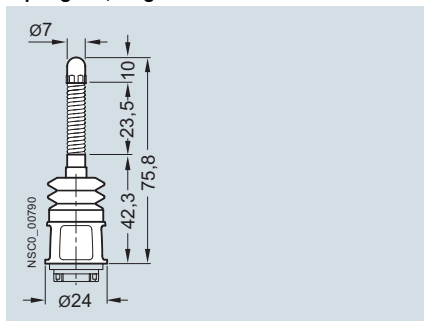
Spring rod, length 142.5 mm



Spring rod, length 242.5 mm



Spring rod, length 76 mm

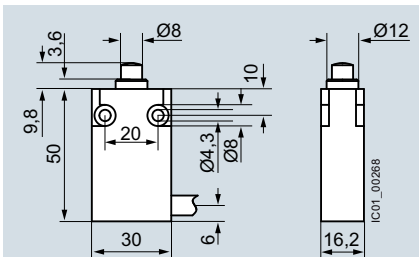


SIRIUS 3SE5 Mechanical Position Switches

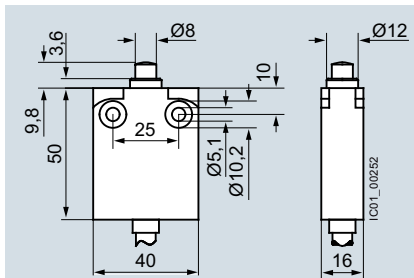
General data

Dimensions of the switches in compact design

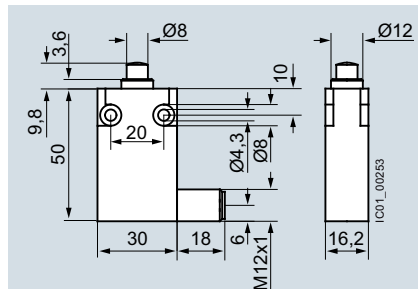
Rounded plungers, enclosure width 30 mm,
with connecting cable
3SE5413-0CC20-1EA2



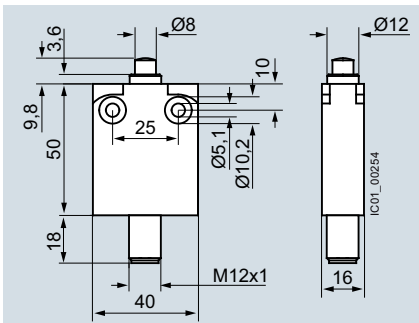
Rounded plungers, enclosure width 40 mm,
with connecting cable
3SE5423-0CC20-1EA2



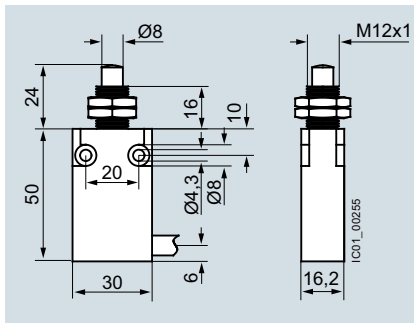
Rounded plungers, enclosure width 30 mm,
with M12 connector socket
3SE5413-0CC20-1EB1



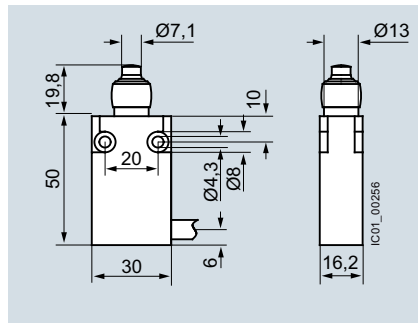
Rounded plungers, enclosure width 40 mm,
with M12 connector socket
3SE5423-0CC20-1EB1



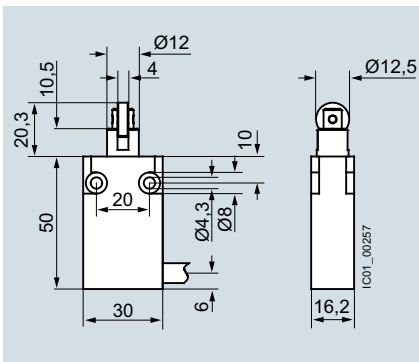
Rounded plungers, enclosure width 30 mm,
with central fixing
3SE5413-0CC21-1EA2



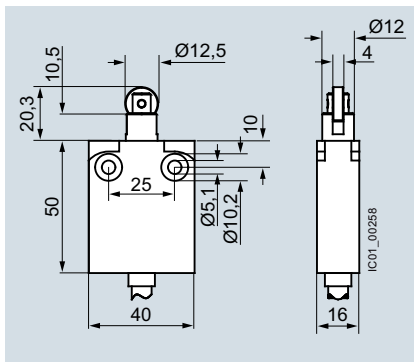
Rounded plungers, enclosure width 30 mm,
with external seal
3SE5413-0CC22-1EA2



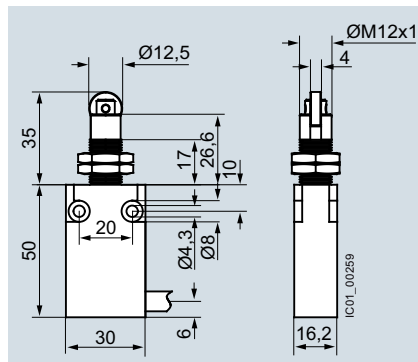
Roller plungers, enclosure width 30 mm,
with connecting cable
3SE5413-0CD20-1EA2



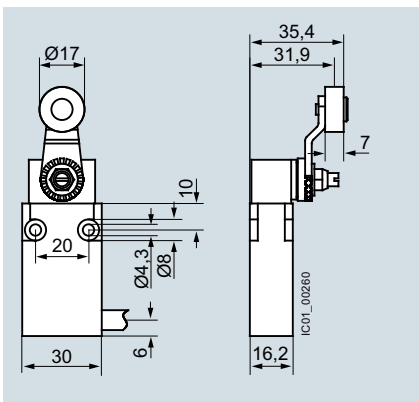
Roller plungers, enclosure width 40 mm,
with connecting cable
3SE5423-0CD20-1EA2



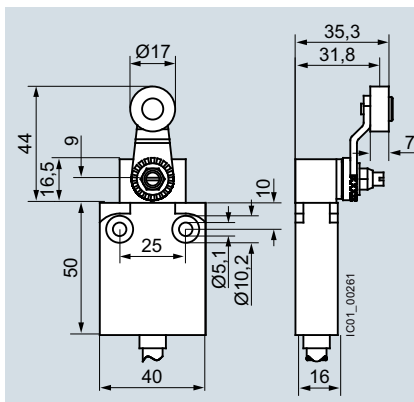
Roller plungers, enclosure width 30 mm,
with central fixing
3SE5413-0CD21-1EA2



Twist levers, enclosure width 30 mm,
with connecting cable
3SE5413-0CN20-1EA2



Twist levers, enclosure width 40 mm,
with connecting cable
3SE5423-0CN20-1EA2



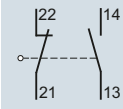
SIRIUS 3SE5 Mechanical Position Switches

General data

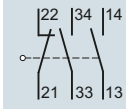
Circuit diagrams

Enclosure widths 31, 40, 50 and 56 mm

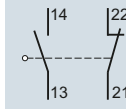
Slow-action contacts
1 NO + 1 NC
3SE5...-B..., -R...



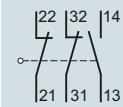
Slow-action contacts
2 NO + 1 NC
3SE5...-P...



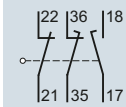
Snap-action contacts
1 NO + 1 NC
3SE5...-C..., -F..., -G..., -H..., -N...



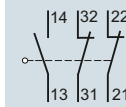
Slow-action contacts
1 NO + 2 NC
3SE5...-K..., -Q...



Slow-action contacts
1 NO + 2 NC with make-before-break, 3SE5...-M...

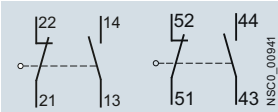


Snap-action contacts
1 NO + 2 NC
3SE5...-L...

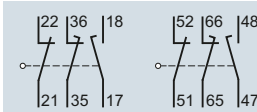


XL enclosures, width 56 mm

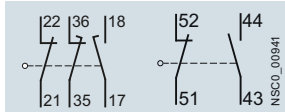
Slow-action contacts
2 x (1 NO + 1 NC)
3SE5162-0B...



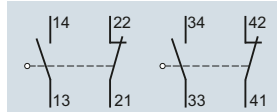
Slow-action contacts
2 x (1 NO + 2 NC) with make-before-break, 3SE5162-0D...



Slow-action contacts
1 NO + 2 NC with make-before-break, 3SE5162-0E...



Snap-action contacts
2 x (1 NO + 1 NC)
3SE5162-0C...

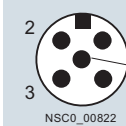


3SE5 connector assignment

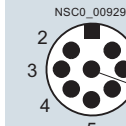
M12 connector socket, 4-pole
3SY3127



M12 connector sockets, 5-pole
3SY3128



M12 connector sockets, 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

SIRIUS 3SE5 Mechanical Position Switches

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. The 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 levers, 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

SIRIUS 3SE5 Mechanical Position Switches

3SE5, Metal Enclosures

Compact design

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	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm	d					kg
Complete units • Enclosure width 30 or 40 mm								
Rounded plungers								
	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CC20-1EA2	1	1 unit	41K	0.284
		40	⊕ 2	3SE5423-0CC20-1EA2	1	1 unit	41K	0.290
	- With 5 m cable 5 x 0.75 mm ²	30	⊕ 5	3SE5413-0CC20-1EA5	1	1 unit	41K	0.561
	- With M12 connector socket, 5-pole	30	⊕ 2	3SE5413-0CC20-1EB1	1	1 unit	41K	0.091
3SE5413-0CC20-1EA2		40	⊕ 5	3SE5423-0CC20-1EB1	1	1 unit	41K	0.113
	• With central fixing M12 x 1							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CC21-1EA2	1	1 unit	41K	0.297
		40	⊕ 5	3SE5423-0CC21-1EA2	1	1 unit	41K	0.324
3SE5413-0CC21-1EA2								
	• With external seal							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 5	3SE5413-0CC22-1EA2	1	1 unit	41K	0.288
		40	⊕ 5	3SE5423-0CC22-1EA2	1	1 unit	41K	0.299
3SE5413-0CC22-1EA2								
Roller plungers								
	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CD20-1EA2	1	1 unit	41K	0.298
		40	⊕ 2	3SE5423-0CD20-1EA2	1	1 unit	41K	0.319
	- With 5 m cable 5 x 0.75 mm ²	30	⊕ 5	3SE5413-0CD20-1EA5	1	1 unit	41K	0.550
	- With M12 connector socket, 5-pole	30	⊕ 2	3SE5413-0CD20-1EB1	1	1 unit	41K	0.099
3SE5413-0CD20-1EA2		40	⊕ 2	3SE5423-0CD20-1EB1	1	1 unit	41K	0.116
	• With central fixing M12 x 1							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CD21-1EA2	1	1 unit	41K	0.306
		40	⊕ 5	3SE5423-0CD21-1EA2	1	1 unit	41K	0.318
3SE5413-0CD21-1EA2								
	• Actuator head rotated 90°							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CD23-1EA2	1	1 unit	41K	0.291
3SE5413-0CD23-1EA2								
Twist levers								
	• Standard mounting							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CN20-1EA2	1	1 unit	41K	0.316
		40	⊕ 5	3SE5423-0CN20-1EA2	1	1 unit	41K	0.353
	- With 5 m cable 5 x 0.75 mm ²	30	⊕ 2	3SE5413-0CN20-1EA5	1	1 unit	41K	0.580
	- With M12 connector socket, 5-pole	30	⊕ 2	3SE5413-0CN20-1EB1	1	1 unit	41K	0.126
3SE5413-0CN20-1EA2		40	⊕ 5	3SE5423-0CN20-1EB1	1	1 unit	41K	0.140
	• Twist levers with a smaller mounting depth and lower height							
	- With 2 m cable 5 x 0.75 mm ²	30	⊕ 5	3SE5413-0CP20-1EA2	1	1 unit	41K	0.314

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

SIRIUS 3SE5, 3SE2 Mechanical Safety Hinge Switches

3SE2, Plastic Enclosures

With integrated hinge

Selection and ordering data

3 contacts · Degree of protection IP65 · Cable entry 2 × (M20 × 1.5)

Version	Slow-action contacts	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		d	Article No.				kg

Plastic enclosures with integrated hinge



3SE2283

With integrated hinge

(Scope of supply includes additional hinge and fixing accessories)

• Aluminum hinge

- 4° actuating angle	1 NO + 2 NC	⊙ 15	3SE2283-0GA43	1	1 unit	41K	0.426
- 4° actuating angle	3 NC	⊙ 5	3SE2283-6GA43	1	1 unit	41K	0.386
- 8° actuating angle	1 NO + 2 NC	⊙ 10	3SE2283-0GA53	1	1 unit	41K	0.449
- 8° actuating angle	3 NC	⊙ 15	3SE2283-6GA53	1	1 unit	41K	0.450

• High-grade steel hinge

- 4° actuating angle	1 NO + 2 NC	⊙ 5	3SE2283-0GA44	1	1 unit	41K	0.430
----------------------	-------------	-----	----------------------	---	--------	-----	-------

⊙ Positive opening according to IEC 60947-5-1, Appendix K.

Accessories/spare parts

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Accessories



3SX3225

Additional hinges

(Scope of supply includes fixing accessories)

• Made of aluminum

⊙ 10	3SX3225	1	1 unit	41K	0.155
------	----------------	---	--------	-----	-------

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test

SIRIUS 3SE5 Mechanical Safety Switches

3SE5, plastic enclosures

Selection and ordering data**Complete units**

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Complete units¹⁾ • Enclosure width 31 mm

SE5232-OLK21-1AY0

Twist levers, 21 mm long, according to EN 50047With plastic roller 19 mm,
with M20 connector socket

Snap-action contacts

1 NO + 2 NC --

5

3SE5232-OLK21-1AY0

1 1 unit 41K 0.110



3SE5232-OLE10-1AY0

Roller levers, according to EN 50047With plastic roller 13 mm,
with M20 connector socket

Snap-action contacts

1 NO + 2 NC --

5

3SE5232-OLE10-1AY0

1 1 unit 41K 0.086



3SE5232-OHK82-1AY0

Rod actuators, according to EN 50047Plastic rod, length 200 mm
with M20 connector socket

Snap-action contacts

1 NO + 1 NC --

30

3SE5232-OHK82-1AY0

1 1 unit 41K 0.114



3SE5232-OHR01-1AY0

Spring rods, according to EN 50047

with M20 connector socket

Snap-action contacts

1 NO + 1 NC --

30

3SE5232-OHR01-1AY0

1 1 unit 41K 0.117

⊕ 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.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test

SIRIUS 3SE5 Mechanical Safety Switches with Tumbler

3SE5, plastic enclosures

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

Tumbler ¹⁾	LED	Solenoid, rated operational voltage	SD	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		V	d					kg

1 300 N locking force · Enclosure width 54 mm

Spring-actuated locks

- With front auxiliary release

24 DC

⊕ 5

3SE5322-0SD21-1AY0

1 1 unit

41K

0.503



3SE5322-0SD21-1AY0

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Supplied without actuator. Please order separately.

Accessories/spare parts

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Accessories

Standard actuators

- Length 75.6 mm

3SE5000-0AV01

▶

3SE5000-0AV01

1 1 unit

41K

0.034



High-grade steel actuators¹⁾

- Length 75.6 mm

3SE5000-0AW51

5

3SE5000-0AW51

1 1 unit

41K

0.046

¹⁾ With optimized geometry and suitable for extreme environmental conditions -40 °C

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test

SIRIUS 3SE5 Safety Switches and Hinge Switches

3SE5, plastic enclosures

Selection and ordering data

With enhanced corrosion protection.

Version	Contacts	LEDs	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Complete units¹⁾ • Enclosure width 31 mm**Hinge switches, according to EN 50047****With hollow shaft D = 8 mm, operating angle 10 degrees,
with M20 connector socket**

Snap-action contacts	1 NO + 1 NC --	⌚ 30	3SE5232-0HU21-1AY0	1	1 unit	41K	0.117
----------------------	----------------	------	---------------------------	---	--------	-----	-------

3SE5232-0HU21-1AY0

⌚ Positive opening according to IEC 60947-5-1, Appendix K.

2

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, plastic enclosures**Selection and ordering data****Complete units**

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Complete units¹⁾ • Enclosure width 31 mm

3SE5234-0CD03-1AJ1

Roller plungers, type C, acc. to EN 50047With plastic roller 10 mm,
With M12 connector socket, 4-pole (250 V, 4 A)Snap-action contacts 1 NO + 1 NC -- ➞ 5 **3SE5234-0CD03-1AJ1** 1 1 unit 41K 0.084

3SE5232-0CD10-1AJ0

Roller plungers with central fixing

Snap-action contacts 1 NO + 1 NC -- ➞ 5

3SE5232-0CD10-1AJ0 1 1 unit 41K 0.101

3SE5232-0CK31-1AJ0

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 -- ➞ 2 **3SE5232-0CK31-1AJ0** 1 1 unit 41K 0.104

3SE5232-0CK62-1AJ0

Twist levers, adjustable lengthWith high-grade steel lever with grid hole and
plastic roller 19 mmSnap-action contacts 1 NO + 1 NC -- ➞ 5 **3SE5232-0CK62-1AJ0** 1 1 unit 41K 0.126Snap-action contacts 1 NO + 2 NC -- ➞ 5 **3SE5232-0LK62-1AJ0** 1 1 unit 41K 0.130**Complete units¹⁾ • Enclosure width 50 mm**

3SE5242-0HK21-1AJ0

Twist levers

With metal lever 21 mm and plastic roller 19 mm

Snap-action contacts, integrated²⁾ 1 NO + 1 NC -- ➞ 5 **3SE5242-0HK21-1AJ0** 1 1 unit 41K 0.120**Twist levers, adjustable length**With high-grade steel lever with grid hole and
plastic roller 19 mmSnap-action contacts, integrated²⁾ 1 NO + 1 NC -- ➞ 5 **3SE5242-0HK62-1AJ0** 1 1 unit 41K 0.134

➞ 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 2/265](#).

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, plastic enclosures

Modular system

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Basic switches • Enclosure width 31 mm (with rounded plunger¹⁾)**With teflon plunger**

Snap-action contacts	1 NO + 1 NC --	⊕	5	3SE5232-0CC05-1AJ0	1	1 unit	41K	0.072
Slow-action contacts	1 NO + 2 NC --	⊕	5	3SE5232-0KC05-1AJ0	1	1 unit	41K	0.068
Snap-action contacts	1 NO + 2 NC --	⊕	5	3SE5232-0LC05-1AJ0	1	1 unit	41K	0.080

3SE5232-0CC05-1AJ0

Basic switches • Enclosure width 50 mm (with rounded plunger¹⁾)**With teflon plunger**

Slow-action contacts	1 NO + 1 NC --	⊕	5	3SE5242-0BC05-1AJ0	1	1 unit	41K	0.088
Snap-action contacts, integrated ²⁾	1 NO + 1 NC --	⊕	5	3SE5242-0HC05-1AJ0	1	1 unit	41K	0.089

3SE5242-0BC05-1AJ0

⊕ 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.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, plastic enclosures

Version	Diameter	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm	d	Article No.				kg
Operating mechanisms							
	Roller plungers, type C, acc. to EN 50047						
	Plastic roller	10	↻ 5	3SE5000-0AD03-1AJ0	1	1 unit	41K 0.011
	Roller levers, type E, acc. to EN 50047						
	Metal lever, plastic roller	13	↻ 5	3SE5000-0AE10-1AJ0	1	1 unit	41K 0.019
	High-grade steel lever, plastic roller	13	↻ 5	3SE5000-0AE12-1AJ0	1	1 unit	41K 0.014
	Angular roller levers						
	Metal lever, plastic roller	13	↻ 5	3SE5000-0AF10-1AJ0	1	1 unit	41K 0.019
	High-grade steel lever, plastic roller	13	↻ 5	3SE5000-0AF12-1AJ0	1	1 unit	41K 0.015
Twist actuators							
	Twist actuators, for 31/50 mm, EN 50047						
	Switching right and/or left, adjustable		↻ 5	3SE5000-0AK00-1AJ0	1	1 unit	41K 0.026
Levers							
	Twist levers straight, 21 mm, type A acc. to EN 50047						
	Metal lever, plastic roller	19	↻ 5	3SE5000-0AA21-1AJ0	1	1 unit	41K 0.015
	High-grade steel lever, plastic roller	19	↻ 5	3SE5000-0AA31-1AJ0	1	1 unit	41K 0.015
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	↻ 5	3SE5000-0AA60-1AJ0	1	1 unit	41K 0.032
	High-grade steel lever, plastic roller	19	↻ 5	3SE5000-0AA62-1AJ0	1	1 unit	41K 0.031

↻ Positively driven actuator, necessary in safety circuits.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, plastic enclosures

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Basic switches • Enclosure width 40 mm

3SE5132-0CA00-1AJ0

With connecting thread M20 × 1.5

Snap-action contacts	1 NO + 1 NC --	⊕	5	3SE5132-0CA00-1AJ0	1	1 unit	41K	0.093
Slow-action contacts	1 NO + 2 NC --	⊕	5	3SE5132-0KA00-1AJ0	1	1 unit	41K	0.091
Snap-action contacts	1 NO + 2 NC --	⊕	5	3SE5132-0LA00-1AJ0	1	1 unit	41K	0.092

⊕ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Version	Diame- ter	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm	d	Article No.				kg

Operating mechanisms

3SE5000-0AC03-1AJ0

Rounded plungers, type B, acc. to EN 50041

Plastic plungers	10	⊕	5	3SE5000-0AC03-1AJ0	1	1 unit	41K	0.011
------------------	----	---	---	---------------------------	---	--------	-----	-------



3SE5000-0AD05-1AJ0

Roller plungers, type C, acc. to EN 50041

Plastic plunger, plastic roller	13	⊕	5	3SE5000-0AD05-1AJ0	1	1 unit	41K	0.014
---------------------------------	----	---	---	---------------------------	---	--------	-----	-------



3SE5000-0AE05-1AJ0

Roller levers

Metal lever with plastic roller, plastic base	22	⊕	5	3SE5000-0AE05-1AJ0	1	1 unit	41K	0.026
---	----	---	---	---------------------------	---	--------	-----	-------

Twist actuators

3SE5000-0AK00-1AJ0

Twist actuators, for 31/50 mm, EN 50047

• For twist levers and rod levers, Switching right and/or left, adjustable		⊕	5	3SE5000-0AJ00-1AJ0	1	1 unit	41K	0.026
---	--	---	---	---------------------------	---	--------	-----	-------



Twist lever

Levers**Twist levers, type A, acc. to EN 50041**

Metal lever, plastic roller	19	⊕	5	3SE5000-0AA01-1AJ0	1	1 unit	41K	0.017
High-grade steel lever, plastic roller	19	⊕	5	3SE5000-0AA11-1AJ0	1	1 unit	41K	0.015

Twist levers, adjustable length, with grid hole

Metal lever, plastic roller	19	⊕	5	3SE5000-0AA60-1AJ0	1	1 unit	41K	0.032
High-grade steel lever, plastic roller	19	⊕	5	3SE5000-0AA62-1AJ0	1	1 unit	41K	0.031



3SE5000-0AA60-1AJ0

⊕ Positively driven actuator, necessary in safety circuits.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, metal enclosures**Selection and ordering data****Complete units**

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Modular system	☐	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
d				Article No.					kg

Complete units • Enclosure width 31 mm***Rounded plungers, type B, acc. to EN 50047***

3SE5212-0CC05-1AJ0

Snap-action contacts	1 NO + 1 NC --	⊕	5	3SE5212-0CC05-1AJ0	1	1 unit	41K	0.184
Slow-action contacts	1 NO + 2 NC --	⊕	5	3SE5212-0KC05-1AJ0	1	1 unit	41K	0.188
Snap-action contacts	1 NO + 2 NC --	⊕	5	3SE5212-0LC05-1AJ0	1	1 unit	41K	0.185

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**

3SE5212-0CH22-1AJ0

Snap-action contacts	1 NO + 1 NC --	⊕	5	3SE5212-0CH22-1AJ0	1	1 unit	41K	0.283
----------------------	----------------	---	---	---------------------------	---	--------	-----	-------

⊕ 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" on page 2/267.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, metal enclosures

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Basic switches • Enclosure width 31 mm (with rounded plunger¹⁾)

3SE5212-0CC05-1AJ0

With plunger

Snap-action contacts	1 NO + 1 NC --	⊕ 5	3SE5212-0CC05-1AJ0	1	1 unit	41K	0.184
Slow-action contacts	1 NO + 2 NC --	⊕ 5	3SE5212-0KC05-1AJ0	1	1 unit	41K	0.188
Snap-action contacts	1 NO + 2 NC --	⊕ 5	3SE5212-0LC05-1AJ0	1	1 unit	41K	0.185

⊕ 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.

Version	Diame- ter	SD	Modular system	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm	d	Article No.				kg

Operating mechanisms

3SE5000-0AD03-1AJ0

Roller plungers, type C, acc. to EN 50047

Plastic roller	10	⊕ 5	3SE5000-0AD03-1AJ0	1	1 unit	41K	0.011
----------------	----	-----	--------------------	---	--------	-----	-------



3SE5000-0AE10-1AJ0

Roller levers, type E, acc. to EN 50047

Metal lever, plastic roller	13	⊕ 5	3SE5000-0AE10-1AJ0	1	1 unit	41K	0.019
High-grade steel lever, plastic roller	13	⊕ 5	3SE5000-0AE12-1AJ0	1	1 unit	41K	0.014



3SE5000-0AF10-1AJ0

Angular roller levers

Metal lever, plastic roller	13	⊕ 5	3SE5000-0AF10-1AJ0	1	1 unit	41K	0.019
High-grade steel lever, plastic roller	13	⊕ 5	3SE5000-0AF12-1AJ0	1	1 unit	41K	0.015

Twist actuators

3SE5000-0AK00-1AJ0

Twist actuators, for 31/50 mm, EN 50047

Switching right and/or left, adjustable		⊕ 5	3SE5000-0AK00-1AJ0	1	1 unit	41K	0.026
---	--	-----	--------------------	---	--------	-----	-------

Levers

3SE5000-0AA21-1AJ0

Twist levers straight, 21 mm, type A acc. to EN 50047

Metal lever, plastic roller	19	⊕ 5	3SE5000-0AA21-1AJ0	1	1 unit	41K	0.015
High-grade steel lever, plastic roller	19	⊕ 5	3SE5000-0AA31-1AJ0	1	1 unit	41K	0.015



3SE5000-0AA60-1AJ0

Twist levers, adjustable length, with grid hole

Metal lever, plastic roller	19	⊕ 5	3SE5000-0AA60-1AJ0	1	1 unit	41K	0.032
High-grade steel lever, plastic roller	19	⊕ 5	3SE5000-0AA62-1AJ0	1	1 unit	41K	0.031

⊕ Positively driven actuator, necessary in safety circuits.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, metal enclosures

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Complete units • Enclosure width 40 mm



3SE5112-0CC02-1AJ0

Rounded plungers, type B, acc. to EN 50041
With high-grade steel plungers, with 3 mm overtravel
 Snap-action contacts 1 NO + 1 NC --

⊕ 5

3SE5112-0CC02-1AJ0

1 1 unit 41K 0.360



3SE5112-0LH11-1AJ0

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 --

⊕ 5

3SE5112-0LH11-1AJ0

1 1 unit 41K 0.347



3SE5112-0CH62-1AJ0

Twist levers, adjustable length
With high-grade steel lever with grid hole and plastic roller 19 mm
 Snap-action contacts 1 NO + 1 NC --

⊕ 5

3SE5112-0CH62-1AJ0

1 1 unit 41K 0.423

Complete units • Enclosure width 56 mm, XL



3SE5162-0CH60-1AJ0

Twist levers, adjustable length
With metal lever with grid hole and plastic roller 19 mm
 Snap-action contacts 1 NO + 1 NC --

⊕ 5

3SE5162-0CH60-1AJ0

1 1 unit 41K 0.509

⊕ 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" on page 2/271.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, metal enclosures

Modular system

2, 3 or 4 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5, with enhanced corrosion protection

Version	Contacts	LEDs	SD	Modular system		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
			d	Article No.					kg	
Basic switches • Enclosure width 40 mm										
	With connecting thread M20 × 1.5									
	Snap-action contacts	1 NO + 1 NC	--		5	3SE5112-0CA00-1AJ0	1	1 unit	41K	0.297
	Slow-action contacts	1 NO + 2 NC	--		5	3SE5112-0KA00-1AJ0	1	1 unit	41K	0.303
	Snap-action contacts	1 NO + 2 NC	--		5	3SE5112-0LA00-1AJ0	1	1 unit	41K	0.304
3SE5112-0CA00-1AJ0										
Basic switches • Enclosure width 56 mm										
	With 3 x connecting thread M20 × 1.5									
	Snap-action contacts	1 NO + 1 NC	--		5	3SE5122-0CA00-1AJ0	1	1 unit	41K	0.365
	Slow-action contacts	1 NO + 2 NC	--		5	3SE5122-0KA00-1AJ0	1	1 unit	41K	0.360
	Snap-action contacts	1 NO + 2 NC	--		5	3SE5122-0LA00-1AJ0	1	1 unit	41K	0.380
3SE5122-0CA00-1AJ0										
Basic switches • Enclosure width 56 mm, XL										
	With 3 × connection thread M20 × 1.5									
	Slow-action contacts	2 × (1 NO + 1 NC)	--		5	3SE5162-0BA00-1AJ0	1	1 unit	41K	0.450
	Snap-action contacts	2 × (1 NO + 1 NC)	--		5	3SE5162-0CA00-1AJ0	1	1 unit	41K	0.451
3SE5162-0BA00-1AJ0										

⊕ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Position Switches

3SE5, metal enclosures

Version		Diameter	SD	Modular system		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm	d	Article No.					
Operating mechanisms									
	Rounded plungers, type B, acc. to EN 50041 High-grade steel plungers, with 3 mm overtravel	10	 5	3SE5000-0AC02-1AJ0		1	1 unit	41K	0.031
3SE5000-0AC02-1AJ0									
	Roller plungers, type C, acc. to EN 50041 High-grade steel roller, with 3 mm overtravel	10	 5	3SE5000-0AD02-1AJ0		1	1 unit	41K	0.054
3SE5000-0AD02-1AJ0									
	Roller levers Metal lever, plastic roller	13	 5	3SE5000-0AE01-1AJ0		1	1 unit	41K	0.025
	High-grade steel lever, plastic roller	13	 5	3SE5000-0AE03-1AJ0		1	1 unit	41K	0.044
3SE5000-0AE01-1AJ0									
	Angular roller levers Metal lever, plastic roller	13	 5	3SE5000-0AF01-1AJ0		1	1 unit	41K	0.054
	High-grade steel lever, plastic roller	13	 5	3SE5000-0AF03-1AJ0		1	1 unit	41K	0.052
3SE5000-0AF01-1AJ0									
Twist actuators									
	Twist actuators , for 40/56/56 XL mm EN 50041 Switching right and/or left, adjustable		 5	3SE5000-0AH00-1AJ0		1	1 unit	41K	0.027
3SE5000-0AH00-1AJ0									
	Levers Twist levers, type A, acc. to EN 50041 Metal lever, plastic roller	19	 5	3SE5000-0AA01-1AJ0		1	1 unit	41K	0.017
	High-grade steel lever, plastic roller	19	 5	3SE5000-0AA11-1AJ0		1	1 unit	41K	0.015
3SE5000-0AA01-1AJ0									
	Twist levers, adjustable length, with grid hole Metal lever, plastic roller	19	 5	3SE5000-0AA60-1AJ0		1	1 unit	41K	0.032
	High-grade steel lever, plastic roller	19	 5	3SE5000-0AA62-1AJ0		1	1 unit	41K	0.031
3SE5000-0AA60-1AJ0									

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Safety Switches with Separate Actuator**3SE5, plastic enclosures****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	SD	Complete units	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Enclosure width 31 mm acc. to EN 50047

3SE5232-0RV40-1AJ0

Ambient temperature down to -40° C
With increased corrosion protection

Slow-action contacts

1 NO +
1 NC

--



5

3SE5232-0RV40-1AJ0

1 1 unit 41K 0.124

Accessories/spare parts

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Accessories

3SE5000-0AW11

Standard actuators

- With transverse fixing, plastic
- Length 40 mm

5

3SE5000-0AW11

1 1 unit 41K 0.012



3SE5000-0AW51

High-grade steel actuators¹⁾

- Length 75.6 mm

5

3SE5000-0AW51

1 1 unit 41K 0.046

¹⁾ With optimized geometry and suitable for extreme environmental conditions -40 °C

SIRIUS 3SE5 Mechanical Position Switches for Ambient Temperatures of -40 °C

Shock and Vibration Test According to Railway Standard

SIRIUS 3SE5 Mechanical Safety Switches with Tumbler

3SE5, plastic enclosures

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

Tumbler ¹⁾	Solenoid, rated operational voltage	SD	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	d	Article No.				kg

1 300 N locking force · Enclosure width 54 mm



3SE5322-0SL21-1AJ0

Spring-actuated locks

- With escape release from the front and emergency release from the back

24 DC

5

3SE5322-0SL21-1AJ0

1 1 unit 41K 0.761

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

¹⁾ Supplied without actuator. Please order separately.

Accessories/spare parts

Version	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	d					kg

Accessories



3SE5000-0AV01

Standard actuators

- Length 75.6 mm

▶

3SE5000-0AV01

1 1 unit 41K 0.034



3SE5000-0AW51

High-grade steel actuators¹⁾

- Length 75.6 mm

5

3SE5000-0AW51

1 1 unit 41K 0.046

¹⁾ With optimized geometry and suitable for extreme environmental conditions -40 °C

Overview

More information

Home page, see www.siemens.com/railway-componentsCatalog IC 10, see www.siemens.com/ic10Home page, see www.siemens.com/sirius-actIndustry Mall, see www.siemens.com/product?3SU1Configurator, see www.siemens.com/sirius-act/configuratorConversion tool, see www.siemens.com/sirius/conversion-tool

Manual, see

<https://support.industry.siemens.com/cs/ww/en/view/107542462>

3SU1.



3SU1.6

Pushbuttons and indicator lights

Designs

Nominal diameter

22 mm

30 mm

Version

Plastic with metal front ring, matte

Metal, matte, flat

Actuating /
signaling elementsActuating /
signaling elements

Actuators

Pushbuttons

✓ see page 2/289

✓ see page 2/301

Illuminated pushbuttons

✓ see page 2/290

✓ see page 2/301

Mushroom pushbuttons

✓ see page 2/291

--

EMERGENCY STOP mushroom pushbuttons

✓ see page 2/292

--

Selector switches

✓ see page 2/294

✓ see page 2/302

Key-operated switches

✓ see page 2/296

✓ see page 2/303

Toggle switches

✓ see page 2/293

--

Coordinate switches

✓ see page 2/299

--

Pushbuttons with
extended stroke

--

--

Potentiometers

--

--

Indicators

Indicator lights

✓ see page 2/299

✓ see page 2/303

Contact modules

Single-pole

✓ see page 2/307

LED modules

Wedge bases

--

--

Module with integrated LED

✓ see page 2/310

Connections

--

Plug-in connection

--

--

Screw terminals

✓

✓

Spring-type terminals

✓

✓

Solder pins

✓

✓

AS-Interface

✓

✓

IO-Link

✓

✓

✓ Available

-- Not available

Note:

Safety characteristics, see www.siemens.com/ic10, Chapter 16.

AS-Interface solutions

Pushbuttons and indicator lights of the SIRIUS ACT 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 "Industrial Communication SIMATIC NET"](#).

AS-Interface EMERGENCY STOP according to ISO 13850

Using special modules, EMERGENCY STOP devices according to ISO 13850 can be directly connected through the standard AS-Interface with safety-related communication (see www.siemens.com/ic10, Chapter 13).

AS-Interface enclosures

Enclosures with standard fittings are listed in this catalog. For customized enclosures, use the SIRIUS ACT Configurator to select the elements for equipping (see page 2/315).

PROFINET solutions

SIRIUS ACT devices will be equipped in future with a direct communication interface to PROFINET and PROFINsafe.

RFID authentication solutions

Groups of employees or individuals can be authenticated by means of the ID key-operated switch. Color-coded keys for easy distinction between users and flexible in application thanks to four function stages.

SIRIUS ACT Pushbuttons and Indicator Lights

Introduction

2



3SU18

Enclosures

Enclosures

Plastic

✓

Metal

✓

Actuators

Pushbuttons

✓

Illuminated pushbuttons

✓

Mushroom pushbuttons

✓

EMERGENCY STOP mushroom pushbuttons

✓

Selector switches

✓

Key-operated switches

✓

Palm pushbutton

✓

Bowden wires

--

Indicators

Indicator lights

✓

Acoustic signaling devices

✓

Contact modules

Single-pole

✓

Connections

Screw terminals

✓

Spring-type terminals

✓

AS-Interface

✓

Pages

[See p. 2/312](#)

✓ Available -- Not available

Overview



SIRIUS ACT pushbuttons and indicator lights

SIRIUS ACT – commanding and signaling

SIRIUS ACT is a modular system of pushbuttons and indicator lights for front plate mounting and rear-mounted electrical modules.

Extensive portfolio

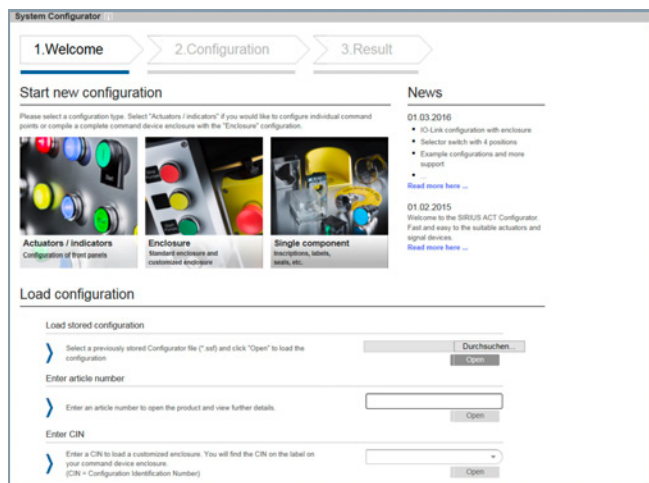
- Customized variants, e.g. special tumbler arrangements, labeling, equipped enclosures
- Communication-enabled thanks to direct interfacing to AS-Interface, IO-Link or PROFINET

Diverse possible applications

- National and international approvals
- Many trade approvals
- Short delivery times thanks to global availability

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 devices

Configurator

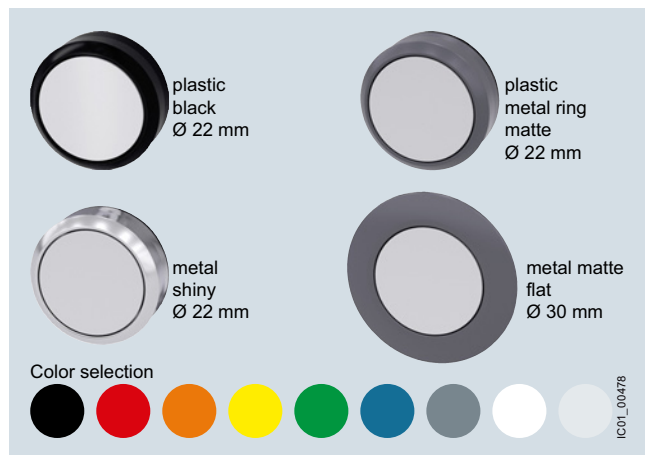
- Fast, simple selection by intuitive navigation through clearly-organized menus using drag & drop
- Image preview of selected components
- Inscription of pushbuttons and labeling plates using the interactive inscription tool
- Once created, a configuration can be ordered as often as required using the customer-specific article number and the CIN (Configuration Identification Number)
- Everything at a glance: Product data sheets, certificates, dimensional drawings, list prices, inscription tool

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Benefits

Design



SIRIUS ACT is available in four design lines.

Ruggedness



- Degree of protection IP66, IP67, IP69 (IP69K)

IP66

6 = Protection against the ingress of dust

6 = Protection against powerful splashwater

IP67

6 = Protection against the ingress of dust

7 = Protection against temporary immersion

IP69 (IP69K)

6 = Protection against the ingress of dust

9/9K = Protection against water in high-pressure cleaning (approx. 80 bar) and high water jet temperatures (approx. 80°C)

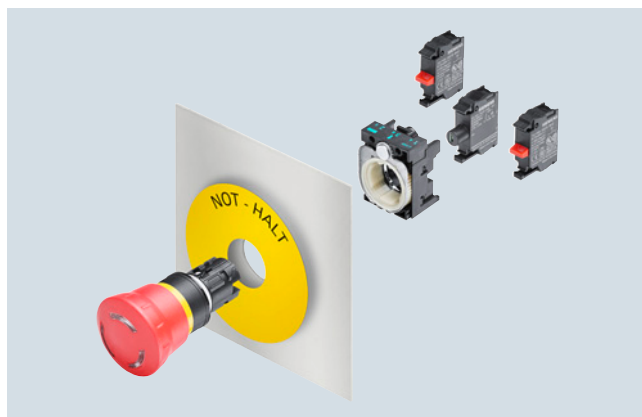
- Service life of 100 000 hours thanks to use of LEDs
- Media resistance (chemicals) thanks to solid stainless steel and high-grade plastics
- Mechanical endurance of 10×10^6 switching cycles
- Suitable for use in extreme environments
- Reliable, friction-locked fixing with just one screw
- Design stability according to use
- Simple geometry for mounting holes

Communication



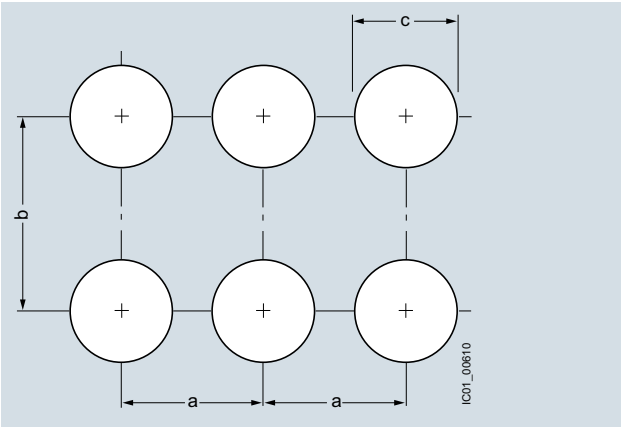
- Direct connection of the enclosure to AS-Interface or IO-Link
- Direct connection in the control cabinet to PROFINET, IO-Link or AS-Interface
- Can be integrated easily via the TIA Portal

Easy handling



- Self-holding function of the actuator when mounting
- Twist prevention integrated into patented holder design
- Stackable contact modules
- Self-explanatory and fast installation using one hand
- Components can be mounted with holder removed
- No special tools required, simple size 2 screwdriver (cross-tip ISO 87641PZD1, flat-head ISO 2380-1 A/B 1x4.5) is sufficient

Mounting dimensions



Versions

SIRIUS ACT is a modular system of pushbuttons and indicator lights with which customized variants can be configured flexibly.

One command point comprises:

- An actuating or signaling element in front of the control panel
- A holder for securing behind the control panel
- Up to six contact modules and/or one LED module (mounted onto the holder), single-pole contacts can be stacked
- A comprehensive range of accessories for inscription/markings

Compact units

Signaling devices, sensor switches, and pushbuttons with extended stroke are available as compact units. The electronic circuitry is already integrated in these devices, i.e. it is not necessary to snap on a contact or LED module.

	Minimum clearance		
	a	b	c
	mm	mm	mm
22 mm, plastic with metal front ring, matte for front plate thickness 1 ... 6 mm			
3-slot holder	30	40	22.3 ^{+0.4}
4-slot holder	40	40	22.3 ^{+0.4}
30 mm, metal, matte for front plate thickness 1 ... 4 mm			
3-slot holder	40	45	30.5 ^{+0.5}

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Actuating and signaling elements



Actuating and signaling elements

- ① Pushbuttons, illuminated pushbuttons
- ② Mushroom pushbuttons
- ③ Selector switches
- ④⑤ Key-operated switches, coordinate switches,
- ⑥⑦ potentiometers, indicator lights
- ⑧⑨ EMERGENCY STOP mushroom pushbuttons, backing plates
- ⑩⑪ ID key-operated switches, ID keys, electronic modules
- ⑫ Twin pushbuttons, label holders, labeling plates

Holders and labels

- ⑬ Label holders, labeling plates
- ⑭ Holder

Modules for front plate mounting

- ⑮ Contact modules
- ⑯ LED modules
- ⑰ AS-Interface modules

Enclosures

- ⑱ Enclosures

Modules for base mounting

- ⑲ Contact modules
- ⑳ LED modules
- ㉑ IO-Link modules
- ㉒ AS-Interface modules

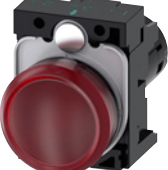
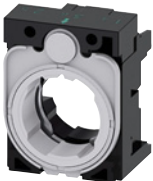
System overview of SIRIUS ACT pushbuttons and indicator lights from the plastic design line.
Pushbuttons and indicator lights available in 4 design lines,
see Catalog IC 10 www.siemens.com/ic10, Chapter 13

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Article No. scheme

Device types

						
3SU10	3SU11	3SU12	3SU14	3SU15	3SU18	3SU19
Device types						
Actuating and signaling elements	Complete units	Compact units	Modules for actuators and indicators	Holders with module	Enclosures	Accessories

Actuating and signaling elements

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1	☐	☐	☐	☐	-	☐	☐	☐	☐	☐	☐	-	☐	☐	☐
Device type	Actuating and signaling elements	0															
Material (front ring)	Plastic, black	0															
	Metal, matte (front ring)/ plastic, black (rosette)	3															
	Metal, shiny	5															
	Metal, matte	6															
Illumination	Non-illuminated	0															
	Illuminated/transparent	1															
	Illuminated/non-illuminated	2															
Type of actuator/indicator	Pushbutton	0															
	Mushroompushbutton/ EMERGENCY STOP mushroom	1															
	pushbutton/sensor switch	2															
	Selector switch	3															
	Twin pushbutton, toggle switch	4/5															
	Key-operated switch	6															
	Indicator light/acoustic signaling device Coordinate switch	7															
Design of the actuator/ acoustic signaling device	e.g. A = Flat								☐								
Function	e.g. B = Momentary contact									☐							
Color/key removal position	e.g. 10 = Black, 20 = Red										☐	☐					
Connection type	0 = None														☐		
Module/holder equipment	e.g.															☐	
	A = Without module, without holder																
	Y = Without module, with holder																
Marking	e.g. A = None, C = "I", D = "O", R = "R"															☐	
Ambient condition	Standard,																0
	ATEX																1
Example		3SU1	0	0	0	-	0	A	B	1	0	-	0	A	A	0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Complete units

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1				-							-				
Device type	Complete units	1															
Material (front ring)	Plastic, black	0															
	Metal, matte (front ring)/ plastic, black (rosette)	3															
	Metal, shiny	5															
	Metal, matte	6															
Illumination	Non-illuminated	0															
	Illuminated (with/without LED, various voltages)	1...8															
Type of actuator/indicator	Pushbutton	0															
	Mushroom pushbutton/ EMERGENCY STOP mushroom	1															
	pushbutton/sensor switch	2															
	Selector switch	3															
	Twin pushbutton, toggle switch	4/5															
	Key-operated switch	6															
	Indicator light/acoustic signaling device Coordinate switch	7															
Design of the actuator/ acoustic signaling device	e.g. A = Flat																
Function	e.g. B = Momentary contact																
Color/key removal position	e.g. 10 = Black, 20 = Red																
Connection type	Screw terminals																
	Spring-type terminals																
Module/holder equipment incl. contact material	e.g.																
	A = Without module, with holder																
	B = 1 NO contact with holder																
	C = 1 NC contact with holder																
Marking	e.g. A = None, C = "I", D = "O", R = "R"																
Ambient condition	Standard																
	ATEX																
Example		3SU1	1	0	0	-	0	A	A	1	0	-	1	B	A	0	

Compact units

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1				-							-				
Device type	Compact units	2															
Material (front ring)	Plastic, black	0															
	Metal, matte (front ring)/ plastic, black (rosette)	3															
	Metal, shiny	5															
	Metal, matte	6															
Illumination	Non-illuminated	0															
	Illuminated/non-illuminated	1															
Type of actuator/indicator	Pushbutton	0															
	Sensor switch	1															
	Potentiometer	2															
	Indicator light/acoustic signaling device	6															
Design of the actuator/ acoustic signaling device	e.g. A = Flat																
Function (voltage/resistance)	e.g. B = 24 V AC/DC																
Color	e.g. 10 = Black, 20 = Red																
Connection type	None																
	Screw terminals																
	M12 connection, 4-pole																
	Spring-type terminals																
Module/holder equipment incl. contact material	e.g.																
	A = Without module, without holder																
	B = 1 NO contact with holder																
	C = 1 NC contact with holder																
Marking	e.g. A = None																
Ambient condition	Standard																
	ATEX																
Example		3SU1	2	0	1	-	6	A	B	0	0	-	1	A	A	0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Modules for actuators and indicators

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1	□	□	□	–	□	□	□	□	□	–	□	□	□	□	□
Device type	Modules for actuators and indicators	4															
Material (front ring)	Plastic, black		0														
Illumination	Non-illuminated			0													
	Illuminated			1													
Fastening method	Front plate mounting						1										
	Base mounting						2										
	Printed circuit board						3										
Module type	Contact module							A									
	LED module							B									
	LED test module							C									
	Support terminal							D									
	AS-Interface module							E									
	Electronic module for ID key-operated switches							G									
Function/voltage	e.g. B = 24 V AC/DC								□								
Color	e.g. 10 = Black, 20 = Red									□	□						
Connection type	Screw terminals												1				
	Screw terminals + Insulation piercing method												2				
	Spring-type terminals												3				
	Spring-type terminals + Insulation piercing method												4				
	Socket terminals												5				
Module equipment incl. contact material	e.g. A = None B = 1 NO contact, silver C = 1 NC contact, silver													□			
Marking	None															A	
Ambient condition	Standard ATEX																0 1
Example		3SU1	4	0	0	–	1	A	A	1	0	–	1	B	A	0	

Holders

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1	□	□	□	–	□	□	□	□	□	–	□	□	□	□	□
Device type	Holder	5															
Material (front ring)	Plastic, black			0													
	Metal, shiny			5													
Illumination	Non-illuminated				0												
	Illuminated				1												
Fastening method	None						0										
	Front plate mounting						1										
Holder type	3x A							A									
	4x B							B									
Function/voltage	Without 6 ... 24 V AC/DC								A								
									G								
Color	e.g. 10 = Black, 20 = Red									□	□						
Connection type	None												0				
	Screw terminals												1				
Module equipment incl. contact material and slot	e.g. A = None B = 1 NO contact, silver C = 1 NC contact, silver													□			
Marking	None															A	
Ambient condition	Standard ATEX																0 1
Example		3SU1	5	0	0	–	0	A	A	1	0	–	0	A	A	0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Enclosures

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1	□	□	□	–	□	□	□	□	□	–	□	□	□	□	□
Device type	8 = Enclosure	8															
Material (enclosure/front ring)	Plastic, black plastic	0															
	Metal, shiny metal	5															
Number of command points	1 command point	1															
	... 6 command points	... 6															
Type of enclosure	Configuration	0															
	4-position selector switch and coordinate switch	1															
	Palm pushbutton	2															
	Two-hand operation console	3															
Command point	e.g. command point, inscription, module							□	□								
Communication capability	None									0							
	AS-i									1							
Ambient condition	Standard									0							
	ATEX									1							
Mounting/connection of modules	None												0				
	Front plate mounting, screw terminals												1				
	Base mounting, screw terminals												2				
	Base mounting, spring-type terminals												3				
Cable exit from enclosure	None															A	
	Direct entry of AS-i flat cable at top/on right															G	
	AS-i insulation piercing method at top/on right															H	
Design of enclosure top	Center command point															A	
	With recess for labeling plate															B	
	With protective collar															C	
	4 additional holes (two-hand operation console)															D	
	8 additional premachined breaking points (two-hand operation console)															E	
Color of enclosure top	Gray																8
	Yellow																
Example		3SU1	8	0	1	–	0	A	A	0	0	–	0	A	A	2	

Accessories

Product versions		Article number															
SIRIUS ACT pushbuttons and indicator lights		3SU1	□	□	□	–	□	□	□	□	□	–	□	□	□	□	□
Device type	Accessories	9															
Material	Plastic, black	0															
	Metal/plastic	3															
	Metal, shiny	5															
	Metal, matte	6															
Illumination	Non-illuminated	0															
	Illuminated	1															
Type of accessory (labels, protection, actuator, enclosure)	e.g. 0AB = Insert label						□	□	□								
Color	e.g. 10 = Black, 20 = Red									□	□						
Marking	e.g. 0AA = None 0AB = ON 0AT = EMERGENCY STOP												□	□	□		
Ambient condition	Standard																0
	ATEX																1
Example		3SU1	9	0	0		0	A	B	7	1		0	A	B	0	

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Application

Environmental conditions

The pushbuttons and indicator lights are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications.

Safety EMERGENCY STOP pushbuttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the SIRIUS ACT mushroom pushbuttons are suitable for use as safety EMERGENCY STOP pushbuttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening. This means that for the purpose of personal safety, the reliable opening of NC contacts in all safety circuits is expressly prescribed for the electrical equipment of machines and is designated 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 or the 3RK3 Modular Safety System ([see www.siemens.com/ic10](http://www.siemens.com/ic10), Chapter 11) or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

The SIRIUS ACT pushbuttons and indicator lights can be connected to the AS-Interface communication system quickly and safely.

The following solutions are available:

- AS-Interface modules
- AS-Interface module in safety-related version for EMERGENCY STOP mushroom pushbutton
- Ready-fitted AS-Interface enclosures with 1 to 6 command points

IO-Link

The SIRIUS ACT pushbuttons and indicator lights can be connected to IO-Link quickly and safely. The connection is made via a special IO-Link-module.

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Technical specifications

More information	
Industry Mall, see www.siemens.com/product?3SU1	Configurator, see www.siemens.com/sirius-act/configurator Conversion tool, see www.siemens.com/sirius/conversion-tool Manual, see https://support.industry.siemens.com/cs/ww/en/view/107542462

Type	3SU1..0-AA 3SU1..0-JA		3SU1..1-AA 3SU1..1-JA		3SU1..0-AB 3SU1..0-BB 3SU1..0-CB 3SU1..0-DB 3SU1..0-JB		3SU1..1-AB 3SU1..1-BB 3SU1..1-JB	
Product version	Pushbuttons							
Operating principle of the actuating element	Latching				Momentary contact			
Optional expansion of product by light source	No		Yes		No		Yes	
Mechanical endurance (operating cycles) typical	500 000				10 000 000		3 000 000	
Switching frequency maximum	1/h	1 800			3 600			
Shock resistance acc. to IEC 60068-2-27	Half-sine wave 50 g / 11 ms							
Vibration resistance acc. to IEC 60068-2-6	10 ... 500 Hz: 5 g							
IP degree of protection	IP66, IP67, IP69 (IP69K)							
Environmental category during operation according to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%)							
Ambient temperature								
• During operation	°C	-25 ... +70						
• During storage	°C	-40 ... +80						

Type		3SU1.00-AA 3SU1.00-BA 3SU1.00-CA 3SU1.30-AA 3SU1.30-BA 3SU1.50-AA 3SU1.50-BA 3SU1.50-CA	3SU1.50-EA	3SU1.01-AA 3SU1.01-BA 3SU1.51-AA 3SU1.51-BA 3SU1.51-CA	3SU1.00-AD 3SU1.00-BD 3SU1.00-CD 3SU1.30-AD 3SU1.30-BD 3SU1.50-AD 3SU1.50-BD 3SU1.50-CD	3SU1.50-ED	3SU1.01-AD 3SU1.01-BD 3SU1.31-AD 3SU1.31-BD
Product version	Mushroom pushbutton						
Operating principle of the actuating element	Latching				Momentary contact		
Optional expansion of product by light source	No			Yes	No		Yes
Mechanical endurance (operating cycles) typical	500 000	300 000	500 000	10 000 000		300 000	3 000 000
Switching frequency maximum	1/h	1 800		3 600		1 800	3 600
Shock resistance acc. to IEC 60068-2-27	Half-sine wave 50 g / 11 ms						
Vibration resistance acc. to IEC 60068-2-6	10 ... 500 Hz: 5 g						
IP degree of protection	IP66, IP67, IP69 (IP69K)	IP65, IP67, IP69 (IP69K)	IP66, IP67, IP69 (IP69K)			IP65, IP67, IP69 (IP69K)	IP66, IP67, IP69 (IP69K)
Environmental category during operation according to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%)						
Ambient temperature							
• During operation	°C	-25 ... +70					
• During storage	°C	-40 ... +80					

Type	3SU1...-J 3SU1...-H 3SU1...-G
Product version	EMERGENCY STOP mushroom pushbuttons
Mechanical endurance (operating cycles)	300 000
Switching frequency maximum	1/h 600
Shock resistance acc. to IEC 60068-2-27	Half-sine wave 50 g / 11 ms
Vibration resistance acc. to IEC 60068-2-6	10 ... 500 Hz: 5 g
IP degree of protection	IP66, IP67, IP69 (IP69K)
Environmental category during operation acc. to EN 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95%)
Ambient temperature	
• During operation	°C -25 ... 70
• During storage	°C -40 ... 80

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Type		3SU1.5.-2A 3SU1.5.-2B 3SU1.5.-2C 3SU1.5.-2D 3SU1.5.-2E	3SU1.0.-2A 3SU1.0.-2B 3SU1.0.-2C 3SU1.3.-2A 3SU1.3.-2B 3SU1.3.-2C	3SU1.0.-3E 3SU1.3.-3E 3SU1.5.-3E	3SU1.0.-4B 3SU1.0.-4C 3SU1.0.-4D 3SU1.0.-4F 3SU1.0.-4G 3SU1.0.-4H 3SU1.0.-4J 3SU1.0.-4L 3SU1.0.-5B 3SU1.0.-5H 3SU1.0.-5P 3SU1.0.-5Q 3SU1.0.-5R 3SU1.0.-5S 3SU1.0.-5T 3SU1.0.-5X	3SU1...-4B 3SU1...-4C 3SU1...-4D 3SU1...-4F 3SU1...-4G 3SU1...-4H 3SU1...-4J 3SU1...-4L 3SU1...-5B 3SU1...-5H 3SU1...-5K 3SU1...-5L 3SU1...-5P 3SU1...-5Q 3SU1...-5R 3SU1...-5S 3SU1...-5T 3SU1...-5X	3SU1.0.-7A 3SU1.0.-7B 3SU1.3.-7A 3SU1.3.-7B 3SU1.5.-7A 3SU1.5.-7B	
Product version		Selector switches		Toggle switches	Key-operated switches		Coordinate switches	
Mechanical endurance (operating cycles)		300 000	1 000 000			300 000	250 000	
Switching frequency maximum		1/h	1 800				3 600	
Shock resistance acc. to IEC 60068-2-27		Half-sine wave 50 g / 11 ms						
Vibration resistance acc. to IEC 60068-2-6		10 ... 500 Hz: 5 g						
IP degree of protection		IP66, IP67, IP69 (IP69K)			IP66, IP67, IP69K	IP66, IP67, IP69 (IP69K)		IP65, IP67
Ambient temperature								
• During operation		°C	-25 ... +70					
• During storage		°C	-40 ... +80					

Type		3SU1400- 1AA101- A0	3SU1400- 1AA101- GA0, 3SU1400- 1AA101-RA0	3SU1400- 1AA101-HA0	3SU1400- 1AA103- A0	3SU1400- 1AA103- GA0, 3SU1400- 1AA103-RA0	3SU1400- 1AA103-HA0	3SU1400- 3AA105- A0
Product version		Contact modules						
Rated insulation voltage	V	500						
Pollution degree		3						
Impulse withstand voltage Rated value	kV	6						
Operational voltage type		AC/DC						
Operational voltage, rated value								
• At AC at 50 Hz	V	5 ... 500						
• At DC	V	5 ... 500						
Thermal current	A	10						
Operational current, rated value								
• At AC-12								
- At 24 V	A	10						
- At 230 V	A	8						
• At AC-15								
- At 24 V	A	6						
- At 230 V	A	6			4		6	
- At 400 V	A	3						
- At 500 V	A	1.4						
• At DC-12								
- At 24 V	A	10						
- At 48 V	A	5						
- At 110 V	A	2.5						
- At 230 V	A	1			0.3		1	
- At 400 V	A	0.3						
- At 500 V	A	0.3			0.2		0.3	
• At DC-13								
- At 24 V	A	3						
- At 48 V	A	1.5						
- At 110 V	A	0.7			0.6		0.7	
- At 230 V	A	0.3						
- At 400 V	A	0.1						
- At 500 V	A	0.1						
Contact reliability		One contact failure per 100 million switching operations (17 V, 5 mA), one contact failure per 10 million switching operations (5 V, 1 mA)						
Mechanical endurance (operating cycles) typical		10 000 000						

SIRIUS ACT Pushbuttons and Indicator Lights

General data

Type		3SU1400- .AA101-.A0	3SU1400- 1AA101- GA0, 3SU1400- 1AA101-RA0	3SU1400- 1AA101-HA0	3SU1400- .AA103-.A0	3SU1400- 1AA103- GA0, 3SU1400- 1AA103-RA0	3SU1400- 1AA103-HA0	3SU1400- 3AA105-.A0	
Product version		Contact modules							
Switching frequency maximum	1/s	3600							
Fuse link version required for short-circuit protection of the auxiliary switch with type of coordination 1		gG / Dz 10 A, quick-response / Dz 10 A							
Continuous current of miniature circuit breaker A C characteristic	A	10							
Vibration resistance acc. to IEC 60068-2-6		10 ... 500 Hz: 5 <i>g</i>							
Shock resistance acc. to IEC 60068-2-27		Half-sine wave 50 <i>g</i> / 11 ms							
Climate class during operation acc. to EN 60721		3M6, 3S2, 3B2, 3C3, 3K6 (with a relative air humidity of 10 ... 95 %, no condensation permitted in operation)							
Ambient temperature									
• During operation	°C	-25 ... +70							
• During storage	°C	-40 ... +80							
IP degree of protection									
• Of enclosure		IP40							
• Of the terminal		IP20							
Type of electrical connection		Screw terminals			Spring-type terminals			Socket terminals (THT)	
Type of connectable conductor cross-sections									
• Solid with end sleeve		2 x (0.5 ... 0.75 mm²)			--				
• Solid without end sleeve		2 x (1.0 ... 1.5 mm²)			2 x (0.25 ... 1.5 mm²)			--	
• Finely stranded with end sleeve		2 x (0.5 ... 1.5 mm²)			2 x (0.25 ... 0.75 mm²)			--	
• Finely stranded without end sleeve		2 x (1.0 ... 1.5 mm²)			2 x (0.25 ... 1.5 mm²)			--	
• For AWG cables		2 x (18 ... 14)			2 x (24 ... 16)			--	
Tightening torque for screw terminals	Nm	0.8 ... 0.9			--				

Type		3SU1401-.....1	3SU1401-.....3	3SU1401-.....5
Product version		LED modules		
Light source integrated in product		Yes		
Type of light source		LED		
Rated insulation voltage	V	320		
Pollution degree		3		
Impulse withstand voltage rated value	kV	4		
Relative positive tolerance of the operational voltage	%	20		
Relative negative tolerance of the operational voltage	%	20		
Operating time typical	h	100 000		
Vibration resistance acc. to IEC 60068-2-6		10 ... 500 Hz: 5 g		
Shock resistance acc. to IEC 60068-2-27		Half-sine wave 50 g / 11 ms		
Environmental category during operation according to IEC 60721		3M6, 3S2, 3B2, 3K6 (with a relative air humidity of 10 ... 95 %, no condensation permitted in operation)		
Ambient temperature				
• During operation	°C	-25 ... +70		
• During storage	°C	-40 ... +80		
IP degree of protection of the terminal		IP20		
Type of electrical connection		Screw terminals 	Spring-type terminals	Socket terminals (THT) 

For further information in the Manual, see <https://support.industry.siemens.com/cs/ww/en/view/107542462>.

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Pushbuttons

Selection and ordering data

Version of actuating element Front ring version	Operating principle Unlatching method	Color, marking	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg
Pushbuttons								
 3SU1030-0AB50-0AR0	Pushbuttons with flat button Standard	Momentary contact	Black	▶ 3SU1030-0AB10-0AA0	1	1 unit	41J	0.027
			Black, "O"	▶ 3SU1030-0AB10-0AD0	1	1 unit	41J	0.027
			Red	▶ 3SU1030-0AB20-0AA0	1	1 unit	41J	0.027
			Red, "O"	▶ 3SU1030-0AB20-0AD0	1	1 unit	41J	0.028
			Red, "AUTO"	▶ 3SU1030-0AB20-0AQ0	1	1 unit	41J	0.027
			Yellow	▶ 3SU1030-0AB30-0AA0	1	1 unit	41J	0.027
			Green	▶ 3SU1030-0AB40-0AA0	1	1 unit	41J	0.027
			Green, "I"	▶ 3SU1030-0AB40-0AC0	1	1 unit	41J	0.028
			Blue	▶ 3SU1030-0AB50-0AA0	1	1 unit	41J	0.027
			Blue, "R"	▶ 3SU1030-0AB50-0AR0	1	1 unit	41J	0.027
			White	▶ 3SU1030-0AB60-0AA0	1	1 unit	41J	0.027
			White, "I"	▶ 3SU1030-0AB60-0AC0	1	1 unit	41J	0.028
			Clear	▶ 3SU1030-0AB70-0AA0	1	1 unit	41J	0.027
			Gray	▶ 3SU1030-0AB80-0AA0	1	1 unit	41J	0.028
		Latching	Black	▶ 3SU1030-0AA10-0AA0	1	1 unit	41J	0.026
		Push to unlatch	Red	▶ 3SU1030-0AA20-0AA0	1	1 unit	41J	0.025
 3SU1030-0AA40-0AA0			Yellow	▶ 3SU1030-0AA30-0AA0	1	1 unit	41J	0.025
			Green	▶ 3SU1030-0AA40-0AA0	1	1 unit	41J	0.025
			Blue	▶ 3SU1030-0AA50-0AA0	1	1 unit	41J	0.025
			White	▶ 3SU1030-0AA60-0AA0	1	1 unit	41J	0.025
 3SU1030-0BB20-0AA0	Pushbuttons with raised button Standard	Momentary contact	Black	▶ 3SU1030-0BB10-0AA0	1	1 unit	41J	0.027
			Red	▶ 3SU1030-0BB20-0AA0	1	1 unit	41J	0.028
			Yellow	▶ 3SU1030-0BB30-0AA0	1	1 unit	41J	0.027
			Green	▶ 3SU1030-0BB40-0AA0	1	1 unit	41J	0.028
			Blue	▶ 3SU1030-0BB50-0AA0	1	1 unit	41J	0.028
			White	▶ 3SU1030-0BB60-0AA0	1	1 unit	41J	0.029
 3SU1030-0CB30-0AA0	Pushbuttons with flat button Raised	Momentary contact	Black	5 3SU1030-0CB10-0AA0	1	1 unit	41J	0.038
			Red	5 3SU1030-0CB20-0AA0	1	1 unit	41J	0.039
			Yellow	5 3SU1030-0CB30-0AA0	1	1 unit	41J	0.037
			Green	5 3SU1030-0CB40-0AA0	1	1 unit	41J	0.036
			Blue	5 3SU1030-0CB50-0AA0	1	1 unit	41J	0.037
			White	5 3SU1030-0CB60-0AA0	1	1 unit	41J	0.038

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Illuminated pushbuttons

Version of actuating element Front ring version		Operating principle Unlatching method	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
					d				
Illuminated pushbuttons									
	Illuminated pushbuttons with flat button Standard	Momentary contact	Amber	5	3SU1031-0AB00-0AA0	1	1 unit	41J	0.025
			Red	▶	3SU1031-0AB20-0AA0	1	1 unit	41J	0.026
			Yellow	▶	3SU1031-0AB30-0AA0	1	1 unit	41J	0.026
			Green	▶	3SU1031-0AB40-0AA0	1	1 unit	41J	0.026
			Blue	▶	3SU1031-0AB50-0AA0	1	1 unit	41J	0.026
			White	▶	3SU1031-0AB60-0AA0	1	1 unit	41J	0.026
			Clear	▶	3SU1031-0AB70-0AA0	1	1 unit	41J	0.026
3SU1031-0AB20-0AA0									
		Latching	Red	▶	3SU1031-0AA20-0AA0	1	1 unit	41J	0.025
		Push to unlatch	Yellow	▶	3SU1031-0AA30-0AA0	1	1 unit	41J	0.025
			Green	▶	3SU1031-0AA40-0AA0	1	1 unit	41J	0.025
			Blue	▶	3SU1031-0AA50-0AA0	1	1 unit	41J	0.024
			White	▶	3SU1031-0AA60-0AA0	1	1 unit	41J	0.023
			Clear	▶	3SU1031-0AA70-0AA0	1	1 unit	41J	0.025
			3SU1031-0AA50-0AA0						
	Illuminated pushbuttons with raised button Standard	Momentary contact	Red	▶	3SU1031-0BB20-0AA0	1	1 unit	41J	0.027
			Yellow	▶	3SU1031-0BB30-0AA0	1	1 unit	41J	0.027
			Green	▶	3SU1031-0BB40-0AA0	1	1 unit	41J	0.028
			Blue	▶	3SU1031-0BB50-0AA0	1	1 unit	41J	0.027
			Clear	3	3SU1031-0BB70-0AA0	1	1 unit	41J	0.027
3SU1031-0BB40-0AA0									

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Mushroom pushbuttons

Selection and ordering data

Version of actuating element	Operating principle Unlatching method	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg
Mushroom pushbuttons								
	Mushroom pushbuttons 30 mm diameter, 2 positions	Momentary contact	Black ▶	3SU1030-1AD10-0AA0	1	1 unit	41J	0.033
			Red ▶	3SU1030-1AD20-0AA0	1	1 unit	41J	0.034
			Yellow ▶	3SU1030-1AD30-0AA0	1	1 unit	41J	0.033
			Green ▶	3SU1030-1AD40-0AA0	1	1 unit	41J	0.032
	Latching Pull to unlatch	Black ▶		3SU1030-1AA10-0AA0	1	1 unit	41J	0.039
		Red ▶		3SU1030-1AA20-0AA0	1	1 unit	41J	0.039
Mushroom pushbuttons								
	Mushroom pushbuttons 40 mm diameter, 2 positions	Momentary contact	Black 3	3SU1030-1BD10-0AA0	1	1 unit	41J	0.035
			Red 3	3SU1030-1BD20-0AA0	1	1 unit	41J	0.034
			Yellow 3	3SU1030-1BD30-0AA0	1	1 unit	41J	0.033
			Green 3	3SU1030-1BD40-0AA0	1	1 unit	41J	0.035
	Latching Pull to unlatch	Black ▶		3SU1030-1BA10-0AA0	1	1 unit	41J	0.041
		Red ▶		3SU1030-1BA20-0AA0	1	1 unit	41J	0.040
		Red, "O" ▶	5	3SU1030-1BA20-0AD0	1	1 unit	41J	0.041
Mushroom pushbuttons								
	Mushroom pushbuttons 30 mm diameter, 2 positions, illuminated	Momentary contact	Yellow 5	3SU1031-1AD30-0AA0	1	1 unit	41J	0.030
			Green 3	3SU1031-1AD40-0AA0	1	1 unit	41J	0.031
			White 3	3SU1031-1AD60-0AA0	1	1 unit	41J	0.046
			Clear 5	3SU1031-1AD70-0AA0	1	1 unit	41J	0.032
	Latching Pull to unlatch	Red 3		3SU1031-1AA20-0AA0	1	1 unit	41J	0.039
		Yellow 5		3SU1031-1AA30-0AA0	1	1 unit	41J	0.037
Mushroom pushbuttons								
	Mushroom pushbuttons 40 mm diameter, 2 positions, illuminated	Momentary contact	Yellow 5	3SU1031-1BD30-0AA0	1	1 unit	41J	0.040
			Green 5	3SU1031-1BD40-0AA0	1	1 unit	41J	0.035
			White 3	3SU1031-1BD60-0AA0	1	1 unit	41J	0.034
			Clear 5	3SU1031-1BD70-0AA0	1	1 unit	41J	0.034
	Latching Pull to unlatch	Red 3		3SU1031-1BA20-0AA0	1	1 unit	41J	0.042
		Yellow 3		3SU1031-1BA30-0AA0	1	1 unit	41J	0.041
Mushroom pushbuttons								
	Mushroom pushbuttons 40 mm diameter, 2 positions	With positive latching, tamper-proof	Black ▶	3SU1000-1HB10-0AA0	1	1 unit	41J	0.047
		Rotate to unlatch	Blue 3	3SU1000-1HB50-0AA0	1	1 unit	41J	0.046

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

EMERGENCY STOP mushroom pushbuttons

Selection and ordering data

Version of actuating element	Outer diameter of mushroom	Make of lock	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm			d					kg

EMERGENCY STOP mushroom pushbuttons

With pull-to-unlatch mechanism

Tamper-proof,
2 positions

40

--

Red



3SU1000-1HA20-0AA0

1

1 unit

41J

0.053



3SU1000-1HA20-0AA0

With rotate-to-unlatch mechanism

Tamper-proof,
2 positions

33.8

--

Red



3SU1000-1GB20-0AA0

1

1 unit

41J

0.042



3SU1000-1GB20-0AA0

40

--

Red



3SU1000-1HB20-0AA0

1

1 unit

41J

0.047



3SU1000-1HB20-0AA0

60

--

Red



3SU1000-1JB20-0AA0

1

1 unit

41J

0.059



3SU1000-1JB20-0AA0

With rotate-to-unlatch mechanism, can be illuminated

Tamper-proof,
2 positions

33.8

--

Red



3SU1001-1GB20-0AA0

1

1 unit

41J

0.048

40

--

Red



3SU1001-1HB20-0AA0

1

1 unit

41J

0.049

60

--

Red



3SU1001-1JB20-0AA0

1

1 unit

41J

0.060



3SU1001-1HB20-0AA0

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

EMERGENCY STOP mushroom pushbuttons / toggle switches

Version of actuating element	Outer diameter of mushroom	Make of lock	Color	Number of keys	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm				d					kg

EMERGENCY STOP mushroom pushbuttons

With key-operated release

	Tamper-proof, 2 positions	40	RONIS SB30	Red	2	▶	3SU1000-1HF20-0AA0	1	1 unit	41J	0.076
			RONIS 455	Red	2	3	3SU1000-1HG20-0AA0	1	1 unit	41J	0.075
3SU1000-1HF20-0AA0											
			BKS S1	Red	2	▶	3SU1000-1HK20-0AA0	1	1 unit	41J	0.105
			BKS E7	Red	0	3	3SU1000-1HM20-0AA0	1	1 unit	41J	0.095
			BKS E9	Red	0	3	3SU1000-1HN20-0AA0	1	1 unit	41J	0.095
3SU1000-1HK20-0AA0											
			O.M.R. 73037	Red	2	▶	3SU1000-1HQ20-0AA0	1	1 unit	41J	0.114
3SU1000-1HQ20-0AA0											
			CES SSG10	Red	2	▶	3SU1000-1HR20-0AA0	1	1 unit	41J	0.109
			CES SSP9	Red	2	▶	3SU1000-1HS20-0AA0	1	1 unit	41J	0.111
			CES SMS1	Red	2	3	3SU1000-1HT20-0AA0	1	1 unit	41J	0.105
3SU1000-1HR20-0AA0											

Selection and ordering data

Number of switching positions	Number of command points	Color of actuating element	Operating principle of the actuating element	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg

Toggle switches

	2	1	Black	Latching	3	3SU1030-3EA10-0AA0	1	1 unit	41J	0.027
				Momentary contact Reset from above	5	3SU1030-3EC10-0AA0	1	1 unit	41J	0.026

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Selector switches

Selection and ordering data

Version of actuator	Operating principle	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Selector switches

2 switch positions, can be illuminated

Selector, short black actuator

Momentary contact, 45°
(10:30/12 o'clock), reset
from center to left



Black
Red
Yellow
Green
Blue
White

3
▶
▶
▶
▶
▶
▶

3SU1032-2BC10-0AA0
3SU1032-2BC20-0AA0
3SU1032-2BC30-0AA0
3SU1032-2BC40-0AA0
3SU1032-2BC50-0AA0
3SU1032-2BC60-0AA0

1 1 unit 41J 0.035
1 1 unit 41J 0.036
1 1 unit 41J 0.037
1 1 unit 41J 0.036
1 1 unit 41J 0.037
1 1 unit 41J 0.037

3SU1032-2BC40-0AA0

Latching, 90°
(10:30/1:30 o'clock)



Black
Red
Yellow
Green
Blue
White

▶
▶
▶
▶
▶
▶

3SU1032-2BF10-0AA0
3SU1032-2BF20-0AA0
3SU1032-2BF30-0AA0
3SU1032-2BF40-0AA0
3SU1032-2BF50-0AA0
3SU1032-2BF60-0AA0

1 1 unit 41J 0.035
1 1 unit 41J 0.037
1 1 unit 41J 0.037
1 1 unit 41J 0.036
1 1 unit 41J 0.037
1 1 unit 41J 0.036

3SU1032-2BF30-0AA0

Selector, long black actuator

Latching, 90°
(10:30/1:30 o'clock)



Black
Red
White

3
3
3

3SU1032-2CF10-0AA0
3SU1032-2CF20-0AA0
3SU1032-2CF60-0AA0

1 1 unit 41J 0.037
1 1 unit 41J 0.035
1 1 unit 41J 0.037

3SU1032-2CF60-0AA0

Rotary knob

Latching, 90°
(10:30/1:30 o'clock)



Red
White

3
▶

3SU1032-2AF20-0AA0
3SU1032-2AF60-0AA0

1 1 unit 41J 0.040
1 1 unit 41J 0.040

3SU1032-2AF20-0AA0

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Selector switches

Version of actuator	Operating principle	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Selector switches

3 switch positions, can be illuminated

Selector, short black actuator

Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right + left



Black
Red
Yellow
Green
Blue
White

▶ 3SU1032-2BM10-0AA0
▶ 3SU1032-2BM20-0AA0
▶ 3SU1032-2BM30-0AA0
▶ 3SU1032-2BM40-0AA0
▶ 3SU1032-2BM50-0AA0
▶ 3SU1032-2BM60-0AA0

1 1 unit 41J 0.036
1 1 unit 41J 0.036
1 1 unit 41J 0.037
1 1 unit 41J 0.035
1 1 unit 41J 0.037
1 1 unit 41J 0.036



3SU1032-2BM60-0AA0



3SU1032-2BL20-0AA0



3SU1032-2BP40-0AA0



3SU1032-2BN30-0AA0



3SU1002-2AS60-0AA0

Latching, 2x45° (10:30/12/1:30 o'clock)



Black
Red
Yellow
Green
Blue
White

▶ 3SU1032-2BL10-0AA0
▶ 3SU1032-2BL20-0AA0
▶ 3SU1032-2BL30-0AA0
▶ 3SU1032-2BL40-0AA0
▶ 3SU1032-2BL50-0AA0
▶ 3SU1032-2BL60-0AA0

1 1 unit 41J 0.036
1 1 unit 41J 0.035
1 1 unit 41J 0.036
1 1 unit 41J 0.036
1 1 unit 41J 0.035
1 1 unit 41J 0.038

Momentary contact/latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to right



Black
Red
Yellow
Green
Blue
White

▶ 3SU1032-2BP10-0AA0
▶ 3SU1032-2BP20-0AA0
▶ 3SU1032-2BP30-0AA0
▶ 3SU1032-2BP40-0AA0
▶ 3SU1032-2BP50-0AA0
▶ 3SU1032-2BP60-0AA0

1 1 unit 41J 0.036
1 1 unit 41J 0.036
1 1 unit 41J 0.036
1 1 unit 41J 0.037
1 1 unit 41J 0.036
1 1 unit 41J 0.036

Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to left



Black
Red
Yellow
Green
Blue
White

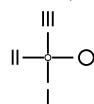
▶ 3SU1032-2BN10-0AA0
▶ 3SU1032-2BN20-0AA0
▶ 3SU1032-2BN30-0AA0
▶ 3SU1032-2BN40-0AA0
▶ 3SU1032-2BN50-0AA0
▶ 3SU1032-2BN60-0AA0

1 1 unit 41J 0.036
1 1 unit 41J 0.035
1 1 unit 41J 0.035
1 1 unit 41J 0.035
1 1 unit 41J 0.036
1 1 unit 41J 0.036

4 switch positions

Rotary knobs

Latching, 4x90° (0-position: 3/6/9/12 o'clock)



White

▶ 3SU1030-2AS60-0AA0

1 1 unit 41J 0.038

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Key-operated switches

Selection and ordering data

Operating principle	Make of lock	Switch position for key removal	Number of keys	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg

Key-operated switches

2 switch positions

Momentary contact, 45° (10:30/12 o'clock), reset from center to left



3SU1030-4BC01-0AA0

Latching, 90° (10:30/1:30 o'clock)



3SU1030-4BF01-0AA0

3SU1030-4FF01-0AA0

3SU1030-5BF01-0AA0

3SU1030-5PF01-0AA0

RONIS, SB30	O	2	▶	3SU1030-4BC01-0AA0	1	1 unit	41J	0.061
RONIS, 455	O	2	5	3SU1030-4CC01-0AA0	1	1 unit	41J	0.060
O.M.R. 73037, red	O	2	3	3SU1030-4FC01-0AA0	1	1 unit	41J	0.097
O.M.R. 73038, light blue	O	2	5	3SU1030-4GC01-0AA0	1	1 unit	41J	0.096
O.M.R. 73034, black	O	2	5	3SU1030-4HC01-0AA0	1	1 unit	41J	0.100
O.M.R. 73033, yellow	O	2	3	3SU1030-4JC01-0AA0	1	1 unit	41J	0.095
CES, SSG10	O	2	▶	3SU1030-5BC01-0AA0	1	1 unit	41J	0.140
CES, LSG1	O	2	3	3SU1030-5HC01-0AA0	1	1 unit	41J	0.140
BKS, S1	O	2	▶	3SU1030-5PC01-0AA0	1	1 unit	41J	0.136
IKON, 360012K1	O	2	3	3SU1030-5XC01-0AA0	1	1 unit	41J	0.131
RONIS, SB30	O	2	▶	3SU1030-4BF01-0AA0	1	1 unit	41J	0.062
	O+I	2	▶	3SU1030-4BF11-0AA0	1	1 unit	41J	0.062
	I	2	3	3SU1030-4BF21-0AA0	1	1 unit	41J	0.061
RONIS, 455	O	2	3	3SU1030-4CF01-0AA0	1	1 unit	41J	0.062
	O+I	2	5	3SU1030-4CF11-0AA0	1	1 unit	41J	0.061
O.M.R. 73037, red	O	2	3	3SU1030-4FF01-0AA0	1	1 unit	41J	0.095
	O+I	2	3	3SU1030-4FF11-0AA0	1	1 unit	41J	0.099
O.M.R. 73038, light blue	O	2	3	3SU1030-4GF01-0AA0	1	1 unit	41J	0.093
	O+I	2	3	3SU1030-4GF11-0AA0	1	1 unit	41J	0.101
O.M.R. 73034, black	O	2	3	3SU1030-4HF01-0AA0	1	1 unit	41J	0.095
	O+I	2	3	3SU1030-4HF11-0AA0	1	1 unit	41J	0.096
	I	2	5	3SU1030-4HF21-0AA0	1	1 unit	41J	0.099
O.M.R. 73033, yellow	O	2	3	3SU1030-4JF01-0AA0	1	1 unit	41J	0.095
	O+I	2	5	3SU1030-4JF11-0AA0	1	1 unit	41J	0.095
CES, SSG10	O	2	▶	3SU1030-5BF01-0AA0	1	1 unit	41J	0.142
	O+I	2	▶	3SU1030-5BF11-0AA0	1	1 unit	41J	0.137
	I	2	3	3SU1030-5BF21-0AA0	1	1 unit	41J	0.139
CES, LSG1	O	2	3	3SU1030-5HF01-0AA0	1	1 unit	41J	0.142
	O+I	2	3	3SU1030-5HF11-0AA0	1	1 unit	41J	0.135
BKS, S1	O	2	3	3SU1030-5PF01-0AA0	1	1 unit	41J	0.135
	O+I	2	3	3SU1030-5PF11-0AA0	1	1 unit	41J	0.133
	I	2	5	3SU1030-5PF21-0AA0	1	1 unit	41J	0.135
BKS, E1	O	0	3	3SU1030-5QF01-0AA0	1	1 unit	41J	0.125
	O+I	0	5	3SU1030-5QF11-0AA0	1	1 unit	41J	0.128
BKS, E2	O	0	▶	3SU1030-5RF01-0AA0	1	1 unit	41J	0.122
	O+I	0	3	3SU1030-5RF11-0AA0	1	1 unit	41J	0.122
BKS, E7	O	0	▶	3SU1030-5SF01-0AA0	1	1 unit	41J	0.126
	O+I	0	▶	3SU1030-5SF11-0AA0	1	1 unit	41J	0.121
BKS, E9	O	0	3	3SU1030-5TF01-0AA0	1	1 unit	41J	0.129
	O+I	0	3	3SU1030-5TF11-0AA0	1	1 unit	41J	0.125
IKON, 360012K1	O	2	▶	3SU1030-5XF01-0AA0	1	1 unit	41J	0.133
	O+I	2	3	3SU1030-5XF11-0AA0	1	1 unit	41J	0.133

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Key-operated switches

Operating principle	Make of lock	Switch position for key removal	Number of keys	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg

Key-operated switches

3 switch positions

Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right



3SU1030-4BM01-0AA0

Latching, 2x45° (10:30/12/1:30 o'clock)



3SU1030-4JL11-0AA0



3SU1030-5BL41-0AA0



3SU1030-5PL01-0AA0

Momentary contact, 2x45° (10:30/12/1:30 o'clock)	RONIS, SB30	O	2	3	3SU1030-4BM01-0AA0	1	1 unit	41J	0.060
	O.M.R. 73037, red	O	2	5	3SU1030-4FM01-0AA0	1	1 unit	41J	0.095
	O.M.R. 73034, black	O	2	5	3SU1030-4HM01-0AA0	1	1 unit	41J	0.096
	CES, SSG10	O	2	▶	3SU1030-5BM01-0AA0	1	1 unit	41J	0.139
	BKS, S1	O	2	3	3SU1030-5PM01-0AA0	1	1 unit	41J	0.134
	IKON, 360012K1	O	2	5	3SU1030-5XM01-0AA0	1	1 unit	41J	0.135
Latching, 2x45° (10:30/12/1:30 o'clock)	RONIS, SB30	O	2	3	3SU1030-4BL01-0AA0	1	1 unit	41J	0.061
		I+O+II	2	▶	3SU1030-4BL11-0AA0	1	1 unit	41J	0.061
		I	2	5	3SU1030-4BL21-0AA0	1	1 unit	41J	0.063
		II	2	3	3SU1030-4BL31-0AA0	1	1 unit	41J	0.060
		I+II	2	5	3SU1030-4BL41-0AA0	1	1 unit	41J	0.062
		O+I	2	3	3SU1030-4BL51-0AA0	1	1 unit	41J	0.061
	RONIS, 455	O	2	5	3SU1030-4CL01-0AA0	1	1 unit	41J	0.063
		I+O+II	2	5	3SU1030-4CL11-0AA0	1	1 unit	41J	0.064
		O	2	5	3SU1030-4FL01-0AA0	1	1 unit	41J	0.103
		O+I	2	5	3SU1030-4FL51-0AA0	1	1 unit	41J	0.090
		O	2	5	3SU1030-4GL01-0AA0	1	1 unit	41J	0.100
		I+O+II	2	3	3SU1030-4GL11-0AA0	1	1 unit	41J	0.093
	O.M.R. 73034, black	O	2	5	3SU1030-4HL01-0AA0	1	1 unit	41J	0.100
		I+O+II	2	3	3SU1030-4HL11-0AA0	1	1 unit	41J	0.095
		O	2	5	3SU1030-4JL11-0AA0	1	1 unit	41J	0.096
		I+O+II	2	5	3SU1030-4JL11-0AA0	1	1 unit	41J	0.096
		O	2	5	3SU1030-5BL01-0AA0	1	1 unit	41J	0.138
		I+O+II	2	▶	3SU1030-5BL11-0AA0	1	1 unit	41J	0.135
	CES, SSG10	I	2	3	3SU1030-5BL21-0AA0	1	1 unit	41J	0.138
		II	2	3	3SU1030-5BL31-0AA0	1	1 unit	41J	0.138
		I+II	2	3	3SU1030-5BL41-0AA0	1	1 unit	41J	0.138
		O+I	2	5	3SU1030-5BL51-0AA0	1	1 unit	41J	0.140
		O	2	5	3SU1030-5PL01-0AA0	1	1 unit	41J	0.140
		I+O+II	2	3	3SU1030-5PL11-0AA0	1	1 unit	41J	0.130
	BKS, S1	I	2	3	3SU1030-5PL21-0AA0	1	1 unit	41J	0.135
		II	2	5	3SU1030-5PL31-0AA0	1	1 unit	41J	0.138
		I+II	2	5	3SU1030-5PL41-0AA0	1	1 unit	41J	0.136
		I+O+II	0	5	3SU1030-5RL11-0AA0	1	1 unit	41J	0.120
		O	2	5	3SU1030-5TL11-0AA0	1	1 unit	41J	0.120
		I+O+II	0	5	3SU1030-5TL11-0AA0	1	1 unit	41J	0.120
	IKON, 360012K1	O	2	5	3SU1030-5XL01-0AA0	1	1 unit	41J	0.136
		I+O+II	2	5	3SU1030-5XL11-0AA0	1	1 unit	41J	0.133

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Key-operated switches / ID key-operated switches

Operating principle	Make of lock	Switch position for key removal	Number of keys	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg

Key-operated switches

3 switch positions



3SU1030-4BP01-0AA0

Momentary contact/latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right



RONIS, SB30	O	2	5		3SU1030-4BP01-0AA0	1	1 unit	41J	0.062
	II	2	5		3SU1030-4BP31-0AA0	1	1 unit	41J	0.060
	O+II	2	5		3SU1030-4BP61-0AA0	1	1 unit	41J	0.062
CES, SSG10	O	2	3		3SU1030-5BP01-0AA0	1	1 unit	41J	0.140
	II	2	5		3SU1030-5BP31-0AA0	1	1 unit	41J	0.180
	O+II	2	3		3SU1030-5BP61-0AA0	1	1 unit	41J	0.140

BKS, S1	O	2	3		3SU1030-5PP01-0AA0	1	1 unit	41J	0.141
---------	---	---	---	--	---------------------------	---	--------	-----	-------

Latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left



RONIS, SB30	O	2	5		3SU1030-4BN01-0AA0	1	1 unit	41J	0.064
	I	2	5		3SU1030-4BN21-0AA0	1	1 unit	41J	0.061
	O+I	2	5		3SU1030-4BN51-0AA0	1	1 unit	41J	0.062
O.M.R. 73038, light blue	O	2	5		3SU1030-4GN01-0AA0	1	1 unit	41J	0.095
O.M.R. 73034, black	I	2	5		3SU1030-4HN21-0AA0	1	1 unit	41J	0.095

CES, SSG10	O	2	3		3SU1030-5BN01-0AA0	1	1 unit	41J	0.138
	I	2	3		3SU1030-5BN21-0AA0	1	1 unit	41J	0.140
	O+I	2	3		3SU1030-5BN51-0AA0	1	1 unit	41J	0.143

BKS, S1	I	2	5		3SU1030-5PN21-0AA0	1	1 unit	41J	0.137
	O+I	2	5		3SU1030-5PN51-0AA0	1	1 unit	41J	0.132
IKON, 360012K1	O+I	2	5		3SU1030-5XN51-0AA0	1	1 unit	41J	0.135



3SU1030-5BN01-0AA0

Selection and ordering data

Operating angle	Operating principle	Switch position for key removal	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg

ID key-operated switches

4 switch positions

45°

Latching

Key removal possible in all 4 positions

Black



3SU1030-4WS10-0AA0

1 1 unit 41J 0.041



3SU1030-4WS10-0AA0

For ID key-operated switches, see www.siemens.com/ic10, Chapter 13.

For electronic modules for ID key-operated switches, see www.siemens.com/ic10, Chapter 13.

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Plastic with Metal Front Ring, Matte
Actuating and Signaling Elements

Coordinate switches / indicator lights

Selection and ordering data

	Product function Locking in zero position	Number of switching positions	Operating principle	Direction of actuation	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
					d					
 3SU1030-7AC10-0AA0  3SU1030-7BD10-0AA0	No	2	Momentary contact	Horizontal	▶	3SU1030-7AC10-0AA0	1	1 unit	41J	0.054
				Vertical	▶	3SU1030-7AD10-0AA0	1	1 unit	41J	0.052
		4	Momentary contact	Horizontal / vertical	▶	3SU1030-7AF10-0AA0	1	1 unit	41J	0.054
	Yes	2	Momentary contact	Horizontal	▶	3SU1030-7BC10-0AA0	1	1 unit	41J	0.056
				Vertical	▶	3SU1030-7BD10-0AA0	1	1 unit	41J	0.059
		4	Momentary contact	Horizontal / vertical	▶	3SU1030-7BF10-0AA0	1	1 unit	41J	0.058

Selection and ordering data

	Version of product	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
			d					
 3SU1001-6AA20-0AA0	With smooth lens	Amber	3	3SU1001-6AA00-0AA0	1	1 unit	41J	0.012
		Red	▶	3SU1001-6AA20-0AA0	1	1 unit	41J	0.012
		Yellow	▶	3SU1001-6AA30-0AA0	1	1 unit	41J	0.012
		Green	▶	3SU1001-6AA40-0AA0	1	1 unit	41J	0.012
		Blue	▶	3SU1001-6AA50-0AA0	1	1 unit	41J	0.012
		White	▶	3SU1001-6AA60-0AA0	1	1 unit	41J	0.012
		Clear	▶	3SU1001-6AA70-0AA0	1	1 unit	41J	0.012

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, 22 mm, Metal, Shiny
Compact Units/Actuating and Signaling Elements

Potentiometers/indicator lights

Selection and ordering data

Version of actuating element	Operating principle	Adjustable resistance	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		kΩ	d	Article No.				kg
Potentiometers								
	Rotary knob	Stepless	1	▶ 3SU1250-2PQ10-1AA0	1	1 unit	41J	0.105
			4.7	▶ 3SU1250-2PR10-1AA0	1	1 unit	41J	0.107
			10	▶ 3SU1250-2PS10-1AA0	1	1 unit	41J	0.107
			47	▶ 3SU1250-2PT10-1AA0	1	1 unit	41J	0.104
			100	▶ 3SU1250-2PU10-1AA0	1	1 unit	41J	0.106
			470	▶ 3SU1250-2PV10-1AA0	1	1 unit	41J	0.105

3SU1250-2PQ10-1AA0

Selection and ordering data

Version of product	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		d					kg	
Indicator lights								
	With smooth lens	Amber	3	3SU1051-6AA00-0AA0	1	1 unit	41J	0.031
		Red	▶	3SU1051-6AA20-0AA0	1	1 unit	41J	0.031
		Yellow	▶	3SU1051-6AA30-0AA0	1	1 unit	41J	0.031
		Green	▶	3SU1051-6AA40-0AA0	1	1 unit	41J	0.031
		Blue	3	3SU1051-6AA50-0AA0	1	1 unit	41J	0.031
		White	▶	3SU1051-6AA60-0AA0	1	1 unit	41J	0.031
		Clear	3	3SU1051-6AA70-0AA0	1	1 unit	41J	0.031
	3SU1051-6AA40-0AA0							

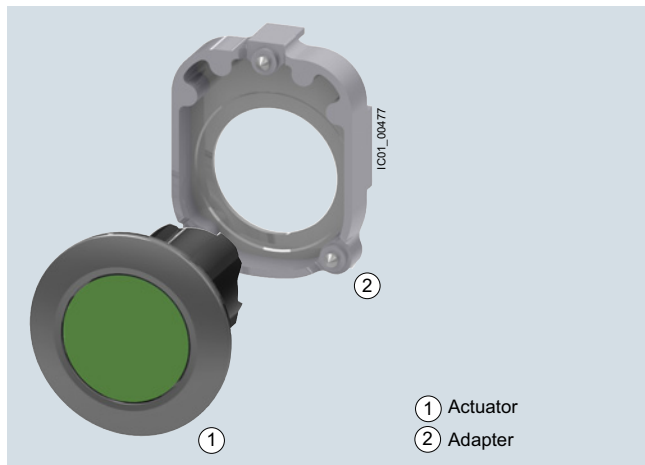
3SU1051-6AA40-0AA0

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, Flat, 30 mm, Metal, Matte
Actuating and Signaling Elements

Pushbuttons

Overview



Actuators and indicators, flat, 30 mm, metal, matte, including adapter
(adapter included in the scope of supply)

Selection and ordering data

	Version	Operating principle	Unlatching method	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.		
					d					kg		
	Pushbuttons With flat button	Momentary contact	--	Black	3	3SU1060-0JB10-0AA0	1	1 unit	41J	0.077		
				Red	3	3SU1060-0JB20-0AA0	1	1 unit	41J	0.075		
				Yellow	3	3SU1060-0JB30-0AA0	1	1 unit	41J	0.074		
				Green	3	3SU1060-0JB40-0AA0	1	1 unit	41J	0.076		
				Blue	3	3SU1060-0JB50-0AA0	1	1 unit	41J	0.075		
				White	3	3SU1060-0JB60-0AA0	1	1 unit	41J	0.075		
3SU1060-0JB50-0AA0												
		Latching	Push to unlatch	Black	5	3SU1060-0JA10-0AA0	1	1 unit	41J	0.072		
				Red	5	3SU1060-0JA20-0AA0	1	1 unit	41J	0.073		
				Yellow	5	3SU1060-0JA30-0AA0	1	1 unit	41J	0.075		
				Green	5	3SU1060-0JA40-0AA0	1	1 unit	41J	0.070		
				Blue	5	3SU1060-0JA50-0AA0	1	1 unit	41J	0.073		
				White	5	3SU1060-0JA60-0AA0	1	1 unit	41J	0.072		
3SU1060-0JA20-0AA0												
	Illuminated pushbuttons With flat button	Momentary contact	--	Red	3	3SU1061-0JB20-0AA0	1	1 unit	41J	0.070		
				Yellow	3	3SU1061-0JB30-0AA0	1	1 unit	41J	0.073		
				Green	3	3SU1061-0JB40-0AA0	1	1 unit	41J	0.076		
				Blue	3	3SU1061-0JB50-0AA0	1	1 unit	41J	0.073		
				Clear	3	3SU1061-0JB70-0AA0	1	1 unit	41J	0.073		
				3SU1061-0JB40-0AA0								
		Latching	Push to unlatch	Red	5	3SU1061-0JA20-0AA0	1	1 unit	41J	0.072		
				Yellow	5	3SU1061-0JA30-0AA0	1	1 unit	41J	0.073		
				Green	5	3SU1061-0JA40-0AA0	1	1 unit	41J	0.073		
				Blue	5	3SU1061-0JA50-0AA0	1	1 unit	41J	0.070		
				Clear	5	3SU1061-0JA70-0AA0	1	1 unit	41J	0.072		
				3SU1061-0JA30-0AA0								

* You can order this quantity or a multiple thereof.

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, Flat, 30 mm, Metal, Matte
Actuating and Signaling Elements

Selector switches

Selection and ordering data

Version	Operating principle	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Selector switches

2 switch positions, can be illuminated

Selector, short black actuator and front ring for flat mounting

Momentary contact, 45° (10:30/12 o'clock), reset from center to left

Black 5
Red 5
Green 5
White 5



3SU1062-2DC10-0AA0
3SU1062-2DC20-0AA0
3SU1062-2DC40-0AA0
3SU1062-2DC60-0AA0

1 1 unit 41J 0.084
1 1 unit 41J 0.083
1 1 unit 41J 0.084
1 1 unit 41J 0.080

Latching, 90° (10:30/1:30 o'clock)

Black 3
Red 5
Green 5
Blue 5
White 3



3SU1062-2DF10-0AA0
3SU1062-2DF20-0AA0
3SU1062-2DF40-0AA0
3SU1062-2DF50-0AA0
3SU1062-2DF60-0AA0

1 1 unit 41J 0.063
1 1 unit 41J 0.082
1 1 unit 41J 0.080
1 1 unit 41J 0.080
1 1 unit 41J 0.083

Selector, long black actuator and front ring for flat mounting

Momentary contact, 45° (10:30/12 o'clock), reset from center to left

Black 5
Red 5
Green 5
White 5



3SU1062-2EC10-0AA0
3SU1062-2EC20-0AA0
3SU1062-2EC40-0AA0
3SU1062-2EC60-0AA0

1 1 unit 41J 0.085
1 1 unit 41J 0.086
1 1 unit 41J 0.085
1 1 unit 41J 0.084

Latching, 90° (10:30/1:30 o'clock)

Black 3
Red 5
Green 5
White 3



3SU1062-2EF10-0AA0
3SU1062-2EF20-0AA0
3SU1062-2EF40-0AA0
3SU1062-2EF60-0AA0

1 1 unit 41J 0.085
1 1 unit 41J 0.084
1 1 unit 41J 0.085
1 1 unit 41J 0.085

3 switch positions (I+O+II), can be illuminated

Selector, short black actuator and front ring for flat mounting

Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right + left

Black 3
Red 5
Green 5
White 3



3SU1062-2DM10-0AA0
3SU1062-2DM20-0AA0
3SU1062-2DM40-0AA0
3SU1062-2DM60-0AA0

1 1 unit 41J 0.083
1 1 unit 41J 0.083
1 1 unit 41J 0.083
1 1 unit 41J 0.084

Latching, 2x45° (10:30/12/1:30 o'clock)

Black 3
Red 5
Yellow 5
Green 5
White 3



3SU1062-2DL10-0AA0
3SU1062-2DL20-0AA0
3SU1062-2DL30-0AA0
3SU1062-2DL40-0AA0
3SU1062-2DL60-0AA0

1 1 unit 41J 0.084
1 1 unit 41J 0.083
1 1 unit 41J 0.080
1 1 unit 41J 0.084
1 1 unit 41J 0.081

Selector, long black actuator and front ring for flat mounting

Momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right + left

Black 3
Red 5
Green 5
White 3



3SU1062-2EM10-0AA0
3SU1062-2EM20-0AA0
3SU1062-2EM40-0AA0
3SU1062-2EM60-0AA0

1 1 unit 41J 0.085
1 1 unit 41J 0.084
1 1 unit 41J 0.084
1 1 unit 41J 0.085

Latching, 2x45° (10:30/12/1:30 o'clock)

Black 3
Red 5
Green 5
White 3



3SU1062-2EL10-0AA0
3SU1062-2EL20-0AA0
3SU1062-2EL40-0AA0
3SU1062-2EL60-0AA0

1 1 unit 41J 0.082
1 1 unit 41J 0.084
1 1 unit 41J 0.084
1 1 unit 41J 0.084

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, Flat, 30 mm, Metal, Matte
Actuating and Signaling Elements

Key-operated switches / indicator lights

Selection and ordering data

Make of lock	Operating principle	Switch position for key removal	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Key-operated switches

2 switch positions

RONIS, SB30 and front ring for flat mounting

Momentary contact, 45° O (10:30/12 o'clock), reset from center to left



5

3SU1060-4LC01-0AA0

1

1 unit

41J

0.108

Latching, 90° (10:30/1:30 o'clock)



O+I

I

3

3SU1060-4LF11-0AA0

1

1 unit

41J

0.108

3SU1060-4LF21-0AA0

1

1 unit

41J

0.106

3 switch positions

RONIS, SB30 and front ring for flat mounting

Latching, 2x45° (10:30/12/1:30 o'clock)



O+I+II

5

3SU1060-4LL11-0AA0

1

1 unit

41J

0.110

3SU1060-4LF11-0AA0

3SU1060-4LL11-0AA0

Selection and ordering data

Version	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		d					kg

Indicator lights

With flat lens

Red
Yellow
Green
Blue
Clear

3

3SU1061-0JD20-0AA0

1

1 unit

41J

0.072

3

3SU1061-0JD30-0AA0

1

1 unit

41J

0.072

3

3SU1061-0JD40-0AA0

1

1 unit

41J

0.073

3

3SU1061-0JD50-0AA0

1

1 unit

41J

0.072

3

3SU1061-0JD70-0AA0

1

1 unit

41J

0.070



3SU1061-0JD40-0AA0

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, Customized Designs

Special locks

Options

Special locks for key-operated switches

The plastic and metal key-operated switches of type RONIS, BKS, CES and IKON can be optionally ordered with additional locks.

In this case **"-Z"**, the order code **"Y01"** and the required lock number must be added to the Article No. of the relevant key-operated switch for standard locking.

Order code	Y01
Standard delivery time	25 working days
Ordering example	3SU1000-5BF01-0AA0-Z Y01 Z = SSG18

Ordering notes

- The order code **"Y01"** 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.
- With RONIS, the special locks SB31, 421 and 455 are possible.

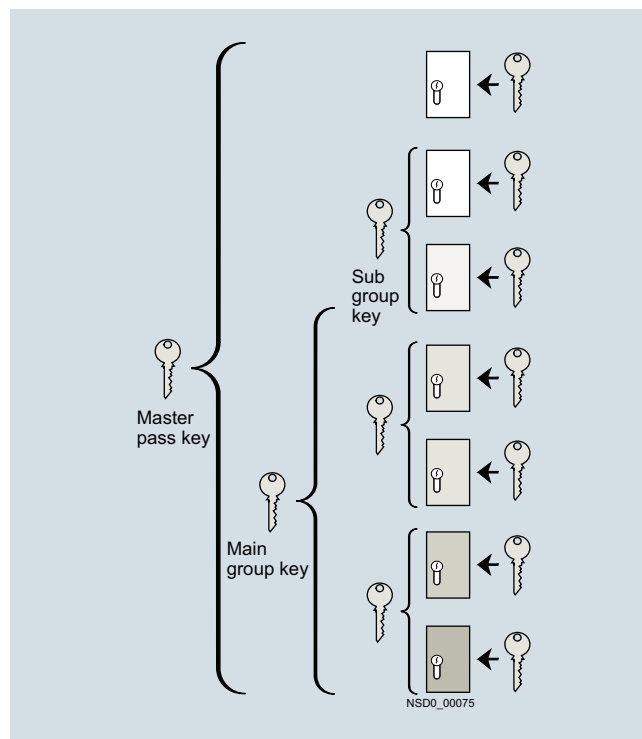
Master and master-pass key systems

The following key systems can be supplied with BKS, CES or IKON 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"**.

Delivery time on request.



Example of master-pass key system

SIRIUS ACT Pushbuttons and Indicator Lights

Actuators and Indicators, Customized Designs

Laser inscriptions

Options

Inscription of actuating and signaling elements

Actuating and signaling elements of plastic as well as metal can be optionally inscribed with a laser.



Example of laser inscription

The actuators of the pushbuttons, illuminated pushbuttons, twin pushbuttons, mushroom pushbuttons, illuminated mushroom pushbuttons, EMERGENCY STOP mushroom pushbuttons (without lock), the lenses of the indicator lights, and the acoustic signaling devices can all be inscribed.

Version

Text inscriptions have centered alignment and a font height of 4 mm as standard.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

The maximum possible number of characters per line is:

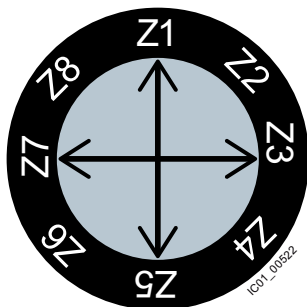
- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line.

Note:

Selected pushbuttons and twin pushbuttons can be supplied as standard with inscribed letters or symbols.

Selector switches, key-operated switches and toggle switches can be inscribed on the front ring only if they are made of plastic (only one text line and the supplement Y19).

Assignment of the positions on the actuator



Ordering notes

To order, the inscribed actuating and signaling elements can be selected via the SIRIUS ACT Configurator. An electronic order form is then generated.

For configurator, see

- www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD or
- Industry Mall: www.siemens.com/industrymall

When ordering, add **-Z** and an order code to the Article No. of the actuator or the indicator light:

- **Y10:** Text line in upper/lower case, all lines begin with upper case letters (e.g. Lift / Off)
- **Y11:** Text in upper case (e.g. LIFT)
- **Y12:** Text in lower case (e.g. lift / off / lower)
- **Y15:** Text in upper/lower case, all words begin with upper case letters (e.g. On / Off)
- **Y13:** Symbol with number according to ISO 7000 or IEC 60417
- **Y19:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, 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 symbols with number, quote the corresponding standard (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 examples 2 and 3).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Y19). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Ordering example 1

A round pushbutton with the inscription Reset is required:

3SU1030-0AB20-0AA0-Z

Y10

Z=Reset (English)

Ordering example 2

A square pushbutton inscribed with symbol No. 5389 according to IEC 60417 is required:

3SU1030-0AB20-0AA0-Z

Y13

Z=IEC5389

Ordering example 3

A selector switch with 2 switch positions and multi-line inscription on the front ring is required:

3SU1002-2BF10-0AA0-Z

Z8=0

Z2=1

SIRIUS ACT Pushbuttons and Indicator Lights

Holders

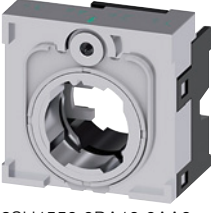
Holders without module/holders with module

Overview

Holders made of plastic can only be attached to actuators and indicators made of plastic (3SU100) or plastic with metal front ring (3SU103).

Metal holders can be attached to all versions of actuators and indicators. Metal holders are automatically grounded by their fastening screw, but a grounding stud can also be fitted.

Selection and ordering data

Version	Holder material	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		d					kg
Holders without module							
 3SU1550-0AA10-0AA0	3x without module	Metal ▶	3SU1550-0AA10-0AA0	1	1 unit	41J	0.044
 3SU1550-0BA10-0AA0	4x without module For selector switch with 4 switch positions and for coordinate switches	Metal ▶	3SU1550-0BA10-0AA0	1	1 unit	41J	0.064

Selection and ordering data

Number of			SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Contact modules	NO contacts	NC contacts	d						
				Article No.					
				kg					

Holders with module										
	3x with module, metal									
	1	1	0		3	3SU1550-1AA10-1BA0	1	1 unit	41J	0.051
		0	1		3	3SU1550-1AA10-1CA0	1	1 unit	41J	0.052
	2	2	0		3	3SU1550-1AA10-1NA0	1	1 unit	41J	0.060
		0	2		3	3SU1550-1AA10-1PA0	1	1 unit	41J	0.060

3SU1550-1AA10-1BA0

⊖ Positive opening according to IEC 60947-5-1, Annex K.

Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System,
see www.siemens.com/ic10, Chapter 11.

Certificate:



SIRIUS ACT Pushbuttons and Indicator Lights

Modules for Actuators and Indicators

Contact modules

Overview

Contact modules and LED modules

The contact modules are fitted with slow-action contacts (NO contacts or NC 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. The contact pieces of the NC contacts are positively driven.

Only LED modules with permanently integrated LEDs are available for illumination.

Contact modules and LED modules bear terminal designations acc. to EN 50013

Mounting the modules

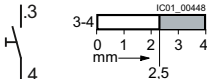
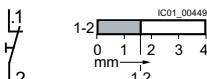
With SIRIUS ACT, the modules are mounted on the holder without any further accessories. Holders in plastic or metal versions are available for mounting three modules.

Connection methods

The modules are available with:

- Screw terminals
- Spring-type terminals or
- Solder pin connection (0.8 mm × 0.8 mm solder pins) for assembly on printed circuit boards

Selection and ordering data

Contact version	Number of		SD	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.						
	NO contact	NC contacts													
Article No.															
Contact modules for front plate mounting															
	Silver alloy	1	0		3SU1400-1AA10-3BA0	1	1 unit	41J	0.010						
		0	1		3SU1400-1AA10-3CA0	1	1 unit	41J	0.011						
		0	1 with installation monitoring ¹⁾		3SU1400-1AA10-3HA0	1	1 unit	41J	0.019						
															

¹⁾ The contact module has 1 NO internal contact + 1 NC internal contact. The NO contact is connected in series with the NC contact and brought out at terminal 1-2. When the module is snapped onto the holder, the NO contact closes. It opens when the module is detached from the holder again (the NC contact remains closed). The NC contact opens when the EMERGENCY STOP device is actuated (the NO contact remains closed). The contact is closed only when both the NC and NO contacts are closed. Unsuitable for mounting in 3SU18 enclosure.

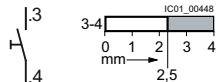
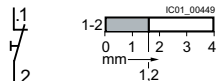
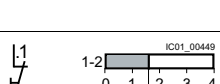
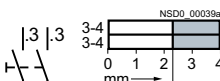
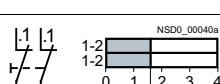
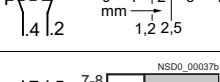
⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see www.siemens.com/ic10, Chapter 11.
Certificate:



SIRIUS ACT Pushbuttons and Indicator Lights

Modules for Actuators and Indicators

Contact modules

Contact version	Number of NO contacts	NC contacts	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU		
Contact modules for front plate mounting							
 3SU1400-1AA10-3BA0	Silver alloy	1	0		3SU1400-1AA10-3BA0	1	1 unit 41J
		0	1		3SU1400-1AA10-3CA0	1	1 unit 41J
		0	1 with installation monitoring ¹⁾		3SU1400-1AA10-3HA0	1	1 unit 41J
		2	0		3SU1400-1AA10-3DA0	1	1 unit 41J
		0	2		3SU1400-1AA10-3EA0	1	1 unit 41J
		1	1		3SU1400-1AA10-3FA0	1	1 unit 41J
 3SU1400-1AA10-3GA0	1 leading	1 lagging		3SU1400-1AA10-3GA0	1	1 unit 41J	

¹⁾ The contact module has 1 NO internal contact + 1 NC internal contact. The NO contact is connected in series with the NC contact and brought out at terminal 1-2. When the module is snapped onto the holder, the NO contact closes. It opens when the module is detached from the holder again (the NC contact remains closed). The NC contact opens when the EMERGENCY STOP device is actuated (the NO contact remains closed). The contact is closed only when both the NC and NO contacts are closed. Not suitable for installation in 3SU18 enclosure.

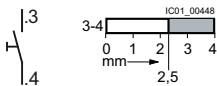
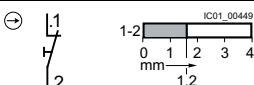
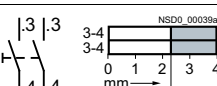
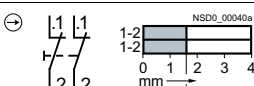
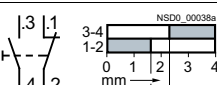
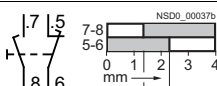
⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, see page 11/1 onwards.
Certificate:



SIRIUS ACT Pushbuttons and Indicator Lights

Modules for Actuators and Indicators

Contact modules

Contact version	Number of NO contacts	NC contacts	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
			d	Article No.	Price per PU		
Contact modules for front plate mounting							
	Gold-plated	1	0		5	3SU1400-1AA10-3LA0	1 1 unit 41J
		0	1		5	3SU1400-1AA10-3MA0	1 1 unit 41J
		2	0		5	3SU1400-1AA10-3NA0	1 1 unit 41J
		0	2		5	3SU1400-1AA10-3PA0	1 1 unit 41J
		1	1		5	3SU1400-1AA10-3QA0	1 1 unit 41J
	1 leading	1 lagging			5	3SU1400-1AA10-3RA0	1 1 unit 41J

⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, [see page 11/1 onwards](#).
Certificate:



Contact version	Number of NO contacts	NC contacts	SD	Socket terminals (THT)	PU (UNIT, SET, M)	PS*	PG
			d	Article No.	Price per PU		
Contact modules for mounting on printed-circuit boards NEW							
	Silver alloy	1	0	▶	3SU1400-3AA10-5BA0	1 1 unit 41J	
	Gold-plated	0	1	3	3SU1400-3AA10-5CA0	1 1 unit 41J	

⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System, [see page 11/1 onwards](#).
Certificate:



SIRIUS ACT Pushbuttons and Indicator Lights

Modules for Actuators and Indicators

LED modules

Selection and ordering data

	Operational voltage at AC	Operational voltage at DC	Color	SD	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	V		d	Article No.					kg
LED modules ¹⁾ for front plate mounting										
	24	24	Amber	3	3SU1401-1BB00-3AA0		1	1 unit	41J	0.012
			Red	▶	3SU1401-1BB20-3AA0		1	1 unit	41J	0.012
			Yellow	3	3SU1401-1BB30-3AA0		1	1 unit	41J	0.012
			Green	▶	3SU1401-1BB40-3AA0		1	1 unit	41J	0.012
			Blue	▶	3SU1401-1BB50-3AA0		1	1 unit	41J	0.012
			White	▶	3SU1401-1BB60-3AA0		1	1 unit	41J	0.012
	110	--	Amber	5	3SU1401-1BC00-3AA0		1	1 unit	41J	0.010
			Red	▶	3SU1401-1BC20-3AA0		1	1 unit	41J	0.008
			Yellow	5	3SU1401-1BC30-3AA0		1	1 unit	41J	0.008
			Green	▶	3SU1401-1BC40-3AA0		1	1 unit	41J	0.008
			Blue	▶	3SU1401-1BC50-3AA0		1	1 unit	41J	0.008
			White	▶	3SU1401-1BC60-3AA0		1	1 unit	41J	0.012
	230	--	Amber	5	3SU1401-1BF00-3AA0		1	1 unit	41J	0.012
			Red	▶	3SU1401-1BF20-3AA0		1	1 unit	41J	0.012
			Yellow	5	3SU1401-1BF30-3AA0		1	1 unit	41J	0.012
			Green	▶	3SU1401-1BF40-3AA0		1	1 unit	41J	0.012
			Blue	▶	3SU1401-1BF50-3AA0		1	1 unit	41J	0.012
			White	▶	3SU1401-1BF60-3AA0		1	1 unit	41J	0.012
	6 ... 24	6 ... 24	Amber	3	3SU1401-1BG00-3AA0		1	1 unit	41J	0.009
			Red	▶	3SU1401-1BG20-3AA0		1	1 unit	41J	0.012
			Yellow	5	3SU1401-1BG30-3AA0		1	1 unit	41J	0.012
			Green	▶	3SU1401-1BG40-3AA0		1	1 unit	41J	0.012
			Blue	▶	3SU1401-1BG50-3AA0		1	1 unit	41J	0.012
			White	▶	3SU1401-1BG60-3AA0		1	1 unit	41J	0.012
	24 ... 240	24 ... 240	Amber	5	3SU1401-1BH00-3AA0		1	1 unit	41J	0.008
			Red	▶	3SU1401-1BH20-3AA0		1	1 unit	41J	0.012
			Yellow	5	3SU1401-1BH30-3AA0		1	1 unit	41J	0.012
			Green	▶	3SU1401-1BH40-3AA0		1	1 unit	41J	0.012
			Blue	▶	3SU1401-1BH50-3AA0		1	1 unit	41J	0.012
			White	▶	3SU1401-1BH60-3AA0		1	1 unit	41J	0.012

¹⁾ Only for use with SIRIUS commanding and signaling devices.

Operational voltage at AC	Operational voltage at DC	SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	d	Article No.					kg
LED test modules ¹⁾ for front plate mounting								
	12 ... 240	12 ... 240	3	3SU1401-1CK10-1AA0	1	1 unit	41J	0.011

3SU1401-1CK10-1AA0

	Operational voltage at AC	Operational voltage at DC	Color	SD	Socket terminals (THT) 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	V		d	Article No.				kg
LED modules ¹⁾ for mounting on printed-circuit boards									
	--	5	Amber	5	3SU1401-3BA00-5AA0	1	1 unit	41J	0.004
			Red	5	3SU1401-3BA20-5AA0	1	1 unit	41J	0.004
			Yellow	5	3SU1401-3BA30-5AA0	1	1 unit	41J	0.004
			Green	3	3SU1401-3BA40-5AA0	1	1 unit	41J	0.003
			Blue	5	3SU1401-3BA50-5AA0	1	1 unit	41J	0.004
			White	3	3SU1401-3BA60-5AA0	1	1 unit	41J	0.004
3SU1401-3BA20-5AA0									

¹⁾ Only for use with SIRIUS commanding and signaling devices.

Overview

Design



Enclosures with standard fittings

Enclosed SIRIUS ACT pushbuttons and indicator lights are used as hand-operated control devices for separately allocated control units and cabinets. The devices are suitable for use in any climate and all have IP66, IP67, IP69 (IP69K) degree of protection, including those with cable glands.

Standards

IEC 60947-5-1 or EN 60947-5-1

Versions

The enclosed pushbuttons and indicator lights are available with conventional controls as well as for connection to AS-Interface. The following versions are available:

- Empty enclosures with 1 to 6 command points (the installed components must be ordered separately; modules for floor mounting or 1-pole contact and LED modules can be used)
- Enclosures with standard fittings with 1 to 3 command points, e.g. EMERGENCY STOP enclosure with EMERGENCY STOP mushroom pushbutton
- Enclosures with customized fittings with 1 to 6 command points
- Enclosure for 4-position selector switches, coordinate switches, ID key-operated switches and sensor switches

Color of the enclosures

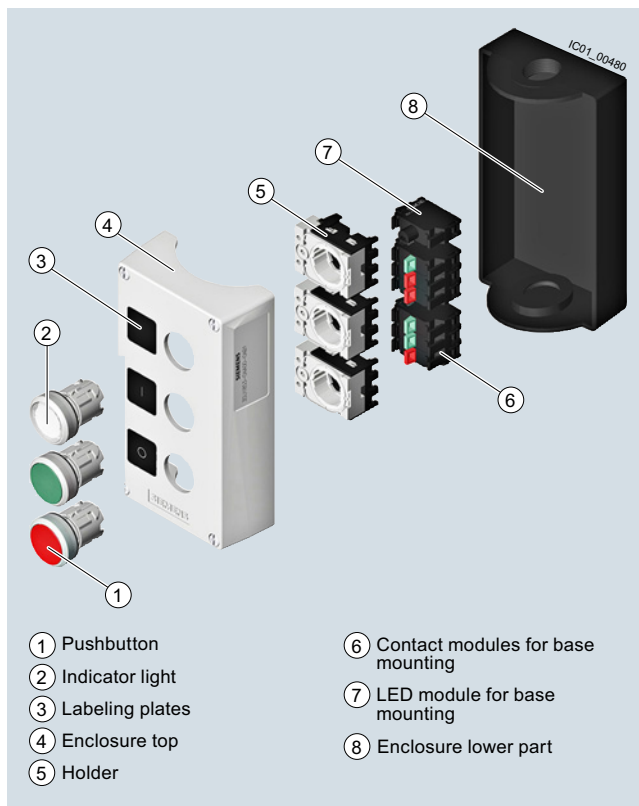
Top:

- Gray, RAL 7035
- Yellow, RAL 1004 for EMERGENCY STOP

Base:

- Black, RAL 9005

Enclosures with standard fittings



Pushbuttons and indicator lights in the enclosure

Customized enclosures

The fittings and labeling of the command point can be chosen using the configurator on the Internet.

Application

The enclosures are climate-proof (KTW 24) according to EN ISO 6270-2 and suitable for stationary use, and for use in marine applications.

SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Empty enclosures

Selection and ordering data

Color of enclosure top	Number of command points	Version of enclosure	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Enclosures for surface mounting

Metal

Yellow	1	Center command point	▶	3SU1851-0AA00-0AA2	1	1 unit	41J	0.488
		With protective collar	3	3SU1851-0AA00-0AC2	1	1 unit	41J	0.569
		With recess for labeling plate	▶	3SU1851-0AA00-0AB2	1	1 unit	41J	0.477
Gray	1	With recess for labeling plate	▶	3SU1851-0AA00-0AB1	1	1 unit	41J	0.479
		With protective collar	5	3SU1851-0AA00-0AC1	1	1 unit	41J	0.564
	2	With recess for labeling plate	▶	3SU1852-0AA00-0AB1	1	1 unit	41J	0.560
	3	With recess for labeling plate	▶	3SU1853-0AA00-0AB1	1	1 unit	41J	0.683
	4	With recess for labeling plate	▶	3SU1854-0AA00-0AB1	1	1 unit	41J	0.800
	6	With recess for labeling plate	▶	3SU1856-0AA00-0AB1	1	1 unit	41J	1.085



3SU1851-0AA00-0AC2



3SU1853-0AA00-0AB1



3SU1854-0AA00-0AB1

Enclosure for 4-position selector switches, coordinate switches, ID key-operated switches and sensor switches

Metal, front plate mounting

Gray	1	Center command point	5	3SU1851-1AA00-1AA1	1	1 unit	41J	0.487
------	---	----------------------	---	---------------------------	---	--------	-----	-------

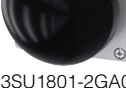


SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Pushbuttons and indicator lights in the enclosure

Selection and ordering data

	Color of enclosure top	Number of command points	Enclosure version Command point fittings	Color of actuating element Marking	Number of NC contact	Number of NO contacts	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
								d					kg
Enclosures with standard fittings													
Metal													
	Yellow	1	Center command point A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching function according to ISO 13850, rotate to unlatch	Red	1	0	3	3SU1851-0NA00-2AA2	1	1 unit	41J	0.613	
					2	0	5	3SU1851-0NB00-2AA2	1	1 unit	41J	0.625	
3SU1851-0NA00-2AA2													
			With protective collar A = EMERGENCY STOP mushroom pushbuttons, 40 mm, with positive latching function according to ISO 13850, rotate to unlatch	Red	1	0	▶	3SU1851-0NA00-2AC2	1	1 unit	41J	0.714	
					2	0	3	3SU1851-0NB00-2AC2	1	1 unit	41J	0.720	
					2	1	5	3SU1851-0ND00-2AC2	1	1 unit	41J	0.731	
3SU1851-0NA00-2AC2													
		1	Center command point A = Palm pushbutton	Red	1	1	3	3SU18512NG002AA2	1	1 unit	41J	0.655	
3SU1801-2NG00-2AA2													
	Gray	1	With recess for labeling plate A = Pushbutton	Green	A = I	0	1	5	3SU1851-0AB00-2AB1	1	1 unit	41J	0.570
				Red	A = O	1	0	5	3SU1851-0AC00-2AB1	1	1 unit	41J	0.600
				White	A = I	0	1	5	3SU1851-0AD00-2AB1	1	1 unit	41J	0.590
				Black	A = O	1	0	5	3SU1851-0AE00-2AB1	1	1 unit	41J	0.562
3SU1851-0AC00-2AB1													
		2	With recess for labeling plate A = Pushbutton / B = Pushbutton	A = Red / B = Green	1	1	5	3SU1852-0AB00-2AB1	1	1 unit	41J	0.725	
				A = O / B = I									
				A = Black / B = White	1	1	5	3SU1852-0AC00-2AB1	1	1 unit	41J	0.729	
				A = O / B = I									
3SU1852-0AB00-2AB1													
		3	With recess for labeling plate A = Pushbutton / B = Pushbutton / C = Indicator light	A = Red / B = Green / C = Clear	1	1	5	3SU1853-0AB00-2AB1	1	1 unit	41J	0.931	
				A = O / B = I / C = "Without inscription"									
			With recess for labeling plate A = Pushbutton / B = Pushbutton / C = Pushbutton	A = Red / B = Black / C = Black	1	2	5	3SU1853-0AD00-2AB1	1	1 unit	41J	0.990	
				A = O / B = I / C = II									
3SU1853-0AB00-2AB1													
		1	Center command point A = Palm pushbutton	Green	0	1	3	3SU1851-2GA00-2AA1	1	1 unit	41J	0.642	
3SU1801-2GA00-2AA1													

SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Pushbuttons and indicator lights in the enclosure

No. of command points	Product function / EMERGENCY STOP function	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
d							
Customized enclosures¹⁾							
Metal							
1	No	10	3SU1851-0AZ00 K0Y	1	1 unit	41J	0.589
	Yes	10	3SU1851-0NZ00 K0Y	1	1 unit	41J	0.646
2	No	10	3SU1852-0AZ00 K0Y	1	1 unit	41J	0.840
	Yes	10	3SU1852-0NZ00 K0Y	1	1 unit	41J	0.890
3	No	10	3SU1853-0AZ00K0Y	1	1 unit	41J	1.132
	Yes	10	3SU1853-0NZ00 K0Y	1	1 unit	41J	1.182
4	No	10	3SU1854-0AZ00 K0Y	1	1 unit	41J	1.342
	Yes	10	3SU1854-0NZ00 K0Y	1	1 unit	41J	1.392
6	No	10	3SU1856-0AZ00 K0Y	1	1 unit	41J	1.742
	Yes	10	3SU1856-0NZ00 K0Y	1	1 unit	41J	1.792

¹⁾ The fittings and labeling of the command points can be chosen using the Configurator on the Internet.



SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Pushbuttons and indicator lights in the enclosure for AS-Interface

Overview

With AS-Interface enclosures, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. Using suitable components you can make your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.



Enclosures for AS-Interface

Enclosures

Color of enclosure top:

- Gray, RAL 7035
- Yellow, RAL 1004 for EMERGENCY-STOP

Color of enclosure base:

- Black, RAL 9005

Equipping with AS-Interface slaves

The following slaves are available for connecting the command points:

- Slave in A/B technology with 4 digital inputs and 3 digital outputs (4 DI/3 DQ)
- Slave with 4 digital inputs and 4 digital outputs (4 DI/4 DQ)
- F slave with 2 safe inputs for EMERGENCY STOP mushroom pushbutton (2 F-DI), also with integrated red LED for the illuminated EMERGENCY STOP mushroom pushbutton.

The following table shows the maximum number of slaves possible:

Number of command points	Number of slaves for enclosures without EMERGENCY STOP	Number of slaves for enclosures with EMERGENCY STOP
1	--	1 x F slave 2 F-DI
2	1 x slave 4 DI/4 DQ or 4 DI/3 DQ	--
3	1 x slave 4 DI/4 DQ or 4 DI/3 DQ	1 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave
4	2 x slave 4 DI/4 DQ or 4 DI/3 DQ	2 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave
6	2 x slave 4 DI/4 DQ or 4 DI/3 DQ	2 x slave 4 DI/4 DQ or 4 DI/3 DQ + 1 x F slave

Connection

One set of links is required in each case to connect a slave to contact modules, LED modules, and the connection element.

The connection elements are mounted in the front-end cable glands and are used to connect the AS-Interface or bring unused inputs or outputs out of the enclosure.

For connection to AS-Interface, the following options are available:

- 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.

Enclosures with standard fittings

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosure with plastic actuators and indicators, metal enclosure with metal actuators and indicators

The enclosures without EMERGENCY STOP each have one 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 modules, which are wired to the safe F slave.

The contact modules and LED modules (with spring-type terminals) of the command devices and the AS-Interface slaves are mounted in the base of the enclosure and connected using cables. The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is run along the outside of the enclosure). With metal enclosures, the AS-Interface cable is run inside the enclosure.

The enclosures with EMERGENCY STOP mushroom pushbuttons are also available with an M12 connector.

Customized enclosures (selection by configurator)

To order customized 3SU18 AS-Interface enclosures with pushbuttons and indicator lights, the configurator must be used to select the fittings. An electronic order form will be generated for the options.

For the configurator, see www.siemens.com/sirius-act/configurator.

SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Pushbuttons and indicator lights in the enclosure for AS-Interface/modules for enclosures

Selection and ordering data

No. of command points	Product function / EMERGENCY STOP function	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		d					kg

Customized enclosures for AS-Interface¹⁾

Metal

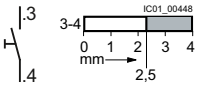
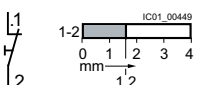
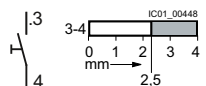
1	No	10	3SU1851-0NZ10 K0Y	1	1 unit	41J	0.667
2	No	10	3SU1852-0AZ10 K0Y	1	1 unit	41J	0.831
	Yes	10	3SU1852-0NZ10 K0Y	1	1 unit	41J	0.831
3	No	10	3SU1853-0AZ10K0Y	1	1 unit	41J	1.182
	Yes	10	3SU1853-0NZ10 K0Y	1	1 unit	41J	1.182
4	No	10	3SU1854-0AZ10 K0Y	1	1 unit	41J	1.342
	Yes	10	3SU1854-0NZ10 K0Y	1	1 unit	41J	1.342
6	No	10	3SU1856-0AZ10 K0Y	1	1 unit	41J	1.792
	Yes	10	3SU1856-0NZ10 K0Y	1	1 unit	41J	1.792

¹⁾ The fittings and labeling of the command points can be chosen using the Configurator on the Internet.

Selection and ordering data

Contact version	Number of NO contacts	Number of NC contacts	SD	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d	Article No.				kg

Contact modules for base mounting

 3SU1400-2AA10-3BA0	Silver alloy	1	0	 IC01_00448	3SU1400-2AA10-3BA0	1	1 unit	41J	0.010
		0	1	 IC01_00449	3SU1400-2AA10-3CA0	1	1 unit	41J	0.010
 3SU1400-2AA10-3LA0	Gold-plated	1	0	 IC01_00448	3SU1400-2AA10-3LA0	1	1 unit	41J	0.010

⊕ Positive opening according to IEC 60947-5-1, Annex K.
Can be used with 3SK11 safety relays or the 3RK3 Modular Safety System,
[see www.siemens.com/ic10](http://www.siemens.com/ic10), Chapter 11.
Certificate:



SIRIUS ACT Pushbuttons and Indicator Lights

Enclosures

Modules for enclosures

	Operational voltage at AC	Operational voltage at DC	Color	SD	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	V		d	Article No.				kg
LED modules¹⁾ for base mounting • Wide voltage range									
	6 ... 24	6 ... 24	Amber	5	3SU1401-2BG00-3AA0	1	1 unit	41J	0.008
			Red	▶	3SU1401-2BG20-3AA0	1	1 unit	41J	0.008
			Yellow	5	3SU1401-2BG30-3AA0	1	1 unit	41J	0.010
			Green	▶	3SU1401-2BG40-3AA0	1	1 unit	41J	0.008
			Blue	▶	3SU1401-2BG50-3AA0	1	1 unit	41J	0.008
			White	▶	3SU1401-2BG60-3AA0	1	1 unit	41J	0.012
	24 ... 240	24 ... 240	Amber	5	3SU1401-2BH00-3AA0	1	1 unit	41J	0.011
			Red	▶	3SU1401-2BH20-3AA0	1	1 unit	41J	0.008
			Yellow	5	3SU1401-2BH30-3AA0	1	1 unit	41J	0.008
			Green	▶	3SU1401-2BH40-3AA0	1	1 unit	41J	0.008
			Blue	▶	3SU1401-2BH50-3AA0	1	1 unit	41J	0.008
			White	▶	3SU1401-2BH60-3AA0	1	1 unit	41J	0.012

3SU1401-2BG20-3AA0

¹⁾ Only for use with SIRIUS commanding and signaling devices.

	Operational voltage at AC	Operational voltage at DC	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	V	V	d	Article No.				kg
LED test modules¹⁾ for base mounting								
	12 ... 240	12 ... 240	▶	3SU1400-2CK10-1AA0	1	1 unit	41J	0.010

3SU1401-1CK10-1AA0

¹⁾ Only for use with SIRIUS commanding and signaling devices.

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Insert labels

Overview

Labels can be inserted for identification purposes in pushbuttons (clear) and in illuminated pushbuttons with a flat button. These insert labels are made of transparent plastic with black inscription; they can be fitted in any 90° angle.

Inscription

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.

The insert labels without inscription are suitable for user marking with permanent pen.

For customized inscriptions, see "Options", page 2/319.

Selection and ordering data

Color	Marking	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		d					kg

Insert labels



3SU1900-0AB71-0AA0

For self-inscription

Clear/Black
(label/lettering)

Without



3SU1900-0AB71-0AA0

100

10 units

41J

0.042

With customized inscription

Inscription or symbol,
see "Options", page 2/319.

10

3SU1900-0AB71-0AZ0

1

1 unit

41J

0.042

Options**Customized inscriptions**

The labels can be inscribed with text and symbols not listed in the ordering data.

Text inscriptions have centered alignment and a font height of 4 mm as standard (for a single line of text) or 3 mm (for two or three lines of text).

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:

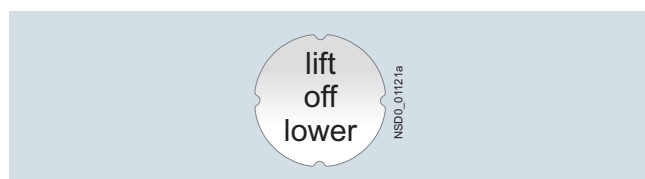
- 10 characters for one line of text
- 8 characters for two lines of text
- 6 characters for three lines of text, but 10 characters in the middle line.

Examples for customized inscription

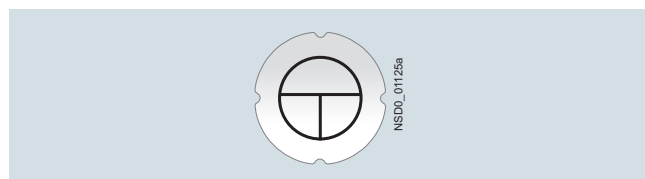
Two-line inscription in upper/lower case lettering (Q0Y)



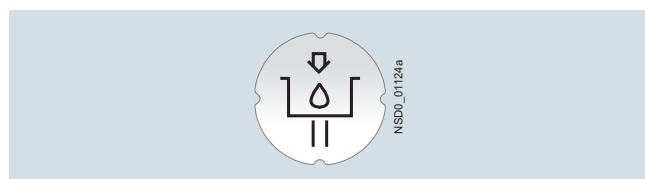
Single-line inscription in upper case lettering (Q1Y)



Three-line inscription in lower case letters (Q2Y)



Symbol number 5011 according to IEC 60417 (Q3Y)



Any symbol according to order form supplement (Q9Y)

Ordering notes

Append the following order codes to the Article No.:

- **Q0Y:** Text line(s) in upper/lower case, all lines begin with upper case (e.g. Lift / Off)
- **Q1Y:** Text line(s) in upper case (e.g. LIFT)
- **Q2Y:** Text line(s) in lower case (e.g. lift / off / lower)
- **Q5Y:** Text line(s) in upper/lower case, all words begin with upper case letters (e.g. On Off)
- **Q3Y:** Symbol with number according to ISO 7000 or IEC 60417
- **Q9Y:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, 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 (hyphenation), [see ordering example 1](#).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417, [see ordering examples 2 and 3](#).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:

- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900-0AB71-0AZ0

Q1Y

Z1=LIFT

Z2=LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900-0AB71-0AZ0

Q3Y

Z=IEC5011

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900-0AB71-0AZ0

Q3Y

Z=ISO1118

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Label holders for labeling plates

Selection and ordering data

	Label holder shape	Color holder shape	Fastening method method	Labeling plate size Height	Labeling plate size Width	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				mm	mm	d					kg
Label holders for labeling plates											
	With rounded bottom	Black	Self-adhesive	12.5	27	▶	3SU1900-0AG10-0AA0	100	10 units	41J	0.200
				17.5	27	▶	3SU1900-0AH10-0AA0	100	10 units	41J	0.200
				27	27	▶	3SU1900-0AJ10-0AA0	100	10 units	41J	0.300
			Snap-on	12.5	27	▶	3SU1900-0AR10-0AA0	100	10 units	41J	0.200
				17.5	27	▶	3SU1900-0AS10-0AA0	100	10 units	41J	0.200
				27	27	▶	3SU1900-0AT10-0AA0	100	10 units	41J	0.300
3SU1900-0AG10-0AA0											
	With square bottom	Black	Self-adhesive	12.5	27	3	3SU1900-0AN10-0AA0	100	10 units	41J	0.200
				17.5	27	▶	3SU1900-0AP10-0AA0	100	10 units	41J	0.200
				27	27	5	3SU1900-0AQ10-0AA0	100	10 units	41J	0.300
				3SU1900-0AN10-0AA0							
Label holders for labeling plates, coordinate switches											
	With square bottom	Black	Self-adhesive	27	27	▶	3SU1900-0AL10-0AA0	1	1 unit	41J	0.006
				3SU1900-0AL10-0AA0							
	Cross	Black	Self-adhesive	27	27	▶	3SU1900-0AM10-0AA0	1	1 unit	41J	0.012
				3SU1900-0AM10-0AA0							
3SU1900-0AM10-0AA0											
Label holders for labeling plates, twin pushbuttons											
	Rectangular	Black	Self-adhesive	12.5	27	▶	3SU1900-0AK10-0AA0	100	10 units	41J	0.300
				3SU1900-0AK10-0AA0							
3SU1900-0AK10-0AA0											
Single frames											
	Square	--	--	29.8	29.8	▶	3SU1900-0AX10-0AA0	1	10 units	41J	0.001
				3SU1900-0AX10-0AA0							
3SU1900-0AX10-0AA0											

Overview

Label holders of black plastic, and labeling plates (black with white print or silver-colored with black print) for sticking or snapping in place, are available for labeling. They are not suitable for EMERGENCY STOP buttons. Note mounting dimensions!

The label holders cannot be used in conjunction with protective caps, protective collars and locking devices.

Inscription

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.

For customized inscriptions, see "Options", page 2/323.

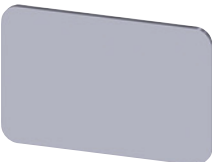
Labeling plates for sticking/snapping in place

The labels are available in three sizes:

- 12.5 mm × 27 mm
- 17.5 mm × 27 mm
- 27 mm × 27 mm

For mounting the labeling plates, you can choose between label holders for stick-on or snap-on mounting.

Selection and ordering data

Color	Marking	Symbol No.	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg	
Labeling plate 12.5 mm x 27 mm									
	For self-inscription								
	Black/White (label/lettering)	None	--	▶	3SU1900-0AC16-0AA0	100	10 units	41J	0.056
	With customized inscription								
	For inscriptions or symbols, see "Options", page 2/323 .		10	▶	3SU1900-0AC16-0AZ0	1	1 unit	41J	0.056
3SU1900-0AC16-0AA0									
	For self-inscription								
	Silver/Black (label/lettering)	Without	--	▶	3SU1900-0AC81-0AA0	100	10 units	41J	0.052
	With customized inscription								
	For inscriptions or symbols, see "Options", page 2/323 onwards.		10	▶	3SU1900-0AC81-0AZ0	1	1 unit	41J	0.055
3SU1900-0AC81-0AA0									
Labeling plates 17.5 mm x 27 mm									
	For self-inscription								
	Black/White (label/lettering)	None	--	▶	3SU1900-0AD16-0AA0	100	10 units	41J	0.066
	With customized inscription								
	For inscriptions or symbols, see "Options", page 2/323 onwards.		10	▶	3SU1900-0AD16-0AZ0	1	1 unit	41J	0.072
3SU1900-0AD16-0AA0									
	For self-inscription								
	Silver/Black (label/lettering)	None	--	▶	3SU1900-0AD81-0AA0	100	10 units	41J	0.068
	With customized inscription								
	For inscriptions or symbols, see "Options", page 2/323 onwards.								
3SU1900-0AD81-0AA0									

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Labeling plates

Color	Marking	Symbol No.	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Labeling plates 27 mm x 27 mm

For self-inscription

Black/White
(label/lettering)

None

--

**3SU1900-0AE16-0AA0**

100 10 units 41J 0.091

Silver/Black
(label/lettering)

--

**3SU1900-0AE81-0AA0**

100 10 units 41J 0.092

With customized inscription

For inscriptions or symbols, see "Options",
page 2/323 onwards.Black/White
(label/lettering)

10

3SU1900-0AE16-0AZ0

1 1 units 41J 0.091

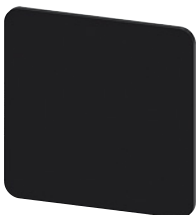
Silver/Black
(label/lettering)

10

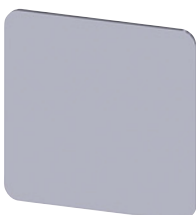
3SU1900-0AE81-0AZ0

1 1 units 41J 0.092

2



3SU1900-0AE16-0AA0



3SU1900-0AE81-0AA0

Options**Customized inscriptions**

The labels can be inscribed with text and symbols not listed in the ordering data.

Text inscriptions have centered alignment and the font heights specified below as standard:

- Label size 12.5 mm × 27 mm, max. 3 lines:
Letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 17.5 mm × 27 mm, max. 3 lines:
Letter height 4 mm (1- to 2-line) or 3 mm (3-line)
- Label size 27 mm × 27 mm, max. 5 lines:
Letter height 4 mm (1- to 5-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 (Q0Y)



Single-line inscription in upper case lettering (Q1Y)



Three-line inscription in lower case letters (Q2Y)



Symbol number 5011 according to IEC 60417 (Q3Y)



Any symbol according to order form supplement (Q9Y)

Ordering notes

Append the following order codes to the Article No.:

- **Q0Y:** Text line(s) in upper/lower case, all lines begin with upper case (e.g. Lift / Off)
- **Q1Y:** Text line(s) in upper case (e.g. LIFT)
- **Q2Y:** Text line(s) in lower case (e.g. lift / off / lower)
- **Q5Y:** Text line(s) in upper/lower case, all words begin with upper case letters (e.g. On Off)
- **Q3Y:** Symbol with number according to ISO 7000 or IEC 60417
- **Q9Y:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, 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 (hyphenation), see [ordering example 1](#).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417, (see [ordering examples 2 and 3](#)).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:

- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900-0AC16-0AZ0

Q1Y
Z1=LIFT
Z2=LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900-0AC16-0AZ0

Q3Y
Z=IEC5011

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900-0AC16-0AZ0

Q3Y
Z=ISO1118

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Labeling plates for enclosures

Overview

The labeling plates in size 22 mm x 22 mm can be attached to enclosures with cutouts for labels. There are versions in black with white print or silver-colored with black print.

Inscription

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.

For customized inscriptions, see "Options", page 2/325.

Selection and ordering data

Color	Marking	Symbol No.	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg

Labeling plates 22 mm x 22 mm



3SU1900-0AF16-0AA0

For self-inscription

Black/White None
(label/lettering)

--



3SU1900-0AF16-0AA0

100 10 units 41J 0.068

With customized inscription

For inscriptions or symbols, see "Options",
page 2/325 onwards.

10

3SU1900-0AF16-0AZ0

1 1 units 41J 0.068



3SU1900-0AF81-0AA0

For self-inscription

Silver/Black None
(label/lettering)

--



3SU1900-0AF81-0AA0

100 10 units 41J 0.068

With customized inscription

For inscriptions or symbols, see "Options",
page 2/325 onwards.

10

3SU1900-0AF81-0AZ0

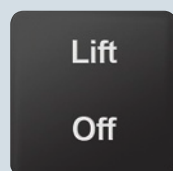
1 1 units 41J 0.068

Options**Customized inscriptions**

The labels can be inscribed with texts and symbols not listed in the ordering data.

Text inscriptions have centered alignment and font height 4 mm (1 to 3 lines):

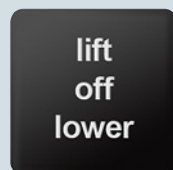
Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription

Two-line inscription in upper/lower case lettering (Q0Y)



Single-line inscription in upper case lettering (Q1Y)



3SB39 backing plate for enclosures, customized inscription (Q2Y)



Symbol number 5011 according to IEC 60417 (Q3Y)



Any symbol according to order form supplement (Q9Y)

Ordering notes

Append the following order codes to the Article No.:

- **Q0Y:** Text line(s) in upper/lower case, all lines begin with upper case (e.g. Lift / Off)
- **Q1Y:** Text line(s) in upper case (e.g. LIFT)
- **Q2Y:** Text line(s) in lower case (e.g. lift / off / lower)
- **Q5Y:** Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "On Off")
- **Q3Y:** Symbol with number according to ISO 7000 or IEC 60417
- **Q9Y:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, 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 examples 2 and 3](#)).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:

- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.siemens.com/industrymall

Ordering example 1

A label with 2 lines of text is required:

3SU1900-0AF16-0AZ0

Q1Y

Z1=LIFT

Z2=LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SU1900-0AF16-0AZ0

Q3Y

Z=IEC5011

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SU1900-0AF16-0AZ0

Q3Y

Z=ISO1118

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Labels for laser printers

Overview

Label inscriptions

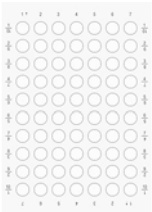
Using the *Label Designer* software, which can be downloaded from the Internet, and the labeling plates for laser inscription you can create your own customized labels with a standard laser printer. The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holders. Round labels are provided for inserting in illuminated pushbuttons and switches.

The labels are suitable for inscription with one to three lines of text or symbols.

For applications with more exacting requirements we recommend factory-printed labeling plates and insert labels (laser-printed or engraved depending on the type).

For *Label Designer* software, see www.siemens.com/sirius-label-designer.

Selection and ordering data

Type of mounting	Height	Width	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm	mm	d					kg
Labels for printing - insert labels								
	Insert	--	--	3	3SU1900-0BH60-0AA0	100	490 units	41J 0.029
3SU1900-0BH60-0AA0								
Labels for printing - labeling plates								
	Self-adhesive	12.5	27.5	▶	3SU1900-0BJ61-0AA0	100	480 units	41J 0.033
		17.5	27	▶	3SU1900-0BK61-0AA0	100	720 units	41J 0.034
		27	27	▶	3SU1900-0BL61-0AA0	100	480 units	41J 0.050
		22	22	▶	3SU1900-0BM61-0AA0	100	700 units	41J 0.034
3SU1900-0BJ61-0AA0								

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Other labels

Selection and ordering data

	Color	Fastening method	Outer diameter	Marking	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
			mm		d					kg	
EMERGENCY STOP backing plates											
	Yellow/Black (label/lettering)	None	45	Without	▶	3SU1900-0BA31-0AA0	1	10 units	41J	0.002	
			75	Without	▶	3SU1900-0BB31-0AA0	1	10 units	41J	0.007	
				EMERGENCY OFF	3	3SU1900-0BB31-0AS0	1	10 units	41J	0.008	
				EMERGENCY-STOP	3	3SU1900-0BB31-0AT0	1	10 units	41J	0.007	
With customized inscription											
For inscriptions or symbols, see "Options" on page 2/328											
3SU1900-0BB31-0AT0			45		10	3SU1900-0BA31-0AZ0	1	10 units	41J	0.004	
			75		10	3SU1900-0BB31-0AZ0	1	10 units	41J	0.011	
EMERGENCY STOP backing plates											
	Yellow/Black (label/lettering)	Self-adhesive	75	Without	▶	3SU1900-0BC31-0AA0	1	10 units	41J	0.002	
				EMERGENCY OFF	3	3SU1900-0BC31-0AS0	1	10 units	41J	0.001	
				EMERGENCY-STOP	▶	3SU1900-0BC31-0AT0	1	10 units	41J	0.002	
				EMERGENCY STOP	▶	3SU1900-0BC31-0DA0	1	10 units	41J	0.001	
				Arrêt d'urgence	3	3SU1900-0BC31-0GQ0	1	10 units	41J	0.001	
				EMERGENZA	3	3SU1900-0BC31-0JA0	1	10 units	41J	0.002	
				NODSTOP	5	3SU1900-0BC31-0LA0	1	10 units	41J	0.002	
				EMERGENCY STOP in Chinese	5	3SU1900-0BC31-0MA0	1	10 units	41J	0.002	
3SU1900-0BC31-0AT0				NOT-HALT, EMERGENCY STOP, EMERGENZA, EMERGENCIA (de, en, it, sp)	▶	3SU1900-0BC31-0NB0	1	10 units	41J	0.002	
			60	NOT-HALT, EMERGENCY STOP, Arrêt d'urgence, parada de emergencia (de, en, fr, it)	5	3SU1900-0BN31-0NC0	1	10 units	41J	0.005	
With customized inscription											
For inscriptions or symbols, see "Options" on page 2/328											
			75		10	3SU1900-0BC31-0AZ0	1	1 unit	41J	0.004	
Labeling plates for potentiometers											
	Black/White (label/lettering)	None	40	--	▶	3SU1900-0BG16-0AA0	1	10 units	41J	0.002	
				SYMBOL: 0 ... 9	▶	3SU1900-0BG16-0RT0	1	10 units	41J	0.002	
				SYMBOL: 0 ... 10	3	3SU1900-0BG16-0SA0	1	10 units	41J	0.001	
				SYMBOL: Startup	▶	3SU1900-0BG16-0RU0	1	10 units	41J	0.001	
3SU1900-0BG16-0RU0											
	Color	Label fastening method	Height	Width	Marking	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			mm	mm		d					kg
Labeling plates for enclosures with EMERGENCY STOP											
	Yellow/Black (label/lettering)	Self-adhesive	38	150	Without	▶	3SU1900-0BE31-0AA0	1	10 units	41J	0.002
					EMERGENCY OFF	3	3SU1900-0BE31-0AS0	1	10 units	41J	0.001
3SU1900-0BE31-0AS0											
Labeling plates for enclosures with EMERGENCY STOP with recess											
	Yellow/Black (label/lettering)	Self-adhesive	38	150	None	3	3SU1900-0BF31-0AA0	1	10 units	41J	0.001
3SU1900-0BF31-0AA0											
Unit labeling plates											
	White/Black (label/lettering)	Insert	9.5	10.5	None	5	3SU1900-0AY61-0AA0	100	10 units	41J	0.032
3SU1900-0BY61-0AA0											

* You can order this quantity or a multiple thereof.

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Labels

Other labels

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

The EMERGENCY STOP backing plates can be divided into as many as 4 radial segments. Each segment can be custom-labeled.

Example: 4 radial segments for customized inscription



Ordering notes

Append the following order codes to the Article No.:

- **Q0Y:** Text line(s) in upper/lower case, all lines begin with upper case letters (e.g. Text)
- **Q1Y:** Text line(s) in upper case (e.g. TEXT)
- **Q2Y:** Text line(s) in lower case (e.g. text)
- **Q5Y:** Text line(s) in upper/lower case, all words begin with upper case letters (e.g. Text / Text)
- **Q9Y:** Inscription of choice, text or symbol, can only be ordered via SIRIUS ACT Configurator can be ordered with a Configuration Identification Number (CIN)

When ordering, specify the required inscription in plain text without spaces, 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 customer-specific labeling with as many as 4 radial segments, the text must be assigned to the respective radial segment (Z1-Z4), e.g. Z1=Text 1, Z2=Text 2.

For long words you can also specify the end-of-line division (see ordering examples 1 and 2)

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a CIN (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:

- Configurator: www.siemens.com/sirius-act/configurator
- Electronic Catalog CA 01 on DVD
- Industry Mall: www.siemens.com/industrymall

Ordering example 1

A label with two radial segments is required:

3SU1900-0BB31-0AZ0

Q1Y

Z1=Text 1

Z2=Text 2

Ordering example 2

A label with four radial segments is required:

3SU1900-0BB31-0AZ0

Q1Y

Z1=Text 1

Z2=Text 2

Z3=Text 3

Z4=Text 4

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Protection/access protection

Overview

- Protection and access protection are for actuators and indicators with diameter 22 mm.
- The protective collars cannot be used in conjunction with label holders or single frames.

Selection and ordering data

Product version	Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Protective caps								
	Plastic	Black	3	3SU1900-0DA10-0AA0	1	1 unit	41J	0.006
		Clear	3	3SU1900-0DA70-0AA0	1	1 unit	41J	0.008
3SU1900-0DA10-0AA0								
	Plastic	Black	3	3SU1900-0EL10-0AA0	1	1 unit	41J	0.008
		Clear	3	3SU1900-0EL70-0AA0	1	1 unit	41J	0.008
3SU1900-0EL70-0AA0								
	Plastic	Clear	▶	3SU1900-0DB70-0AA0	1	1 unit	41J	0.006
		Clear	▶	3SU1900-0ED70-0AA0	1	1 unit	41J	0.007
3SU1900-0DB70-0AA0								
	Plastic	Clear	▶	3SU1900-0DC70-0AA0	1	1 unit	41J	0.007
		Clear	▶	3SU1900-0EE70-0AA0	1	1 unit	41J	0.006
3SU1900-0DC70-0AA0								
	Plastic	Clear	3	3SU1900-0DD70-0AA0	1	1 unit	41J	0.009
		Clear	▶	3SU1900-0EF70-0AA0	1	1 unit	41J	0.007
3SU1900-0DD70-0AA0								
	Plastic	Clear	5	3SU1900-0DE70-0AA0	1	1 unit	41J	0.012
		Clear	▶	3SU1900-0EG70-0AA0	1	1 unit	41J	0.008
3SU1900-0DE70-0AA0								

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Protection/access protection

	Product version	Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				d					kg
Protective caps									
 3SU1900-0DF70-0AA0	Silicone protective caps for EMERGENCY STOP, 40 mm	Plastic	Clear	5	3SU1900-0DF70-0AA0	1	1 unit	41J	0.019
	Silicone protective caps for twin pushbuttons, flat	Plastic	Clear	▶	3SU1900-0DG70-0AA0	1	1 unit	41J	0.013
	Silicone protective caps for twin pushbuttons, raised	Plastic	Clear	▶	3SU1900-0DH70-0AA0	1	1 unit	41J	0.016
	Silicone-free protective caps for twin pushbuttons, raised	Plastic	Clear	▶	3SU1900-0EK70-0AA0	1	1 unit	41J	0.013
	Dust caps for key-operated switches	Plastic	Clear	▶	3SU1900-0EB10-0AA0	1	1 unit	41J	0.006
 3SU1900-0EM70-0AA0	Dust caps for ID key-operated switches	Plastic	Clear	NEW 5	3SU1900-0EM70-0AA0	1	1 unit	41J	0.004
Protective collars									
 3SU1900-0DJ10-0AA0	Sun collars for illuminated pushbuttons	Plastic	Black	5	3SU1900-0DJ10-0AA0	1	1 unit	41J	0.004
	360° protective collars for pushbuttons and selectors, short	Plastic	Black	3	3SU1900-0DW10-0AA0	1	1 unit	41J	0.008
 3SU1900-0DW10-0AA0									

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

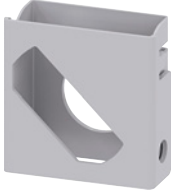
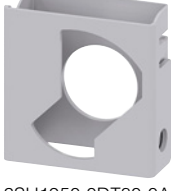
Protection/access protection

Product version	Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Protective collars								
	Metal	Silver	5	3SU1950-0DK80-0AA0	1	1 unit	41J	0.023
3SU1950-0DK80-0AA0								
	Metal	Silver	5	3SU1950-0DL80-0AA0	1	1 unit	41J	0.042
3SU1950-0DL80-0AA0								
	Plastic	Yellow Silver	▶ ▶	3SU1900-0DY30-0AA0 3SU1900-0DY80-0AA0	1	1 unit	41J	0.034
3SU1900-0DY30-0AA0					1	1 unit	41J	0.035
	Metal	Yellow Silver	3 5	3SU1950-0DX30-0AA0 3SU1950-0DX80-0AA0	1	1 unit	41J	0.156
3SU1950-0DX30-0AA0					1	1 unit	41J	0.153
	Plastic	Yellow	5	3SU1900-0EA30-0AA0	1	1 unit	41J	0.043
3SU1900-0EA30-0AA0								
	Plastic	Black	▶	3SU1900-0EC10-0AA0	1	1 unit	41J	0.115
3SU1900-0EC10-0AA0								

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Protection/access protection

Product version		Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
				d					
Locking devices									
 3SU1950-0DM80-0AA0	Locking devices for pushbuttons flat, for raised front ring and raised front ring, castellated	Metal	Silver	5	3SU1950-0DM80-0AA0	1	1 unit	41J	0.040
	Locking devices for pushbuttons, raised	Metal	Silver	5	3SU1950-0DN80-0AA0	1	1 unit	41J	0.047
	Locking devices for mushroom pushbuttons D30, D40	Metal	Silver	5	3SU1950-0DP80-0AA0	1	1 unit	41J	0.048
	Locking devices for selectors short/long actuator, in the left position	Metal	Silver	5	3SU1950-0DQ80-0AA0	1	1 unit	41J	0.057
 3SU1950-0DQ80-0AA0									
 3SU1950-0DR80-0AA0	Locking devices for selectors short/long actuator, in the center position	Metal	Silver	5	3SU1950-0DR80-0AA0	1	1 unit	41J	0.064
 3SU1950-0DS80-0AA0	Locking devices for selectors short/long actuator, in the right position	Metal	Silver	5	3SU1950-0DS80-0AA0	1	1 unit	41J	0.060
 3SU1950-0DT80-0AA0	Locking devices for selectors short/long actuator, window from center to right, blocked on left	Metal	Silver	5	3SU1950-0DT80-0AA0	1	1 unit	41J	0.060
 3SU1950-0DU80-0AA0	Locking devices for selectors short/long actuator, window from center to left, blocked on right	Metal	Silver	5	3SU1950-0DU80-0AA0	1	1 unit	41J	0.059
 3SU1950-0DV80-0AA0	Covers for locking device	Metal	Silver	5	3SU1950-0DV80-0AA0	1	1 unit	41J	0.040

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Actuators

Selection and ordering data

Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d				
Sealing plugs ¹⁾ , mounting diameter 22 mm							kg
	Plastic	Black	▶ 3SU1900-0FA10-0AA0	1	1 unit	41J	0.011
	Metal, matte	Sand gray	▶ 3SU1930-0FA80-0AA0	1	1 unit	41J	0.045
	Metal, shiny	Silver	▶ 3SU1950-0FA80-0AA0	1	1 unit	41J	0.043
3SU1950-0FA80-0AA0							

¹⁾ The sealing plug is mounted with a holder.
Modules might already be mounted on the holder.

Type of product	Outer diameter of the actuating element	Accessory color	Accessory material	SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.					
	mm			d	Article No.					kg					
USB port															
	USB 3.0	22	Black	Plastic	3	3SU1900-0GA10-0AA0	1	1 unit	41J	0.020					
			Sand gray	Metal/plastic	3						3SU1930-0GA80-0AA0	1	1 unit	41J	0.037
		Silver	Metal, shiny	3	3SU1950-0GA80-0AA0						1	1 unit	41J	0.052	
		Sand gray	Metal, matte	3	3SU1960-0GA80-0AA0						1	1 unit	41J	0.120	
		30													
															
3SU1930-0GA80-0AA0															
															
															
3SU1960-0GA80-0AA0															
RJ45 connection															
	RJ-45 Cat. 6	22	Black	Plastic	3	3SU1900-0GB10-0AA0	1	1 unit	41J	0.023					
			Sand gray	Metal/plastic	3						3SU1930-0GB80-0AA0	1	1 unit	41J	0.032
		Silver	Metal, shiny	3	3SU1950-0GB80-0AA0						1	1 unit	41J	0.046	
		Sand gray	Metal, matte	3	3SU1960-0GB80-0AA0						1	1 unit	41J	0.080	
		30													
															
3SU1900-0GB10-0AA0															
															
															
3SU1950-0GB80-0AA0															

* You can order this quantity or a multiple thereof.

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Actuators

	Material	Key number	Version of RFID coding	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					d					kg
RONIS keys										
	Metal	SB30 ¹⁾ 455	--	Silver	▶ 5	3SU1950-0FB80-0AA0 3SU1950-0FC80-0AA0	1	1 unit	41J	0.008
							1	1 unit	41J	0.008
3SSU1950-0FB80-0AA0										
BKS keys										
	Metal	S1 ¹⁾	--	Silver	5	3SU1950-0FD80-0AA0	1	1 unit	41J	0.008
3SSU1950-0FD80-0AA0										
OMR keys										
	Metal	73038	--	Blue	3	3SU1950-0FJ50-0AA0	1	1 unit	41J	0.013
		73037		Red	5	3SU1950-0FK20-0AA0	1	1 unit	41J	0.013
		73034		Black	5	3SU1950-0FL10-0AA0	1	1 unit	41J	0.013
		73033		Yellow	5	3SU1950-0FM30-0AA0	1	1 unit	41J	0.013
3SSU1950-0FJ50-0AA0										
CES keys										
	Metal	LSG1	--	Silver	5	3SU1950-0FN80-0AA0	1	1 unit	41J	0.010
		SSG10 ¹⁾			▶	3SU1950-0FP80-0AA0	1	1 unit	41J	0.010
		VL5			5	3SU1950-0FQ80-0AA0	1	1 unit	41J	0.008
3SSU1950-0FP80-0AA0										
IKON keys										
	Metal	360012K1 ¹⁾	--	Silver	5	3SU1950-0FR80-0AA0	1	1 unit	41J	0.009
3SU1950-0FR80-0AA0										
ID keys ID group individual										
	Plastic	--	Individually coded, programmable several times	White	▶	3SU1900-0FU60-0AA0	1	1 unit	41J	0.005
3SU1900-0FU60-0AA0										
ID keys										
	Plastic	--	ID group 1	Green	▶	3SU1900-0FV40-0AA0	1	1 unit	41J	0.004
			ID group 2	Yellow	▶	3SU1900-0FW30-0AA0	1	1 unit	41J	0.005
			ID group 3	Red	▶	3SU1900-0FX20-0AA0	1	1 unit	41J	0.005
			ID group 4	Blue	▶	3SU1900-0FY50-0AA0	1	1 unit	41J	0.005
3SU1900-0FV40-0AA0										

¹⁾ Also available with special lock. Supplement Article No. with "-Z" and the code "Y04" and specify the required lock in plain language.

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Enclosures

Selection and ordering data

Product version	Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			d					kg
Cable glands								
 3SU1900-0HG10-0AA0	Metric M20 cable glands for enclosures	Plastic	Black	▶ 3SU1900-0HG10-0AA0	1	1 unit	41J	0.016
	Metric M25 cable glands for enclosures		5	3SU1900-0HH10-0AA0	1	1 unit	41J	0.022
Cable glands for AS-i								
 3SU1900-0HG10-0AA0	Metric M20 cable glands for enclosures	Plastic	Black	3 3SU1900-0JA10-0AA0	1	1 unit	41J	0.025
	Metric M25 cable glands for enclosures		3	3SU1900-0JB10-0AA0	1	1 unit	41J	0.020
Connection pieces								
 3SU1950-0HJ10-0AA0	For metal enclosures							
	M20/M20 connection pieces for connecting 2 enclosures	Metal	Silver	5 3SU1950-0HJ10-0AA0	1	1 unit	41J	0.060
	M20/M25 connection pieces for connecting 2 enclosures			5 3SU1950-0HK10-0AA0	1	1 unit	41J	0.075
	M25/M25 connection pieces for connecting 2 enclosures			5 3SU1950-0HL10-0AA0	1	1 unit	41J	0.077

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Enclosures

Product version		Material	Color	SD	Insulation piercing method 	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
					Article No.					
					d					
Adapters for AS-i shaped cable										
	Insulation piercing method	Plastic	Black	3	3SU1900-0HX10-0AA0 3SU1900-0HY10-0AA0	1	1 unit	41J	0.036	
	M20 M25			3		1	1 unit	41J	0.045	
3SU1900-0HX10-0AA0										
Adapters for tab connection										
	For metal enclosures									
	Adapter, M12 socket, 4-pole	Metal	Black	5	3SU1950-0HA10-0AA0 3SU1950-0HB10-0AA0	1	1 unit	41J	0.072	
	M20 cable entry M25 cable entry			5		1	1 unit	41J	0.080	
	Adapter, M12 connector, 4-pole			5	3SU1950-0HC10-0AA0 3SU1950-0HD10-0AA0	1	1 unit	41J	0.072	
	M20 cable entry M25 cable entry	5	1	1 unit		41J	0.080			
	Adapter, M12 socket, 5-pole	Metal	Black	5	3SU1950-0HP10-0AA0 3SU1950-0HQ10-0AA0	1	1 unit	41J	0.078	
	M20 cable entry M25 cable entry			5		1	1 unit	41J	0.084	
	Adapter, M12 connector, 5-pole			5	3SU1950-0HR10-0AA0 3SU1950-0HS10-0AA0	1	1 unit	41J	0.076	
	M20 cable entry M25 cable entry	5	1	1 unit		41J	0.082			
	Adapter, M12 socket, 8-pole	Metal	Black	5	3SU1950-0HT10-0AA0 3SU1950-0HU10-0AA0	1	1 unit	41J	0.079	
	M20 cable entry M25 cable entry			5		1	1 unit	41J	0.090	
	Adapter, M12 connector, 8-pole			5	3SU1950-0HV10-0AA0 3SU1950-0HW10-0AA0	1	1 unit	41J	0.076	
M20 cable entry M25 cable entry	5	1	1 unit	41J		0.085				
Enclosure cover monitoring										
	Enclosure cover monitoring	Plastic	Black	3	3SU1900-0HM10-0AA0	1	1 unit	41J	0.006	
	(module with extension plunger)									
3SU1900-0HM10-0AA0										

SIRIUS ACT Pushbuttons and Indicator Lights

Accessories

Miscellaneous accessories

Selection and ordering data

	Product version	Material	Color	SD	Article No.	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Accessories				d					
	PCB carriers	Plastic	Black	5	3SU1900-0KA10-0AA0	100	10 units	41J	0.600
3SU1900-0KA10-0AA0									
	Pressure plates for selectors and locks	Plastic	White	▶	3SU1900-0CK10-0AA0	100	10 units	41J	0.039
3SU1900-0CK10-0AA0									
	Adapters for 30.5 mm to 22.5 mm mounting hole	Metal, matte	Sand gray	▶	3SU1960-0KB10-0AA0	1	1 unit	41J	0.033
3SU1950-0KB10-0AA0									
	Extension plungers For compensation of the distance between the pushbutton and the unlatching button of an overload relay	Plastic	Gray	▶	3SU1900-0KG10-0AA0	1	1 unit	41J	0.008
3SU1900-0KG10-0AA0									
	Adapters for standard rail mounting	Plastic	Black	▶	3SU1900-0KH80-0AA0	1	1 unit	41J	0.048
3SU1900-0KH80-0AA0									
	Adapters for actuators and indicators with front ring for flat mounting	Metal	Silver	▶	3SU1950-0KJ80-0AA0	1	1 unit	41J	0.023
3SU1950-0KJ80-0AA0									
	Adapters for 30.5 mm to 22.5 mm mounting hole	Metal	Silver	▶	3SU1950-0KB10-0AA0	1	1 unit	41J	0.034
3SU1950-0KB10-0AA0									
	Grounding stud	Metal	Silver	5	3SU1950-0KK80-0AA0	100	50 units	41J	0.060
3SU1950-0KK80-0AA0									
	Connectors for sensor switches, angled socket with screw terminal connection	Metal	Black	▶	3SU1900-0KL10-0AA0	1	1 unit	41J	0.018
3SU1900-0KL10-0AA0									

* You can order this quantity or a multiple thereof.

SIRIUS ACT Pushbuttons and Indicator Lights

Notes

2

SIPLUS RAIL and SIDOOR

**3/2 SIPLUS RAIL****3/2 SIPLUS S7-1200 RAIL**

- 3/2 SIPLUS extreme RAIL standard CPUs
- 3/2 SIPLUS S7-1200 CPU 1212C RAIL
- 3/4 SIPLUS S7-1200 CPU 1214C RAIL
- 3/6 SIPLUS extreme RAIL digital modules
- 3/6 SIPLUS S7-1200 SM 1221 RAIL
- 3/8 SIPLUS S7-1200 SM 1222 RAIL
- 3/11 SIPLUS S7-1200 SM 1223 RAIL
- 3/15 SIPLUS S7-1200 SB 1223 RAIL
- 3/17 SIPLUS extreme RAIL analog modules
- 3/17 SIPLUS extreme S7-1200 SM 1231 RTD RAIL
- 3/19 SIPLUS extreme S7-1200 SM 1232 RAIL
- 3/21 SIPLUS extreme S7-1200 SM 1234 RAIL
- 3/23 SIPLUS extreme RAIL communication
- 3/23 SIPLUS S7-1200 CB 1241 RS485 RAIL
- 3/25 SIPLUS S7-1200 CM 1242-5 RAIL
- 3/25 SIPLUS S7-1200 CM 1243-5 RAIL

3/26 SIPLUS S7-1500 RAIL

- 3/26 SIPLUS extreme RAIL standard CPUs
- 3/26 SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL
- 3/30 SIPLUS S7-1500 CPU 1516-3 PN/DP RAIL
- 3/34 SIPLUS extreme RAIL digital modules
- 3/34 SIPLUS extreme RAIL digital input modules
- 3/36 SIPLUS extreme RAIL digital output modules
- 3/40 SIPLUS extreme RAIL analog modules
- 3/40 SIPLUS extreme RAIL analog input modules
- 3/45 SIPLUS extreme RAIL analog output modules
- 3/47 SIPLUS extreme RAIL communication
- 3/47 SIPLUS CM PtP

3/49 SIPLUS ET 200SP RAIL

- 3/49 SIPLUS extreme RAIL fail-safe CPUs
- 3/49 SIPLUS CPU 1510SP F-1 PN T1 RAIL
- 3/52 SIPLUS CPU 1512SP F-1 PN T1 RAIL
- 3/55 SIPLUS extreme RAIL interface modules
- 3/60 SIPLUS extreme RAIL I/O modules
- 3/60 SIPLUS extreme RAIL digital inputs
- 3/65 SIPLUS extreme RAIL digital outputs
- 3/70 SIPLUS extreme RAIL analog inputs
- 3/80 SIPLUS extreme RAIL analog outputs
- 3/83 SIPLUS extreme RAIL technology modules
- 3/83 • SIPLUS extreme RAIL
TM COUNT 1X24 V T1 counter module
- 3/87 • SIPLUS ET 200SP TM Pulse 2x24 V T1
RAIL pulse output module
- 3/90 SIPLUS extreme RAIL communication
- 3/90 • SIPLUS extreme RAIL CM PtP T1 serial
interface
- 3/93 • SIPLUS extreme RAIL CM 4x IO-Link

- 3/96 SIPLUS extreme RAIL failsafe I/O modules
- 3/96 SIPLUS extreme RAIL digital F input
modules
- 3/99 SIPLUS extreme RAIL digital F output
modules
- 3/102 SIPLUS extreme RAIL BaseUnits
- 3/106 SIPLUS extreme RAIL BusAdapter

3/108 SIPLUS ET 200MP RAIL

- 3/108 SIPLUS extreme RAIL interface modules
- 3/108 SIPLUS ET 200MP IM 155-5 PN ST TX RAIL

3/112 SIPLUS extreme RAIL gateways

- 3/112 SIPLUS NET PN/PN Coupler T1 RAIL
- 3/114 SIPLUS PN/CAN LINK T1 RAIL

3/116 SIPLUS extreme RAIL

- operator control and monitoring devices**
- 3/116 SIPLUS extreme RAIL Basic Panels
(1st Generation)
- 3/119 SIPLUS HMI Comfort Panels Outdoor RAIL

3/123 SIPLUS Power supplies

- 3/123 1-phase, 24 V DC (for S7-300 and ET200M)

3/125 SIDOOR**3/125 SIDOOR automatic door controls
for railway applications**

- 3/125 Controller
- 3/125 Platform screen door drive
- 3/128 Control unit for gap filler
- 3/129 Interior railway door drives
- 3/131 Additional units
- 3/131 • SIDOOR Software kit
- 3/131 • SIDOOR Service tool
- 3/132 Geared motors
- 3/134 Direct drives
- 3/135 Accessories

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1200 CPU 1212C RAIL

Overview



- The superior compact solution
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- With 14 integral input/outputs
- Expandable by:
 - 1 signal board (SB) or communication board (CB)
 - 2 signal modules (SM)
 - Max. 3 communication modules (CM)

3

Technical specifications

Article number	6AG2212-1AE40-1XB0
	SIPLUS S7-1200 CPU 1212C DC/DC/DC RAIL
General information	
Product type designation	CPU 1212C DC/DC/DC
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Encoder supply	
24 V encoder supply	
• 24 V	Permissible range: 20.4V to 28.8V
Power loss	
Power loss, typ.	9 W
Memory	
Work memory	
• integrated	50 kbyte
Load memory	
• integrated	1 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card
Backup	
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation
Data areas and their retentivity	
Flag	
• Number, max.	4 kbyte; Size of bit memory address area
Address area	
I/O address area	
• Inputs	1 024 byte
• Outputs	1 024 byte
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte
Time of day	
Clock	
• Hardware clock (real-time)	Yes

Article number	6AG2212-1AE40-1XB0
	SIPLUS S7-1200 CPU 1212C DC/DC/DC RAIL
Digital inputs	
Number of digital inputs	8; Integrated
• of which inputs usable for technological functions	6; HSC (High Speed Counting)
Digital outputs	
Number of digital outputs	6
• of which high-speed outputs	4; 100 kHz Pulse Train Output
Analog inputs	
Number of analog inputs	2
Input ranges	
• Voltage	Yes
Analog outputs	
Number of analog outputs	0
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• Open IE communication	Yes
• Web server	Yes
Protocols	
Open IE communication	
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes
Communication functions	
S7 communication	
• supported	Yes
Web server	
• supported	Yes
Number of connections	
• overall	16; dynamically

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1200 CPU 1212C RAIL

Article number	6AG2212-1AE40-1XB0 SIPLUS S7-1200 CPU 1212C DC/DC/DC RAIL
Integrated Functions	
Number of counters	4
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated DO
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Isolation	
Isolation tested with	According to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	6AG2212-1AE40-1XB0 SIPLUS S7-1200 CPU 1212C DC/DC/DC RAIL
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- SCL	Yes
Dimensions	
Width	90 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	370 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS S7-1200 CPU 1212C RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

Integrated program/data memory 75 KB;
load memory 1 MB;
Supply voltage 24 V DC;
Boolean execution times 0.1 µs per operation;
8 digital inputs, 6 digital outputs, 2 analog inputs;
Expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board;
Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2212-1AE40-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1200 CPU 1214C RAIL

Overview



- The compact high-performance CPU
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- With 24 integrated I/Os
- Expandable by:
 - 1 signal board (SB) or communication board (CB)
 - 8 signal modules (SM)
 - Max. 3 communication modules (CM)

Technical specifications

Article number	6AG2214-1AG40-1XB0
	SIPLUS S7-1200 CPU 1214C DC/DC/DC RAIL
General information	
Product type designation	CPU 1214C DC/DC/DC
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Encoder supply	
24 V encoder supply	
• 24 V	L+ minus 4 V DC min.
Power loss	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	100 kbyte
Load memory	
• integrated	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	with SIMATIC memory card
Backup	
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.085 µs; / instruction
for word operations, typ.	1.7 µs; / instruction
for floating point arithmetic, typ.	2.3 µs; / instruction
Data areas and their retentivity	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte
Time of day	
Clock	
• Hardware clock (real-time)	Yes
Digital inputs	
Number of digital inputs	14; Integrated
• of which inputs usable for technological functions	6; HSC (High Speed Counting)

Article number	6AG2214-1AG40-1XB0
	SIPLUS S7-1200 CPU 1214C DC/DC/DC RAIL
Digital outputs	
Number of digital outputs	10
• of which high-speed outputs	4; 100 kHz Pulse Train Output
Analog inputs	
Number of analog inputs	2
Input ranges	
• Voltage	Yes
Analog outputs	
Number of analog outputs	0
1. Interface	
Interface type	PROFINET
Physics	Ethernet
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• Open IE communication	Yes
• Web server	Yes
Protocols	
Open IE communication	
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes
Communication functions	
S7 communication	
• supported	Yes
Web server	
• supported	Yes
Number of connections	
• overall	16; dynamically

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1200 CPU 1214C RAIL

Article number	6AG2214-1AG40-1XB0 SIPLUS S7-1200 CPU 1214C DC/DC/DC RAIL
Integrated Functions	
Number of counters	6
Counting frequency (counter) max.	100 kHz
Frequency measurement	Yes
controlled positioning	Yes
Number of position-controlled positioning axes, max.	8
Number of positioning axes via pulse-direction interface	4; With integrated DO
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	100 kHz
Isolation	
Isolation tested with	According to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	6AG2214-1AG40-1XB0 SIPLUS S7-1200 CPU 1214C DC/DC/DC RAIL
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- SCL	Yes
Dimensions	
Width	110 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	415 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS S7-1200 CPU 1214C RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

Integrated program/data memory 100 KB, load memory 2 MB; Supply voltage 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2214-1AG40-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1221 RAIL

Overview



- Digital inputs as supplement to the integral I/O of the CPUs
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs

Technical specifications

Article number	6AG2221-1BF32-1XB0
	SIPLUS S7-1200 SM 1221 8DI RAIL
General information	
Product type designation	SM 1221, DI 8x24 V DC
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
from backplane bus 5 V DC, max.	105 mA
Digital inputs	
• from load voltage L+ (without load), max.	4 mA; per channel
Output voltage	
Power supply to the transmitters	
• present	Yes
Power loss	
Power loss, typ.	1.5 W
Digital inputs	
Number of digital inputs	8
• in groups of	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
all mounting positions	
- up to 40 °C, max.	8
horizontal installation	
- up to 40 °C, max.	8
- up to 50 °C, max.	8
vertical installation	
- up to 40 °C, max.	8
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input current	
• for signal "0", max. (permissible quiescent current)	1 mA
• for signal "1", min.	2.5 mA
• for signal "1", typ.	4 mA

Article number	6AG2221-1BF32-1XB0
	SIPLUS S7-1200 SM 1221 8DI RAIL
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
for interrupt inputs	
- parameterizable	Yes
Cable length	
• shielded, max.	500 m
• unshielded, max.	300 m
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostic functions	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for maintenance	Yes
Potential separation	
Potential separation digital inputs	
• between the channels, in groups of	2
Isolation	
Isolation tested with	According to EN 50155 (routine test)
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1221 RAIL

Article number	6AG2221-1BF32-1XB0 SIPLUS S7-1200 SM 1221 8DI RAIL
Railway application	
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Article number	6AG2221-1BF32-1XB0 SIPLUS S7-1200 SM 1221 8DI RAIL
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	170 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS SM 1221 RAIL digital input module

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

8 inputs, 24 V DC, isolated, current sourcing/sinking

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2221-1BF32-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1222 RAIL

Overview



- Digital outputs as a supplement to the integral I/O of the CPUs
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs

Technical specifications

Article number	6AG2222-1BF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RAIL	6AG2222-1HF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RLY RAIL
General information		
Product type designation	SM 1222, DQ 8x24 V DC/0.5 A	SM 1222, DQ 8x relay/2 A
Input current		
from backplane bus 5 V DC, max.	120 mA	120 mA
Digital outputs		
• from load voltage L+, max.		11 mA/relay coil
Power loss		
Power loss, typ.	1.5 W	4.5 W
Digital outputs		
Number of digital outputs	8	8
• in groups of	1	2
Short-circuit protection	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	typ. (L+) -48 V	
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	2 A
• on lamp load, max.	5 W	30 W with DC, 200 W with AC
Output voltage		
• Rated value (DC)	24 V	5 V DC to 30 V DC
• Rated value (AC)		5 V AC to 250 V AC
• for signal "0", max.	0.1 V; with 10 kOhm load	
• for signal "1", min.	20 V DC	
Output current		
• for signal "1" rated value	0.5 A	2 A
• for signal "0" residual current, max.	10 µA	
Output delay with resistive load		
• "0" to "1", max.	50 µs	10 ms
• "1" to "0", max.	200 µs	10 ms
Total current of the outputs (per group)		
horizontal installation		
- up to 50 °C, max.	4 A; Current per mass	10 A; Current per mass
Relay outputs		
• Number of relay outputs		8
• Rated supply voltage of relay coil L+ (DC)		24 V
• Number of operating cycles, max.		mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts		
- with inductive load, max.	0.5 A	2 A
- on lamp load, max.	5 W	30 W with DC, 200 W with AC
- with resistive load, max.	0.5 A	2 A

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1222 RAIL

Article number	6AG2222-1BF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RAIL	6AG2222-1HF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RLY RAIL
Cable length		
• shielded, max.	500 m	500 m
• unshielded, max.	150 m	150 m
Interrupts/diagnostics/ status information		
Alarms	Yes	
Diagnostic functions	Yes	
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	
Diagnostics indication LED		
• for status of the outputs	Yes	Yes
• for maintenance	Yes	
Potential separation		
Potential separation digital outputs		
• between the channels		Relays
• between the channels, in groups of	1	2
• between the channels and backplane bus	500 V AC	1500 V AC for 1 minute
Permissible potential difference		
between different circuits		750 V AC for 1 minute
Isolation		
Isolation tested with	According to EN 50155 (routine test)	According to EN 50155 (routine test)
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
CE mark		Yes
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-25 °C; = Tmin; Startup @ -25 °C	-25 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position; +70 °C for 10 minutes (T1 acc. to EN 50155) 8 outputs for horizontal mounting position	60 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIPLUS RAIL and SIDOOR**SIPLUS S7-1200 RAIL****SIPLUS extreme RAIL digital modules****SIPLUS S7-1200 SM 1222 RAIL**

Article number	6AG2222-1BF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RAIL	6AG2222-1HF32-1XB0 SIPLUS S7-1200 SM 1222 8DQ RLY RAIL
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	180 g	190 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Article No.****SIPLUS signal module
SM 1222 RAIL digital output
module**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

8 outputs, 24 V DC; 0.5 A, 5 W, isolated

- For areas subject to exceptional medial exposure (conformal coating); ambient temperature range -25 ... +70 °C

6AG2222-1BF32-1XB0

8 outputs, 5 ... 30 V DC / 5 ... 250 V AC, relay 2 A, 30 W DC / 200 W AC

For areas subject to exceptional medial exposure (conformal coating); ambient temperature -25 ... +60 °C

6AG2222-1HF32-1XB0

Overview



- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs

3

Technical specifications

Article number	6AG2223-1BH32-1XB0 SIPLUS S7-1200 SM 1223 8DI/8DQ RAIL	6AG2223-1PL32-1XB0 SIPLUS S7-1200 SM 1223 16DI/16DQ RAIL
General information		
Product type designation	SM 1223, DI 8x24 V DC, DO 8x24 V DC	SM 1223, DI 16x24 V DC, DO 16x relay
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Input current		
from backplane bus 5 V DC, max.	145 mA	180 mA
Digital inputs		
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA/input 11 mA/relay
Output voltage		
Power supply to the transmitters		
• present	Yes	Yes
Power loss		
Power loss, typ.	2.5 W	10 W
Digital inputs		
Number of digital inputs	8	16
• in groups of	2	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes
Number of simultaneously controllable inputs		
all mounting positions		
- up to 40 °C, max.	8	16
horizontal installation		
- up to 40 °C, max.	8	16
- up to 50 °C, max.	8	16
vertical installation		
- up to 40 °C, max.	8	16
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)	24 V	24 V
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA	15 V DC at 2.5 mA
Input current		
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA	4 mA

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1223 RAIL

Article number	6AG2223-1BH32-1XB0 SIPLUS S7-1200 SM 1223 8DI/8DQ RAIL	6AG2223-1PL32-1XB0 SIPLUS S7-1200 SM 1223 16DI/16DQ RAIL
Input delay (for rated value of input voltage)		
for standard inputs		
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
for interrupt inputs		
- parameterizable	Yes	Yes
Cable length		
• shielded, max.	500 m	500 m
• unshielded, max.	300 m	300 m
Digital outputs		
Number of digital outputs	8	16
• in groups of	1	4
Short-circuit protection	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	L+ (-48 V)	
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	2 A
• on lamp load, max.	5 W	30 W with DC, 200 W with AC
Output voltage		
• Rated value (DC)	24 V	5 V DC to 30 V DC
• Rated value (AC)		5 V AC to 250 V AC
• for signal "0", max.	0.1 V; with 10 kOhm load	
• for signal "1", min.	20 V DC	
Output current		
• for signal "1" permissible range, max.	0.5 A	2 A
• for signal "0" residual current, max.	10 µA	
Output delay with resistive load		
• "0" to "1", max.	50 µs	10 ms
• "1" to "0", max.	200 µs	10 ms
Total current of the outputs (per group)		
horizontal installation		
- up to 50 °C, max.	4 A; Current per mass	8 A; Current per mass
Relay outputs		
• Number of relay outputs		16
• Rated supply voltage of relay coil L+ (DC)		24 V
• Number of operating cycles, max.		mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts		
- with inductive load, max.	0.5 A	2 A
- on lamp load, max.	5 W	30 W with DC, 200 W with AC
- with resistive load, max.	0.5 A	2 A
Cable length		
• shielded, max.	500 m	500 m
• unshielded, max.	150 m	150 m
Interrupts/diagnostics/status information		
Alarms	Yes	Yes
Diagnostic functions	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for status of the outputs	Yes	Yes
• for maintenance	Yes	Yes

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1223 RAIL

Article number	6AG2223-1BH32-1XB0 SIPLUS S7-1200 SM 1223 8DI/8DQ RAIL	6AG2223-1PL32-1XB0 SIPLUS S7-1200 SM 1223 16DI/16DQ RAIL
Potential separation		
Potential separation digital inputs		
• between the channels, in groups of	2	2
Potential separation digital outputs		
• between the channels		Relays
• between the channels, in groups of	1	4
• between the channels and backplane bus	500 V AC	1500 V AC for 1 minute
Permissible potential difference		
between different circuits		750 V AC for 1 minute
Isolation		
Isolation tested with	According to EN 50155 (routine test)	According to EN 50155 (routine test)
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP20	Yes	Yes
Standards, approvals, certificates		
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-25 °C; = Tmin; Startup @ -25 °C	-25 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position	60 °C; Number of simultaneously activated outputs: 8 (no adjacent points) at 60 °C horizontal, 16 at 55 °C horizontal; +70 °C for 10 minutes (T1 acc. to EN 50155)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SM 1223 RAIL

Article number	6AG2223-1BH32-1XB0 SIPLUS S7-1200 SM 1223 8DI/8DQ RAIL	6AG2223-1PL32-1XB0 SIPLUS S7-1200 SM 1223 16DI/16DQ RAIL
Resistance		
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	70 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	210 g	350 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Article No.****SIPLUS SM 1223 RAIL
digital input/output signal module**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

8 inputs, 24 V DC, IEC type 1 current sinking;
8 transistor outputs, 24 V DC, 0.5 A, 5 W

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2223-1BH32-1XB0

16 inputs, 24 V DC, IEC type 1 current sinking;
16 relay outputs,
5 ... 30 V DC / 5 ... 250 V AC, 2 A,
30 W DC / 200 W AC

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2223-1PL32-1XB0

Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIPLUS S7-1200-CPU's
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Can be plugged directly into the CPU

3**Technical specifications**

Article number	6AG2223-0BD30-1XB0
	SIPLUS S7-1200 SB 1223 2DI/2DQ RAIL
General information	
Product type designation	SB 1223, DI 2x24 V DC/DQ 2x24 V DC
Input current	
from backplane bus 5 V DC, typ.	50 mA
Output voltage	
Power supply to the transmitters	
• Supply current, max.	4 mA; per channel
Power loss	
Power loss, typ.	1 W
Digital inputs	
Number of digital inputs	2; Current-sinking
• in groups of	1
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
all mounting positions	
- up to 40 °C, max.	2
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	0 to 5 V
• for signal "1"	+15 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	1 mA
• for signal "1", typ.	0.5 A
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
- at "0" to "1", max.	2 µs
- at "1" to "0", max.	10 µs
for interrupt inputs	
- parameterizable	Yes
for counter/technological functions	
- parameterizable	Yes

Article number	6AG2223-0BD30-1XB0
	SIPLUS S7-1200 SB 1223 2DI/2DQ RAIL
Cable length	
• shielded, max.	500 m
• unshielded, max.	300 m
Digital outputs	
Number of digital outputs	2; MOSFET, solid-state (current-sinking/current-sourcing)
• in groups of	1
Short-circuit protection	No
Switching capacity of the outputs	
• with resistive load, max.	0.5 A
• on lamp load, max.	5 W
Load resistance range	
• upper limit	0.6 Ω
Output voltage	
• Rated value (DC)	24 V
• for signal "0", max.	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V
Output current	
• for signal "1" permissible range, max.	0.5 A
• for signal "0" residual current, max.	10 µA
Cable length	
• shielded, max.	500 m
• unshielded, max.	150 m
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostic functions	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for status of the outputs	Yes
Isolation	
Isolation tested with	According to EN 50155 (routine test)
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS S7-1200 SB 1223 RAIL

Article number	6AG2223-0BD30-1XB0 SIPLUS S7-1200 SB 1223 2DI/2DQ RAIL
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin; Startup @ -25 °C
• max.	55 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *

Article number	6AG2223-0BD30-1XB0 SIPLUS S7-1200 SB 1223 2DI/2DQ RAIL
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	40 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS SB 1223 RAIL digital input/output signal board

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

2 inputs, 24 V DC, IEC type 1 current sinking;
2 transistor outputs 24 V DC, 0.5 A, 5 W;
can be used as HSC at up to 30 kHz

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2223-0BD30-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme S7-1200 SM 1231 RTD RAIL

Overview

- For the convenient recording of temperatures with great accuracy
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- 4 inputs
- Most popular resistance temperature detectors can be used
- Can easily be retrofitted to existing plant

Technical specifications

Article number	6AG2231-5PD32-1XB0 SIPLUS S7-1200 SM 1231 RTD RAIL
General information	
Product type designation	SM 1231 RTD 4x16bit
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4; Resistance thermometer
permissible input voltage for current input (destruction limit), max.	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	No
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes
• Ni 100	Yes
• Ni 1000	Yes
• LG-Ni 1000	Yes
• Ni 120	Yes
• Ni 200	Yes
• Ni 500	Yes
• Pt 100	Yes
• Pt 1000	Yes
• Pt 200	Yes
• Pt 500	Yes
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• 0 to 300 ohms	Yes
• 0 to 600 ohms	Yes
Thermocouple (TC)	
Temperature compensation	
- parameterizable	No

Article number	6AG2231-5PD32-1XB0 SIPLUS S7-1200 SM 1231 RTD RAIL
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostic functions	Yes; Can be read out
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
Railway application	
• EN 50121-3-2	Yes
• EN 50121-4	Yes
• EN 50124-1	Yes; OVC II, PD2
• EN 50125-1	Yes; Class Ax up to 2 000 m above sea level
• EN 50125-2	Yes; Class Ax up to 2 000 m above sea level
• EN 50125-3	Yes; track-side use 1 - 3 m next to track bed
• EN 50155	Yes; T1 Category 1 Class A/B ST2 horizontal mounting position
• EN 61373	Yes; Category 1 Class B
• Fire protection acc. to EN 45545-2	Yes; Verification on request
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C
• max.	60 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position
Altitude during operation relating to sea level	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m)

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme S7-1200 SM 1231 RTD RAIL**Technical specifications** (continued)

Article number	6AG2231-5PD32-1XB0 SIPLUS S7-1200 SM 1231 RTD RAIL
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Use in stationary industrial systems	
to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Use on land craft, rail vehicles and special-purpose vehicles	
to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75%) including salt spray according to EN 50155 (ST2). The supplied plug covers must remain in place over the unused interfaces during operation!
to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 including sand and dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****SIPLUS RTD signal module SM 1231 RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign

- For areas subject to exceptional medial exposure (conformal coating); ambient temperature range -25 ... +60 °C

6AG2231-5PD32-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme S7-1200 SM 1232 RAIL

Overview



- Analog outputs for SIPLUS S7-1200
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- With extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks

3

Technical specifications

Article number	6AG2232-4HD32-1XB0
	SIPLUS S7-1200 SM 1232 4AQ RAIL
General information	
Product type designation	SM 1232, AQ 4x14 bit
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	45 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog outputs	
Number of analog outputs	4; Current or voltage
Output ranges, voltage	
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Analog value generation for the outputs	
Integration and conversion time/ resolution per channel	
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits
Errors/accuracies	
Temperature error (relative to output range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.3 %
• Current, relative to output range, (+/-)	0.3 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
• Common mode voltage, max.	12 V

Article number	6AG2232-4HD32-1XB0
	SIPLUS S7-1200 SM 1232 4AQ RAIL
Interrupts/diagnostics/ status information	
Alarms	Yes
Diagnostic functions	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• for status of the outputs	Yes
• for maintenance	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage $U_{Ni} = 0.5 \text{ kV}$; $U_{Nm} = 24 \text{ V DC}$
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme S7-1200 SM 1232 RAIL**Technical specifications** (continued)

Article number	6AG2232-4HD32-1XB0 SIPLUS S7-1200 SM 1232 4AQ RAIL
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C
• max.	60 °C; = Tmax; +70 °C for 10 minutes (T1 acc. to EN 50155) for horizontal mounting position
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	180 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Analog output SIPLUS signal module SM 1232 RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

4 analog outputs, ± 10 V with 14 bits or 0 ... 20 mA with 13 bits

For areas subject to exceptional medial exposure (conformal coating); ambient temperature range -25 ... +60 °C

6AG2232-4HD32-1XB0

Overview

- Analog inputs and outputs for SIPLUS S7-1200
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the inputs and outputs can be controlled simultaneously

Technical specifications

Article number	6AG2234-4HE32-1XB1 SIPLUS S7-1200 SM 1234 4AI/2AQ RAIL
General information	
Product type designation	SM 1234 A I4x13 bit AQ 2x14 bit
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, typ.	60 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	4; Current or voltage differential inputs
permissible input voltage for current input (destruction limit), max.	± 35 V
permissible input voltage for voltage input (destruction limit), max.	35 V
permissible input current for voltage input (destruction limit), max.	40 mA
permissible input current for current input (destruction limit), max.	40 mA
Cycle time (all channels) max.	625 µs
Input ranges	
• Voltage	Yes; ±10V, ±5V, ±2.5V
• Current	Yes; 4 to 20 mA, 0 to 20 mA
Input ranges (rated values), voltages	
• -10 V to +10 V	Yes
• -2.5 V to +2.5 V	Yes
• -5 V to +5 V	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Analog outputs	
Number of analog outputs	2; Current or voltage
Output ranges, voltage	
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 000 Ω
• with current outputs, max.	600 Ω
Analog value generation for the inputs	
Measurement principle	Differential

Article number	6AG2234-4HE32-1XB1 SIPLUS S7-1200 SM 1234 4AI/2AQ RAIL
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	12 bit; + sign
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency f1 in Hz	40 dB, DC to 60 V for interference frequency 50 / 60 Hz
Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution (incl. overrange)	Voltage: 14 bits; Current : 13 bits
Errors/accuracies	
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range
Temperature error (relative to output range), (+/-)	25 °C ±0.3%, to 55 °C ±0.6% total measurement range
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.1 %
• Current, relative to input range, (+/-)	0.1 %
• Voltage, relative to output range, (+/-)	0.3 %
• Current, relative to output range, (+/-)	0.3 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
• Common mode voltage, max.	12 V
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostic functions	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• for status of the inputs	Yes
• for status of the outputs	Yes
• for maintenance	Yes

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme S7-1200 SM 1234 RAIL

Article number	6AG2234-4HE32-1XB1 SIPLUS S7-1200 SM 1234 4AI/2AQ RAIL
Potential separation analog outputs	No
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles - 24 V supply of assembly: Cable length <3 m or with upstream filter for supply cable
• EN 50121-4	Yes; EMC for signal and telecommunications systems - 24 V supply of the assembly: with upstream filter for supply cable
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

Article number	6AG2234-4HE32-1XB1 SIPLUS S7-1200 SM 1234 4AI/2AQ RAIL
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	220 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Analog input/output
SIPLUS signal module SM 1234 RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

Ambient temperature range
-25 ... +70 °C
incl. +15 °C/K temperature rise for 10 minutes

4 analog inputs, ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA, 12 bits + sign;
2 analog outputs, ±10 V with 14 bits or 0 ... 20 mA with 13 bits

6AG2234-4HE32-1XB1

Overview

- For fast, high-performance serial data exchange via point-to-point connection
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can be loaded later
- Simple parameterization with STEP 7 Basic
- Can be plugged directly into the CPU

Technical specifications

Article number	6AG2241-1CH30-1XB0 SIPLUS S7-1200 CB 1241 RS485 T1 RAIL
General information	
Product type designation	CB 1241 RS485
Input current	
from backplane bus 5 V DC, typ.	50 mA
Power loss	
Power loss, typ.	1.5 W
Interfaces	
Point-to-point	
• Cable length, max.	1 000 m
Integrated protocol driver	
- Freeport	Yes
- ASCII	Yes; Available as library function
- Modbus	Yes
- Modbus RTU master	Yes
- MODBUS RTU slave	Yes
- USS	Yes; Available as library function
Protocols	
Integrated protocols	
Freeport	
- Telegram length, max.	1 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)
3964 (R)	
- Telegram length, max.	1 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 (Standard), 2
- Parity	No parity (standard); even, uneven, mark (parity bit always 1); space (parity bit always 0)
Modbus RTU master	
- Address area	1 through 49 999 (Standard Modbus addressing)
- Number of slaves, max.	247; slave numbers 1 through 247, per MODBUS network segment maximum 32 devices, additional repeaters needed to expand the network to maximum configuration
MODBUS RTU slave	
- Address area	1 through 49 999 (Standard Modbus addressing)

Article number	6AG2241-1CH30-1XB0 SIPLUS S7-1200 CB 1241 RS485 T1 RAIL
Interrupts/diagnostics/status information	
Diagnostic functions	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Free fall	
• Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL communication

SIPLUS S7-1200 CB 1241 RS485 RAIL

Technical specifications (continued)

Article number	6AG2241-1CH30-1XB0 SIPLUS S7-1200 CB 1241 RS485 T1 RAIL
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanics/material	
Enclosure material (front)	
Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Weights	
Weight, approx.	40 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

SIPLUS CB 1241 communication board RS 485 RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

for point-to-point connection, with 1 RS 485 interface

Article No.

6AG2241-1CH30-1XB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1200 RAIL

SIPLUS extreme RAIL communication

SIPLUS S7-1200 CM 1242-5 RAIL, SIPLUS S7-1200 CM 1243-5 RAIL

Overview SIPLUS S7-1200 CM 1242-5 RAIL

DP-M	DP-S	FMS	PG/OP	S7
	●			

The SIPLUS S7-1200 CM 1242-5 RAIL communication module is used to connect a SIPLUS extreme RAIL S7-1200 to PROFIBUS as a DP slave and has the following characteristics:

- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- PROFIBUS DPV1 slave in accordance with IEC 61158
- Module replacement without PG supported
- Power is supplied via the backplane bus so that no extra cabling is required
- Support of all standard baud rates from 9.6 Kbps to 12 Mbps
- Compact industry-standard enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The SIPLUS S7-1200 CM 1242-5 RAIL is intended for use in rail traffic. Low-cost PROFIBUS-based automation solutions can be created on the basis of the S7-1200.

Overview SIPLUS S7-1200 CM 1243-5 RAIL

DP-M	DP-S	FMS	PG/OP	S7
●			●	●

The SIPLUS S7-1200 CM 1243-5 RAIL communication module is used to connect a SIPLUS extreme RAIL S7-1200 to PROFIBUS as a DP master and has the following characteristics:

- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- PROFIBUS DPV1 master in accordance with IEC 61158
- Support of up to 16 PROFIBUS DP slaves
- Communication with other S7 controllers based on S7 communication
- Allows the connection of programming devices and operator panels with a PROFIBUS interface to the S7-1200
- Module replacement without PG supported
- Support of all standard baud rates from 9.6 Kbps to 12 Mbps
- Compact industry-standard enclosure in S7-1200 design for mounting on a DIN rail
- Fast commissioning thanks to easy configuration using STEP 7 without additional programming overhead

The SIPLUS S7-1200 CM 1243-5 RAIL is intended for use in rail traffic. Low-cost PROFIBUS-based automation solutions can be created on the basis of the S7-1200 for optimal production.

Ordering data**Article No.****SIPLUS CM 1242-5 RAIL communication module**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

Communication module for electrical connection of SIPLUS S7-1200 RAIL to PROFIBUS as a DPV1 slave

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2242-5DX30-1XE0**Ordering data****Article No.****SIPLUS CM 1243-5 RAIL communication module**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

Communication module for electrical connection of SIPLUS S7-1200 RAIL to PROFIBUS as a DPV1 master

- For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C

6AG2242-5DX30-1XE0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1511-1 PN RAIL

Overview



- Entry-level CPU in the SIPLUS extreme RAIL S7-1500 controller product range
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Suitable for applications with medium requirements for program scope and processing speed
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO Controller
- Isochronous mode
- SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6AG2511-1AK01-1AB0 SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK01-4AB0 SIPLUS S7-1500 CPU 1511-1 PN TX RAIL
General information		
Product type designation	CPU 1511-1 PN	CPU 1511-1 PN
Supply voltage		
Type of supply voltage	24 V DC	24 V DC
Power loss		
Power loss, typ.	5.7 W	5.7 W
Memory		
Work memory		
• integrated (for program)	150 kbyte	150 kbyte
• integrated (for data)	1 Mbyte	1 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	60 ns	60 ns
for word operations, typ.	72 ns	72 ns
for fixed point arithmetic, typ.	96 ns	96 ns
for floating point arithmetic, typ.	384 ns	384 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Number, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1511-1 PN RAIL

Article number	6AG2511-1AK01-1AB0 SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK01-4AB0 SIPLUS S7-1500 CPU 1511-1 PN TX RAIL
1. Interface		
Interface types		
• Number of ports	2	2
• integrated switch	Yes	Yes
• RJ 45 (Ethernet)	Yes; X1	Yes; X1
Functionality		
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
• Media redundancy	Yes	Yes
Protocols		
Number of connections		
• Number of connections, max.	96; via integrated interfaces of the CPU and connected CPs / CMs	96; via integrated interfaces of the CPU and connected CPs / CMs
PROFINET IO Controller		
Services		
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	128	128
OPC UA		
• OPC UA Server	Yes; for data access	
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 625 µs	Yes; With minimum OB 6x cycle of 625 µs
Supported technology objects		
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes
• Number of available Motion Control resources for technology objects (except cam disks)	1 600	
• Required Motion Control resources		
- per speed-controlled axis	80; per axis	
- per positioning axis	160; per axis	
- per synchronous axis	160; per axis	
- per external encoder	80; per external encoder	
- per output cam	20; per cam	
- per cam track	160; per cam track	
- per probe	40; per probe	
• Speed-controlled axis		
- Number of speed-controlled axes, max.		6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Positioning axis		
- Number of positioning axes, max.		6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Synchronized axes (relative gear synchronization)		
- Number of axes, max.		3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• External encoders		
- Number of external encoders, max.		6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1511-1 PN RAIL

Article number	6AG2511-1AK01-1AB0 SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK01-4AB0 SIPLUS S7-1500 CPU 1511-1 PN TX RAIL
Controller		
• PID_Compact • PID_3Step • PID-Temp	Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature	Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Isolation		
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates		
Railway application		
• EN 50121-3-2 • EN 50121-4 • EN 50124-1 • EN 50125-1 • EN 50125-2 • EN 50125-3 • EN 50155 • EN 61373 • Fire protection acc. to EN 45545-2	Yes; EMC for rail vehicles Yes; EMC for signal and telecommunications systems Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC Yes; Rail vehicles - see ambient conditions Yes; Stationary electrical equipment - see ambient conditions Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; Rail vehicles - verification on request	Yes; EMC for rail vehicles Yes; EMC for signal and telecommunications systems Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC Yes; Rail vehicles - see ambient conditions Yes; Stationary electrical equipment - see ambient conditions Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; Rail vehicles - verification on request
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min. • horizontal installation, max.	-40 °C; = Tmin 60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5 - to chemically active substances according to EN 60721-3-5 - to mechanically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; * * The supplied plug covers must remain in place over the unused interfaces during operation!	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; * * The supplied plug covers must remain in place over the unused interfaces during operation!

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1511-1 PN RAIL

Article number	6AG2511-1AK01-1AB0 SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK01-4AB0 SIPLUS S7-1500 CPU 1511-1 PN TX RAIL
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration		
Programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• Password for display	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Complete protection	Yes	Yes
Dimensions		
Width	35 mm	70 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	430 g	610 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data	Article No.	Article No.
SIPLUS S7-1500 CPU 1511-1 PN T1 RAIL	6AG2511-1AK01-1AB0	Accessories
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic		SIMATIC Memory Card
Work memory 150 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC memory card required		4 MB 6ES7954-8LC02-0AA0
For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +55 °C (+70 °C for 10 min.)		12 MB 6ES7954-8LE02-0AA0
		24 MB 6ES7954-8LF02-0AA0
		256 MB 6ES7954-8LL02-0AA0
		2 GB 6ES7954-8LP02-0AA0
		32 GB 6ES7954-8LT03-0AA0
SIPLUS S7-1500 CPU 1511-1 PN TX RAIL	6AG2511-1AK01-4AB0	
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic		
Without display; 150 KB RAM for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required		
For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)		

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1516-3 PN/DP RAIL**Overview**

- The CPU with large program and data memory in the SIPLUS extreme RAIL S7-1500 controller product range for applications with high program scope requirements
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- High processing speed for binary and floating-point arithmetic
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO Controller
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6AG2516-3AN01-4AB0
	SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
General information	
Product type designation	CPU 1516-3 PN/DP
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	7 W
Memory	
Work memory	
• integrated (for program)	1 Mbyte
• integrated (for data)	5 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image

Article number	6AG2516-3AN01-4AB0
	SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
PROFINET IO Controller	
Services	
- PG/OP communication	Yes
- S7 routing	Yes
- Isochronous mode	Yes
- Open IE communication	Yes
- IRT	Yes
- MRP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
- MRPD	Yes; Requirement: IRT
- PROFINergy	Yes
- Prioritized startup	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1516-3 PN/DP RAIL

Article number	6AG2516-3AN01-4AB0 SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
Services	
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for IRT	
- for send cycle of 250 µs	250 µs to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of 500 µs of the isochronous OB is decisive
- for send cycle of 500 µs	500 µs to 8 ms
- for send cycle of 1 ms	1 ms to 16 ms
- for send cycle of 2 ms	2 ms to 32 ms
- for send cycle of 4 ms	4 ms to 64 ms
- With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs ... 3 875 µs)
Update time for RT	
- for send cycle of 250 µs	250 µs to 128 ms
- for send cycle of 500 µs	500 µs to 256 ms
- for send cycle of 1 ms	1 ms to 512 ms
- for send cycle of 2 ms	2 ms to 512 ms
- for send cycle of 4 ms	4 ms to 512 ms
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- S7 routing	Yes
- Isochronous mode	No
- Open IE communication	Yes
- IRT	Yes
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- PROFlenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
2. Interface	
Interface types	
• Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFINET IO Controller	
Services	
- PG/OP communication	Yes
- S7 routing	Yes
- Isochronous mode	No
- Open IE communication	Yes
- IRT	No
- MRP	No
- PROFlenergy	Yes
- Prioritized startup	No

Article number	6AG2516-3AN01-4AB0 SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
Services	
- Number of connectable IO Devices, max.	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	32
- of which in line, max.	32
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8; in total across all interfaces
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
Update time for RT	
- for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- S7 routing	Yes
- Isochronous mode	No
- Open IE communication	Yes
- IRT	No
- MRP	No
- MRPD	No
- PROFlenergy	Yes
- Prioritized startup	No
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
3. Interface	
Interface types	
• Number of ports	1
• RS 485	Yes
Functionality	
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	No
• SIMATIC communication	Yes
Protocols	
Number of connections	
• Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs
PROFIBUS DP master	
Services	
- Number of DP slaves	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
OPC UA	
• OPC UA Server	Yes; for data access
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 375 µs

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL standard CPUs

SIPLUS S7-1500 CPU 1516-3 PN/DP RAIL

Article number	6AG2516-3AN01-4AB0 SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
Supported technology objects	
Motion Control	Yes; Note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects (except cam disks)	4 800
• Required Motion Control resources	
- per speed-controlled axis	80; per axis
- per positioning axis	160; per axis
- per synchronous axis	160; per axis
- per external encoder	80; per external encoder
- per output cam	20; per cam
- per cam track	160; per cam track
- per probe	40; per probe
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Article number	6AG2516-3AN01-4AB0 SIPLUS S7-1500 CPU 1516-3 PN/DP TX RAIL
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	105 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	1 109 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Selection and ordering data**SIPLUS S7-1500
CPU 1516-3 PN/DP TX RAIL**

Approved in accordance with the
EN 50155, EN 15121, EN 50124,
EN 50125 and EN 45545 railway
standards for use in rail traffic

Without display;
1 MB RAM for program,
5 MB for data,
PROFINET IO IRT interface,
PROFINET/PROFIBUS interface;
SIMATIC Memory Card required

For areas with extreme exposure to
environmental substances
(conformal coating);
ambient temperature -40 ... +70 °C
(+85 °C for 10 min.)

6AG2516-3AN01-4AB0**Accessories****SIMATIC Memory Card**

4 MB

6ES7954-8LC02-0AA0

12 MB

6ES7954-8LE02-0AA0

24 MB

6ES7954-8LF02-0AA0

256 MB

6ES7954-8LL02-0AA0

2 GB

6ES7954-8LP02-0AA0

32 GB

6ES7954-8LT03-0AA0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS extreme RAIL digital input modules**Overview**

- 16-channel digital input module
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs

Technical specifications

Article number	6AG2521-1BH00-4AB0
	SIPLUS S7-1500 DI 16x24VDC HF TX RAIL
General information	
Product type designation	DI 16x24VDC HF
Product function	
• I&M data	Yes; I&M0 to I&M3
Operating mode	
• DI	Yes
• Counter	Yes
• MSI	Yes
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital inputs	
Number of digital inputs	16
Digital inputs, parameterizable	Yes
Source/sink input	P-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Freely usable digital input	Yes
• Counter	
- Number, max.	2
- Counting frequency, max.	1 kHz
- Counting width	32 bit
- Counting direction up/down	Up
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms

Article number	6AG2521-1BH00-4AB0
	SIPLUS S7-1500 DI 16x24VDC HF TX RAIL
for interrupt inputs	
- parameterizable	Yes
for counter/technological functions	
- parameterizable	Yes
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	80 µs; At 50 µs filter time
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; to I < 350 µA
• Short-circuit	No
• Fuse blown	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED

SIPLUS RAIL and SIDOOR**SIPLUS S7-1500 RAIL****SIPLUS extreme RAIL digital modules****SIPLUS extreme RAIL digital input modules**

Article number	6AG2521-1BH00-4AB0 SIPLUS S7-1500 DI 16x24VDC HF TX RAIL
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Suitable for safety functions	No
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Article number	6AG2521-1BH00-4AB0 SIPLUS S7-1500 DI 16x24VDC HF TX RAIL
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Decentralized operation	
Prioritized startup	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	240 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****SIPLUS extreme SM 521 RAIL digital input modules**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

SIPLUS S7-1500 DI 16 x 24 V DC HF TX RAIL

16 inputs, 24 V DC, isolated, configurable diagnostics and hardware interrupts; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2521-1BH00-4AB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS extreme RAIL digital output modules**Overview**

- 8 and 16-channel digital output modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs

Technical specifications

Article number	6AG2522-1BH01-4AB0 SIPLUS S7-1500 DQ 16x24VDC HF TX RAIL	6AG2522-5HF00-1AB0 SIPLUS S7-1500 DQ 8x230VAC ST 5A T1 RAIL
General information		
Product type designation	DQ 16x24VDC/0.5A HF	DQ 8x230 V AC/5 A ST (relay)
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Operating mode		
• MSO	Yes	
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	
Digital outputs		
Type of digital output	Transistor	Relays
Number of digital outputs	16	8
Current-sourcing	Yes	
Digital outputs, parameterizable	Yes	Yes
Short-circuit protection	Yes; Clocked electronically	
Open-circuit detection	Yes	
Limitation of inductive shutdown voltage to	L+ (-53 V)	
Controlling a digital input	Yes	possible
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	
• on lamp load, max.	5 W	
• Low energy/fluorescent lamps with electronic control gear		1 500 W; 10 000 operating cycles
• Fluorescent tubes, conventionally compensated		10x 58 W (25 000 operating cycles)
• Fluorescent tubes, uncompensated		1x 58 W (25 000 operating cycles)
		10x 58 W (25 000 operating cycles)
Load resistance range		
• lower limit	48 Ω	
• upper limit	12 kΩ	
Output voltage		
• Type of output voltage	DC	
• for signal "1", min.	L+ (-0.8 V)	
Output current		
• for signal "1" rated value	0.5 A	5 A
• for signal "0" residual current, max.	0.5 mA	0 A
Output delay with resistive load		
• "0" to "1", max.	100 µs	
• "1" to "0", max.	100 µs; at rated load	

Article number	6AG2522-1BH01-4AB0 SIPLUS S7-1500 DQ 16x24VDC HF TX RAIL	6AG2522-5HF00-1AB0 SIPLUS S7-1500 DQ 8x230VAC ST 5A T1 RAIL
Parallel switching of two outputs		
• for logic links	Yes	Yes
• for uprating	Yes	No
• for redundant control of a load	Yes	Yes
Switching frequency		
• with resistive load, max.	100 Hz	2 Hz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz
• on lamp load, max.	10 Hz	2 Hz
Total current of the outputs		
• Current per channel, max.	0.5 A; see additional description in the manual	8 A; see additional description in the manual
• Current per group, max.	4 A; see additional description in the manual	8 A; see additional description in the manual
• Current per module, max.	8 A; see additional description in the manual	64 A; see additional description in the manual
Relay outputs		
• Number of relay outputs		8
• Rated supply voltage of relay coil L+ (DC)		24 V
• Current consumption of relays (coil current of all relays), max.		80 mA
• external protection for relay outputs		With miniature circuit breaker with characteristic B for: cos φ 1.0: 600 A cos φ 0.5 ... 0.7: 900 A with 8 A Diazed fuse: 1000 A
• Contact connection (internal)		No
• Size of motor starters according to NEMA, max.		5
• Number of operating cycles, max.		4 000 000; see additional description in the manual
• Relay approved acc. to UL 508		Yes; 250 V AC/5 A g.p.; 120 V AC TV-4 tungsten; A300, R300
Switching capacity of contacts		
- with inductive load, max.		see additional description in the manual
- with resistive load, max.		see additional description in the manual
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes	No
Execution and activation time (TCO), min.	70 μs	
Bus cycle time (TDP), min.	250 μs	
Interrupts/diagnostics/status information		
Diagnostics function	Yes	Yes
Substitute values connectable	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes	No
• Short-circuit	Yes	No
• Fuse blown	No	
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	No
• for module diagnostics	Yes; Red LED	Yes; Red LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS extreme RAIL digital output modules

Article number	6AG2522-1BH01-4AB0 SIPLUS S7-1500 DQ 16x24VDC HF TX RAIL	6AG2522-5HF00-1AB0 SIPLUS S7-1500 DQ 8x230VAC ST 5A T1 RAIL
Isolation		
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	Between the channels: 2 500 V DC; between the channels and backplane bus: 2 500 V DC; between L+ and backplane bus 707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates		
Suitable for safety functions	No	No
Suitable for safety-oriented group deactivation	No	No
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin	-25 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; > +60 °C number of simultaneously controllable outputs max. 8x 0.5 A, max. total current per group 2 A; +85 °C for 10 minutes (Tx acc. to EN 50155)	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-3	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL digital modules

SIPLUS extreme RAIL digital output modules

Article number	6AG2522-1BH01-4AB0 SIPLUS S7-1500 DQ 16x24VDC HF TX RAIL	6AG2522-5HF00-1AB0 SIPLUS S7-1500 DQ 8x230VAC ST 5A T1 RAIL
Decentralized operation		
Fast Startup supported		Yes; 500 ms
Prioritized startup	Yes	
Dimensions		
Width	35 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	350 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****SIPLUS extreme SM 522 RAIL
digital output modules**

Approved in accordance with the
EN 50155, EN 15121, EN 50124,
EN 50125 and EN 45545 railway
standards for use in rail traffic

**SIPLUS S7-1500
DQ 16x24 V DC HF TX RAIL**

16 outputs, 24 V DC; 0.5 A,
isolated;
for areas with extreme exposure to
environmental substances
(conformal coating);
ambient temperature -40 ... +70 °C
(+85 °C for 10 min.)

**SIPLUS S7-1500
DQ 8x230VAC ST 5A T1 RAIL**

8 relay outputs, 230 V AC; 5 A;
for areas with extreme exposure to
environmental substances
(conformal coating);
ambient temperature -25 ... +55 °C
(+70 °C for 10 min.)

6AG2522-1BH01-4AB0**6AG2522-5HF00-1AB0**

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme RAIL analog input modules**Overview**

- 8-channel analog input modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Optionally with extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- Even solves more complex automation tasks

Technical specifications

Article number	6AG2531-7NF10-4AB0 SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7KF00-4AB0 SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL
General information		
Product type designation	AI 8xU/I HS	AI 8xU/I/RTD/TC ST
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Measuring range scalable	No	No
• Scalable measured values	No	No
• Adjustment of measuring range	No	No
Operating mode		
• Oversampling	Yes	No
• MSI	Yes	Yes
CiR – Configuration in RUN		
Reparameterization possible in RUN	Yes	Yes
Calibration possible in RUN	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Analog inputs		
Number of analog inputs	8; > +60 °C max. 4x ±20 mA or 4x ±10 V permissible	8; > +60 °C max. 2x ±20 mA or 4x ±10 V or 4x RTD permissible
• For current measurement	8	8
• For voltage measurement	8	8
• For resistance/resistance thermometer measurement		4
• For thermocouple measurement		8
permissible input voltage for voltage input (destruction limit), max.	28.8 V	28.8 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA
Technical unit for temperature measurement adjustable		Yes; °C/°F/K
Input ranges (rated values), voltages		
• 0 to +5 V	No	No
• 0 to +10 V	No	No
• 1 V to 5 V	Yes	Yes
• -1 V to +1 V		Yes
• -10 V to +10 V	Yes	Yes
• -2.5 V to +2.5 V	No	Yes
• -25 mV to +25 mV	No	No
• -250 mV to +250 mV	No	Yes

Article number	6AG2531-7NF10-4AB0 SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7KF00-4AB0 SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL
Input ranges (rated values), voltages		
• -5 V to +5 V	Yes	Yes
• -50 mV to +50 mV	No	Yes
• -500 mV to +500 mV	No	Yes
• -80 mV to +80 mV	No	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• -20 mA to +20 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	No	Yes
• Type C	No	No
• Type E	No	Yes
• Type J	No	Yes
• Type K	No	Yes
• Type L	No	No
• Type N	No	Yes
• Type R	No	Yes
• Type S	No	Yes
• Type T	No	Yes
• Type TXK/TXK(L) to GOST	No	No
Input ranges (rated values), resistance thermometer		
• Cu 10	No	No
• Cu 10 according to GOST	No	No
• Cu 50	No	No
• Cu 50 according to GOST	No	No
• Cu 100	No	No
• Cu 100 according to GOST	No	No
• Ni 10	No	No
• Ni 10 according to GOST	No	No
• Ni 100	No	Yes; Standard/climate
• Ni 100 according to GOST	No	No
• Ni 1000	No	Yes; Standard/climate
• Ni 1000 according to GOST	No	No
• LG-Ni 1000	No	Yes; Standard/climate
• Ni 120	No	No
• Ni 120 according to GOST	No	No
• Ni 200	No	No
• Ni 200 according to GOST	No	No
• Ni 500	No	No
• Ni 500 according to GOST	No	No
• Pt 10	No	No
• Pt 10 according to GOST	No	No
• Pt 50	No	No
• Pt 50 according to GOST	No	No
• Pt 100	No	Yes; Standard/climate
• Pt 100 according to GOST	No	No
• Pt 1000	No	Yes; Standard/climate
• Pt 1000 according to GOST	No	No
• Pt 200	No	Yes; Standard/climate
• Pt 200 according to GOST	No	No
• Pt 500	No	Yes; Standard/climate
• Pt 500 according to GOST	No	No

SIPLUS RAIL and SIDOOR**SIPLUS S7-1500 RAIL****SIPLUS extreme RAIL analog modules****SIPLUS extreme RAIL analog input modules**

Article number	6AG2531-7NF10-4AB0 SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7KF00-4AB0 SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL
Input ranges (rated values), resistors		
• 0 to 150 ohms	No	Yes
• 0 to 300 ohms	No	Yes
• 0 to 600 ohms	No	Yes
• 0 to 3000 ohms	No	No
• 0 to 6000 ohms	No	Yes
• PTC	No	Yes
Thermocouple (TC)		
Temperature compensation		
- parameterizable		Yes
Cable length		
• shielded, max.	800 m	800 m; for U/I, 200 m for R/RTD, 50 m for TC
Analog value generation for the inputs		
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	16 bit	16 bit
• Integration time, parameterizable		Yes
• Integration time (ms)		2,5 / 16,67 / 20 / 100 ms
• Basic conversion time, including integration time (ms)		9 / 23 / 27 / 107 ms
- additional conversion time for wire-break monitoring		9 ms (to be considered in R/RTD/TC measurement)
- additional conversion time for resistance measurement		150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms
• Interference voltage suppression for interference frequency f1 in Hz		400 / 60 / 50 / 10 Hz
• Basic execution time of the module (all channels released)	62.5 µs; independent of number of activated channels	
Smoothing of measured values		
• parameterizable	Yes	Yes
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes
- Burden of 2-wire transmitter, max.	820 Ω	820 Ω
• for current measurement as 4-wire transducer	Yes	Yes
• for resistance measurement with two-wire connection	No	Yes; Only for PTC
• for resistance measurement with three-wire connection	No	Yes; All measuring ranges except PTC; internal compensation of the cable resistances
• for resistance measurement with four-wire connection	No	Yes; All measuring ranges except PTC
Errors/accuracies		
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.2 %	0.1 %
• Current, relative to input range, (+/-)	0.2 %	0.1 %
• Resistance, relative to input range, (+/-)		0.1 %
• Resistance thermometer, relative to input range, (+/-)		Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K
• Thermocouple, relative to input range, (+/-)		Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme RAIL analog input modules

Article number	6AG2531-7NF10-4AB0 SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7KF00-4AB0 SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL
Interference voltage suppression for $f = n \times (f_1 \pm 1\%)$, $f_1 =$ interference frequency - Series mode interference (peak value of interference < rated value of input range), min. - Common mode voltage, max. - Common mode interference, min.	10 V 50 dB at 400 Hz; 60 dB at 60 / 50 / 10 Hz	40 dB 10 V 60 dB
Isochronous mode Isochronous operation (application synchronized up to terminal) Filtering and processing time (TCI), min. Bus cycle time (TDP), min.	Yes 80 µs 250 µs	No
Interrupts/diagnostics/status information Diagnostics function	Yes	Yes
Alarms - Diagnostic alarm - Limit value alarm	Yes Yes; two upper and two lower limit values in each case	Yes Yes; two upper and two lower limit values in each case
Diagnostic messages - Monitoring the supply voltage - Wire-break - Overflow/underflow	Yes Yes; only for 1 ... 5 V and 4 ... 20 mA Yes	Yes Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD Yes
Diagnostics indication LED - RUN LED - ERROR LED - Monitoring of the supply voltage (PWR-LED) - Channel status display - for channel diagnostics - for module diagnostics	Yes; Green LED Yes; Red LED Yes; Green LED Yes; Green LED Yes; Red LED Yes; Red LED	Yes; Green LED Yes; Red LED Yes; Green LED Yes; Green LED Yes; Red LED Yes; Red LED
Potential separation Potential separation channels between the channels and backplane bus	Yes	Yes
Isolation Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates Railway application - EN 50121-3-2 - EN 50121-4 - EN 50124-1 - EN 50125-1 - EN 50125-2 - EN 50125-3 - EN 50155 - EN 61373 - Fire protection acc. to EN 45545-2	Yes; EMC for rail vehicles Yes; EMC for signal and telecommunications systems Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC Yes; Rail vehicles - see ambient conditions Yes; Stationary electrical equipment - see ambient conditions Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; For proof of conformity, see Service & Support	Yes; EMC for rail vehicles Yes; EMC for signal and telecommunications systems Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC Yes; Rail vehicles - see ambient conditions Yes; Stationary electrical equipment - see ambient conditions Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; For proof of conformity, see Service & Support
Ambient conditions Ambient temperature during operation - horizontal installation, min. - horizontal installation, max.	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme RAIL analog input modules

Article number	6AG2531-7NF10-4AB0 SIPLUS S7-1500 AI 8xU/I HS TX RAIL	6AG2531-7KF00-4AB0 SIPLUS S7-1500 AI 8xU/I/RTD/TC TX RAIL
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Decentralized operation		
Prioritized startup	Yes	No
Dimensions		
Width	35 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	300 g	310 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Article No.****SIPLUS extreme SIM 531 RAIL analog input modules**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

SIPLUS S7-1500 AI 8xU/I HS T1 RAIL

8 analog inputs, ± 10 V, ± 5 V, 1 ... 5 V or 0/4 ... 20 mA, ± 20 mA, 16-bit + sign; incl. infeed element, shield clamp, shield terminal, labeling strips, U connector, printed front door;
for areas with extreme exposure to environmental substances (conformal coating)

Ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2531-7NF10-4AB0**SIPLUS S7-1500 AI 8xU/I/RTD/TC T1 RAIL**

8 analog inputs
 ± 10 V, ± 5 V, ± 2.5 V, ± 1 V, ± 500 mV, ± 250 mV, ± 80 mV, ± 50 mV, 1 ... 5 V, 0/4 ... 20 mA, ± 20 mA, thermocouples type B, E, J, K, N, R, S, T, resistance thermometers Ni 100, Ni 1000, LG-Ni 1000, Pt 100, Pt 1000, Pt 250, Pt 500, resistors 0...150/300/600/6000 ohms, 16-bit;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -25 ... +55 °C (+70 °C for 10 min.)

Ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2531-7KF00-4AB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme RAIL analog output modules

Overview



- 4-channel analog output module
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Optionally with extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks

3

Technical specifications

Article number	6AG2532-5HD00-4AB0 SIPLUS S7-1500 AQ 4xU/I ST TX RAIL
General information	
Product type designation	AQ 4xU/I ST
Product function	
• I&M data	Yes; I&M0 to I&M3
• Output range scalable	No
Operating mode	
• Oversampling	No
• MSO	Yes
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog outputs	
Number of analog outputs	4; > +60 °C max. 4x ±10 V permissible
Cycle time (all channels), min.	3.2 ms; independent of number of activated channels
Output ranges, voltage	
• 0 to 10 V	Yes
• 1 V to 5 V	Yes
• -5 V to +5 V	No
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes

Article number	6AG2532-5HD00-4AB0 SIPLUS S7-1500 AQ 4xU/I ST TX RAIL
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 kΩ; 0.5 kΩ at 1 to 5 V
• with voltage outputs, capacitive load, max.	1 μF
• with current outputs, max.	750 Ω
• with current outputs, inductive load, max.	10 mH
Cable length	
• shielded, max.	800 m; for current, 200 m for voltage
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Conversion time (per channel)	0.5 ms
Settling time	
• for resistive load	1.5 ms
• for capacitive load	2.5 ms
• for inductive load	2.5 ms
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.2 %
• Current, relative to output range, (+/-)	0.2 %
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Only for output type "current"
• Short-circuit	Yes; Only for output type "voltage"
• Overflow/underflow	Yes

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL analog modules

SIPLUS extreme RAIL analog output modules

Article number	6AG2532-5HD00-4AB0 SIPLUS S7-1500 AQ 4xU/I ST TX RAIL
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; For proof of conformity, see Service & Support
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)

Article number	6AG2532-5HD00-4AB0 SIPLUS S7-1500 AQ 4xU/I ST TX RAIL
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Decentralized operation	
Prioritized startup	No
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	310 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Article No.****SIPLUS extreme RAIL SM 532 analog output modules**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

SIPLUS S7-1500 AQ 4xU/I ST TX RAIL

4 analog outputs, ± 10 V, 1 ... 5 V, 0 ... 10 V or ± 20 mA, 0/4 ... 20 mA, 16-bit;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2532-5HD00-4AB0

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL communication

SIPLUS CM PtP

Overview



- Module for serial communication connections
- Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- Physical transmission media:
 - RS 232C, max. 115.2 Kbps
- Protocols supported
 - Freeport: User-parameterizable frame format for universal communication
 - 3964(R) for improved transmission reliability
 - Modbus RTU Master
 - Modbus RTU Slave
 - USS, implemented through instructions

3

Technical specifications

Article number	6AG2541-1AD00-4AB0 SIPLUS S7-1500 CM PtP RS232 HF TX RAIL
General information	
Product type designation	CM PtP RS232 HF
Product function	
• I&M data	Yes; I&M 0
Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Type of supply voltage	system power supply
Input current	
Current consumption (rated value)	35 mA; From the backplane bus
Power	
Power available from the backplane bus	0.65 W
Power loss	
Power loss, typ.	0.6 W
Interface types	
RS 232	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	15 m
• RS 232 auxiliary signals	RTS, CTS, DTR, DSR, RI, DCD
Protocols	
Integrated protocols	
Freeport	
- Telegram length, max.	4 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any
3964 (R)	
- Telegram length, max.	4 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any
Modbus RTU master	
- Address area	1 to 247, extended 1 to 65535
- Number of slaves, max.	1
MODBUS RTU slave	
- Address area	1 to 247, extended 1 to 65535

Article number	6AG2541-1AD00-4AB0 SIPLUS S7-1500 CM PtP RS232 HF TX RAIL
Telegram buffer	
• Buffer memory for telegrams	8 kbyte
• Number of telegrams which can be buffered	255
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostic messages	
• Wire-break	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Receive RxD	Yes; yellow LED
• Transmit TxD	Yes; yellow LED
Potential separation	
between backplane bus and interface	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)

SIPLUS RAIL and SIDOOR

SIPLUS S7-1500 RAIL

SIPLUS extreme RAIL communication

SIPLUS CM PtP

Article number	6AG2541-1AD00-4AB0 SIPLUS S7-1500 CM PtP RS232 HF TX RAIL
Railway application	
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Article number	6AG2541-1AD00-4AB0 SIPLUS S7-1500 CM PtP RS232 HF TX RAIL
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1500	Yes
to standard PROFINET controller	Yes
Fast Startup supported	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	127 mm
Weights	
Weight, approx.	0.22 kg
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data	Article No.
SIPLUS S7-1500CM PtP RS 232 HF T1 RAIL communications module	6AG2541-1AD00-4AB0
Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic	
High Feature communications module with 1 RS 232 interface, and Freeport, 3964(R), USS and Modbus RTU protocols, 9-pin D-sub connector, max. 115.2 Kbps; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL fail-safe CPUs

SIPLUS CPU 1510SP F-1 PN T1 RAIL

Overview



- SIPLUS ET 200SP CPU 1510SP F-1 PN T1 RAIL for SIPLUS extreme RAIL ET 200SP based on S7-1500 CPU 1511F-1 PN
- Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- For high-performance control solutions using ET 200SP
- Increase in availability of systems and machines
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO controller for up to 64 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO controller
- PROFINET shared I-device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), web server and S7 communication (with loadable FBs)
- Configuration control (option handling)
- Integrated motion control functions for controlling speed-controlled and positioning axes, support for external encoders

3

Technical specifications

Article number	6AG2510-1SJ01-1AB0
	SIPLUS ET 200SP CPU 1510 F-1 PN RAIL
General information	
Product type designation	CPU 1510SP F-1 PN
Supply voltage	
Type of supply voltage	24 V DC
Memory	
Work memory	
• integrated (for program)	150 kbyte
• integrated (for data)	750 kbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	72 ns
for word operations, typ.	86 ns
for fixed point arithmetic, typ.	115 ns
for floating point arithmetic, typ.	461 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte

Article number	6AG2510-1SJ01-1AB0
	SIPLUS ET 200SP CPU 1510 F-1 PN RAIL
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	3
• integrated switch	Yes
• RJ 45 (Ethernet)	1. integr. + 2. via BusAdapter BA 2x RJ45
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
2. Interface	
Interface types	
• Number of ports	1
• RS 485	Yes; Via CM DP module

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL fail-safe CPUs

SIPLUS CPU 1510SP F-1 PN T1 RAIL

Article number	6AG2510-1SJ01-1AB0 SIPLUS ET 200SP CPU 1510 F-1 PN RAIL
Functionality	
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• SIMATIC communication	Yes
Protocols	
Number of connections	
• Number of connections, max.	64
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	64; In total, up to 189 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	64
PROFIBUS DP master	
Services	
- Number of DP slaves	125
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; For PROFINET only
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Max. number of speed-controlled axes (requirement: there must be no other motion technology objects created)
• Positioning axis	
- Number of positioning axes, max.	6; Max. number of positioning axes (requirement: there must be no other motion technology objects created)
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)
• External encoders	
- Number of external encoders, max.	6; Max. number of external encoders (requirement: there must be no other motion technology objects created)
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)

Article number	6AG2510-1SJ01-1AB0 SIPLUS ET 200SP CPU 1510 F-1 PN RAIL
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Highest safety class achievable in safety mode	
• SIL in accordance with EN 50126, 50128, 50129	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

Technical specifications (continued)

Article number	6AG2510-1SJ01-1AB0 SIPLUS ET 200SP CPU 1510 F-1 PN RAIL
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-3	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****SIPLUS ET 200SP
CPU 1510SP F-1 PN T1 RAIL**

(extended temperature range and exposure to environmental substances)

Work memory 150 KB for program, 750 KB for data,
 PROFINET IO IRT interface;
 SIMATIC Memory Card required;
 for areas with extreme exposure to environmental substances (conformal coating);
 ambient temperature -25 ... +60 °C (+70 °C for 10 min.)

Accessories**SIPLUS extreme RAIL
BusAdapter****SIPLUS ET 200SP
BA 2XRJ45 TX RAIL**

For PROFINET interface modules in Standard function class or above;
 max. cable length 50 m;
 for areas with extreme exposure to environmental substances (conformal coating);
 ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

**SIPLUS ET 200SP
BA 2XFC TX RAIL**

For PROFINET interface modules in Standard function class or above;
 for increased vibration and EMC load rating; max. cable length 50 m;
 for areas with extreme exposure to environmental substances (conformal coating);
 ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2510-1SJ01-1AB0**6AG2193-6AR00-4AA0****6AG2193-6AF00-4AA0**

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL fail-safe CPUs

SIPLUS CPU 1512SP F-1 PN T1 RAIL

Overview



- SIPLUS ET 200SP CPU 1512SP F-1 PN T1 RAIL for SIPLUS extreme RAIL ET 200SP based on S7-1500 CPU 1513F-1 PN
- Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- For applications with average requirements regarding the program scope and processing speed, for distributed setup via PROFINET IO or PROFIBUS DP
- Increase in availability of systems and machines
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO controller for up to 128 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET IO controller
- PROFINET shared I-device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), web server and S7 communication (with loadable FBs)
- Configuration control (option handling)
- Integrated motion control functions for controlling speed-controlled and positioning axes, support for external encoders

Technical specifications

Article number	6AG2512-1SK01-1AB0 SIPLUS ET 200SP CPU 1512 F-1 PN RAIL
General information	
Product type designation	CPU 1512SP F-1 PN
Supply voltage	
Type of supply voltage	24 V DC
Memory	
Work memory	
• integrated (for program)	300 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte

Article number	6AG2512-1SK01-1AB0 SIPLUS ET 200SP CPU 1512 F-1 PN RAIL
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
• BusAdapter (PROFINET)	Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL fail-safe CPUs

SIPLUS CPU 1512SP F-1 PN T1 RAIL

Article number	6AG2512-1SK01-1AB0 SIPLUS ET 200SP CPU 1512 F-1 PN RAIL
2. Interface	
Interface types	
• Number of ports	1
• RS 485	Yes; Via CM DP module
Functionality	
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
• SIMATIC communication	Yes
Protocols	
Number of connections	
• Number of connections, max.	88
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	128; In total, up to 253 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	128
PROFIBUS DP master	
Services	
- Number of DP slaves	125
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Max. number of speed-controlled axes (requirement: there must be no other motion technology objects created)
• Positioning axis	
- Number of positioning axes, max.	6; Max. number of positioning axes (requirement: there must be no other motion technology objects created)
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)
• External encoders	
- Number of external encoders, max.	6; Max. number of external encoders (requirement: there must be no other motion technology objects created)
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)

Article number	6AG2512-1SK01-1AB0 SIPLUS ET 200SP CPU 1512 F-1 PN RAIL
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Highest safety class achievable in safety mode	
• SIL in accordance with EN 50126, 50128, 50129	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL fail-safe CPUs

SIPLUS CPU 1512SP F-1 PN T1 RAIL

Technical specifications (continued)

Article number	6AG2512-1SK01-1AB0 SIPLUS ET 200SP CPU 1512 F-1 PN RAIL
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS ET 200SP CPU 1512SP F-1 PN T1 RAIL

6AG2512-1SK01-1AB0

Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

Work memory 300 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)

Accessories

SIPLUS extreme RAIL BusAdapter

SIPLUS ET 200SP BA 2XRJ45 TX RAIL

6AG2193-6AR00-4AA0

For PROFINET interface modules in Standard function class or above; max. cable length 50 m; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

SIPLUS ET 200SP BA 2XFC TX RAIL

6AG2193-6AF00-4AA0

For PROFINET interface modules in Standard function class or above; for increased vibration and EMC load rating; max. cable length 50 m; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

Overview



Thanks to their wide scope of functions, the interface modules of the scalable SIPLUS extreme RAIL ET 200SP I/O system, even in their basic versions, cover a wide range of applications. The basic functions of the interface modules include:

- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Short data update times of typically 1 ms
- Single Hot Swap (withdrawing and insertion of an I/O module during operation without impairing the communication with the remaining modules)
- Operation with gaps (empty BaseUnits)
- Complete diagnostic support, extending to channel-by-channel diagnostics
- Configuration control / option handling (adaptation of the actual configuration via user software)
- Device replacement without PG I&M data 0 to 3 (electronic rating plate with non-volatile storage of plant data)
- Firmware update
- Pluggable 24 V DC supply connection
- Network / power failure bridging time of 5 ms
- Labeling option via optional labeling strips and equipment labeling plates

When using PROFINET interface modules, the following basic functions are also included:

- Media redundancy (MRP) integrated 2-port switch
- Freely selectable connection method via SIMATIC BusAdapter
- Reset button for simple return to factory settings without the need for programming device
- Replacement without programming device even in case of non-topological configuration with subsequent automatic launching
- Automatic synchronization of the backplane bus to the PROFINET cycle to minimize the response time fluctuations (jitter)

SIPLUS ET 200SP IM 155-6PN ST (BA) TX RAIL with PROFINET interface

- Max. 32 I/O modules, also PROFIsafe modules, with complete diagnostic support
- Expansion option with max. 16 modules from the ET 200AL series using the BU-Send BaseUnit and the BA-Send BusAdapter
- Max. 256 bytes in each case for input and output data per module and max. 512 bytes per station (depending on configuration)
- Data update time: typ. 1 ms
- Choice of connection type of the PROFINET by means of SIMATIC BusAdapter (BusAdapter for copper cables only)
- Two types of delivery:
 - As package with SIPLUS ET 200SP IM 155-6PN ST BA TX RAIL, with pre-assembled BA 2xRJ45 BusAdapter, including server module
 - As package with SIPLUS ET 200SP IM 155-6PN ST TX RAIL, without BusAdapter, including server module

SIPLUS ET 200SP IM 155-6PN HF T1 RAIL with PROFINET interface

- Max. 64 I/O modules, also PROFIsafe modules, with complete diagnostic support
- Expansion option with max. 16 modules from the ET 200AL series using the BU-Send BaseUnit and the BA-Send BusAdapter
- Max. 288 bytes in each case for input and output data per module and max. 1440 bytes per station (depending on configuration)
- Fast data refresh time: isochronous mode from 250 µs
- S2 system redundancy
- Choice of connection type and physical connection of the PROFINET by means of SIMATIC BusAdapter. All BusAdapters with a connection for copper and/or fiber-optic cables can be used; BusAdapter must be ordered separately
- Package inclusive of server module

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL interface modules

Technical specifications

Article number	6AG2155-6AA01-4BN0 SIPLUS ET 200SP IM155-6PN ST BA TX RAIL	6AG2155-6AU01-4BN0 SIPLUS ET 200SP IM155-6PN ST TX RAIL	6AG2155-6AU00-1CN0 SIPLUS ET 200SP IM155-6PN HF T1 RAIL
General information			
Product type designation	IM 155-6 PN ST	IM 155-6 PN ST	IM 155-6 PN HF
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M4
• Module swapping during operation (hot swapping)	Yes; Single hot swapping	Yes; Single hot swapping	
Supply voltage			
Type of supply voltage			24 V DC
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	
Mains buffering			
• Mains/voltage failure stored energy time	10 ms	10 ms	5 ms
Power loss			
Power loss, typ.	1.9 W	1.9 W	2.4 W
Hardware configuration			
Rack			
• Modules per rack, max.	32; + 16 ET 200AL modules	32; + 16 ET 200AL modules	64; + 16 ET 200AL modules
Submodules			
• Number of submodules per station, max.	256	256	256
Interfaces			
Number of PROFINET interfaces	1; 2 ports (switch)	1; 2 ports (switch)	1; 2 ports (switch)
1. Interface			
Interface types			
• Number of ports	2	2	2
• integrated switch	Yes	Yes	Yes
• RJ 45 (Ethernet)	Yes; Pre-assembled BusAdapter BA 2x RJ45		
• BusAdapter (PROFINET)	Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC	Yes; Applicable BusAdapter: BA 2x RJ45, BA 2x FC	Yes; Compatible BusAdapter: BA 2x RJ45, BA 2x FC, BA 2x SCRJ (from FS03, V2.2), BA SCRJ / RJ45 (from FS03, V3.1), BA SCRJ / FC (from FS03, V3.1), BA 2x LC (from FS03, V3.3), BA LC / RJ45 (from FS03, V3.3), BA LC / FC (from FS03, V3.3)
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• Open IE communication	Yes	Yes	Yes
• Media redundancy	Yes; PROFINET MRP	Yes; PROFINET MRP	Yes; PROFINET MRP
Interface types			
RJ 45 (Ethernet)			
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 10 Mbps	Yes; for Ethernet services	Yes; for Ethernet services	No
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• Autonegotiation	Yes	Yes	Yes
• Autocrossing	Yes	Yes	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL interface modules

Article number	6AG2155-6AA01-4BN0 SIPLUS ET 200SP IM155-6PN ST BA TX RAIL	6AG2155-6AU01-4BN0 SIPLUS ET 200SP IM155-6PN ST TX RAIL	6AG2155-6AU00-1CN0 SIPLUS ET 200SP IM155-6PN HF T1 RAIL
PROFINET IO Device			
Services			
- Isochronous mode	No	No	Yes; Bus cycle time: min. 250 µs
- Open IE communication	Yes	Yes	Yes
- IRT	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs	Yes; 250 µs, 500 µs, 1 ms, 2 ms, 4 ms additionally with IRT with high perfor- mance: 250 µs to 4 ms in 125 µs frame
- PROFIenergy	Yes	Yes	Yes
- Prioritized startup	Yes	Yes	Yes
- Shared device	Yes	Yes	Yes
- Number of IO Controllers with shared device, max.	2	2	4
Redundancy mode			
- MRP	Yes	Yes	Yes
- MRPD	No	No	No
- PROFINET system redundancy (S2)	No	No	Yes; NAP S2
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• SNMP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	Yes
Equidistance			Yes
shortest clock pulse			250 µs
max. cycle			4 ms
Bus cycle time (TDP), min.			250 µs
Interrupts/diagnostics/ status information			
Status indicator	Yes	Yes	Yes
Alarms	Yes	Yes	Yes
Diagnostic functions	Yes	Yes	Yes
Diagnostics indication LED			
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• MAINT LED	Yes; yellow LED	Yes; yellow LED	Yes; yellow LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Connection display LINK TX/RX			Yes; 2x green link LEDs on BusAdapter
• Connection to network LINK (green)	Yes; 2x green link LEDs on BusAdapter	Yes; 2x green link LEDs on BusAdapter	
Isolation			
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates			
Network loading class	2	2	3
Security level	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1
Railway application			
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommuni- cations systems	Yes; EMC for signal and telecommuni- cations systems	Yes; EMC for signal and telecommuni- cations systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient condi- tions	Yes; Rail vehicles - see ambient condi- tions	Yes; Rail vehicles - see ambient condi- tions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL interface modules

Article number	6AG2155-6AA01-4BN0 SIPLUS ET 200SP IM155-6PN ST BA TX RAIL	6AG2155-6AU01-4BN0 SIPLUS ET 200SP IM155-6PN ST TX RAIL	6AG2155-6AU00-1CN0 SIPLUS ET 200SP IM155-6PN HF T1 RAIL
Railway application			
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes	Yes	
• Protection against fouling acc. to EN 60664-3	Yes	Yes	
• Electronic equipment on rolling stock acc. to EN 50155	Yes	Yes	
• Acceptance criteria for electronic modules in accordance with IPC-A-610	Yes	Yes	
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes	Yes	

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL interface modules

Article number	6AG2155-6AA01-4BN0 SIPLUS ET 200SP IM155-6PN ST BA TX RAIL	6AG2155-6AU01-4BN0 SIPLUS ET 200SP IM155-6PN ST TX RAIL	6AG2155-6AU00-1CN0 SIPLUS ET 200SP IM155-6PN HF T1 RAIL
Dimensions			
Width	50 mm	50 mm	50 mm
Height	117 mm	117 mm	117 mm
Depth	74 mm	74 mm	74 mm
Weights			
Weight, approx.	190 g; IM 155-6 PN BA with 2x RJ45 ports and server module	147 g; without BusAdapter	147 g; without BusAdapter
Other			
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data	Article No.	Article No.
SIPLUS extreme RAIL SIPLUS IM155-6PN Standard PROFINET interface module with server module SIPLUS ET 200SP IM155-6PN ST BA TX RAIL With server module and installed SIMATIC BusAdapter BA 2xRJ45; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.); extended power failure backup time	6AG2155-6AA01-4BN0	Accessories SIPLUS extreme RAIL BusAdapter SIPLUS ET 200SP BA 2XRJ45 TX RAIL For PROFINET interface modules in Standard function class or above; max. cable length 50 m; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.) SIPLUS ET 200SP BA 2XFC TX RAIL For PROFINET interface modules in Standard function class or above; for increased vibration and EMC load rating; max. cable length 50 m; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)
SIPLUS ET 200SP IM155-6PN ST TX RAIL With server module, without SIMATIC BusAdapter; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.); extended power failure backup time	6AG2155-6AU01-4BN0	6AG2193-6AR00-4AA0
SIPLUS ET 200SP IM155-6PN HF TX RAIL with server module, without SIMATIC BusAdapter; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +55 °C (+70 °C for 10 min.)	6AG2155-6AU00-1CN0	6AG2193-6AF00-4AA0

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital inputs**Overview**

- 4, 8 and 16-channel digital input (DI) modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

For different requirements, the digital input modules offer:

- Function classes Standard and High Feature
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Connection option of sensors compliant with IEC 61131 Type 1, 2 or 3 (module-dependent) for rated voltages of up to 24 V DC or 230 V AC
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Optional accessories
 - Labeling strips (film or card)
 - Reference identification label
 - Color-coded label with module-specific CC Code
 - Shielding terminal

A quick and clear comparison of the functions of the different DI modules is offered by the TIA Selection Tool.

Overview of digital input modules

Digital input	PU	Article No.	CC code	BU type
DI 16 x 24 V DC ST	1	6AG2131-6BH00-4BA0	CC00	A0
DI 8 x NAMUR HF	1	6AG2131-6TF00-4CA0	CC01	A0
DI 4 x 120 ... 230 V AC ST	1	6AG2131-6FD00-4BB1	CC41	B1

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4BA0	CC01 to CC05	--

Technical specifications

Article number	6AG2131-6BH00-4BA0	6AG2131-6TF00-4CA0	6AG2131-6FD00-4BB1
	SIPLUS ET 200SP DI 16x24VDC ST TX RAIL	SIPLUS ET 200SP DI 8xNAMUR HF TX RAIL	SIPLUS ET 200SP DI 4x120/230VAC TX RAIL
General information			
Product type designation	DI 16x24 VDC ST	DI 8xNAMUR HF	DI 4x120 ... 230 V AC ST
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Operating mode			
• DI	Yes	Yes	Yes
• Counter	No	No	No
• Oversampling	No	No	No
• MSI	No	No	No

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital inputs

Article number	6AG2131-6BH00-4BA0	6AG2131-6TF00-4CA0	6AG2131-6FD00-4BB1
	SIPLUS ET 200SP DI 16X24VDC ST TX RAIL	SIPLUS ET 200SP DI 8xNAMUR HF TX RAIL	SIPLUS ET 200SP DI 4X120/230VAC TX RAIL
Supply voltage			
Type of supply voltage	DC	24 V DC	100 - 240 V AC
Rated value (DC)	24 V	24 V	
Rated value (AC)			230 V
Reverse polarity protection	Yes	Yes	No
Encoder supply			
Number of outputs		8	4
Short-circuit protection	No	Yes	No; when using BU type B1, a fuse with 10 A tripping current must be provided
Output current			
• up to 60 °C, max.			10 A
24 V encoder supply			
• 24 V	No	No	No
• Short-circuit protection	No	No	No
Digital inputs			
Number of digital inputs	16; > +60 °C, number of simultaneously controllable inputs max. 4	8; > +60 °C number of simultaneously controllable inputs max. 4 (no adjacent points)	4
Digital inputs, parameterizable		Yes	
Source/sink input	P-reading		No
Input characteristic curve in accordance with IEC 61131, type 1	Yes		
Input characteristic curve in accordance with IEC 61131, type 2	No		
Input characteristic curve in accordance with IEC 61131, type 3	Yes		Yes
Pulse extension	No	Yes; 0.5 s, 1 s, 2 s	No
Edge evaluation		Yes; rising edge, falling edge, edge change	
Signal change flutter		Yes; 2 to 32 signal changes	
Flutter observation window		Yes; 0.5 s, 1 s to 100 s in 1-s steps	
Input voltage			
• Type of input voltage	DC	DC	120/230 V AC (47 Hz to 63 Hz)
• Rated value (DC)	24 V	8.2 V	
• Rated value (AC)			230 V
• for signal "0"	-30 to +5V		0V AC to 40V AC
• for signal "1"	+11 to +30V		74 V AC to 264 V AC
Input current			
• for signal "1", typ.	2.5 mA		10.8 mA
for 10 k switched contact			
- for signal "0"		0.35 to 1.2 mA	
- for signal "1"		2.1 to 7 mA	
for unswitched contact			
- for signal "0", max. (permissible quiescent current)		0.5 mA	
- for signal "1"		typ. 8 mA	
for NAMUR encoders			
- for signal "0"		0.35 to 1.2 mA	
- for signal "1"		2.1 to 7 mA	
Input delay (for rated value of input voltage)			
• tolerated changeover time for changeover contacts		300 ms	
for standard inputs			
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	No	No
for interrupt inputs			
- parameterizable	No		

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital inputs

Article number	6AG2131-6BH00-4BA0 SIPLUS ET 200SP DI 16X24VDC ST TX RAIL	6AG2131-6TF00-4CA0 SIPLUS ET 200SP DI 8xNAMUR HF TX RAIL	6AG2131-6FD00-4BB1 SIPLUS ET 200SP DI 4X120/230VAC TX RAIL
for counter/technological functions			
- parameterizable	No		
for NAMUR inputs			
- at "0" to "1", max.		12 ms	
- at "1" to "0", max.		12 ms	
Cable length			
• shielded, max.	1 000 m	200 m	1 000 m
• unshielded, max.	600 m		600 m
Encoder			
Connectable encoders			
• NAMUR encoder/changeover contact according to EN 60947		Yes	
• Single contact / changeover contact unconnected		Yes	
• Single contact / changeover contact connected with 10 kΩ		Yes	
• 2-wire sensor	Yes		Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA		
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	No
Interrupts/diagnostics/status information			
Diagnostics function	Yes	Yes	
Alarms			
• Diagnostic alarm	Yes	Yes; channel by channel	No
• Hardware interrupt		Yes; Parameterizable, channels 0 to 7	No
Diagnostic messages			
• Diagnostic information readable	Yes	Yes	
• Monitoring the supply voltage	Yes	Yes	
- parameterizable	Yes	Yes	
• Monitoring of encoder power supply	No	Yes; channel by channel	
• Wire-break	Yes; Module-wise	Yes; channel by channel	No
• Short-circuit	No	Yes; channel by channel	No
• Group error	Yes	Yes	Yes
Diagnostics indication LED			
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	Yes; Red LED	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation			
Potential separation channels			
• between the channels and backplane bus	Yes	Yes	Yes
Isolation			
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)	2 300 V AC for 1 minute (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates			
Suitable for safety functions	No	No	No
Railway application			
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital inputs

Article number	6AG2131-6BH00-4BA0 SIPLUS ET 200SP DI 16X24VDC ST TX RAIL	6AG2131-6TF00-4CA0 SIPLUS ET 200SP DI 8xNAMUR HF TX RAIL	6AG2131-6FD00-4BB1 SIPLUS ET 200SP DI 4X120/230VAC TX RAIL
Railway application			
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions			
Width	15 mm	15 mm	20 mm
Height	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm
Weights			
Weight, approx.	28 g	32 g	36 g
Other			
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital inputs**Ordering data****Article No.****Article No.****SIPLUS extreme RAIL digital inputs**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

SIPLUS ET 200SP
DI 16X24 V DC ST TX RAIL,
BU type A0, color code CC00;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2131-6BH00-4BA0

SIPLUS ET 200SP
DI 8xNAMUR HF TX RAIL,
BU type A0, color code CC01;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2131-6TF00-4CA0

SIPLUS ET 200SP
DI 4X120/230 V AC TX RAIL,
BU type B1, color code CC41;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2131-6FD00-4BB1**Suitable SIPLUS extreme RAIL BaseUnits****SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A);
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP00-4DA0**SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP00-4BA0**SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A);
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP20-4DA0**SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP20-4BA0**SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; 1 unit

6AG2193-6BP20-4BB1

Overview



- 4, 8 and 16-channel digital output (DQ) modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

For different requirements, the digital output modules offer:

- Function classes Basic and High Feature
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option of connecting actuators with rated load voltages of up to 120 V DC or 230 V AC and load currents of up to 5 A (depending on module)
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Optional accessories
 - Labeling strips (film or card)
 - Reference identification label
 - Color-coded label with module-specific CC Code
 - Shielding terminal

A quick and clear comparison of the functions of the different DQ modules is offered by the TIA Selection Tool.

Overview of digital output modules

Digital output	PU	Article No.	CC code	BU type
DQ 16 x 24 V DC/0.5 A ST	1	6AG2132-6BH00-4BA0	CC00	A0
DQ 8 x 24 V DC/0.5 A HF	1	6AG2132-6BF00-4CA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6AG2132-6BD20-4BA0	CC02	A0

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4BA0	CC01 to CC05	--

Technical specifications

Article number	6AG2132-6BH00-4BA0	6AG2132-6BF00-4CA0	6AG2132-6BD20-4BA0
	SIPLUS ET 200SP DQ 16X24VDC/0.5A TX RAIL	SIPLUS ET 200SP DQ 8X24VDC/0.5A TX RAIL	SIPLUS ET 200SP DQ 4X24VDC/2A ST TX RAIL
General information			
Product type designation	DQ 16x24 VDC/0.5 A ST	DQ 8x24 VDC/0.5 A ST	DQ 4x24 V DC/2 A ST
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Operating mode			
• DQ	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No
• PWM	No	No	No
• Oversampling	No	No	No
• MSO	No	Yes	No

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital outputs

Article number	6AG2132-6BH00-4BA0 SIPLUS ET 200SP DQ 16X24VDC/0.5A TX RAIL	6AG2132-6BF00-4CA0 SIPLUS ET 200SP DQ 8X24VDC/0.5A TX RAIL	6AG2132-6BD20-4BA0 SIPLUS ET 200SP DQ 4X24VDC/2A ST TX RAIL
Supply voltage			
Type of supply voltage	24 V DC	DC	DC
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Digital outputs			
Type of digital output		Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)
Number of digital outputs	16; > +60 °C max. total current 1.0 A	8; > +60 °C max. total current 1.0 A	4; > +60 °C number of simultaneously controllable outputs max. 2 x 0.25 A or max. 4 x 0.125 A, max. total current 0.5 A
Current-sinking	No	No	No
Current-sourcing	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	Typ. L+ (-50 V)	Typ. L+ (-50 V)
Controlling a digital input	Yes	Yes	Yes
Switching capacity of the outputs			
• with resistive load, max.	0.5 A	0.5 A	2 A
• on lamp load, max.	5 W	5 W	10 W
Load resistance range			
• lower limit	48 Ω	48 Ω	12 Ω
• upper limit	12 kΩ	12 kΩ	3 400 Ω
Output voltage			
• Type of output voltage	DC	DC	DC
Output current			
• for signal "1" rated value	0.5 A	0.5 A	2 A
• for signal "0" residual current, max.	0.1 mA	0.1 mA	0.1 mA
Output delay with resistive load			
• "0" to "1", typ.	50 μs	50 μs	50 μs
• "0" to "1", max.			50 μs
• "1" to "0", typ.	100 μs	100 μs	100 μs
• "1" to "0", max.			100 μs
Parallel switching of two outputs			
• for uprating	No	No	No
• for redundant control of a load	Yes	Yes	Yes
Switching frequency			
• with resistive load, max.	100 Hz	100 Hz	100 Hz
• with inductive load, max.	2 Hz	2 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz
Total current of the outputs			
• Current per channel, max.	0.5 A	0.5 A	2 A
• Current per module, max.	8 A	4 A	8 A
Total current of the outputs (per module)			
horizontal installation			
- up to 30 °C, max.	8 A		8 A
- up to 40 °C, max.	8 A		8 A
- up to 50 °C, max.	6 A		6 A
- up to 60 °C, max.	4 A	4 A	4 A
- up to 70 °C, max.		1 A	0.5 A
vertical installation			
- up to 30 °C, max.			8 A
- up to 40 °C, max.			6 A
- up to 50 °C, max.		4 A; in all other mounting positions	4 A
- up to 60 °C, max.			4 A

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital outputs

Article number	6AG2132-6BH00-4BA0 SIPLUS ET 200SP DQ 16X24VDC/0.5A TX RAIL	6AG2132-6BF00-4CA0 SIPLUS ET 200SP DQ 8X24VDC/0.5A TX RAIL	6AG2132-6BD20-4BA0 SIPLUS ET 200SP DQ 4X24VDC/2A ST TX RAIL
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	Yes	No
Execution and activation time (TCO), min.		48 µs	
Bus cycle time (TDP), min.		500 µs	
Interrupts/diagnostics/status information			
Diagnostics function	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
Diagnostic messages			
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire-break	Yes; Module-wise	Yes; channel by channel	Yes; Module-wise
• Short-circuit	Yes; Module-wise	Yes; channel by channel	Yes; Module-wise
• Group error	Yes	Yes	Yes
Diagnostics indication LED			
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	Yes; Red LED	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation			
Potential separation channels			
• between the channels and backplane bus	Yes	Yes	Yes
Isolation			
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates			
Suitable for safety functions	No	No	No
Railway application			
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL digital outputs

Article number	6AG2132-6BH00-4BA0 SIPLUS ET 200SP DQ 16X24VDC/0.5A TX RAIL	6AG2132-6BF00-4CA0 SIPLUS ET 200SP DQ 8X24VDC/0.5A TX RAIL	6AG2132-6BD20-4BA0 SIPLUS ET 200SP DQ 4X24VDC/2A ST TX RAIL
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions			
Width	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm
Weights			
Weight, approx.	28 g	30 g	30 g
Other			
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

3/69

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs**Overview**

- 2, 4 and 8-channel analog input (AI) modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

For different requirements, the analog output modules offer:

- Function classes Basic and High Feature
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option of connecting current, voltage and resistance sensors, as well as thermocouples
- Energy Meter for recording up to 200 electrical variables
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - Scalable measuring range (adaptation of measuring range, increase of the 16-bit resolution by adapting the measuring range to a limited section)
- Optional accessories
 - Labeling strips (film or card)
 - Reference identification label
 - Color-coded label with module-specific CC Code
 - Shielding terminal

A quick and clear comparison of the functions of the AI modules is offered by the TIA Selection Tool.

Overview of analog input modules

Analog input	PU	Article No.	CC code	BU type
AI 4 x I 2-/4-wire ST	1	6AG2134-6GD00-4BA1	CC03	A0, A1
AI 4 x U/I 2-wire ST	1	6AG2134-6HD00-4BA1	CC03	A0, A1
AI 2 x U/I 2/4-wire HF	1	6AG2134-6HB00-1CA1	CC05	A0, A1
AI 8 x RTD/TC 2-wire HF	1	6AG2134-6JF00-1CA1	CC00	A0, A1
AI Energy Meter ST	1	6AG2134-6PA00-4BD0	CC00	D0
AI Energy Meter 480 V AC ST	1	6AG2134-6PA20-4BD0	CC00	D0

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4BA0	CC01 to CC05	--
BU type D0 • Forwarding of load group (dark) • 12 process terminals • Without AUX terminals	1	6AG2193-6BP00-4BD0	--	--

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Technical specifications

Article number	6AG2134-6GD00-4BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6HD00-4BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HB00-1CA1 SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6JF00-1CA1 SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL
General information				
Product type designation	AI 4xl 2-/4-wire ST	AI 4xU/I 2-wire ST	AI 2xU/I 2-4-wire HF	ET 200SP, AI 8x RTD/TC 2-wire HF, PU 1
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Measuring range scalable	No	No	No	
Operating mode				
• Oversampling	No	No	No	No
• MSI	No	No	Yes	No
Supply voltage				
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Analog inputs				
Number of analog inputs	4; > 60 °C max. 1x ±20 mA permissible	4; > 60 °C max. 1x ±20 mA or 4x ±10 V permissible	2; Differential inputs	8
permissible input voltage for voltage input (destruction limit), max.		30 V	30 V	30 V
permissible input current for current input (destruction limit), max.	50 mA	50 mA	50 mA	
Constant measurement current for resistance-type transmitter, typ.				2 mA
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)		Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)
Technical unit for temperature measurement adjustable				Yes; °C/°F/K
Analog input with oversampling			No	
Standardization of measured values			Yes	
Input ranges (rated values), voltages				
• 0 to +10 V		Yes; 15 bit	Yes; 15 bit	
• 1 V to 5 V		Yes; 15 bit	Yes; 15 bit	
• -1 V to +1 V				Yes; 16 bit incl. sign
• -10 V to +10 V		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• -250 mV to +250 mV				Yes; 16 bit incl. sign
• -5 V to +5 V		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• -50 mV to +50 mV				Yes; 16 bit incl. sign
• -80 mV to +80 mV				Yes; 16 bit incl. sign
Input ranges (rated values), currents				
• 0 to 20 mA	Yes	Yes; 15 bit	Yes; 15 bit	
• -20 mA to +20 mA	Yes		Yes; 16 bit incl. sign	
• 4 mA to 20 mA	Yes	Yes; 15 bit	Yes; 15 bit	
Input ranges (rated values), thermocouples				
• Type B				Yes; 16 bit incl. sign
• Type C				Yes; 16 bit incl. sign
• Type E				Yes; 16 bit incl. sign
• Type J				Yes; 16 bit incl. sign
• Type K				Yes; 16 bit incl. sign
• Type L				Yes; 16 bit incl. sign
• Type N				Yes; 16 bit incl. sign
• Type R				Yes; 16 bit incl. sign
• Type S				Yes; 16 bit incl. sign
• Type T				Yes; 16 bit incl. sign
• Type U				Yes; 16 bit incl. sign
• Type TXK/TXK(L) to GOST				Yes; 16 bit incl. sign

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6GD00-4BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6HD00-4BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HB00-1CA1 SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6JF00-1CA1 SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL
Input ranges (rated values), resistance thermometer				Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign Yes; 16 bit incl. sign
• Ni 100 • Ni 1000 • LG-Ni 1000 • Ni 120 • Ni 200 • Ni 500 • Pt 100 • Pt 1000 • Pt 200 • Pt 500				
Input ranges (rated values), resistors				Yes; 15 bit Yes; 15 bit Yes; 15 bit Yes; 15 bit Yes; 15 bit Yes; 15 bit
• 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms • 0 to 3000 ohms • 0 to 6000 ohms • PTC				
Thermocouple (TC)				
Temperature compensation				
- parameterizable				Yes
Cable length				
• shielded, max.	1 000 m	1 000 m; 200 m for voltage measurement	1 000 m; 200 m for voltage measurement	200 m; 50 m with thermo-couples
Analog value generation for the inputs				
Measurement principle	integrating (Sigma-Delta)	integrating (Sigma-Delta)	Sigma Delta	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel				
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes	Yes
• Basic conversion time, including integration time (ms)				
- additional processing time for wire-break check				2 ms; In the ranges resistance thermometers, resistors and thermocouples
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 / 300 / 600 / 1 200 / 2 400 / 4 800	16.6 / 50 / 60 Hz
• Conversion time (per channel)	180 / 60 / 50 ms	180 / 60 / 50 ms		180 / 60 / 50 ms
• Basic execution time of the module (all channels released)			1 ms	
Smoothing of measured values				
• Number of smoothing levels	4; None; 4/8/16 times	4; None; 4/8/16 times	6; none; 2-/4-/8-/16-/32-fold	4; None; 4/8/16 times
• parameterizable	Yes	Yes	Yes	Yes
Encoder				
Connection of signal encoders				
• for voltage measurement	No	Yes	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes	Yes	
- Burden of 2-wire transmitter, max.	650 Ω	650 Ω	650 Ω	
• for current measurement as 4-wire transducer	Yes	No	Yes	
• for resistance measurement with two-wire connection				Yes
• for resistance measurement with three-wire connection				No
• for resistance measurement with four-wire connection				No

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6GD00-4BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6HD00-4BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HB00-1CA1 SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6JF00-1CA1 SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL
Errors/accuracies				
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input range, (+/-)		0.3 %	0.05 %; 0.1 % at SFU 4.8 kHz	0.05 %
• Current, relative to input range, (+/-)	0.3 %	0.3 %	0.05 %; 0.1 % at SFU 4.8 kHz	
• Resistance, relative to input range, (+/-)				0.05 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 =$ interference frequency				
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	70 dB		70 dB
• Common mode voltage, max.	10 V	10 V	35 V	10 V
• Common mode interference, min.	90 dB	90 dB	90 dB	90 dB
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No	No	Yes	No
Filtering and processing time (TCI), min.			800 µs	
Bus cycle time (TDP), min.			1 ms	
Interrupts/diagnostics/status information				
Diagnostics function	Yes		Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
• Limit value alarm	No	No	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnostic messages				
• Monitoring the supply voltage	Yes	Yes	Yes	Yes
• Wire-break	Yes; at 4 to 20 mA	Yes; at 4 to 20 mA	Yes; Measuring range 4 to 20 mA only	Yes; channel by channel
• Short-circuit	Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; channel-by-channel, at 1 to 5 V or for short-circuit in encoder supply	
• Group error	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes; channel by channel
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; Green/red LED	Yes; Green/red LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates				
Suitable for safety functions	No	No	No	No

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6GD00-4BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6HD00-4BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HB00-1CA1 SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6JF00-1CA1 SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL
Railway application				
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes	Yes
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6GD00-4BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE TX RAIL	6AG2134-6HD00-4BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE TX RAIL	6AG2134-6HB00-1CA1 SIPLUS ET 200SP AI 2XU/I 2/4W HF T1 RAIL	6AG2134-6JF00-1CA1 SIPLUS ET 200SP AI 8XRTD/TC T1 RAIL
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	73 mm	73 mm	73 mm	73 mm
Depth	58 mm	58 mm	58 mm	58 mm
Weights				
Weight, approx.	31 g	31 g	32 g	32 g
Other				
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Article number	6AG2134-6PA00-4BD0 SIPLUS ET 200SP AI ENERGY METER TX RAIL	6AG2134-6PA20-4BD0 SIPLUS ET 200SP AI EMETER 480VAC TX RAIL
General information		
Product type designation	AI energy meter 400VAC ST	ET 200SP, AI Energy Meter 480 V AC ST, PU 1
Product function		
• Voltage measurement	Yes	Yes
- with voltage transformer	No	Yes
• Current measurement	Yes	Yes
- without current transformer	No	No
- with current transformer	Yes	Yes
• Energy measurement	Yes	Yes
• Frequency measurement	Yes	Yes
• Power measurement	Yes	Yes
• Active power measurement	Yes	Yes
• Reactive power measurement	Yes	Yes
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Isochronous mode	No	No
Operating mode		
• cyclic measurement	Yes	Yes
• acyclic measurement	Yes	Yes
• Acyclic measured value access	Yes	Yes
• Fixed measured value sets	Yes	Yes
• Freely definable measured value sets	No	Yes
Installation type/mounting		
Mounting position	Horizontal	Any
Supply voltage		
Design of the power supply	Supply via voltage measurement channel L1	Supply via voltage measurement channel L1
Type of supply voltage	100 - 240 V AC	AC 100 - 277 V
Line frequency		
• permissible range, lower limit	47 Hz	47 Hz
• permissible range, upper limit	63 Hz	63 Hz
Analog inputs		
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6PA00-4BD0 SIPLUS ET 200SP AI ENERGY METER TX RAIL	6AG2134-6PA20-4BD0 SIPLUS ET 200SP AI EMETER 480VAC TX RAIL
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	Yes	Yes
• Limit value alarm	No	Yes
• Hardware interrupt	No	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)
Diagnostics indication LED		
• Monitoring of the supply voltage (PWR-LED)	Yes	Yes
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; red Fn LED	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Integrated Functions		
Measuring functions		
• Measuring procedure for voltage measurement	TRMS	TRMS
• Measuring procedure for current measurement	TRMS	TRMS
• Type of measured value acquisition	seamless	seamless
• Curve shape of voltage	Sinusoidal or distorted	Sinusoidal or distorted
• Buffering of measured variables	No	Yes
• Parameter length	38 byte	74 byte
• Bandwidth of measured value acquisition	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz
Measuring range		
- Frequency measurement, min.	45 Hz	45 Hz
- Frequency measurement, max.	65 Hz	65 Hz
Measuring inputs for voltage		
- Measurable line voltage between phase and neutral conductor	230 V	277 V
- Measurable line voltage between the line conductors	400 V	480 V
- Measurable line voltage between phase and neutral conductor, min.	90 V	90 V
- Measurable line voltage between phase and neutral conductor, max.	264 V	293 V
- Measurable line voltage between the line conductors, min.	155 V	155 V
- Measurable line voltage between the line conductors, max.	460 V	508 V
- Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II; CAT III in case of guaranteed protection level of 1.5 kV	CAT II; CAT III in case of guaranteed protection level of 1.5 kV
- Internal resistance line conductor and neutral conductor	3.4 MΩ	3.4 MΩ
- Power consumption per phase	20 mW	20 mW
- Impulse voltage resistance 1,2/50μs	1 kV	1 kV
Measuring inputs for current		
- measurable relative current (AC), min.	5 %; Relative to the secondary rated current; 1 A, 5 A	1 %; Relative to the secondary rated current 5 A
- measurable relative current (AC), max.	100 %; Relative to the secondary rated current; 1 A, 5 A	100 %; Relative to the secondary rated current 5 A
- Continuous current with AC, maximum permissible	5 A; at > +60 °C max. permissible current 1 A per phase	5 A; at > +60 °C max. permissible current 1 A per phase
- Apparent power consumption per phase for measuring range 5 A	0.6 V·A	0.6 V·A
- Rated value short-time withstand current restricted to 1 s	100 A	100 A

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6PA00-4BD0 SIPLUS ET 200SP AI ENERGY METER TX RAIL	6AG2134-6PA20-4BD0 SIPLUS ET 200SP AI EMETER 480VAC TX RAIL
Measuring inputs for current		
- Input resistance measuring range 0 to 5 A	25 mΩ	25 mΩ; At the terminal
- Zero point suppression	Parameterizable: 20 ... 250 mA, default 50 mA	Parameterizable: 2 ... 250 mA, default 50 mA
- Surge strength	10 A; for 1 minute	10 A; for 1 minute
Accuracy class according to IEC 61557-12		
- Measured variable voltage	0.5	0.2
- Measured variable current	0.5	0.2
- Measured variable apparent power	1	0.5
- Measured variable active power	1	0.5
- Measured variable reactive power	1	1
- Measured variable power factor	0.5	0.5
- Measured variable active energy	1	0.5
- Measured variable reactive energy	2	1
- Measured variable neutral current		0.5; calculated
- Measured variable phase angle	±1 °; not covered by IEC 61557-12	±1 °; not covered by IEC 61557-12
- Measured variable frequency	0.05	0.05
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes; 3 700V AC (type test) CAT III	Yes; 3 700V AC (type test) CAT III
Isolation		
Isolation tested with	2 300 V AC for 1 minute (type test) and according to EN 50155 (routine test)	2 300 V AC for 1 minute (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates		
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV3; pollution degree PD2; UNm = 277/480 V AC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Article number	6AG2134-6PA00-4BD0 SIPLUS ET 200SP AI ENERGY METER TX RAIL	6AG2134-6PA20-4BD0 SIPLUS ET 200SP AI EMETER 480VAC TX RAIL
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions		
Width	20 mm	20 mm
Height		73 mm
Depth		58 mm
Weights		
Weight (without packaging)	45 g	45 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776
Data for selecting a current transformer		
• Burden power current transformer x/1A, min.	As a function of cable length and cross section, see device manual	As a function of cable length and cross section, see device manual
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual	As a function of cable length and cross section, see device manual

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog inputs

Ordering data	Article No.		Article No.
SIPLUS extreme RAIL analog inputs Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic SIPLUS ET 200SP AI 4xI 2/4-wire TX RAIL, BU type A0 or A1, color code CC03; 16-bit, $\pm 0.3\%$; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2134-6GD00-4BA1	SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BA0
SIPLUS ET 200SP AI 4XU/I 2 W ST TX RAIL, BU type A0 or A1, color code CC03; 16-bit, $\pm 0.1\%$; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2134-6HD00-4BA1	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4DA0
SIPLUS ET 200SP AI 2XU/I 2/4 W HF T1 RAIL, BU type A0 or A1, color code CC05; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)	6AG2134-6HB00-1CA1		
SIPLUS ET 200SP AI 8xRTD/TC HF T1 RAIL, BU type A0 or A1, color code CC00; 16-bit, $\pm 0.1\%$, scalable measuring range, for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)	6AG2134-6JF00-1CA1	SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4BA0
SIPLUS ET 200SP AI Energy Meter 400 V AC TX RAIL, BU type D0; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2134-6PA00-4BD0	Suitable SIPLUS extreme RAIL BaseUnits, type D0	
SIPLUS ET 200SP AI Energy Meter 480 V AC TX RAIL, BU type D0; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2134-6PA20-4BD0	SIPLUS ET 200SP BU20-P12+A0+0B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BD0
Suitable SIPLUS extreme RAIL BaseUnits, type A0			
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4DA0		

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog outputs**Overview**

- 4-channel analog output (AQ) modules
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

For different requirements, the analog output modules offer:

- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option for connecting current and voltage actuators
- Clear labeling on front of module
- LEDs for diagnostics, status, supply voltage and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Optional accessories
 - Labeling strips (film or card)
 - Reference identification label
 - Color-coded label with module-specific CC Code
 - Shielding terminal

A quick and clear comparison of the functions of the AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	PU	Article No.	CC code	BU type
AQ 4 x U/I ST	1	6AG2135-6HD00-4BA1	CC00	A0, A1

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6AG2193-6BP20-4BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6AG2193-6BP00-4BA0	CC01 to CC05	--

Technical specifications

Article number	6AG2135-6HD00-4BA1
	SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
General information	
Product type designation	AQ 4xU/I ST
Product function	
• I&M data	Yes; I&M0 to I&M3
• Output range scalable	No
Operating mode	
• Oversampling	No
• MSO	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes

Article number	6AG2135-6HD00-4BA1
	SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
Analog outputs	
Number of analog outputs	4; > +60 °C max. 2x ±10 V permissible
Cycle time (all channels), min.	5 ms
Analog output with oversampling	No
Output ranges, voltage	
• 0 to 10 V	Yes; 15 bit
• 1 V to 5 V	Yes; 13 bit
• -5 V to +5 V	Yes; 15 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog outputs

Article number	6AG2135-6HD00-4BA1 SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
Output ranges, current	
• 0 to 20 mA	Yes; 15 bit
• -20 mA to +20 mA	Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes; 14 bit
Connection of actuators	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	2 kΩ
• with voltage outputs, capacitive load, max.	1 μF
• with current outputs, max.	500 Ω
• with current outputs, inductive load, max.	1 mH
Cable length	
• shielded, max.	1 000 m; 200 m for voltage output
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
Settling time	
• for resistive load	0.1 ms
• for capacitive load	1 ms
• for inductive load	0.5 ms
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.3 %
• Current, relative to output range, (+/-)	0.3 %
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	No
• for module diagnostics	Yes; green/red DIAG LED

Article number	6AG2135-6HD00-4BA1 SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL analog outputs

Article number	6AG2135-6HD00-4BA1 SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *

Article number	6AG2135-6HD00-4BA1 SIPLUS ET 200SP AQ 4XU/I ST TX RAIL
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	31 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**Article No.****Article No.****SIPLUS extreme RAIL analog outputs**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

SIPLUS ET 200SP AQ 4XU/I ST TX RAIL, BU type A0 or A1, color code CC03; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2135-6HD00-4BA1**Suitable SIPLUS extreme RAIL BaseUnits, type A0****SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP00-4DA0**SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP00-4BA0**SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP20-4DA0**SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL**

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP20-4BA0

Overview



Technical properties

- Counter module for ET 200SP
- Interfaces:
 - 24 V encoder signals A, B and N from P, M or push-pull-switching encoders and sensors
 - 24 V encoder supply output, short-circuit proof
 - 3 digital inputs for controlling the count operation, for saving or for setting the count value
 - 2 digital outputs for fast reactions regardless of the counter status or measured value

- Counting frequency 200 kHz (800 kHz with quadruple evaluation)
- Counting range: +/- 31 bits
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- 24 V incremental encoder with and without signal N
- 24 V pulse encoder with direction signal
- 24 V pulse encoder without direction signal
- 24 V pulse encoder for pulse up and down respectively

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Technical specifications

Article number	6AG2138-6AA00-1BA0
	SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
General information	
Product type designation	TM Count 1x24V
Product function	
• I&M data	Yes; I&M0 to I&M3
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA
Digital inputs	
Number of digital inputs	3
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Capture	Yes
• Synchronization	Yes
• Freely usable digital input	Yes
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V
• permissible voltage at input, max.	30 V

Article number	6AG2138-6AA00-1BA0
	SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
for counter/technological functions	
- parameterizable	Yes
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL technology modules > SIPLUS extreme RAIL TM COUNT 1X24 V T1 counter module

Article number	6AG2138-6AA00-1BA0 SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 μs
• "1" to "0", max.	50 μs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per module, max.	1 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	24 V
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Cable length, shielded, max.	600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
• Signal filter, parameterizable	Yes
• Incremental encoder with A/B tracks, 90° phase offset	Yes
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes
Encoder signal 24 V	
- permissible voltage at input, min.	-30 V
- permissible voltage at input, max.	30 V
Interface types	
• Source/sink input	Yes
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes

Article number	6AG2138-6AA00-1BA0 SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator backward counting (green)	Yes
• Status indicator forward counting (green)	Yes
Integrated Functions	
Number of counters	1
Counting frequency (counter) max.	800 kHz; with quadruple evaluation
Counting functions	
• Can be used with TO High_Speed_Counter	Yes
• Continuous counting	Yes
• Counter response parameterizable	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
Comparator	
- Number of comparators	2
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
Measuring functions	
• Measuring time, parameterizable	Yes
• Dynamic measurement period adjustment	Yes
• Number of thresholds, parameterizable	2
Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	800 kHz
- Cycle duration measurement, min.	1.25 μs
- Cycle duration measurement, max.	25 s
Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
- Velocity measurement	100 ppm; depending on measuring interval and signal evaluation

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL technology modules > SIPLUS extreme RAIL TM COUNT 1X24 V T1 counter module

Article number	6AG2138-6AA00-1BA0 SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG2138-6AA00-1BA0 SIPLUS ET 200SP TM COUNT 1X24V T1 RAIL
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL technology modules > SIPLUS extreme RAIL TM COUNT 1X24 V T1 counter module

Ordering data	Article No.		Article No.
Serial interface SIPLUS extreme RAIL CM PtP T1 RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic for serial communication connections with the interfaces RS 232, RS 422, RS 485, BU type A0, color code CC00; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +55 °C (+70 °C for 10 min.)	6AG2137-6AA00-1BA0	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4DA0
Accessories			
Suitable SIPLUS extreme RAIL BaseUnits, type A0		SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4BA0
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4DA0		
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BA0		

Overview



- 2-channel pulse output module for SIPLUS ET 200SP
- Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- Operating modes:
 - Single pulse with defined length
 - Pulse chain with defined number of pulses
 - Pulse width modulation (with flexible ON period, optional current control and dither function)
 - PWM signal for controlling a DC motor
 - On and OFF delay; rising and falling edge can be delayed separately to the microsecond
 - Frequency output with defined output frequency

- Hardware:
 - 2 24V channels, 2A output current can be switched in parallel to boost performance to 4A of output current
 - Switching frequencies to 10 kHz; at reduced output current to 0.1 A up to 100 kHz
 - Push/pull output driver for especially steep edges at the outputs
 - Polarity change in DC motor operation for direction reversal
 - 1 high-speed 24 V digital input per channel with parameterizable input delay from 4 µs
- Channel functions:
 - HW enable; Start of signal output with the onboard digital input
 - Parameterizable ON delay; for precise deceleration between the HW enable and the start of output
 - Current measurement in the operating modes pulse-width modulation and pulse chain; enables control of the output current mean value over a period. Temperature influences can thus be balanced to the resistance of the actuator.
 - Cyclic control of the respective main setpoint from the PLC in every operating mode; other values can be modified flexibly from the user program.
- Supported system functions:
 - Isochronous mode; enables precision-timed connection of the setpoint output to a higher-level controller
 - Firmware update
 - Identification data I&M

Technical specifications

Article number	6AG2138-6DB00-1BB1
	SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL
General information	
Product type designation	TM Pulse 2x24 V
Product function	
• I&M data	Yes; I&M 0
• Isochronous mode	Yes
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Short-circuit protection	Yes
• Reverse polarity protection	Yes; against destruction
Encoder supply	
Number of outputs	2; A common 24V encoder supply for both channels
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes; per module, electronic
• Output current, max.	300 mA
Digital inputs	
Number of digital inputs	2; 1 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Freely usable digital input	Yes
• HW enable for digital output	Yes

Article number	6AG2138-6DB00-1BB1
	SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V
• permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	4 µs; for parameterization "none"
- at "1" to "0", min.	4 µs; for parameterization "none"
Digital outputs	
Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Current-sinking	Yes
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL technology modules > SIPLUS ET 200SP TM Pulse 2x24 V T1 RAIL pulse output module

Article number	6AG2138-6DB00-1BB1 SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL
Digital output functions, parameterizable	
• Freely usable digital output	Yes
• PWM output	Yes
- Number, max.	2; 1 per channel
- Cycle duration, parameterizable	Yes; Max. 85 s
• Connection of a proportional valve	Yes
• Dithering	Yes
• Current measurement	Yes
• Current control	Yes
• Connection of a DC motor	Yes
• ON-delay	Yes
• OFF-delay	Yes
• Frequency output	Yes
• Pulse train	Yes
• Pulse output	Yes
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W; 1 W with High Speed output
Load resistance range	
• lower limit	12 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "0", max.	1 V
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	2 A; 0.1 A with High Speed output, observe derating
Output delay with resistive load	
• "0" to "1", typ.	0 µs; With High Speed output, 4.5 µs with Standard output
• "0" to "1", max.	0.8 µs; With High Speed output, 9 µs with Standard output
• "1" to "0", typ.	0 µs; With High Speed output, 4.5 µs with Standard output
• "1" to "0", max.	0.8 µs; With High Speed output, 9 µs with Standard output
Parallel switching of two outputs	
• for uprating	Yes
Switching frequency	
• with resistive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• with inductive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	2 A
• Current per group, max.	4 A
• Current per module, max.	4 A
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Bus cycle time (TDP), min.	250 µs; with 1 channel configuration, 375 µs with 2 channel configuration

Article number	6AG2138-6DB00-1BB1 SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Technical specifications (continued)

Article number	6AG2138-6DB00-1BB1 SIPLUS ET 200SP TM PULSE 2x24V T1 RAIL
Relative humidity	
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	50 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Selection and ordering data
SIPLUS ET 200SP TM Pulse 2x24 V T1 RAIL pulse output module
6AG2138-6DB00-1BB1

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

PWM and pulse output, 2 channels
2 A for proportional valves and DC motors;
For areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -25 ... +55 °C
(+70 °C for 10 min.)

Accessories
Suitable SIPLUS extreme RAIL BaseUnits, type B1
SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL
6AG2193-6BP20-4BB1

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; 1 unit

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL communication > SIPLUS extreme RAIL CM PtP T1 serial interface**Overview**

- CM PtP communication module; module for serial communication connections with RS232 and RS422 interfaces. RS485 for the Freeport, 3964(R), Modbus RTU, and USS protocols, max. 115.2 kbit/s, 2 KB frame length, 4 KB receive buffer.

- Protocols supported
 - Freeport: User-parameterizable frame format for universal communication
 - 3964(R) for improved transmission reliability
 - Modbus RTU master (requires instructions in SIMATIC S7)
 - Modbus RTU slave (requires instructions in SIMATIC S7)
 - USS, implemented through instructions
- Interface properties
 - RS232 with auxiliary signals
 - RS422 for full-duplex connections
 - RS485 for half-duplex and multi-point connections
 - Transmission rates from 300 to 115200 bit/s
- Can be plugged into Type A0 BaseUnits (BU) with automatic coding
- LED display for errors, operation, and supply voltage
- Communication display for sending and receiving
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the CM module type: Silver
 - Hardware and firmware version
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional system-integrated shield connection

Technical specifications

Article number	6AG2137-6AA00-1BA0
	SIPLUS ET 200SP CM PTP T1 RAIL
General information	
Product type designation	CM PtP
Product function	
• I&M data	Yes; I&M0 to I&M3
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
1. Interface	
Interface types	
• RS 485	Yes
• RS 422	Yes
• RS 232	Yes
RS 232	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	15 m
• RS 232 auxiliary signals	RTS, CTS, DTR, DSR, RI, DCD
RS 485	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	1 200 m
RS 422	
• Transmission rate, max.	115.2 kbit/s
• Cable length, max.	1 200 m
• 4-wire full duplex connection	Yes
• 4-wire multipoint connection	Yes
Integrated protocols	
Freeport	
- Telegram length, max.	2 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any

Article number	6AG2137-6AA00-1BA0
	SIPLUS ET 200SP CM PTP T1 RAIL
3964 (R)	
- Telegram length, max.	2 kbyte
- Bits per character	7 or 8
- Number of stop bits	1 or 2 bit
- Parity	None, even, odd, always 1, always 0, any
Modbus RTU master	
- Address area	1 to 247, extended 1 to 65535
- Number of slaves, max.	32
MODBUS RTU slave	
- Address area	1 to 247, extended 1 to 65535
Telegram buffer	
• Buffer memory for telegrams	4 kbyte
• Number of telegrams which can be buffered	255
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostic messages	
• Wire-break	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• for module diagnostics	Yes; green/red DIAG LED
• Receive RxID	Yes; Green LED
• Transmit TxID	Yes; Green LED
Potential separation	
between backplane bus and interface	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL communication > SIPLUS extreme RAIL CM PtP T1 serial interface

Article number	6AG2137-6AA00-1BA0 SIPLUS ET 200SP CM PTP T1 RAIL
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG2137-6AA00-1BA0 SIPLUS ET 200SP CM PTP T1 RAIL
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	30 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL communication > SIPLUS extreme RAIL CM PtP T1 serial interface

Ordering data	Article No.		Article No.
Serial interface SIPLUS extreme RAIL CM PtP T1 RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic for serial communication connections with the interfaces RS 232, RS 422, RS 485, BU type A0, color code CC00; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +55 °C (+70 °C for 10 min.)	6AG2137-6AA00-1BA0	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4DA0
Accessories			
Suitable SIPLUS extreme RAIL BaseUnits, type A0			
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4DA0	SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4BA0
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BA0		

Overview



- SIPLUS ET 200SP CM 4xIO-LINK ST T1 RAIL communication module:
Serial communication module for connecting up to 4 IO-Link devices in accordance with IO-Link specification V1.0 and V1.1. The IO-Link parameters are configured using the Port Configuration Tool (PCT), version V3.0 and higher.
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Time-based IO
Time-based IO ensures that signals are output with a precisely defined response time. By combining inputs and outputs, for example, passing products can be accurately measured or fluids dosed in precise quantities.
- Supported data transfer rates
 - COM1 (4.8 kbps)
 - COM2 (38.4 kbps)
 - COM3 (230.4 kbps)

- Expansion limits
 - Length of cable: Max. 20 m
 - Max. 32 bytes of input and output data per port
 - Max. 144 bytes of input data and 128 bytes of output data per module
- Supported ET 200SP system functions
 - Replacement without PG with automatic backup without the engineering tool of the IO Link Device Parameter (V1.1 devices only) and the IO-Link master parameters by means of redundant saving of parameters on the e-coding element
 - Re-parameterization during operation
 - Identification data I&M
 - Firmware update
 - PROFlenergy
- Can be plugged into Type A0 BaseUnits (BU) with automatic e-coding
- LED indicators
 - DIAG: Operating state indicator (green/red) of the module
 - C1..C4: Port status indicator (green) for Port 1, 2, 3 and 4
 - Q1..Q4: Channel status indicator (green) for Port 1, 2, 3 and 4
 - F1..F4: Port fault indicator (red) for Port 1, 2, 3 and 4
 - PWR: Supply voltage indicator (green)
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color-coding of the module class CM: Silver
 - Hardware and firmware version
 - Complete Article No.
- Optional accessories
 - Labeling strips
 - Reference identification label
 - Color-coding plate with color code CC04
- Optional system-integrated shield connection

Overview of CM 4xIO-Link

Communication module	Article No.	CC code	BU type	PU
CM 4xIO-Link	6AG2137-6BD00-1BA0	CC04	A0	1

Overview of BaseUnits

BaseUnit	Article No.	CC codes for process terminals	CC codes for AUX terminals	PU
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	6AG2193-6BP20-4DA0	CC01 to CC05	CC71 to CC73	1
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	6AG2193-6BP00-4DA0	CC01 to CC05	--	1
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	6AG2193-6BP20-4BA0	CC01 to CC05	CC71 to CC73	1
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	6AG2193-6BP00-4BA0	CC01 to CC05	--	1

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL communication > SIPLUS extreme RAIL CM 4x IO-Link

Technical specifications

Article number	6AG2137-6BD00-1BA0 SIPLUS ET 200SP CM 4XIO-LINK ST T1 RAIL
General information	
Product type designation	CM 4 x IO-Link ST
Product function	
• I&M data	Yes
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	4
Output current	
• Rated value	200 mA
IO-Link	
Number of ports	4
• of which simultaneously controllable	4
IO-Link protocol 1.0	Yes
IO-Link protocol 1.1	Yes
Transmission rate	4.8 kBaud (COM1); 38.4 kBaud (COM2), 230.4 kBaud (COM3)
Cycle time, min.	2 ms; dynamic, depending on user data length
Size of process data, input per port	32 byte; max.
Size of process data, input per module	32 byte; max.
Size of process data, output per port	32 byte; max.
Size of process data, output per module	32 byte; max.
Memory size for device parameter	2 kbyte; for each port
Cable length unshielded, max.	20 m; max.
Operating modes	
• IO-Link	Yes
• DI	Yes
• DQ	Yes; max. 100 mA
Time Based IO	
- TIO IO-Link IN	Yes
- TIO IO-Link OUT	Yes
- TIO IO-Link IN/OUT	Yes
- TIO Jitter	36 µs; typically ±
Connection of IO-Link devices	
• Port type A	Yes
• Port type B	Yes; 24 V DC via external terminal
Isochronous mode	
Equidistance	Yes
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes; The port diagnosis is available in the IO-Link mode only.
Diagnostic messages	
• Monitoring the supply voltage	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; one green LED for channel status Qn (SIO mode) and port status Cn (IO-Link mode) per channel
• for channel diagnostics	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED

Article number	6AG2137-6BD00-1BA0 SIPLUS ET 200SP CM 4XIO-LINK ST T1 RAIL
Potential separation	
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL communication > SIPLUS extreme RAIL CM 4x IO-Link

Article number	6AG2137-6BD00-1BA0 SIPLUS ET 200SP CM 4XIO-LINK ST T1 RAIL	Article number	6AG2137-6BD00-1BA0 SIPLUS ET 200SP CM 4XIO-LINK ST T1 RAIL
Use in stationary industrial systems		from supply voltage 1L+	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Dimensions	
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Width	15 mm
Use on land craft, rail vehicles and special-purpose vehicles		Weights	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Weight, approx.	30 g
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Other	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data	Article No.	Ordering data	Article No.
SIPLUS extreme RAIL CM communication module 4x IO-Link	6AG2137-6BD00-1BA0	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL	6AG2193-6BP20-4DA0
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic		Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic	
Serial communication module for connecting up to 4 IO-Link devices, time-based IO, BU type A0, color code CC04; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +60 °C (+70 °C for 10 min.)		BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	
Accessories		SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL	6AG2193-6BP20-4BA0
Suitable SIPLUS extreme RAIL BaseUnits, type A0		Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic	
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL	6AG2193-6BP00-4DA0	BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic			
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)			
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL	6AG2193-6BP00-4BA0		
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic			
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)			

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL failsafe I/O modules > SIPLUS extreme RAIL digital F input modules

Overview

Digital fail-safe input module:
SIPLUS ET 200SP F-DI 4/8X24VDC RAIL for BU type A0,
color code CC01

Other properties:

- 8-channel digital fail-safe input module for SIPLUS extreme ET 200SP RAIL
- Approved in accordance with railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 8 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the DI module type: White
 - Hardware and firmware version
 - CC color code for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. They can be used with all fail-safe SIMATIC S7 CPUs

Technical specifications

Article number	6AG2136-6BA00-1CA0 SIPLUS ET 200SP F-DI 4/8X24VDC RAIL
General information	
Product type designation	F-DI 8x24VDC HF
Product function	
• I&M data	Yes; I&M0 to I&M3
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	8
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
Output current	
• up to 60 °C, max.	0.3 A
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	800 mA; Total current of all encoders
Digital inputs	
Number of digital inputs	8
Source/sink input	Yes; P-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+15 to +30V

Article number	6AG2136-6BA00-1CA0 SIPLUS ET 200SP F-DI 4/8X24VDC RAIL
Input current	
• for signal "1", typ.	3.7 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- parameterizable	Yes
for counter/technological functions	
- parameterizable	No
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Interrupts/diagnostics/status information	
Diagnostics function	Yes, "Alarms/diagnostic messages" section in the manual
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL failsafe I/O modules > SIPLUS extreme RAIL digital F input modules

Article number	6AG2136-6BA00-1CA0 SIPLUS ET 200SP F-DI 4/8X24VDC RAIL
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunication systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
• SIL in accordance with EN 50126, 50128, 50129	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05 1/h
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h

Article number	6AG2136-6BA00-1CA0 SIPLUS ET 200SP F-DI 4/8X24VDC RAIL
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	15 mm
Weights	
Weight, approx.	49 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL failsafe I/O modules > SIPLUS extreme RAIL digital F input modules

Ordering data	Article No.	Article No.
SIPLUS ET 200SP F-DI 8x24VDC High Feature T1 RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0, color code CC01; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)	6AG2136-6BA00-1CA0	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)
Usable BaseUnits		6AG2193-6BP20-4DA0
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4DA0	SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BA0	6AG2193-6BP20-4BA0

Overview



Digital fail-safe output module:
SIPLUS ET 200SP F-DQ 4x24VDC High Feature RAIL,
BU type A0, color code CC01

Other properties:

- 4-channel digital fail-safe output module for SIPLUS extreme ET 200SP RAIL
- Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic
- Fail-safe 2-channel activation (sink/source output) by actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the DI module type: White
 - Hardware and firmware version
 - CC color code for module-specific color coding of the potentials at the terminals of the BU
 - Complete Article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations
- They can be used with all fail-safe SIMATIC S7 CPUs

Technical specifications

Article number	6AG2136-6DB00-1CA0 SIPLUS ET 200SP F-DQ 4X24VDC/2A PM RAIL
General information	
Product type designation	F-DQ 4x24VDC HF
Product function	
• I&M data	Yes; I&M0 to I&M3
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Number of digital outputs	4
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	typ. 2*47V
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W
Load resistance range	
• lower limit	12 Ω
• upper limit	2 000 Ω
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	2 A
• for signal "0" residual current, max.	0.5 mA

Article number	6AG2136-6DB00-1CA0 SIPLUS ET 200SP F-DQ 4X24VDC/2A PM RAIL
Switching frequency	
• with resistive load, max.	30 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical
• on lamp load, max.	10 Hz; Symmetrical
Total current of the outputs	
• Current per channel, max.	2 A; Note derating data in the manual
• Current per module, max.	6 A; Note derating data in the manual
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Interrupts/diagnostics/status information	
Diagnostics function	Yes, "Alarms/diagnostic messages" section in the manual
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL failsafe I/O modules > SIPLUS extreme RAIL digital F output modules

Article number	6AG2136-6DB00-1CA0 SIPLUS ET 200SP F-DQ 4X24VDC/2A PM RAIL
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
• SIL in accordance with EN 50126, 50128, 50129	SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations.
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05 1/h
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h

Article number	6AG2136-6DB00-1CA0 SIPLUS ET 200SP F-DQ 4X24VDC/2A PM RAIL
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	15 mm
Weights	
Weight, approx.	57 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL I/O modules

SIPLUS extreme RAIL failsafe I/O modules > SIPLUS extreme RAIL digital F output modules

Ordering data	Article No.		Article No.
SIPLUS ET 200SP F-DQ 4x24VDC High Feature T1 RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; color code CC01; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)	6AG2136-6DB00-1CA0	SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4DA0
Usable BaseUnits			
SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4DA0	SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP20-4BA0
SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)	6AG2193-6BP00-4BA0	BU20-P12+A4+0B (extended temperature range and exposure to environmental sub- stances) BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	6AG1193-6BP20-7BB0

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BaseUnits

Overview



With the BaseUnits (BUs), the SIPLUS extreme RAIL ET 200SP offers a rugged and service-friendly design with permanent wiring:

- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- No tools needed for one-handed wiring using push-in terminals
- Actuation of the spring NC contacts with a standard screwdriver, with a blade width up to 3.5 mm
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel
- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (gaps without I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High EMC interference immunity:
 - Self-assembling shielded backplane bus
 - multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module,
 - System-integrated, space-saving shield connection for quick installation
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical and EMC loads
- Optional module-specific color identification of the terminals according to the color code CC
- Optional equipment marking using slide-in equipment labeling plates

Technical specifications

Article number	6AG2193-6BP00-4BA0 SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL	6AG2193-6BP00-4DA0 SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL	6AG2193-6BP20-4BA0 SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL	6AG2193-6BP20-4DA0 SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL
General information				
Product type designation	Type A0	Type A0	Type A0	Type A0
Standards, approvals, certificates				
Railway application				
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BaseUnits

Article number	6AG2193-6BP00-4BA0 SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL	6AG2193-6BP00-4DA0 SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL	6AG2193-6BP20-4BA0 SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL	6AG2193-6BP20-4DA0 SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes	Yes	Yes	Yes
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Height	117 mm	117 mm	141 mm	141 mm
Weights				
Weight, approx.	40 g	40 g	50 g	50 g
Other				
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BaseUnits

Article number	6AG2193-6BP20-4BB1 SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL	6AG2193-6BP00-4BD0 SIPLUS ET 200SP BU20-P12+A0+0B TX RAIL	6AG2193-6BP00-4DA1 SIPLUS ET 200SP BU15-P16+A0+2D/T TX RAIL
General information			
Product type designation	Type A1	Type D0	Type A1
Standards, approvals, certificates			
Railway application			
- EN 50121-3-2 - EN 50121-4 - EN 50124-1 - EN 50125-1 - EN 50125-2 - EN 50125-3 - EN 50155 - EN 61373 - Fire protection acc. to EN 45545-2	Yes; EMC for rail vehicles Yes; EMC for signal and telecommunications systems Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC Yes; Rail vehicles - see ambient conditions Yes; Stationary electrical equipment - see ambient conditions Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track) Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; Rail vehicles - verification on request		
Ambient conditions			
Ambient temperature during operation			
- horizontal installation, min. - horizontal installation, max.	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)	-40 °C; = Tmin 70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Altitude during operation relating to sea level			
- Installation altitude above sea level, max. - Ambient air temperature-barometric pressure-altitude	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	2 000 m Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Coolants and lubricants			
Resistant to commercially available coolants and lubricants	Yes	Yes	Yes
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3 - to chemically active substances according to EN 60721-3-3 - to mechanically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5 - to chemically active substances according to EN 60721-3-5 - to mechanically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+			
Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions			
Width	20 mm	20 mm	15 mm
Height	117 mm	117 mm	117 mm
Depth	35 mm		35 mm

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BaseUnits

Article number	6AG2193-6BP20-4BB1 SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL	6AG2193-6BP00-4BD0 SIPLUS ET 200SP BU20-P12+A0+0B TX RAIL	6AG2193-6BP00-4DA1 SIPLUS ET 200SP BU15-P16+A0+2D/T TX RAIL
Weights			
Weight, approx.	48 g	47 g	40 g
Other			
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

Article No.

Suitable SIPLUS extreme RAIL BaseUnits, type A0

SIPLUS ET 200SP BU15-P16+A0+2D TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

SIPLUS ET 200SP BU15-P16+A0+2B TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

SIPLUS ET 200SP BU15-P16+A10+2D TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and additional 10 internally bridged AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A); for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2193-6BP00-4DA0

6AG2193-6BP00-4BA0

6AG2193-6BP20-4DA0

SIPLUS ET 200SP BU15-P16+A10+2B TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and additionally 10 internally bridged AUX terminals (1 A to 10 A); for continuing the load group; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

Suitable SIPLUS extreme RAIL BaseUnits, type B1

SIPLUS ET 200SP BU20-P12+A0+4B TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; 1 unit

Suitable SIPLUS extreme RAIL BaseUnits, type D0

SIPLUS ET 200SP BU20-P12+A0+0B TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

Suitable SIPLUS extreme type A1 RAIL BaseUnits (with temperature detection)

SIPLUS ET 200SP BU15-P16+A0+2D/T TX RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)

6AG2193-6BP20-4BA0

6AG2193-6BP20-4BB1

6AG2193-6BP00-4BD0

6AG2193-6BP00-4DA1

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BusAdapter

Overview



BusAdapters (BA) are available for the SIPLUS extreme RAIL ET 200SP:

- SIPLUS extreme RAIL BusAdapter for the free selection of the connection system (pluggable or direct connection) of PROFINET to devices with a SIPLUS extreme RAIL BusAdapter interface. Another benefit of the SIPLUS extreme RAIL BusAdapter: only the adapter needs to be replaced for subsequent conversion to the rugged FastConnect technology or to repair defective RJ45 sockets.

Technical specifications

Article number	6AG2193-6AR00-4AA0 SIPLUS ET 200SP BA 2XRJ45 TX RAIL	6AG2193-6AF00-4AA0 SIPLUS ET 200SP BA 2XFC TX RAIL
General information		
Product type designation	BA 2xRJ45	BA 2xFC
Interfaces		
Number of PROFINET interfaces	1	1
PROFINET IO		
• Number of RJ45 ports	2	2
• Number of FC (FastConnect) connections		
Cable length		
- Cu conductors	100 m	100 m
Standards, approvals, certificates		
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIPLUS RAIL and SIDOOR

SIPLUS ET 200SP RAIL

SIPLUS extreme RAIL BusAdapter

Article number	6AG2193-6AR00-4AA0 SIPLUS ET 200SP BA 2XRJ45 TX RAIL	6AG2193-6AF00-4AA0 SIPLUS ET 200SP BA 2XFC TX RAIL
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions		
Width	20 mm	20 mm
Height	69.5 mm	69.5 mm
Depth	59 mm	59 mm
Weights		
Weight, approx.	46 g	53 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

Article No.

SIPLUS extreme RAIL BusAdapter

SIPLUS ET 200SP BA 2XRJ45 TX RAIL

For PROFINET interface modules in Standard function class or above;
max. cable length 50 m;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C
(+85 °C for 10 min.)

SIPLUS ET 200SP BA 2XFC TX RAIL

For PROFINET interface modules in Standard function class or above;
for increased vibration and EMC load rating; max. cable length 50 m;
for areas with extreme exposure to environmental substances (conformal coating);
ambient temperature -40 ... +70 °C
(+85 °C for 10 min.)

6AG2193-6AR00-4AA0

6AG2193-6AF00-4AA0

Accessories

Equipment labeling plate

10 sheets of 16 labels,
for printing with thermal transfer
card printer or plotter

6ES7193-6LF30-0AW0

SIPLUS RAIL and SIDOOR

SIPLUS ET 200MP RAIL

SIPLUS extreme RAIL interface modules

SIPLUS ET 200MP IM 155-5 PN ST TX RAIL**Overview**

- Interface modules for linking the ET 200MP to PROFINET
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- They handle data exchange with the PROFINET IO Controller in the PLC
- Integrated 2-port switch for line topology
- Max. 30 I/O modules
- Shortest bus cycle 250 µs

- Linking to the isochronous task of the CPU
- Prioritized fast startup (FSU) with 500 ms (max. 12 I/O modules)
- Media Redundancy Protocol (MRP)
- Shared device on up to 2 I/O controllers (when configuring using GSD file; depends on the respective configuration tool)
- Omission of SIMATIC memory card (SMC); IM replacement without PG using LLDP
- Operation of F-modules and PROFI-safe

As of firmware version 2.0.0, the SIPLUS ET 200MP interface module IM 155-5 PN ST TX RAIL offers the following new functions:

- Submodule-granular shared device with up to two IO controllers
- Configuration control (option handling)
- Module shared input and module shared output (MSI/MSO), i.e. the inputs or outputs of a module can be made available simultaneously to up to two IO controllers

SIPLUS ET 200MP interface module IM155-5 PN HF T1 RAIL features the following additional functions:

- Shared device on up to 4 IO controllers
- Module internal shared input and module shared output (MSI/MSO) on up to four IO controllers
- Operation on a high-availability SIMATIC S7-400H
- Support for the MRPD function (media redundancy with planned duplication)

	IM 155-5 PN ST TX RAIL	IM155-5 PN HF T1 RAIL
Article No.	6AG2155-5AA00-4AB0	6AG2155-5AA00-1AC0
Quantity structures		
IO modules	All	All
Max. number IO modules / IM	30	30
Max. number of bytes / slot	256 inputs 256 outputs	256 inputs 256 outputs
Max. number bytes / station	512 inputs 512 outputs	512 inputs 512 outputs
Update time	250 µs	250 µs
Configuration		
GSDML	Yes	Yes
STEP 7	GSDML	GSDML
TIA Portal	Yes	Yes
PCS 7	No	No
General functions		
Reset to factory settings	TIA Portal	TIA Portal
Device replacement without programming device	LLDP	LLDP
Configuration management (option handling)	Yes	Yes
I&M data	IM 0 ... 3	IM 0 ... 3
Isochronous mode	Yes	Yes
PROFI-safe	Yes	Yes

SIPLUS RAIL and SIDOOR

SIPLUS ET 200MP RAIL

SIPLUS extreme RAIL interface modules

SIPLUS ET 200MP IM 155-5 PN ST TX RAIL

Overview (continued)

	IM 155-5 PN ST TX RAIL	IM155-5 PN HF T1 RAIL
PROFINET functions		
RT	Yes	Yes
IRT	Yes	Yes
MRP	Yes	Yes
MRPD	No	No
S2 redundancy	No	Yes
Fast startup	Yes	Yes
Shared device	Yes; up to 2 ctrls.	Yes; up to 4 ctrls.
MSI / MSO	Yes	Yes
Submodules	Yes	Yes

Technical specifications

Article number	6AG2155-5AA00-4AB0 SIPLUS ET 200MP IM 155-5 PN ST TX RAIL	6AG2155-5AA00-1AC0 SIPLUS ET 200MP IM 155-5 PN HF T1 RAIL
General information		
Product type designation	IM 155-5 PN ST	IM 155-5 PN HF
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Short-circuit protection	Yes	Yes
Mains buffering		
• Mains/voltage failure stored energy time	5 ms	5 ms
Power loss		
Power loss, typ.	4.5 W	4.5 W
Hardware configuration		
Integrated power supply		Yes
Rack		
• Modules per rack, max.	30; I/O modules	30; I/O modules
Interfaces		
Number of PROFINET interfaces	1	1
1. Interface		
Interface types		
• Number of ports	2	2
• integrated switch	Yes	Yes
• RJ 45 (Ethernet)	Yes	Yes
Functionality		
• PROFINET IO Device	Yes	Yes
• Media redundancy	Yes	Yes; PROFINET MRP
Interface types		
RJ 45 (Ethernet)		
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• 100 Mbps	Yes	Yes
• Autonegotiation	Yes	Yes
• Autocrossing	Yes	Yes
PROFINET IO Device Services		
- Isochronous mode	Yes	Yes
- IRT	Yes	Yes
- PROFINET energy		No
- Prioritized startup	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	2	4

SIPLUS RAIL and SIDOOR**SIPLUS ET 200MP RAIL****SIPLUS extreme RAIL interface modules****SIPLUS ET 200MP IM 155-5 PN ST TX RAIL**

Article number	6AG2155-5AA00-4AB0 SIPLUS ET 200MP IM 155-5 PN ST TX RAIL	6AG2155-5AA00-1AC0 SIPLUS ET 200MP IM 155-5 PN HF T1 RAIL
Redundancy mode		
- MRP	Yes	Yes
- MRPD		No
- PROFINET system redundancy (S2)		Yes
Open IE communication		
• TCP/IP	Yes	Yes
• SNMP	Yes	Yes
• LLDP	Yes	Yes
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes	Yes
Equidistance	Yes	Yes
shortest clock pulse	250 µs	250 µs
max. cycle	4 ms	4 ms
Interrupts/diagnostics/ status information		
Status indicator	Yes	Yes
Alarms	Yes	Yes
Diagnostic functions	Yes	Yes
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• MAINT LED	Yes; yellow LED	Yes; yellow LED
• Connection display LINK TX/RX	Yes; yellow LED	Yes; yellow LED
Isolation		
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates		
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request	Yes; Rail vehicles - verification on request
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; from > +60 °C no module permissible left of the IM; +85 °C for 10 min. (Tx acc. to EN 50155)	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIPLUS RAIL and SIDOOR

SIPLUS ET 200MP RAIL

SIPLUS extreme RAIL interface modules

SIPLUS ET 200MP IM 155-5 PN ST TX RAIL

Article number	6AG2155-5AA00-4AB0 SIPLUS ET 200MP IM 155-5 PN ST TX RAIL	6AG2155-5AA00-1AC0 SIPLUS ET 200MP IM 155-5 PN HF T1 RAIL
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions		
Width	35 mm	35 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	310 g	350 g
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

Article No.

SIPLUS ET 200MP interface module IM 155-5 PN ST TX RAIL

Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

IP 20 degree of protection, module width 35 mm, mounted on S7-1500 mounting rail; standard functions; for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2155-5AA00-4AB0

SIPLUS ET 200MP interface module IM 155-5 PN HF T1 RAIL

Approved in accordance with EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

IP 20 degree of protection, module width 35 mm, mounted on S7-1500 mounting rail; High Feature version with additional functions for areas with extreme exposure to environmental substances (conformal coating); ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2155-5AA00-1AC0

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL gateways

SIPLUS NET PN/PN Coupler T1 RAIL

Overview



- Maximum data exchange of 256-bytes input data and 256-bytes output data between two PROFINET networks
- Maximum of 16 input/output ranges for the exchange of data
- Electrical isolation between the two PROFINET IO subnets
- Redundant power supply
- Supported Ethernet services
 - ping
 - arp
 - Network diagnostics (SNMP/MIB-2)
- Diagnostic interrupts
- ReturnOfSubmodule interrupts

Technical specifications

Article number	6AG2158-3AD01-1XA0
	SIPLUS NET PN/PN COUPLER T1 RAIL
Installation type/mounting	
Mounting	Mounting rail 7.5 mm and 15 mm
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
• Mains/voltage failure stored energy time	20 ms
Input current	
from supply voltage 1L+, max.	400 mA
Power loss	
Power loss, typ.	6 W
Interfaces	
PROFINET IO	
• automatic detection of transmission rate	Yes
• Transmission rate, max.	100 Mbit/s
• Number of RJ45 ports	4; 2 for each side
Protocols	
Supports protocol for PROFINET IO	Yes
Protocols (Ethernet)	
• SNMP	Yes
• ping	Yes
• ARP	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No; For operation on isochronous bus
Interrupts/diagnostics/status information	
Status indicator	Yes
Alarms	Yes
Diagnostic functions	Yes

Article number	6AG2158-3AD01-1XA0
	SIPLUS NET PN/PN COUPLER T1 RAIL
Diagnostics indication LED	
• Bus fault BF (red)	Yes; for each side
• Group error SF (red)	Yes; for each side
• Monitoring 24 V voltage supply ON (green)	Yes; for each side
• Connection to network LINK (green)	Yes; for each port
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL gateways

SIPLUS NET PN/PN Coupler T1 RAIL

Technical specifications (continued)

Article number	6AG2158-3AD01-1XA0 SIPLUS NET PN/PN COUPLER T1 RAIL
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	120 mm; Minimized with good handling
Height	119.5 mm
Depth	75 mm; with mounting rail
Weights	
Weight, approx.	283 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

SIPLUS NET PN/PN Coupler T1 RAIL

Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

for connecting two PROFINET networks;
Suitable for areas with extreme exposure to environmental substances (conformal coating)

Ambient temperature -25 ... +55 °C
(+70 °C for 10 min.)

Article No.

6AG2158-3AD01-1XA0

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL gateways

SIPLUS PN/CAN LINK TX RAIL

Overview



- For data exchange between PROFINET and CAN Bus 2.0A/B or CANopen Manager or Slave (according to CiA 301 & 302)
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- CANopen features:
 - Node / lifeguarding
 - Heartbeat
 - SYNC (producer / consumer)
- Integrated in TIA via HSP, TIA Portal V14 or higher
- PROFINET switch and 9-pin D-sub plug integrated for CAN
- Up to 126 CAN nodes
- 512 receiver/transmitter PDOs
- Electrical isolation between the two networks
- Diagnostic interrupts
- Controllers supported: S7-1200, S7-1500, ET 200SP, Open Controller

Technical specifications

Article number	6AG2620-0AA00-4AA0
	SIPLUS PN/CAN LINK TX RAIL
General information	
Product type designation	PN/CAN LINK
Firmware version	
• FW update possible	Yes
Vendor identification (VendorID)	ID 09 00 00 53h acc. to CiA
Installation type/mounting	
Mounting	DIN rail, wall mounting, portrait mounting
Mounting position	Any
Recommended mounting position	Horizontal
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Overvoltage protection	Yes
Short-circuit protection	Yes
Mains buffering	
• Mains/voltage failure stored energy time	10 ms
Input current	
Current consumption (rated value)	0.09 A
Current consumption, max.	0.11 A
Power loss	
Power loss, typ.	2.2 W
Interfaces	
Interfaces/bus type	2x Ethernet (RJ45), 1x Sub-D (9-pin)
Supports protocol for PROFINET IO	
• automatic detection of transmission rate	No
• Transmission rate, max.	100 Mbit/s
• Number of RJ45 ports	2
• Number of FC (FastConnect) connections	2
PROFINET functions	
• Assignment of the IP address, supported	Yes
• Assignment of the device name, supported	Yes

Article number	6AG2620-0AA00-4AA0
	SIPLUS PN/CAN LINK TX RAIL
CAN	
• CAN operating modes	CAN Standard CAN 2.0A/B; CANopen Manager / Slave acc. to CiA
• Specification acc. to CiA	CiA 301 & CiA 302
• Transmission rate, min.	50 kbit/s
• Transmission rate, max.	1 000 kbit/s
• Number of slaves, max.	126
• Number of SDOs in parallel	16; Parallel
• Number of PDOs	512; Send / receive
Services	
- Node/life-guarding	Yes
- Heartbeat	Yes
- SYNC	Yes
1. Interface	
Interface type	CAN according to CiA 303-1
Physics	9-pin sub D socket
Isolated	Yes; 500 V AC or 707 V DC
Interface types	
• Number of ports	1
2. Interface	
Interface type	PROFINET
Physics	Ethernet, 2-port switch, 2*RJ45
Isolated	Yes; 1 500 V AC or 2 250 V DC
Interface types	
• Number of ports	2
• integrated switch	Yes
Protocols	
• PROFINET IO Device	Yes
Interrupts/diagnostics/status information	
Status indicator	Yes
Alarms	Yes
Diagnostic functions	Yes
Diagnostics indication LED	
• RUN LED	Yes
• ERROR LED	Yes
• MAINT LED	Yes
• LINK LED	Yes
• RX/TX LED	Yes

Switch Disconnectors

SIPLUS extreme RAIL gateways

SIPLUS PN/CAN LINK TX RAIL

Article number	6AG2620-0AA00-4AA0 SIPLUS PN/CAN LINK TX RAIL
Potential separation	
Potential separation exists	Yes
Degree and class of protection	
Degree of protection acc. to EN 60529	IP20
Standards, approvals, certificates	
CE mark	Yes
EAC (formerly Gost-R)	Yes
RoHS conformity	Yes
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV3; pollution degree PD2; UNm = 277/480 V AC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	85 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Article number	6AG2620-0AA00-4AA0 SIPLUS PN/CAN LINK TX RAIL
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	70 mm
Height	112 mm
Depth	75 mm
Weights	
Weight, approx.	212 g
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

Article No.

SIPLUS PN/CAN LINK TX RAIL

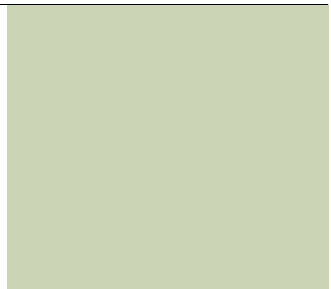
Approved in accordance with the EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 railway standards for use in rail traffic

PROFINET network transition according to CAN Bus 2.0A/B, CANopen Manager according to CiA301/302, CANopen Slave according to CiA301/302; IP20

Ambient temperature -40 ... +70 °C (+85 °C for 10 min.)

6AG2620-0AA00-4AA0

Article No.

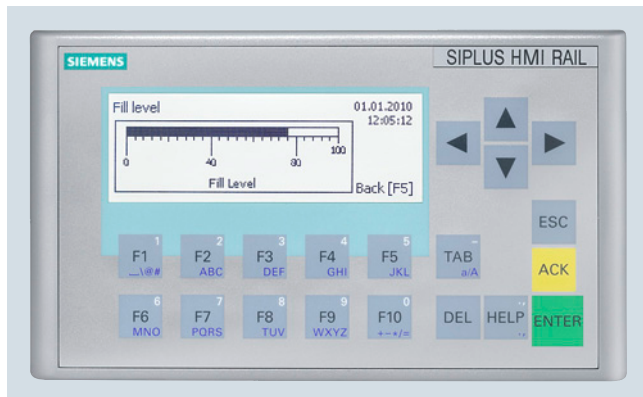


SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL operator control and monitoring devices

SIPLUS extreme RAIL Basic Panels (1st Generation)

Overview



- Basic Panel 3.6 inches for operating and monitoring compact machines and systems
- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- Clear process representation through the use of full-graphic displays
- Intuitive operation via touch and tactile function keys
- Equipped with all the necessary basic functions such as reporting, recipe management, curve representation, vector graphics, and language selection
- Easy connection to the controller via integrated Ethernet interface

Technical specifications

Article number	6AG2647-0AH11-1AX0
	SIPLUS HMI KP300 BASIC MONO 3,6" T1 RAIL
General information	
Product type designation	KP300 Basic mono PN
Display	
Design of display	FSTN
Screen diagonal	3.6 in
Number of colors	4; Backlit display only (white, red, green, yellow)
Resolution (pixels)	
• Horizontal image resolution	240 Pixel
• Vertical image resolution	80 Pixel
Backlighting	
• MTBF backlighting (at 25 °C)	50 000 h
• Backlight dimmable	No
Keyboard fonts	
• Function keys	
- Number of function keys	10
Touch operation	
• Design as touch screen	No
Installation type/mounting	
Mounting in portrait format possible	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Memory	
Memory available for user data	1 Mbyte
Type of output	
Acoustics	
• Buzzer	No
Time of day	
Clock	
• Software clock	Yes
• retentive	No
• synchronizable	Yes
Interfaces	
Number of industrial Ethernet interfaces	1
Number of RS 485 interfaces	0
Number of USB interfaces	0
Number of SD card slots	0

Article number	6AG2647-0AH11-1AX0
	SIPLUS HMI KP300 BASIC MONO 3,6" T1 RAIL
Protocols	
PROFINET	Yes
IRT	No
PROFIBUS	No
MPI	No
Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection	
IP (at the front)	IP65
Enclosure Type 4x at the front	Yes
IP (rear)	IP20
Standards, approvals, certificates	
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
• Fire protection acc. to EN 45545-2	Yes; Rail vehicles - verification on request
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL operator control and monitoring devices

SIPLUS extreme RAIL Basic Panels (1st Generation)

Article number	6AG2647-0AH11-1AX0 SIPLUS HMI KP300 BASIC MONO 3,6" T1 RAIL
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S4 incl. sand, dust; *
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Configuration	
Configuration software	
• STEP 7 Basic (TIA Portal)	Yes; via integrated WinCC Basic (TIA Portal)
• WinCC flexible Compact	No
• WinCC Basic (TIA Portal)	Yes
Languages	
Online languages	
• Number of online/runtime languages	5
Functionality under WinCC (TIA Portal)	
Task planner	
• time-controlled	No
• task-controlled	Yes
Message system	
• Bit messages	
- Number of bit messages	200
• Analog messages	
- Number of analog messages	15
• Message buffer	
- Number of entries	256
- Circulating buffer	Yes
- retentive	Yes

Article number	6AG2647-0AH11-1AX0 SIPLUS HMI KP300 BASIC MONO 3,6" T1 RAIL
Recipe management	
• Number of recipes	5
• Size of internal recipe memory	40 kbyte
• Recipe memory expandable	No
Variables	
• Number of variables per device	250
• Number of variables per screen	30
Images	
• Number of configurable images	50
Archiving	
• Number of archives per device	0
Security	
• Number of user groups	50
• Number of users	50
• SIMATIC Logon	No
Transfer (upload/download)	
• MPI/PROFIBUS DP	No
• Ethernet	Yes
Process coupling	
• S7-1200	Yes
• S7-1500	Yes
• S7-200	Yes
• S7-300/400	Yes
• LOGO!	Yes
• WinAC	Yes
• SIMOTION	No
• Allen Bradley (EtherNet/IP)	Yes
• Allen Bradley (DF1)	No
• Mitsubishi (MC TCP/IP)	Yes
• Mitsubishi (FX)	No
• OMRON (FINS TCP)	No
• OMRON (LINK/Multilink)	No
• Modicon (Modbus TCP/IP)	Yes
• Modicon (Modbus)	No
Peripherals/Options	
Peripherals	
• Printer	No
• SIMATIC HMI MM memory card: Multi Media Card	No
• SIMATIC HMI SD memory card: Secure Digital memory card	No
• USB memory	No
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
• Aluminum	No
• Stainless steel	No

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL operator control and monitoring devices

SIPLUS extreme RAIL Basic Panels (1st Generation)**Technical specifications** (continued)

Article number	6AG2647-0AH11-1AX0 SIPLUS HMI KP300 BASIC MONO 3,6" T1 RAIL
Dimensions	
Width of the housing front	165 mm
Height of housing front	97 mm
Mounting cutout, width	149 mm
Mounting cutout, height	82 mm
Overall depth	30 mm
Weights	
Weight without packaging	0.25 kg
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data**SIPLUS HMI
KP300 Basic mono PN T1 RAIL**

Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

Key operation; 3" FSTN LCD display, black and white, PROFINET interface

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +55 °C (+70 °C for 10 min.)

Article No.**6AG2647-0AH11-1AX0**

Overview**SIPLUS HMI Comfort Panels Outdoor RAIL**

Special HMI Panels have been developed which are designed to withstand outdoor environments.

It's not only extreme temperatures which call for robust hardware. Direct sunlight, too, must not be allowed to impair display readability and the panel front must be protected from UV radiation. The specially-bonded Outdoor fronts and the rugged hardware of the Outdoor Panels make the SIMATIC HMI Comfort Panels Outdoor a reliable partner in this environment.

- Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic
- For outdoor operation without additional measures
- 7" and 15" daylight-readable display, widescreen
- Automatic, central or manual dimming of the backlight, with integrated sensor

- Panel front 100% UV protected
- Front resistant to salt mist
- Front IP66 and Nema4 x (indoor/outdoor)
- Extended operating temperature range: from -30 °C to +60 °C at 3 000 m installation altitude
- TIA Portal central engineering tool (WinCC V13 SP1&HSP or higher)
- Comfort Panel functionality and performance

Notice:

The 7" Comfort Panel corresponds to a 7" Comfort Panel Standard, the 15" Comfort Panel Outdoor corresponds to a 12" Comfort Panel Standard in respect of performance, functionality and quantity structure.

Technical specifications

Article number	6AG2124-0GC13-1AX0 SIPLUS HMI TP700 OUTDOOR T1 RAIL	6AG2124-0QC13-1AX0 SIPLUS HMI TP1500 OUTDOOR T1 RAIL
General information		
Product type designation	SIPLUS HMI TP700 Comfort Outdoor	SIPLUS HMI TP1500 Comfort Outdoor RAIL
Display		
Design of display	TFT, bonded, daylight-readable	TFT, bonded, daylight-readable
Screen diagonal	7 in	15.4 in
Number of colors	16 777 216	16 777 216
Resolution (pixels)		
• Horizontal image resolution	800 Pixel	1 280 Pixel
• Vertical image resolution	480 Pixel	800 Pixel
Backlighting		
• MTBF backlighting (at 25 °C)	50 000 h	50 000 h
• Backlight dimmable	Yes; LED, can be dimmed manually or automatically	Yes; LED, can be dimmed manually or automatically
Keyboard fonts		
• Function keys		
- Number of function keys	0	0
Touch operation		
• Design as touch screen	Yes; analog, resistive	Yes; analog, resistive
Installation type/mounting		
Mounting in portrait format possible	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Memory		
Memory available for user data	12 Mbyte	12 Mbyte
Type of output		
Acoustics		
• Speaker	Yes	Yes
Time of day		
Clock		
• Hardware clock (real-time)	Yes	Yes
• retentive	Yes; Back-up duration typically 6 weeks	Yes; Back-up duration typically 6 weeks
• synchronizable	Yes	Yes
Interfaces		
Number of industrial Ethernet interfaces	2	2
Number of RS 485 interfaces	1; RS 422/485 combined	1; RS 422/485 combined
Number of USB interfaces	2; USB 2.0	2; USB 2.0
• USB Mini B	1; 5-pole	1; 5-pole
Number of SD card slots	2	2
Industrial Ethernet		
• Number of ports of the integrated switch	2	2

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL operator control and monitoring devices

SIPLUS HMI Comfort Panels Outdoor RAIL

Article number	6AG2124-0GC13-1AX0 SIPLUS HMI TP700 OUTDOOR T1 RAIL	6AG2124-0QC13-1AX0 SIPLUS HMI TP1500 OUTDOOR T1 RAIL
Protocols		
PROFINET	Yes	Yes
IRT	Yes	Yes
MRP	Yes	Yes
PROFIBUS	Yes	Yes
MPI	Yes	Yes
Isolation		
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)	707 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection		
IP (at the front)	IP66	IP66
Enclosure Type 4x at the front	Yes	Yes
IP (rear)	IP20	IP20
Standards, approvals, certificates		
CE mark	Yes	Yes
Railway application		
• EN 50121-3-2	Yes; EMC for rail vehicles	
• EN 50121-4	Yes; EMC for signal and telecommunications systems	
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC	
• EN 50125-1	Yes; Rail vehicles - see ambient conditions	
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions	
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)	
• EN 50155	Yes; Rail vehicles - temperature class T1, horizontal and vertical mounting position, salt spray class ST2	
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B	
Ambient conditions		
Ambient temperature during operation		
• Operation (vertical installation)		
- For vertical installation, min.	-30 °C	-30 °C
- For vertical installation, max.	60 °C; (55 °C, see entry ID: 64847814)	60 °C; (55 °C, see entry ID: 64847814)
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes	Yes
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
from supply voltage 1L+		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Article number	6AG2124-0GC13-1AX0 SIPLUS HMI TP700 OUTDOOR T1 RAIL	6AG2124-0QC13-1AX0 SIPLUS HMI TP1500 OUTDOOR T1 RAIL
Configuration		
Configuration software		
• WinCC Comfort (TIA Portal)	Yes	Yes
Languages		
Online languages		
• Number of online/runtime languages	32	32
Functionality under WinCC (TIA Portal)		
Applications/options		
• Web browser	Yes	Yes
• Pocket Word	Yes	Yes
• Pocket Excel	Yes	Yes
• PDF Viewer	Yes	Yes
• Media Player	Yes	Yes
• SIMATIC WinCC Sm@rtServer	Yes	Yes
• SIMATIC WinCC Audit	Yes	Yes
Number of Visual Basic Scripts	Yes	Yes
Task planner		
• time-controlled	Yes	Yes
• task-controlled	Yes	Yes
Message system		
• Bit messages		
- Number of bit messages	4 000	4 000
• Analog messages		
- Number of analog messages	200	200
• Message buffer		
- Number of entries	1 024	1 024
- Circulating buffer	Yes	Yes
- retentive	Yes	Yes
Recipe management		
• Number of recipes	300	300
• Size of internal recipe memory	2 Mbyte	2 Mbyte
• Recipe memory expandable	Yes	Yes
Variables		
• Number of variables per device	2 048	2 048
• Number of variables per screen	400	400
Images		
• Number of configurable images	500	500
Archiving		
• Number of archives per device	50	50
Security		
• Number of user groups	50	50
• Number of users	50	50
• SIMATIC Logon	Yes	Yes
Logging through printer		
• Alarms	Yes	Yes
• Report (shift log)	Yes	Yes
• Hardcopy	Yes	Yes
• Electronic print to file	Yes; PDF, HTML	Yes; PDF, HTML
Transfer (upload/download)		
• MPI/PROFIBUS DP	Yes	Yes
• Ethernet	Yes	Yes
Process coupling		
• S7-1200	Yes	Yes
• S7-1500	Yes	Yes
• S7-200	Yes	Yes
• S7-300/400	Yes	Yes
• LOGO!	Yes	Yes
• WinAC	Yes	Yes
• SIMOTION	Yes	Yes

SIPLUS RAIL and SIDOOR

SIPLUS extreme RAIL operator control and monitoring devices

SIPLUS HMI Comfort Panels Outdoor RAIL

Article number	6AG2124-0GC13-1AX0 SIPLUS HMI TP700 OUTDOOR T1 RAIL	6AG2124-0QC13-1AX0 SIPLUS HMI TP1500 OUTDOOR T1 RAIL
Process coupling		
• Allen Bradley (EtherNet/IP)	Yes	Yes
• Allen Bradley (DF1)	Yes	Yes
• Mitsubishi (MC TCP/IP)	Yes	Yes
• Mitsubishi (FX)	Yes	Yes
• OMRON (FINS TCP)	No	No
• OMRON (LINK/Multilink)	Yes	Yes
• Modicon (Modbus TCP/IP)	Yes	Yes
• Modicon (Modbus)	Yes	Yes
• OPC UA Client	Yes	Yes
• OPC UA Server	Yes	Yes
Peripherals/Options		
Peripherals		
• Printer	Yes	Yes
• SIMATIC HMI MM memory card: Multi Media Card	Yes	Yes
• SIMATIC HMI SD memory card: Secure Digital memory card	Yes	Yes
• USB memory	Yes	Yes
• Network camera	Yes	Yes; See FAQ Entry ID: 62383298 and entry ID: 65647473
Mechanics/material		
Enclosure material (front)		
• Plastic	No	No
• Aluminum	Yes; Powder-coated, UV resistant	Yes; Powder-coated, UV resistant
• Stainless steel	No	No
Dimensions		
Width of the housing front	214 mm	415 mm
Height of housing front	158 mm	310 mm
Mounting cutout, width	197 mm	396 mm
Mounting cutout, height	141 mm	291 mm
Overall depth	67 mm	77 mm
Weights		
Weight without packaging	1.5 kg	4 kg
Other		
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

Ordering data

SIPLUS HMI Comfort Outdoor Panels RAIL

SIPLUS HMI TP700 Comfort Panel Outdoor RAIL

Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

Touch operation, 7" widescreen TFT display, 16 million colors, PROFINET interface, MPI/PROFIBUS DP interface, 12 MB configuration memory, Windows CE 6.0, configurable as from WinCC Comfort V13, SP1, HSP

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +60 °C (+70 °C for 10 min.)

Article No.

6AG2124-0GC13-1AX0

Article No.

6AG2124-0QC13-1AX0

SIPLUS HMI TP1500 Comfort Panel Outdoor RAIL

Approved in accordance with the railway standards EN 50155, EN 15121, EN 50124, EN 50125 and EN 45545 for use in rail traffic

Touch operation, 15" widescreen TFT display, 16 million colors, PROFINET interface, MPI/PROFIBUS DP interface, 12 MB configuration memory, Windows CE 6.0, configurable as from WinCC Comfort V13, SP1, HSP

For areas with extreme exposure to environmental substances (conformal coating); ambient temperature -25 ... +70 °C (+85 °C for 10 min.)

Accessories

See catalog ST 80/ST PC

SIPLUS RAIL and SIDOOR

SIPLUS Power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Overview



The design and functionality of the SIMATIC PS 305 and 307 single-phase load power supplies (system and load current supply) with automatic range switchover of the input voltage are an optimal match for the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

Note

SIPLUS extreme products are based on Siemens standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS PS 305, PS 307	
Article No.	6AG1305-1BA80-2AA0
Article number based on	6ES7305-1BA80-0AA0
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply, except for the ambient conditions.
Ambient conditions	
Extended range of environmental conditions	
with reference to ambient temperature, air pressure and altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
with condensation, max.	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
to biologically active substances/ compliance with EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
to chemically active substances/ compliance with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
to mechanically active substances, compliance with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

Technical specifications

Article number	6AG1305-1BA80-2AA0
	SIPLUS PS S7-300 PS305 (EN50155)
Supply voltage	
Rated value (DC)	
24 V DC 48 V DC 72 V DC 96 V DC 120 V DC	Yes Yes Yes Yes Yes; Rated value 110 V DC
permissible range, lower limit (DC)	16.8 V
permissible range, upper limit (DC)	138 V
Rated value (AC)	
120 V AC 230 V AC	
Overvoltage strength	
Line frequency	
- permissible range, lower limit - permissible range, upper limit	
Mains buffering	
- Mains/voltage failure stored energy time - Repeat rate, min.	10 ms; Corresponds to S2 and C1 of EN 50155 1 s

Article number	6AG1305-1BA80-2AA0
	SIPLUS PS S7-300 PS305 (EN50155)
Input current	
Rated value at 24 V DC	2.7 A
Rated value at 48 V DC	1.3 A
Rated value at 72 V DC	0.9 A
Rated value at 96 V DC	0.65 A
Rated value at 110 V DC	0.6 A
Rated value at 120 V AC	
Rated value at 230 V AC	
Inrush current, max.	20 A
I²t	5 A²·s
Leakage current, typ.	0.7 mA
Leakage current, max.	3.5 mA
Overcurrent overload capability	270 ms on short circuit during startup and operation
Output voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	23.27 V
permissible range, upper limit (DC)	24.72 V
Power up time, max.	3 s
Voltage rise time, typ.	
Overvoltage protection	
Short-circuit strength	
Residual ripple, typ.	30 mV; Peak - peak
Residual ripple, max.	150 mV; Peak - peak

SIPLUS RAIL and SIDOOR**SIPLUS Power supplies****1-phase, 24 V DC (for S7-300 and ET200M)**

Article number	6AG1305-1BA80-2AA0 SIPLUS PS S7-300 PS305 (EN50155)
Output current	
Current output (rated value)	2 A; 2 for connection in parallel
Short-circuit protection	Yes; Electronic
Continuous short-circuit current, max.	
Power	
Active power input, typ.	64 W
Efficiency	75 %
Power loss	
Power loss, typ.	16 W
Interrupts/diagnostics/ status information	
Diagnostics indication LED	
• Output voltage 24 V DC (green)	Yes; OK for 24 V
Potential separation	
primary/secondary	Yes; SELV output voltage U_a according to EN 60950-1 and EN 50178
SELV	
Isolation	
Isolation tested with	Rated insulation voltage (24 V against input); 150 V AC tested with: 2800 V DC
EMC	
EMC interference immunity	EN 61000-6-2
EMC interference emission	EN 55011 Class A
Degree and class of protection	
Degree of protection acc. to EN 60529	IP20
Equipment protection class	I
Standards, approvals, certificates	
CE mark	Yes
Standard for line harmonics limit	
Railway application	
• EN 50155	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class A/B, EN 50155:2007
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = T_{min}
• max.	70 °C; = T_{max} ; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies

Article number	6AG1305-1BA80-2AA0 SIPLUS PS S7-300 PS305 (EN50155)
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	T_{min} ... T_{max} at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // T_{min} ... (T_{max} - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // T_{min} ... (T_{max} - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	
- to chemically active substances according to EN 60721-3-6	
- to mechanically active substances according to EN 60721-3-6	
from supply voltage 1L+	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	740 g

Ordering data**Article No.**

SIPLUS S7-300 PS 305
(Extended temperature range and exposure to media)
Conforms to EN 50155
Input: 24 ... 110 V DC
Output: 24 V DC/2 A

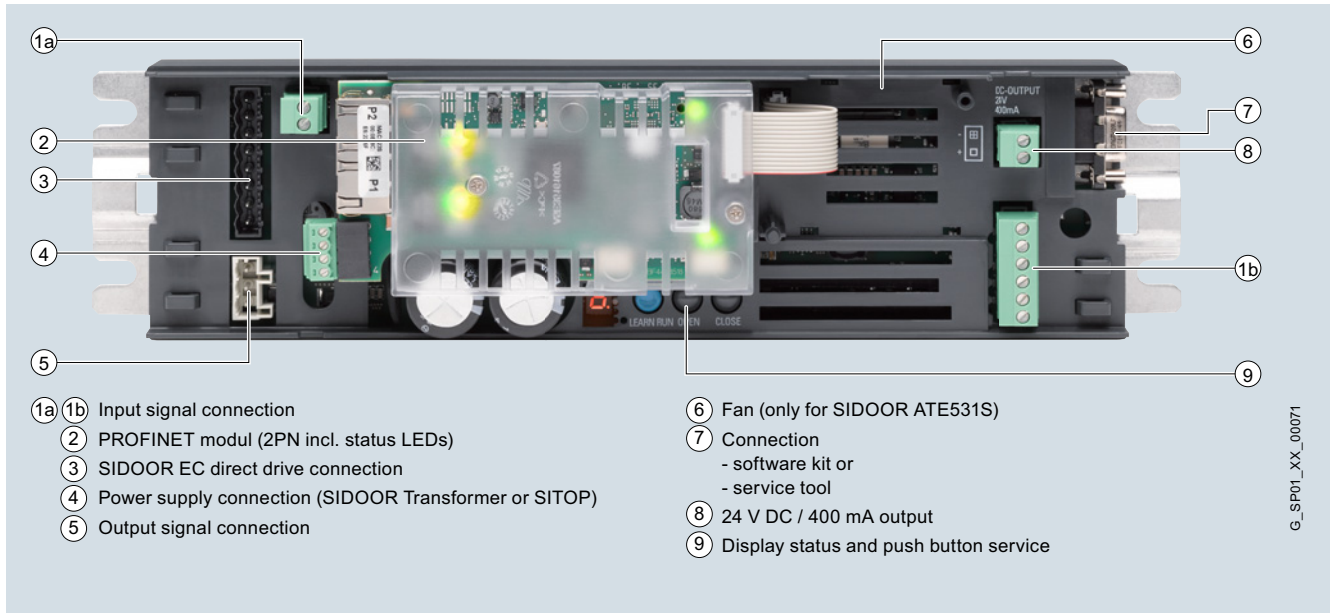
6AG1305-1BA80-2AA0

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls for railway applications

Controller > Platform screen door drive

Overview



SIDOOR ATE530S/531S wiring diagram

The SIDOOR ATE53xS door controller is an "intelligent" door drive which can be used for safety-oriented operation of platform screen doors (PSD) according to individual requirements. Siemens has once again shown just how easy integration can be with the innovative SIDOOR ATE53xS platform screen door drive in conjunction with SIDOOR MED280 or MEG251 motors. The PROFINET module integrated in the SIDOOR ATE53xS enables standardized, certified connection to PROFINET IO systems.

- Use of standard automation components
- Full integration into TIA Portal and STEP 7 thanks to PROFINET connection
- Parameter assignment and monitoring of door control parameters via the PROFINET interface (function blocks available as example applications in SIOS).
- Application example:
Synchronization of two-panel and independent platform screen doors with SIDOOR ATE530S PROFINET EC door drive and S7-1500 CPU via TIA Portal
<https://support.industry.siemens.com/cs/de/en/view/109480495>

- Application example:
Safety-oriented automation of platform screen doors with SIDOOR ATE530S PROFINET EC door drive and S7-1500 CPU via TIA Portal
<https://support.industry.siemens.com/cs/de/en/view/109477186>
- Read-in of two safe signals (two-channel, antivalent)
- High level of system safety thanks to safe torque off (e.g. self-release in the event of a fault)
- Firmware update for all SIDOOR controllers on an entire platform possible centrally via TCP/IP
- SIL 2 according to IEC 62061

Technical specifications

Article number	6FB1231-3BM10-7AT0	6FB1231-3BM12-7AT0	6FB1231-3BM11-7AT0
	SIDOOR ATE530S	SIDOOR ATE530S COATED	SIDOOR ATE531S
General information			
Product brand name	SIDOOR		
Product version	With PROFINET interface	With PROFINET interface and protective coating	With PROFINET interface, protective coating, and temperature extension
Optional product expansion	Standard mounting rail holder 6FB1144-0AT00-3AS0		
Manufacturer's article no. of the usable motor	6FB1203-0AT12-7DA0		
Manufacturer's article no. of the usable power supply unit	6FB1112-0AT20-2TR0		
Installation type/mounting			
Installation and mounting instructions	No direct exposure to the sun		
Supply voltage			
Rated value (DC)	36 V; With MED280: At 24 V DC max. door speed of 500 mm/s, at 28.8 V DC max. door speed of 800 mm/s. With MEG251: At 24 V DC max. door speed of 500 mm/s. at 28.8 V DC max. door speed of 750 mm/s		

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Controller > Platform screen door drive

Article number	6FB1231-3BM10-7AT0 SIDOOR ATE530S	6FB1231-3BM12-7AT0 SIDOOR ATE530S COATED	6FB1231-3BM11-7AT0 SIDOOR ATE531S
Power			
Active power input (standby mode)	7 W		
Digital inputs			
Control inputs isolated	Yes		
Control inputs p-switching	Yes		
Protection in case of DC supply	Use of a circuit breaker in the supply path according to 60898-1, 8A, C-characteristic type SIEMENS: 5SY4108-7 or 5SY4108-7KK11		
Input voltage			
• per DC input, min.	10 V; Observe polarity !		
• per DC input, max.	28 V; Observe polarity !		
Input current			
• per DC input, min.	3 mA		
• per DC input, max.	15 mA		
Digital outputs			
short-circuit proof	Yes		
Overload-proof	Yes		
Remark	Ensure correct polarity! CAUTION: Do not supply with external voltage!		
Output voltage			
• Output voltage (DC)	24 V		
Output current			
• For output (24 V DC), max.	400 mA		
Relay outputs			
Switching capacity of contacts			
- at 30 V DC, min.	0.01 A		
- at 30 V DC, max.	0.5 A		
Mechanical data			
Opening width of door, min.	0.35 m		
Opening width of door, max.	5 m		
Weight of door, max.	280 kg		
Operating cycle frequency of door, max.	180 1/h		
Kinetic energy, max.	75 J		
Interfaces			
Interfaces/bus type	PROFINET according to Conformance Class A, B, C; integrated switch for linear and ring structure		
Isolation			
Overvoltage category	2		
Degree and class of protection			
IP degree of protection	IP20		
Standards, approvals, certificates			
CE mark	Yes	No	
UL approval	No		
TÜV Inspectorate approval	Yes		
Standard for EMC	EN 61000-6-2 / EN 61000-6-4 / EN 61326-3-1 / EN 50121-3-2 / EN50121-4 / EN50121-5		
Standard for safety	EN 60950-1 / EN 60335-1 / EN 14752 / EN ISO 13849-1 Cat. 2 PL d / IEC 62061: SIL 2		
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C		
• max.	50 °C		
• Remark	Screw control device thermally conductive onto a metallic mounting surface or standard rail mounting, otherwise the maximum operating temperature is only 40 °C		
		70 °C	To ensure compliance with MTBF value, ensure that the ambient temperature is less than 50 °C for 90 % of operating time and screw the control unit onto a metallic mounting surface in a manner that ensures thermal conductivity or use standard rail mounting. At operating temperatures above 50 °C, the maximum output current of the 24 V DC output is a maximum of 0.1 A and the maximum number of cycles is 60/h.

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Controller > Platform screen door drive

Article number	6FB1231-3BM10-7AT0 SIDOOR ATE530S	6FB1231-3BM12-7AT0 SIDOOR ATE530S COATED	6FB1231-3BM11-7AT0 SIDOOR ATE531S
Ambient temperature during storage/transportation			
• Storage, min.	-40 °C		
• Storage, max.	85 °C		
Air pressure acc. to IEC 60068-2-13			
• Installation altitude above sea level, max.	2 000 m		
Relative humidity			
• No condensation, min.	10 %		
• No condensation, max.	93 %		
Mechanics/material			
Service life			
• Mean time between failures (MTBF)	13 y		
Dimensions			
Width	320 mm		
Height	60 mm		
Depth	80 mm		

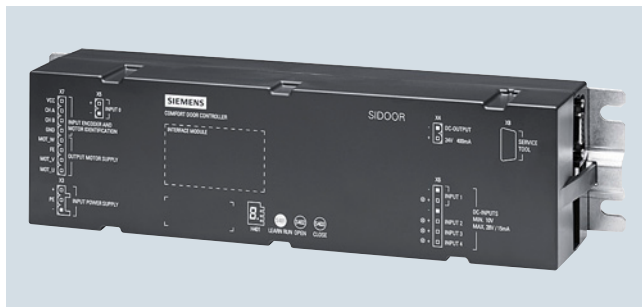
Ordering data	Article No.
SIDOOR ATE530S Platform Screen Door Drive	
SIDOOR ATE530S	6FB1231-3BM10-7AT0
SIDOOR ATE530S coated, version with protective coating	6FB1231-3BM12-7AT0
SIDOOR ATE531S Platform Screen Door Drive	
SIDOOR ATE531S, version with protective coating and extended temperature range	6FB1231-3BM11-7AT0

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Controller > Control unit for gap filler

Overview



The SIDOOR ATE530G drive control is designed for controlling gap fillers between external train doors and the platform edge. The gap filler facilitates easy access for passengers. The innovative SIDOOR ATE530G drive solution enables operation of a gap filler with adjustable speed, acceleration and motor currents. Depending on the application, a project-specific motor is used. In this case the firmware of the controller might be adapted to the specific project.

The SIDOOR ATE530G is activated by digital signals from a higher-level door control, and reports information about its current state via digital signals back to the door control.

The following drive functions are supported:

- System start-up after power failure
- "Extend", "Retract" command
- Gap filler is moved by a travel curve profile
- Obstruction detection
- Ice-breaker function
Icing can be shifted broken by repeated extension and retraction of the gap filler with increased force.
- Reversing at the platform edge

The SIDOOR ATE530G control unit fulfills Basic Integrity in accordance with EN 50657:2017

Technical specifications

Article No.	6FB1221-5SM10-7BP0 SIDOOR ATE530G COATED
General information	
Product brand name	SIDOOR
Product category	Controller
Type of product	ATE530G with protective coating
Area of application	For gap filling in railway vehicles
Installation type/mounting	
Installation and mounting note	Do not expose to direct sunlight
Supply voltage	
Rated value (DC)	36 V
Permissible range, lower limit (DC)	19.2 V
Permissible range, upper limit (DC)	37.1 V
DC supply protection	Use of a miniature circuit breaker in the supply branch
Digital inputs	
Control inputs isolated	Yes
Control inputs p-switching	Yes
DC supply protection	Use of a miniature circuit breaker in the supply branch 230/400 V 10 kA, 1-pin, C, 8A for railway applications, 5SY5108-7KK11

Article No.	6FB1221-5SM10-7BP0 SIDOOR ATE530G COATED
Input voltage	
• Per DC input, min.	10 V; ensure correct polarity!
• Per DC input, max.	28 V; ensure correct polarity!
Digital outputs	
Short-circuit proof	Yes
Overload-proof	Yes
Note	Ensure correct polarity! CAUTION: Do not supply with external voltage!
Output voltage	
• Output voltage (DC)	24 V
Output current	
• For output (24 V DC), max.	400 mA
Relay outputs	
Switching capacity of contacts	
• At 30 V DC, min.	0.01 A
• At 30 V DC, max.	0.5 A
Isolation	
Overvoltage category	2
Degree of protection and protection class	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	No
China RoHS compliance	Yes
Standard for EMC	EN 61000-6-2 / EN 61000-6-4 / EN 61326-3-1 / EN 50121-3-2
Ambient conditions	
Ambient temperature during operation	
• Min.	-25 °C
• Max.	50 °C
• Note	Screw the control unit thermally conductive to a metal mounting surface or use standard rail mounting, otherwise maximum operating temperature is only 40 °C
Ambient temperature during storage/transport	
• Storage, min.	-40 °C
• Storage, max.	85 °C
Air pressure acc. to IEC 60068-2-13	
• Installation altitude above sea level, max.	2 000 m
Relative humidity	
• No condensation, min.	10%
• No condensation, max.	93%
Mechanics/material	
Dimensions	
Width	320 mm
Height	60 mm
Depth	80 mm

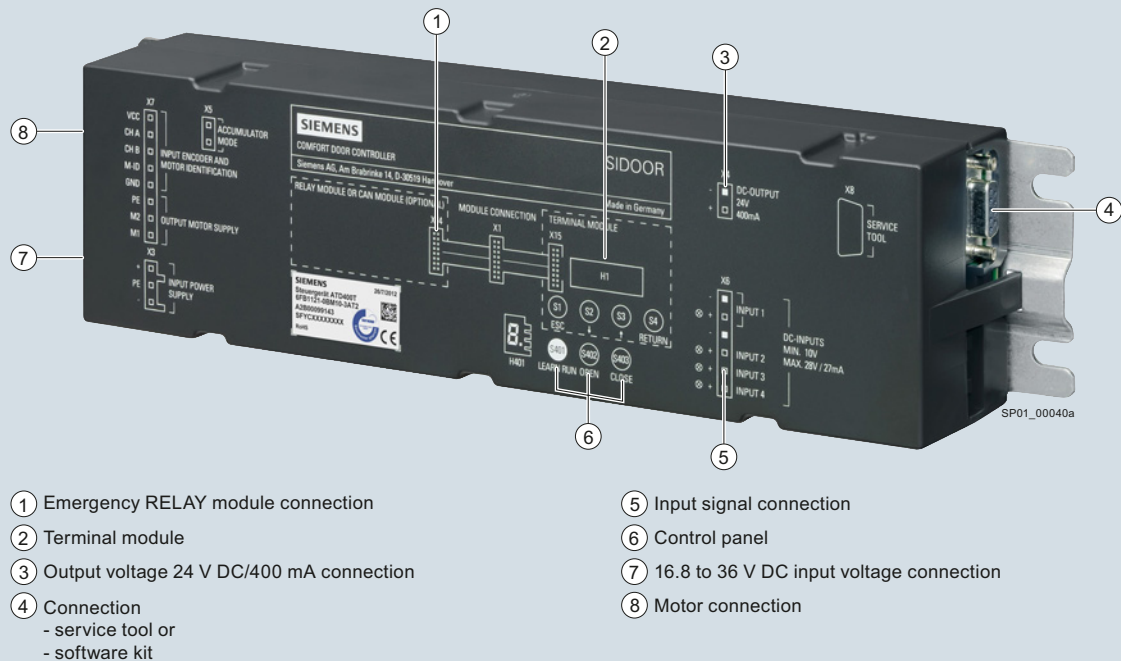
Ordering data

Article No.

**Control unit for gap filler
SIDOOR ATE530G**
SIDOOR ATE530G coated, controlling gap fillers between external train doors and the platform edge

6FB1221-5SM10-7BP0

Overview



SIDOOR ATD400T interior railway door drive

The SIDOOR ATD400T interior railway door drive is an "intelligent" door drive which enables gangway doors to be opened and closed at adjustable speeds and accelerations.

- Relay module design
- For dynamic door weights up to 180 kg
- Automatic door weight detection
- Operating temperature -20 to +70 °C ¹⁾
- Flexible motor management (two different motor types), automatic detection
- Opening width 0.25 to 4 m
- Door can be operated with and without closing springs (60 to 80 N)
- With two identical door leaves, can be used up to a train inclination of 0 to 10%
- Forces and energies are limited in accordance with EN 14752
- EMC according to EN 50121-3-2
- Fulfills HL3 according to fire protection standard EN 45545-2 (Railway applications – Fire protection on rail vehicles)
- Vandal-proof

1) Note:

- Maximum output current at 24 V DC:
 - 0.4 A at ≤ 55 °C ambient temperature during operation
 - 0.1 A from 55 °C to 70 °C ambient temperature during operation, with restrictions at operating temperatures > 55 °C
- Maximum ambient temperature during operation:
 - 55 °C
 - 70 °C with restrictions at operating temperatures > 55 °C
- Restrictions at operating temperatures > 55 °C:
 - Use the 24 V output voltage only for operating the control inputs (max. 0.1 A)
 - Use a sufficiently large (at least 350 x 350 mm), unpainted, metal mounting plate
 - The maximum drive parameters are restricted to the default values
 - If temperature class T3 according to EN 50155 is used, the maximum air temperature of 85 °C must not be exceeded near the printed-circuit board

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Controller > Interior railway door drives

Technical specifications

Article number	6FB1121-0BM13-3AT2 SIDOOR ATD400T RELAY
General information	
Product brand name	SIDOOR
Product version	With relay outputs
Manufacturer's article no. of the usable motor	6FB1103-0AT10-4MB0, 6FB1103-0AT11-4MB0, 6FB1103-0AT15-4MB0, 6FB1103-0AT16-4MB0
Installation type/mounting	
Installation and mounting instructions	At operating temperatures > 55 °C a sufficiently large (at least 350 mm x 350 mm), unpainted, metal mounting plate must be used
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, max.	15 A
Digital inputs	
Control inputs isolated	Yes
Control inputs p-switching	Yes
Input voltage	
• per DC input, min.	10 V; Observe polarity !
• per DC input, max.	28 V; Observe polarity !
Input current	
• per DC input, min.	9 mA
• per DC input, max.	27 mA
Digital outputs	
short-circuit proof	Yes
Overload-proof	Yes
Remark	Ensure correct polarity! CAUTION: Do not supply with external voltage!
Output voltage	
• Output voltage (DC)	24 V
Output current	
• For output (24 V DC), max.	400 mA
• For output (24 V DC) at 55 to 70 °C, max.	100 mA
Relay outputs	
Switching capacity of contacts	
- at 50 V DC, min.	0.01 A; 50 V DC switching voltage not released for NFPA-relevant countries
- at 50 V DC, max.	1 A; 50 V DC switching voltage not released for NFPA-relevant countries
- at 230 V AC, min.	0.01 A
- at 230 V AC, max.	1 A
Mechanical data	
Opening width of door, min.	0.25 m
Opening width of door, max.	4 m
Weight of door, max.	400 kg
Operating cycle frequency of door, max.	180 1/h
Counterforce, max.	80 N

Article number	6FB1121-0BM13-3AT2 SIDOOR ATD400T RELAY
Counterweight	
• with SIDOOR M3 geared motor, max.	6 kg
Interfaces	
Interfaces/bus type	without
Isolation	
Overvoltage category	2
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
UL approval	No
Standard for EMC	EN 50121-3-2
Ambient conditions	
Ambient temperature class according to EN 50155	T3
Ambient temperature during operation	
• min.	-25 °C
• max.	70 °C; At operating temperatures > 55 °C the operating parameters are limited to default values
• Remark	At operating temperatures > 55 °C, the maximum air temperature of 85 °C must not be exceeded near the printed-circuit board if Temperature class T3 according to EN 50155 is used
Ambient temperature during storage/transportation	
• Storage, min.	-40 °C
• Storage, max.	50 °C
Air pressure acc. to IEC 60068-2-13	
• Installation altitude above sea level, max.	2 000 m
Relative humidity	
• No condensation, min.	10 %
• No condensation, max.	93 %
Fire resistance	
• Behavior in fire	complies with EN 45545-2 Hazard Level HL3
Dimensions	
Width	320 mm
Height	60 mm
Depth	80 mm

Ordering data**Article No.****SIDOOR ATD400T**

Controller for interior railway doors,
relay module design

6FB1121-0BM13-3AT2

Overview SIDOOR Software kit



SIDOOR Software Kit

The scope of delivery of the SIDOOR Software Kit includes an installation CD

which includes the following functionalities:

SIDOOR User Software	The component that enables the door control system to be configured, parameters to be assigned, and analyzed.
Siemens HCS12 Firmware Loader	This component is used to update the operating software of the door controller.
SIDOOR USB to UART Bridge Driver	This driver is essential for operation of the USB adapter.

Note:

Some firmware updates are offered as free downloads in the Siemens Industry Online Support (SIOS Service & Support Portal). For information on the availability and acquisition of more firmware, please contact Technical Support.

Ordering data	Article No.
SIDOOR Software Kit	6FB1105-0AT01-6SW0

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 controllers by the respective cable.

- SIDOOR AT12, SIDOOR AT40 and SIDOOR ATD400V elevator door drives
- SIDOOR ATD400K cold room gate drive, SIDOOR ATD4xxW machine tool door drives
- SIDOOR ATD400S and SIDOOR ATE250S platform screen door drives

You do not need to open the cover of the controller to do this.

Note:

If the Service Tool is in the "Quick adjustment" or "Total adjustment" menu, the run commands of the controller are blocked via the command inputs.

Ordering data	Article No.
SIDOOR Service Tool Hand-held terminal for parameter assignment of controllers	6FB1105-0AT01-6ST0

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Geared motors

Overview

SIDOOR motors are speed controlled, taking set force and speed limits into account. The gear outlet direction is defined as left or right when viewing the gear unit from the front. Force transmission is via a toothed belt. The toothed belt passes over a deflector pulley and can be fitted with two door clutch holders. This enables it to drive both single-side and centrally opening doors.

SIDOOR geared motors are available in two technological versions.

- 1. DC technology in version
(area of application: interior railway doors)
 - DC geared motor
 - SIDOOR geared motors are a combination of gear unit, motor, and encoder. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning. The variable speed drive unit comprises a speed-controlled DC motor with non-self-locking gearing.
- 2. EC technology in version
(area of application: platform screen doors)
 - EC direct drive
 - SIDOOR direct drives are a combination of motor and sensor. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning. The maintenance-free drive unit consists of a gearless, speed-controlled, electronically commutated motor. The EC direct drive can be fitted in various mounting orientations, facilitating reduced inventory management and minimizing assets.
 - EC geared motors
 - EC geared motors are electronically commutated DC motors with non-self-locking gearing and are speed-controlled. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning. Due to the brushless drive technology, EC geared motors are subject to less abrasion compared with DC geared motors and thus have a longer service life. On account of the brushless drive technology, no commutation noises come from this motor, so it generates less noise than the DC geared motors.

Motors for interior railway door drives (for controllers ATD400T)

The following DC geared motors **are available for interior railway door drives**. They should be selected according to the dynamic door weight.

- SIDOOR MDG180 geared motors, compliance with fire protection standard EN 45545-2 (max. door weight 180 kg)
 - SIDOOR MDG180 L EN 45545-2 (pinion left) 6FB1103-0AT16-4MB0
 - SIDOOR MDG180 R EN 45545-2 (pinion right) 6FB1103-0AT15-4MB0
- SIDOOR M3 geared motors (max. door weight 180 kg)
 - SIDOOR M3 L (pinion left) 6FB1103-0AT10-4MB0
 - SIDOOR M3 R (pinion right) 6FB1103-0AT11-4MB0

Motors for platform screen door drives (for controllers ATE530S, ATE531S)

EC technology:

- SIDOOR MEG251 geared motors (max. door weight 250 kg)
 - SIDOOR MEG251 L (pinion left), 6FB1203-5AT00-7MP0
 - SIDOOR MEG251 R (pinion right), 6FB1203-5AT01-7MP0



Photo: DC geared motor SIDOOR M3 L, 6FB1103-0AT10-4MB0 or SIDOOR MDG180 L, 6FB1103-0AT16-4MB0. (version with pinion left)



Photo: EC geared motor SIDOOR MEG251 L, 6FB1203-5AT00-7MP0. (version with pinion left)

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Geared motors

Technical specifications

Article number	6FB1103-0AT16-4MB0	6FB1103-0AT15-4MB0	6FB1103-0AT10-4MB0	6FB1103-0AT11-4MB0	6FB1203-5AT00-7MP0	6FB1203-5AT01-7MP0
	SIDOOR MDG180 L DIN EN 45545-2	SIDOOR MDG180 R DIN EN 45545-2	SIDOOR M3 L	SIDOOR M3 R	SIDOOR MEG251 L	SIDOOR MEG251 R
General information						
Product brand name	SIDOOR					
Product version	With driven gear on the left	With driven gear on the right	With driven gear on the left	With driven gear on the right	With driven gear on the left	With driven gear on the right
Input current						
Operational current (rated value)	4 A				6.8 A	
Mechanical data						
Torque of the rotary operating mechanism (rated value)	3 N·m				4.1 N·m	
Speed, max.	0.65 m/s					
Gear ratio	15					
Number of pulses per revolution, max.	100					
Weight of door, max.	180 kg				250 kg	
Degree and class of protection						
IP degree of protection						
• of the motor	IP54				IP40	
• of the gear unit	IP40					
Ambient conditions						
Ambient temperature during operation						
• min.	-20 °C					
• max.	50 °C				70 °C	
Ambient temperature during storage/transportation						
• Storage, min.	-40 °C					
• Storage, max.	85 °C					
Fire resistance						
• Behavior in fire	complies with EN 45545-2 Hazard Level HL3					
Dimensions						
Height of motor	98 mm				100 mm	
Length of motor	236 mm				249 mm	
Diameter of motor	63 mm				62 mm	
Width of gear unit, including drive pinion	85 mm				86 mm	

Ordering data

Motors for interior railway door drives

SIDOOR MDG180 geared motors

MDG180 L, EN 45545-2

MDG180 R, EN 45545-2

SIDOOR M3 geared motors

M3 L

M3 R

Article No.

6FB1103-0AT16-4MB0

6FB1103-0AT15-4MB0

6FB1103-0AT10-4MB0

6FB1103-0AT11-4MB0

Article No.

Motors for platform screen doors

SIDOOR MEG251

EC technology geared motor

MEG251 L

MEG251 R

6FB1203-5AT00-7MP0

6FB1203-5AT01-7MP0

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

Direct drives**Overview**

SIDOOR MED280 direct drive

SIDOOR direct drives are a combination of motor and sensor. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning.

The maintenance-free drive unit consists of a gearless, speed-controlled, electronically commutated motor with non-self-locking gearing.

Direct drives are designed for certain maximum dynamic door weights and can control both drive directions.

- SIDOOR MED280 direct drive for dynamic door weights up to 280 kg (6FB1203-0AT12-7DA0)

Technical specifications

Article number	6FB1203-0AT12-7DA0 SIDOOR MED280
General information	
Product brand name	SIDOOR
Product designation	Motor for door control
Product version	MED280
Input current	
Operational current (rated value)	9.7 A
Mechanical data	
Torque of the rotary operating mechanism (rated value)	4.7 N·m
Speed, max.	0.8 m/s
Number of pulses per revolution, max.	1 024
Weight of door, max.	280 kg
Degree and class of protection	
IP degree of protection	
• of the motor	IP54
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C
• max.	70 °C
Ambient temperature during storage/transportation	
• Storage, min.	-40 °C
• Storage, max.	85 °C
Dimensions	
Width of motor	160 mm
Height of motor	140 mm
Length of motor	56 mm
• including drive pinion	91 mm

Ordering data**Article No.**

SIDOOR MED280 direct drive

6FB1203-0AT12-7DA0

Motor for door control

Overview

A comprehensive range of accessories is available for the SIDOOR systems. This is necessary to ensure low-noise operation of the door by the controller.

Accessories for SIDOOR DC and EC geared motors

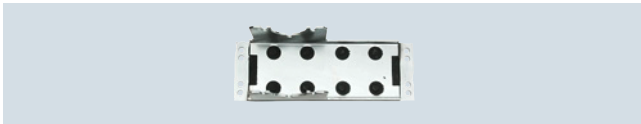
Rubber-metal anti-vibration mount

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 M3 and SIDOOR MDG180 DC geared motors (also for EN 45545-2) and SIDOOR MEG251 EC geared motors (door weights up to 250 kg)
- Rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0 for SIDOOR M4 DC geared motors (door weights up to 400 kg)



Rubber-metal anti-vibration mount 6FB1104-0AT02-0AD0



Rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0

Mounting bracket

Two different mounting brackets are available with elongated holes:

- Mounting bracket 6FB1104-0AT01-0AS0 for SIDOOR M3 and SIDOOR MDG180 DC geared motors (also for EN 45545-2) and SIDOOR MEG251 EC 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.



Mounting bracket 6FB1104-0AT01-0AS0 for mounting the geared motor



Mounting bracket 6FB1104-0AT02-0AS0 for the deflector unit

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.



Door clutch holder 6FB1104-0AT01-0CP0 (packaging size = 1 unit)

Deflector unit

The deflector unit 6FB1104-0AT03-0AS0 contains an embedded belt pulley which can be mounted on the door system.

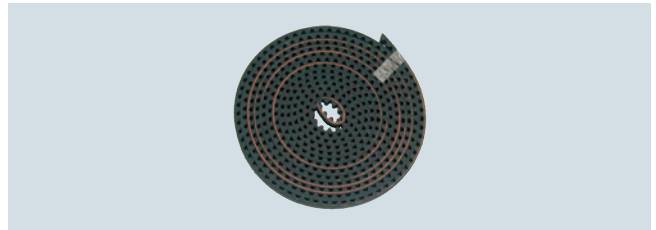
The STS toothed belt is redirected via this deflector unit.



Deflector unit 6FB1104-0AT03-0AS0

STS toothed belt

The door system is moved between the end positions of the door using the STS toothed belt 6FB1104-0AT0.-0AB0. Two different toothed belt lengths are available.



Toothed belt 6FB1104-0AT01-0AB0, length 4 m



Toothed belt 6FB1104-0AT02-0AB0, length 45 m

SIPLUS RAIL and SIDOOR

SIDOOR automatic door controls
for railway applications

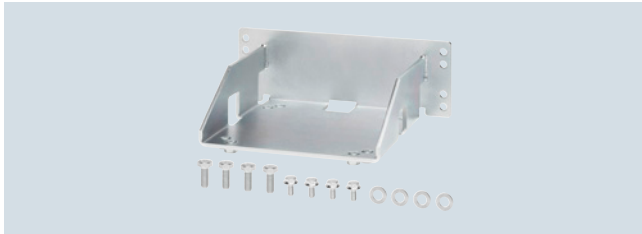
Accessories

Overview (continued)

Accessories for the SIDOOR MED280 EC direct drive, for the controller for the SIDOOR ATE530S/ATE531S platform screen door drive

Motor holder

- Motor holder 6FB1104-0AT03-0AD0 for accommodation of the SIDOOR MED280 direct drive.



SIDOOR motor holder

Mounting bracket

- For mounting the SIDOOR motor holder 6FB1104-0AT01-0AS0. Identical to the mounting bracket 6FB1104-0AT01-0AS0 for DC geared motors.



Mounting bracket for geared motor

- With tensioning device for mounting the deflector unit and setting the toothed belt to the required tension (large) 6FB1104-0AT05-0AS4



SIDOOR mounting bracket, large

- With tensioning device for mounting the deflector unit and setting the toothed belt to the required tension (small) 6FB1104-0AT05-0AS5



SIDOOR mounting bracket, small

Door clutch holder

- For attaching both ends of the toothed belt and connecting the respective door panel to the toothed belt, width 20 mm, 6FB1104-0AT05-0AS1



SIDOOR door clutch holder

Deflector unit

- For attaching the SIDOOR toothed belt and fixing to the door 6FB1104-0AT07-0AS0



SIDOOR deflector unit

STD toothed belt

- As a connection between the door system and the end positions of the door, toothed belt width 20 mm. Length 4 m, 6FB1104-0AT05-0AB0



SIDOOR toothed belt, small

- Toothed belt width 20 mm. Length 45 m 6FB1104-0AT06-0AB1



SIDOOR toothed belt, large

Ordering data	Article No.
Accessories for SIDOOR DC and EC geared motors	
Rubber-metal anti-vibration mounts for geared motors	
• SIDOOR rubber-metal anti-vibration mount for geared motors for door weights up to 300 kg	6FB1104-0AT02-0AD0
• SIDOOR rubber-metal anti-vibration mount for geared motors for door weights from 300 kg	6FB1104-0AT01-0AD0
Mounting bracket	
• SIDOOR mounting bracket for geared motor	6FB1104-0AT01-0AS0
• SIDOOR mounting bracket with tensioning device for deflector pulley	6FB1104-0AT02-0AS0
SIDOOR door clutch holder	
• For toothed belt, width 12 mm	6FB1104-0AT01-0CP0
SIDOOR deflector unit	6FB1104-0AT03-0AS0
SIDOOR toothed belt STS	
Width 12 mm	
• 4 m	6FB1104-0AT01-0AB0
• 45 m	6FB1104-0AT02-0AB0
Accessories for the SIDOOR MED280 EC direct drive, for the controller for the SIDOOR ATE530S/ATE531S platform screen door drive	
Motor holder for SIDOOR MED280 direct drive	6FB1104-0AT03-0AD0
Mounting bracket for mounting the motor holder	6FB1104-0AT01-0AS0
Mounting bracket with tensioning device for mounting the deflector unit	
• Large	6FB1104-0AT05-0AS4
• Small	6FB1104-0AT05-0AS5
SIDOOR door clutch holder	
• For toothed belt, width 20 mm	6FB1104-0AT05-0AS1
SIDOOR deflector unit	6FB1104-0AT07-0AS0
SIDOOR toothed belt STD	
Width 20 mm	
• 4 m	6FB1104-0AT05-0AB0
• 45 m	6FB1104-0AT06-0AB1

SIPLUS RAIL and SIDOOR

Notes

3

SENTRON · ALPHA FIX · DELTA

**SENTRON**

Miniature circuit breakers

5SY Miniature Circuit Breakers

4/2 Introduction

4/4 5SY4, 10 000 A

4/6 5SY5, universal current, 10 000 A

4/7 5SY7, 15000 A

Additional Components

4/10 Electrical components

4/13 Mechanical components

Residual current protective devices

4/14 5SV RCCBs

4/21 SIQUENCE 5SV3

universal current-sensitive RCCBs,
type B and type B+

4/23 Additional components

4/25 5SU1 RCBOs

Fuse systemsNEOZED Fuse Systems

4/30 Introduction

4/31 MINIZED switch disconnectors

LV HRC Fuse Systems

4/32 LV HRC fuse links

4/35 LV HRC signal detectors

4/36 LV HRC fuse bases and accessories

4/39 SITOR Semiconductor Fuses

4/39 LV HRC design

Switch disconnectors3NP5 Fuse Switch Disconnectors

up to 630 A

4/40 With fuse monitoring

Switching devices

4/43 5TT4 remote control switches

ALPHA FIX terminal blocks8WH6 iPo plug-in terminals

4/46 General data

4/47 8WH6 through-type terminals

4/50 8WH6 isolating terminals

4/51 Accessories for 8WH Terminal Blocks

4/51 Standard labeling system

4/52 Mounting accessories

DELTA**DELTA profil**

4/54 Socket outlets

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

Introduction

Overview

MCBs are used to protect systems and installations in buildings and for industrial applications.

Used in industrial applications and plant engineering, miniature circuit breakers can be supplemented with additional components, such as auxiliary switches, fault signal contacts,

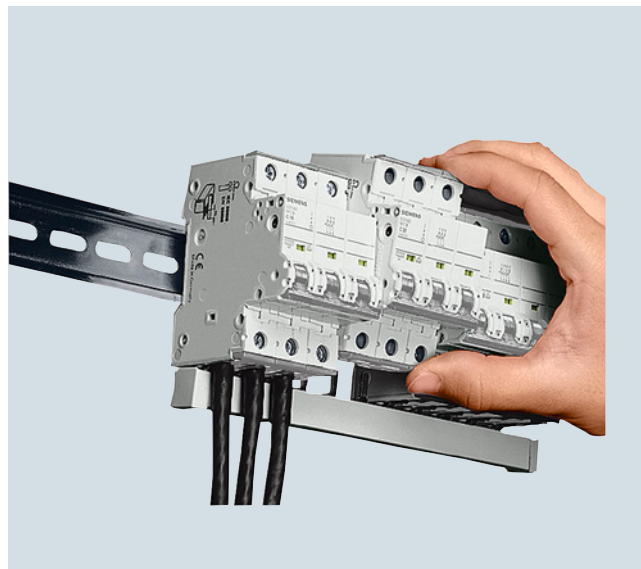
shunt trips, undervoltage releases, remote controlled mechanisms, RC units, and arc fault detection devices.

The devices are approved for worldwide use according to IEC standards for power supply systems up to 250/440 V AC. 72 V DC per pole is permitted in DC systems.

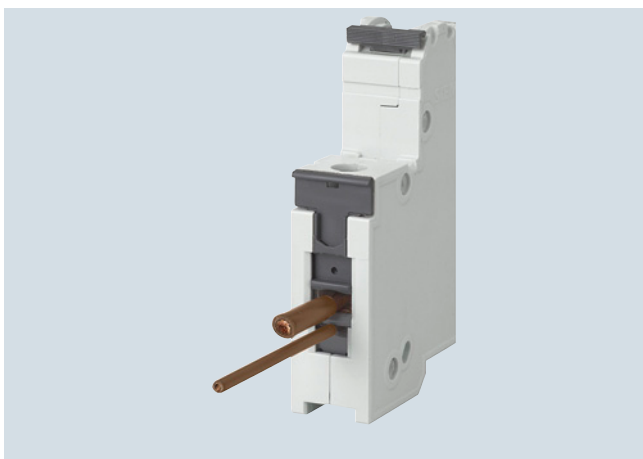
Benefits



- Optional top or bottom infeed as the terminals are identical
- Clear and visible conductor connection in front of the rear busbar facilitates controls
- The conductor is easily inserted into the terminal thanks to the large and easily accessible wiring space



- Quick and easy manual removal of MCBs from the busbar assembly, for example if connections need to be changed
- Time-saving replacement of parts as busbars no longer need to be freed from adjacent devices



- Double terminal chambers permit accommodation of 2 wires of different cross-sections.



- The 5SY miniature circuit breakers are ideal for the quick and easy mounting of auxiliary switches and fault signal contacts. Captive metal brackets on the additional components ensure the quick and easy mounting of devices on the miniature circuit breakers without the need for tools.

Technical specifications

			5SY4	5SY5	5SY7	
Standards			EN 60898-1	EN 60898-2	EN 60898-1	
Approvals			See chapter "Appendix"			
Rated voltage U_n		V AC V DC	230/400 --	230/400 220/440	230/400 --	
Operational voltage						
Acc. to EN 60898-1/-2 and EN 60947-2	Min.	V AC/DC/pole	24	24	24	
	Max.	V DC/pole	72 ³⁾	250	72 ³⁾	
	Max.	V AC	250/440	250/440	250/440	
Acc. to UL 1077 and CSA C22.2 No.235	Max.	V AC	480/277	--	480/277	
	Max.	V DC	60	--	60	
Breaking capacity ¹⁾						
• I_{cn} acc. to IEC/EN 60898-1		kA AC	10	10	15	
		kA DC	10	10	15	
	• I_{cu} acc. to IEC/EN 60947-2	kA AC	35 ... 10 ¹⁾	--	50 ... 15 ¹⁾	
		kA DC	15	15	15	
• Acc. to UL1077 and CSA C22.2 No.235		kA AC	5	--	5	
Insulation coordination						
• Rated insulation voltage		V AC	250/440			
		V DC/pole	--	250	--	
Pollution degree for overvoltage category			3/III			
Touch protection		Acc. to EN 50274	Yes			
Handle end position, sealable			Yes			
Degree of protection		Acc. to EN 60529	IP20 with connected conductors, IP40 in the area of the handle with distribution cover			
CFC and silicone-free			Yes			
Mounting						
• Snap-on fixing system			Yes			
	• Standard mounting rail and screw fixing		--			
Terminals		± screw (Pozidriv)	2			
• Tunnel terminals at both ends			--			
	• Combined terminals at both ends		Yes			
		• Terminal tightening torque		2.5 ... 3		
			Nm lbs/in.	22 ... 26		
Conductor cross-sections						
• Solid and stranded		mm ²	0.75 ... 35			
	• Finely stranded, with end sleeve	mm ²	0.75 ... 25			
	• AWG cables (Cu 60/75 °C $I_n \leq 40$ A; 60 °C $I_n > 40$ A)	AWG	14 ... 4			
Mains connection						
• AC			Any			
	• DC		Any	²⁾	Any	
Mounting position			Any			
Endurance		Actuations	20000			
On average, with rated load		Actuations	10000, for 5SY5 at 40 A, 50 A and 63 A			
Ambient temperature		°C	-40 ... +70			
Storage temperature		°C	-40 ... +75			
Resistance to climate		Acc. to IEC 60068-2-30	Cycles	28		
Vibration and shock resistant			According to EN 61373 Category 1, Class B			

¹⁾ For further information see Configuration Manual "Miniature Circuit Breakers" at: www.siemens.com/lowvoltage/manuals.

²⁾ Ensure compliance with the specified polarity when connecting DC.

³⁾ Exempt: C/D 0.3 A ... 0.5 A

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY4, 10 000 A
Selection and ordering data

10 000		I _n	Mounting width MW ¹⁾	SD	Characteristic B			Characteristic C			PU	PS*/ P. unit	PG	Weight per PU approx. kg
3					Article No.	Price per PU	PG	SD	Article No.	Price per PU				
MCBs 10000 A														
	1P, 230/400 V AC													
	0.3	1	--				30	5SY4114-7		1	1 unit	1AC	0.167	
	0.5		--				15	5SY4105-7		1	1 unit	1AC	0.165	
	1		--				5	5SY4101-7		1	1 unit	1AC	0.155	
	1.6		--				15	5SY4115-7		1	1 unit	1AC	0.169	
	2		--				▶	5SY4102-7		1	1 unit	1AC	0.165	
	3		--				5	5SY4103-7		1	1 unit	1AC	0.152	
	4		--				▶	5SY4104-7		1	1 unit	1AC	0.152	
	6		▶	5SY4106-6		1AB	▶	5SY4106-7		1	1 unit	1AC	0.159	
	8		--				15	5SY4108-7		1	1 unit	1AC	0.165	
	10		▶	5SY4110-6		1AB	▶	5SY4110-7		1	1 unit	1AC	0.159	
	13		15	5SY4113-6		1AB	15	5SY4113-7		1	1 unit	1AC	0.154	
	16		▶	5SY4116-6		1AB	▶	5SY4116-7		1	1 unit	1AC	0.149	
	20		15	5SY4120-6		1AB	15	5SY4120-7		1	1 unit	1AC	0.152	
	25		15	5SY4125-6		1AB	15	5SY4125-7		1	1 unit	1AC	0.168	
	32		15	5SY4132-6		1AB	15	5SY4132-7		1	1 unit	1AC	0.154	
	40		15	5SY4140-6		1AB	15	5SY4140-7		1	1 unit	1AC	0.154	
	50		30	5SY4150-6		1AB	30	5SY4150-7		1	1 unit	1AC	0.168	
	63		30	5SY4163-6		1AB	15	5SY4163-7		1	1 unit	1AC	0.173	
	2P, 400 V AC													
	0.3	2	--				30	5SY4214-7		1	1 unit	1AC	0.325	
	0.5		--				15	5SY4205-7		1	1 unit	1AC	0.322	
	1		--				15	5SY4201-7		1	1 unit	1AC	0.327	
	1.6		--				15	5SY4215-7		1	1 unit	1AC	0.323	
	2		--				▶	5SY4202-7		1	1 unit	1AC	0.316	
	3		--				15	5SY4203-7		1	1 unit	1AC	0.319	
	4		--				2	5SY4204-7		1	1 unit	1AC	0.306	
	6		15	5SY4206-6		1AB	▶	5SY4206-7		1	1 unit	1AC	0.301	
	8		--				15	5SY4208-7		1	1 unit	1AC	0.314	
	10		5	5SY4210-6		1AB	▶	5SY4210-7		1	1 unit	1AC	0.302	
	13		30	5SY4213-6		1AB	15	5SY4213-7		1	1 unit	1AC	0.323	
	16		15	5SY4216-6		1AB	▶	5SY4216-7		1	1 unit	1AC	0.302	
	20		15	5SY4220-6		1AB	15	5SY4220-7		1	1 unit	1AC	0.323	
	25		15	5SY4225-6		1AB	15	5SY4225-7		1	1 unit	1AC	0.309	
	32		15	5SY4232-6		1AB	15	5SY4232-7		1	1 unit	1AC	0.323	
	40		15	5SY4240-6		1AB	15	5SY4240-7		1	1 unit	1AC	0.316	
	50		30	5SY4250-6		1AB	30	5SY4250-7		1	1 unit	1AC	0.327	
	63		30	5SY4263-6		1AB	15	5SY4263-7		1	1 unit	1AC	0.339	
	3P, 400 V AC													
	0.3	3	--				30	5SY4314-7		1	1 unit	1AC	0.482	
	0.5		--				15	5SY4305-7		1	1 unit	1AC	0.481	
	1		--				15	5SY4301-7		1	1 unit	1AC	0.482	
	1.6		--				30	5SY4315-7		1	1 unit	1AC	0.468	
	2		--				5	5SY4302-7		1	1 unit	1AC	0.484	
	3		--				15	5SY4303-7		1	1 unit	1AC	0.471	
	4		--				15	5SY4304-7		1	1 unit	1AC	0.472	
	6		15	5SY4306-6		1AB	2	5SY4306-7		1	1 unit	1AC	0.463	
	8		--				15	5SY4308-7		1	1 unit	1AC	0.466	
	10		5	5SY4310-6		1AB	▶	5SY4310-7		1	1 unit	1AC	0.458	
	13		15	5SY4313-6		1AB	15	5SY4313-7		1	1 unit	1AC	0.476	
	16		▶	5SY4316-6		1AB	▶	5SY4316-7		1	1 unit	1AC	0.451	
	20		15	5SY4320-6		1AB	15	5SY4320-7		1	1 unit	1AC	0.323	
	25		15	5SY4325-6		1AB	5	5SY4325-7		1	1 unit	1AC	0.477	
	32		2	5SY4332-6		1AB	▶	5SY4332-7		1	1 unit	1AC	0.473	
	40		15	5SY4340-6		1AB	15	5SY4340-7		1	1 unit	1AC	0.470	
	50		15	5SY4350-6		1AB	15	5SY4350-7		1	1 unit	1AC	0.493	
	63		15	5SY4363-6		1AB	15	5SY4363-7		1	1 unit	1AC	0.512	

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY4, 10 000 A

10 000		I _n	Mounting width MW ¹⁾	SD	Characteristic B			PG	SD	Characteristic C			PU	PS*/ P. unit	PG	Weight per PU approx. kg	
3					Article No.	Price per PU	Article No.			Price per PU							
		A		d					d								
		4P, 400 V AC	4														
		0.3			--				30	5SY4414-7		1	1 unit	1AC	0.662		
		0.5			--				30	5SY4405-7		1	1 unit	1AC	0.635		
		1			--				30	5SY4401-7		1	1 unit	1AC	0.627		
		1.6			--				30	5SY4415-7		1	1 unit	1AC	0.624		
		2			--				15	5SY4402-7		1	1 unit	1AC	0.642		
		3			--				30	5SY4403-7		1	1 unit	1AC	0.621		
		4			--				30	5SY4404-7		1	1 unit	1AC	0.623		
		6		30	5SY4406-6			1AB	15	5SY4406-7		1	1 unit	1AC	0.606		
		8			--				30	5SY4408-7		1	1 unit	1AC	0.608		
		10		30	5SY4410-6			1AB	15	5SY4410-7		1	1 unit	1AC	0.614		
		13		30	5SY4413-6			1AB	30	5SY4413-7		1	1 unit	1AC	0.625		
		16		15	5SY4416-6			1AB	5	5SY4416-7		1	1 unit	1AC	0.604		
		20		15	5SY4420-6			1AB	15	5SY4420-7		1	1 unit	1AC	0.630		
		25		15	5SY4425-6			1AB	5	5SY4425-7		1	1 unit	1AC	0.625		
		32		15	5SY4432-6			1AB	15	5SY4432-7		1	1 unit	1AC	0.620		
		40		30	5SY4440-6			1AB	15	5SY4440-7		1	1 unit	1AC	0.627		
		50		30	5SY4450-6			1AB	15	5SY4450-7		1	1 unit	1AC	0.655		
63		30	5SY4463-6			1AB	15	5SY4463-7		1	1 unit	1AC	0.677				

1) 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY5, universal current, 10 000 A

Selection and ordering data

10 000		I _n	Mount- ing width	SD	Characteristic B			Characteristic C			PU	PS*/ P. unit	PG	Weight per PU approx. kg
3					Article No.	Price per PU	PG	SD	Article No.	Price per PU				
		A	MW ¹⁾	d										
	MCBs 10000 A Universal current													
	1P, 230/400 V AC, 220 V DC													
	0.3	1	--			30	5SY5114-7	1	1 unit	1AC	0.171			
	0.5		--			30	5SY5105-7	1	1 unit	1AC	0.171			
	1		--			15	5SY5101-7	1	1 unit	1AC	0.168			
	1.6		--			30	5SY5115-7	1	1 unit	1AC	0.167			
	2		--			15	5SY5102-7	1	1 unit	1AC	0.170			
	3		--			15	5SY5103-7	1	1 unit	1AC	0.165			
	4		--			15	5SY5104-7	1	1 unit	1AC	0.166			
	6			15	5SY5106-6	1AB	5	5SY5106-7	1	1 unit	1AC	0.165		
	8		--			30	5SY5108-7	1	1 unit	1AC	0.163			
	10			15	5SY5110-6	1AB	15	5SY5110-7	1	1 unit	1AC	0.164		
	13			30	5SY5113-6	1AB	30	5SY5113-7	1	1 unit	1AC	0.168		
	16			15	5SY5116-6	1AB	15	5SY5116-7	1	1 unit	1AC	0.164		
	20			30	5SY5120-6	1AB	30	5SY5120-7	1	1 unit	1AC	0.167		
	25			30	5SY5125-6	1AB	15	5SY5125-7	1	1 unit	1AC	0.166		
	32			30	5SY5132-6	1AB	30	5SY5132-7	1	1 unit	1AC	0.168		
	40			30	5SY5140-6	1AB	30	5SY5140-7	1	1 unit	1AC	0.167		
	50			30	5SY5150-6	1AB	30	5SY5150-7	1	1 unit	1AC	0.172		
63			30	5SY5163-6	1AB	30	5SY5163-7	1	1 unit	1AC	0.177			
	2P, 400 V AC, 220 V DC													
	0.3	2	--			30	5SY5214-7	1	1 unit	1AC	0.330			
	0.5		--			15	5SY5205-7	1	1 unit	1AC	0.329			
	1		--			15	5SY5201-7	1	1 unit	1AC	0.325			
	1.6		--			15	5SY5215-7	1	1 unit	1AC	0.322			
	2		--			2	5SY5202-7	1	1 unit	1AC	0.328			
	3		--			5	5SY5203-7	1	1 unit	1AC	0.318			
	4		--			2	5SY5204-7	1	1 unit	1AC	0.318			
	6			5	5SY5206-6	1AB	▶	5SY5206-7	1	1 unit	1AC	0.309		
	8		--			15	5SY5208-7	1	1 unit	1AC	0.314			
	10			15	5SY5210-6	1AB	2	5SY5210-7	1	1 unit	1AC	0.315		
	13			30	5SY5213-6	1AB	15	5SY5213-7	1	1 unit	1AC	0.321		
	16			15	5SY5216-6	1AB	5	5SY5216-7	1	1 unit	1AC	0.314		
	20			30	5SY5220-6	1AB	15	5SY5220-7	1	1 unit	1AC	0.320		
	25			30	5SY5225-6	1AB	15	5SY5225-7	1	1 unit	1AC	0.320		
	32			30	5SY5232-6	1AB	15	5SY5232-7	1	1 unit	1AC	0.321		
	40			30	5SY5240-6	1AB	15	5SY5240-7	1	1 unit	1AC	0.322		
	50			30	5SY5250-6	1AB	15	5SY5250-7	1	1 unit	1AC	0.333		
	63			30	5SY5263-6	1AB	15	5SY5263-7	1	1 unit	1AC	0.342		

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY7, 15000 A

Selection and ordering data

15000		I_n	Mounting width	SD	Characteristic B Article No. www.siemens.com/ product?Article No.	Price per PU	PU	PS*/ P. unit	PG
		A	MW ¹⁾	d					
Miniature circuit breakers 15000 A									
	1P, 230/400 V AC								
	6	1	15	5SY7106-6	1	1 unit	1AB		
	10		15	5SY7110-6	1	1 unit	1AB		
	13		30	5SY7113-6	1	1 unit	1AB		
	16		15	5SY7116-6	1	1 unit	1AB		
	20		30	5SY7120-6	1	1 unit	1AB		
	25		15	5SY7125-6	1	1 unit	1AB		
	32		30	5SY7132-6	1	1 unit	1AB		
	40		30	5SY7140-6	1	1 unit	1AB		
	50		30	5SY7150-6	1	1 unit	1AB		
63		30	5SY7163-6	1	1 unit	1AB			
	1P+N, 230 V AC								
	6	2	30	5SY7506-6	1	1 unit	1AB		
	10		30	5SY7510-6	1	1 unit	1AB		
	13		30	5SY7513-6	1	1 unit	1AB		
	16		30	5SY7516-6	1	1 unit	1AB		
	20		30	5SY7520-6	1	1 unit	1AB		
	25		30	5SY7525-6	1	1 unit	1AB		
	32		30	5SY7532-6	1	1 unit	1AB		
	40		30	5SY7540-6	1	1 unit	1AB		
	50		30	5SY7550-6	1	1 unit	1AB		
63		30	5SY7563-6	1	1 unit	1AB			
	2P, 400 V AC								
	6	2	15	5SY7206-6	1	1 unit	1AB		
	10		30	5SY7210-6	1	1 unit	1AB		
	13		30	5SY7213-6	1	1 unit	1AB		
	16		30	5SY7216-6	1	1 unit	1AB		
	20		30	5SY7220-6	1	1 unit	1AB		
	25		30	5SY7225-6	1	1 unit	1AB		
	32		30	5SY7232-6	1	1 unit	1AB		
	40		30	5SY7240-6	1	1 unit	1AB		
	50		30	5SY7250-6	1	1 unit	1AB		
63		30	5SY7263-6	1	1 unit	1AB			
	3P, 400 V AC								
	6	3	30	5SY7306-6	1	1 unit	1AB		
	10		30	5SY7310-6	1	1 unit	1AB		
	13		30	5SY7313-6	1	1 unit	1AB		
	16		15	5SY7316-6	1	1 unit	1AB		
	20		30	5SY7320-6	1	1 unit	1AB		
	25		30	5SY7325-6	1	1 unit	1AB		
	32		30	5SY7332-6	1	1 unit	1AB		
	40		30	5SY7340-6	1	1 unit	1AB		
	50		30	5SY7350-6	1	1 unit	1AB		
63		30	5SY7363-6	1	1 unit	1AB			
	3P+N, 400 V AC								
	6	4	30	5SY7606-6	1	1 unit	1AB		
	10		30	5SY7610-6	1	1 unit	1AB		
	13		30	5SY7613-6	1	1 unit	1AB		
	16		30	5SY7616-6	1	1 unit	1AB		
	20		30	5SY7620-6	1	1 unit	1AB		
	25		30	5SY7625-6	1	1 unit	1AB		
	32		30	5SY7632-6	1	1 unit	1AB		
	40		30	5SY7640-6	1	1 unit	1AB		
	50		30	5SY7650-6	1	1 unit	1AB		
63		30	5SY7663-6	1	1 unit	1AB			
	4P, 400 V AC								
	6	4	30	5SY7406-6	1	1 unit	1AB		
	10		30	5SY7410-6	1	1 unit	1AB		
	13		30	5SY7413-6	1	1 unit	1AB		
	16		30	5SY7416-6	1	1 unit	1AB		
	20		30	5SY7420-6	1	1 unit	1AB		
	25		30	5SY7425-6	1	1 unit	1AB		
	32		30	5SY7432-6	1	1 unit	1AB		
	40		30	5SY7440-6	1	1 unit	1AB		
	50		30	5SY7450-6	1	1 unit	1AB		
63		30	5SY7463-6	1	1 unit	1AB			

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY7, 15000 A

15000		I_n	Mount- ing width	SD	Characteristic C	Price per PU	PU	PS*/ P. unit	PG	SD	Characteristic D	Price per PU	PU	PS*/ P. unit	PG
		A	MW ¹⁾	d	Article No. www.siemens.com/ product?Article No.					d	Article No. www.siemens.com/ product?Article No.				
Miniature circuit breakers 15000 A															
	1P, 230/400 V AC														
	0.3	1	30		5SY7114-7		1AC	1 unit	1AC	30	5SY7114-8		1	1 unit	1AA
	0.5		30		5SY7105-7		1AC	1 unit	1AC	30	5SY7105-8		1	1 unit	1AA
	1		15		5SY7101-7		1AC	1 unit	1AC	30	5SY7101-8		1	1 unit	1AA
	1.6		30		5SY7115-7		1AC	1 unit	1AC	30	5SY7115-8		1	1 unit	1AA
	2		15		5SY7102-7		1AC	1 unit	1AC	30	5SY7102-8		1	1 unit	1AA
	3		30		5SY7103-7		1AC	1 unit	1AC	30	5SY7103-8		1	1 unit	1AA
	4		15		5SY7104-7		1AC	1 unit	1AC	30	5SY7104-8		1	1 unit	1AA
	6		15		5SY7106-7		1AC	1 unit	1AC	30	5SY7106-8		1	1 unit	1AA
	8		30		5SY7108-7		1AC	1 unit	1AC	30	5SY7108-8		1	1 unit	1AA
	10		15		5SY7110-7		1AC	1 unit	1AC	15	5SY7110-8		1	1 unit	1AA
	13		30		5SY7113-7		1AC	1 unit	1AC	30	5SY7113-8		1	1 unit	1AA
	16		15		5SY7116-7		1AC	1 unit	1AC	30	5SY7116-8		1	1 unit	1AA
	20		15		5SY7120-7		1AC	1 unit	1AC	30	5SY7120-8		1	1 unit	1AA
	25		30		5SY7125-7		1AC	1 unit	1AC	30	5SY7125-8		1	1 unit	1AA
	32		15		5SY7132-7		1AC	1 unit	1AC	30	5SY7132-8		1	1 unit	1AA
	40		30		5SY7140-7		1AC	1 unit	1AC	30	5SY7140-8		1	1 unit	1AA
	50		30		5SY7150-7		1AC	1 unit	1AC	30	5SY7150-8		1	1 unit	1AA
	63		30		5SY7163-7		1AC	1 unit	1AC	30	5SY7163-8		1	1 unit	1AA
	1P+N, 230 V AC														
	0.3	2	30		5SY7514-7		1AC	1 unit	1AC	30	5SY7514-8		1	1 unit	1AA
	0.5		30		5SY7505-7		1AC	1 unit	1AC	30	5SY7505-8		1	1 unit	1AA
	1		30		5SY7501-7		1AC	1 unit	1AC	30	5SY7501-8		1	1 unit	1AA
	1.6		30		5SY7515-7		1AC	1 unit	1AC	30	5SY7515-8		1	1 unit	1AA
	2		15		5SY7502-7		1AC	1 unit	1AC	30	5SY7502-8		1	1 unit	1AA
	3		30		5SY7503-7		1AC	1 unit	1AC	30	5SY7503-8		1	1 unit	1AA
	4		30		5SY7504-7		1AC	1 unit	1AC	30	5SY7504-8		1	1 unit	1AA
	6		15		5SY7506-7		1AC	1 unit	1AC	30	5SY7506-8		1	1 unit	1AA
	8		30		5SY7508-7		1AC	1 unit	1AC	30	5SY7508-8		1	1 unit	1AA
	10		15		5SY7510-7		1AC	1 unit	1AC	30	5SY7510-8		1	1 unit	1AA
	13		30		5SY7513-7		1AC	1 unit	1AC	30	5SY7513-8		1	1 unit	1AA
	16		15		5SY7516-7		1AC	1 unit	1AC	30	5SY7516-8		1	1 unit	1AA
	20		30		5SY7520-7		1AC	1 unit	1AC	30	5SY7520-8		1	1 unit	1AA
	25		30		5SY7525-7		1AC	1 unit	1AC	30	5SY7525-8		1	1 unit	1AA
	32		15		5SY7532-7		1AC	1 unit	1AC	30	5SY7532-8		1	1 unit	1AA
	40		30		5SY7540-7		1AC	1 unit	1AC	30	5SY7540-8		1	1 unit	1AA
	50		30		5SY7550-7		1AC	1 unit	1AC	30	5SY7550-8		1	1 unit	1AA
	63		30		5SY7563-7		1AC	1 unit	1AC	30	5SY7563-8		1	1 unit	1AA
	2P, 400 V AC														
	0.3	2	30		5SY7214-7		1AC	1 unit	1AC	30	5SY7214-8		1	1 unit	1AA
	0.5		30		5SY7205-7		1AC	1 unit	1AC	30	5SY7205-8		1	1 unit	1AA
	1		15		5SY7201-7		1AC	1 unit	1AC	30	5SY7201-8		1	1 unit	1AA
	1.6		30		5SY7215-7		1AC	1 unit	1AC	30	5SY7215-8		1	1 unit	1AA
	2		15		5SY7202-7		1AC	1 unit	1AC	30	5SY7202-8		1	1 unit	1AA
	3		30		5SY7203-7		1AC	1 unit	1AC	15	5SY7203-8		1	1 unit	1AA
	4		15		5SY7204-7		1AC	1 unit	1AC	30	5SY7204-8		1	1 unit	1AA
	6		15		5SY7206-7		1AC	1 unit	1AC	15	5SY7206-8		1	1 unit	1AA
	8		30		5SY7208-7		1AC	1 unit	1AC	30	5SY7208-8		1	1 unit	1AA
	10		15		5SY7210-7		1AC	1 unit	1AC	15	5SY7210-8		1	1 unit	1AA
	13		30		5SY7213-7		1AC	1 unit	1AC	30	5SY7213-8		1	1 unit	1AA
	16		15		5SY7216-7		1AC	1 unit	1AC	15	5SY7216-8		1	1 unit	1AA
	20		15		5SY7220-7		1AC	1 unit	1AC	30	5SY7220-8		1	1 unit	1AA
	25		15		5SY7225-7		1AC	1 unit	1AC	15	5SY7225-8		1	1 unit	1AA
	32		15		5SY7232-7		1AC	1 unit	1AC	30	5SY7232-8		1	1 unit	1AA
	40		30		5SY7240-7		1AC	1 unit	1AC	30	5SY7240-8		1	1 unit	1AA
	50		30		5SY7250-7		1AC	1 unit	1AC	30	5SY7250-8		1	1 unit	1AA
	63		30		5SY7263-7		1AC	1 unit	1AC	30	5SY7263-8		1	1 unit	1AA

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

5SY Miniature Circuit Breakers

5SY7, 15000 A

15000		I_n	Mount- ing width	SD	Characteristic C Article No. www.siemens.com/ product?Article No.	Price per PU	PU	PS*/ P. unit	PG	SD	Characteristic D Article No. www.siemens.com/ product?Article No.	Price per PU	PU	PS*/ P. unit	PG
Miniature circuit breakers 15000 A															
	3P, 400 V AC														
	0.3	3	30	5SY7314-7		1AC	1 unit	1AC	30	5SY7314-8		1	1 unit	1AA	
	0.5		30	5SY7305-7		1AC	1 unit	1AC	30	5SY7305-8		1	1 unit	1AA	
	1		30	5SY7301-7		1AC	1 unit	1AC	30	5SY7301-8		1	1 unit	1AA	
	1.6		30	5SY7315-7		1AC	1 unit	1AC	30	5SY7315-8		1	1 unit	1AA	
	2		15	5SY7302-7		1AC	1 unit	1AC	30	5SY7302-8		1	1 unit	1AA	
	3		30	5SY7303-7		1AC	1 unit	1AC	30	5SY7303-8		1	1 unit	1AA	
	4		30	5SY7304-7		1AC	1 unit	1AC	30	5SY7304-8		1	1 unit	1AA	
	6		15	5SY7306-7		1AC	1 unit	1AC	30	5SY7306-8		1	1 unit	1AA	
	8		30	5SY7308-7		1AC	1 unit	1AC	30	5SY7308-8		1	1 unit	1AA	
	10		15	5SY7310-7		1AC	1 unit	1AC	30	5SY7310-8		1	1 unit	1AA	
	13		30	5SY7313-7		1AC	1 unit	1AC	30	5SY7313-8		1	1 unit	1AA	
	16		15	5SY7316-7		1AC	1 unit	1AC	30	5SY7316-8		1	1 unit	1AA	
	20		15	5SY7320-7		1AC	1 unit	1AC	30	5SY7320-8		1	1 unit	1AA	
	25		15	5SY7325-7		1AC	1 unit	1AC	30	5SY7325-8		1	1 unit	1AA	
	32		15	5SY7332-7		1AC	1 unit	1AC	30	5SY7332-8		1	1 unit	1AA	
	40		15	5SY7340-7		1AC	1 unit	1AC	30	5SY7340-8		1	1 unit	1AA	
	50		30	5SY7350-7		1AC	1 unit	1AC	30	5SY7350-8		1	1 unit	1AA	
63		15	5SY7363-7		1AC	1 unit	1AC	30	5SY7363-8		1	1 unit	1AA		
	3P+N, 400 V AC														
	0.3	4	30	5SY7614-7		1AC	1 unit	1AC	30	5SY7614-8		1	1 unit	1AA	
	0.5		30	5SY7605-7		1AC	1 unit	1AC	30	5SY7605-8		1	1 unit	1AA	
	1		30	5SY7601-7		1AC	1 unit	1AC	30	5SY7601-8		1	1 unit	1AA	
	1.6		30	5SY7615-7		1AC	1 unit	1AC	30	5SY7615-8		1	1 unit	1AA	
	2		30	5SY7602-7		1AC	1 unit	1AC	30	5SY7602-8		1	1 unit	1AA	
	3		30	5SY7603-7		1AC	1 unit	1AC	30	5SY7603-8		1	1 unit	1AA	
	4		30	5SY7604-7		1AC	1 unit	1AC	30	5SY7604-8		1	1 unit	1AA	
	6		30	5SY7606-7		1AC	1 unit	1AC	30	5SY7606-8		1	1 unit	1AA	
	8		30	5SY7608-7		1AC	1 unit	1AC	30	5SY7608-8		1	1 unit	1AA	
	10		30	5SY7610-7		1AC	1 unit	1AC	30	5SY7610-8		1	1 unit	1AA	
	13		30	5SY7613-7		1AC	1 unit	1AC	30	5SY7613-8		1	1 unit	1AA	
	16		15	5SY7616-7		1AC	1 unit	1AC	15	5SY7616-8		1	1 unit	1AA	
	20		30	5SY7620-7		1AC	1 unit	1AC	30	5SY7620-8		1	1 unit	1AA	
	25		15	5SY7625-7		1AC	1 unit	1AC	30	5SY7625-8		1	1 unit	1AA	
	32		15	5SY7632-7		1AC	1 unit	1AC	15	5SY7632-8		1	1 unit	1AA	
	40		30	5SY7640-7		1AC	1 unit	1AC	30	5SY7640-8		1	1 unit	1AA	
	50		30	5SY7650-7		1AC	1 unit	1AC	30	5SY7650-8		1	1 unit	1AA	
63		15	5SY7663-7		1AC	1 unit	1AC	30	5SY7663-8		1	1 unit	1AA		
	4P, 400 V AC														
	0.3	4	30	5SY7414-7		1AC	1 unit	1AC	30	5SY7414-8		1	1 unit	1AA	
	0.5		30	5SY7405-7		1AC	1 unit	1AC	30	5SY7405-8		1	1 unit	1AA	
	1		30	5SY7401-7		1AC	1 unit	1AC	30	5SY7401-8		1	1 unit	1AA	
	1.6		30	5SY7415-7		1AC	1 unit	1AC	30	5SY7415-8		1	1 unit	1AA	
	2		30	5SY7402-7		1AC	1 unit	1AC	30	5SY7402-8		1	1 unit	1AA	
	3		30	5SY7403-7		1AC	1 unit	1AC	30	5SY7403-8		1	1 unit	1AA	
	4		30	5SY7404-7		1AC	1 unit	1AC	30	5SY7404-8		1	1 unit	1AA	
	6		15	5SY7406-7		1AC	1 unit	1AC	30	5SY7406-8		1	1 unit	1AA	
	8		30	5SY7408-7		1AC	1 unit	1AC	30	5SY7408-8		1	1 unit	1AA	
	10		15	5SY7410-7		1AC	1 unit	1AC	30	5SY7410-8		1	1 unit	1AA	
	13		30	5SY7413-7		1AC	1 unit	1AC	30	5SY7413-8		1	1 unit	1AA	
	16		15	5SY7416-7		1AC	1 unit	1AC	30	5SY7416-8		1	1 unit	1AA	
	20		15	5SY7420-7		1AC	1 unit	1AC	30	5SY7420-8		1	1 unit	1AA	
	25		15	5SY7425-7		1AC	1 unit	1AC	30	5SY7425-8		1	1 unit	1AA	
	32		15	5SY7432-7		1AC	1 unit	1AC	30	5SY7432-8		1	1 unit	1AA	
	40		15	5SY7440-7		1AC	1 unit	1AC	30	5SY7440-8		1	1 unit	1AA	
	50		15	5SY7450-7		1AC	1 unit	1AC	30	5SY7450-8		1	1 unit	1AA	
63		15	5SY7463-7		1AC	1 unit	1AC	30	5SY7463-8		1	1 unit	1AA		

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers

Additional Components

Electrical components

Overview

The Siemens mounting concept supports the combination of all 5ST3 additional components with Siemens 5SY and 5SP miniature circuit breakers and with 5SU1 RCBOs.

Auxiliary switches (AS)

The auxiliary switch (AS) always signals the contact position of the miniature circuit breaker, regardless of whether the miniature circuit breaker was tripped manually or as the result of a fault. An additional version is also available for the switching of small currents and voltages for the control of programmable control systems (PLCs) acc. to EN 61131-2. The auxiliary switch with test button enables the testing of control circuits without the need to switch the miniature circuit breaker.

Fault signal contacts (FC)

The fault signal contact (FC) signals the automatic tripping of the miniature circuit breaker in the event of a fault, such as an overload or a short circuit. If the fault signal contact is activated, the contact position does not change if the miniature circuit breaker is tripped manually. Fault signal contacts with TEST and RESET buttons enable the testing of control circuits without the need to trip the miniature circuit breaker. The red RESET button integrated in the handle also indicates the automatic tripping of the MCB. The signal can be acknowledged manually using the RESET button.

Benefits

Can be universally retrofitted with all additional components



- The 5SY and 5SP miniature circuit breakers are ideal for the quick and easy mounting of auxiliary switches and fault signal contacts. Captive metal brackets on the additional components ensure the quick and easy mounting of devices on the miniature circuit breakers without the need for tools.



- Fault signal contacts with TEST and RESET button enable the simple testing of auxiliary circuits and, in the event of a fault, acknowledgement of the fault over the RESET button, without the need to switch the miniature circuit breakers.

Technical specifications

		Auxiliary switches (AS) 5ST3010	Fault signal contacts (FC) 5ST3020
Standards		EN 62019; IEC/EN 60947-5-1; UL 1077; CSA C22.2 No. 235	
Approvals		See chapter "Appendix"	
Short-circuit protection		Miniature circuit breakers or gG 6 A fuse	
Contact load		50 mA, 24 V	
• Min.			
• 400 V AC, AC-14, NO	A	2	
• 230 V AC, AC-14, NO	A	6	
• 400 V AC, AC-13, NC	A	2	
• 230 V AC, AC-13, NC	A	6	
• 220 V DC, DC-13, NO+NC	A	1	
• 110 V DC, DC-13, NO+NC	A	1	
• 60 V DC, DC-13, NO+NC	A	3	
• 24 V DC, DC-13, NO+NC	A	6	
Service life, on average, with rated load		20 000 actuations	
Conductor cross-sections	mm ² AWG	0.5 ... 2.5 22 ... 14	
Terminals			
• Terminal tightening torque	Nm lbs/in.	0.5 4.5	
Mounting position		Any	
Ambient temperature	°C	-40 ... +70	
Storage temperature	°C	-40 ... +75	
Resistance to climate	Acc. to IEC 60068-2-30	Cycles	28
Vibration and shock resistant		According to EN 61373 Category 1, Class B	

Remote controlled mechanisms **NEW**

Remote controlled mechanism ARD (with automatic restart)



5ST3070

Standards		EN 50557 (VDE 0640-20)	
Rated power dissipation	VA	≤ 1 in standby	
Module width	mm	27 (1.5 MW)	36 (2 MW)
Ambient and storage temperature	°C	-40 ... +70	
Safety class		IP20	
Service life, on average, with rated load		20 000 actuations	
Conductor cross-sections	mm ² AWG	0.5 ... 1.5 14 ... 30	
Terminal tightening torque	Nm lb-in	0.2 ... 0.25 2.0	
Cable length in the control circuit	m	≤ 1500	
Number of remote switching operations/min.		2	
Number of automatic reclose attempts	--	3	
Sliding selector with locking device	--	✓	✓
Integrated auxiliary switches	--	1 NO + 1 NC, 2 A, 250 V	
Integrated fault signal contact	--	1 NO + 1 NC, 2 A, 250 V	
Possible device combinations		MCBs up to 4 MW, RCBOs up to 3 MW	MCBs, RCCBs up to 4P, RCBOs up to 3 MW, RC unit + MCB, on/off switches: 5TL1, 5TE2

Miniature Circuit Breakers

Additional Components

Electrical components

Selection and ordering data

	Rated voltage U_n V	Mount- ing width MW ¹⁾	SD d	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx. kg
	Auxiliary switches (AS)								
	For 5SL, 5SY, 5SP miniature circuit breakers, 5SU1 RCBOs and 5TE8 switches								
	1 NO + 1 NC	0.5	►	5ST3010		1	1 unit	1AD	0.055
	2 NO		2	5ST3011		1	1 unit	1AD	0.066
	2 NC		2	5ST3012		1	1 unit	1AD	0.066
	Fault signal contacts (FC)								
	For 5SL, 5SY, 5SP miniature circuit breakers and 5SU1 RCBOs								
	1 NO + 1 NC	0.5	►	5ST3020		1	1 unit	1AD	0.066
	2 NO		2	5ST3021		1	1 unit	1AD	0.065
	2 NC		2	5ST3022		1	1 unit	1AD	0.065
	Remote controlled mechanisms (RC mech.) NEW								
	• Remote controlled mechanisms with extended function NEW								
	12 ... 30 V AC 12 ... 48 V DC	2	5	5ST3070		1	1 unit	1AD	0.229
	Note								
	Matching adapters must be ordered separately.								
	Accessories for remote controlled mechanisms NEW								
	• Adapters for 5SY MCBs 1-2-pole		3	5ST3820-1		1	1 unit	1AD	0.013
	• Adapters for 5SY MCBs 3-4-pole		3	5ST3820-2		1	1 unit	1AD	0.011
	• Adapters for 5SM2 RC units		3	5ST3820-3		1	1 unit	1AD	0.013
	• Adapters for 5SU1 RC-BOs		3	5ST3820-5		1	1 unit	1AD	0.010
	• Adapters for 5SL MCBs 1-2-pole, 5SV3 residual current switches		3	5ST3820-6		1	1 unit	1AD	0.009
	• Adapters for 5SL MCBs, 3-4-pole		3	5ST3820-7		1	1 unit	1AD	0.011
	• Adapters for 5TL1 ON/OFF switches 1-2-pole		3	5ST3820-8		1	1 unit	1AD	0.009
	• Adapters for 5TL1 ON/OFF switches 3-4-pole		3	5ST3821-1		1	1 unit	1AD	0.011

¹⁾ 1 MW (modular width) = 18 mm.

Miniature Circuit Breakers
Additional Components

Mechanical components

Selection and ordering data

	Version	Mount- ing width	SD	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx.
		MW	d						kg
	Spacers								
	Can be placed on either side of the standard mounting rail. Two spacers allow for convenient cable routing		0.5	2	5TG8240		1 2 units	1BK	0.017

* You can order this quantity or a multiple thereof.

Residual Current Protective Devices

5SV RCCBs

Overview

RCCBs are used in all systems up to 240/415 V AC. Devices of type AC trip in the event of sinusoidal AC residual currents, type A also trips in the event of pulsating DC residual currents.

In addition, RCCBs type F also detect residual currents with mixed frequencies up to 1 kHz.

RCCBs with a rated residual current of maximum 30 mA are used for personnel, material and fire protection, as well as for protection against direct contact. RCCBs with a rated residual current of 10 mA are primarily used in areas that represent an increased risk for personnel.

Since the introduction of DIN VDE 0100-410, all socket outlet current circuits up to 20 A must also be fitted with residual current protective devices with a rated residual current of max. 30 mA. This also applies to outdoor electrical circuits up to 32 A for the connection of portable equipment.

Devices with a rated residual current of maximum 300 mA are used as preventive fire protection in case of insulation faults. RCCBs with a rated residual current of 100 mA are primarily used in European countries outside Germany.

Benefits

- Instantaneous residual current operated circuit breakers with the N connection on the left or right-hand side enable simple bus mounting with standard pin busbars with miniature circuit breakers installed on the right-hand side.
- Instantaneous type A devices have a surge current withstand capability with current waveform 8/20 μ s of more than 1 kA, super resistant devices of more than 3 kA and selective devices of more than 5 kA. This ensures safe operation.
- SIGRES has an extremely long service life due to patented active condensation protection, and identical dimensions enable the quick and easy replacement of existing instantaneous RCCBs.
- Super resistant devices increase system availability, as unnecessary tripping is prevented in power supply systems with short-time glitches.
- Selective RCCBs increase system availability as a staggered tripping time enables the selective tripping of RCCBs connected in series in the event of a fault.
- Auxiliary switches, fault signal contacts, undervoltage releases and shunt trips are also available as additional components.
- By means of internal contacts, effective touch protection is provided when grasping and manually operating the latching slide.
- To facilitate entry of pin busbars with connection cables up to 35 mm², the devices are equipped with rectangular terminals for the accommodation of funnel-shaped cable entries.
- By means of standardized clearances of the terminals in modular width dimensions, the RCCBs and MCBs can be optionally connected to busbars on the top or on the bottom.

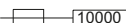
Technical specifications

			Instantaneous	SIGRES	Super resistant	Selective
Standards			IEC/DIN EN 61008-1 (VDE 0664-10); IEC/EN 61008-2-1 (VDE 0664-11); IEC/EN 61543 (VDE 0664-30); IEC/EN 62423 (VDE 0664-40)			
Surge current withstand capability						
• Type A with current waveform 8/20 µs	Acc. to EN 60060-2 (VDE 0432-2)	kA	> 1		> 3	> 5
• Type F with current waveform 8/20 µs	Acc. to EN 60060-2 (VDE 0432-2)	kA	--	--	> 3	--
Minimum operational voltage for test function operation						
• 30-mA devices		V AC	195			
• Non-30-mA devices		V AC	100			
• 24-V devices		V AC	20			
Test cycles			1/2 year	1 year	1/2 year	
Insulation coordination						
• Overvoltage category			III			
Pollution degree			2			
Terminal conductor cross-sections						
• 1-wire						
- Solid ($\leq 10 \text{ mm}^2$) / stranded ($\geq 16 \text{ mm}^2$)		mm ²	0.75 ... 35			
- Finely stranded with non-insulated end sleeve		mm ²	0.75 ... 25			
- Finely stranded with insulated end sleeve		mm ²	0.75 ... 25			
- Finely stranded without end sleeve		mm ²	1 ... 35			
• 2-wire, same cross-section, same conductor type						
- Solid ($\leq 10 \text{ mm}^2$) / stranded ($\geq 16 \text{ mm}^2$)		mm ²	0.75 ... 10			
- Finely stranded with non-insulated end sleeve		mm ²	0.75 ... 4			
- Finely stranded with insulated end sleeve		mm ²	0.75 ... 4			
- Finely stranded without end sleeve		mm ²	1 ... 4			
• 1-wire + busbar (pin thickness 1.5 mm)						
- Solid ($\leq 10 \text{ mm}^2$) / stranded ($\geq 16 \text{ mm}^2$)		mm ²	10 ... 25			
- Finely stranded with non-insulated end sleeve		mm ²	6 ... 25			
- Finely stranded with insulated end sleeve		mm ²	6 ... 16			
Terminal tightening torque						
• Up to $I_n = 80 \text{ A}$		Nm	2.5			
• At $I_n = 100 \text{ A}, 125 \text{ A}$		Nm	3.0 ... 3.5			
Mains connection			Optionally top or bottom (top for the SIGRES function to also be effective in the deactivated state)			
Rated frequency		Hz	50	50	50/60	50/60
Mounting position (on a standard mounting rail)			Any			
Degree of protection	Acc. to EN 60529 (VDE 0470-1)		IP20, if the distribution board is installed, with connected conductors			
Touch protection	Acc. to EN 50274 (VDE 0660-514)		Finger and back-of-hand safe			
Service life	Average number of operating cycles Test cycle acc. to IEC/EN 61008		> 10000			
Storage temperature		°C	-40 ... +75			
Ambient temperature		°C	-25 ... +45, marked with 			
Resistance to climate	Acc. to IEC 60068-2-30		28 cycles (55 °C; 95% rel. air humidity)			
CFC and silicone-free			Yes			

Residual Current Protective Devices

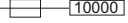
5SV RCCBs

Selection and ordering data

 (Type A)			Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG
$I_{\Delta n}$ mA			I_n A		 10000							
RCCBs, type A, instantaneous												
1P+N; 230 V AC												
N connection, right												
	10	16	63	2	2	5SV3111-6	1	1 unit	1AH			
	30	16	63	2	2	5SV3311-6	1	1 unit	1AH			
		25	Bulk packaging 36 units	5	5SV3311-6GV01	1	36 units	1AH				
		63	Bulk packaging 36 units	2	5SV3312-6	1	1 unit	1AH				
		40	Bulk packaging 36 units	5	5SV3312-6GV01	1	36 units	1AH				
		63	Bulk packaging 36 units	2	5SV3314-6	1	1 unit	1AH				
		63	Bulk packaging 36 units	5	5SV3314-6GV01	1	36 units	1AH				
		80		2	5SV3316-6	1	1 unit	1AH				
		80		10	5SV3317-6	1	1 unit	1AH				
	100	25	63	2	2	5SV3412-6	1	1 unit	1AH			
		40		10	5SV3414-6	1	1 unit	1AH				
		63	80	10	5SV3416-6	1	1 unit	1AH				
	80		10	5SV3417-6	1	1 unit	1AH					
300	25	63	2	2	5SV3612-6	1	1 unit	1AH				
	40		2	2	5SV3614-6	1	1 unit	1AH				
	63	80	2	2	5SV3616-6	1	1 unit	1AH				
	80		10	5SV3617-6	1	1 unit	1AH					
3P+N; 400 V AC												
N connection, right												
	30	25	80	4	2	5SV3342-6	1	1 unit	1AH			
			Bulk packaging 18 units	5	5SV3342-6GV01	1	18 units	1AH				
		40	80	2	5SV3344-6	1	1 unit	1AH				
			Bulk packaging 18 units	5	5SV3344-6GV01	1	18 units	1AH				
		63	100	2	5SV3346-6	1	1 unit	1AH				
			Bulk packaging 18 units	5	5SV3346-6GV01	1	18 units	1AH				
		80	100	2	5SV3347-6	1	1 unit	1AH				
	100	25	80	4	2	5SV3442-6	1	1 unit	1AH			
		40		2	5SV3444-6	1	1 unit	1AH				
		63	100	2	5SV3446-6	1	1 unit	1AH				
		80		10	5SV3447-6	1	1 unit	1AH				
	300	25	80	4	2	5SV3642-6	1	1 unit	1AH			
	40		2	5SV3644-6	1	1 unit	1AH					
	63	100	2	5SV3646-6	1	1 unit	1AH					
	80		2	5SV3647-6	1	1 unit	1AH					
500	25	80	4	2	5SV3742-6	1	1 unit	1AH				
	40		2	5SV3744-6	1	1 unit	1AH					
	63	100	2	5SV3746-6	1	1 unit	1AH					
		Bulk packaging 18 units	5	5SV3746-6GV01	1	18 units	1AH					
	80		10	5SV3747-6	1	1 unit	1AH					
1P+N; 230 V AC												
N connection, left												
	10	16	63	2	10	5SV3111-6KL	1	1 unit	1AH			
	30	16	63	2	2	5SV3311-6KL	1	1 unit	1AH			
		25		2	2	5SV3312-6KL	1	1 unit	1AH			
		40		2	2	5SV3314-6KL	1	1 unit	1AH			
		63	80	2	2	5SV3316-6KL	1	1 unit	1AH			
		80		10	5SV3317-6KL	1	1 unit	1AH				
	100	25	63	2	10	5SV3412-6KL	1	1 unit	1AH			
		40		10	5SV3414-6KL	1	1 unit	1AH				
		63	80	10	5SV3416-6KL	1	1 unit	1AH				
		80		10	5SV3417-6KL	1	1 unit	1AH				
	300	25	63	2	10	5SV3612-6KL	1	1 unit	1AH			
		40		10	5SV3614-6KL	1	1 unit	1AH				
		63	80	10	5SV3616-6KL	1	1 unit	1AH				
		80		10	5SV3617-6KL	1	1 unit	1AH				

Residual Current Protective Devices

5SV RCCBs

 (Type A)	Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG
	$I_{\Delta n}$ mA	I_n A	 10000							
3P+N; 400 V AC										
	N connection, left									
	30	25	80	4	2	5SV3342-6KL		1	1 unit	1AH
		40			2	5SV3344-6KL		1	1 unit	1AH
		Bulk packaging 18 units			5	5SV3344-6GV02		1	18 units	1AH
		63	80		2	5SV3346-6KL		1	1 unit	1AH
		80			10	5SV3347-6KL		1	1 unit	1AH
	300	25	80	4	2	5SV3642-6KL		1	1 unit	1AH
		40			2	5SV3644-6KL		1	1 unit	1AH
		63			2	5SV3646-6KL		1	1 unit	1AH
		80			10	5SV3647-6KL		1	1 unit	1AH
	500	63	80	4	10	5SV3746-6KL		1	1 unit	1AH
RCCBs, type A, super resistant [K]										
1P+N; 230 V AC										
	N connection, right									
	30	25	63	2	10	5SV3312-6KK01		1	1 unit	1AH
		40			10	5SV3314-6KK01		1	1 unit	1AH
		63	80		10	5SV3316-6KK01		1	1 unit	1AH
		80			10	5SV3317-6KK01		1	1 unit	1AH
	300	25	63	2	10	5SV3612-6KK01		1	1 unit	1AH
		40			10	5SV3614-6KK01		1	1 unit	1AH
		63	80		10	5SV3616-6KK01		1	1 unit	1AH
		80			10	5SV3617-6KK01		1	1 unit	1AH
3P+N; 400 V AC										
	N connection, right									
	30	25	100	4	10	5SV3342-6KK01		1	1 unit	1AH
		40			10	5SV3344-6KK01		1	1 unit	1AH
		63			10	5SV3346-6KK01		1	1 unit	1AH
		80			10	5SV3347-6KK01		1	1 unit	1AH
	300	25	100	4	10	5SV3642-6KK01		1	1 unit	1AH
		40			10	5SV3644-6KK01		1	1 unit	1AH
		63			10	5SV3646-6KK01		1	1 unit	1AH
		80			10	5SV3647-6KK01		1	1 unit	1AH
RCCBs, type A, selective [S]										
1P+N; 230 V AC										
	N connection, right									
	100	63	80	2	10	5SV3416-8		1	1 unit	1AH
	300	25	63	2	10	5SV3612-8		1	1 unit	1AH
		40			10	5SV3614-8		1	1 unit	1AH
		63	80		10	5SV3616-8		1	1 unit	1AH
		80			10	5SV3617-8		1	1 unit	1AH

Residual Current Protective Devices

5SV RCCBs



Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG
$I_{\Delta n}$ mA	I_n A	 10000	MW	d					
3P+N; 400 V AC									
N connection, right									
100	40	100	4	10	5SV3444-8		1	1 unit	1AH
	63			10	5SV3446-8		1	1 unit	1AH
300	25	100	4	10	5SV3642-8		1	1 unit	1AH
	40			10	5SV3644-8		1	1 unit	1AH
	63			10	5SV3646-8		1	1 unit	1AH
	80			10	5SV3647-8		1	1 unit	1AH
1000	63	100	4	10	5SV3846-8		1	1 unit	1AH
1P+N; 230 V AC									
N connection, left									
300	40	63	2	10	5SV3614-8KL		1	1 unit	1AH
	63	80		10	5SV3616-8KL		1	1 unit	1AH
3P+N; 400 V AC									
N connection, left									
300	63	80	4	10	5SV3646-8KL		1	1 unit	1AH

RCCBs, type A, SIGRES, instantaneous

1P+N; 230 V AC									
N connection, right									
30	16	63	2	10	5SV3311-6KK12		1	1 unit	1AH
	25			10	5SV3312-6KK12		1	1 unit	1AH
	40			10	5SV3314-6KK12		1	1 unit	1AH
	63	80		10	5SV3316-6KK12		1	1 unit	1AH
3P+N; 400 V AC									
N connection, right									
30	25	100	4	10	5SV3342-6KK12		1	1 unit	1AH
	40			10	5SV3344-6KK12		1	1 unit	1AH
	63			10	5SV3346-6KK12		1	1 unit	1AH
	80			10	5SV3347-6KK12		1	1 unit	1AH
300	25	100	4	10	5SV3642-6KK12		1	1 unit	1AH
	40			10	5SV3644-6KK12		1	1 unit	1AH
	63			10	5SV3646-6KK12		1	1 unit	1AH
	80			10	5SV3647-6KK12		1	1 unit	1AH

RCCBs, type A, SIGRES, selective **[S]**

3P+N; 400 V AC									
N connection, right									
300	63	100	4	10	5SV3646-8KK12		1	1 unit	1AH

Residual Current Protective Devices

5SV RCCBs

Selection and ordering data

 (Type F)	Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG
	$I_{\Delta n}$ mA	I_n A	 A	mm	d					
RCCBs, type F, super resistant [K]										
	1P + N; 230 V AC									
	N connection, right									
	30	25	63	2	10	5SV3312-3		1	1 unit	1AH
		40			10	5SV3314-3		1	1 unit	1AH
		63	80		10	5SV3316-3		1	1 unit	1AH
		80			10	5SV3317-3		1	1 unit	1AH
	300	25	63	2	10	5SV3612-3		1	1 unit	1AH
		40			10	5SV3614-3		1	1 unit	1AH
		63	80		10	5SV3616-3		1	1 unit	1AH
		80			10	5SV3617-3		1	1 unit	1AH
	3P + N; 400 V AC									
	N connection, right									
	30	25	100	4	10	5SV3342-3		1	1 unit	1AH
		40			10	5SV3344-3		1	1 unit	1AH
		63			10	5SV3346-3		1	1 unit	1AH
		80			10	5SV3347-3		1	1 unit	1AH
	300	25	100	4	10	5SV3642-3		1	1 unit	1AH
		40			10	5SV3644-3		1	1 unit	1AH
		63			10	5SV3646-3		1	1 unit	1AH
		80			10	5SV3647-3		1	1 unit	1AH
RCCBs, type F, selective [S]										
	1P + N; 230 V AC									
	N connection, right									
	300	40	63	2	10	5SV3614-7		1	1 unit	1AH
		80	80		10	5SV3617-7		1	1 unit	1AH
	3P + N; 400 V AC									
	N connection, right									
	300	40	100	4	10	5SV3644-7		1	1 unit	1AH
		80			10	5SV3647-7		1	1 unit	1AH

Residual Current Protective Devices

5SV RCCBs

 (Type A)			Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG
			$I_{\Delta n}$ mA	I_n A	 10000							
RCCBs, type A, instantaneous												
	1P+N; 24 ... 125 V AC											
	N connection, right											
	30	16	63	2	10	5SV3311-6KK13	1	1 unit	1AH			
	30	25		2	10	5SV3312-6KK13	1	1 unit	1AH			
	30	40		2	10	5SV3314-6KK13	1	1 unit	1AH			
	30	63	80	2	10	5SV3316-6KK13	1	1 unit	1AH			
	3P+N; 500 V AC											
	N connection, right											
	30	25	63	4	10	5SV3352-6	1	1 unit	1AH			
	30	40		4	10	5SV3354-6	1	1 unit	1AH			
	30	63		4	10	5SV3356-6	1	1 unit	1AH			
	30	80	80	4	10	5SV3357-6	1	1 unit	1AH			
	300	25	63	4	10	5SV3652-6	1	1 unit	1AH			
	300	40		4	10	5SV3654-6	1	1 unit	1AH			
	300	63		4	10	5SV3656-6	1	1 unit	1AH			
	300	80	80	4	10	5SV3657-6	1	1 unit	1AH			
	3P+N; 230 V AC; 400 Hz											
	N connection, right											
	30	25	80	4	10	5SV3342-6KK03	1	1 unit	1AH			
	30	40		4	10	5SV3344-6KK03	1	1 unit	1AH			

SIQUENCE 5SV3 universal current-sensitive RCCBs, type B and type B+

Technical specifications

SIQUENCE, RCCBs, type B and type B+ 5SV3		
Standards	IEC/EN 62423 (VDE 0664-40); IEC/EN 61543 (VDE 0664-30); additionally applicable for type B+ DIN VDE 0664-400	
Versions	1P+N / 3P+N	
Tripping characteristic	--	
Surge current withstand capability With current waveform 8/20 µs acc. to EN 60060-2 (VDE 0432-2)		
• Super resistant	kA	> 3
• Selective	kA	> 5
Minimum operational voltage for test function operation	V AC	195
Rated voltages U_n	V AC	230 / 400
Rated frequency f_n	Hz	50 ... 60
Rated currents I_n	A	16, 25, 40, 63, 80
Rated residual currents $I_{\Delta n}$	mA	30, 300, 500
Rated breaking capacity		
• I_m	A	800
• I_{cn}	kA	--
Insulation coordination • Overvoltage category	III	
Conductor cross-sections		
• Solid and stranded	mm ²	0.75 ... 35
• Finely stranded, with end sleeve	mm ²	0.75 ... 25
Terminal tightening torque For all devices	Nm	2.5 ... 3.0
Mains connection (bottom for the SIGRES function to also be effective in the deactivated state)	Optionally top or bottom	
Mounting position (on a standard mounting rail)	Any	
Degree of protection according to EN 60529 (VDE 0470-1)	IP20, if the distribution board is installed, with connected conductors	
Touch protection Acc. to EN 50274 (VDE 0660-514)	Finger and back-of-hand safe	
Service life Average number of switching cycles	> 10000 switching cycles	
Storage temperature	°C	-40 ... +75
Ambient temperature	°C	-25 ... +45,  marked with
Resistance to climate acc. to IEC 60068-2-30	28 cycles (55 °C; 95% rel. air humidity)	
CFC and silicone-free	Yes	

For details of I^2 characteristics, see Configuration Manual "Residual Current Protective Devices/Arc Fault Detection Devices (AFDDs)" at: www.siemens.com/lowvoltage/manuals

Power losses per conducting path under rated current load

Note:

0.4 W per unit must be added for SIGRES versions.

Number of poles	Rated current	Rated residual current $I_{\Delta n}$ [mA]	Power losses per conducting path P_v [W]
2/4	16	30/300	0.17
	25	30/300	0.42
	40	30/300	1.09
	63	30/300/500	2.7
	80	30/300/500	4.35

Residual Current Protective Devices

SIQUENCE 5SV3 universal current-sensitive RCCBs, type B and type B+

kHz (Type B/type B+)	Rated residual current	Rated current	Max. permissible short-circuit back-up fuse	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU	PS	PG	
	$I_{\Delta n}$ mA	I_n A	10000 A	MW	d						
SIQUENCE RCCBs, type B, super resistant [K] NEW											
	1P+N; 230 V AC; 50 ... 60 Hz										
	30	16 25 40 63	100	4	15 15 15 15	5SV3321-4 5SV3322-4 5SV3324-4 5SV3326-4		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	300	16 25 40 63	100	4	15 15 15 15	5SV3621-4 5SV3622-4 5SV3624-4 5SV3626-4		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
	30	25 40 63 80	100	4	5 2 2 15	5SV3342-4 5SV3344-4 5SV3346-4 5SV3347-4		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	300	25 40 63 80	100	4	5 2 2 15	5SV3642-4 5SV3644-4 5SV3646-4 5SV3647-4		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	500	25 40 63 80	100	4	15 15 15 15	5SV3742-4 5SV3744-4 5SV3746-4 5SV3747-4		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	SIQUENCE RCCBs, type B, selective [S] NEW										
		3P+N; 230 ... 400 V AC; 50 ... 60 Hz									
300		63 80	100	4	15 15	5SV3646-5 5SV3647-5		1 1	1 unit 1 unit	1AJ 1AJ	
500		63 80	100	4	15 15	5SV3746-5 5SV3747-5		1 1	1 unit 1 unit	1AJ 1AJ	
SIQUENCE RCCBs, type B+, super resistant [K] NEW											
		3P+N; 230 ... 400 V AC; 50 ... 60 Hz									
	30	25 40 63 80	100	4	20 20 20 20	5SV3342-4KK14 5SV3344-4KK14 5SV3346-4KK14 5SV3347-4KK14		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	300	25 40 63 80	100	4	20 20 20 20	5SV3642-4KK14 5SV3644-4KK14 5SV3646-4KK14 5SV3647-4KK14		1 1 1 1	1 unit 1 unit 1 unit 1 unit	1AJ 1AJ 1AJ 1AJ	
	SIQUENCE RCCBs, type B+, selective [S] NEW										
		3P+N; 230 ... 400 V AC; 50 ... 60 Hz									
		300	63 80	100	4	20 20	5SV3646-5KK14 5SV3647-5KK14		1 1	1 unit 1 unit	1AJ 1AJ

Technical specifications

		Auxiliary switches (AS) 5ST3010	Fault signal contacts (FC) 5ST3020
Standards		EN 62019; IEC/EN 60947-5-1; UL 1077; CSA C22.2 No. 235	
Approvals		See chapter "Appendix"	
Short-circuit protection		Miniature circuit breakers or gG 6 A fuse	
Contact load		50 mA, 24 V	
• Min.			
• 400 V AC, AC-14, NO	A	2	
• 230 V AC, AC-14, NO	A	6	
• 400 V AC, AC-13, NC	A	2	
• 230 V AC, AC-13, NC	A	6	
• 220 V DC, DC-13, NO+NC	A	1	
• 110 V DC, DC-13, NO+NC	A	1	
• 60 V DC, DC-13, NO+NC	A	3	
• 24 V DC, DC-13, NO+NC	A	6	
Service life, on average, with rated load		20 000 actuations	
Conductor cross-sections	mm ² AWG	0.5 ... 2.5 22 ... 14	
Terminals			
• Terminal tightening torque	Nm lbs/in.	0.5 4.5	
Mounting position		Any	
Ambient temperature	°C	-40 ... +70	
Storage temperature	°C	-40 ... +75	
Resistance to climate	Acc. to IEC 60068-2-30	Cycles	28
Vibration and shock resistant		According to EN 61373 Category 1, Class B	

Remote controlled mechanisms **NEW**

Remote controlled mechanism ARD (with automatic restart)



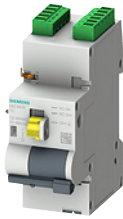
5ST3070

Standards		EN 50557 (VDE 0640-20)	
Rated power dissipation	VA	≤ 1 in standby	
Module width	mm	27 (1.5 MW)	36 (2 MW)
Ambient and storage temperature	°C	-40 ... +70	
Safety class		IP20	
Service life, on average, with rated load		20 000 actuations	
Conductor cross-sections	mm ² AWG	0.5 ... 1.5 14 ... 30	
Terminal tightening torque	Nm lb-in	0.2 ... 0.25 2.0	
Cable length in the control circuit	m	≤ 1500	
Number of remote switching operations/min.		2	
Number of automatic reclose attempts	--	3	
Sliding selector with locking device	--	✓	✓
Integrated auxiliary switches	--	1 NO + 1 NC, 2 A, 250 V	
Integrated fault signal contact	--	1 NO + 1 NC, 2 A, 250 V	
Possible device combinations		MCBs up to 4 MW, RCBOs up to 3 MW	MCBs, RCCBs up to 4P, RCBOs up to 3 MW, RC unit + MCB, on/off switches: 5TL1, 5TE2

Residual Current Protective Devices

Additional components

Selection and ordering data

	Rated voltage U_n V	Mount- ing width MW ¹⁾	SD d	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx. kg
	Remote controlled mechanisms (RC mech.) NEW		5	5ST3070		1	1 unit	1AD	0.229
	Remote controlled mechanisms with extended function NEW		2						
	12 ... 30 V AC		5						
	12 ... 48 V DC								
Note Matching adapters must be ordered separately.									
	Accessories for remote controlled mechanisms NEW		3	5ST3820-1		1	1 unit	1AD	0.013
	Adapters for 5SY MCBs 1-2-pole		3	5ST3820-2		1	1 unit	1AD	0.011
	Adapters for 5SY MCBs 3-4-pole		3	5ST3820-3		1	1 unit	1AD	0.013
	Adapters for 5SM2 RC units		3	5ST3820-5		1	1 unit	1AD	0.010
	Adapters for 5SU1 RCBOs		3	5ST3820-6		1	1 unit	1AD	0.009
	Adapters for 5SL MCBs 1-2-pole, 5SV3 residual current switches		3	5ST3820-7		1	1 unit	1AD	0.011
	Adapters for 5SL MCBs, 3-4-pole		3	5ST3820-8		1	1 unit	1AD	0.009
	Adapters for 5TL1 ON/OFF switches 1-2-pole		3	5ST3821-1		1	1 unit	1AD	0.011
Adapters for 5TL1 ON/OFF switches 3-4-pole									

¹⁾ 1 MW (modular width) = 18 mm.

Overview

RCBOs are a combination of an RCCB and a miniature circuit breaker in a compact design for personnel, fire and line protection. For personnel protection and fire protection, the residual current part of the type AC trips in the event of sinusoidal AC residual currents, type A also trips in the event of pulsating DC residual currents.

In addition, RCBOs type F also detect residual currents with mixed frequencies up to 1 kHz.

RCBOs with a rated residual current of maximum 30 mA are used for personnel, material and fire protection, as well as for protection against direct contact. RCBOs with a rated residual current of 10 mA are primarily used in areas that represent an increased risk for personnel and in the outdoor installations of residential buildings.

Devices with a rated residual current of maximum 300 mA are used as preventative fire protection in case of insulation faults.

The MCB part of the RCBO protects lines against overload and short circuits and is available in characteristics B and C.

Since DIN VDE 0100-410 came into effect in June 2007, all socket outlet current circuits up to 20 A must now also be fitted with residual current protective devices with a rated residual current of max. 30 mA. This also applies to outdoor electrical circuits up to 32 A for the connection of portable equipment.

In order to implement this protection, we recommend the use of RCBOs with 30 mA on a country-specific basis.

Assignment to each individual branch circuit helps prevent the undesired tripping of fault-free circuits induced by the accumulation of operation-related leakage currents or by transient current pulses during switching operations.

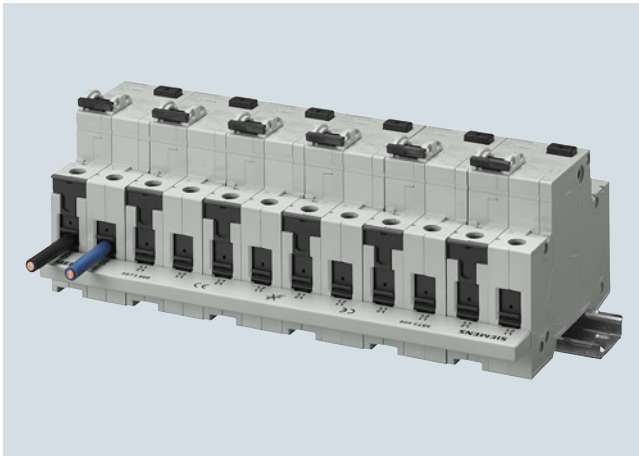
Additional components of the 5SY miniature circuit breakers can be mounted at the side and carry out additional functions.

For further details on additional components, [please refer to the chapter "Miniature Circuit Breakers"](#):

RCBOs comprise one part for fault-current detection and one part for overcurrent detection. They are equipped with a delayed overload/time-dependent thermal release (thermal bimetal) for low overcurrents and with an instantaneous electromagnetic release for higher overload and short-circuit currents.

The special contact materials used guarantee a long service life and offer a high degree of protection against contact welding.

Benefits



For all versions

- Clear and visible conductor connection in front of the rear busbar facilitates controls
- Large and easily accessible wiring space enables easy insertion of conductor in the terminals
- The surge current withstand capability of over 1 kA ensures safe and reliable operation
- All additional components for miniature circuit breakers can be retrofitted on the right-hand side

For all 10 kA versions up to 40 A

- Integrated movable terminal covers located at the cable entries ensure the terminals are fully insulated when the screws are tightened. The effective touch protection when grasping the device considerably exceeds the requirements of BGV A3.
- The RCBOs can be quickly and easily removed from the assembly by hand if connections need to be changed. Time-saving replacement of parts as busbars no longer need to be freed from adjacent miniature circuit breakers.

Residual Current Protective Devices

5SU1 RCBOs

Technical specifications

			Up to 40 A
Standards			IEC/EN 61009-1 (VDE 0664-20); IEC/EN 61009-2-1 (VDE 0664-21) IEC/EN 61543 (VDE 0664-30); ÖVE EN 61009; IEC/EN 62423 (VDE 0664-40)
Rated voltages U_n	V AC		230
Rated frequency f_n	Hz		50 ... 60
Rated currents I_n	A		6, 8, 10, 13, 16, 20, 25, 32, 40
Rated residual currents $I_{\Delta n}$	mA		10, 30, 100, 300
Rated breaking capacity	kA		6 / 10
Energy limitation class			3
Surge current withstand capability Type A			
• With current waveform 8/20 μ s Acc. to DIN VDE 0432-2			
- Instantaneous	kA		> 1
- Super resistant	kA		> 3
- Selective	kA		> 5
• Type F with current waveform 8/20 μ s			> 3
Minimum voltage for operation of the test equipment	V AC		100
Insulation coordination			
• Overvoltage category			III
Pollution degree			2
Terminal conductor cross-sections			
• Solid and stranded	mm ²		0.75 ... 35
• Finely stranded with end sleeve	mm ²		0.75 ... 25
Terminal tightening torque	Nm		2.5 ... 3.0
Mains connection			Top or bottom
Mounting position			Any
Degree of protection	Acc. to EN 60529 (VDE 0470-1)		IP20, if the distribution board is installed, with connected conductors
Touch protection	Acc. to EN 50274 (VDE 0660-514)		Finger and back-of-hand safe
Service life	Test cycle Acc. to IEC/EN 61009	Operating cycles	> 10000
Storage temperature	°C		-40 ... +75
Ambient temperature	°C		-25 ... +45, marked with 
Resistance to climate	Acc. to IEC 60068-2-30		28 cycles (55 °C; 95 % rel. air humidity)
CFC and silicone-free			Yes

Residual Current Protective Devices

5SU1 RCB0s

Selection and ordering data

	Rated residual current	Rated current	Mounting width	SD	Tripping characteristic B	PG	SD	Tripping characteristic C	PU	PS*/P. unit	PG	Weight per PU approx.
	$I_{\Delta n}$	I_n			Article No.			Article No.				
	mA	A	MW	d			d					
RCBOs, type AC, instantaneous												
1P + N, 230 V AC, 50 ... 60 Hz												
N connection, right												
4 500												
3												
	30	6	2	--				5SU1353-1KK06	1	1 unit	1BB	0.272
		8						5SU1353-1KK08	1	1 unit	1BB	0.268
		10						5SU1353-1KK10	1	1 unit	1BB	0.271
		13						5SU1353-1KK13	1	1 unit	1BB	0.274
		16						5SU1353-1KK16	1	1 unit	1BB	0.271
		20						5SU1353-1KK20	1	1 unit	1BB	0.280
		25						5SU1353-1KK25	1	1 unit	1BB	0.281
		32						5SU1353-1KK32	1	1 unit	1BB	0.286
		40						5SU1353-1KK40	1	1 unit	1BB	0.285
	300	6	2	--				5SU1653-1KK06	1	1 unit	1BB	0.266
		10						5SU1653-1KK10	1	1 unit	1BB	0.268
		13						5SU1653-1KK13	1	1 unit	1BB	0.271
		16						5SU1653-1KK16	1	1 unit	1BB	0.267
		20						5SU1653-1KK20	1	1 unit	1BB	0.278
		25						5SU1653-1KK25	1	1 unit	1BB	0.279
		32						5SU1653-1KK32	1	1 unit	1BB	0.278
		40						5SU1653-1KK40	1	1 unit	1BB	0.275
6 000												
3												
	30	6	2	5	5SU1356-0KK06	1BB	2	5SU1356-1KK06	1	1 unit	1BB	0.271
		8		--	--	5	5SU1356-1KK08	1	1 unit	1BB	0.269	
		10		2	5SU1356-0KK10	1BB	2	5SU1356-1KK10	1	1 unit	1BB	0.272
		13		5	5SU1356-0KK13	1BB	2	5SU1356-1KK13	1	1 unit	1BB	0.276
		16		2	5SU1356-0KK16	1BB	2	5SU1356-1KK16	1	1 unit	1BB	0.271
		20		5	5SU1356-0KK20	1BB	2	5SU1356-1KK20	1	1 unit	1BB	0.280
		25		5	5SU1356-0KK25	1BB	2	5SU1356-1KK25	1	1 unit	1BB	0.280
		32		5	5SU1356-0KK32	1BB	2	5SU1356-1KK32	1	1 unit	1BB	0.284
		40		5	5SU1356-0KK40	1BB	5	5SU1356-1KK40	1	1 unit	1BB	0.283
	300	6	2	5	5SU1656-0KK06	1BB	2	5SU1656-1KK06	1	1 unit	1BB	0.268
		10		5	5SU1656-0KK10	1BB	2	5SU1656-1KK10	1	1 unit	1BB	0.268
		13		20	5SU1656-0KK13	1BB	20	5SU1656-1KK13	1	1 unit	1BB	0.274
		16		5	5SU1656-0KK16	1BB	2	5SU1656-1KK16	1	1 unit	1BB	0.267
		20		20	5SU1656-0KK20	1BB	5	5SU1656-1KK20	1	1 unit	1BB	0.278
		25		5	5SU1656-0KK25	1BB	5	5SU1656-1KK25	1	1 unit	1BB	0.276
		32		5	5SU1656-0KK32	1BB	5	5SU1656-1KK32	1	1 unit	1BB	0.275
		40		20	5SU1656-0KK40	1BB	5	5SU1656-1KK40	1	1 unit	1BB	0.278
10 000												
3												
	30	6	2	5	5SU1354-0KK06	1BB	2	5SU1354-1KK06	1	1 unit	1BB	0.275
		8		--	--	20	20	5SU1354-1KK08	1	1 unit	1BB	0.279
		10		5	5SU1354-0KK10	1BB	2	5SU1354-1KK10	1	1 unit	1BB	0.276
		13		5	5SU1354-0KK13	1BB	2	5SU1354-1KK13	1	1 unit	1BB	0.279
		16		5	5SU1354-0KK16	1BB	2	5SU1354-1KK16	1	1 unit	1BB	0.274
		20		5	5SU1354-0KK20	1BB	5	5SU1354-1KK20	1	1 unit	1BB	0.278
		25		5	5SU1354-0KK25	1BB	5	5SU1354-1KK25	1	1 unit	1BB	0.277
		32		5	5SU1354-0KK32	1BB	5	5SU1354-1KK32	1	1 unit	1BB	0.280
		40		10	5SU1354-0KK40	1BB	5	5SU1354-1KK40	1	1 unit	1BB	0.284
	300	6	2	5	5SU1654-0KK06	1BB	5	5SU1654-1KK06	1	1 unit	1BB	0.251
		10		5	5SU1654-0KK10	1BB	5	5SU1654-1KK10	1	1 unit	1BB	0.272
		13		20	5SU1654-0KK13	1BB	20	5SU1654-1KK13	1	1 unit	1BB	0.270
		16		5	5SU1654-0KK16	1BB	5	5SU1654-1KK16	1	1 unit	1BB	0.269
		20		20	5SU1654-0KK20	1BB	5	5SU1654-1KK20	1	1 unit	1BB	0.275
		25		20	5SU1654-0KK25	1BB	5	5SU1654-1KK25	1	1 unit	1BB	0.278
		32		5	5SU1654-0KK32	1BB	5	5SU1654-1KK32	1	1 unit	1BB	0.275
		40		20	5SU1654-0KK40	1BB	5	5SU1654-1KK40	1	1 unit	1BB	0.277

Residual Current Protective Devices

5SU1 RCBOS

	Rated residual current $I_{\Delta n}$ mA	Rated current I_n A	Mounting width MW	SD d	Tripping characteristic B		PG	SD	Tripping characteristic C		PU	PS*/ P. unit	PG	Weight per PU approx.
					Article No.	Price per PU			Article No.	Price per PU				
RCBOs, type A, instantaneous														
1P+N, 230 V AC, 50 ... 60 Hz														
N connection, right														
	4 500													
	3													
	30	6	2	--		2	5SU1353-7KK06	1	1 unit	1BC	0.286			
		8		--		5	5SU1353-7KK08	1	1 unit	1BC	0.270			
		10		--		5	5SU1353-7KK10	1	1 unit	1BC	0.271			
		13		--		5	5SU1353-7KK13	1	1 unit	1BC	0.270			
		16		--		2	5SU1353-7KK16	1	1 unit	1BC	0.268			
		20		--		5	5SU1353-7KK20	1	1 unit	1BC	0.280			
		25		--		5	5SU1353-7KK25	1	1 unit	1BC	0.278			
		32		--		5	5SU1353-7KK32	1	1 unit	1BC	0.285			
	300	40		--		5	5SU1353-7KK40	1	1 unit	1BC	0.289			
		6	2	--		5	5SU1653-7KK06	1	1 unit	1BC	0.263			
		10		--		5	5SU1653-7KK10	1	1 unit	1BC	0.266			
		13		--		20	5SU1653-7KK13	1	1 unit	1BC	0.292			
		16		--		5	5SU1653-7KK16	1	1 unit	1BC	0.267			
		20		--		5	5SU1653-7KK20	1	1 unit	1BC	0.276			
		25		--		5	5SU1653-7KK25	1	1 unit	1BC	0.274			
32			--		5	5SU1653-7KK32	1	1 unit	1BC	0.275				
	40		--		5	5SU1653-7KK40	1	1 unit	1BC	0.280				
6 000														
3														
	30	6	2	2	5SU1356-6KK06	1BC	2	5SU1356-7KK06	1	1 unit	1BC	0.268		
		8		--		5	5SU1356-7KK08	1	1 unit	1BC	0.271			
		10		2	5SU1356-6KK10	1BC	►	5SU1356-7KK10	1	1 unit	1BC	0.268		
		13		5	5SU1356-6KK13	1BC	2	5SU1356-7KK13	1	1 unit	1BC	0.272		
		16		►	5SU1356-6KK16	1BC	►	5SU1356-7KK16	1	1 unit	1BC	0.269		
		20		5	5SU1356-6KK20	1BC	5	5SU1356-7KK20	1	1 unit	1BC	0.280		
		25		5	5SU1356-6KK25	1BC	2	5SU1356-7KK25	1	1 unit	1BC	0.280		
		32		5	5SU1356-6KK32	1BC	5	5SU1356-7KK32	1	1 unit	1BC	0.284		
	300	40		5	5SU1356-6KK40	1BC	5	5SU1356-7KK40	1	1 unit	1BC	0.284		
		6	2	5	5SU1656-6KK06	1BC	5	5SU1656-7KK06	1	1 unit	1BC	0.267		
		10		5	5SU1656-6KK10	1BC	2	5SU1656-7KK10	1	1 unit	1BC	0.268		
		13		5	5SU1656-6KK13	1BC	5	5SU1656-7KK13	1	1 unit	1BC	0.268		
		16		5	5SU1656-6KK16	1BC	2	5SU1656-7KK16	1	1 unit	1BC	0.267		
		20		5	5SU1656-6KK20	1BC	5	5SU1656-7KK20	1	1 unit	1BC	0.276		
		25		5	5SU1656-6KK25	1BC	5	5SU1656-7KK25	1	1 unit	1BC	0.278		
		32		5	5SU1656-6KK32	1BC	5	5SU1656-7KK32	1	1 unit	1BC	0.277		
		40		20	5SU1656-6KK40	1BC	5	5SU1656-7KK40	1	1 unit	1BC	0.277		
10 000														
3														
	10	6	2	5	5SU1154-6KK06	1BC	5	5SU1154-7KK06	1	1 unit	1BC	0.275		
		10		5	5SU1154-6KK10	1BC	5	5SU1154-7KK10	1	1 unit	1BC	0.274		
		13		5	5SU1154-6KK13	1BC	5	5SU1154-7KK13	1	1 unit	1BC	0.282		
		16		5	5SU1154-6KK16	1BC	►	5SU1154-7KK16	1	1 unit	1BC	0.274		
	300	6	2	5	5SU1654-6KK06	1BC	5	5SU1654-7KK06	1	1 unit	1BC	0.271		
		10		5	5SU1654-6KK10	1BC	5	5SU1654-7KK10	1	1 unit	1BC	0.270		
		13		5	5SU1654-6KK13	1BC	5	5SU1654-7KK13	1	1 unit	1BC	0.274		
		16		5	5SU1654-6KK16	1BC	5	5SU1654-7KK16	1	1 unit	1BC	0.271		
		20		20	5SU1654-6KK20	1BC	5	5SU1654-7KK20	1	1 unit	1BC	0.273		
		25		20	5SU1654-6KK25	1BC	5	5SU1654-7KK25	1	1 unit	1BC	0.274		
		32		5	5SU1654-6KK32	1BC	5	5SU1654-7KK32	1	1 unit	1BC	0.273		
		40		20	5SU1654-6KK40	1BC	5	5SU1654-7KK40	1	1 unit	1BC	0.275		

Residual Current Protective Devices

5SU1 RCBOs

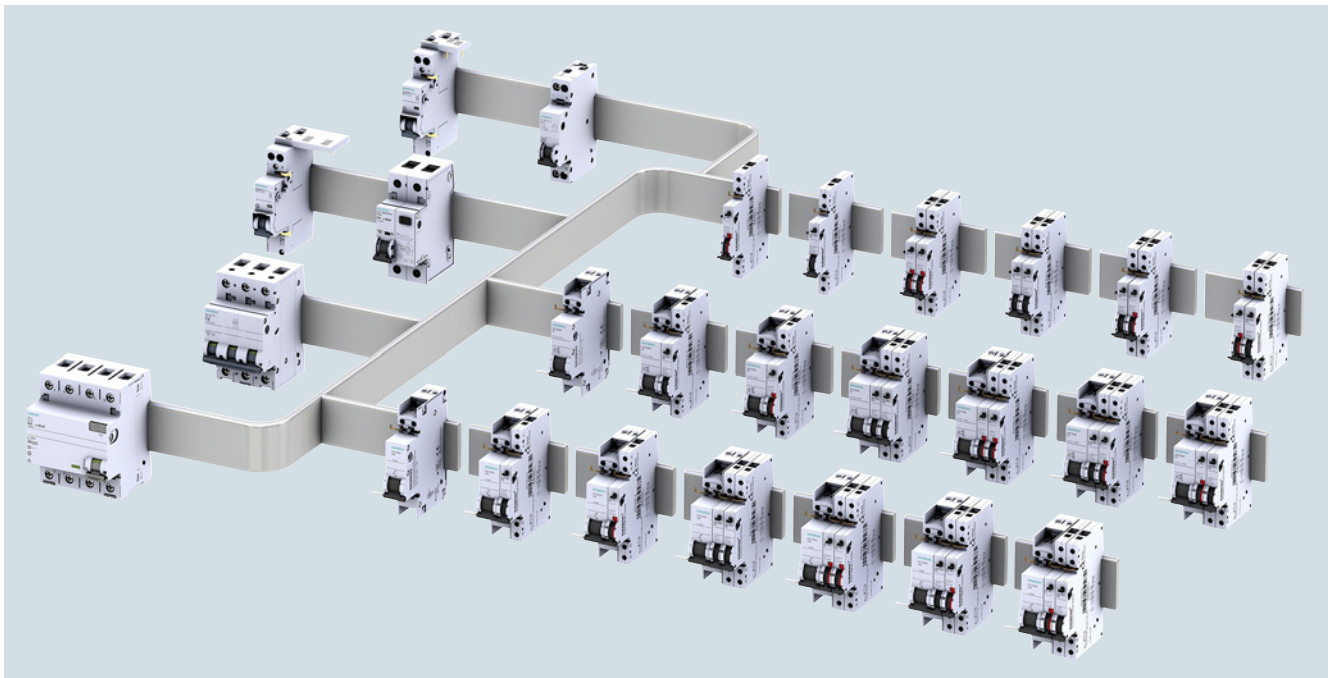
Rated residual current	Rated current	Mounting width	SD	Tripping characteristic B		PG	SD	Tripping characteristic C		PU	PS*/P. unit	PG	Weight per PU approx.
$I_{\Delta n}$	I_n			Article No.	Price per PU			Article No.	Price per PU				
mA	A	MW	d				d						
RCBOs, type F													
1P+N, 230 V AC, 50 Hz													
10 000 3													
30	6	2	15	5SU1354-3KK06	1BC 15	5SU1354-4KK06	1	1 unit	1BC	0.282			
	10		15	5SU1354-3KK10	1BC 5	5SU1354-4KK10	1	1 unit	1BC	0.281			
	13		15	5SU1354-3KK13	1BC 15	5SU1354-4KK13	1	1 unit	1BC	0.285			
	16		5	5SU1354-3KK16	1BC 5	5SU1354-4KK16	1	1 unit	1BC	0.278			
	20		15	5SU1354-3KK20	1BC 15	5SU1354-4KK20	1	1 unit	1BC	0.285			
	25		15	5SU1354-3KK25	1BC 15	5SU1354-4KK25	1	1 unit	1BC	0.286			
	32		15	5SU1354-3KK32	1BC 15	5SU1354-4KK32	1	1 unit	1BC	0.288			
	40		15	5SU1354-3KK40	1BC 15	5SU1354-4KK40	1	1 unit	1BC	0.293			

RCBOs, type A, instantaneous

1P+N; AC 230 V; 50 Hz													
10 000 3													
30	6	2	5	5SU1354-6KK06	1BC ▶	5SU1354-7KK06	1	1 unit	1BC	0.274			
	8		5	5SU1354-6KK10	1BC ▶	5SU1354-7KK08	1	1 unit	1BC	0.273			
	10		5	5SU1354-6KK13	1BC 5	5SU1354-7KK10	1	1 unit	1BC	0.273			
	13		5	5SU1354-6KK16	1BC 5	5SU1354-7KK13	1	1 unit	1BC	0.277			
	16		▶	5SU1354-6KK20	1BC ▶	5SU1354-7KK16	1	1 unit	1BC	0.272			
	20		5	5SU1354-6KK25	1BC 5	5SU1354-7KK20	1	1 unit	1BC	0.276			
	25		5	5SU1354-6KK32	1BC 5	5SU1354-7KK25	1	1 unit	1BC	0.276			
	32		5	5SU1354-6KK40	1BC 5	5SU1354-7KK32	1	1 unit	1BC	0.282			
	40		5	5SU1354-6KK40	1BC 5	5SU1354-7KK40	1	1 unit	1BC	0.282			

RCBOs, type A, super resistant **K**

1P+N; 230 V AC; 50 Hz													
10 000 3													
30	10	2	--	--	5	5SU1354-7VK10	1	1 unit	1BC	0.281			
	16		--	--	5	5SU1354-7VK16	1	1 unit	1BC	0.274			
	20		--	--	20	5SU1354-7VK20	1	1 unit	1BC	0.285			
	25		--	--	20	5SU1354-7VK25	1	1 unit	1BC	0.288			
	32		--	--	10	5SU1354-7VK32	1	1 unit	1BC	0.289			
	40		--	--	20	5SU1354-7VK40	1	1 unit	1BC	0.293			



Fuse Systems

NEOZED Fuse Systems

Introduction

Overview

The MINIZED switch disconnectors are primarily used in switchboard assemblies and control engineering. They are approved for switching loads as well as for safe switching in the event of short circuits.

Technical specifications

MINIZED switch disconnectors		
D02		
5SG71		
Standards	DIN VDE 0638; EN 60947-3 (VDE 0660-107) IEC/EN 60947-3	
Main switch characteristic, EN 60204-1	Yes	
Insulation characteristic EN 60664-1	Yes	
Rated voltage U_n	V AC	230/400, 240/415
• 1P	V DC	65
• 2P in series	V DC	130
Rated current I_n	A	63
Rated insulation voltage	V AC	500
Rated impulse withstand voltage	kV AC	6
Overvoltage category	IV	
Utilization category acc. to VDE 0638		
• AC-22	A	63
Utilization category acc. to EN 60947-3		
• AC-22 A	A	--
• AC-22 B	A	63
• AC-23 B	A	35
• DC-22 B	A	63
Sealable When switched on	Yes	
Mounting position	Any, preferably vertical	
Reduction factor of I_n with 18 pole		
• Side-by-side mounting	0.9	
• On top of one another, with vertical standard mounting rail	0.87	
Degree of protection acc. to IEC 60529	IP20, with connected conductors	
Terminals With touch protection acc. to BGV A3	Yes	
Ambient temperature	°C	-5 ... +40°C, humidity 90 % at 20°C
Terminal versions	--	
Conductor cross-sections		
• Solid and stranded	mm ²	1.5 ... 35
• Flexible, with end sleeve	mm ²	1.5 ... 35
• Finely stranded, with end sleeve	mm ²	--
Tightening torque	Nm	2.5 ... 3

Selection and ordering data

Size	Number of poles	I_n	Mounting width	SD	Article No.	Price per PU	PU	PS*/P. unit	PG	Weight per PU approx.
		A	MW	d						kg
MINIZED switch disconnectors with fuses Using draw-out technology with touch protection acc. to BGV A3 (adapter sleeves not included in scope of delivery)										
	D02	1P	63	1.5	2	5SG7113	1	1 unit	1BM	0.158
		1P+N	63	3	2	5SG7153	1	1 unit	1BM	0.291
		2P	63	3	2	5SG7123	1	1 unit	1BM	0.306
		3P	63	4.5	2	5SG7133	1	1 unit	1BM	0.453
		3P+N	63	6	2	5SG7163	1	1 unit	1BM	0.576
Reducers										
	For fuse links D01 in MINIZED D02 switch disconnectors				2	5SH5527	1	10 units	1CU	0.001
Auxiliary switches (AS)										
	For MINIZED D02 switch disconnectors									
	1 NO + 1 NC		0.5	▶	5ST3010		1	1 unit	1AD	0.055
	2 NO			2	5ST3011		1	1 unit	1AD	0.066
	2 NC			2	5ST3012		1	1 unit	1AD	0.066
Technical specifications, see chapter "Miniature Circuit Breakers -> Additional components"										
Auxiliary switches (AS) with TEST button										
	For MINIZED D02 switch disconnectors									
	1 NO + 1 NC		0.5	2	5ST3010-2		1	1 unit	1AD	0.071
	2 NO			10	5ST3011-2		1	1 unit	1AD	0.068
	2 NC			10	5ST3012-2		1	1 unit	1AD	0.071
Technical specifications, see chapter "Miniature Circuit Breakers -> Additional components"										

1) For 2 A, 4 A, 6 A fuses.

Fuse Systems

LV HRC Fuse Systems

LV HRC fuse links

Overview

LV HRC fuse systems (NH type) are used for installation systems in non-residential, commercial and industrial buildings as well as in switchboard assemblies of power utilities. They therefore protect essential building parts and systems.

LV HRC fuse systems (NH type) are fuse systems designed for operation by experts. There are no constructional requirements for non-interchangeability of rated current and touch protection.

The components and auxiliary equipment are designed in such a way as to ensure the safe replacement of LV HRC fuse systems or isolation of systems.

LV HRC fuse links are available in the sizes 000, 00, 0, 1, 2, 3, 4 and 4a.

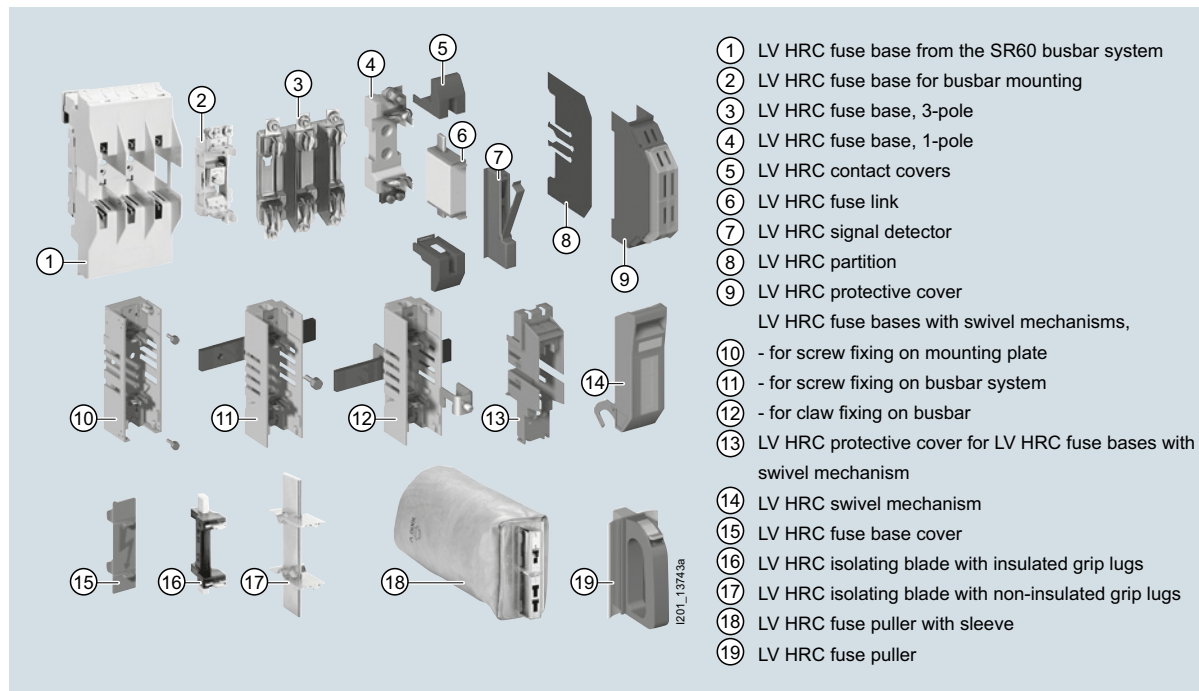
LV HRC fuse links are available in the following operational classes:

- gG for cable and line protection
- aM for short-circuit protection of switching devices in motor circuits
- gR or aR for protection of power semiconductors
- gS: The new gS operational class combines cable and line protection with semiconductor protection

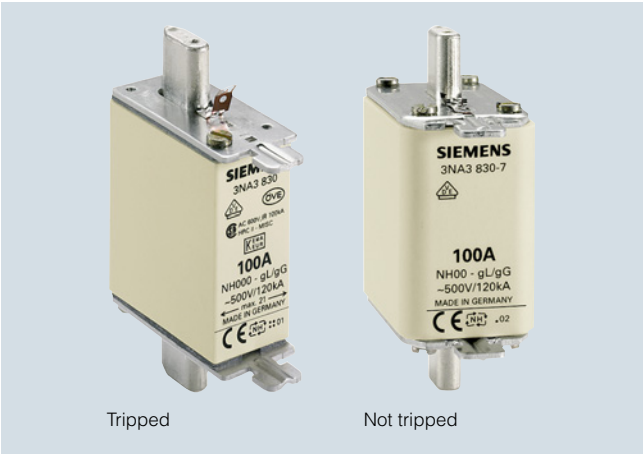
LV HRC fuse links of size 000 can also be used in LV HRC fuse bases, fuse switch disconnectors, LV HRC fuse strips as well as LV HRC in-line fuse switch disconnectors of size 00.

The fuse links 300 A, 355 A and 425 A comply with the standard but do not have the VDE mark.

LV HRC components



Benefits



- In the standard series with front indicator, the front-mounted red indicator signals the tripping of a fuse.
- LV HRC fuse links are always equipped with silver-plated contact pins. This means that they are non-corroding and have less contact resistance. This ensures the long-term operational safety of the plant.

Technical specifications

		LV HRC fuse links	
		Operational class	
		gG	
		3NA3...	3NA3...-6
Standards		IEC 60269-1, -2; EN 60269-1; DIN VDE 0636	
Approvals		DIN VDE 0636-2; CSA 22.2 No.106, File Number 016325_0_00 (CSA approval of fuses 500 V for 600 V)	
Rated voltage U_n			
• Sizes 000 and 00	V AC	500	690
	V DC	250	250
• Sizes 1 and 2	V AC	500	690
	V DC	440	440
• Size 3	V AC	500	690
	V DC	440	440
• Sizes 4 and 4a (IEC design)	V AC	500	--
	V DC	440	--
Rated current I_n	A	2 ... 1250	2 ... 500
Rated breaking capacity	kA AC	120	
	kA DC	25	
Contact pins		Non-corroding, silver-plated	
Resistance to climate	°C	-20 ... +50 at 95% relative humidity	

Fuse Systems

LV HRC Fuse Systems

LV HRC fuse links

Selection and ordering data

	Size	Mounting width	I_n	U_n	SD	Non-insulated grip lugs Article No.	Price per PU	PU	PS*/P. unit	PG	Weight per PU approx.
		mm	A	V AC/V DC	d						kg
LV HRC fuse links with front indicator, operational class gG											
	000	21	32	500/250	2	3NA3812		1	3 units	1BM	0.128
			35		2	3NA3814		1	3 units	1BM	0.130
			63		2	3NA3822		1	3 units	1BM	0.130
			80		2	3NA3824		1	3 units	1BM	0.130
			100		2	3NA3830		1	3 units	1BM	0.131
	00	30	125	500/250	2	3NA3832		1	3 units	1BM	0.203
			160		2	3NA3836		1	3 units	1BM	0.205
	00	30	63	690/250	2	3NA3822-6		1	3 units	1BM	0.205
	1	47.2	250	500/440	2	3NA3144		1	3 units	1BM	0.439
	3	57.8	400	500/440	2	3NA3360		1	3 units	1BM	0.659
		71.2	630		2	3NA3372		1	3 units	1BM	0.955

Overview

LV HRC signal detectors are used for remotely indicating that the LV HRC fuse links have been tripped.

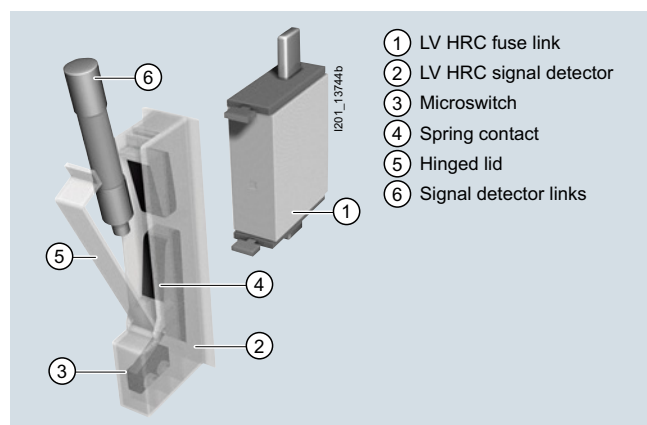
The LV HRC signal detectors with signal detector link can be used to monitor LV HRC signal fuse links with non-insulated grip lugs of sizes 000 to 4 at 10 A or more.

The signal detector link is connected in parallel to the LV HRC fuse link. In the event of a fault, the LV HRC fuse links are released simultaneously with the LV HRC fuse detector link. A trip pin switches a floating microswitch.

Benefits

Uniform solution for all sizes

LV HRC signal detectors reliably indicate when a fuse has tripped. Tripped fuses are quickly located. This saves time and increases system availability.



Selection and ordering data

	Size	SD	Article No.	Price per PU	PU	PS*/P. unit	PG	Weight per PU approx. kg
	000 to 4	2	3NX1021		1	1 unit	1BM	0.040
LV HRC signal detectors Only for SIEMENS 3NA3, 3NA7, 3ND LV HRC fuse links with non-insulated grip lugs • Rated voltage up to 690 V AC/600 V DC • Contact: Microswitch 250 V AC, 6 A • Connection: Flat termination 2.3 mm								
	000 to 4	2	3NX1022		1	3 units	1BM	0.018
		2	3NX1023		1	3 units	1BM	0.018
Signal detector links • Rated voltage up to 690 V AC/600 V DC • Response value > 9 V; 2.5 A; for standard applications • Response value > 2 V; 7 A; only for meshed networks								

Fuse Systems

LV HRC Fuse Systems

LV HRC fuse bases and accessories

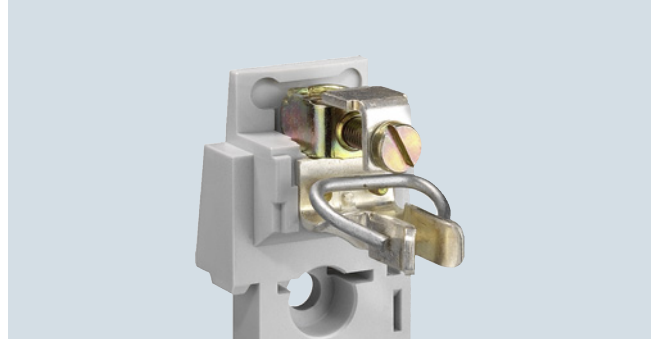
Overview

Terminals for all applications



Flat terminals with screws are suitable for connecting busbars or cable lugs. They have a torsion-proof screw connection with shim, spring washer and nut. When tightening the nut, always ensure compliance with the specified torque due to the considerable leverage effect.

The double busbar terminal differs from the flat terminal in that it supports connection of two busbars, one on the top and one at the bottom of the flat terminal.



The modern box terminal ensures efficient and reliable connection to the conductors. They support connection of conductors with or without end sleeves.



With the flat terminal with nut, terminal lug of the nut is torsion-proof. When tightening the nut, the torque must be observed because of the considerable leverage effect.



Up to three conductors can be clamped to the terminal strip.

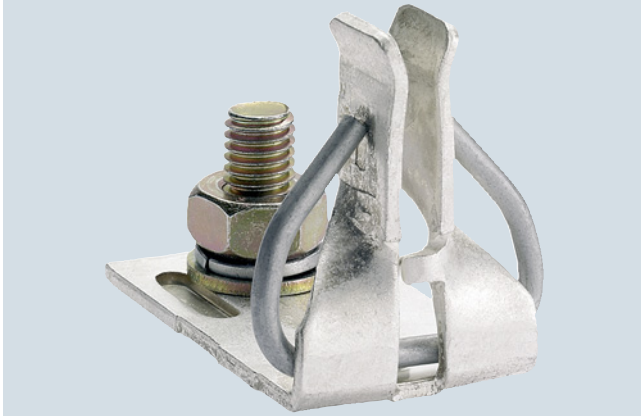


The plug-in terminal is equipped for connecting two conductors.



One conductor can be clamped to the saddle-type terminal.

Benefits



- The silver-plated Lyra contact provides a large contact area for the pin of the LV HRC fuse link. This improves heat transmission and lowers the temperature. It also minimizes ageing of the fuse link in the maximum load range, in particular when using SITOR semiconductor fuses.
- The large contact area also facilitates replacement of LV HRC fuse links.
- The spring washer tensioning the contact is mechanically galvanized. This will prevent hydrogen embrittlement. The contact is resistant to aging and there will be no dreaded annealing of contacts, which considerably improves operating safety.

Technical specifications

		LV HRC fuse bases		
Size		000/00	1	3
Standards		IEC 60269-1, -2; EN 60269-1; DIN VDE 0636-2		
Rated current I_n	A	160	250	630
Rated voltage U_n	V AC	690 ¹⁾		
	V DC	250		
Rated short-circuit strength	kA AC	120		
	kA DC	25		
Max. power dissipation of fuse links	W	12	32	60
Flat terminal				
Screw		M8	M10	M12
Nut		M8		
Max. tightening torque	Nm	14	38	
Plug-in terminal				
Conductor cross-section	mm ²	2.5 ... 50	--	
Saddle-type terminal				
Conductor cross-section	mm ²	6 ... 70		
Box terminal				
Conductor cross-section	mm ²	2.5 ... 50		
Terminal strips				
Conductor cross-section, 3-wire	mm ²	1.5 ... 16		
Max. torque for attachment of LV HRC fuse base	Nm	2	2.5	

¹⁾ Extended rated voltage up to 1000 V (except LV HRC bus-mounting bases).

Fuse Systems

LV HRC Fuse Systems

LV HRC fuse bases and accessories

Selection and ordering data

Size	I_n	Version	SD	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx. kg
A			d						
LV HRC fuse bases									
Made of ceramic for screw fixing									
000/00	160	1P							
		With flat terminals, screw	2	3NH3030		1	3 units	1BM	0.216
		With plug-in terminals	5	3NH3031		1	3 units	1BM	0.270
		With saddle-type terminals	2	3NH3032		1	3 units	1BM	0.218
Made of ceramic for screw fixing									
1	250	1P							
		With double busbar terminals	5	3NH3220		1	3 units	1BM	0.771
Made of ceramic for screw fixing									
3	630	1P							
		With flat terminals	2	3NH3430		1	1 unit	1BM	1.070



Overview

SITOR semiconductor fuses protect power semiconductors from the effects of short circuits because the super quick-response disconnect characteristic is far quicker than with conventional LV HRC fuses. They protect high-quality devices and system components, such as converters with fuses in the input and the DC link, UPS systems and soft starters for motors.

Panel mounting requirements have given rise to various connection versions and designs.

The fuses with blade contacts comply with IEC 60269-2 and are suitable for installation in LV HRC fuse bases, in fuse switch disconnectors and switch disconnectors with fuses. They also include fuses with slotted blade contacts for screw fixing with 110 mm mounting dimension, whose sizes are according to IEC 60269-4.

Fuses with slotted blade contacts for screw fixing with 80 mm or 110 mm mounting dimension are often screwed directly onto busbars for optimum heat dissipation. Even better heat transmission is provided by the compact fuses with M10 or M12 female thread, which are also mounted directly onto busbars.

Bolt-on links with 80 mm mounting dimension are another panel-mounting version for direct busbar mounting.

The fuses for SITOR thyristor sets, railway rectifiers or electrolysis systems were developed specially for these applications.

The LV HRC fuse bases and fuse switching devices suitable for use with SITOR semiconductor fuses [can be found on pages 4/36ff.](#)

Fuse characteristics, configuration notes and the assignment of SITOR semiconductor fuses to the fuse bases and 3NP and 3KL fuse switching devices can be found in the Configuration Manual, "Fuse Systems" at: www.siemens.com/lowvoltage/manuals

The new size 3 type ranges have a round ceramic body instead of a square one. These series are characterized by small I^2t values with low power dissipation and high capability under alternating load. The dimensions and functional values correspond to the current standards IEC 60269-4/EN 60269-4.

Note:

The ordering data of the fuses are listed in ascending order of the rated voltage in the selection tables.

Benefits

- SITOR semiconductor fuses have a high varying load factor, which ensures a high level of operational safety and plant availability – even when subject to constant load change.
- The use of SITOR semiconductor fuses in LV HRC fuse bases or Siemens switch disconnectors has been tested with regard to heat dissipation and maximum current loading. This makes planning and dimensioning easier and prevents consequential damage.
- Our high standard of quality ensures good compliance with the characteristic curve and accuracy. This ensures long-term protection of devices.

Operational classes

Fuses are categorized according to function and operational classes. SITOR semiconductor fuses, LV HRC design, are available in the following operational classes:

- aR: For the short-circuit protection of power semiconductors (partial range protection)
- gR: For the protection of power semiconductors

Selection and ordering data

Size	I_e	U_e	Operational class	Breaking I^2t value	Power loss	Varying load factor	SD	Article No.	Price per PU	PU	PS*/P. unit	PG	Weight per PU approx.
A	V AC			A ² s	W	VL	d						kg
LV HRC design, SITOR													
With slotted blade contacts for M10 screw fixing, mounting dimension: 210 mm													
3	160	1500	aR	54 000	56	1.0	30	3NE5424-0C		1	2 units	1DM	1.995
	224			138 000	80	1.0	30	3NE5426-0C		1	2 units	1DM	1.986
	315			311 000	115	1.0	30	3NE5430-0C		1	2 units	1DM	1.260
	350			428 000	135	1.0	30	3NE5431-0C		1	2 units	1DM	2.129
	450			870 000	145	0.95	30	3NE5433-0C		1	2 units	1DM	2.104



Switch Disconnectors

3NP5 Fuse Switch Disconnectors up to 630 A

With fuse monitoring

Overview



3NP5 fuse switch disconnector range

3NP5 fuse switch disconnectors are controls for the occasional manual switching/isolating of loads and distribution boards. They are able to switch on, control and switch off the specified rated current (including a specific overload).

With the 3NP5 fuse switch disconnectors, all poles of downstream electric loads can be safely disconnected from the system under load.

Application

The 3NP5 fuse switch disconnectors are ideally suited for surface mounting and installation in distribution boards (e.g. ALPHA, SIKUS), meter cabinets (e.g. ALPHA 400-ZS), and molded-plastic distribution systems such as 8HP.

The ability to mount them on a range of different busbar systems allows their very diverse implementation in switchboard cabinet and control engineering.

The 3NP5 fuse switch disconnectors are ideal for operation in combination with other switching devices, for example in capacitor modules for reactive-power compensation.

In conjunction with semiconductor protection fuses (e.g. SITOR), these are used for the effective protection of frequency converters and soft starters.

The 3NP5 fuse switch disconnectors are suitable for use in any climate and comply with standards IEC 60947-1, IEC 60947-3 and DIN VDE 0660 Part 107.

In addition, the 3NP5 series of fuse switch disconnectors complies with the requirements of BS 5419 and is also approved for operation in marine applications.

All 3NP5 fuse switch disconnectors can be sealed as standard (or can be sealed through accessories).

Switch Disconnectors

3NP5 Fuse Switch Disconnectors up to 630 A

With fuse monitoring

Technical specifications

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107
Type		3NP50
Rated uninterrupted current I_u	A	160
For fuse links acc. to IEC 60269-2	Size	00
Conventional free-air thermal current I_{th}	A	160
Rated operational voltage U_e		
• 50/60 Hz AC	V	690
• DC	V	440 (3 conducting paths series-connected), 220 (2 conducting paths in series, fuse monitoring by 3RV)
Rated insulation voltage U_i	V	690 ¹⁾
Rated impulse withstand voltage U_{imp}	kV	6
Rated conditional short-circuit current with fuses (by fast switch on)		
Rated current	Size/A	00/160
• At 500 V AC (rms value)	kA	50
Permissible let-through current of the fuses (peak value)	kA	15
Short-circuit strength with fuses (with closed disconnector)		
• Rated current	Size/A	00/160
• At 500 V AC (rms value)	kA	100
• Maximum permissible let-through I^2t value	kA ² s	223
• Permissible let-through current of the fuses (peak value)	kA	23
Rated short-circuit making capacity with isolating blades²⁾	Size	00
• At 500 V AC (peak value)	kA	6
Rated making and breaking capacity²⁾ (infeed from top or bottom) ³⁾	Size	00
Breaking current I_c		
• At p.f. = 0.35, rms value	A	1300
• At p.f. = 0.35, rms value	A	800
• At p.f. = 0.35 and 400 V AC, with fuse links, rms value	A	1600
Rated operational current I_g		
• At AC-21B, AC-22B, AC-23B at 500 V AC, with fuse links	A	160
• At AC-21B, AC-22B, AC-23B At 690 V AC, with fuse links	A	160
• At AC-21B, AC-22B	A	160
• At AC-23B	A	100
At 220 (440) V DC, with 2 (3) conducting paths series-connected and fuse links:		
• Breaking current I_c ($L/R = 15$ ms)	A	640
• Rated operational current I_g at DC-23B	A	160
Capacitor switching capacity		
• Capacitor rating at 400 V AC	kvar	80
• Rated current I_n at 525 V AC	A	116
• Capacitor rating	kvar	100
• Rated current I_n	A	110
Permissible ambient temperature	°C	-25 ... +55 for operation ⁴⁾ , -50 ... +80 during storage
Mechanical endurance, operating cycles		1600
Degree of protection		
• Without molded-plastic masking frame		IP00, for 3NP5 2 with terminal clamp connection, IP10 degree of protection
• With molded-plastic masking frame with closed fuse carrier on the operator side		IP30
• With molded-plastic masking frame with open fuse carrier		IP10
Power loss of the switch at I_{th} (without power loss of the fuse links)		
Without busbar adapter	W	7.8 (16.3) ⁵⁾
Maximum power loss of the usable fuses (per fuse)⁶⁾	W	12
Main conductor connections		
Flat terminal for connection of		
• Crimped cable lugs acc. to DIN 46234 (conductor cross-section, stranded)	mm ²	2.5 ... 120
• Pressed cable lugs acc. to DIN 46235 (conductor cross-section, stranded)	mm ²	16 ... 70
• Busbars (usable busbar width)	mm	16 ... 22
Clamp terminals	mm ²	2.5 ... 50 ⁷⁾
Auxiliary switch 1 NO + 1 NC (accessories)		
• At 50 Hz/60 Hz to 400 V AC, rated operational current I_g at AC-12/AC-15 A	A	The same voltage potential must be applied to the NO and NC contacts
• Flat plug-in terminals (DIN 46244)		16/6 A 6.3 ... 0.8
Permissible mounting position		Vertical or horizontal (switching capacity may be reduced with horizontal installation)
Signaling contact for electronic fuse monitoring		
• Rated operational current I_g at 250 V, DC-13	A	2 NO + 1 NC
• Rated operational current I_g at 240 V, AC-15	A	0.27
• Thermal free-air rated current I_{th}	A	1.5 5

¹⁾ When observing degree of pollution 2 (instead of 3) operation is also possible up to $U_i = 1000$ V.

²⁾ Rated making and breaking current according to IEC 60947-3:
Rated making current
 $I = 10 \times I_g$ (AC-23); $3 \times I_g$ (AC-22); $1.5 \times I_g$ (AC-21);
Rated breaking current
 $I_g = 8 \times I_g$ (AC-23); $3 \times I_g$ (AC-22); $1.5 \times I_g$ (AC-21).

³⁾ When electronic fuse monitors are used, infeed must be from the top.

⁴⁾ When using isolating blades. If using fuse links, please observe specifications of fuse manufacturer.

⁵⁾ With busbar adapter.

⁶⁾ Values are valid when using LV HRC fuse systems with characteristic gG. If using fuses for semiconductor protection, please refer to the assignment table, see [Catalog LV 10, chapter "Switch Disconnectors"](#)

⁷⁾ When connecting one conductor.
For 2 conductors max. 1×50 mm² and 1×35 mm².

Switch Disconnectors

3NP5 Fuse Switch Disconnectors up to 630 A

With fuse monitoring

Selection and ordering data

Rated uninterrupted current I_u	Connection type	Size	Auxiliary switches		SD	Degree of protection IP00, without fuse links, without isolating blades, with terminal screws	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
			At switch disconnectors	At circuit breakers						
A			Version	Version	d	Article No.	Price per PU			kg

Completely compartmentalized, with high speed closing feature with fuse monitoring by SIRIUS circuit breakers

With plug-in connection of the auxiliary switch connecting cable (length approx. 1 m) to the circuit breakers										
160	Flat terminals ¹⁾	00	1 NO + 1 NC	1 NO + 1 NC	►	3NP5060-0EA86		1	1 unit	1CL 2.435



3NP5060-0EA86

- ¹⁾ For 3NP5060 with flat terminals, appropriate 3NY1106 cable lug covers must be used to provide a finger-safe cover, according to DIN VDE 0106 Part 100.

Overview

Remote control switches are used in residential and non-residential buildings, as well as the switchboard engineering sector. They trip in the event of "current inrushes", i.e. pulses, and then electromechanically save the switching position, even in the event of a power failure.

All the devices have the VDE mark and can also be equipped with an additional auxiliary switch. All devices have a switching position indication and are operated manually. The switching noise is particularly quiet and meets the requirements of residential buildings.

Benefits

- Remote control switches with central/group switching support convenient and high feature applications
- High functional reliability due to electromechanical design without fault-prone electronics
- The devices have no standby losses
- All devices have a switching position indication and are operated manually
- The remote control switches can be bus-mounted on 5TE9100 and 5TE9101 busbars; e.g.: bus mounting of the N conductor and/or infeed
- All the remote control switches can be fitted with an additional auxiliary switch

Central switching functions

Versions with central On/Off function allow the central switching of all connected remote control switches. This type of central switching can also be actuated using a time switch. All remote control switches can be switched to the ON or OFF switching state, regardless of their current switching state.

Contact sequences

1 – 2 – 1+2 – 0 or 1 – 0 – 2 – 0 means:

- 0: No contact closed
- 1: Only contact 1 closed
- 2: Only contact 2 closed
- 1+2: Contact 1 and contact 2 are closed

The contact positions are constantly changing with each pushbutton impulse.

Note:

Synchronous switching of the contacts cannot be guaranteed with parallel switching. Products with central/group switching must be used for the mutual control of several remote control switches.

Bus mounting



All 5TT41 remote control switches can be bus-mounted with each other.

Note:

For suitable busbars for the 5TT41 remote control switches, see [Catalog LV 10, chapter "Switching Devices"](#).

Switching Devices

5TT4 remote control switches

Technical specifications

Remote control switches		
5TT4101 5TT4102 5TT4115		
Standards	IEC 60669-1, IEC 60669-2, IEC 60669-3, EN 60669 (VDE 0632), EN 60669-2-2, EN 60669-2-2/A1	
Approvals	VDE 0632	
Contact type	1 NO 2 NO 1 NO 1 NC	
Manual operation	Yes	
Switching position indication	Yes	
Rated control voltage U_c	V AC V DC	8 ... 230 12 ... 110
Primary operating range	$\times U_c$	0.8 ... 1.1
Rated frequency f_c (AC types)	Hz	50
Rated impulse withstand voltage U_{imp}	kV	4
Rated power dissipation P_v		
• Magnet coil, only pulse	W/VA	4,5/7
• Per contact at 16 A	W	1,2
Minimum contact load	V AC; mA	10; 100
Rated operational current I_e at p.f. = 0.6 ... 1	A	16
Rated operational voltage U_e		
• 1 NO	V AC	250
• 2 NO	V AC	400
• 1 NO + 1 NC	V AC	250
Glow lamp load at 230 V	mA	5
• With 1 5TT4920 compensator	mA	25
• With 2 5TT4920 compensators	mA	45
Incandescent lamp load²⁾	W	1200
Different phases between magnet coil/contact		Permissible
Contact gap	mm	> 1.2
Safe separation Creepage distances and clearances between magnet coil/contact	mm	> 6
Pushbutton malfunction Protected against continuous voltage, safe due to design		Yes
Minimum pulse duration	ms	50
Electrical service life At I_e/U_e , p.f. = 0.6; incandescent lamp load 600 W	In operating cycles	50000
Terminals $\pm$ screw (Pozidriv)		1
Conductor cross-sections		
• Rigid	mm ²	1.5 ... 6
• Flexible, with end sleeve	mm ²	1 ... 6
Resistance to climate At 95 % relative humidity	Acc. to DIN 50015 °C	35
Permissible ambient temperature	°C	-10 ... +40
Degree of protection	Acc. to EN 60529	IP20, with connected conductors
Mounting position		Any

¹⁾ For 2.5 MW 5TT4123-0 devices with PTC.

²⁾ For 15000 operating cycles.

Selection and ordering data

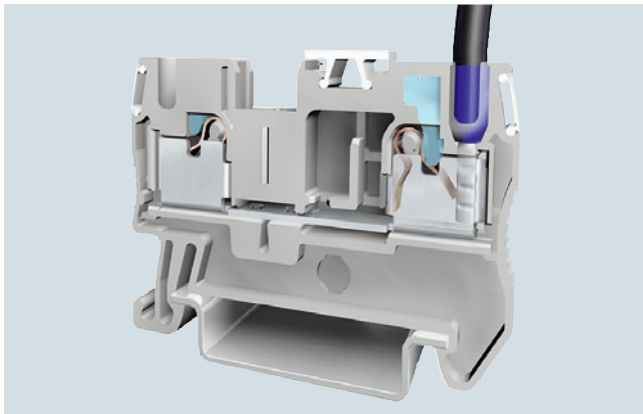
	Contacts	U_e	I_e	U_c	U_c	Mount- ing width	SD	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx. kg
		V AC	A AC	V AC	V DC	MW	d						
	Remote control switches Auxiliary switches can be retrofitted												
	1 NO	250	16	230		1	►	5TT4101-0		1	1 unit	1BK	0.124
	2 NO	400	16	230		1	►	5TT4102-0		1	1 unit	1BK	0.143
	Remote control switches DC applications												
	1 NO + 1 NC	250	16		110	1	►	5TT4115-1		1	1 unit	1BK	0.146

ALPHA FIX Terminal Blocks

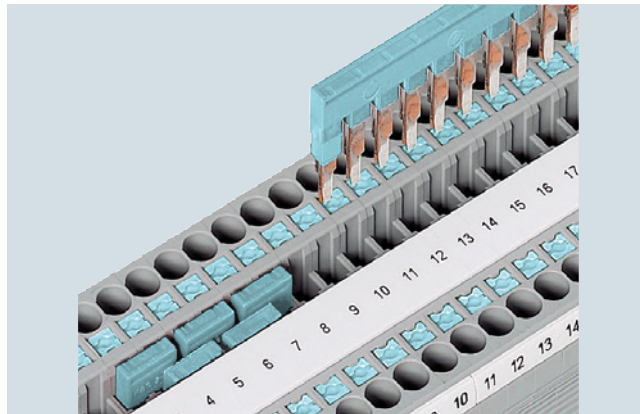
8WH6 iPo Plug-In Terminals

General data

Overview

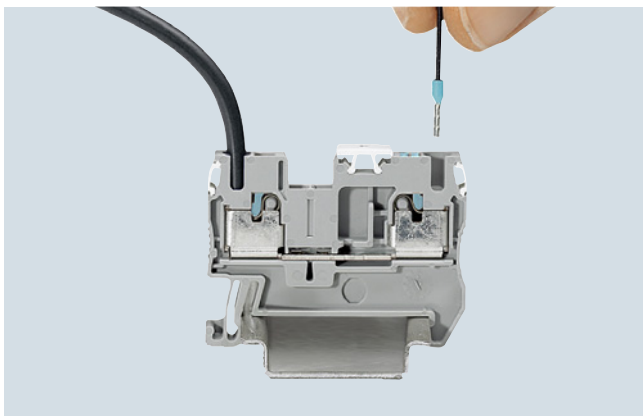


iPo connection method: Characterized by its simple and direct conductor connection, this series utilizes all the benefits of the 8WH system.

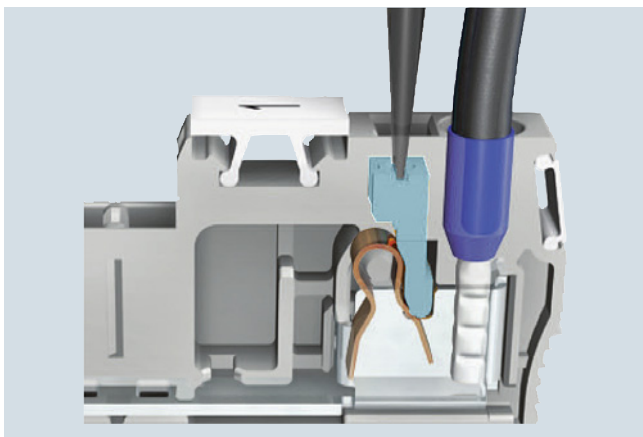


Easy bridging: The double bridge shaft supports the interconnection of any number of terminals using 2-pole jumpers. The 2-pole to 50-pole jumpers enable up to 50 terminals to be connected in a single step.

4



Super-light insertion: With an up to 50 % lower insertion force, the iPo connection method permits easy and direct insertion of rigid and flexible conductors with end sleeves with a cross-section of more than 0.34 mm^2 .



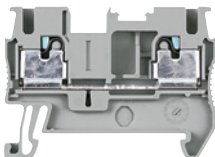
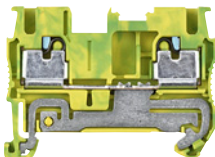
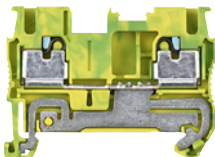
Pusher button function: The actuation button is used to open the spring to either release the conductor or to connect smaller cross-sections from 0.14 mm^2 . It can be operated by any tool.

ALPHA FIX Terminal Blocks

8WH6 iPo Plug-In Terminals

8WH6 through-type terminals

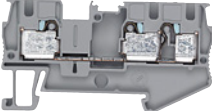
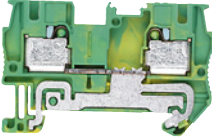
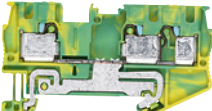
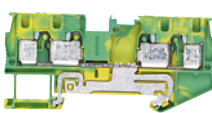
Selection and ordering data

	Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
		d						kg
Terminal size 2.5 mm²								
	Through-type terminals, terminal size 2.5 mm²							
	•  US • Terminal width 5.2 mm • I_{max} = 30 A • U_{max} = 800 V • AWG 26 ... 12 • Connection capacity, one conductor - Rigid 0.14 ... 4 mm² - Flexible 0.14 ... 2.5 mm²							
	Versions							
	• Two clamping points - Gray - Blue		7	8WH6000-0AF00	1	50 units	1BT	0.007
			7	8WH6000-0AF01	1	50 units	1BT	0.006
	• Three clamping points - Gray - Blue		7	8WH6003-0AF00	1	50 units	1BT	0.008
			7	8WH6003-0AF01	1	50 units	1BT	0.008
	• Four clamping points - Gray - Blue		7	8WH6004-0AF00	1	50 units	1BT	0.010
			7	8WH6004-0AF01	1	50 units	1BT	0.009
	PE through-type terminals, terminal size 2.5 mm²							
	•  US • Terminal width 5.2 mm • AWG 26 ... 12 • Connection capacity, one conductor - Rigid 0.14 ... 4 mm² - Flexible 0.14 ... 2.5 mm² • Green-yellow							
	Versions							
	• Two clamping points • Three clamping points • Four clamping points		7	8WH6000-0CF07	1	50 units	1BT	0.009
			7	8WH6003-0CF07	1	50 units	1BT	0.010
			7	8WH6004-0CF07	1	50 units	1BT	0.011
Accessories								
	Covers, for terminal size 1.5 ... 2.5 mm²							
	Width 2.2 mm							
	Versions							
	• For two clamping points • For three clamping points • For four clamping points		7	8WH9000-1GA00	100	50 units	1BT	0.200
			7	8WH9000-2GA00	100	50 units	1BT	0.200
	• For four clamping points		7	8WH9000-4GA00	100	50 units	1BT	0.300
	Cover segments, for terminal size 1.5 ... 2.5 mm²		2	8WH9000-0GA00	100	10 units	1BT	0.100
	For covering multi-wire terminals when mounting two-wire terminals side-by-side							
	Compartment partitions, for terminal size 1.5 ... 4 mm²							
	• For visual and electrical separation of terminal groups • 2 mm thick • Gray							
	Versions							
	• For two clamping points • For three clamping points • For four clamping points		7	8WH9070-0AA00	100	50 units	1BT	0.200
			7	8WH9070-0GA00	100	50 units	1BT	0.300
			7	8WH9070-0HA00	100	50 units	1BT	0.400

ALPHA FIX Terminal Blocks

8WH6 iPo Plug-In Terminals

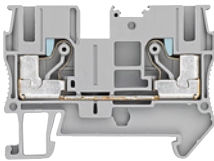
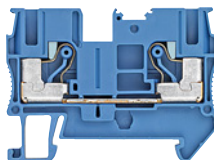
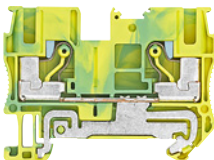
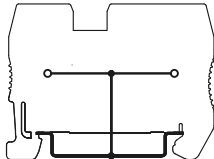
8WH6 through-type terminals

	Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
		d						kg
Terminal size 4 mm²								
	Through-type terminals, terminal size 4 mm² •  US • Terminal width 6.2 mm • $I_{\max}$ = 38 A • $U_{\max}$ = 800 V • AWG 24 ... 10 • Connection capacity, one conductor - Rigid 0.2 ... 6 mm² - Flexible 0.2 ... 4 mm²							
	Versions							
8WH6000-0AG00	• Two clamping points - Gray - Blue	2	8WH6000-0AG00	1	50 units	1BT	0.009	
		2	8WH6000-0AG01	1	50 units	1BT	0.009	
	• Three clamping points - Gray - Blue	2	8WH6003-0AG00	1	50 units	1BT	0.012	
		2	8WH6003-0AG01	1	50 units	1BT	0.012	
8WH6003-0AG01	• Four clamping points - Gray - Blue	2	8WH6004-0AG00	1	50 units	1BT	0.013	
		2	8WH6004-0AG01	1	50 units	1BT	0.015	
								
8WH6004-0AG00								
								
8WH6004-0AG01								
PE through-type terminals, terminal size 4 mm² •  US • Terminal width 6.2 mm • AWG 24 ... 10 • Connection capacity, one conductor - Rigid 0.2 ... 6 mm² - Flexible 0.2 ... 4 mm² • Green-yellow								
	Versions							
8WH6000-0CG07	• Two clamping points	2	8WH6000-0CG07	1	50 units	1BT	0.011	
	• Three clamping points	2	8WH6003-0CG07	1	50 units	1BT	0.015	
	• Four clamping points	2	8WH6004-0CG07	1	50 units	1BT	0.017	
								
8WH6003-0CG07								
								
8WH6004-0CG07								

ALPHA FIX Terminal Blocks

8WH6 iPo Plug-In Terminals

8WH6 through-type terminals

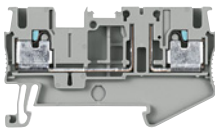
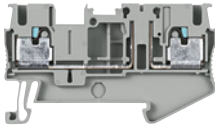
Version		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
		d						kg
Terminal size 6 mm ²								
 8WH6000-0AH00	Through-type terminals, terminal size 6 mm², two clamping points - Terminal width 8.2 mm  US - IEC 60947-7-1 - Rigid 0.5 ... 10 mm² - Flexible 0.5 ... 6 mm² - AWG 20 ... 8 - I = 41 A - U = 1000 V							
	Versions - Gray - Blue		7	8WH6000-0AH00	1	50 units	1BT	0.016
 8WH6000-0AH01		7	8WH6000-0AH01	1	50 units	1BT	0.016	
 8WH6000-0CH07	PE through-type terminals, terminal size 6 mm², two clamping points - Terminal width 8.2 mm  US - IEC 60947-7-2 - Rigid 0.5 ... 10 mm² - Flexible 0.5 ... 6 mm² - AWG 20 ... 8 - Green-yellow		7	8WH6000-0CH07	1	50 units	1BT	0.022
	 I201_12670 8WH6000-0CH07							

ALPHA FIX Terminal Blocks

8WH6 iPo Plug-In Terminals

8WH6 isolating terminals

Selection and ordering data

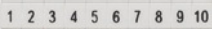
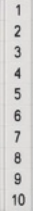
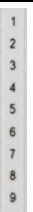
	Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.	
		d						kg	
Terminal size 2.5 mm²									
 8WH6000-6CF00	Isolating terminals, terminal size 2.5 mm²								
	- Terminal width 5.2 mm $I_{\max}$ = 20 A $U_{\max}$ = 400 V - AWG 26 ... 12 - Connection capacity, one conductor - Rigid 0.14 ... 4 mm² - Flexible 0.14 ... 2.5 mm²								
	Versions								
	- Two clamping points - Three clamping points - Four clamping points		7 7 7	8WH6000-6CF00 8WH6003-6CF00 8WH6004-6CF00		1 1 1	50 units 50 units 50 units	1BT 1BT 1BT	0.008 0.010 0.011
Terminal size 4 mm²									
 8WH6000-6AG00	Isolating terminals, terminal size 4 mm²		2	8WH6000-6AG00	1	50 units	1BT	0.460	
	- With two clamping points - Terminal width 6.2 mm $I_{\max}$ = 20 A $U_{\max}$ = 400 V - AWG 24 ... 10 - Connection capacity, one conductor - Rigid 0.2 ... 6 mm² - Flexible 0.2 ... 4 mm²								
Accessories									
 8WH9000-3SC00	Covers, for terminal size 2.5 mm²								
	Width 2.2 mm								
	- For two clamping points - For three clamping points - For four clamping points		7 7 7	8WH9000-3SC00 8WH9000-3SD00 8WH9000-5GA00		100 100 100	50 units 50 units 50 units	1BT 1BT 1BT	0.200 0.200 0.300
	Covers, for terminal size 4 mm²		7	8WH9003-1GA00	100	50 units	1BT	0.200	
 8WA9003-1GA00		- For two clamping points - Width 2.2 mm							
 8WH9070-0AA00	Compartment partitions, for terminal size 1.5 ... 4 mm²		7	8WH9070-0AA00	100	50 units	1BT	0.200	
	- For two clamping points - For visual and electrical separation of terminal groups 2 mm thick - Gray								
 8WH9070-0GA00	Compartment partitions, for terminal size 1.5 ... 4 mm²		7	8WH9070-0GA00	100	50 units	1BT	0.300	
	- For three clamping points - For visual and electrical separation of terminal groups 2 mm thick - Gray								

ALPHA FIX Terminal Blocks

Accessories for 8WH Terminal Blocks

Standard labeling system

Selection and ordering data

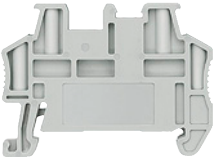
	Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.
		d						kg
	Labels, flat, for terminal width 4.2 mm and terminal size 1.5 mm² (excluding 8WH3), horizontal labeling							
8WH8121-1AB05	Versions • Consecutive numbering - 1 ... 10 (10x) - 11 ... 20 (10x) - 21 ... 30 (10x) • Custom inscription	15	8WH8121-1A□□□ ▲▲▲ B05 B15 B25 8WH8121-1XA05		100	100 units	1BT	0.010
	Labels, flat, for terminal width 4.2 mm and terminal size 1.5 mm² (excluding 8WH3), vertical labeling							
8WH8141-1AB05	Versions • Consecutive numbering - 1 ... 10 (10x) - 11 ... 20 (10x) - 21 ... 30 (10x) • Custom inscription	15	8WH8141-1A□□□ ▲▲▲ B05 B15 B25 8WH8141-1XA05		100	100 units	1BT	0.010
	Labels, flat, for terminal width 4.2 mm and terminal size 1.5 mm² (excluding 8WH3), blank	7	8WH8111-1AA05		100	100 units	1BT	0.010
	Labels, flat, for terminal width 5.2 mm and terminal size 2.5 mm² (8WH3: 1.5 mm²), horizontal labeling							
8WH8121-2AB15	Versions • Consecutive numbering - 1 ... 10 (10x) - 11 ... 20 (10x) - 21 ... 30 (10x) • Custom inscription	15	8WH8121-2A□□□ ▲▲▲ B05 B15 B25 8WH8121-2XA05		100	100 units	1BT	0.010
	Labels, flat, for terminal width 5.2 mm and terminal size 2.5 mm² (8WH3: 1.5 mm²), vertical labeling							
8WH8141-2AB15	Versions • Consecutive numbering - 1 ... 10 (10x) - 11 ... 20 (10x) - 21 ... 30 (10x) • Custom inscription	15	8WH8141-2A□□□ ▲▲▲ B05 B15 B25 8WH8141-2XA05		100	100 units	1BT	0.010
	Labels, flat, for terminal width 5.2 mm and terminal size 2.5 mm² (8WH3: 1.5 mm²), blank	7	8WH8111-2AA05		100	100 units	1BT	0.010

ALPHA FIX Terminal Blocks

Accessories for 8WH Terminal Blocks

Mounting accessories

Selection and ordering data

	Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.
		d						kg
	Lateral mounting test plugs							
	For individual assembly of test plug connectors							
	Versions							
	- For terminal width 4.2 mm and terminal size 1.5 mm² ¹⁾ - For terminal width 5.2 mm and terminal size 2.5 mm² ¹⁾ - For terminal width 6.2 mm and terminal size 6 mm² ¹⁾		7	8WH9010-0DB02	1	10 units	1BT	0.004
	Spacer plates							
	For skipping single terminals for individual test plug assembly							
	Versions							
8WH9010-0DB02	- For terminal width 4.2 mm and terminal size 1.5 mm² ¹⁾ - For terminal width 5.2 mm and terminal size 2.5 mm² ¹⁾ - For terminal width 6.2 mm and terminal size 6 mm² ¹⁾		7	8WH9010-0EB02	1	10 units	1BT	0.003
	- For terminal width 4.2 mm and terminal size 1.5 mm² ¹⁾ - For terminal width 5.2 mm and terminal size 2.5 mm² ¹⁾ - For terminal width 6.2 mm and terminal size 6 mm² ¹⁾		7	8WH9010-0FB02	1	10 units	1BT	0.003
	¹⁾ Except 8WH3							
	Terminal strip markers, for end retainers							
	- Height-adjustable - For quick-fit end retainers - Inscription possible with terminal strip marker or two labels, front, for terminal width 10.2 mm - Labeling field size: 20 x 8 mm		7	8WH9150-1CA00	1	100 units	1BT	0.001
	Test adapters							
	- For 4 mm Ø PS test plugs and 4 mm Ø safety test plugs - Makes contact in the bridge slot		7	8WH9010-0JB00	1	10 units	1BT	0.002
	Reducing combs							
	Versions							
	- For bridging of a through-type terminal, terminal size 2.5 or 4 mm² - For a through-type terminal, terminal size 1.5 mm² - For a through-type terminal, terminal size 6 mm²		7	8WH9020-0CC10	1	10 units	1BT	0.001
	- For bridging of a through-type terminal, terminal size 2.5 or 4 mm² - For a through-type terminal, terminal size 1.5 mm² - For a through-type terminal, terminal size 6 mm²		7	8WH9020-0FC10	1	10 units	1BT	0.003
	Quick-fit end retainers							
	For inscription with front labels, for terminal width 5.2 mm and terminal strip markers		2	8WH9150-0CA00	1	50 units	1BT	0.005

ALPHA FIX Terminal Blocks

Accessories for 8WH Terminal Blocks

Mounting accessories

Version		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx. kg
		d						
 8WH9020-6AC10	Connecting combs							
	Versions	Max. load current I_{max}						
	• For terminal width 4.2 mm and terminal size 1.5 mm ² (excluding 8WH3)	17.5 A						
	- 2-pole	7	8WH9020-6AC10		1	50 units	1BT	0.001
	- 3-pole	7	8WH9020-6AD10		1	50 units	1BT	0.001
	- 4-pole	7	8WH9020-6AE10		1	50 units	1BT	0.002
	• For terminal width 5.2 mm and terminal size 2.5 mm ² (for 8WH3: 1.5 mm ²)	24 A						
	- 2-pole	7	8WH9020-6BC10		1	50 units	1BT	0.002
	- 3-pole	7	8WH9020-6BD10		1	50 units	1BT	0.003
	- 4-pole	7	8WH9020-6BE10		1	50 units	1BT	0.003
	• For terminal width 6.2 mm and terminal size 4 mm ² (for 8WH3: 2.5 mm ²)	32 A						
	- 2-pole	7	8WH9020-6CC10		1	50 units	1BT	0.002
	- 3-pole	7	8WH9020-6CD10		1	50 units	1BT	0.003
	- 4-pole	7	8WH9020-6CE10		1	50 units	1BT	0.003
	• For terminal width 8.2 mm and terminal size 6 mm ²	41 A						
	- 2-pole	7	8WH9020-6DC10		1	10 units	1BT	0.004
	- 3-pole	7	8WH9020-6DD10		1	10 units	1BT	0.005
	- 4-pole	7	8WH9020-6DE10		1	10 units	1BT	0.008
	• For terminal width 10 mm, terminal size 10 mm ² , 2-pole	57 A	8WH9020-6EC10		1	10 units	1BT	0.007

More information

For detailed information see [Catalog LV 52, "ALPHA FIX Terminal Blocks"](#).

DELTA profil

Socket outlets

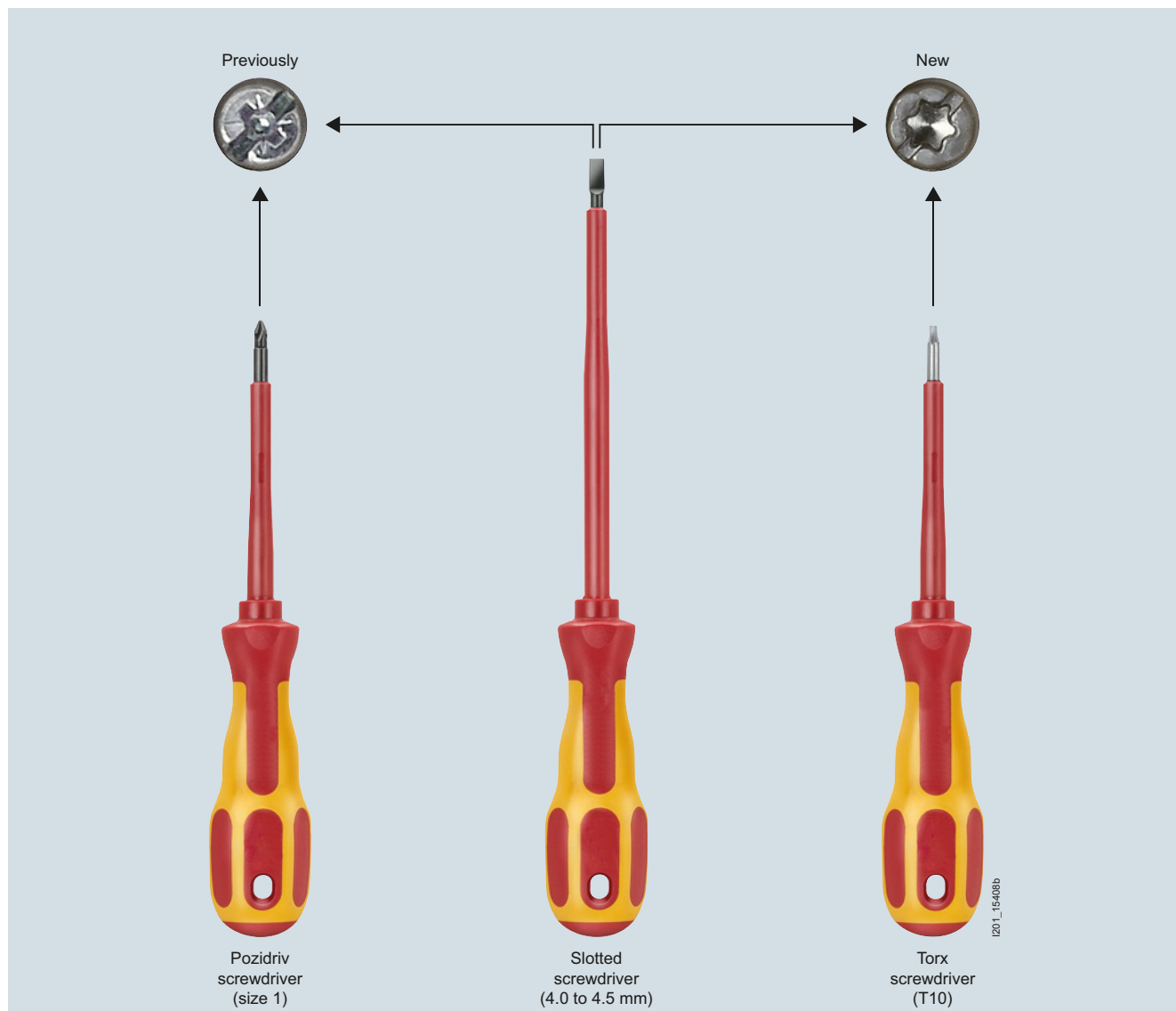
Overview

Combination screws for Torx T10 and slotted screwdrivers



Inserts for switches and pushbuttons as well as all SCHUKO® socket outlets in the DELTA line have been fitted successively with new combination screws since 11/2008.

4



Use of different screwdrivers on the former and new combination screw.

Selection and ordering data

Version	SD	Article No.	Price per PU	PU	PS*/ P. unit	PG	Weight per PU approx. kg
	d						
General data • For screw and claw fixing • SCHUKO® socket outlets: 16 A, ~250 V; 10 A, ~250 V • Live parts of inserts covered by molded plastic • Self-retracting claws • The screwless terminals are connecting terminals for Cu and aluminum conductors up to 2.5 mm² • Degree of protection: IP20 • Size of cover plates: 65 x 65 mm							
							
Schuko® socket outlets, black bezel Silver (similar to RAL 9006)	2	5UB1463		1	1 unit	1BW	0.092

More information

For detailed information see [Catalog ET D1, "DELTA Switches and Socket Outlets"](#).

DELTA profil

Notes

Medium-Voltage Components



4/2

Vacuum interrupters

4/3

3AH47 vacuum circuit breakers

Medium-Voltage Components

Vacuum interrupters

Overview



Vacuum switching technology is the preferred technology for medium-voltage applications worldwide, and is therefore state-of-the-art. Our experience in developing and manufacturing these challenging products dates back over 40 years. The major part relates to the special requirements for railway applications. Over this period, more than 5 million Siemens interrupters have been installed worldwide. Close cooperation with our customers enables us to continuously innovate the products and to maintain our quality requirements at the highest possible level. For this reason, we manufacture the contact material in-house and subject the individual components as well as the complete interrupters to intensive tests before delivery. We therefore offer:

- High reliability
- Maximum switching capacity
- Leading technology
- Excellent technical support

Selection and ordering data

Rated voltage kV	Rated frequency Hz	Rated short-circuit breaking current kA	Rated current A	Lightning impulse withstand voltage kV
up to 17.5	16.7/25/50/60	25/31.5/40/50	up to 2 500	95/125
25	50/60	up to 31.5	up to 2 500	145/170
27.5	50/60	up to 31.5	up to 2 500	170/200
36	50/60	up to 31.5	up to 2 500	200/250

- Mechanical operating cycles 30 000
- Temperature range: -40 °C to 120 °C
- Optionally available siliconized
- Dimensions and further details on request

The vacuum interrupters are fully developed products which can be supplied with customized connection dimensions.

For further information, please contact:

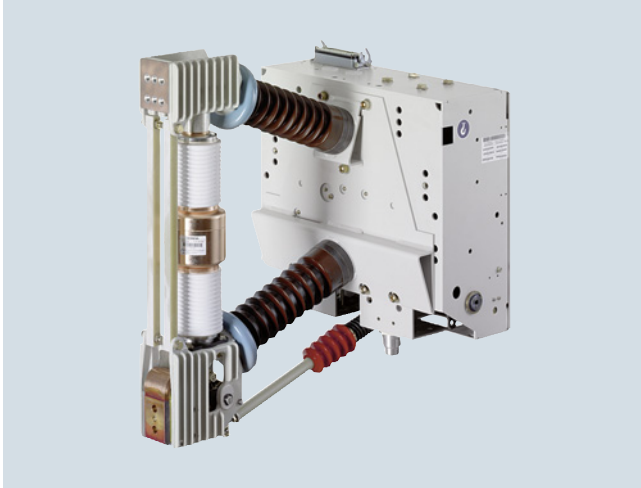
Email: support.ic@siemens.com, or

Tel.: +49 (180) 524-8437

Overview

The 3AH47 vacuum circuit breakers are based on the successful 3AH vacuum circuit breaker series which has been well proven in practice in over 500 000 installations.

The 3AH47 vacuum circuit breaker can control up to 60 000 operating cycles depending on the version. With minimum maintenance work, such as greasing of operating mechanisms after 10 000 operating cycles and replacing the interrupters after 30 000 operating cycles, the reliability of these circuit breakers is maintained throughout the entire service life.



Selection and ordering data

Rated voltage kV	Rated frequency Hz	Rated short-circuit breaking current kA	Rated operational current (A)					
			1 250		2 000		2 500	
			Single-pole	Two-pole	Single-pole	Two-pole	Single-pole	Two-pole
17.5	16.7	25			3AH4754-4			
		31.5			3AH4755-4			
		40					3AH47 56/66-6	
		50					3AH4757-6	
25	25	25 ¹⁾	3AH4714-2	3AH4714-2 "D31"	3AH4714-4	3AH4714-4 "D31"	3AH4714-6	3AH4714-6 "D31"
27.5	50/60	25	3AH4784-2	3AH4784-2 "D31"	3AH4784-4	3AH4784-4 "D31"	3AH4784-6	
		31.5	3AH4785-2	3AH4785-2 "D31"	3AH4785-4		3AH4785-6	3AH4785-6 "D31"

¹⁾ Further values on request.

More information

For detailed information see [Product Catalog HG 11.52](#), "3AH47 Vacuum Circuit Breakers for Traction Applications".

Medium-Voltage Components

Notes

Surge Arresters for Railway Applications



5/2	Introduction
5/4	3EB4 surge arresters
5/7	3EB5 surge arresters

Surge Arresters for Railway Applications

Introduction

Overview

Siemens surge arresters for railway applications – particularly reliable, stable and safe overvoltage protection

Siemens has developed and manufactured medium and high-voltage surge arresters for standard and special applications since 1925. We have been producing surge arresters for railway systems for over 80 years. Continuous research and development, comprehensive know-how and worldwide experience give Siemens surge arresters a leading edge in overvoltage protection. Their uncompromising quality ensures a long service life and reliability in any application.

Siemens surge arresters are an indispensable aid to insulation coordination in electrical power supply systems.

Valuable equipment, such as traction units, is ideally protected against lightning and switching overvoltages.

Siemens surge arresters have been designed to meet the requirements of a wide range of common installation environments, from arctic cold to the heat of the desert and the dampness of tropical climates.

Definition of surge arresters

Surge arresters are used to protect electrical equipment, such as transformers, circuit breakers and bushings, against the effects of overvoltages caused by incoming surges. Such overvoltages can be caused by a direct or nearby lightning strike, electromagnetic discharges or switching operations in the power supply system as well as in devices. Some overvoltages are very high in energy. The current from the surge is diverted through the arrester, in most cases to ground. Effective overvoltage protection requires that different surge arrester types be used depending on the particular application.

Always the best solution for traction systems

Electrical power for traction systems is generally transmitted to traction substations of the (national) utility or the railway systems' own high-voltage network by high voltage transmission lines with rated voltages of 110 kV and above at frequencies of 16 2/3 Hz, 25 Hz, 50 Hz or 60 Hz. The voltage is then stepped down to the supply voltage of the traction system and converted into DC voltage where necessary. The high-voltage transmission lines, the traction substations, the catenary system and the traction units are exposed to lightning overvoltages that may result in huge damage to the insulation of the electrical equipment.

Siemens surge arresters for railway applications protect every part of a railway system, from railway substations through transmission lines, cable and catenary systems to rail vehicles for mass-transit, mainline and high-speed transportation up to 420 km/h. Siemens offers several surge arrester product families for AC and DC railway applications up to 45 kV:

- **3EB4** – silicone rubber surge arrester with composite hollow-core enclosure for use on traction units and for fixed installation in AC and DC systems.
- **3EB5** – silicone rubber surge arrester in a cage design for use on traction units and for fixed installation in AC and DC systems.

Siemens provides each of these types in several versions, making it possible to find the ideal surge arrester for any conceivable application and meet even specific demands, such as:

- high mechanical stability to withstand vibrations and high wind speeds,
- extremely reliable pressure relief behavior for use in areas requiring special protection,
- excellent pollution layer characteristics for use in coastal and desert regions or in areas with extreme air pollution.

All Siemens surge arresters feature a superior sealing system that reliably prevents moisture ingress to ensure the highest possible degree of overvoltage protection and decades of trouble-free service. Moreover, the choice of materials used in the production of Siemens surge arresters contributes to protection of the environment.

The best choice for every application

Whether it is high-speed, intercity trains between the major cities of the world, train shuttle services from train stations to airports that run every few minutes, or everyday mass transit, the requirements of rail transport vary from one extreme to the other.

Siemens supplies a complete portfolio of surge arresters that meets all the requirements for overvoltage protection of rail vehicles and rail electrification worldwide. Apart from the system voltage, the main criterion for the selection of the appropriate surge arrester is the type of application, which defines travel speed and resulting load.

The 3EB4 and 3EB5 surge arresters are highly suitable for every possible railway application, including:

- High-speed and intercity trains
- Mass transit and regional trains
- Urban public transport: Light rail vehicles, metros, trams, electric buses
- Locomotives
- Drive systems

And for every power supply system, such as:

- 12.5 kV, 25 Hz/60 Hz
- 15 kV, 16 2/3 Hz
- 25 kV, 50 Hz/60 Hz
- 750 V DC
- 1 500 V DC
- 3 000 V DC

Standards and tests – reliability you really can depend on

Siemens surge arresters have been designed and tested in compliance with the latest IEC 60099-4, IEEE C62.11 and GB 11032 standards. All type tests are performed by independent, PEHLA-certified laboratories; the test reports are available on request. Please contact your Siemens representative for details.

Moreover, every single surge arrester that leaves the Siemens factory undergoes a routine test and is delivered with a routine test certificate.

Siemens meets all requirements of ISO 9001:2008, ISO 14002:2004 and BS OHSAS 18001:2007. All Siemens suppliers have to be certified according to ISO standards or are audited by Siemens.

To maintain sustainable quality improvement, Siemens introduced corporate quality guidelines that contribute to each step of the quality process.

The 3EB4 and 3EB5 surge arresters comply with the following international standards:

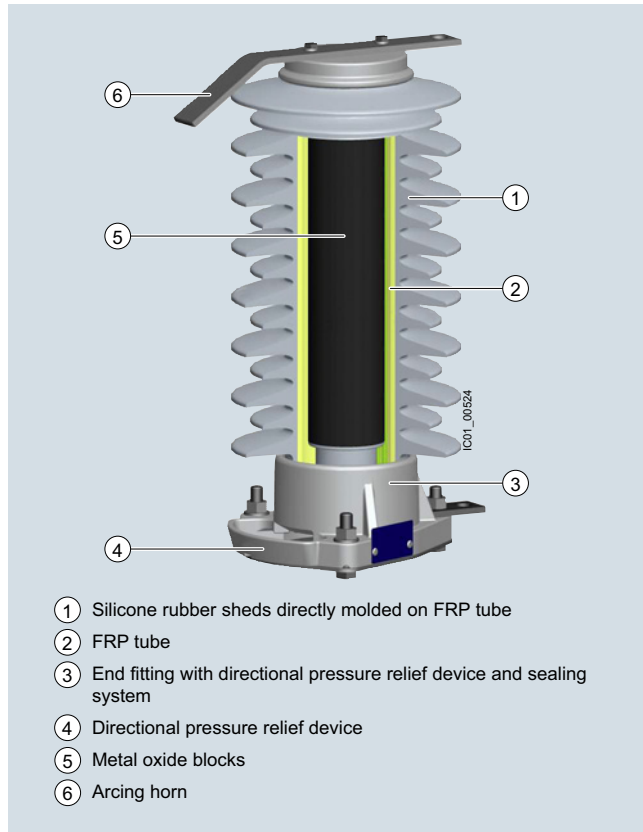
- **IEC 60099-4**, Metal oxide surge arresters for AC systems
- **EN 50526-1**, Railway applications – Fixed installations – D.C. surge arresters and voltage limiting devices
- **EN 45545-2**, Railway applications – Fire protection on railway vehicles
- **IEC 61373**, Railway applications – Rolling stock equipment – Shock and vibration tests

Surge Arresters for Railway Applications

3EB4 surge arresters

Overview

3EB4 – silicone rubber surge arrester with composite hollow core design



Reliable and safe – 3EB4 railway surge arresters

3EB4 type railway surge arresters have to withstand a great deal, including the influence of extreme weather conditions, temperatures from $-40\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$ and the effects of UV radiation and hydrophobicity. They have been designed for precisely this, and are effectively protected with suitable fault-tolerant technology and durable materials to ensure trouble-free operation under all conditions of use.

Within the composite housing, the arrester's enclosure materials consist of silicone and glass-fiber reinforced plastic (GFRP). The silicone, which is directly applied onto the GFRP tube in an injection molding process, ensures reliability and an excellent special seal at both ends of the surge arrester effectively prevents partial discharges and moisture ingress, guaranteeing decades of trouble-free operation. The combination of silicone and a glass-fiber-reinforced plastic tube also ensures excellent mechanical resilience of the design.

The 3EB4 surge arrester enclosure is designed for extreme mechanical loads and it is ideally suited for high speeds up to 420 km/h (260 mph).

The silicone arrester with composite hollow core enclosure design provides a very high degree of safety: In the case of an overload or the extremely rare case of an arrester short circuit, the arc escapes directly through a directional pressure relief device. The surge arrester, therefore, can be installed in a way that will minimize the risk of any damage to the equipment and passengers nearby. Internal parts are not ejected and the shatterproof housing remains intact.

A reliable, rugged and economical choice

Siemens 3EB4 composite hollow core design surge arresters are virtually indestructible during transportation, installation, storms, and vandalism. While the composite hollow core enclosure design provides the highest possible mechanical strength, the silicone rubber insulation is ideal for outdoor applications in severe environmental conditions. No matter how tough environmental and operating conditions may be, 3EB4 arresters assure 100% reliable pressure relief performance and provide the ultimate in protection.

Surge Arresters for Railway Applications

3EB4 surge arresters

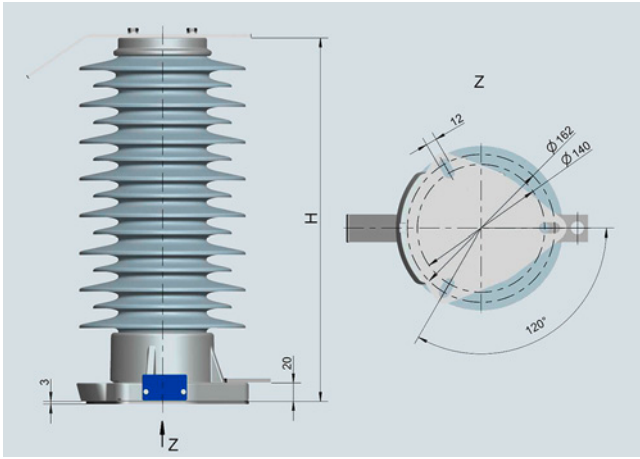
3EB4 technical specifications

Electrical characteristics														
Line voltage	Rated voltage	Continuous voltage	Arrester article number	Maximum travel speed	Arrester class	Rated discharge current	Discharge capacity	Thermal rated energy absorption capacity	Maximum residual voltages					
U _n	U _r	U _c				I _n	Q _{rs}	W _{th}	30/60 μs 500 A	30/60 μs 1000 A	30/60 μs 2000 A	8/20 μs 5 kA	8/20 μs 10 kA	8/20 μs 20 kA
kV	kV	kV		km/h		kA	C	kJ	kV	kV	kV	kV	kV	kV
AC														
15	23	18	3EB4 230 - 5 A L 3 2 - 0.	420	SL	10	1.2	115	45.2	46.9	49.3	54.6	58.7	65.7
	23	18	3EB4 230 - 6 A L 3 2 - 0.	420	SM	10	2.0	161	43.2	44.3	46.5	50.8	54.1	60.0
	23	18	3EB4 230 - 7 A L 3 2 - 0.	420	SH	20	2.8	230	42.8	43.9	46.0	49.7	52.9	58.2
25	37	30	3EB4 370 - 5 A X 3 2 - 0.	420	SL	10	1.2	185	72.7	75.5	79.3	87.8	94.4	106
	37	30	3EB4 370 - 6 A X 3 2 - 0.	420	SM	10	2.0	259	69.6	71.3	74.8	81.7	87.0	96.5
	37	30	3EB4 370 - 7 A X 3 2 - 0.	420	SH	20	2.8	370	68.9	70.6	74.0	80.0	85.1	93.6
	42	34	3EB4 420 - 5 A X 3 2 - 0.	420	SL	10	1.2	210	82.5	85.7	90.0	99.6	107	120
	42	34	3EB4 420 - 6 A X 3 2 - 0.	420	SM	10	2.0	297	79.0	80.9	84.9	92.8	98.7	110
	42	34	3EB4 420 - 7 A X 3 2 - 0.	420	SH	20	2.8	420	78.2	80.2	84.0	90.8	96.6	106
DC														
0.75	1.0	1.0	3EB4 010 - 7 D S 3 2 - 0.	420	DC-B	20	2.5	10	1.9	2.0	2.1	2.3	2.4	2.6
	1.0	1.0	3EB4 010 - 7 D M 3 2 - 0.	420	DC-B	20	2.5	10	1.9	2.0	2.1	2.3	2.4	2.6
1.5	2.0	2.0	3EB4 020 - 7 D S 3 2 - 0.	420	DC-B	20	2.5	20	3.9	4.0	4.2	4.5	4.8	5.3
	2.0	2.0	3EB4 020 - 7 D M 3 2 - 0.	420	DC-B	20	2.5	20	3.9	4.0	4.2	4.5	4.8	5.3
3.0	4.0	4.0	3EB4 040 - 7 D S 3 2 - 0.	420	DC-B	20	2.5	40	7.8	8.0	8.4	9.0	9.6	10.6
	4.0	4.0	3EB4 040 - 7 D M 3 2 - 0.	420	DC-B	20	2.5	40	7.8	8.0	8.4	9.0	9.6	10.6
Mechanical properties														
Line voltage	Height	Creepage path	Rated short-circuit current	Lighting impulse withstand voltage	Power frequency withstand voltage, wet 1 min.	Defined short-time load SSL	Defined continuous load SLL	Weight	Flashover distance	Figure				
U _n	H			1.2/50 μs										
kV	mm	mm	kA	kV	kV	N	N	kg	mm					
AC														
15	275	710	50	110	45	9450	6610	6.8	238	A				
	275	710	50	110	45	9450	6610	7.3	238	A				
	275	710	50	110	45	9450	6610	8.3	238	A				
25	395	1175	50	170	70	6580	4600	9.2	358	A				
	395	1175	50	170	70	6580	4600	10.1	358	A				
	395	1175	50	170	70	6580	4600	12.1	358	A				
	395	1175	50	170	70	6580	4600	9.6	358	A				
	395	1175	50	170	70	6580	4600	10.8	358	A				
	395	1175	50	170	70	6580	4600	12.8	358	A				
DC														
0.75	155	243	40	55	30	16770	11740	3.9	92	A				
	195	399	40	70	40	13330	9330	4.1	124	A				
1.5	155	243	40	55	30	16770	11740	4.1	92	A				
	195	399	40	70	40	13330	9330	4.3	124	A				
3.0	155	243	40	55	30	16770	11740	4.5	92	A				
	195	399	40	70	40	13330	9330	4.6	124	A				

Surge Arresters for Railway Applications

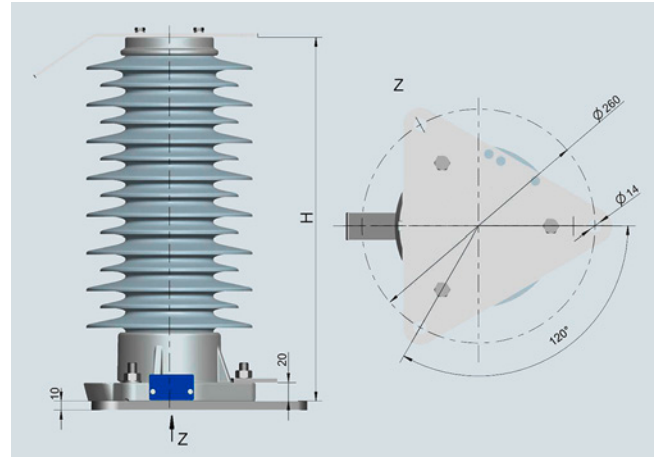
3EB4 surge arresters

3EB4 connections



3EB4-D

Figure A

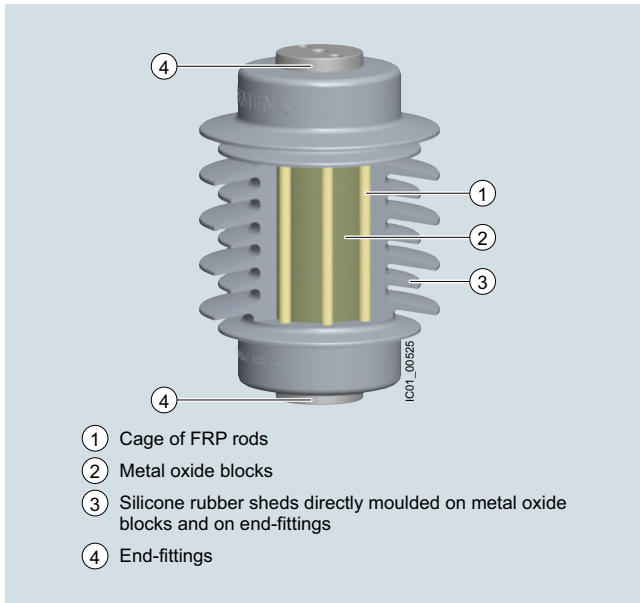


3EB4-E

Figure A

Overview

3EB5 silicone rubber surge arrester in a cage design



Siemens 3EB5 surge arresters in a cage design offer excellent protection from overvoltage in railway applications.

The metal oxide varistors (MOVs) are encased in a cage of rods made out of glass-fiber-reinforced plastic (FRP), which produces a rigid, reinforced construction.

Reliability is ensured by directly injecting the silicone onto the MO varistors and the FRP rods. This ensures complete embedding of all components without entrapment and gaps, and thus excellent sealing against partial discharges or the ingress of moisture.

In the extremely rare case of an MOV overload, arcing does not produce any critical pressure in the interior because the MOV elements are not situated in a sealed mechanical enclosure. The arc can escape directly through the soft silicone housing, without damaging the mechanical enclosure support. The ejection of internal parts that could damage other nearby equipment is prevented almost completely. The innovative cage design from Siemens ensures an excellent safety response.

The silicone is highly hydrophobic and retains its water and dirt-repellent effect throughout its use. This results in high tracking and erosion resistance. The silicone enclosure is self-extinguishing and flame-retardant. These advantages ensure maintenance-free and reliable use of 3EB5 surge arresters.

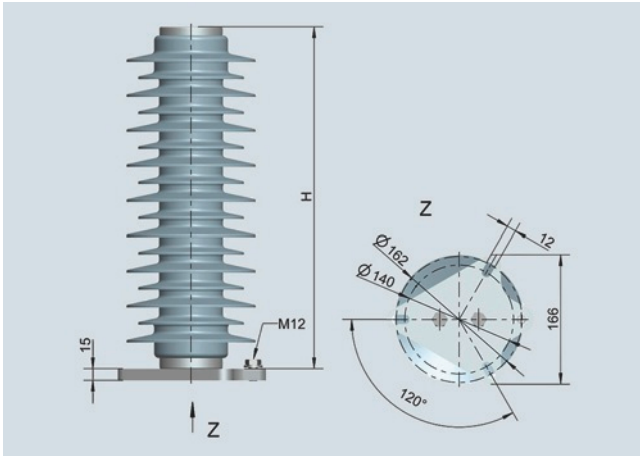
Surge Arresters for Railway Applications

3EB5 surge arresters

3EB5 technical specifications

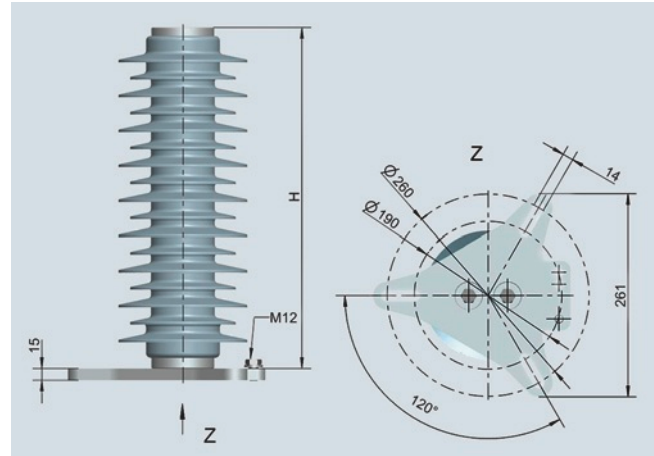
Electrical characteristics														
Line voltage	Rated voltage	Continu-ous voltage	Arrester article number	Maxi-mum travel speed	Arrester class	Rated dis-charge current	Dis-charge capacity	Thermal rated energy absorp-tion capacity	Maximum residual voltages					
U _n	U _r	U _c				I _n	Q _{rs}	W _{th}	30/60 μs 500 A	30/60 μs 1000 A	30/60 μs 2000 A	8/20 μs 5 kA	8/20 μs 10 kA	8/20 μs 20 kA
kV	kV	k		km/h		kA	C	kJ	kV	kV	kV	kV	kV	kV
AC														
15	23	18	3EB5 230 - 6 A E 3 0 - 0.	200	SM	10	2.0	161	43.2	44.3	46.5	50.8	54.1	60.0
	23	18	3EB5 230 - 7 A E 3 0 - 0.	200	SH	20	2.8	230	43.0	44.3	45.5	48.9	51.8	56.4
	23	18	3EB5 230 - 8 A E 3 0 - 0.	200	SH	20	3.6	322	43.0	44.3	45.5	48.9	51.8	56.4
25	37	30	3EB5 370 - 6 A H 3 0 - 0.	200	SM	10	2.0	259	69.6	71.3	74.8	81.7	87.0	96.5
	37	30	3EB5 370 - 7 A H 3 0 - 0.	200	SH	20	2.8	370	69.1	71.2	73.3	78.7	83.3	90.8
	37	30	3EB5 370 - 8 A H 3 0 - 0.	200	SH	20	3.6	518	69.1	71.2	73.3	78.7	83.3	90.8
	42	34	3EB5 420 - 6 A J 3 0 - 0.	200	SM	10	2.0	294	79.0	80.9	84.9	92.8	98.7	110
	42	34	3EB5 420 - 7 A J 3 0 - 0.	200	SH	20	2.8	420	78.5	80.8	83.2	89.3	94.5	103
	42	34	3EB5 420 - 8 A J 3 0 - 0.	200	SH	20	3.6	588	78.5	80.8	83.2	89.3	94.5	103
	45	36	3EB5 450 - 6 A J 3 0 - 0.	200	SM	10	2.0	315	84.6	86.7	90.9	99.4	106	117
	45	36	3EB5 450 - 7 A J 3 0 - 0.	200	SH	20	2.8	450	84.1	86.6	89.1	95.7	101	110
	45	36	3EB5 450 - 8 A J 3 0 - 0.	200	SH	20	3.6	630	84.1	86.6	89.1	95.7	101	110
DC														
0.75	1.0	1.0	3EB5 010 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	14	1.9	1.9	2.0	2.1	2.3	2.5
	1.5	1.5	3EB5 015 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	21	2.8	2.9	3.0	3.2	3.4	3.7
1.5	2.0	2.0	3EB5 020 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	28	3.7	3.8	4.0	4.3	4.5	4.9
	3.0	3.0	3EB5 030 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	42	5.6	5.8	5.9	6.4	6.8	7.4
3.0	4.5	4.5	3EB5 045 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	63	8.4	8.7	8.9	9.6	10.1	11.0
	4.8	4.8	3EB5 048 - 8 D B 3 0 - 0.	200	DC-B	20	3.6	67	9.0	9.2	9.5	10.2	10.8	11.8
Mechanical properties														
Line voltage	Height	Creepage path	Rated short-circuit current	Lighting impulse withstand voltage 1.2/50 μs	Power frequency withstand voltage, wet 1 min.	Defined short-time load SSL	Defined contin-uous load SLL	Weight	Flashover distance	Figure				
U _n	H		kA	kV	kV	N	N	kg	mm					
kV	mm	mm	kA	kV	kV	N	N	kg	mm					
AC														
15	301	920	50	175	80	3320	2320	6.4	306	B				
	281	860	65	165	75	5330	3730	10.1	288	C				
	281	860	65	165	75	5330	3730	10.1	288	C				
25	436	1420	50	250	120	2290	1600	8.7	438	B				
	389	1330	65	230	105	3850	2690	13.6	395	C				
	389	1330	65	230	105	3850	2690	14.1	395	C				
	481	1580	50	275	130	2070	1450	9.6	482	B				
	425	1480	65	250	115	3520	2470	15.1	430	C				
	425	1480	65	250	115	3520	2470	15.6	430	C				
	481	1580	50	275	130	2070	1450	9.9	482	B				
	425	1480	65	250	115	3520	2470	15.6	430	C				
	425	1480	65	250	115	3520	2470	16.0	430	C				
DC														
0.75	172	390	65	105	50	8720	6100	4.9	182	C				
	172	390	65	105	50	8720	6100	5.0	182	C				
1.5	172	390	65	105	50	8720	6100	5.1	182	C				
	172	390	65	105	50	8720	6100	5.2	182	C				
3.0	172	390	65	105	50	8720	6100	5.5	182	C				
	172	390	65	105	50	8720	6100	5.5	182	C				

3EB5 connections



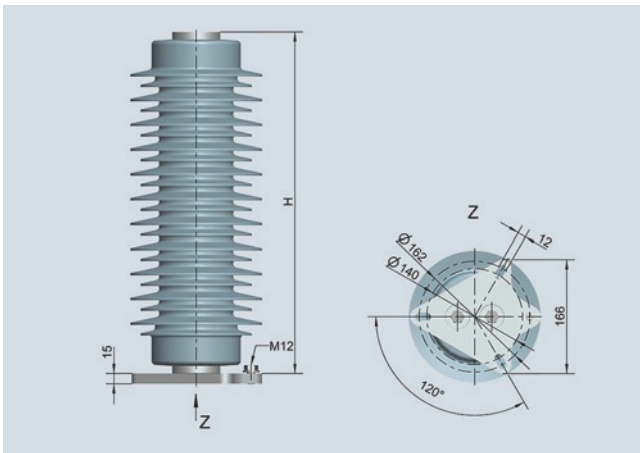
3EB5D

Figure B



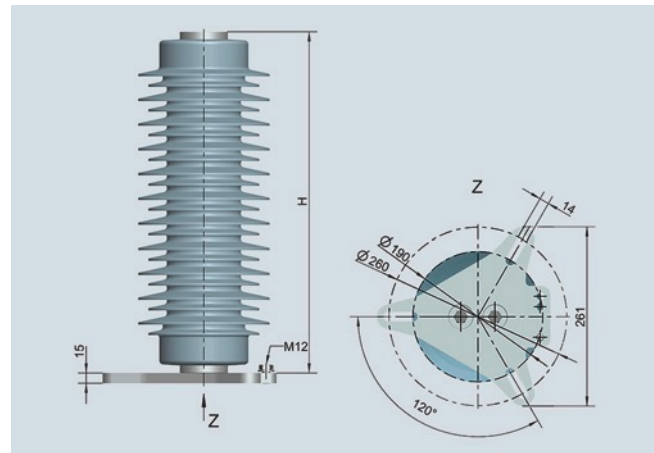
3EB5E

Figure B



3EB5D

Figure C



3EB5E

Figure C

Surge Arresters for Railway Applications

Notes

SCALANCE and RUGGEDCOM Network Components



7/2 SCALANCE X – Industrial Ethernet Switches

7/2	SCALANCE X005EEC
7/5	SCALANCE X204-2TS / SCALANCE X204-2LD TS
7/9	SCALANCE XC-200 managed
7/20	SCALANCE XP-200 managed
7/23	SCALANCE X308-2M TS
7/28	SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS
7/44	SCALANCE XM-400 managed
7/49	Port Extender for SCALANCE XM-400 managed

7/52 Communication for PC-based systems

7/52	CP 1604
------	---------

7/55 SCALANCE M / RUGGEDCOM – Mobile Wireless Routers

7/55	RUGGEDCOM RM1224
7/57	SCALANCE M876-4
7/61	ANT896-6MH

7/63 SCALANCE W – Industrial Wireless LAN

7/63	SCALANCE W774-1 M12 EEC
7/67	SCALANCE W778-1 M12 EEC
7/72	SCALANCE W786-2 RJ45 for outdoor use
7/76	SCALANCE W788-2 M12 EEC
7/80	SCALANCE W1788-2 M12 EEC
7/84	ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

7/89 RUGGEDCOM – Layer 2 Switches

7/89	RUGGEDCOM RSG907R and RSG909R
7/91	RUGGEDCOM RSG920P
7/92	RUGGEDCOM RS900G / RUGGEDCOM RS900GP
7/93	RUGGEDCOM RSG2100 / RUGGEDCOM RSG2300
7/94	RUGGEDCOM RST2228
7/96	RUGGEDCOM RSG2488

7/97 RUGGEDCOM – Layer 3 Switches / Routers

7/97	RUGGEDCOM RX1400
7/98	RUGGEDCOM RX1500 / RUGGEDCOM RX1501 / RUGGEDCOM RX1510
7/100	RUGGEDCOM RX5000

7/101 RUGGEDCOM – Wireless

7/101	RUGGEDCOM WIN7200
7/103	RUGGEDCOM WIN5100
7/105	RUGGEDCOM WIN5200

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X005EEC

Overview



The unmanaged Industrial Ethernet switch SCALANCE X005 is ideally suited for economical setup of small Industrial Ethernet networks with data transfer rates of 10/100 Mbps in line and star structures.

- Five electrical station or network connections
- Rugged metal housing for space-saving control cabinet installation on a standard mounting rail or S7-300 mounting rail or for wall mounting
- Rugged, industry-compatible station connections with RJ45 plug connectors that are locked into place on the housing to provide additional strain relief and bending relief
- Diagnostics on the device by means of LEDs (power, link status, data communication)

SCALANCE X005EEC

- For setting up electrical star and line structures with five electrical ports for use in rail and road transport with extended temperature range

Benefits

- Ideal solution for setup of small Industrial Ethernet line and star structures
- Space-saving installation in the control cabinet thanks to its compact size in S7-300 format
- Reliable plug-in connection thanks to rugged, industry-compatible device connection in combination with FastConnect connectors
- Installation without patch field is possible using IE FC RJ45 plug 180 and IE FC standard cable
- Integrated autocrossover function enables use of uncrossed connection cables

Application

- For economical setup of small, electrical Industrial Ethernet star and line structures with switching functionality, e.g. machine or plant islands
- For use in the control cabinet
- The SCALANCE X005EEC is suitable for use in rail and road transport due to its specification according to EN 50155 and e1/E1

Design

The SCALANCE Industrial Ethernet switches with a rugged metal housing (IP30) are optimized for mounting on a standard mounting rail and an S7-300 mounting rail. Direct wall mounting in different mounting positions is also possible. Due to the housing dimensions, which correspond to those of the SIMATIC S7-300, the devices are very well suited for integration into an automation solution with S7-300 components.

The SCALANCE X005 switch is equipped with:

- Supply voltage 1 x 24 V DC
- A row of LEDs for displaying status information (power, link status, data communication)
- 5 x 10/100BaseTX, RJ45 ports: automatic detection of the data rate (10 or 100 Mbps), with autosensing and autocrossover function for connecting IE FC cables via IE FC RJ45 Plug 180 up to 100 m

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X005EEC

Technical specifications

Article number	6GK5005-0BA10-1CA3
Product type designation	SCALANCE X005EEC
Transmission rate	
Transmission rate	10 Mbps / 100 Mbps
Integrated interfaces for communication	
Number of electrical connections	5; RJ45 with securing collar
• for network components or data terminal equipment	
Number of 100 Mbps SC ports	
• for multimode	
Number of 1000 Mbps LC ports	0
• for multimode	0
• for single-mode (LD)	0
Other interfaces	
Number of electrical connections	1
• for power supply	
Type of electrical connection	2-pin terminal block
• for power supply	
Supply voltage, current consumption, power loss	
Type of supply voltage	DC
Supply voltage	
• External	24 V
• External	18 ... 32 V
Product component: fusing at power supply input	Yes
Type of fusing at input for supply voltage	0.5 A / 60 V
Current consumption, maximum	0.08 A
Power loss [W]	
• with 24 V DC	2 Watts
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +75°C
• during storage	-40 ... +80°C
• during transport	-40 ... +80°C
Relative humidity	
• Relative humidity at 25 °C, without condensation during operation, maximum	95%
IP degree of protection	IP30
Design, dimensions and weights	
Model	Compact
Width	40 mm
Height	125 mm
Depth	124 mm
Net weight	0.55 kg
Product property: conformal coating	No
Mounting type	
• 35 mm DIN rail mounting	Yes
• Wall mounting	Yes
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No

Article number	6GK5005-0BA10-1CA3
Product type designation	SCALANCE X005EEC
Product functions - Management, configuration, engineering	
Product function	
• Multiport mirroring	No
• CoS	Yes
• Switch-managed	No
Product functions - Redundancy	
Product function	
• Parallel Redundancy Protocol (PRP)/use in PRP network	Yes
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No
Standards, specifications, approvals	
Standard	
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for emitted interference	EN 61000-6-4 (Class A)
• for noise immunity	EN 61000-6-2
Standards, specifications, approvals - CE	
Proof of suitability, CE mark	Yes
Standards, specifications, approvals - Other	
Proof of suitability	EN 61000-6-2, EN 61000-6-4
• C-Tick	Yes
• E1 approval	Yes
• e1 approval	Yes
• Railway application in accordance with EN 50155	Yes
• KC approval	Yes
Standards, specifications, approvals - Marine classification	
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• Bureau Veritas (BV)	Yes
• Det Norske Veritas (DNV)	Yes
• Germanischer Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	Yes
• Royal Institution of Naval Architects (RINA)	Yes
Standards, specifications, approvals - Product conformity	
MTBF at 40 °C	167.1 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X005EEC

Selection and ordering data

SCALANCE X005EEC

Industrial Ethernet switch for 10/100 Mbps; with five 10/100 Mbps RJ45 ports for setup of small star and line structures with extended temperature range and approvals for use in rail and road transport

6GK5005-0BA10-1CA3

Accessories

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

IE Connecting Cable IE FC RJ45 Plug-180/ IE FC RJ45 Plug-180

Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection; length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

2-pole screw-terminal block for power supply (24 V DC)

for SCALANCE X/W/S
1 pack = 5 units

6GK5980-0BB00-0AA5

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version:
<http://www.siemens.com/snst>
- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Overview

The managed Industrial Ethernet switches of the SCALANCE X-200 line are optimally suited for setup of Industrial Ethernet networks with transmission rates of 10/100 Mbps in line, star and ring structures.

- Integrated redundancy manager for setup of Fast Ethernet ring topologies with fast media redundancy
- Electrical or optical station or network connection depending on the port type of the devices
- Rugged metal housing in S7-300 format for mounting on standard mounting rail or S7-300 mounting rail or for direct wall mounting in different mounting positions
- Rugged, industry-compatible station connections with RJ45 plug connectors that are locked into place on the housing to provide additional strain relief and bending relief
- Redundant power supply
- Diagnostics on the device by means of LEDs (power, link status, data communication)
- Error signaling contact with easy setting using SET button
- PROFINET diagnostics, SNMP access, integrated web server and automatic e-mail transmission function for remote diagnostics and signaling via the network

Product versions

- Switches with electrical and optical ports for glass multimode FOC up to 5 km:
 - [SCALANCE X204-2TS](#) for setup of optical line or ring structures with four electrical ports and two optical multimode ports especially for railway applications (EN 50155) with extended temperature range
- Switches with electrical and optical ports for glass single mode FOC up to 26 km:
 - [SCALANCE X204-2LD TS](#) for setup of optical line or ring structures with four electrical ports and two optical single-mode ports especially for railway applications (EN 50155) with extended temperature range

Benefits

- Ideal solution for setup of Industrial Ethernet line, star and ring structures
- Reliable plug-in connection thanks to rugged, industry-compatible device connection in combination with FastConnect connectors
- High network availability through setup of redundant ring structures (redundancy manager integrated)
- Integration of the SCALANCE X-200 switches in the existing network management infrastructure through SNMP access
- Module replacement without a programming device by using the C-PLUG removable data storage medium for backing up the configuration data

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X204-2TS / SCALANCE X204-2LD TS

Technical specifications

Article number	6GK5204-2BB10-2CA2	6GK5204-2BC10-2CA2
Product type designation	SCALANCE X204-2TS	SCALANCE X204-2LD TS
Transmission rate		
Transmission rate	10 Mbps, 100 Mbps	10 Mbps, 100 Mbps
Integrated interfaces for communication		
Number of electrical connections		
• for network components or data terminal equipment	4	4
Number of 100 Mbps ST(BFOC) ports		
• for multimode	2	
• for single-mode (LD)	--	2
Number of 100 Mbps SC ports		
• for multimode	0	0
Number of 1000 Mbps LC ports		
• for multimode	0	0
• for single-mode (LD)	0	0
Other interfaces		
Number of electrical connections		
• for signaling contact	1	1
• for power supply	1	1
• for redundant power supply	1	1
Type of electrical connection		
• for signaling contact	2-pin terminal block	2-pin terminal block
• for power supply	4-pin terminal block	4-pin terminal block
Type of removable data storage medium		
• C-PLUG	Yes	Yes
Signal inputs/outputs		
Operating current of the signaling contacts		
• with DC, nominal value	24 V	24 V
Operating current of the signaling contacts		
• with DC, maximum	0.05 A	0.05 A
Supply voltage, current consumption, power loss		
Type of supply voltage	DC	DC
Supply voltage		
• External	12 V	12 V
• External	10 ... 30 V	10 ... 30 V
Supply voltage with DC	24 V	24 V
• Rated value	10 ... 30 V	10 ... 30 V
Product component: fusing at power supply input	Yes	Yes
Type of fusing at input for supply voltage	3 A / 32 V	3 A / 32 V
Current consumption, maximum	0.6 A	0.6 A
Power loss [W]		
• with 24 V DC	6.6 W	6.6 W

Article number	6GK5204-2BB10-2CA2	6GK5204-2BC10-2CA2
Product type designation	SCALANCE X204-2TS	SCALANCE X204-2LD TS
Permissible ambient conditions		
Ambient temperature		
• during operation	-40 ... +70 °C	-40 ... +60 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
• Remark	In the case of horizontal mounting position of the IE switch X-204-2TS, a maximum ambient temperature of +40 °C is permitted	In the case of horizontal mounting position of the IE switch X-204-2LD-TS, a maximum ambient temperature of +40 °C is permitted
Relative humidity		
• Relative humidity at 25 °C, without condensation during operation, maximum	95%	95%
IP degree of protection	IP20	IP20
Design, dimensions and weights		
Model	Compact	Compact
Width	60 mm	60 mm
Height	125 mm	125 mm
Depth	124 mm	124 mm
Net weight	0.78 kg	0.78 kg
Product property: conformal coating	Yes	Yes
Mounting type		
• 35 mm DIN rail mounting	Yes	Yes
• Wall mounting	Yes	Yes
• S7-300 rail mounting	Yes	Yes
• S7-1500 rail mounting	No	No
Product properties, functions, components - General		
Cascading with redundant ring and reconfiguration time of < 0.3 s	100	100
Cascading with star structure	Any (only dependent on signal propagation time)	Any (only dependent on signal propagation time)
Product functions - Management, configuration, engineering		
Product function		
• CLI	Yes	Yes
• Web-based management	Yes	Yes
• MIB support	Yes	Yes
• TRAPs via e-mail	Yes	Yes
• Configuration with STEP 7	Yes	Yes
• Port mirroring	Yes	Yes
• Multiport mirroring	No	No
• for IRT PROFINET IO switch	No	No
• PROFINET IO diagnostics	Yes	Yes
• Switch-managed	Yes	Yes
Protocol is supported		
• Telnet	Yes	Yes
• HTTP	Yes	Yes
• HTTPS	Yes	Yes
• TFTP	Yes	Yes
• FTP	Yes	Yes
• BOOTP	No	No
• DCP	Yes	Yes
• LLDP	Yes	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X204-2TS / SCALANCE X204-2LD TS

Article number	6GK5204-2BB10-2CA2	6GK5204-2BC10-2CA2
Product type designation	SCALANCE X204-2TS	SCALANCE X204-2LD TS
Product functions - Management, configuration, engineering (continued)		
Identification & Maintenance function		
• I&MO - Device-specific information	Yes	Yes
• I&M1 - Higher level designation/location designation	Yes	Yes
Protocol is supported		
• SNMP v1	Yes	Yes
• SNMP v2	Yes	Yes
• SNMP v3	Yes	Yes
Product functions - Diagnostics		
Product function		
• Port diagnostics	Yes	Yes
• Packet size statistics	Yes	Yes
• Packet type statistics	Yes	Yes
• Error statistics	Yes	Yes
Product functions - DHCP		
Product function		
• DHCP client	Yes	Yes
Product functions - Redundancy		
Product function		
• Ring redundancy	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes
• High Speed Redundancy Protocol (HRP) with redundancy manager	Yes	Yes
• High Speed Redundancy Protocol (HRP) with standby redundancy	No	No
Media Redundancy Protocol (MRP) is supported	Yes	Yes
Product function		
• Media Redundancy Protocol (MRP) with redundancy manager	Yes	Yes
• Parallel Redundancy Protocol (PRP)/use in PRP network	Yes	
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No	
• Passive listening	Yes	Yes
Product functions - Security		
Protocol is supported		
• SSH	Yes	Yes
Product functions - Time of day		
Product function		
• SICLOCK support	Yes	Yes
Protocol is supported		
• NTP	No	No
• SNTP	Yes	Yes

Article number	6GK5204-2BB10-2CA2	6GK5204-2BC10-2CA2
Product type designation	SCALANCE X204-2TS	SCALANCE X204-2LD TS
Standards, specifications, approvals		
Standard		
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, CL.1, Zone 2, GP. IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, CL.1, Zone 2, GP. IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 (2) G Ex nA [op is] IIC T4, KEMA 07 ATEX 0145 X	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	ANSI / ISA 12.12.01, CSA C22.2 No. 213-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4	ANSI / ISA 12.12.01, CSA C22.2 No. 213-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4
• for emitted interference	EN 61000-6-4 (Class A)	EN 61000-6-4 (Class A)
• for noise immunity	EN 61000-6-2	EN 61000-6-2
Standards, specifications, approvals - CE		
Proof of suitability, CE mark	Yes	Yes
Standards, specifications, approvals - Other		
Proof of suitability	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4
• C-Tick	Yes	Yes
• Railway application in accordance with EN 50155	Yes	Yes
• Railway application in accordance with EN 50121-4	Yes	Yes
• Railway application in accordance with EN 50124-1	No	No
• KC approval	Yes	Yes
Standards, specifications, approvals - Marine classification		
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)		No
• Bureau Veritas (BV)		No
• Det Norske Veritas (DNV)		Yes
• Germanischer Lloyd (GL)		No
• Lloyds Register of Shipping (LRS)		Yes
• Nippon Kaiji Kyokai (NK)		Yes
• Polski Rejestr Statkow (PRS)		Yes
• Royal Institution of Naval Architects (RINA)		Yes
Standards, specifications, approvals - Product conformity		
MTBF at 40 °C	72.99 y	85.01 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X204-2TS / SCALANCE X204-2LD TS

Selection and ordering data

Industrial Ethernet switches SCALANCE X-200

Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, for setup of line, star and ring structures; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

- With electrical and optical ports for glass multimode FOC up to max. 5 km
 - **SCALANCE X204-2TS** with four 10/100 Mbps RJ45 ports and two multimode FOC ports with extended temperature range and EN 50155 approval for railway applications
- With electrical and optical glass single mode FOC ports up to max. 26 km
 - **SCALANCE X204-2LD TS** with four 10/100 Mbps RJ45 ports and two single-mode FOC ports with extended temperature range and EN 50155 approval for railway applications

6GK5204-2BB10-2CA2

6GK5204-2BC10-2CA2

Accessories

C-PLUG

Removable data storage medium (conformal coating) for easy replacement of devices under fault conditions; for recording configuration data or engineering and application data; can be used in SIMATIC NET products with C-PLUG slot

6GK1900-0AQ00

S7-1500 Mounting Kit

Mounting bracket for installation of SCALANCE X-200 on S7-1500 mounting rail

6GK5980-2EA00-0AA1

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

RJ45 plug connector for Industrial Ethernet with rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications; PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

IE Connecting Cable IE FC RJ45 Plug-180/ IE FC RJ45 Plug-180

Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection; Length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

FC FO Termination Kit

Termination kit for local assembly of FC SC and FC BFOC connectors to FC FO standard cable; contains a stripping tool, Kevlar cutters, fiber breaking tool and microscope

6GK1900-1GL00-0AA0

FC BFOC Plug

Screw connector for on-site assembly on FC fiber-optic cable; (1 pack = 20 units + cleaning cloths)

6GK1900-1GB00-0AC0

FC FO Standard Cable GP 62.5/200/230

FC FO standard cable for fixed installation indoors with PVC sheath; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1847-2A

Multimode FO BFOC Connector Set

For FO standard cable (50/125/1400), FO ground cable (50/125/1400), flexible FO trailing cable, INDOOR FO cable (62.5/125/900), 20 units

6GK1901-0DA20-0AA0

FO Standard Cable GP 50/125/1400^{1) 2)}

Multimode cable sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1873-2A

Screw-Type Terminal Block

For SCALANCE X/W/S

- 2-pole for signaling contact (24 V DC)
1 pack = 5 units
- 4-pole for power supply (24 V DC)
1 pack = 5 units

6GK5980-0BB00-0AA5

6GK5980-1DB00-0AA5

- ¹⁾ Special fiber-optic cables, lengths and accessories available on request
²⁾ Special tools and specially trained personnel are required for assembling glass FOC

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version:
<http://www.siemens.com/snst>
- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Overview



The managed Industrial Ethernet switches of the SCALANCE XC-200 product line are optimized for setting up Industrial Ethernet networks with data transfer rates of 10/100 Mbps in a line, star or ring topology. Furthermore, high-performance optical structures with up to 1 000 Mbps can be set up with the SCALANCE XC206-2SFP.

- Electrical or optical connection to stations or networks according to port characteristics of the devices
- Version with SFP plug-in transceivers for transmission rates up to 1 000 Mbps
- Rugged station connections with industry-standard RJ45 connectors that offer additional strain and bending strain relief thanks to latching on the enclosure
- Redundant power supply
- Console port for direct access to device
- Display of comprehensive operating mode and status information via LEDs and selection pushbuttons
- Signaling contact for connecting to an error signaling system
- Slot for optional C-PLUG removable data storage medium for easy device replacement without additional equipment such as a field PG
- Grounding screw for external ground connection
- Virtual LANs (VLAN) for easy structuring of large networks into smaller, logical subnetworks. Reasons for the subdivision into logical subnetworks are, for example, separation of the Ethernet networks to reduce the broadcast load, separation of sensitive areas from the main network, and subdivision of the network into logical working groups
- By learning the multicast sources and destinations (Internet Group Management Protocol (IGMP) Snooping), SCALANCE XC-200 switches can also filter multicast data traffic and thus limit the load on the network
- Integrated security functions offer protection against unauthorized network access and configuration (e.g. authentication via IEEE 802.1X)

Product versions

- Switches with electrical ports:
 - SCALANCE XC208; with 8x RJ45 ports 10/100 Mbps for mounting in the control cabinet
 - SCALANCE XC216; with 16x RJ45 ports 10/100 Mbps for mounting in the control cabinet
 - SCALANCE XC224; with 24x RJ45 ports 10/100 Mbps for mounting in the control cabinet
- Switches with electrical and optical ports
 - SCALANCE XC206-2; with 6x RJ45 ports 10/100 Mbps and 2x ST/BFOC ports 100 Mbps
 - SCALANCE XC206-2; with 6x RJ45 ports 10/100 Mbps and 2x SC ports 100 Mbps
 - SCALANCE XC206-2SFP; with 6x RJ45 ports 10/100 Mbps and 2x SFP plug-in transceivers with 100 or 1 000 Mbps

Benefits

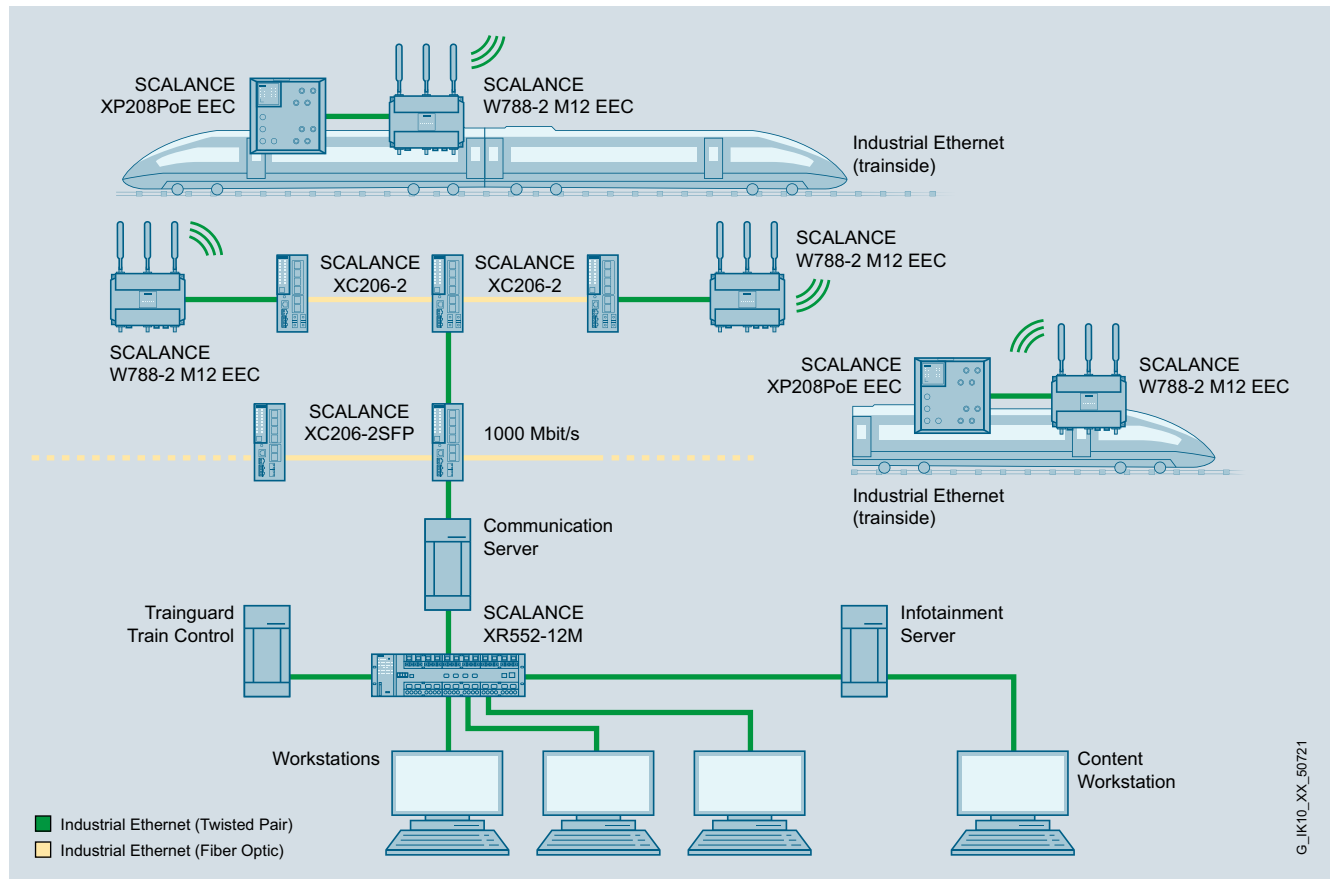
- Operational reliability in industrial environments, e.g. due to rugged enclosure, redundancy, temperature range from -40 °C to +70 °C
- Fast mobile diagnostics by smartphone or tablet in existing WLAN using NFC (near field communication)
- Integration of SCALANCE XC-200 switches into existing network management infrastructure (e.g. SINEMA Server) through SNMP access thanks to rugged, industry-standard device connects
- Reliable plug-in connection in conjunction with industry-standard FastConnect connectors

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Function



Set-up of distributed access points along track segments with SCALANCE XC206-2SFP

Technical specifications

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Transmission rate			
Transfer rate	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s
Interfaces for communication integrated			
Number of electrical connections	6; RJ45	6; RJ45	6; RJ45
Number of 10/100 Mbit/s RJ45 ports Integrated			
• with securing collar	6	6	6
Number of 100 Mbit/s ST(BFOC) ports			
• for multimode	2		
Number of 100 Mbit/s SC ports			
• for multimode		2	
Interfaces for communication pluggable maximum			
Number of electrical connections			
• for SFP			2; 100 Mbit/s or 1000 Mbit/s SFP plug-in transceiver
Interfaces others			
Number of electrical connections			
• for operator console	1	1	1
• for signaling contact	1	1	1
• for power supply	1	1	1
• for redundant voltage supply	1	1	1

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Type of electrical connection	RJ11	RJ11	RJ11
• for operator console	2-pole terminal block	2-pole terminal block	2-pole terminal block
• for signaling contact	4-pole terminal block	4-pole terminal block	4-pole terminal block
• for power supply			
design of the removable storage			
• C-PLUG	Yes	Yes	Yes
Signal-Inputs/outputs			
Operating voltage of the signaling contacts			
• at DC Rated value	24 V	24 V	24 V
Operating current of the signaling contacts			
• at DC maximum	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss			
Type of voltage of the supply voltage	DC	DC	DC
Supply voltage			
• external	24 V	24 V	24 V
• external minimum	9.6 V	9.6 V	9.6 V
• external maximum	31.2 V	31.2 V	31.2 V
Supply voltage 4 Rated value			
• Consumed current 4 at rated supply voltage maximum	0.25 A	0.25 A	0.25 A
Product component fusing at power supply input	Yes	Yes	Yes
Fuse protection type at input for supply voltage	2.5 A / 125 V	2.5 A / 125 V	2.5 A / 125 V
Consumed current maximum	0.5 A	0.5 A	0.5 A
Power loss [W]			
• at DC at 24 V	6 W	6 W	6 W
Permitted ambient conditions			
Ambient temperature			
• during operation	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Relative humidity			
• at 25 °C without condensation during operation maximum	95 %	95 %	95 %
Protection class IP	IP20	IP20	IP20
Design, dimensions and weight			
Design	compact	compact	compact
Width	60 mm	60 mm	60 mm
Height	147 mm	147 mm	147 mm
Depth	125 mm	125 mm	125 mm
Net weight	0.54 kg	0.54 kg	0.52 kg
Material of the enclosure	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum
Mounting type			
• 35 mm DIN rail mounting	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes
• S7-300 rail mounting	Yes	Yes	Yes
• S7-1500 rail mounting	Yes	Yes	Yes
Product properties, functions, components general			
Cascading in the case of a redundant ring at reconfiguration time of < \sim 0.3 \sim s	50	50	50
Cascading in cases of star topology	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)
Product function QoS according to DSCP	Yes	Yes	Yes
Product feature			
• Cut Through switching method	No	No	No
• Store & Forward switching method	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Product functions management, configuration			
Product function			
• CLI	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes
• Configuration with STEP 7	Yes	Yes	Yes
• RMON	Yes	Yes	Yes
• SMTP server	No	No	No
• Port mirroring	Yes	Yes	Yes
• multiport mirroring	Yes	Yes	Yes
• CoS	Yes	Yes	Yes
• PROFINET IO diagnosis	Yes	Yes	Yes
• switch-managed	Yes	Yes	Yes
Telegram length for Ethernet maximum	1 632 byte	1 632 byte	1 632 byte
Protocol is supported			
• Telnet	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes
• BOOTP	No	No	No
• GMRP	Yes	Yes	Yes
• DCP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
• EtherNet/IP	Yes	Yes	Yes
• SNMP v1	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes
• IGMP (snooping/querier)	Yes	Yes	Yes
Identification & maintenance function			
• I&M0 - device-specific information	Yes	Yes	Yes
• I&M1 – higher-level designation/location designation	Yes	Yes	Yes
Product functions Diagnosis			
Product function			
• Port diagnostics	Yes	Yes	Yes
• Statistics Packet Size	Yes	Yes	Yes
• Statistics packet type	Yes	Yes	Yes
• Error statistics	Yes	Yes	Yes
• SysLog	Yes	Yes	Yes
Product functions VLAN			
Product function			
• VLAN - port based	Yes	Yes	Yes
• VLAN - protocol-based	No	No	No
• VLAN - IP-based	No	No	No
• VLAN dynamic	Yes	Yes	Yes
Number of VLANs maximum	257	257	257
Number of VLANs - dynamic maximum	257	257	257
Protocol is supported GVRP	Yes	Yes	Yes
Product functions DHCP			
Product function			
• DHCP server	Yes	Yes	Yes
• DHCP client	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes
• DHCP Option 66	Yes	Yes	Yes
• DHCP Option 67	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Product functions Redundancy			
Product function			
• Ring redundancy	Yes	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with redundancy manager	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with standby redundancy	Yes	Yes	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes	Yes
Product function			
• media redundancy protocol (MRP) with redundancy manager	Yes	Yes	Yes
• redundancy procedure STP	Yes	Yes	Yes
• redundancy procedure RSTP	Yes	Yes	Yes
• redundancy procedure MSTP	Yes	Yes	Yes
• Passive listening	Yes	Yes	Yes
Protocol is supported			
• LACP	Yes	Yes	Yes
Product functions Security			
Product function			
• IEEE 802.1x (radius)	Yes	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	Yes	Yes	Yes
• broadcast blocking	Yes	Yes	Yes
Protocol is supported			
• SSH	Yes	Yes	Yes
• SSL	Yes	Yes	Yes
Product functions Time			
Product function			
• SICLOCK support	Yes	Yes	Yes
• NTP-client	Yes	Yes	Yes
• SNTP client	Yes	Yes	Yes
Protocol is supported			
• NTP	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes
Standards, specifications, approvals CE			
Certificate of suitability CE marking	Yes	Yes	Yes
Product conformity according to EMC-guideline	2014/30/EU	2014/30/EU	2014/30/EU
Standard			
• for EMC interference emission	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4
• for immunity to EMI	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4
Certificate of suitability RoHS conformity	Yes; 2011/65/EU	Yes; 2011/65/EU	Yes; 2011/65/EU
Standards, specifications, approvals hazardous environments			
Certificate of suitability			
• ATEX	Yes	Yes	Yes
• IECEX	Yes	Yes	Yes
• FM registration	Yes	Yes	Yes
Standards, specifications, approvals miscellaneous			
Certificate of suitability			
• Railway application in accordance with EN 50121-4	Yes	Yes	Yes
• Regulatory Compliance Mark (RCM)	Yes	Yes	Yes
• EAC approval	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5206-2BB00-2AC2	6GK5206-2BD00-2AC2	6GK5206-2BS00-2AC2
Product type designation	SCALANCE XC206-2 (ST/BFOC)	SCALANCE XC206-2 (SC)	SCALANCE XC206-2SFP
Standards, specifications, approvals ship classification			
Marine classification association			
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes
• DNV GL	Yes	Yes	Yes
• Polski Rejestr Statkow (PRS)	Yes	Yes	Yes
Standards, specifications, approvals product conformity			
MTBF at 40 °C	46.43 y	46.43 y	47.06 y
Accessories			
Product extension optional C-PLUG	Yes	Yes	Yes
Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Transmission rate			
Transfer rate	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s	10 Mbit/s, 100 Mbit/s
Interfaces for communication integrated			
Number of electrical connections			
• for network components or terminal equipment	8; RJ45	16; RJ45	24; RJ45
Number of 10/100 Mbit/s RJ45 ports Integrated			
• with securing collar	8	16	24
Interfaces others			
Number of electrical connections			
• for operator console	1	1	1
• for signaling contact	1	1	1
• for power supply	1	1	1
• for redundant voltage supply	1	1	1
Type of electrical connection			
• for operator console	RJ11	RJ11	RJ11
• for signaling contact	2-pole terminal block	2-pole terminal block	2-pole terminal block
• for power supply	4-pole terminal block	4-pole terminal block	4-pole terminal block
design of the removable storage			
• C-PLUG	Yes	Yes	Yes
Signal-Inputs/outputs			
Operating voltage of the signaling contacts			
• at DC Rated value	24 V	24 V	24 V
Operating current of the signaling contacts			
• at DC maximum	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss			
Type of voltage of the supply voltage	DC	DC	DC
Supply voltage			
• external	24 V	24 V	24 V
• external minimum	9.6 V	9.6 V	9.6 V
• external maximum	31.2 V	31.2 V	31.2 V
Supply voltage 4 Rated value			
• Consumed current 4 at rated supply voltage maximum	0.175 A	0.275 A	0.375 A
Product component fusing at power supply input	Yes	Yes	Yes
Fuse protection type at input for supply voltage	2.5 A / 125 V	2.5 A / 125 V	2.5 A / 125 V
Consumed current maximum	0.35 A	0.55 A	0.75 A
Power loss [W]			
• at DC at 24 V	4.2 W	6.6 W	9 W

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Permitted ambient conditions			
Ambient temperature			
• during operation	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Relative humidity			
• at 25 °C without condensation during operation maximum	95 %	95 %	95 %
Protection class IP	IP20	IP20	IP20
Design, dimensions and weight			
Design	compact	compact	compact
Width	60 mm	120 mm	120 mm
Height	147 mm	147 mm	147 mm
Depth	125 mm	125 mm	125 mm
Net weight	0.52 kg	0.8 kg	0.88 kg
Material of the enclosure	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum	Polycarbonate (PC-GF10) / pressure die cast aluminum
Mounting type			
• 35 mm DIN rail mounting	Yes	Yes	Yes
• wall mounting	Yes	Yes	Yes
• S7-300 rail mounting	Yes	Yes	Yes
• S7-1500 rail mounting	Yes	Yes	Yes
Product properties, functions, components general			
Cascading in the case of a redundant ring at reconfiguration time of < \-0.3\~s	50	50	50
Cascading in cases of star topology	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)
Product function QoS according to DSCP		Yes	Yes
Product feature			
• Cut Through switching method	No	No	No
• Store & Forward switching method	Yes	Yes	Yes
Product functions management, configuration			
Product function			
• CLI	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes
• Configuration with STEP 7	Yes	Yes	Yes
• RMON	Yes	Yes	Yes
• SMTP server	No	No	No
• Port mirroring	Yes	Yes	Yes
• multiport mirroring	Yes	Yes	Yes
• CoS	Yes	Yes	Yes
• PROFINET IO diagnosis	Yes	Yes	Yes
• switch-managed	Yes	Yes	Yes
Telegram length for Ethernet maximum	1 632 byte	1 632 byte	1 632 byte
Protocol is supported			
• Telnet	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes
• BOOTP	No	No	No
• GMRP	Yes	Yes	Yes
• DCP	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes
• EtherNet/IP	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
• SNMP v1	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes
• IGMP (snooping/querier)	Yes	Yes	Yes
Identification & maintenance function			
• I&M0 - device-specific information	Yes	Yes	Yes
• I&M1 – higher-level designation/location designation	Yes	Yes	Yes
Product functions Diagnosis			
Product function			
• Port diagnostics	Yes	Yes	Yes
• Statistics Packet Size	Yes	Yes	Yes
• Statistics packet type	Yes	Yes	Yes
• Error statistics	Yes	Yes	Yes
• SysLog	Yes	Yes	Yes
Product functions VLAN			
Product function			
• VLAN - port based	Yes	Yes	Yes
• VLAN - protocol-based	No	No	No
• VLAN - IP-based	No	No	No
• VLAN dynamic	Yes	Yes	Yes
Number of VLANs maximum	257	257	257
Number of VLANs - dynamic maximum	257	257	257
Protocol is supported GVRP	Yes	Yes	Yes
Product functions DHCP			
Product function			
• DHCP server	Yes	Yes	Yes
• DHCP client	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes
• DHCP Option 66	Yes	Yes	Yes
• DHCP Option 67	Yes	Yes	Yes
Product functions Redundancy			
Product function			
• Ring redundancy	Yes	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with redundancy manager	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with standby redundancy	Yes	Yes	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes	Yes
Product function			
• media redundancy protocol (MRP) with redundancy manager	Yes	Yes	Yes
• redundancy procedure STP	Yes	Yes	Yes
• redundancy procedure RSTP	Yes	Yes	Yes
• redundancy procedure MSTP	Yes	Yes	Yes
• Parallel Redundancy Protocol (PRP)/operation in the PRP-network	No	No	No
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No	No	No
• Passive listening	Yes	Yes	Yes
Protocol is supported			
• LACP	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Article number	6GK5208-0BA00-2AC2	6GK5216-0BA00-2AC2	6GK5224-0BA00-2AC2
Product type designation	SCALANCE XC208	SCALANCE XC216	SCALANCE XC224
Product functions Security			
Product function			
• IEEE 802.1x (radius)	Yes	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	Yes	Yes	Yes
• broadcast blocking	Yes	Yes	Yes
Protocol is supported			
• SSH	Yes	Yes	Yes
• SSL	Yes	Yes	Yes
Product functions Time			
Product function			
• SICLOCK support	Yes	Yes	Yes
• NTP-client	Yes	Yes	Yes
• SNTP client	Yes	Yes	Yes
Protocol is supported			
• NTP	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes
Standards, specifications, approvals CE			
Certificate of suitability CE marking	Yes	Yes	Yes
Product conformity according to EMC-guideline	2014/30/EU	2014/30/EU	2014/30/EU
Standard			
• for EMC interference emission	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4	EN 61000-6-4, EN 50121-4
• for immunity to EMI	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4	EN 61000-6-2, EN 50121-4
Certificate of suitability RoHS conformity	Yes; 2011/65/EU	Yes; 2011/65/EU	Yes; 2011/65/EU
Standards, specifications, approvals miscellaneous			
Certificate of suitability			
• Railway application in accordance with EN 50121-4	Yes	Yes	Yes
• Regulatory Compliance Mark (RCM)	Yes	Yes	Yes
• EAC approval	Yes	Yes	Yes
Standards, specifications, approvals product conformity			
MTBF at 40 °C	57.15 y	48.09 y	41.36 y
Accessories			
Product extension optional C-PLUG	Yes	Yes	Yes

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

Selection and ordering data

SCALANCE XC-200 Industrial Ethernet switches

Industrial Ethernet switches with integrated SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

- **SCALANCE XC206-2 (ST/BFOC)**
with six RJ45 ports 10/100 Mbps and two ST/BFOC ports 100 Mbps
- **SCALANCE XC206-2 (SC)**
with six RJ45 ports 10/100 Mbps and two SC ports 100 Mbps
- **SCALANCE XC206-2SFP**
with six RJ45 ports 10/100 Mbps and two SFP slots for SFPs with 100 or 1 000 Mbps
- **SCALANCE XC208**
with eight RJ45 ports 10/100 Mbps
- **SCALANCE XC216**
with sixteen RJ45 ports 10/100 Mbps
- **SCALANCE XC224**
with twenty-four RJ45 ports 10/100 Mbps

6GK5206-2BB00-2AC2

6GK5206-2BD00-2AC2

6GK5206-2BS00-2AC2

6GK5208-0BA00-2AC2

6GK5216-0BA00-2AC2

6GK5224-0BA00-2AC2

Accessories

FC RJ 45 port lock

Mechanical locking of unused RJ45 ports at network components and end devices. For use on devices with and without retaining collar²⁾

6GK1901-1BB50-0AA0

C-PLUG

Removable data storage medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot

- 1 pack = 1 unit

6GK1900-0AB10

Push-in terminal block

For Scalance X/W/S

- 2-pin for signaling contact (24 V DC)
1 pack = 5 units
- 4-pin for power supply (24 V DC)
1 pack = 5 units

6GK5980-0BB10-0AA5

6GK5980-1DB10-0AA5

Screw-type terminal block

For Scalance X/W/S

- 2-pin for signaling contact (24 V DC)
1 pack = 5 units
- 4-pin for power supply (24 V DC)
1 pack = 5 units

6GK5980-0BB00-0AA5

6GK5980-1DB00-0AA5

Fixing screw

for SCALANCE X/W

Screw for mounting on an S7-1500 and S7-300 mounting rail
1 pack = 5 units

6GK5980-4AA00-0AA5

SFP plug-in transceiver

See "Plug-in transceivers for SCALANCE XR-500" / "Media modules for modular SCALANCE X-500"

IE FC RJ45 plug 180 2x2

Industrial Ethernet FastConnect RJ45 plug 180 2x2, RJ45 connector (10/100 Mbps) with rugged metal enclosure and FC connection technology, for IE FC cable 2x2 180° cable outlet
1 pack = 1 unit

6GK1901-1BB10-2AA0

IE FC RJ45 plug 4x2

RJ45 plug-in data connector (10/100/1000 Mbps), for connection to IE FC TP cables 4x2, with rugged metal enclosure and FastConnect connection technology

6GK1901-1BB11-2AA0

IE FC TP standard cable GP 2 x 2 (Type A)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1 000 m, minimum order 20 m

6XV1840-2AH10

IE FC TP standard cable GP 4X2

TP installation cable Cat 6 for connection to IE FC RJ45 plug 4x2, AWG24, sold by the meter; max. length 1 000 m, minimum order quantity 20 m

6XV1878-2A

IE FC TP standard cable GP 4x2

Shielded TP installation cable capable of 1 000 Mbps, for connection to FC RJ45 modular outlet, 8-wire, AWG22, with rigid cores for final assembly

6XV1870-2E

IE connecting cable IE FC RJ45 plug 180/IE FC RJ45 plug 180

IE FC trailing cable GP, preassembled with 2x IE FC RJ45 plugs 180; length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

FastConnect stripping tool

Industrial Ethernet FastConnect stripping tool, for fast stripping of the Industrial Ethernet FastConnect cable

6GK1901-1GA00

FC FO standard cable GP 62.5/200/230^{1) 2)}

FC FO standard cable (62.5/200/230) for field assembly, cULus approval, standard cable divisible

6XV1847-2A

FO standard cable GP 50/125/1400^{1) 2)}

Multimode cable, sold by the meter; max. length 1 000 m; minimum order 20 m

6XV1873-2A

¹⁾ Special fiber-optic cables; lengths and accessories available on request

²⁾ Special tools and trained personnel are required for pre-assembling glass fiber-optic cables

Network Components

SCALANCE X - Industrial Ethernet Switches

SCALANCE XC-200 managed

MM FO cord LC/LC 50/125; preassembled with 2x2 LC duplex connectors; length 1.0 m	6XV1843-5EH10-0AA0
MM FO cord SC/LC 50/125; preassembled with 1x SC duplex connector and 1x LC duplex connector; length 1.0 m	6XV1843-5EH10-0CA0
MM FO cord SC/BFOC 50/125; preassembled with 1x SC duplex connector and 1x BFOC connector; length 1.0 m	6XV1843-5EH10-0CB0
MM FO cord SC/SC 50/125; preassembled with 2x SC duplex connectors; length 1.0 m	6XV1843-5EH10-0CC0
MM FO cord LC/LC 9/125; preassembled with 2x2 LC duplex connectors; length 1.0 m	6XV1843-5FH10-0AA0
MM FO cord SC/LC 9/125; preassembled with 1x SC duplex connector and 1x LC duplex connector; length 1.0 m	6XV1843-5FH10-0CA0
MM FO cord SC/BFOC 9/125; preassembled with 1x SC duplex connector and 1x BFOC connector; length 1.0 m	6XV1843-5FH10-0CB0
MM FO cord SC/SC 9/125; preassembled with 2x2 SC duplex connectors; length 1.0 m	6XV1843-5FH10-0CC0
MM FO robust cable GP FO robust cable GP 50/125, preassembled with 2 x LC duplex connectors Length: • 1.0 m • 2.0 m • 3.0 m • 10.0 m • 30.0 m • 50.0 m • 100.0 m • 150.0 m	6XV1873-5RH10 6XV1873-5RH20 6XV1873-5RH30 6XV1873-5RN10 6XV1873-5RN30 6XV1873-5RN50 6XV1873-5RT10 6XV1873-5RT15
5 x FC SC duplex plugs FC FO SC plugs for on-site mounting on FC FO cables (62.5/200/230)	6GK1900-1LB00-0AC0
MM FO SC connector set 10 duplex connectors for FO cable; standard, trailing, indoor and marine cable; Note: special tools and skilled personnel are required for assembly; adhesive bonding and polishing technology	6GK1901-0LB10-2AA0
MM FO LC duplex plug 10 units for MM FO robust cable GP (2G50/125); Note: special tools and skilled personnel are required for assembly; adhesive bonding and polishing technology	6GK1901-0RB10-2AB0
FC FO Termination Kit Termination Kit for local assembly of FC SC and FC BFOC connectors to FC FO standard cable; comprising a stripping tool, Kevlar cutters, fiber breaking tool and microscope	6GK1900-1GL00-0AA0

FC ST/ BFOC plug Screw connector for on-site assembly on FC fiber-optic cable; (1 pack = 10 units + cleaning cloths)	6GK1900-1GB00-0AC0
Serial cable RJ11/RS232 Preassembled serial cable with RJ11 and RS232 connectors; length: 3 m; 1 pack = 1 unit	6GK5980-3BB00-0AA5
SCALANCE TAP104 Test access port for the reaction-free extraction of Ethernet data frames (10/100 Mbps) from both transmission directions; extracts entire data traffic (including incomplete diagrams) for further diagnostics.	6GK5104-0BA00-1SA2

More information

Selection tool:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XP-200 managed

Overview



SCALANCE XP216EEC



SCALANCE XP208EEC

The managed Industrial Ethernet switches of the SCALANCE XP-200 product line with 8 or 16 Ethernet ports are optimally suited for setup of cabinet-free automation concepts of Industrial Ethernet networks with transmission rates of 10/100/1000 Mbps in a line, star or ring structure.

- Integrated redundancy manager for setup of high availability networks in a ring structure
- Electrical station or network connection
- Rugged metal housing for mounting on SIMATIC ET 200pro rack, ITEM rail mounting or direct wall mounting
- Rugged industry-compatible station connections with industrial-compatible M12 plug connectors, (M12 D-coded for FastEthernet (10/100 Mbps) interfaces, M12 X-coded for 1000 Mbps interfaces)
- Redundant power supply (M12, A-coded)
- Console port (M12, D-coded)
- Diagnostics on the device by means of prominent LED display with integrated SELECT/SET button (power, link status, data communication, display mode)
- Error signaling contact with easy setting using SELECT/SET button
- Configuration storage using C-PLUG removable data storage medium
- Grounding screw for external ground connection

Product versions

SCALANCE XP208EEC

- with 8 electrical ports (10/100 Mbps, M12 D-coded)

SCALANCE XP208PoE EEC

- with 4 electrical ports (10/100 Mbps, M12 D-coded) and 4 electrical PoE ports (10/100 Mbps M12 D-coded)

SCALANCE XP216EEC

- with 12 electrical ports (10/100 Mbps, M12 D-coded) and 4 electrical ports (10/100/1000 Mbps, M12 X-coded)

SCALANCE XP216PoE EEC

- with 12 electrical ports (10/100 Mbps, M12 D-coded) and 4 electrical ports (10/100/1000 Mbps, M12 X-coded)
A total of 8 ports with PoE can be used.

The switch is suitable for mounting outside a control cabinet especially in railway applications (EN 50155/45545), extended range (-40 to +70 °C).

Benefits

- Ideal solution for setup of Industrial Ethernet line, star and ring structures
- Industry-compatible plug-in connection (10/100 Mbps M12 D-coded and 10/100/1000 Mbps, X-coded)
- High network availability through setup of redundant ring structures (redundancy manager integrated)
- Integration of the SCALANCE XP-200 Industrial Ethernet switches in the existing network management infrastructure through SNMP access
- Easy integration in the process diagnostics and system diagnostics
- Fast device replacement under fault conditions through the use of C-PLUG
- Use under extreme ambient conditions (-40 to +70 °C)
- Use outside the control cabinet also possible (IP65/67 degree of protection)

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XP-200 managed

Technical specifications

Article number	6GK5 208-0HA00-2ES6 6GK5 208-0UA00-5ES6	6GK5 216-0HA00-2ES6 6GK5 216-0UA00-5ES6
Product type designation	SCALANCE XP208EEC, SCALANCE XP208PoE EEC	SCALANCE XP216EEC, SCALANCE XP216PoE EEC
Transmission rate		
Port speed	8 x 10/100 Mbps (D-coded)	12 x 10/100 Mbps (D-coded), 4 x 1000 Mbps (X-coded)
Supply voltage		
Supply voltage	2 x M12 A-coded (24 V DC) XP208PoE EEC: 2 x M12 A-coded (54 V DC)	2 x M12 A-coded (24 V DC) XP216PoE EEC: 2 x M12 A-coded (54 V DC)
Dimensions and weights		
Width	200 mm	200 mm
Height	200 mm	280 mm
Depth	49 mm	49 mm
Weight	1.8 kg	2.5 kg

Article number	6GK5 208-0HA00-2ES6 6GK5 208-0UA00-5ES6	6GK5 216-0HA00-2ES6 6GK5 216-0UA00-5ES6
Product type designation	SCALANCE XP208EEC, SCALANCE XP208PoE EEC	SCALANCE XP216EEC, SCALANCE XP216PoE EEC
Product properties, functions, components - General		
Coated printed circuit boards (conformal coating)	Yes	Yes
Port type	M12 D-coded	M12 D-coded and X-coded
Power-over-Ethernet (PoE)	XP208PoE EEC: 4 ports IEEE 802.3at Type 2 (max. 120 W)	XP216PoE EEC: 8 ports IEEE 802.3at Type 2 (max. 120 W)
Permissible ambient conditions		
IP degree of protection	IP65/IP67	IP65/IP67
Standards, specifications, approvals - Other		
• e1/E1 motor vehicle approval	Yes	Yes
• Railway application in accordance with EN 50155	Yes	Yes
• Railway application in accordance with EN 45545	Yes	Yes

Selection and ordering data

Industrial Ethernet switches SCALANCE XP-200

Industrial Ethernet switches with integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, for setup of line, star and ring structures; with integrated redundancy manager; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

- **SCALANCE XP208EEC**
with eight 10/100 Mbps M12 ports (D-coded)
- **SCALANCE XP208PoE EEC**
with four 10/100 Mbps M12 ports (D-coded) and four 10/100 Mbps M12 PoE ports (D-coded)
- **SCALANCE XP216EEC**
with twelve 10/100 Mbps M12 ports (D-coded) and four 10/100/1000 Mbps M12 ports (X-coded)
- **SCALANCE XP216PoE EEC**
with twelve 10/100 Mbps M12 ports (D-coded) and four 10/100/1000 Mbps M12 ports (X-coded)
A total of eight PoE ports are possible.

Accessories

C-PLUG

Removable data storage medium (conformal coating) for easy replacement of devices under fault conditions; for recording configuration data or engineering and application data; can be used in SIMATIC NET products with C-PLUG slot

6GK5 208-0HA00-2ES6

6GK5 208-0UA00-5ES6

6GK5 216-0HA00-2ES6

6GK5 216-0UA00-5ES6

6GK1900-0AQ00

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

IE Train Cable GP 4x2

8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1878-2T

IE Connecting Cable M12-180/M12-180

Flexible plug-in cable (4-core), pre-assembled with 4-pin M12 connectors (D-coded), for connection of IE devices, IP65/67

Length:

- 0.3 m
- 0.5 m
- 1 m
- 1.5 m
- 2 m
- 3 m
- 5 m
- 10 m
- 15 m

6XV1870-8AE30
6XV1870-8AE50
6XV1870-8AH10
6XV1870-8AH15
6XV1870-8AH20
6XV1870-8AH30
6XV1870-8AH50
6XV1870-8AN10
6XV1870-8AN15

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XP-200 managed

M12 Robust Connecting Cable M12-180/M12-180

Flexible plug-in cable (4-core), pre-assembled with 4-pin M12 connectors (D-coded), for connection of IE devices such as SCALANCE XP-200 and ET 200, IP69

Length:

- 1 m
- 2 m
- 3 m
- 5 m

6XV1881-5AH10
6XV1881-5AH20
6XV1881-5AH30
6XV1881-5AH50

M12 Power Connecting Cable M12-180/M12-180

Flexible plug-in cable (4-core), pre-assembled with one 4-pin M12 male connector/female connector each (A-coded), for connection of 24 V voltage supply to SCALANCE XP-200 and ET 200, IP 65/67

Length:

- 0.3 m
- 0.5 m
- 1 m
- 1.5 m
- 2 m
- 3 m
- 5 m
- 10 m
- 15 m

6XV1801-5DE30
6XV1801-5DE50
6XV1801-5DH10
6XV1801-5DH15
6XV1801-5DH20
6XV1801-5DH30
6XV1801-5DH50
6XV1801-5DN10
6XV1801-5DN15

Robust Power Connecting Cable M12-180/M12-180

Preassembled cable with M12 male connector and M12 female connector for power supply of SCALANCE XP-200 and ET 200, A-coded, 4-pin, IP69

Length:

- 1 m
- 2 m
- 3 m
- 5 m

6XV1801-5AH10
6XV1801-5AH20
6XV1801-5AH30
6XV1801-5AH50

IE FC M12 Plug PRO 2 x 2

M12 plug-in connector with rugged metal housing and FC connection technology, with axial cable outlet, D-coded, for SCALANCE XP-200 and ET 200

- 1 pack = 1 unit
- 1 pack = 8 units

6GK1901-0DB20-6AA0
6GK1901-0DB20-6AA8

IE FC M12 Plug PRO 4 x 2

M12 plug-in connector with rugged metal housing and FC connection technology, with axial cable outlet, X-coded, for SCALANCE W and XP-200

- 1 pack = 1 unit
- 1 pack = 8 units

6GK1901-0DB30-6AA0
6GK1901-0DB30-6AA8

IE FC M12 Cable Connector PRO 4 x 2

Field-assembled M12 plug-in connector with metal housing and FC connection technology, female contact insert, X-coded, 8-pin

- 1 pack = 1 unit
- 1 pack = 8 units

6GK1901-0DB40-6AA0
6GK1901-0DB40-6AA8

IE M12 Panel Feedthrough

Control cabinet bushing for transition from M12 (D-coded) connection technology (IP65) to RJ45 connection technology (IP20), 5 units

6GK1901-0DM20-2AA5

IE M12 Panel Feedthrough PRO

Control cabinet bushing for transition from M12 (D-coded) connection technology (IP65) to M12 (D-coded) connection technology (IP65), 5 units

6GK1901-0DM30-2AA5

IE M12 Panel Feedthrough 4 x 2

M12 control cabinet bushing for transition from M12 connection technology (X-coded, IP65/67) to RJ45 connection technology (X-coded, IP20), 5 units

6GK1901-0DM40-2AA5

M12 Power T-Tap

T-function for looping through the energy supply if redundant supply is not needed (24 V DC), 5 units

6GK1907-0DC00-6AA5

Serial Cable M12/RS232

Serial connection cable (M12 / Sub-D) for direct configuration of switch using laptop

6GK5980-3BC00-0AA5

IE Power M12 Plug PRO

Plug-in connector for connection to PS791-1PRO power supply for 24 V DC supply voltage with installation instructions, 4-pin, A-coded, 3 units

6GK1907-0DB10-6AA3

Signaling Contact M12 Cable Connector PRO

Connection socket for connection of SCALANCE X208PRO for signaling contact with installation instructions, 5-pin, B-coded, 3 items

6GK1908-0DC10-6AA3

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version:
<http://www.siemens.com/snst>
- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Overview



The SCALANCE X-300 product line comprises compact Industrial Ethernet switches for setup of electrical and/or optical line, star and ring structures with transmission rates of 10/100/1000 Mbps.

- Fast media redundancy through integral redundancy manager for Gigabit Ethernet (SCALANCE X-300, X-400) and Fast Ethernet (e.g. in combination with SCALANCE X-200 switches)
- Seamless integration of automation networks into existing corporate networks thanks to support of a large number of IT standards: Setup of virtual networks (VLANs)
- Redundant integration into higher-level networks thanks to support of standardized redundancy procedures (Rapid Spanning Tree Protocol)
- PROFINET diagnostics, SNMP access, integrated web server and automatic e-mail transmission function for remote diagnostics and signaling via the network

Benefits

- High availability of the network thanks to
 - Redundant power supply
 - Redundant network structures based on fiber-optic or twisted pair cable (redundancy manager, standby function and RSTP are integrated)
 - Easy device replacement by means of plug-in C-PLUG removable data storage medium
 - Very fast reconfiguration of the network in event of a fault
- Lower susceptibility to failure and higher availability of the plant networking due to locking of the RJ45 FastConnect plug connectors in place in the securing collar of the RJ45 ports
- Protection of investment through integration in existing network management systems by means of standardized SNMP access
- Easy adaptation to different network structures, and reduction in stock keeping costs through flexibility of the partially modular versions

Application

SCALANCE X-300 products enable the setup of switched networks in the field level area and the control level area where high transmission speed is required in addition to high network availability and extensive diagnostic capabilities.

The main area of application is found in high-performance plant networks with connection to the corporate network.

The X308-2M TS is suitable for use in railway applications due to its specification according to EN 50155.

SCALANCE X308-2M TS

- For setup of optical line, ring or star structures
- Hub in the plant bus (redundant connection possible)
- SCALANCE X308-2M TS (TS = Transportation Systems); 4 x 10/100/1000 Mbps RJ45 ports, electrical
2 x free module slots for 4 x 10/100/1000 Mbps media modules (electrical or optical)

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X308-2M TS

Technical specifications

Article number	6GK5308-2GG10-2CA2
Product type designation	SCALANCE X308-2M TS
Transmission rate	
Transmission rate	10 Mbps, 100 Mbps, 1 000 Mbps
Integrated interfaces for communication	
Number of electrical connections	
• for network components or data terminal equipment	4
Number of 100 Mbps ST(BFOC) ports	
• for multimode	4
Number of 100 Mbps SC ports	
• for multimode	4
Number of 1000 Mbps LC ports	
• for multimode	4
• for single-mode (LD)	4
Other interfaces	
Number of electrical connections	
• for signaling contact	1
• for media module	2
• for power supply	1
• for redundant power supply	1
Type of electrical connection	
• for signaling contact	2-pin terminal block
• for power supply	4-pin terminal block
Type of removable data storage medium	
• C-PLUG	Yes
Signal inputs/outputs	
Operating current of the signaling contacts	
• with DC, nominal value	24 V
Operating current of the signaling contacts	
• with DC, maximum	0.1 A
Supply voltage, current consumption, power loss	
Type of power supply: redundant power supply	No
Type of supply voltage	DC
Supply voltage	
• External	12 V
• External	20 ... 30 V
Supply voltage with DC	24 V
• Rated value	20 ... 30 V
Product component: fusing at power supply input	Yes
Type of fusing at input for supply voltage	F 3 A / 32 V
Current consumption, maximum	0.7 A
Power loss [W]	
• with 24 V DC	16.6 W

Article number	6GK5308-2GG10-2CA2
Product type designation	SCALANCE X308-2M TS
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
• Remark	Reduced operating temperature through use of media modules (-40 to +70 °C) or SFP plug-in transceivers (-40 to +60 °C). In the case of vertical mounting position, the maximum operating temperature is reduced to +50 °C.
Relative humidity	
• Relative humidity at 25 °C, without condensation during operation, maximum	95%
IP degree of protection	IP20
Design, dimensions and weights	
Model	Compact
Width	120 mm
Height	125 mm
Depth	124 mm
Net weight	1.4 kg
Product property: conformal coating	Yes
Mounting type	In marine applications, mounting on the 35 mm DIN rail is not permissible.
• 19-inch installation	No
• 35 mm DIN rail mounting	Yes
• Wall mounting	Yes
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No
Product properties, functions, components - General	
Cascading with redundant ring and reconfiguration time of < 0.3 s	100
Cascading with star structure	Any (only dependent on signal propagation time)
Product functions - Management, configuration, engineering	
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• RMON	Yes
• Port mirroring	Yes
• Multiport mirroring	Yes
• CoS	Yes
• PROFINET IO diagnostics	Yes
• Switch-managed	Yes
Protocol is supported	
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• FTP	Yes
• BOOTP	Yes
• GMRP	Yes
• DCP	Yes
• LLDP	Yes
• IGMP (snooping/querier)	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X308-2M TS

Article number	6GK5308-2GG10-2CA2
Product type designation	SCALANCE X308-2M TS
Product functions - Management, configuration, engineering (continued)	
Identification & Maintenance function	
• I&M0 - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions - Diagnostics	
Product function	
• Port diagnostics	Yes
• Packet size statistics	Yes
• Packet type statistics	Yes
• Error statistics	Yes
• SysLog	Yes
Product functions - VLAN	
Product function	
• VLAN - port-based	Yes
• VLAN - protocol-based	No
• VLAN - IP-based	No
• VLAN - dynamic	Yes
Number of VLANs, maximum	255
Number of dynamic VLANs, maximum	255
GVRP protocol is supported	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• DHCP option 82	Yes
• DHCP option 66	Yes
• DHCP option 67	Yes
Product functions - Redundancy	
Product function	
• Ring redundancy	Yes
• High Speed Redundancy Protocol (HRP)	Yes
• High Speed Redundancy Protocol (HRP) with redundancy manager	Yes
• High Speed Redundancy Protocol (HRP) with standby redundancy	Yes
Media Redundancy Protocol (MRP) is supported	Yes
Product function	
• Media Redundancy Protocol (MRP) with redundancy manager	Yes
• Redundancy procedure STP	Yes
• Redundancy procedure RSTP	Yes
• Redundancy procedure MSTP	Yes
• Parallel Redundancy Protocol (PRP)/use in PRP network	Yes
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No
• Passive listening	Yes
Protocol is supported	
• STP/RSTP	Yes
• STP	Yes
• RSTP	Yes
• MSTP	No
• RSTP Big Network Support	Yes
• LACP	Yes

Article number	6GK5308-2GG10-2CA2
Product type designation	SCALANCE X308-2M TS
Product functions - Security	
Product function	
• ACL - MAC-based	Yes
• ACL - Port/MAC-based	Yes
• IEEE 802.1X (RADIUS)	Yes
• Broadcast/Multicast/Unicast Limiter	Yes
• Broadcast blocking	Yes
Protocol is supported	
• SSH	Yes
Product functions - Time of day	
Product function	
• SICLOCK support	Yes
Protocol is supported	
• NTP	Yes
• SNTP	Yes
• IEEE 1588 profile default	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location), CSA C22.2 No. 213-M1987, Class 1 / Division 2 / Group A, B, C, D / T4, Class 1 / Zone 2 / Group IIC / T4
• for emitted interference	EN 61000-6-4
• for noise immunity	EN 61000-6-2
Standards, specifications, approvals - CE	
Proof of suitability, CE mark	Yes
Standards, specifications, approvals - Other	
Proof of suitability	EN 61000-6-2, EN 61000-6-4
• C-Tick	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	Yes
• KC approval	Yes
Standards, specifications, approvals - Product conformity	
MTBF at 40 °C	40 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X308-2M TS

Selection and ordering data

Industrial Ethernet switches SCALANCE X-300

Industrial Ethernet switches for setting up electrical and/or optical Industrial Ethernet networks; integrated redundancy manager, IT functions (RSTP, VLAN, etc.), network management via SNMP and web server; incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM; C-PLUG included in scope of delivery

Full Gigabit Ethernet switches

- **SCALANCE X308-2M TS:**
4 x 10/100/1000 Mbps RJ45 ports, electrical
2 x 10/100/1000 Mbps slots for 2-port media modules, electrical or optical, with extended temperature range and EN 50155 approval for railway applications

6GK5308-2GG10-2CA2

Media modules

Electrical Media Modules

With 2 x 10/100/1000 Mbps RJ45 ports, electrical

- MM992-2CUC with securing collar and coated PCBs (conformal coating)

6GK5992-2GA00-8FA0

With 2 x 10/100/1000 Mbps M12 ports, electrical

- MM992-2 M12 interface (x-coded) and coated PCBs (conformal coating)

6GK5992-2HA00-0AA0

Optical Media Modules

with 2 x 1000 Mbps SC ports, optical

- MM992-2 multimode, glass, up to 750 m, coated PCBs (conformal coating)

6GK5992-2AL00-8FA0

Accessories

S7-1500 Mounting Kit

Mounting bracket for installation of SCALANCE X-300 on S7-1500 mounting rail

6GK5980-2EA00-0AA1

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

RJ45 plug connector for Industrial Ethernet with rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

IE FC RJ45 Plug 4 x 2

RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB12-2AA0

IE FC M12 Plug PRO 4x2

M12 plug connector (X-coded, IP65/IP67) that can be assembled in the field, metal enclosure, insulation displacement fast connection method, for SCALANCE W

- 1 unit

6GK1901-0DB30-6AA0

IE M12 Panel Feedthrough 4x2

Control cabinet feedthrough for transition from M12 connection method (X-coded, IP65/IP67) to RJ45 connection method (IP20)

- 1 pack = 5 units

6GK1901-0DM40-2AA5

IE FC M12 Cable Connector PRO 4x2

M12 plug-in connector (X-coded, IP65/IP67, female contact insert) that can be assembled in the field, metal housing, insulation displacement fast connection method

- 1 unit

6GK1901-0DB40-6AA0

IE Train Cable GP 4x2

8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1878-2T

IE Connecting Cable IE FC RJ45 Plug-180/IE FC RJ45 Plug-180

Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection;

Length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

IE SC RJ POF Plug

Screw connector for local assembly on POF FOC (1 pack = 20 units)

6GK1900-0MB00-0AC0

POF Standard Cable GP 980/1000

POF standard cable for fixed installation indoors with PVC sheath; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m.

6XV1874-2A

IE SC RJ PCF Plug

Screw connector for local assembly on PCF FOC (1 pack = 10 units)

6GK1900-0NB00-0AC0

PCF Standard Cable GP 200/230

Standard cable, fan-out, sold by the meter; Maximum delivery unit 2000 m; minimum order quantity 20 m

6XV1861-2A

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE X308-2M TS

FC FO Termination Kit Termination kit for local assembly of FC SC and FC BFOC connectors on FC FO standard cable; contains a stripping tool, Kevlar cutters, fiber breaking tool and microscope.	6GK1900-1GL00-0AA0	Pre-Assembled FO Patch Cables Multimode	
FC BFOC Plug Screw connector for local assembly on FC FOC; (1 pack = 20 units + cleaning cloths)	6GK1900-1GB00-0AC0	MM FO Cord SC/LC With one SC duplex connector and one LC duplex connector, 1 m	6XV1843-5EH10-0CA0
FC SC Plug Screw connector for local assembly on FC FOC; (1 pack = 10 units duplex plugs + cleaning cloths)	6GK1900-1LB00-0AC0	MM FO Cord SC/BFOC With one SC duplex connector and two BFOC connectors, 1 m	6XV1843-5EH10-0CB0
FC FO Standard Cable GP 62.5/200/230 FC FO standard cable for fixed installation indoors with PVC sheath; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1847-2A	MM FO Cord SC/SC With two SC duplex connectors, 1 m	6XV1843-5EH10-0CC0
Multimode FO BFOC Connector Set For FO standard cable (50/125/1400), FO ground cable (50/125/1400), flexible FO trailing cable, INDOOR FO cable (62.5/125/900), 20 units	6GK1901-0DA20-0AA0	Single-mode SM FO Cord SC/LC With one SC duplex connector and one LC duplex connector, 1 m	6XV1843-5FH10-0CA0
Multi-mode FO SC Duplex Connector Set For FO standard cable (50/125/1400), FO ground cable (50/125/1400), flexible FO trailing cable, INDOOR FO cable (62.5/125/900), 10 units	6GK1901-0LB10-2AA0	SM FO Cord SC/BFOC With one SC duplex connector and two BFOC connectors, 1 m	6XV1843-5FH10-0CB0
LC Plug MM²⁾	6GK1901-0RB10-2AB0	SM FO Cord SC/SC With two SC duplex connectors, 1 m	6XV1843-5FH10-0CC0
FO Standard Cable GP 50/125/1400 ^{1) 2)} Multimode cable sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1873-2A	IE TP Cord RJ45/RJ45 TP cable 4 x 2 with two RJ45 connectors • 1 m • 6 m • 10 m	6XV1870-3QH10 6XV1870-3QH60 6XV1870-3QN10
		Screw-Type Terminal Block For SCALANCE X/W/S • 2-pole for signaling contact (24 V DC) 1 pack = 5 units • 4-pole for power supply (24 V DC) 1 pack = 5 units	6GK5980-0BB00-0AA5 6GK5980-1DB00-0AA5
		C-PLUG Removable data storage medium (conformal coating) for easy replacement of devices under fault conditions; for recording configuration data or engineering and application data; can be used in SIMATIC NET products with C-PLUG slot	6GK1900-0AQ00

¹⁾ Special fiber-optic cables, lengths and accessories available on request

²⁾ Special tools and specially trained personnel are required for assembling glass FOC

More information

Selection Tool:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version:
<http://www.siemens.com/snst>
- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Overview



SCALANCE XR324-4M PoE TS



SCALANCE XR324-4M EEC



SCALANCE XR324-12M TS

- Fast media redundancy through integrated redundancy manager both for Gigabit Ethernet (with SCALANCE X-300, X-400) and Fast Ethernet (e.g. in combination with SCALANCE X-200 switches)
- Seamless integration of automation networks in existing corporate networks thanks to support of a large number of IT standard functions (VLANs, IGMP-Snooping/Querier, STP/RSTP, Link Aggregation, Quality of Service)
- Redundant integration in higher-level networks thanks to support of standardized redundancy procedures (Spanning Tree Protocol/Rapid Reconfiguration Spanning Tree Protocol/MRP)
- Remote diagnostics by means of PROFINET diagnostics, web browser, CLI or SNMP

SCALANCE XR324-4M PoE TS

The SCALANCE XR-300PoE Industrial Ethernet switches are partly modular, high-performance, industry-standard switches for setup of electrical and/or optical line, ring and star structures with transmission rates of 10/100/1000 Mbps, designed for installation in 19" control cabinets

- Up to 24 electrical and/or optical interfaces (10/100/1000 Mbps), of which 16 are integrated RJ45 ports, eight of which are PoE-capable; up to four electrical and/or optical 2-port media modules can also be inserted in the media module slots of the basic device.

SCALANCE XR324-4M EEC

The SCALANCE XR-300EEC (Enhanced Environmental Conditions) industrial Ethernet switches are partly modular, high-performance, industry-standard switches for the construction of electrical and/or optical line, ring and star topologies at data transfer rates of 10/100/1000 Mbps, designed for installation in 19" control cabinets.

- Up to 24 electrical and/or optical interfaces (10/100/1000 Mbps), of which 16 are integral RJ45 ports; up to four electrical and/or optical 2-port media modules can also be inserted in the media module slots of the basic device

SCALANCE XR324-12M TS

The SCALANCE XR-300 Industrial Ethernet switches are fully modular, high-performance, industry-standard switches for setup of electrical and optical line, ring and star structures with transmission rates of 10/100/1000 Mbps, designed for installation in 19" control cabinets.

- Up to 24 electrical and/or optical interfaces (10/100/1000 Mbps); up to 12 electrical and/or optical 2-port media modules can be inserted at any position in the basic device

Benefits

- Unlimited flexibility for network expansions (e.g. more terminals) or upgrade (e.g. switching from copper to fiber-optic cable) and reduction of stock keeping costs due to the modular configuration with port modules
- High availability of the network thanks to
 - Redundant power supply
 - Redundant network structures based on fiber-optic or twisted pair cable (redundancy manager, standby function and STP/RSTP integrated)
 - Easy device replacement by means of plug-in C-PLUG removable data storage medium
 - Very fast reconfiguration of the network in event of a fault
- Lower susceptibility to failure and higher availability of the plant networking due to locking of the RJ45 FastConnect plug connectors in place in the securing collar of the RJ45 port modules
- Protection of investment through integration in existing network management systems by means of standardized SNMP access
- Space savings in control cabinet due to flexible cable outlet on the front or rear of the device

SCALANCE XR324-4M PoE TS

- No need for additional power supply units and cabling for terminal devices due to PoE power supply

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Technical specifications

Article number	6GK5324-4QG00-1CR2
Product type designation	SCALANCE XR324-4M PoE TS
Transmission rate	
Transmission rate	10 Mbps, 100 Mbps, 1 000 Mbps
Integrated interfaces for communication	
Number of electrical connections	
• for network components or data terminal equipment	16
• with Power-over-Ethernet for network components or terminal equipment	8
Number of 100 Mbps ST(BFOC) ports	
• for multimode	8
Number of 100 Mbps SC ports	
• for multimode	8
Number of 1000 Mbps LC ports	
• for multimode	8
• for single-mode (LD)	8
Other interfaces	
Number of electrical connections	
• for operation panel	1
• for signaling contact	1
• for media module	4
• for power supply	1
• for redundant power supply	0
Type of electrical connection	
• for operation panel	RJ11 port
• for signaling contact	2-pin terminal block
• for power supply	4-pin terminal block
Type of removable data storage medium	
• C-PLUG	Yes
Signal inputs/outputs	
Operating current of the signaling contacts	
• with DC, nominal value	24 V
Operating current of the signaling contacts	
• with DC, maximum	0.1 A
Supply voltage, current consumption, power loss	
Type of power supply: redundant power supply	No
Type of supply voltage	DC
Supply voltage	
• External	24 V
• External	19.2 ... 28.8 V
Product component: fusing at power supply input	Yes
Type of fusing at input for supply voltage	F 5 A / 250 V
Current consumption, maximum	4.2 A
Power loss [W]	
• with 24 V DC	46 W
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
• Remark	In the case of vertical mounting position, the maximum operating temperature is reduced to 60 °C

Article number	6GK5324-4QG00-1CR2
Product type designation	SCALANCE XR324-4M PoE TS
Relative humidity	95%
• Relative humidity at 25 °C, without condensation during operation, maximum	
IP degree of protection	IP20
Design, dimensions and weights	
Model	19-inch rack
Number of modular height units for 19-inch cabinet	1
Width	449 mm
Height	43.6 mm
Depth	305 mm
Net weight	6.8 kg
Product property: conformal coating	Yes
Mounting type	For 19-inch rack mounting, 4-point fixing is required for marine engineering applications
• 19-inch installation	Yes
• 35 mm DIN rail mounting	No
• Wall mounting	No
• S7-300 rail mounting	No
• S7-1500 rail mounting	No
Product properties, functions, components - General	
Cascading with redundant ring and reconfiguration time of < 0.3 s	100
Cascading with star structure	Any (only dependent on signal propagation time)
Product functions - Management, configuration, engineering	
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• RMON	Yes
• Port mirroring	Yes
• Multiport mirroring	Yes
• CoS	Yes
• PROFINET IO diagnostics	Yes
• Switch-managed	Yes
Protocol is supported	
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• FTP	Yes
• BOOTP	Yes
• GMRP	Yes
• DCP	Yes
• LLDP	Yes
• IGMP (snooping/querier)	Yes
Identification & Maintenance function	
• I&M0 - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4QG00-1CR2
Product type designation	SCALANCE XR324-4M PoE TS
Product functions - Diagnostics	
Product function	
• Port diagnostics	Yes
• Packet size statistics	Yes
• Packet type statistics	Yes
• Error statistics	Yes
• SysLog	Yes
Product functions - VLAN	
Product function	
• VLAN - port-based	Yes
• VLAN - protocol-based	No
• VLAN - IP-based	No
• VLAN - dynamic	Yes
Number of VLANs, maximum	255
Number of dynamic VLANs, maximum	255
GVRP protocol is supported	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• DHCP option 82	Yes
• DHCP option 66	Yes
• DHCP option 67	Yes
Product functions - Redundancy	
Product function	
• Ring redundancy	Yes
• High Speed Redundancy Protocol (HRP)	Yes
• High Speed Redundancy Protocol (HRP) with redundancy manager	Yes
• High Speed Redundancy Protocol (HRP) with standby redundancy	Yes
Media Redundancy Protocol (MRP) is supported	Yes
Product function	
• Media Redundancy Protocol (MRP) with redundancy manager	Yes
• Redundancy procedure STP	Yes
• Redundancy procedure RSTP	Yes
• Redundancy procedure MSTP	Yes
• Passive listening	Yes
Protocol is supported	
• STP/RSTP	Yes
• STP	Yes
• RSTP	Yes
• MSTP	No
• RSTP Big Network Support	Yes
• LACP	Yes
Product functions - Security	
Product function	
• ACL - MAC-based	Yes
• ACL - Port/MAC-based	Yes
• IEEE 802.1X (RADIUS)	Yes
• Broadcast/Multicast/Unicast Limiter	Yes
• Broadcast blocking	Yes
Protocol is supported	
• SSH	Yes

Article number	6GK5324-4QG00-1CR2
Product type designation	SCALANCE XR324-4M PoE TS
Product functions - Time of day	
Product function	
• SICLOCK support	Yes
Protocol is supported	
• NTP	Yes
• SNTP	Yes
• IEEE 1588 profile default	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location), CSA C22.2 No. 213-M1987, Class 1 / Division 2 / Group A, B, C, D / T4, Class 1 / Zone 2 / Group IIC / T4
• for emitted interference	EN 61000-6-4: 2007 (Class A)
• for noise immunity	EN 61000-6-2: 2006
Standards, specifications, approvals - CE	
Proof of suitability, CE mark	Yes
Standards, specifications, approvals - Other	
Proof of suitability	EN 61000-6-2: 2006, EN 61000-6-4:2007
• C-Tick	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	
• KC approval	No
Standards, specifications, approvals - Product conformity	
MTBF at 40 °C	

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-1ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-1JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2JR2 SCALANCE XR324-4M EEC
Transmission rate				
Transfer rate	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s
Interfaces for communication integrated				
Number of electrical connections	16; RJ45	16; RJ45	16; RJ45	16; RJ45
• for network components or terminal equipment				
Number of 100 Mbit/s ST(BFOC) ports	8	8	8	8
• for multimode				
Number of 100 Mbit/s SC ports	8	8	8	8
• for multimode				
Number of 1000 Mbit/s LC ports	8	8	8	8
• for multimode				
• for single mode (LD)	8	8	8	8
Interfaces others				
Number of electrical connections				
• for operator console	1	1	1	1
• for signaling contact	1	1	1	1
• for media module	4	4	4	4
• for power supply	1	1	2	2
• for redundant voltage supply	1	1	1	1
Type of electrical connection				
• for operator console	RJ11	RJ11	RJ11	RJ11
• for signaling contact	2-pole terminal block	2-pole terminal block	2 x 2-pole terminal block	2 x 2-pole terminal block
• for power supply	4-pole terminal block	4-pole terminal block	2 x 4-pole terminal block	2 x 4-pole terminal block
design of the removable storage				
• C-PLUG	Yes	Yes	Yes	Yes
Signal-Inputs/outputs				
Operating voltage of the signaling contacts				
• at DC Rated value	24 V	24 V	24 V	24 V
Operating current of the signaling contacts				
• at DC maximum	0.1 A	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss				
Type of voltage supply redundant power supply unit	No	No	Yes	Yes
Type of voltage of the supply voltage	DC	DC	DC	DC
Supply voltage				
• external	24 V	24 V	24 V	24 V
• external minimum	19.2 V	19.2 V	19.2 V	19.2 V
• external maximum	57.6 V	57.6 V	57.6 V	57.6 V
Supply voltage 2 Rated value				
• Type of voltage 2 of the supply voltage	DC	DC	DC	DC
Supply voltage at DC				
• rated value	24 V	24 V	24 V	24 V
	19.2 ... 57.6 V	19.2 ... 57.6 V	19.2 ... 57.6 V	19.2 ... 57.6 V
Product component fusing at power supply input	Yes	Yes	Yes	Yes
Fuse protection type at input for supply voltage	T2H / 250 V	T2H / 250 V	T2H / 250 V	T2H / 250 V
Consumed current maximum	1.6 A	1.6 A	1.6 A	1.6 A
Power loss [W]				
• at DC at 24 V	40 W	40 W	40 W	40 W

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-1ER2	6GK5324-4GG00-1JR2	6GK5324-4GG00-2ER2	6GK5324-4GG00-2JR2
	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC
Permitted ambient conditions				
Ambient temperature				
• during operation	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• Note	Extended temperature upper limit of +85° C permitted for 16 hours. Reduced operating temperature through the use of media modules (-40 °C to +70 °C) or SFP plug-in transceivers (-40 °C to +60 °C)			
Relative humidity				
• at 25 °C without condensation during operation maximum	95 %	95 %	95 %	95 %
Protection class IP	IP20	IP20	IP20	IP20
Design, dimensions and weight				
Design	19" rack	19" rack	19" rack	19" rack
Number of modular height units relating to 19-inch cabinet	1	1	1	1
Width	483 mm	483 mm	483 mm	483 mm
Height	44 mm	44 mm	44 mm	44 mm
Depth	305 mm	305 mm	305 mm	305 mm
Net weight	6.5 kg	6.5 kg	6.8 kg	6.8 kg
Mounting type	When used in shipbuilding, the device must be secured in the 19" rack at four points			
• 19-inch installation	Yes	Yes	Yes	Yes
• 35 mm DIN rail mounting	No	No	No	No
• wall mounting	No	No	No	No
• S7-300 rail mounting	No	No	No	No
• S7-1500 rail mounting	No	No	No	No
Product properties, functions, components general				
Cascading in the case of a redundant ring at reconfiguration time of <~0.3~s	100	100	100	100
Cascading in cases of star topology	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)
Product functions management, configuration				
Product function				
• CLI	Yes	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes	Yes
• Configuration with STEP 7	Yes	Yes	Yes	Yes
• RMON	Yes	Yes	Yes	Yes
• Port mirroring	Yes	Yes	Yes	Yes
• multiport mirroring	Yes	Yes	Yes	Yes
• CoS	Yes	Yes	Yes	Yes
• PROFINET IO diagnosis	Yes	Yes	Yes	Yes
• switch-managed	Yes	Yes	Yes	Yes
Protocol is supported				
• Telnet	Yes	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes	Yes
• FTP	Yes	Yes	Yes	Yes
• BOOTP	Yes	Yes	Yes	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-1ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-1JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2JR2 SCALANCE XR324-4M EEC
• GMRP	Yes	Yes	Yes	Yes
• DCP	Yes	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes	Yes
• SNMP v1	Yes	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes	Yes
• IGMP (snooping/querier)	Yes	Yes	Yes	Yes
Identification & maintenance function				
• I&MO - device-specific information	Yes	Yes	Yes	Yes
• I&M1 – higher-level designation/location designation	Yes	Yes	Yes	Yes
Product functions Diagnosis				
Product function				
• Port diagnostics	Yes	Yes	Yes	Yes
• Statistics Packet Size	Yes	Yes	Yes	Yes
• Statistics packet type	Yes	Yes	Yes	Yes
• Error statistics	Yes	Yes	Yes	Yes
• SysLog	Yes	Yes	Yes	Yes
Product functions VLAN				
Product function				
• VLAN - port based	Yes	Yes	Yes	Yes
• VLAN - protocol-based	No	No	No	No
• VLAN - IP-based	No	No	No	No
• VLAN dynamic	Yes	Yes	Yes	Yes
Number of VLANs maximum	255	255	255	255
Number of VLANs - dynamic maximum	255	255	255	255
Protocol is supported GVRP	Yes	Yes	Yes	Yes
Product functions DHCP				
Product function				
• DHCP client	Yes	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes	Yes
• DHCP Option 66	Yes	Yes	Yes	Yes
• DHCP Option 67	Yes	Yes	Yes	Yes
Product functions Redundancy				
Product function				
• Ring redundancy	Yes	Yes	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with redundancy manager	Yes	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with standby redundancy	Yes	Yes	Yes	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes	Yes	Yes
Product function				
• media redundancy protocol (MRP) with redundancy manager	Yes	Yes	Yes	Yes
• redundancy procedure STP	Yes	Yes	Yes	Yes
• redundancy procedure RSTP	Yes	Yes	Yes	Yes
• redundancy procedure MSTP	Yes	Yes	Yes	Yes
• Parallel Redundancy Protocol (PRP)/operation in the PRP-network	Yes	Yes	Yes	Yes
• Parallel Redundancy Protocol (PRP)/Redundant Network Access (RNA)	No	No	No	No
• Passive listening	Yes	Yes	Yes	Yes
Protocol is supported				
• STP/RSTP	Yes	Yes	Yes	Yes
• STP	Yes	Yes	Yes	Yes
• RSTP	Yes	Yes	Yes	Yes
• MSTP	Yes	Yes	Yes	Yes
• RSTP big network support	Yes	Yes	Yes	Yes
• LACP	Yes	Yes	Yes	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-1ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-1JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-2JR2 SCALANCE XR324-4M EEC
Product functions Security				
Product function				
• ACL - MAC-based	Yes	Yes	Yes	Yes
• ACL - port/MAC-based	Yes	Yes	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	Yes	Yes	Yes	Yes
• broadcast blocking	Yes	Yes	Yes	Yes
Protocol is supported				
• SSH	Yes	Yes	Yes	Yes
Product functions Time				
Product function				
• SICLOCK support	Yes	Yes	Yes	Yes
Protocol is supported				
• NTP	Yes	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes	Yes
• IEEE 1588 profile default	Yes	Yes	Yes	Yes
Standards, specifications, approvals				
Standard				
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0 : 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-0 : 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-0 : 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-0 : 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03	UL 60950-1, CSA C22.2 No. 60950-1-03
• for hazardous zone from CSA and UL	ANSI / ISA 12.12.01, CSA C22.2 No. 142-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4	ANSI / ISA 12.12.01, CSA C22.2 No. 142-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4	ANSI / ISA 12.12.01, CSA C22.2 No. 142-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4	ANSI / ISA 12.12.01, CSA C22.2 No. 142-M1987, CL. 1 / Div. 2 / GP. A, B, C, D T4, CL. 1 / Zone 2 / GP. IIC, T4
• for emitted interference	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)
• for interference immunity	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005
Standards, specifications, approvals CE				
Certificate of suitability CE marking	Yes	Yes	Yes	Yes
Standard				
• for EMC	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613
Standards, specifications, approvals miscellaneous				
Certificate of suitability	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007
• C-Tick	Yes	Yes	Yes	Yes
• IEC 61850-3	Yes	Yes	Yes	Yes
• KC approval	Yes	Yes	Yes	Yes
Standards, specifications, approvals ship classification				
Marine classification association				
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes	Yes
• Bureau Veritas (BV)	Yes	Yes	Yes	Yes
• Det Norske Veritas (DNV)	No	No	No	No
• Germanische Lloyd (GL)	No	No	No	No
• DNV GL	Yes	Yes	Yes	Yes
• Lloyds Register of Shipping (LRS)	Yes	Yes	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes	Yes	Yes
• Polski Rejestr Statkow (PRS)	No	No	No	No
• Royal Institution of Naval Architects (RINA)	Yes	Yes	Yes	Yes
Standards, specifications, approvals product conformity				
MTBF	15 y	15 y	20 y	20 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-3ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-3JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4JR2 SCALANCE XR324-4M EEC
Transmission rate				
Transfer rate	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s
Interfaces for communication integrated				
Number of electrical connections • for network components or terminal equipment	16; RJ45	16; RJ45	16; RJ45	16; RJ45
Number of 100 Mbit/s ST(BFOC) ports • for multimode	8	8	8	8
Number of 100 Mbit/s SC ports • for multimode	8	8	8	8
Number of 1000 Mbit/s LC ports • for multimode	8	8	8	8
• for single mode (LD)	8	8	8	8
Interfaces others				
Number of electrical connections • for operator console	1	1	1	1
• for signaling contact	1	1	1	1
• for media module	4	4	4	4
• for power supply	1	1	2	2
• for redundant voltage supply	0	0	0	0
Type of electrical connection • for operator console	RJ11	RJ11	RJ11	RJ11
• for signaling contact	3-pole terminal block	3-pole terminal block	2 x 3-pole terminal block	2 x 3-pole terminal block
• for power supply	3-pole terminal block	3-pole terminal block	2 x 3-pole terminal block	2 x 3-pole terminal block
design of the removable storage • C-PLUG	Yes	Yes	Yes	Yes
Signal-Inputs/outputs				
Operating voltage of the signaling contacts • at AC Rated value	276 V	276 V	276 V	276 V
• at DC Rated value	230 V	230 V	230 V	230 V
Operating current of the signaling contacts • at AC maximum	5 A	5 A	5 A	5 A
• at DC maximum	0.1 A	0.1 A	0.1 A	0.1 A
Supply voltage, current consumption, power loss				
Type of voltage supply redundant power supply unit	No	No	Yes	Yes
Type of voltage of the supply voltage	AC	AC	AC	AC
Supply voltage • at AC	230 V	230 V	230 V	230 V
• at AC rated value	80 ... 276 V	80 ... 276 V	80 ... 276 V	80 ... 276 V
Supply voltage 2 Rated value • Type of voltage 2 of the supply voltage	DC	DC	DC	DC
Supply voltage at DC • rated value	220 V 48 ... 300 V	220 V 48 ... 300 V	220 V 48 ... 300 V	220 V 48 ... 300 V
Product component fusing at power supply input	Yes	Yes	Yes	Yes
Fuse protection type at input for supply voltage	3.15 A / 250 V	3.15 A / 250 V	3.15 A / 250 V	3.15 A / 250 V
Consumed current maximum	0.7 A	0.7 A	0.7 A	0.7 A
Power loss [W] • at AC at 230 V	42 W	42 W	42 W	42 W
• at DC at 250 V	42 W	42 W	42 W	42 W

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-3ER2	6GK5324-4GG00-3JR2	6GK5324-4GG00-4ER2	6GK5324-4GG00-4JR2
	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC	SCALANCE XR324-4M EEC
Permitted ambient conditions				
Ambient temperature				
• during operation	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• Note	Extended temperature upper limit of +85° C permitted for 16 hours. Reduced operating temperature through the use of media modules (-40 °C to +70 °C) or SFP plug-in transceivers (-40 °C to +60 °C)			
Relative humidity				
• at 25 °C without condensation during operation maximum	95 %	95 %	95 %	95 %
Protection class IP	IP20	IP20	IP20	IP20
Design, dimensions and weight				
Design	19" rack	19" rack	19" rack	19" rack
Number of modular height units relating to 19-inch cabinet	1	1	1	1
Width	483 mm	483 mm	483 mm	483 mm
Height	44 mm	44 mm	44 mm	44 mm
Depth	305 mm	305 mm	305 mm	305 mm
Net weight	6.6 kg	6.6 kg	7 kg	7 kg
Mounting type	When used in shipbuilding, the device must be secured in the 19" rack at four points			
• 19-inch installation	Yes	Yes	Yes	Yes
• 35 mm DIN rail mounting	No	No	No	No
• wall mounting	No	No	No	No
• S7-300 rail mounting	No	No	No	No
• S7-1500 rail mounting	No	No	No	No
Product properties, functions, components general				
Cascading in the case of a redundant ring at reconfiguration time of <~0.3~s	100	100	100	100
Cascading in cases of star topology	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)	any (depending only on signal propagation time)
Product functions management, configuration				
Product function				
• CLI	Yes	Yes	Yes	Yes
• web-based management	Yes	Yes	Yes	Yes
• MIB support	Yes	Yes	Yes	Yes
• TRAPs via email	Yes	Yes	Yes	Yes
• Configuration with STEP 7	Yes	Yes	Yes	Yes
• RMON	Yes	Yes	Yes	Yes
• Port mirroring	Yes	Yes	Yes	Yes
• multiport mirroring	Yes	Yes	Yes	Yes
• CoS	Yes	Yes	Yes	Yes
• PROFINET IO diagnosis	Yes	Yes	Yes	Yes
• switch-managed	Yes	Yes	Yes	Yes
Protocol is supported				
• Telnet	Yes	Yes	Yes	Yes
• HTTP	Yes	Yes	Yes	Yes
• HTTPS	Yes	Yes	Yes	Yes
• TFTP	Yes	Yes	Yes	Yes
• FTP	Yes	Yes	Yes	Yes
• BOOTP	Yes	Yes	Yes	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-3ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-3JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4JR2 SCALANCE XR324-4M EEC
• GMRP	Yes	Yes	Yes	Yes
• DCP	Yes	Yes	Yes	Yes
• LLDP	Yes	Yes	Yes	Yes
• SNMP v1	Yes	Yes	Yes	Yes
• SNMP v2	Yes	Yes	Yes	Yes
• SNMP v3	Yes	Yes	Yes	Yes
• IGMP (snooping/querier)	Yes	Yes	Yes	Yes
Identification & maintenance function				
• I&MO - device-specific information	Yes	Yes	Yes	Yes
• I&M1 – higher-level designation/ location designation	Yes	Yes	Yes	Yes
Product functions Diagnosis				
Product function				
• Port diagnostics	Yes	Yes	Yes	Yes
• Statistics Packet Size	Yes	Yes	Yes	Yes
• Statistics packet type	Yes	Yes	Yes	Yes
• Error statistics	Yes	Yes	Yes	Yes
• SysLog	Yes	Yes	Yes	Yes
Product functions VLAN				
Product function				
• VLAN - port based	Yes	Yes	Yes	Yes
• VLAN - protocol-based	No	No	No	No
• VLAN - IP-based	No	No	No	No
• VLAN dynamic	Yes	Yes	Yes	Yes
Number of VLANs maximum	255	255	255	255
Number of VLANs - dynamic maximum	255	255	255	255
Protocol is supported GVRP	Yes	Yes	Yes	Yes
Product functions DHCP				
Product function				
• DHCP client	Yes	Yes	Yes	Yes
• DHCP Option 82	Yes	Yes	Yes	Yes
• DHCP Option 66	Yes	Yes	Yes	Yes
• DHCP Option 67	Yes	Yes	Yes	Yes
Product functions Redundancy				
Product function				
• Ring redundancy	Yes	Yes	Yes	Yes
• High Speed Redundancy Protocol (HRP)	Yes	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with redundancy manager	Yes	Yes	Yes	Yes
• high speed redundancy protocol (HRP) with standby redundancy	Yes	Yes	Yes	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes	Yes	Yes
Product function				
• media redundancy protocol (MRP) with redundancy manager	Yes	Yes	Yes	Yes
• redundancy procedure STP	Yes	Yes	Yes	Yes
• redundancy procedure RSTP	Yes	Yes	Yes	Yes
• redundancy procedure MSTP	Yes	Yes	Yes	Yes
• Passive listening	Yes	Yes	Yes	Yes
Protocol is supported				
• STP/RSTP	Yes	Yes	Yes	Yes
• STP	Yes	Yes	Yes	Yes
• RSTP	Yes	Yes	Yes	Yes
• MSTP	Yes	Yes	Yes	Yes
• RSTP big network support	Yes	Yes	Yes	Yes
• LACP	Yes	Yes	Yes	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-4GG00-3ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-3JR2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4ER2 SCALANCE XR324-4M EEC	6GK5324-4GG00-4JR2 SCALANCE XR324-4M EEC
Product functions Security				
Product function				
• ACL - MAC-based	Yes	Yes	Yes	Yes
• ACL - port/MAC-based	Yes	Yes	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	Yes	Yes	Yes	Yes
• broadcast blocking	Yes	Yes	Yes	Yes
Protocol is supported				
• SSH	Yes	Yes	Yes	Yes
Product functions Time				
Product function				
• SICLOCK support	Yes	Yes	Yes	Yes
Protocol is supported				
• NTP	Yes	Yes	Yes	Yes
• SNTP	Yes	Yes	Yes	Yes
• IEEE 1588 profile default	Yes	Yes	Yes	Yes
Standards, specifications, approvals				
Standard				
• for hazardous zone	-	-	-	-
• for safety from CSA and UL	UL 508, CSA C22.2 No. 142-M1987	UL 508, CSA C22.2 No. 142-M1987	UL 508, CSA C22.2 No. 142-M1987	UL 508, CSA C22.2 No. 142-M1987
• for hazardous zone from CSA and UL	No	No	No	No
• for emitted interference	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)	EN 61000-6-4:2007 (Class A)
• for interference immunity	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005	EN 61000-6-2:2005
Standards, specifications, approvals CE				
Certificate of suitability CE marking	Yes	Yes	Yes	Yes
Standard				
• for EMC	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613	IEC 61850, IEEE 1613
Standards, specifications, approvals miscellaneous				
Certificate of suitability	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007	EN 61000-6-2:2005, EN 61000-6-4:2007
• C-Tick	Yes	Yes	Yes	Yes
• IEC 61850-3	Yes	Yes	Yes	Yes
• KC approval	Yes	Yes	Yes	Yes
Standards, specifications, approvals ship classification				
Marine classification association				
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes	Yes	Yes
• Bureau Veritas (BV)	Yes	Yes	Yes	Yes
• Det Norske Veritas (DNV)	No	No	No	No
• Germanische Lloyd (GL)	No	No	No	No
• DNV GL	Yes	Yes	Yes	Yes
• Lloyds Register of Shipping (LRS)	Yes	Yes	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes	Yes	Yes
• Polski Rejestr Statkow (PRS)	No	No	No	No
• Royal Institution of Naval Architects (RINA)	Yes	Yes	Yes	Yes
Standards, specifications, approvals product conformity				
MTBF	15 y	15 y	20 y	20 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-0GG00-1CR2
Product type designation	SCALANCE XR324-12M TS
Transmission rate	
Transmission rate	10 Mbps, 100 Mbps, 1 000 Mbps
Integrated interfaces for communication	
Number of electrical connections	
• for network components or data terminal equipment	
• with Power-over-Ethernet for network components or terminal equipment	
Number of 100 Mbps ST(BFOC) ports	
• for multimode	24
Number of 100 Mbps SC ports	
• for multimode	24
Number of 1000 Mbps LC ports	
• for multimode	24
• for single-mode (LD)	24
Other interfaces	
Number of electrical connections	
• for operation panel	1
• for signaling contact	1
• for media module	12
• for power supply	1
• for redundant power supply	1
Type of electrical connection	
• for operation panel	RJ11 port
• for signaling contact	2-pin terminal block
• for power supply	4-pin terminal block
Type of removable data storage medium	
• C-PLUG	Yes
Signal inputs/outputs	
Operating current of the signaling contacts	
• with DC, nominal value	24 V
Operating current of the signaling contacts	
• with DC, maximum	0.1 A
Supply voltage, current consumption, power loss	
Type of power supply: redundant power supply	No
Type of supply voltage	DC
Supply voltage	
• External	24 V
• External	19.2 ... 28.8 V
Product component: fusing at power supply input	Yes
Type of fusing at input for supply voltage	F 5 A / 125 V
Current consumption, maximum	1.8 A
Power loss [W]	
• with 24 V DC	44 W
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
• Remark	Reduced operating temperature through use of media modules (-40 to +70 °C) or SFP plug-in transceivers (-40 to +60 °C). In the case of vertical mounting position, the maximum operating temperature is reduced to +50 °C.

Article number	6GK5324-0GG00-1CR2
Product type designation	SCALANCE XR324-12M TS
Relative humidity	
• Relative humidity at 25 °C, without condensation during operation, maximum	95%
IP degree of protection	IP20
Design, dimensions and weights	
Model	19-inch rack
Number of modular height units for 19-inch cabinet	1
Width	483 mm
Height	44 mm
Depth	305 mm
Net weight	5.5 kg
Product property: conformal coating	Yes
Mounting type	For 19-inch rack mounting, 4-point fixing is required for marine engineering applications
• 19-inch installation	Yes
• 35 mm DIN rail mounting	No
• Wall mounting	No
• S7-300 rail mounting	No
• S7-1500 rail mounting	No
Product properties, functions, components - General	
Cascading with redundant ring and reconfiguration time of < 0.3 s	100
Cascading with star structure	Any (only dependent on signal propagation time)
Product functions - Management, configuration, engineering	
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• RMON	Yes
• Port mirroring	Yes
• Multiport mirroring	Yes
• CoS	Yes
• PROFINET IO diagnostics	Yes
• Switch-managed	Yes
Protocol is supported	
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• FTP	Yes
• BOOTP	Yes
• GMRP	Yes
• DCP	Yes
• LLDP	Yes
• IGMP (snooping/querier)	Yes

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Article number	6GK5324-0GG00-1CR2
Product type designation	SCALANCE XR324-12M TS
Identification & Maintenance function	
• I&M0 - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions - Diagnostics	
Product function	
• Port diagnostics	Yes
• Packet size statistics	Yes
• Packet type statistics	Yes
• Error statistics	Yes
• SysLog	Yes
Product functions - VLAN	
Product function	
• VLAN - port-based	Yes
• VLAN - protocol-based	No
• VLAN - IP-based	No
• VLAN - dynamic	Yes
Number of VLANs, maximum	255
Number of dynamic VLANs, maximum	255
GVRP protocol is supported	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• DHCP option 82	Yes
• DHCP option 66	Yes
• DHCP option 67	Yes
Product functions - Redundancy	
Product function	
• Ring redundancy	Yes
• High Speed Redundancy Protocol (HRP)	Yes
• High Speed Redundancy Protocol (HRP) with redundancy manager	Yes
• High Speed Redundancy Protocol (HRP) with standby redundancy	Yes
Media Redundancy Protocol (MRP) is supported	Yes
Product function	
• Media Redundancy Protocol (MRP) with redundancy manager	Yes
• Redundancy procedure STP	Yes
• Redundancy procedure RSTP	Yes
• Redundancy procedure MSTP	Yes
• Passive listening	Yes
Protocol is supported	
• STP/RSTP	Yes
• STP	Yes
• RSTP	Yes
• MSTP	No
• RSTP Big Network Support	Yes
• LACP	Yes

Article number	6GK5324-0GG00-1CR2
Product type designation	SCALANCE XR324-12M TS
Product functions - Security	
Product function	
• ACL - MAC-based	Yes
• ACL - Port/MAC-based	Yes
• IEEE 802.1X (RADIUS)	Yes
• Broadcast/Multicast/Unicast Limiter	Yes
• Broadcast blocking	Yes
Protocol is supported	
• SSH	Yes
Product functions - Time of day	
Product function	
• SICLOCK support	Yes
Protocol is supported	
• NTP	Yes
• SNTP	Yes
• IEEE 1588 profile default	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2006, EN 60079-15: 2005, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1-03
• for hazardous zone, from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location), CSA C22.2 No. 213-M1987, Class 1 / Division 2 / Group A, B, C, D / T4, Class 1 / Zone 2 / Group IIC / T4
• for emitted interference	EN 61000-6-4: 2007 (Class A)
• for noise immunity	EN 61000-6-2: 2005
Standards, specifications, approvals - CE	
Proof of suitability, CE mark	Yes
Standards, specifications, approvals - Other	
Proof of suitability	EN 61000-6-2: 2005, EN 61000-6-4:2007
• C-Tick	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	Yes
• KC approval	Yes
Standards, specifications, approvals - Product conformity	
MTBF at 40 °C	25 y

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Selection and ordering data

Industrial Ethernet switches SCALANCE XR324-4M PoE

Partially modular 19" Industrial Ethernet switches for setup of electrical and optical Industrial Ethernet networks; eight PoE-capable ports, can be optionally equipped with optical or electrical 2-port media modules; All ports support Gigabit Ethernet (blocking), integrated redundancy manager, RSTP, RMON, IGMP-Snooping/Querier, network management via SNMP, PROFINET, and web server
16 x 10/100/1000 Mbps RJ45 ports of which eight support PoE;
4 x 10/100/1000 Mbps slots for 2-port media modules, electrical or optical

SCALANCE XR324-4M PoE TS

For railway applications (EN 50155 approval); 24 V DC power supply
• Data cable outlet at front

6GK5324-4QG00-1CR2

SCALANCE XR324-4M EEC Industrial Ethernet switches

Partially modular 19" Industrial Ethernet switches for establishing electrical and optical Industrial Ethernet networks; all ports can be optionally equipped with optical or electrical 2-port media modules; All ports support Gigabit Ethernet (blocking), integrated redundancy manager, RSTP, RMON, IGMP snooping querier, network management via SNMP, PROFINET and Web server
16 x 10/100/1000 Mbps RJ45 ports, electrical 4 x 10/100/1000 Mbps slots for 2-port media modules, electrical or optical

SCALANCE XR324-4M EEC

Power supply 1 x 24 V DC

- Front data cable outlet, rear power supply
- Rear data cable outlet, front power supply

6GK5324-4GG00-1ER2

6GK5324-4GG00-1JR2

Power supply 1 x 100-240 AC/
60-250 V DC

- Front data cable outlet, rear power supply
- Rear data cable outlet, front power supply

6GK5324-4GG00-3ER2

6GK5324-4GG00-3JR2

Power supply 2 x 24 V DC

- Front data cable outlet, rear power supply
- Rear data cable outlet, front power supply

6GK5324-4GG00-2ER2

6GK5324-4GG00-2JR2

Power supply 2 x 100-240 AC/
60-250 V DC

- Front data cable outlet, rear power supply
- Rear data cable outlet, front power supply

6GK5324-4GG00-4ER2

6GK5324-4GG00-4JR2

Industrial Ethernet switches SCALANCE XR324-12M TS

Fully modular 19" Industrial Ethernet switches for setup of electrical and/or optical Industrial Ethernet networks; all ports can optionally be equipped with optical or electrical 2-port media modules; All ports support Gigabit Ethernet (blocking), integrated redundancy manager, RSTP, RMON, IGMP-Snooping/Querier, network management via SNMP, PROFINET, and web server
12 x 10/100/1000 Mbps slots for 2-port media modules, electrical or optical

SCALANCE XR324-12M TS

For railway applications (EN 50155 approval)
24 V DC power supply
• Data cable outlet at front

6GK5324-0GG00-1CR2

Media modules

Electrical Media Modules

With 2 x 10/100/1000 Mbps RJ45 ports, electrical

- MM992-2CUC with securing collar and coated PCBs (conformal coating)

6GK5992-2GA00-8FA0

With 2 x 10/100/1000 Mbps M12 ports, electrical

- MM992-2 M12 interface (x-coded) and coated PCBs (conformal coating)

6GK5992-2HA00-0AA0

Optical Media Modules

With 2 x 1000 Mbps SC ports, optical

- MM992-2 multi-mode, glass, up to 750 m, coated PCBs (conformal coating)

6GK5992-2AL00-8FA0

Accessories

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

RJ45 plug connector for Industrial Ethernet with rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface • 1 pack = 1 unit	6GK1901-1BB12-2AA0	POF Standard Cable GP 980/1000 POF standard cable for fixed installation indoors with PVC sheath; <u>sold by the meter</u> ; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1874-2A
IE FC M12 Plug PRO 4x2 M12 plug connector (X-coded, IP65/IP67) that can be assembled in the field, metal enclosure, insulation displacement fast connection method, for SCALANCE W • 1 unit	6GK1901-0DB30-6AA0	IE SC RJ PCF Plug Screw connector for local assembly on PCF FOC (1 pack = 10 units)	6GK1900-0NB00-0AC0
IE M12 Panel Feedthrough 4x2 Control cabinet feedthrough for transition from M12 connection method (X-coded, IP65/IP67) to RJ45 connection method (IP20) • 1 pack = 5 units	6GK1901-0DM40-2AA5	PCF Standard Cable GP 200/230 Standard cable, fan-out, <u>sold by the meter</u> ; maximum delivery unit 2000 m; minimum order quantity 20 m	6XV1861-2A
IE FC M12 Cable Connector PRO 4x2 M12 plug-in connector (X-coded, IP65/IP67, female contact insert) that can be assembled in the field, metal housing, insulation displacement fast connection method • 1 unit	6GK1901-0DB40-6AA0	FC FO Termination Kit Termination kit for local assembly of FC SC and FC BFOC connectors on FC FO standard cable; contains a stripping tool, Kevlar cutters, fiber breaking tool and microscope.	6GK1900-1GL00-0AA0
IE Train Cable GP 4x2 8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; <u>sold by the meter</u> ; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1878-2T	FC BFOC Plug Screw connector for local assembly on FC FOC; (1 pack = 20 units + cleaning cloths)	6GK1900-1GB00-0AC0
IE Connecting Cable IE FC RJ45 Plug-180/IE FC RJ45 Plug-180 Preassembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection; Length: • 1.0 m • 5.0 m • 10.0 m	6XV1871-5BH10 6XV1871-5BH50 6XV1871-5BN10	FC SC Plug Screw connector for local assembly on FC FOC; (1 pack = 10 units duplex plugs + cleaning cloths)	6GK1900-1LB00-0AC0
IE TP Cord RJ45/RJ45 TP cable 4 x 2 with two RJ45 connectors • 1 m • 6 m • 10 m	6XV1870-3QH10 6XV1870-3QH60 6XV1870-3QN10	FC FO Standard Cable GP 62.5/200/230 FC FO standard cable for fixed installation indoors with PVC sheath; <u>sold by the meter</u> ; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1847-2A
IE SC RJ POF Plug Screw connector for local assembly on POF FOC (1 pack = 20 units)	6GK1900-0MB00-0AC0	Multimode FO BFOC Connector Set For FO standard cable (50/125/1400), FO ground cable (50/125/1400), flexible FO trailing cable, INDOOR FO cable (62.5/125/900), 20 units	6GK1901-0DA20-0AA0
		Multi-mode FO SC Duplex Connector Set For FO standard cable (50/125/1400), FO ground cable (50/125/1400), flexible FO trailing cable, INDOOR FO cable (62.5/125/900), 10 units	6GK1901-0LB10-2AA0
		LC Plug MM²⁾	6GK1901-0RB10-2AB0
		FO Standard Cable GP 50/125/1400^{1) 2)} Multimode cable <u>sold by the meter</u> ; maximum delivery unit 1000 m, minimum order quantity 20 m	6XV1873-2A

¹⁾ Special fiber-optic cables; lengths and accessories available on request

²⁾ Special tools and specially trained personnel are required for assembling glass FOC

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XR324-4M PoE TS / SCALANCE XR324-4M EEC / SCALANCE XR324-12M TS

Pre-Assembled FO Patch Cables

Multimode

MM FO Cord SC/LC

With one SC duplex connector and one LC duplex connector, 1 m

6XV1843-5EH10-0CA0

MM FO Cord SC/BFOC

With one SC duplex connector and two BFOC connectors, 1 m

6XV1843-5EH10-0CB0

MM FO Cord SC/SC

With two SC duplex connectors, 1 m

6XV1843-5EH10-0CC0

Single-mode

SM FO Cord SC/LC

With one SC duplex connector and one LC duplex connector, 1 m

6XV1843-5FH10-0CA0

SM FO Cord SC/BFOC

With one SC duplex connector and two BFOC connectors, 1 m

6XV1843-5FH10-0CB0

SM FO Cord SC/SC

With two SC duplex connectors, 1 m

6XV1843-5FH10-0CC0

Screw-Type Terminal Block

For SCALANCE X/W/S/M

- 2-pole for signaling contact (24 V DC)
1 pack = 5 units
- 2-pole for power supply (230 V AC)
1 pack = 5 units
- 4-pole for power supply (24 V DC)
1 pack = 5 units

6GK5980-0BB00-0AA5

6GK5980-1BC00-0AA5

6GK5980-1DB00-0AA5

C-PLUG

Removable data storage medium (conformal coating) for easy replacement of devices under fault conditions; for recording configuration data or engineering and application data; can be used in SIMATIC NET products with C-PLUG slot

6GK1900-0AQ00

More information

Selection Tool:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

SIMATIC NET Selection Tool:

- Online version:
<http://www.siemens.com/snst>
- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XM-400 managed

Overview



The new SCALANCE XM-400 product range comprises modular Industrial Ethernet switches, expandable by various port extenders and plug-in transceivers for a maximum configuration with up to 24 ports. It supports 10/100/1000 Mbit technology for various transmission media (twisted pair, fiber optic) and increased port requirements. Thanks to the flexible, modular design, the XM-400 product line is also designed for future requirements and can be adapted to the relevant task.

- Combo ports for the flexible use of interfaces: A combo port consists of an electric port and an SFP slot. Only one of the two ports can ever be active. If an SFP plug-in transceiver is inserted, the electric port is deactivated
- Fast mobile diagnosis with smartphone/tablet thanks to WLAN and NFC: Fast access to the web-based management of the SCALANCE XM-400 via mobile websites. The function can be started using existing WLAN and NFC (Near Field Communication)
- High-speed media redundancy through integral redundancy manager even for large networks, for both Gigabit Ethernet and Fast Ethernet
- Seamless integration of automation networks into existing corporate networks thanks to support for a host of IT standards: Establishment of virtual networks (VLANs)
- Integration into higher-level enterprise networks thanks to support for standardized redundancy procedures (Rapid Spanning Tree Protocol, Link Aggregation)
- By learning the multicast sources and destinations (Internet Group Management Protocol (IGMP) Snooping), SCALANCE XM-400 switches can also filter multicast data traffic and thus limit the load on the network
- Optional activation of the Layer 3 functions for IPv4 and IPv6 in connection with the KEY-PLUG XM-400
- Creation of IP subnets and IP router communication by means of Layer 3 switching (IP routing)
 - Static routing
 - Dynamic routing OSPF (Open Shortest Path First) and RIPv2 (Routing Information Protocol)
 - Redundant routing VRRP (Virtual Router Redundancy Protocol)

Product versions - basic devices

XM408-8C

- 8 ports available in total, of which
 - up to 8 x 10/100/1000 Mbit/s are RJ45 ports with retaining collars
 - up to 8 x SFP slots (combo ports), 100 or 1000 Mbit/s
- Two port extenders with 8 ports each can be connected to implement a maximum of 24 ports in one switch

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XM-400 managed

Technical specifications

Article number	6GK5408-8GS00-2AM2
Transmission rate	
Transfer rate	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s
Number of ports maximum	24
Interfaces for communication maximum configuration for modular devices	
Number of electrical ports maximum	24
Number of electrical ports with PoE maximum	16
Number of optical ports maximum	24
Interfaces for communication integrated	
Number of electrical connections	
• for network components or terminal equipment	8; RJ45 with securing collar
Number of 10/100/1000 Mbit/s RJ45 ports Integrated	
• with securing collar	8
Number of electrical connections	
• for SFP	8; 100 Mbit/s or 1000 Mbit/s SFP plug-in transceiver
Number of combo ports with RJ45 interface for optical plug-in transceiver	8; 100 Mbit/s or 1000 Mbit/s SFP plug-in transceiver
Number of connectable extender modules	2
Interfaces for communication pluggable maximum	
Number of 10/100/1000 Mbit/s RJ45 ports	
• with securing collar	16
• with securing collar with PoE	16
Number of 100 Mbit/s LC ports	
• for multimode	24
• for single mode (LD)	24
• for single mode (LH+)	24
• for single mode (ELH200)	24
Number of 1000 Mbit/s LC ports	
• for multimode	24
• for single mode (LD)	24
• for single mode (LH)	24
• for single mode (LH+)	24
• for single mode (ELH)	24
Number of electrical connections	
• for SFP	24; 100 Mbit/s or 1000 Mbit/s SFP plug-in transceiver
Interfaces others	
Number of electrical connections	
• for operator console	1
• for management purposes	1
• for signaling contact	1
• for power supply	1
• for redundant voltage supply	1
Type of electrical connection	
• for operator console	RJ11
• for management purposes	RJ45
• for signaling contact	2-pole terminal block
• for power supply	4-pole terminal block

Article number	6GK5408-8GS00-2AM2
Number of extender expansion interfaces	2
design of the removable storage	
• C-PLUG/KEY-PLUG	Yes
Product feature hot-swappable interface modules	Yes
Signal-inputs/outputs	
Operating voltage of the signaling contacts	
• at DC Rated value	24 V
Operating current of the signaling contacts	
• at DC maximum	0.1 A
Supply voltage, current consumption, power loss	
Type of voltage supply redundant power supply unit	No
Type of voltage of the supply voltage	DC
Supply voltage	
• external	24 V
• external minimum	19.2 V
• external maximum	28.8 V
Product component fusing at power supply input	Yes
Fuse protection type at input for supply voltage	F 15 A / 125 V
Consumed current maximum	2 A
Power loss [W]	
• at DC at 24 V	48 W
Supplied active power of PSE with PoE	
• per port maximum	30 W
• total maximum	360 W
Permitted ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Relative humidity	
• at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Design	modular
Width	140 mm
Height	147 mm
Depth	125 mm
Net weight	1.15 kg
Mounting type	
• 19-inch installation	No
• 35 mm DIN rail mounting	Yes
• wall mounting	No
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	Yes
Product properties, functions, components general	
Cascading in cases of star topology	any (depending only on signal propagation time)

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XM-400 managed

Article number	6GK5408-8GS00-2AM2	Article number	6GK5408-8GS00-2AM2
Product functions management, configuration		Protocol is supported	
Product function		• RIPv2	Yes
• CLI	Yes	• RIPnG for IPv6	Yes
• web-based management	Yes	• OSPFv2	Yes
• MIB support	Yes	• OSPFv3 for IPv6	Yes
• TRAPs via email	Yes	• VRRP	Yes
• Configuration with STEP 7	Yes	• VRRP for IPv6	Yes
• RMON	Yes		
• Port mirroring	Yes	Product functions Redundancy	
• multiport mirroring	Yes	Product function	
• CoS	Yes	• Ring redundancy	Yes
• PROFINET IO diagnosis	Yes	• High Speed Redundancy Protocol (HRP)	Yes
• switch-managed	Yes	• high speed redundancy protocol (HRP) with redundancy manager	Yes
Telegram length for Ethernet maximum	9 216 byte	• high speed redundancy protocol (HRP) with standby redundancy	Yes
Protocol is supported		Protocol is supported Media Redundancy Protocol (MRP)	Yes
• Telnet	Yes	Product function	
• HTTP	Yes	• media redundancy protocol (MRP) with redundancy manager	Yes
• HTTPS	Yes	• redundancy procedure STP	Yes
• TFTP	Yes	• redundancy procedure RSTP	Yes
• FTP	Yes	• redundancy procedure MSTP	Yes
• BOOTP	Yes	• Passive listening	Yes
• GMRP	Yes	Protocol is supported	
• DCP	Yes	• LACP	Yes
• LLDP	Yes	Product functions Security	
• SNMP v1	Yes	Product function	
• SNMP v2	Yes	• ACL - MAC-based	Yes
• SNMP v3	Yes	• ACL - port/MAC-based	Yes
• IGMP (snooping/querier)	Yes	• IEEE 802.1x (radius)	Yes
Identification & maintenance function		• Broadcast/Multicast/Unicast Limiter	Yes
• I&M0 - device-specific information	Yes	• broadcast blocking	Yes
• I&M1 - higher-level designation/location designation	Yes	Protocol is supported	
		• SSH	Yes
Product functions Diagnosis		Product functions Time	
Product function		Product function	
• Port diagnostics	Yes	• SICLOCK support	Yes
• Statistics Packet Size	Yes	Protocol is supported	
• Statistics packet type	Yes	• NTP	Yes
• Error statistics	Yes	• SNTP	Yes
• SysLog	Yes	Standards, specifications, approvals	
Product functions VLAN		Standard	
Product function		• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• VLAN - port based	Yes	Standards, specifications, approvals CE	
• VLAN - protocol-based	Yes	Certificate of suitability CE marking	Yes
• VLAN - IP-based	Yes	Standards, specifications, approvals miscellaneous	
• VLAN dynamic	Yes	Certificate of suitability	EN 61000-6-2, EN 61000-6-4
Number of VLANs maximum	255	• C-Tick	Yes
Number of VLANs - dynamic maximum	255	• Railway application in accordance with EN 50121-4	Yes
Protocol is supported GVRP	Yes	• KC approval	Yes
Product functions DHCP		Standards, specifications, approvals product conformity	
Product function		MTBF at 40 °C	28 y
• DHCP client	Yes		
• DHCP Option 82	Yes		
• DHCP Option 66	Yes		
• DHCP Option 67	Yes		
Product functions Routing			
Product function			
• Static IP routing	Yes		
• Static IP routing IPv6	Yes		
• dynamic IP routing	Yes		
• dynamic IP routing IPv6	Yes		

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XM-400 managed

Selection and ordering data

SCALANCE XM-400 Industrial Ethernet switches

SCALANCE XM408-8C;

8 x 10/100/1000 Mbps, of which
8 x RJ45/SFP combo ports;
8 x 1000 Mbps maximum basic
device configuration

- IP routing in combination with KEY PLUG XM-400
- IP routing integrated

6GK5408-8GS00-2AM2

6GK5408-8GR00-2AM2

Accessories

Power supplies

SIMATIC PM 1507 24 V

stabilized power supply for
SIMATIC S7-1500

- Power supply S7-1500 PM1507 SIMATIC PM 1507 24 V/3 A stabilized power supply for SIMATIC S7-1500
input: 120/230 V AC
output: 24 V DC/3 A
- Power supply S7-1500 PM1507 SIMATIC PM 1507 24 V/8 A stabilized power supply for SIMATIC S7-1500
input: 120/230 V AC
output: 24 V DC/8 A

6EP1332-4BA00

6EP1333-4BA00

6GK5904-0PA00

KEY-PLUG XM-400

Swap medium for expansion of the device functions with IP routing (Layer 3), for integration of configuration data and easy replacement of SCALANCE XM-400 in the event of a fault

IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE FC TP Standard Cable GP 2 x 2 (Type A)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1000 m, minimum order 20 m

6XV1840-2AH10

IE FC RJ45 Plug 4 x 2

IE FC RJ45 plug 180 4 x 2; RJ45 connector; Cat6A; (10/100/1000/10000 Mbps) with rugged metal enclosure; FC connection method; for IE FC cable 4 x 2 (AWG24); 180° cable outlet

- 1 pack = 1 unit

6GK1901-1BB12-2AA0

IE FC TP Standard Cable GP 4 x 2

8-core, shielded TP installation cable for universal applications; with UL approval; sold by the meter;

- max. length per delivery unit 1000 m, minimum order 20 m
- AWG24, for connecting to IE FC RJ45 Plug 4 x 2, IE FC M12 Plug PRO 4 x 2

6XV1878-2A

IE Connecting Cable IE FC RJ45 Plug-180/IE FC RJ45 Plug-180

Preassembled IE FC TP Trailing Cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection

Length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

FC FO Termination Kit

Termination Kit for local assembly of FC SC and FC BFOC connectors to FC FO Standard Cable, comprising a stripping tool, Kevlar cutters, fiber breaking tool and microscope

6GK1900-1GL00-0AA0

FC BFOC Plug

Screw connector for on-site assembly on FC fiber-optic cable; (1 pack = 20 units + cleaning cloths)

6GK1900-1GB00-0AC0

FC SC Plug

Screw connector for on-site assembly on FC fiber-optic cable; (1 pack = 10 duplex plugs + cleaning cloths)

6GK1900-1LB00-0AC0

FC FO Standard Cable GP 62.5/200/230

FC FO Standard Cable for fixed routing indoors with PVC sheath; sold by the meter; max. length 1000 m; minimum order 20 m

6XV1847-2A

Multi-mode FO BFOC connector set

For FO Standard Cable (50/125/1400), FO Ground Cable (50/125/1400), flexible FO Trailing Cable, INDOOR FC Cable (62.5/125/900), 20 units

6GK1901-0DA20-0AA0

Multi-mode FO SC duplex connector set

For FO Standard Cable (50/125/1400), FO Ground Cable (50/125/1400), flexible FO Trailing Cable, INDOOR FC Cable (62.5/125/900), 10 units

6GK1901-0LB10-2AA0

LC Plug MM²⁾

6GK1901-0RB10-2AB0

FO Standard Cable GP 50/125/1400 ^{1) 2)}

Multimode cable, sold by the meter; max. length 1000 m; minimum order 20 m

6XV1873-2A

Pre-assembled FO patch cables

Multimode

MM FO Cord SC/LC

With one SC duplex connector and one LC duplex connector, 1 m

6XV1843-5EH10-0CA0

MM FO Cord SC/BFOC

With one SC duplex connector and two BFOC connectors, 1 m

6XV1843-5EH10-0CB0

¹⁾ Special fiber-optic cables; lengths and accessories available on request

²⁾ Special tools and trained personnel are required for pre-assembling glass fiber-optic cables

Network Components

SCALANCE X – Industrial Ethernet Switches

SCALANCE XM-400 managed

MM FO Cord SC/SC With two SC duplex connectors, 1 m <u>Single-mode</u>	6XV1843-5EH10-0CC0	Other accessories Spring-loaded terminal block Spring-type terminal block for SCALANCE X/W/S/M; 1 pack = 5 units • 2-pole for signaling contact (24 V DC) • 4-pole for power supply (24 V DC)	
SM FO Cord SC/LC With one SC duplex connector and one LC duplex connector, 1 m	6XV1843-5FH10-0CA0	Connecting cable (RJ11/RS232) Preassembled serial cable with RJ11 and RS232 connectors; length: 5 m; 1 item per pack	6GK5980-0BB10-0AA5
SM FO Cord SC/BFOC With one SC duplex connector and two BFOC connectors, 1 m	6XV1843-5FH10-0CB0	Screw for fixing to S7-1500 and S7-300 rails Mounting screw for SCALANCE X/W/S/M; 1 pack = 5 items	6GK5980-1DB10-0AA5 6GK5980-3BB00-0AA5
SM FO Cord SC/SC With two SC duplex connectors, 1 m	6XV1843-5FH10-0CC0	SCALANCE TAP104 Test access port for the reaction-free extraction of Ethernet data frames (10/100 Mbps) from both transmission directions; extracts entire data traffic (including incomplete diagrams) for further diagnostics.	6GK5980-4AA00-0AA5
C-PLUG Swap medium for simple replacement of devices in the event of a fault; for storing configuration or application data; can be used for SIMATIC NET products with C-PLUG slot	6GK1900-0AB00		6GK5104-0BA00-1SA2

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

- www.siemens.com/snst-standalone
- www.siemens.com/tia-selection-tool-standalone

Network Components

SCALANCE X – Industrial Ethernet Switches

Port Extender for SCALANCE XM-400 managed

Overview



- Port extender for flexible expansion to up to 24 ports, can be connected to the SCALANCE XM-400 Industrial Ethernet switches
- Each port extender has eight ports
- There are three different versions, with different connections

Product versions

PE 408PoE

- 8 x 10/100/1000 Mbps RJ45 ports with retaining collar with PoE according to IEEE802.3 Type 1 and Type 2
- Extended operating temperature range from -40 °C to +60 °C
- A separate power supply is required for PoE power (SCALANCE PS924 PoE or SCALANCE PS9230 PoE are available)

Benefits

- Cost savings due to the modular system. The modular system allows the setup of electrical and optical Industrial Ethernet networks and the network topology and port type to easily be adapted to the plant structure and expanded at any time
- Integrated industrial network for data, speech, and video
- Mounting of a port extender on the basic device or another port extender without tools
- High performance due to Gigabit ports

Design

- Extender connection on the left for connection to a SCALANCE XM-400 basic device or a port extender
- Extender connection on the right for connecting another port extender
- 8 ports for Ethernet connection, different design depending on the version
- LEDs to display the port and device status
- 2 terminal blocks for Power-over-Ethernet supply with 54 V DC input (only PE408PoE)
- Operating temperature range from -40 °C to +70 °C
- IP20 degree of protection

Network Components

SCALANCE X – Industrial Ethernet Switches

Port Extender for SCALANCE XM-400 managed

Technical specifications

Article number	6GK5408-0PA00-8AP2
Product type designation	PE408PoE
Transmission rate	
Transfer rate	10 Mbit/s, 100 Mbit/s, 1 000 Mbit/s
Interfaces for communication integrated	
Number of electrical connections	
• for network components or terminal equipment	8
• for Power-over-Ethernet for network components or terminal equipment	8
Number of 10/100/1000 Mbit/s RJ45 ports Integrated	
• with securing collar	
• with securing collar with PoE	8
Number of electrical connections	
• for SFP	
Interfaces for communication pluggable maximum	
Number of electrical connections	
• for SFP	0
Interfaces others	
Type of electrical connection	
• for power supply	2-pole terminal block
Number of extender expansion interfaces	2
Product feature hot-swappable interface modules	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	
• external	54 V
• external minimum	51.3 V
• external maximum	56.7 V
Product component fusing at power supply input	Yes
Fuse protection type at input for supply voltage	F 4 A / 60 V
Consumed current maximum	0.2 A
Power loss [W]	
• at DC at 24 V	4.8 W
Supplied active power of PSE with PoE	
• per port maximum	30 W
• total maximum	180 W
Permitted ambient conditions	
Ambient temperature	
• during operation	-40 ... +60 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Relative humidity	
• at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20

Article number	6GK5408-0PA00-8AP2
Product type designation	PE408PoE
Design, dimensions and weight	
Design	SIMATIC S7-1500 device design
Number of modular height units relating to 19-inch cabinet	
Width	70 mm
Height	147 mm
Depth	125 mm
Net weight	0.7 kg
Mounting type	
• 19-inch installation	No
• 35 mm DIN rail mounting	Yes
• wall mounting	No
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM3611: Class 1, Division 2, Group A, B, C, D / T4, Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-0: 2009, EN60079-15: 2010, II 3 G Ex nA IIC T4 Gc, KEMA 07 ATEX 0145 X, IECEx DEK 14.0025X
• for safety from CSA and UL	UL 508, UL 60950-1, CSA C22.2 Nr. 60950-1-03
• for hazardous zone from CSA and UL	ISA 12.12.01-2012 (Hazardous Location), Class 1 / Division 2 / Group A, B, C, D / T4, Class 1 / Zone 2 / Group IIC / T4
• for emitted interference	EN 61000-6-4 (Class A)
• for interference immunity	EN 61000-6-2
Standards, specifications, approvals CE	
Certificate of suitability CE marking	Yes
Standards, specifications, approvals miscellaneous	
Certificate of suitability	EN 61000-6-2, EN 61000-6-4
• C-Tick	Yes
• Railway application in accordance with EN 50121-4	Yes
• KC approval	Yes
Standards, specifications, approvals ship classification	
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanische Lloyd (GL)	No
• DNV GL	Yes
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	Yes
• Royal Institution of Naval Architects (RINA)	Yes
Standards, specifications, approvals product conformity	
MTBF at 40°C	58 y

Network Components

SCALANCE X – Industrial Ethernet Switches

Port Extender for SCALANCE XM-400 managed

Selection and ordering data

Port extender for SCALANCE XM-400

- PE408PoE; with 8 x 10/100/1000 Mbps TP ports Power over Ethernet according to 802.3at Type 1/2

6GK5408-0PA00-8AP2

SCALANCE PS924 PoE or SCALANCE PS9230 PoE

SCALANCE PS924 PoE

power supply for Power-over-Ethernet, Input: 24 V DC Output: 54 V DC/1.6 A NEC Class 2

6GK5924-0PS00-1AA2

SCALANCE PS9230 PoE

power supply for Power-over-Ethernet, Input: 120/230 V AC, Output: 54 V DC/1.6 A NEC Class

6GK5923-0PS00-3AA2

Accessories

IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

IE FC RJ45 Plug 180 2 x 2

180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB10-2AA0

IE FC TP Standard Cable GP 2 x 2 (Type A)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 Plug 4 x 2

RJ45 plug-in connector for Industrial Ethernet (10/100/1000 Mbps) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit

6GK1901-1BB11-2AA0

IE FC TP Standard Cable GP 4 x 2

8-core, shielded TP installation cable for universal applications; with UL approval; sold by the meter; max. length per delivery unit 1000 m, minimum order 20 m

- AWG24, for connecting to IE FC RJ45 Plug 4 x 2, IE FC M12 Plug PRO 4 x 2

6XV1878-2A

IE Connecting Cable IE FC RJ45 Plug-180/IE FC RJ45 Plug-180

Preassembled IE FC TP Trailing Cable GP 2 x 2 (PROFINET type C) with two IE FC RJ45 Plug-180, IP20 degree of protection

Length:

- 1.0 m
- 5.0 m
- 10.0 m

6XV1871-5BH10
6XV1871-5BH50
6XV1871-5BN10

Other accessories

Spring-loaded terminal block

Spring-type terminal block for SCALANCE X/W/S/M; 1 pack = 5 units

- 2-pole for signaling contact (24 V DC)

6GK5980-0BB10-0AA5

Screw for fixing to S7-1500 and S7-300 rails

Mounting screw for SCALANCE X/W/S/M; 1 pack = 5 items

6GK5980-4AA00-0AA5

More information

Selection tools:

To assist in selecting the right Industrial Ethernet switches as well as configuration of modular variants, the SIMATIC NET Selection Tool and the TIA Selection Tool are available at:

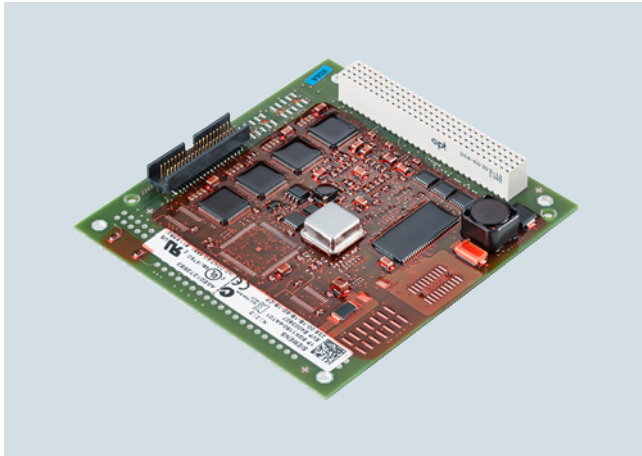
- www.siemens.com/snst-standalone
- www.siemens.com/tia-selection-tool-standalone

Network Components

Communication for PC-based systems

CP 1604

Overview



ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
	●	●	●				

- Integral 4-port real-time switch
- High performance through direct memory access
- Integration in network management systems through the support of SNMP
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- Powerful configuration tools are part of the scope of delivery of the module
- The CP 1604 EEC (Enhanced Environmental Conditions) is suitable for use in extremely harsh industrial environments

Benefits

- Ideally suited for design of small local networks through integral 4-port real-time switch
- Simple portability to various operating system environments using DK-16xx PN IO development kit
- Uncrossed connecting cables can be used due to the integrated Autocrossover function
- Suitable for railway applications acc. to EN 50155 / IEC 60571 (EEC variant 6GK1160-4AT01 only)

Application

The CP 1604 provides high-performance support for control tasks on the PC (PC based Control, Numeric Control, Robot Control).

With IRT (Isochronous Real-Time), the CP is ideally suited to time-critical applications that are in the range of strictly isochronous closed-loop control in the motion control sector.

The integrated 4-port switch supports low-cost system solutions and the configuration of different topologies.

The DK-16xx PN IO development kit enables integration of the module into any operating systems.

The CP 1604 EEC (Enhanced Environmental Conditions) is suitable for use in extremely harsh industrial environments

Design

- Industrial Ethernet (via "Connection Board for CP 1604")
 - Ethernet real-time ASIC ERTEC 400
 - 4 x RJ45 connection
 - Integral 4-port real-time switch for 10/100 Mbit/s Ethernet
 - Half/full duplex
 - Autosensing/Autocrossover/Autonegotiation
- PCI-104-Plus interface:
 - PCI 2.2
 - 32 bits
 - 33 MHz or 66 MHz
 - Installation through PCI standard mechanisms (Plug & Play)
- Host interface/processor:
 - Dual-port RAM onboard
 - Flash for program memory onboard
 - ARM 946 RISK processor (32-bit) onboard for preprocessing
- Power supply:
 - Operating voltage: 5 V through PCI-104
- Size:
 - PCI-104 format

Product versions

CP 1604 EEC (6GK1160-4AT01), version suitable for use in railway applications

- Suitable for use in extreme environmental conditions

Technical specifications

Article number	6GK1160-4AT01
Product type designation	CP 1604 EEC
Transmission rate	
Transfer rate	100 Mbit/s
Interfaces	
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	4
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port via connection board
• for power supply	4-pole terminal block through power supply board
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Type of voltage supply optional external supply	Yes
Supply voltage	
• 1 from backplane bus	5 V
• external	
• Note	
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Consumed current	
• 1 from backplane bus at DC maximum	0.8 A
• from external supply voltage at DC at 24 V maximum	
Power loss [W]	4 W
Power loss [W] in switch mode maximum	4.1 W
Permitted ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-20 ... +60 °C
• during transport	-20 ... +60 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP00

Article number	6GK1160-4AT01
Product type designation	CP 1604 EEC
Design, dimensions and weight	
Module format	PC/104-Plus
Width	90 mm
Height	24 mm
Depth	95 mm
Net weight	110 g
Mounting type	Screw mounting
Number of plug-in cards of same design plug-in per PC station	1
Number of units Note	-
Product functions switch	
Product feature Switch	Yes
Product function switch-managed	No
Product functions Redundancy	
Software for redundancy function required	No
Product function	
• Ring redundancy	Yes
• Redundancy manager	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes
Standards, specifications, approvals	
Standard	
• for EMC	2004/108/EC
• for safety from CSA and UL	CAN/CSA C22.2 & UL 60950-1
• for emitted interference	EN 61000-6-3, EN 61000-6-4
• for interference immunity	EN 61000-6-1, EN 61000-6-2
Certificate of suitability	
• CE marking	Yes
• C-Tick	Yes
Accessories	
accessories	optional: Connection board for CP 1604, power supply board for CP 1604, HARDNET-IE DK (development kit)

Network Components

Communication for PC-based systems

CP 1604

Selection and ordering data

CP 1604 EEC communications processor

PCI-104 card (32-bit) with ASIC ERTEC 400 for connecting PCI-104 systems to PROFINET IO with 4-port real-time switch (RJ45); incl. IO-Base software for PROFINET IO Controller and NCM PC; single license for one installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows XP Professional and Windows 7; other operating systems using DK-16xx PN IO Development Kit English/German

6GK1160-4AT01

Accessories

Connection board for CP 1604

Connection board for CP 1604 with four RJ45 sockets incl. connecting cable

6GK1160-4AC00

Power supply for CP 1604

Redundant power supply for CP 1604 for operating the integral 4-port switch of the CP 1604 with the PC-104 system switched off; includes connecting cable

6GK1160-4AP00

Development Kit DK-16xx PN IO

Software Development Kit for CP 1616/CP 1604; driver and IO-Base software for CP 1616/CP 1604 as PN IO Controller and PN IO Device in source code for transfer to other PC-based operating systems; incl. executable sample code for SUSE Linux 10, Windows XP Professional and Windows 7

See
<https://support.industry.siemens.com/cs/de/en/view/109480928>

IE TP Cord RJ45/RJ45

TP cable 4 x 2 with 2 RJ45 connectors

- 0.5 m
- 1 m
- 2 m
- 6 m

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60

More information

The DK-16xx PN IO Development Kit is available on the Internet at:
<https://support.industry.siemens.com/cs/de/en/view/109480928>

Overview

The RUGGEDCOM RM1224 is a small form-factor industrial 4G cellular router with integrated switch, which enables secure and cost effective connections to and from remote applications.

Features

- 4 copper fast Ethernet ports
- Available with LTE-Modem for Europe and North America
- 2 SMA antenna connectors for MIMO and diversity
- Digital in/out (I/O)
- Redundant Power Supply Inputs 24 V DC
- For use at ambient temperatures from -40 °C to +70 °C without the use of fans

Product versions**RUGGEDCOM RM1224**

- Small form-factor industrial Ethernet-switch and TCP/IP router with LTE WAN option

Benefits

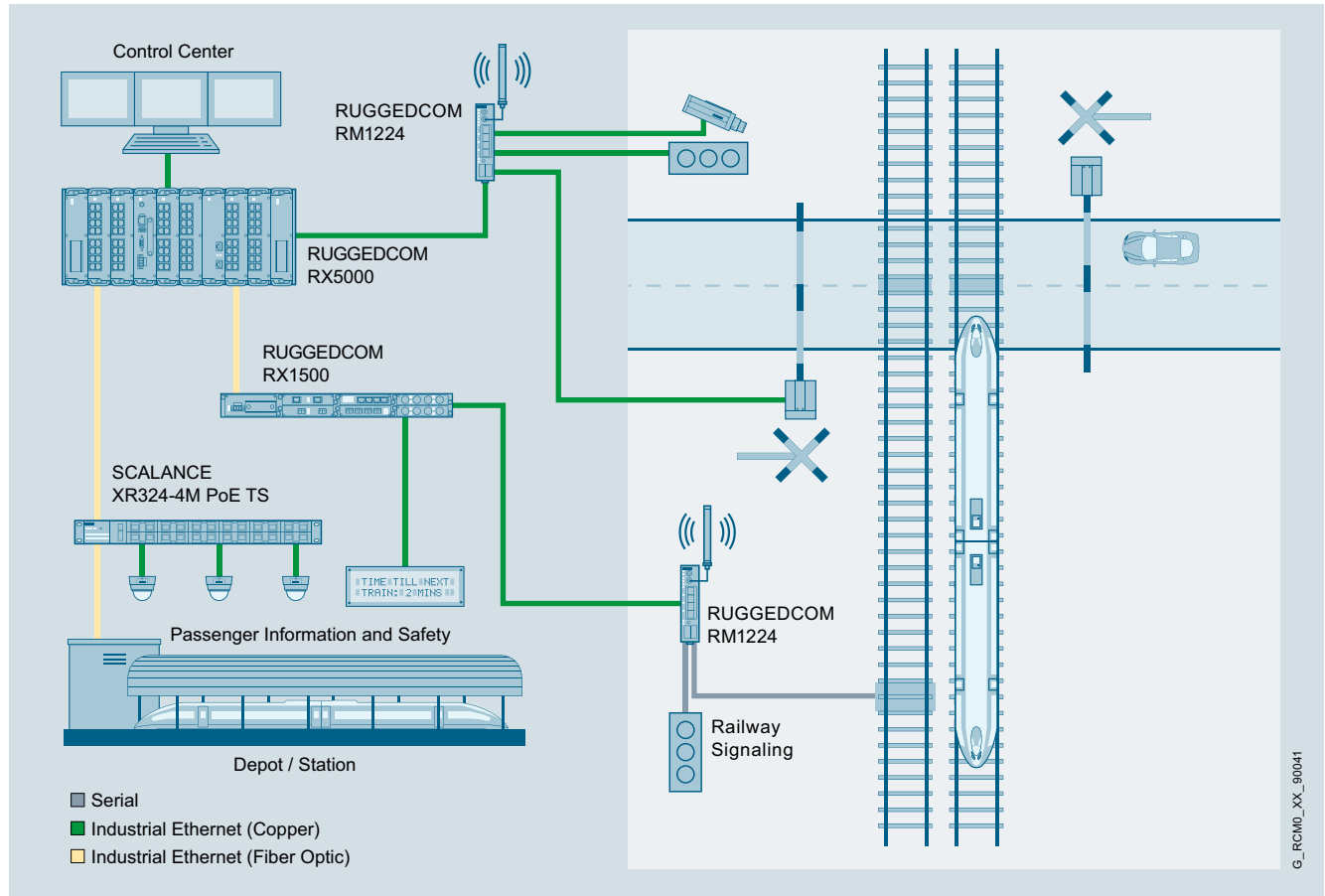
- Economical industrial graded cellular modem designed for space-saving integration in the cabinet
- Two antenna connectors for reliable wireless transmission
- Supports SINEMA Remote Connect
- Built-in Digital I/O which enables push-button VPN connectivity
- Robust plastic housing which fulfills a critical safety requirement in order to avoid using grounding in Mid & Low Voltage installations

Network Components

SCALANCE M / RUGGEDCOM – Mobile Wireless Routers

RUGGEDCOM RM1224

Integration



Redundant connection to end-devices used in conjunction with signaling and monitoring when wireline backhaul is combined with cellular connectivity.

Selection and ordering data

RUGGEDCOM RM1224

The RUGGEDCOM RM1224 is a small form-factor industrial Ethernet-switch and TCP/IP router with 4 copper Ethernet ports, 1 digital I/O, and cellular LTE modem.

- RUGGEDCOM RM1224-EU
- RUGGEDCOM RM1224-NAM

6GK6108-4AM00-2BA2
6GK6108-4AM00-2DA2

More information

To assist in selecting the right RUGGEDCOM products as well as configuration of variants, the RUGGEDCOM Selector is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview



SCALANCE M876-4 is a mobile wireless router for cost-effective and secure connection of Ethernet-based subnets and programmable controllers via mobile networks of the 4th (LTE), 3rd (UMTS) or 2nd (GSM) generation.

SCALANCE M876-4 supports LTE (Long Term Evolution). As a result, high transmission rates of up to 100 Mbps in the downlink and up to 50 Mbps in the uplink are possible (depending on the infrastructure of the mobile wireless provider).

Secure access and communication is ensured by the security functions of the integrated firewall and by VPN tunnels (end-to-end encryption of the communication connection by creation of IPsec tunnels).

Product versions

SCALANCE M876-4 (EU)

- Pentaband LTE with frequency bands 800/900/1800/2100/2600 MHz
- Support of LTE (Downlink: up to 100 Mbps, uplink: up to 50 Mbps)
- Optimized for use in Europe
- Without LTE network, automatic switchover to UMTS (HSPA+) or GSM (EDGE, eGPRS or GPRS mode) data services

SCALANCE M876-4 (NAM)

- Pentaband LTE with frequency bands 700/850/AWS-1 (1700/2100)/1900 MHz
- Support of LTE (Downlink: up to 100 Mbps, uplink: up to 50 Mbps)
- Optimized for use in North America
- Without LTE network, automatic switchover to UMTS (HSPA+) or GSM (EDGE, eGPRS or GPRS mode) data services

Network Components

SCALANCE M – Mobile Wireless Routers

SCALANCE M876-4

Technical specifications

Article number	6GK5876-4AA00-2BA2	6GK5876-4AA00-2DA2
Product type designation	SCALANCE M876-4 (EU)	SCALANCE M876-4 (NAM)
Transmission rate		
Transmission rate	10 Mbps, 100 Mbps	10 Mbps, 100 Mbps
Transmission rate		
• GPRS transmission, in downlink, maximum	85.6 Kbps	85.6 Kbps
• GPRS transmission, in uplink, maximum	85.6 Kbps	85.6 Kbps
• eGPRS transmission, in downlink, maximum	236.8 Kbps	236.8 Kbps
• eGPRS transmission, in uplink, maximum	236.8 Kbps	236.8 Kbps
• UMTS transmission, in downlink, maximum	14.4 Mbps	14.4 Mbps
• UMTS transmission, in uplink, maximum	5.76 Mbps	5.76 Mbps
• LTE transmission, in downlink, maximum	100 Mbps	100 Mbps
• LTE transmission, in uplink, maximum	50 Mbps	50 Mbps
Interfaces		
Number of electrical connections		
• for internal network	4	4
• for external network	2	2
• for power supply	2	2
Type of electrical connection		
• for internal network	RJ45 port (10/100 Mbps, TP, autocrossover)	RJ45 port (10/100 Mbps, TP, autocrossover)
• for external network	SMA antenna socket (50 ohms)	SMA antenna socket (50 ohms)
• for power supply	Terminal strip	Terminal strip
Signal inputs/outputs		
Number of electrical connections		
• for digital input signals	1	1
• for digital output signals	1	1
Type of electrical connection		
• for digital input signals	Terminal strip	Terminal strip
• for digital output signals	Terminal strip	Terminal strip
WAN connection		
Type of wireless network is supported	GSM, UMTS, LTE	GSM, UMTS, LTE
Type of mobile wireless service is supported	GPRS, eGPRS, HSPA+	GPRS, eGPRS, HSPA+
Operating frequency for GSM transmission	900 MHz, 1800 MHz	850 MHz, 900 MHz, 1800 MHz, 1900 MHz
Operating frequency for UMTS transmission	900 MHz, 1800 MHz, 2100 MHz	850 MHz, AWS-1 (1700/2100 MHz), 1900 MHz
Operating frequency for LTE transmission	800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2600 MHz	700 MHz, 850 MHz, AWS-1 (1700/2100 MHz), 1900 MHz

Article number	6GK5876-4AA00-2BA2	6GK5876-4AA00-2DA2
Product type designation	SCALANCE M876-4 (EU)	SCALANCE M876-4 (NAM)
Supply voltage, current consumption, power loss		
Supply voltage, nominal value	24 V	24 V
Supply voltage, rated value	10.8 ... 28.8	10.8 ... 28.8
Type of supply voltage	DC	DC
Current consumed at nominal value of supply voltage, maximum	330 mA	330 mA
Power loss [W]		
• Typical	8 W	8 W
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +60 °C	-20 ... +60 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
Relative humidity at 25 °C during operation, maximum	95%	95%
IP degree of protection	IP20	IP20
Design, dimensions and weights		
Model	Compact	Compact
Depth	127 mm	127 mm
Height	147 mm	147 mm
Width	35 mm	35 mm
Mounting type		
• 35 mm DIN rail mounting	Yes	Yes
• S7-300 rail mounting	Yes	Yes
• S7-1500 rail mounting	Yes	Yes
• Wall mounting	Yes	Yes
Product properties, functions, components - General		
Product function		
• DynDNS client	Yes	Yes
• no-ip.com client	Yes	Yes
Product functions - Management, configuration, engineering		
Product function		
• CLI	Yes	Yes
• Web-based management	Yes	Yes
• MIB support	Yes	Yes
• TRAPs via e-mail	Yes	Yes
Protocol is supported		
• Telnet	Yes	Yes
• HTTP	Yes	Yes
• HTTPS	Yes	Yes
Type of configuring	Web-based management	Web-based management
Product functions - Diagnostics		
Protocol is supported		
• SNMP v1	Yes	Yes
• SNMP v2	Yes	Yes
• SNMP v2c	Yes	Yes
• SNMP v3	Yes	Yes
Product function		
• Packet size statistics	No	No
• Packet type statistics	No	No
• Error statistics	No	No
• SysLog	Yes	Yes
• Packet filter log	Yes	Yes

Network Components

SCALANCE M – Mobile Wireless Routers

SCALANCE M876-4

Article number	6GK5876-4AA00-2BA2	6GK5876-4AA00-2DA2
Product type designation	SCALANCE M876-4 (EU)	SCALANCE M876-4 (NAM)
Product functions - DHCP		
Product function		
• DHCP client	Yes	Yes
• DHCP server - internal network	Yes	Yes
Product functions - Routing		
Router function		
• NAT (IP masquerading)	Yes	Yes
• Port forwarding	Yes	Yes
• NAT traversal	Yes	Yes
• 1:1 NAT	Yes	Yes
• DNS cache	Yes	Yes
Product functions - Security		
Suitability for use of virtual private network	Yes	Yes
Type of firewall	Stateful inspection	Stateful inspection
Product function		
• Password protection	Yes	Yes
• Packet filter	Yes	Yes
• Broadcast/Multicast/Unicast Limiter	No	No
Product function		
• Broadcast blocking	No	No
• with VPN connection	IPsec, OpenVPN (as client for SINEMA RC)	IPsec, OpenVPN (as client for SINEMA RC)
Number of possible connections when using VPN connection	20	20
PSK authentication method when using virtual private network	Yes	Yes
Protocol is supported		
• IPsec tunnel and transport mode	Yes	Yes
Key length		
• 1 with IPsec AES and virtual private network	128 bits	128 bits
• 2 with IPsec AES and virtual private network	192 bits	192 bits
• 3 with IPsec AES and virtual private network	256 bits	256 bits
• with IPsec 3DES and virtual private network	168 bits	168 bits
Internet key exchange mode when using virtual private network		
• Main mode	Yes	Yes
• Quick mode	Yes	Yes
Packet authentication method when using virtual private network	MD5, SHA-1, SHA-256, SHA-384, SHA-512	MD5, SHA-1, SHA-256, SHA-384, SHA-512
IETF profile X.509v3 certificate when using virtual private network	Yes	Yes
Product functions - Time of day		
Protocol is supported		
• NTP	Yes	Yes
• SNTP	Yes	Yes

Article number	6GK5876-4AA00-2BA2	6GK5876-4AA00-2DA2
Product type designation	SCALANCE M876-4 (EU)	SCALANCE M876-4 (NAM)
Standards, specifications, approvals		
Standard		
• for EMC	ETSI EN 301 489-1, ETSI EN 301 489-7, ETSI EN 301 489-24, EN 61000-6-2, EN 61000-6-4	FCC CFR 47, Part 15, Subpart B
• for FM		FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for safety, from CSA and UL		UL 60950-1, CAN/CSA C22.2 No. 60950-1-07, UL E115352 Vol. X2
• for hazardous zone	EN 60079-15, EN 60079-0, II 3 G Ex nA IIC T4 Gc, KEMA 07ATEX0145 X	
• for hazardous zone, from CSA and UL		ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. 1, Div. 2, GP A,B,C,D, T4 / CL. 1, Zone 2, GP IIC
• for emitted interference	ETSI EN 301 489-1, ETSI EN 301 489-7, ETSI EN 301 489-24, EN 61000-6-4	
• for noise immunity	ETSI EN 301 489-1, ETSI EN 301 489-7, ETSI EN 301 489-24, EN 61000-6-2	
Proof of suitability		
• CE mark	Yes	Yes
• Railway application in accordance with EN 50121-3-2	Yes	Yes
• Railway application in accordance with EN 50121-4	Yes	Yes
• Railway application in accordance with EN 50155	Yes; no coated printed-circuit boards	Yes; no coated printed-circuit boards
Standards, specifications, approvals product conformity		
MTBF at 40 °C	55 y	55 y

Network Components

SCALANCE M – Mobile Wireless Routers

SCALANCE M876-4

Selection and ordering data

Mobile wireless router SCALANCE M876

Mobile wireless router for wireless IP communication of Industrial Ethernet-based subnets and programmable controllers via LTE, UMTS or GSM mobile networks; with integrated firewall and VPN with IPsec (OpenVPN for connection to SINEMA RC); 4 x RJ45 ports, 2 x antenna port

- **SCALANCE M876-4 (EU)** ¹⁾
- **SCALANCE M876-4 (NAM)** ¹⁾

6GK5876-4AA00-2BA2
6GK5876-4AA00-2DA2

Accessories

IE FC RJ45 Plug 180

RJ45 plug connector for Industrial Ethernet with rugged metal housing and integrated insulation-displacement/terminal contacts for connecting Industrial Ethernet FC installation cables, with 180° cable outlet, for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

SIMATIC NET Antenna N-Connect Male/Male Flexible Connection Cable

Flexible connection cable for connecting an RCoax cable or antenna to a SCALANCE W-700 access point with N-Connect connections; pre-assembled with two N-Connect male connections

- 1 m
- 2 m
- 5 m
- 10 m

6XV1875-5AH10
6XV1875-5AH20
6XV1875-5AH50
6XV1875-5AN10

SIMATIC NET Antenna Connection Cable N/SMA Male/Male

Flexible antenna connection cable for connection of antenna and SCALANCE M

- 0.3 m
- 1 m
- 2 m
- 5 m

6XV1875-5LE30
6XV1875-5LH10
6XV1875-5LH20
6XV1875-5LH50

Lightning Protector LP798-1N

6GK5798-2LP00-2AA6

Lightning protector with N/N female/female connection, IP67 (-40 to +85 °C), frequency range: 0 ... 6 GHz

SIMATIC NET N-Connect/ N-Connect Female/ Female Panel Feedthrough

Cabinet feedthrough for wall thicknesses up to 4.5 mm, two N-Connect female connections

6GK5798-2PP00-2AA6

C-PLUG

Removable data storage medium for easy replacement of devices under fault conditions; for storing configuration and application data; can be used in SIMATIC NET products with C-PLUG slot

6GK1900-0AB00

KEY-PLUG SINEMA RC

Removable data storage medium for activating the connection to SINEMA Remote Connect for S615 and SCALANCE M874-x and M876-x, for easy device replacement under fault conditions, and for storing configuration data.

6GK5908-0PB00

SCALANCE M Desktop Pedestal

SCALANCE M-800 desktop pedestal for table mounting for SCALANCE M812 / M816 / M874-x / M876-x / S615

6GK5898-8MD00

IE TP Cord RJ45/RJ45

TP cable 4 x 2 with 2 RJ45 plugs

- 0.5 m
- 1 m
- 2 m
- 6 m
- 10 m

6XV1870-3QE50
6XV1870-3QH10
6XV1870-3QH20
6XV1870-3QH60
6XV1870-3QN10

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1871-2T

IE Train Cable GP 4x2

8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1878-2T

¹⁾ Note national approvals under <http://www.siemens.com/mobilenetwork-approvals>

More information

You can find more information on remote networks on the Internet at:

<http://www.siemens.com/remote-networks>

You will find more information on industrial security on the Internet at:

<http://www.siemens.com/industrialsecurity>

Selection tools:

Two tools are available to assist you in selecting the right remote networks products: the SIMATIC NET Selection Tool and the TIA Selection Tool.

SIMATIC NET Selection Tool:

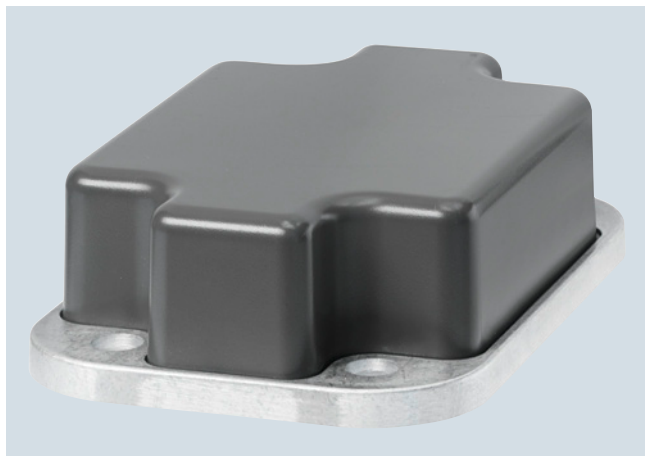
- Online version:
<http://www.siemens.com/snst>

- Offline version:
<http://www.siemens.com/snst-standalone>

TIA Selection Tool:

<http://www.siemens.com/tia-selection-tool>

Overview



Remote antennas increase the reliability of wireless links by optimizing signal reception and emission.

- Used for routers, modems and communications processors for the mobile network standards GSM/GPRS (2G), UMTS (3G), LTE (4G)

Benefits

- Cost-effective connection to devices in remote, difficult-to-access or hostile environments
- Establishment of a reliable mobile network infrastructure through the use of remote antennas, even if the mobile network devices are installed in the control cabinet, for example

Application

Remote antennas optimize transmission and reception conditions and enable use of remote network products in a large number of industrial applications.

In addition to antennas with directional radiation characteristics, omnidirectional antennas concentrate the radio field around the antenna in the shape of a disc. Both designs therefore result in improved radio communication quality.

Technical specifications

Article No.	6GK5896-6MH00-0AA0
Product type designation	Antenna ANT896-6MH
Radio frequencies	
Type of wireless network is supported	GSM, UMTS, LTE
Operating frequency	
• For WLAN in 2.4 GHz frequency band	2.4 ... 2.7 GHz
Operating frequency	700 MHz, 800 MHz, 850 MHz, 900 MHz, 1575.42 MHz, 1700 MHz, 1800 MHz, 1900 MHz, 2100 MHz, 2600 MHz
Electrical specifications	
Impedance	50 ohms
Polarization	Linear vertical
Radiation characteristic	Omnidirectional
Antenna gain compared with the spherical radiator	
• With linear radiation	5 dB
Voltage standing wave ratio (VSWR), max.	2.2
Radiating angle of the antenna	
• Horizontal	360°
Number of electrical connections of the antenna	1
Design of the electrical connection of the antenna	N-connector
Connection version	Female
Transmit power, maximum	100 W; at 50 °C ambient temperature

Article No.	6GK5896-6MH00-0AA0
Product type designation	Antenna ANT896-6MH
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +85 °C
• during storage	-40 ... +85 °C
IP degree of protection	IP69K
Maximum wind load	Survival at 500 km/h
Design, dimensions and weight	
Width	100 mm
Height	40 mm
Depth	145 mm
Net weight	0.488 kg
Mounting type	
• Flat-roof mounting	Yes
• Directly on the device	No
Product properties, functions, components - General	
Product property silicone-free	Yes
Standards, specifications, approvals	
Certificate of suitability	Railway application acc. to DIN5510-2, BS6853, NF-F-16-101, NF-F-16-102
Certificate of suitability	
• RoHS compliance	Yes
• Railway application in accordance with EN 50155	Yes
• Fire protection in accordance with EN 45545-2	Yes
Wireless approval	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals

Network Components

SCALANCE M – Mobile Wireless Routers

ANT896-6MH

Selection and ordering data

2G/3G/4G Antenna ANT896-6MH

Omnidirectional mobile radio antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; suitable for railway applications; omnidirectional characteristic; with N-female connector; mounting on vehicle roof; antenna gain 5/6 dBi, IP69K

6GK5896-6MH00-0AA0

More information

Cabling range:

Pre-assembled connecting cables for IRC products can be found in the Industry Mall under Antenna Connection System.

You can order components supplementary to the SIMATIC NET cabling range from your local contact. Technical advice on this subject is available from:

J. Hertlein
PD PA CI PRM 4
Phone: +49 (911) 750 44 65
E-Mail: juergen.hertlein@siemens.com

Overview



- Industrial Wireless LAN access points for installation in control cabinets or in indoor areas with support of IEEE 802.11a/b/g/h/n and data rates of up to 300 Mbps

Design

- Low-profile, compact aluminum housing, shock and vibration resistant for stringent mechanical requirements
- Special coating of the printed circuit boards (conformal coating)
- Resistant to condensation
- Railroad approval in accordance with EN 50155
- Degree of protection IP30
- For use at ambient temperatures from -30 ... +65 °C
- Support of 2.4 GHz and 5 GHz frequency bands
- 2 x R-SMA sockets for connection of directly mountable and remote antennas
- Optimized antenna placement for 2x2 MIMO technology; antennas do not interfere with each other when mounted directly on the device
- 2 x M12 connections for 10/100 Mbps, one with Power-over-Ethernet according to IEEE 802.3at
- 1 x M12 socket for power supply (24 V DC)
- 1 x PLUG slot (KEY-PLUG/C-PLUG)
- Function LEDs for optical signaling of faults and operating states
- Mounting: Wall, S7-1500 mounting rail, S7-300 mounting rail or 35 mm standard mounting rail
- A wireless card is permanently installed in the device; functional scope can be expanded by using a KEY-PLUG W780 iFeatures

Function

The SCALANCE W774-1 M12 EEC (Extended Environmental Conditions) access points are designed for use in a railway environment. The devices are EN 50155-approved for railway applications and can thus be used for rail traffic. Combined with antennas approved for the rail sector, which are connected via R-SMA antenna connections (female), these products can be used to set up a reliable IWLAN infrastructure.

The devices can be mounted at an optimal location for the wireless link. The housing and the connection plugs are resistant to high shock and vibration loads because all the connections are screwed or locked. The SCALANCE W774 M12 EEC is ideally suited for environments in which a compact size is important. Through its coated printed-circuit boards (conformal coating), the module is resistant to condensation caused, for example, by use in environments with large temperature variations.

SCALANCE W774-1 M12 EEC access points can also be operated as client modules.

Provided that a time delay (several 100 ms), which arises from the roaming defined in IEEE 802.11, is tolerated by all communication stations following a change from one radio cell to another, the communication continues uninterrupted.

For real-time requirements, the SCALANCE W774-1 M12 EEC can be equipped with KEY-PLUG functionality for activating iFeatures.

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W774-1 M12 EEC

Technical specifications

Article number	6GK5774-1FY00-0TA0 6GK5774-1FY00-0TB0 ¹⁾
Product type designation	SCALANCE W774-1 M12 EEC
Transmission rate	
Transmission rate	
• on WLAN, maximum	300 Mbps
• on Industrial Ethernet	10 Mbps, 100 Mbps, 10 Mbps, 100 Mbps
Interfaces	
Number of electrical connections	
• for network components or data terminal equipment	2
• for power supply	1
• for redundant power supply	1
Type of electrical connection	
• for network components or data terminal equipment	M12 interface (4-pin, D-coded), PoE
• for power supply	M12 interface (4-pin, A-coded)
Type of removable data storage medium	
• C-PLUG	Yes
• KEY-PLUG	Yes
Wireless interfaces	
Number of permanently installed wireless cards	1
Type of transmission for multiple input multiple output (MIMO)	2x2
Number of spatial streams	2
Number of electrical connections for external antenna(s)	2
Type of electrical connection for external antenna(s)	R-SMA (socket)
Product property: external antenna can be mounted directly on device	Yes
Supply voltage, current consumption, power loss	
Type of supply voltage	DC
Supply voltage 1	
• from M12 power connector (A-coded) for redundant power supply	16.8 V
Supply voltage 2	
• from M12 power connector (A-coded) for redundant power supply	31.2 V
Supply voltage	
• from Power-over-Ethernet in accordance with IEEE802.3af for Type 1 and IEEE802.3af	48 V

Article number	6GK5774-1FY00-0TA0 6GK5774-1FY00-0TB0 ¹⁾
Product type designation	SCALANCE W774-1 M12 EEC
Permissible ambient conditions	
Ambient temperature	
• during operation	-30 ... +65 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Relative humidity at 25 °C, without condensation during operation, maximum	100%
Ambient conditions for operation	When used under explosion protection conditions (Zone 2), the SCALANCE W774-1 M12 EEC product must be installed in an enclosure with at least IP54 degree of protection according to EN 60529 within the jurisdiction of EN 50021.
IP degree of protection	IP30
Design, dimensions and weights	
Width	26 mm
Height	156 mm
Depth	127 mm
Width of housing without antenna	26 mm
Height of housing without antenna	147 mm
Depth of housing without antenna	127 mm
Net weight	0.52 kg
Product property: conformal coating	Yes
Mounting type	Wall mounting only when mounted flat
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	Yes
• Wall mounting	Yes
Radio frequencies	
Operating frequency	
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz
Product properties, functions, components - General	
Product function - Access point mode	Yes
Product function - Client mode	Yes
Number of SSIDs	4
Product function	
• Dual client	No
• iPCF access point	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; only in combination with the 'KEY-PLUG W740 iFeatures'
• iPCF-MC access point	No
• iPCF-MC client	Yes; only in combination with the 'KEY-PLUG W740 iFeatures'
Number of iPCF-enabled wireless modules	1
Product function - iREF	No
Number of iREF-enabled wireless modules	0

¹⁾ Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W774-1 M12 EEC

Article number	6GK5774-1FY00-0TA0 6GK5774-1FY00-0TB0 ¹⁾
Product type designation	SCALANCE W774-1 M12 EEC
Product functions - Management, configuration, engineering	
Number of manageable IP addresses in the client	8
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• Configuration with STEP 7 in the TIA Portal	Yes
• Forced roaming with IWLAN	No
• WDS	Yes
Protocol is supported	
• Address Resolution Protocol (ARP)	Yes
• ICMP	Yes
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• DCP	Yes
• LLDP	Yes
Identification & Maintenance function	
• I&MO - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Product functions - Diagnostics	
Product function	
• PROFINET IO diagnostics	Yes
• Link check	No
• Connection monitoring IP-Alive	No
• Localization using Aeroscout	No
• SysLog	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions - VLAN	
Product function	
• VLAN function for IWLAN	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• In Client Mode, DHCP server via LAN	No
Product functions - Redundancy	
Protocol is supported	
• STP/RSTP	Yes
Product functions - Security	
Product function	
• ACL - MAC-based	No
• Management security with IP-based ACL	Yes
• IEEE 802.1X (RADIUS)	Yes
• NAT/NAPT	No
• Access protection in accordance with IEEE802.11i	Yes
• WPA/WPA2	Yes
• TKIP/AES	Yes
Protocol is supported	
• SSH	Yes

Article number	6GK5774-1FY00-0TA0 6GK5774-1FY00-0TB0 ¹⁾
Product type designation	SCALANCE W774-1 M12 EEC
Product functions - Time of day	
Protocol is supported	
• SNTP	Yes
• SIMATIC Time	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. CL.1, Div. 2 GP. A,B,C,D, T4 / CL. 1, Zone 2, GP IIC
Proof of suitability	
• EC Declaration of Conformity	Yes
• CE mark	Yes
• C-Tick	Yes
• CCC	No
• E1 approval	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	Yes
• NEMA TS2	No
• IEC 61375	No
• IEC 61850-3	No
• NEMA4X	No
• Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af	Yes
• Power-over-Ethernet in accordance with IEEE802.3at for Type 2	Yes
Standard for wireless communication	
• IEEE 802.11a	Yes
• IEEE 802.11b	Yes
• IEEE 802.11e	Yes
• IEEE 802.11g	Yes
• IEEE 802.11h	Yes
• IEEE 802.11i	Yes
• IEEE 802.11n	Yes
Wireless approval	You will find the current list of countries at: www.siemens.com/wireless-approvals
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	No
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanischer Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	No
• Nippon Kaiji Kyokai (NK)	No
• Polski Rejestr Statkow (PRS)	No

¹⁾ Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W774-1 M12 EEC

Selection and ordering data

SCALANCE W774-1 M12 EEC Access Points

IWLAN access points with built-in wireless interface; wireless networks IEEE 802.11a/b/g/h/n at 2.4/5 GHz up to 300 Mbps; railway approval in accordance with EN 50155; conformal coating; WPA2/AES; Power over Ethernet (PoE), IP20 degree of protection; scope of delivery: mounting hardware; manual on CD-ROM, German/English

SCALANCE W774-1 M12 EEC

IWLAN access point with one built-in wireless interface

- National approvals for operation outside the U.S.
- National approvals for operation within the U.S.¹⁾

Accessories

KEY-PLUG W780 iFeatures

Removable data storage medium for activating additional iFeatures, for easy device replacement under fault conditions and for recording configuration data; can be used in SCALANCE W access points with PLUG slot

C-PLUG

Removable data storage medium for easy replacement of devices under fault conditions; for recording configuration data; can be used in SIMATIC NET products with PLUG slot

IE FC M12 Plug PRO 2 x 2

M12 plug connector (D-coded, IP65/IP67) that can be assembled in the field, metal enclosure, FastConnect connection method, for SCALANCE W774-1 M12 EEC

- 1 unit
- 8 units

IE TP Train Cable GP 2x2 (Type C)

4-core, shielded TP installation cable for connection to IE FC outlet RJ45/IE FC RJ45 plug 180/90 for train applications: PROFINET-compliant; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

Power M12 Cable Connector PRO

Connector socket for connection of SCALANCE W700 for 24 V DC supply voltage; 4-pin, A-coded, with assembly instructions, 3 units

Power Cable 2 x 0.75

Connecting cable for Power M12 Cable Connector PRO, sold by the meter

N-Connect/SMA female/female panel feedthrough

Cabinet bushing with fastening flange for wall thicknesses up to 5.5 mm, SMA female and N-Connect female connections

N-Connect/N-Connect female/female panel feedthrough

Cabinet bushing for wall thicknesses up to 4.5 mm, two N-Connect female connections

6XV1871-2T

6GK1901-1GA00

6GK1907-0DC10-6AA3

6XV1812-8A

6GK5798-0PT00-2AA0

6GK5798-2PP00-2AA6

¹⁾ Note national approvals under <http://www.siemens.com/wireless-approvals>

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Wireless approvals:

Current approvals can be found on the Internet at: <http://www.siemens.com/wireless-approvals>

Overview



Product variant

SCALANCE W778-1 M12 EEC

- Access point with a permanently installed radio card; functional scope can be expanded using a KEY-PLUG W780 iFeature; 1 radio; 2 N-CON antenna port; IEEE 802.11a/b/g/h/n; 2.4/5 GHz; gross data rate 300 Mbit/s; 2x M12 max. 100 Mbit/s; PoE integrated 2-port switch; redundant 24 V DC; M12 A-coded IP65; -30... 70 °C; plug slot WPA2/802.11i/e

Technical specifications

Article number	6GK5778-1GY00-0TA0	6GK5778-1GY00-0TB0 ¹⁾
Transmission rate		
Transfer rate		
• with WLAN maximum	300 Mbit/s	300 Mbit/s
• for Industrial Ethernet	10, 100 Mbit/s	10, 100 Mbit/s
Transfer rate for Industrial Ethernet		
• minimum	10 Mbit/s	10 Mbit/s
• maximum	100 Mbit/s	100 Mbit/s
Interfaces		
Number of electrical connections		
• for network components or terminal equipment	2	2
• for power supply	1	1
• for redundant voltage supply	1	1
Type of electrical connection		
• for network components or terminal equipment	M12 interface (4-pole, D-coded), PoE	M12 interface (4-pole, D-coded), PoE
• for power supply	M12 interface (4-pole, A-coded)	M12 interface (4-pole, A-coded)
design of the removable storage		
• C-PLUG	Yes	Yes
• KEY-PLUG	Yes	Yes
Interfaces wireless		
Number of radio cards permanently installed	1	1
Transmission mode for multiple input multiple output (MIMO)	2x2	2x2
Number of spatial streams	2	2
Number of electrical connections for external antenna(s)	2	2
Type of electrical connection for external antenna(s)	N-Connect (socket)	N-Connect (socket)
Product feature external antenna can be mounted directly on device	Yes	Yes
Supply voltage, current consumption, power loss		
Type of voltage of the supply voltage	DC	DC
Supply voltage 1		
• from M12 Power Connector (A-coded) for redundant power supply	16.8 V	16.8 V
Supply voltage 2		
• from M12 Power Connector (A-coded) for redundant power supply	31.2 V	31.2 V

¹⁾Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W778-1 M12 EEC

Article number	6GK5778-1GY00-0TA0	6GK5778-1GY00-0TB0 ¹⁾
Supply voltage		
• from Power-over-Ethernet acc. to IEEE802.3at for type 1 and IEEE802.3af	48 V	48 V
Consumed current		
• at DC at 24 V typical	0.25 A	0.25 A
• with Power-over-Ethernet acc. to IEEE802.3at for type 1 and IEEE802.3af typical	0.125 A	0.125 A
Power loss [W]		
• at DC at 24 V typical	6 W	6 W
• with Power-over-Ethernet acc. to IEEE802.3at for type 1 and IEEE802.3af typical	6 W	6 W
Permitted ambient conditions		
Ambient temperature		
• during operation	-30 ... +75 °C	-30 ... +75 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %	95 %
Protection class IP	IP65	IP65
Design, dimensions and weight		
Width	140 mm	140 mm
Height	160 mm	160 mm
Depth	45 mm	45 mm
Width of the enclosure without antenna	140 mm	140 mm
Height of the enclosure without antenna	149 mm	149 mm
Depth of the enclosure without antenna	45 mm	45 mm
Net weight	0.95 kg	0.95 kg
Product feature conformal coating	Yes	Yes
Mounting type		
• S7-300 rail mounting	No	No
• S7-1500 rail mounting	No	No
• 35 mm DIN rail mounting	Yes	Yes
• wall mounting	Yes	Yes
Wireless frequencies		
Operating frequency		
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz	2.41 ... 2.48 GHz
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz	4.9 ... 5.8 GHz
Product properties, functions, components general		
Product function Access Point Mode	Yes	Yes
Product function Client Mode	Yes	Yes
Number of SSIDs	4	4
Product function		
• iPCF Access Point	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
• iPCF-MC Access Point	No	No
• iPCF-MC client	Yes; Only in combination with 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'	Yes; Only in combination with 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
Number of iPCF-capable radio modules	1	1
Product function iREF	Yes	Yes
Number of iREF-capable radio modules	1	1
Product function iPRP	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only

¹⁾Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W778-1 M12 EEC

Article number	6GK5778-1GY00-0TA0	6GK5778-1GY00-0TB0 ¹⁾
Product functions management, configuration		
Number of manageable IP addresses in client	8	8
Product function		
• CLI	Yes	Yes
• web-based management	Yes	Yes
• MIB support	Yes	Yes
• TRAPs via email	Yes	Yes
• Configuration with STEP 7	Yes	Yes
• configuration with STEP 7 in the TIA Portal	Yes	Yes
• operation with IWLAN controller	No	No
• operation with Enterasys WLAN controller	No	No
• forced roaming on IP down with IWLAN	Yes	Yes
• forced roaming on link down with IWLAN	Yes	Yes
• WDS	Yes	Yes
Protocol is supported		
• Address Resolution Protocol (ARP)	Yes	Yes
• ICMP	Yes	Yes
• Telnet	Yes	Yes
• HTTP	Yes	Yes
• HTTPS	Yes	Yes
• TFTP	Yes	Yes
• DCP	Yes	Yes
• LLDP	Yes	Yes
Identification & maintenance function		
• I&MO - device-specific information	Yes	Yes
• I&M1 – higher-level designation/location designation	Yes	Yes
Product functions Diagnosis		
Product function		
• PROFINET IO diagnosis	Yes	Yes
• Link Check	No	No
• connection monitoring IP-Alive	No	No
• localization via Aeroscout	Yes	Yes
• SysLog	Yes	Yes
Protocol is supported		
• SNMP v1	Yes	Yes
• SNMP v2	Yes	Yes
• SNMP v3	Yes	Yes
Product functions VLAN		
Product function		
• function VLAN with IWLAN	Yes	Yes
Product functions DHCP		
Product function		
• DHCP client	Yes	Yes
• in Client Mode DHCP server via LAN	Yes	Yes
• DHCP Option 82	Yes	Yes
Product functions Redundancy		
Protocol is supported		
• STP/RSTP	Yes	Yes
• MSTP	Yes	Yes
• RSTP	Yes	Yes

¹⁾Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W778-1 M12 EEC

Article number	6GK5778-1GY00-0TA0	6GK5778-1GY00-0TB0 ¹⁾
Product functions Security		
Product function		
• ACL - MAC-based	Yes	Yes
• Management security, ACL-IP based	Yes	Yes
• IEEE 802.1x (radius)	Yes	Yes
• NAT/NAPT	Yes	Yes
• access protection according to IEEE802.11i	Yes	Yes
• WPA/WPA2	Yes	Yes
• TKIP/AES	Yes	Yes
Protocol is supported		
• SSH	Yes	Yes
• RADIUS	Yes	Yes
Product functions Time		
Protocol is supported		
• NTP	Yes	Yes
• SNTP	Yes	Yes
• SIMATIC Time	Yes	Yes
Standards, specifications, approvals		
Standard		
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety from CSA and UL	UL 60950-1 CSA C22.2 No. 60950-1	UL 60950-1 CSA C22.2 No. 60950-1
• for hazardous zone from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. 1, Div. 2, GP. A,B,C,D, T4 / CL. 1, Zone 2, GP IIC	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. 1, Div. 2, GP. A,B,C,D, T4 / CL. 1, Zone 2, GP IIC
Certificate of suitability		
• EC declaration of conformity	Yes	Yes
• CE marking	Yes	Yes
• C-Tick	Yes	Yes
• E1 approval	No	No
• Railway application in accordance with EN 50155	Yes	Yes
• Railway application in accordance with EN 50121-4	Yes	Yes
• Fire protection in accordance with EN 45545-2	Yes	Yes
• NEMA TS2	No	No
• IEC 61375	No	No
• IEC 61850-3	No	No
• NEMA4X	No	No
• Power-over-Ethernet acc. to IEEE802.3at for type 1 and IEEE802.3af	Yes	Yes
• Power-over-Ethernet acc. to IEEE802.3at for type 2	Yes	Yes
Standard for wireless communication		
• IEEE 802.11a	Yes	Yes
• IEEE 802.11b	Yes	Yes
• IEEE 802.11e	Yes	Yes
• IEEE 802.11g	Yes	Yes
• IEEE 802.11h	Yes	Yes
• IEEE 802.11i	Yes	Yes
• IEEE 802.11n	Yes	Yes
Wireless approval	You will find the current list of countries at: www.siemens.com/wireless-approvals	You will find the current list of countries at: www.siemens.com/wireless-approvals
Marine classification association		
• American Bureau of Shipping Europe Ltd. (ABS)	Yes	Yes
• Bureau Veritas (BV)	Yes	Yes
• DNV GL	Yes	Yes
• Lloyds Register of Shipping (LRS)	Yes	Yes
• Nippon Kaiji Kyokai (NK)	Yes	Yes
• Polski Rejestr Statkow (PRS)	Yes	Yes
• Royal Institution of Naval Architects (RINA)	Yes	Yes

¹⁾Wireless approval in the USA

Selection and ordering data

Access Points

SCALANCE W778-1 M12 EEC

IWLAN access point with built-in wireless interfaces (radio)
IEEE 802.11a/b/g/h/n wireless network with 2.4/5 GHz up to 300 Mbps; 2x M12 max. 100 Mbps; M12 A-coded; plug slot WPA2/802.11i/e;
integrated Power over Ethernet (PoE) 2-port switch; 2 N-CON antenna port, iFeatures support via KEY-PLUG; IP65 degree of protection; redundant 24 V DC; -30 ... 75°C; Conformal Coating; EN 50155; EN45545; scope of delivery: Manuals on CD-ROM, English/German; M12 sealing caps

SCALANCE W778-1 M12 EEC

- Country approvals for operation outside the USA ¹⁾
- Country approvals for operation within the USA ¹⁾

Accessories

KEY-PLUG W780 iFeatures

Removable data storage medium for enabling additional iFeatures, simple device replacement in the event of a fault and storage of configuration data. Can be used in SCALANCE W access points with PLUG compartments

C-plug

Removable data storage medium for simple device replacement in the event of a fault and storage of configuration data; can be used in SIMATIC NET products with PLUG compartment

IE FC M12 plug PRO 2 x 2

M12 connector for on-site assembly (D-coded, IP65/IP67), metal enclosure, FastConnect connection technology, for SCALANCE W778-1 M12

- 1 unit
- 8 units

IE FC standard cable GP 2 x 2 /Type A

4-wire, shielded TP installation cable for connection to IE FC RJ45 outlet/ IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length per delivery unit 1 000 m, minimum order quantity 20 m

IE FC stripping tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Power M12 Cable Connector PRO

Terminal socket for connection of SCALANCE W700 for 24 V DC supply voltage; 4-pin, A-coded, with assembly instructions, 3 units

Power cable 2 x 0.75

Connecting cable for Power M12 Cable Connector PRO, sold by the meter

N-Connect/SMA female/female panel feedthrough

Cabinet bushing with fastening flange for wall thicknesses up to 5.5 mm, SMA female and N-Connect female connections

N-Connect/N-Connect female/female panel feedthrough

Cabinet bushing for wall thicknesses up to 4.5 mm, two N-Connect female connections

¹⁾ Please note country approvals under:
<http://www.siemens.com/mobilenetwork-approvals>

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Wireless approvals:

Current approvals can be found on the Internet at:

<http://www.siemens.com/wireless-approvals>

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W786-2 RJ45 for outdoor use

Overview



- Particularly well-suited to applications with high climatic requirements when installed outdoors and in areas accessible to the public

Design

- Rugged, impact-resistant plastic enclosure, shock and vibration-proof for demanding mechanical requirements
- High IP65 degree of protection against dust and water jets
- For use at ambient temperatures from -40 °C to +60 °C
- Resistant to condensation
- Resistant to UV radiation and saltwater spray
- Design for use outdoors
- 3 x R-SMA sockets for the connection of remote antennas (6 x R-SMA sockets or six internal antennas for the variants with two wireless modules)
- Suitable for 2.4 GHz and 5 GHz
- 1 x RJ45 connector for 10/100/1000 Mbit/s and Power-over-Ethernet according to IEEE 802.3at
- 1 x 24 V DC connector, optional operation with 12 to 24 V DC or 100 to 240 V AC with power supply that can be integrated in the device
- 1 x PLUG compartment (KEY-PLUG/C-PLUG)
- Function LEDs for optical signaling of faults/errors and operating statuses
- Resistant to destruction through connections within the device
- Mounting: Wall or, with optional mounting set, on S7 mounting rail, 35 mm standard mounting rail, or on a pole

SCALANCE W786-2 RJ45

- Two radio cards are permanently installed in the device; six internal antennas; functional scope can be expanded by using a KEY-PLUG W780 iFeatures

Technical specifications

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
Transmission rate	
Transfer rate	
• with WLAN maximum	450 Mbit/s
• for Industrial Ethernet	10, 1 000, 1 000 Mbit/s
Transfer rate for Industrial Ethernet	
• minimum	10 Mbit/s
• maximum	1 000 Mbit/s
Interfaces	
Number of electrical connections	
• for network components or terminal equipment	1
• for power supply	1
• for redundant voltage supply	1
Type of electrical connection	
• for network components or terminal equipment	RJ45 socket
• for power supply	2-pole connector (24 V DC) or optionally available power supply adapter (4-pole 24 V DC or 3-pole 110 to 230 V AC)
design of the removable storage	
• C-PLUG	Yes
• KEY-PLUG	Yes
Interfaces wireless	
Number of radio cards permanently installed	2
Transmission mode for multiple input multiple output (MIMO)	3x3

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
Number of spatial streams	3
Number of electrical connections for external antenna(s)	6
Type of electrical connection for external antenna(s)	R-SMA (socket)
Product feature external antenna can be mounted directly on device	No
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1	
• from terminal block	19.2 V
Supply voltage 2	
• from terminal block	28.8 V
Supply voltage	
• from Power-over-Ethernet acc. to IEEE802.3at for type 1 and IEEE802.3af	48 V
• from Power-over-Ethernet acc. to IEEE802.3at for type 2	50 V
• from optional integrable power supply	
- at AC	100 ... 240 V
- at DC	12 ... 24 V
Consumed current	
• at DC at 24 V typical	0.63 A
• at AC at 230 V typical	0.07 A
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	0.22 A

¹⁾ Wireless approval in the USA

²⁾ Wireless approval in the Israel

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W786-2 RJ45 for outdoor use

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
Power loss [W]	
• at DC at 24 V typical	15 W
• at AC at 230 V typical	15 W
• with Power-over-Ethernet according to IEEE802.3at for type 1 and IEEE802.3af typical	10.7 W
Permitted ambient conditions	
Ambient temperature	
• during operation	-40 ... +60 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	100 %
Ambient condition for operation	When using the power supply 100 to 240 V AC, an operating temperature of -40 °C to +60 °C is permissible
Protection class IP	IP65
Design, dimensions and weight	
Width of the enclosure without antenna	251 mm
Height of the enclosure without antenna	251 mm
Depth of the enclosure without antenna	72 mm
Net weight	2.24 kg
Mounting type	For mast mounting, 35 mm DIN rail mounting and S7-300 rail mounting, an additional support plate is required
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	No
• 35 mm DIN rail mounting	Yes
• wall mounting	Yes
Wireless frequencies	
Operating frequency	
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz
Product properties, functions, components general	
Product function Access Point Mode	Yes
Product function Client Mode	Yes
Number of SSIDs	16
Product function	
• iPCF Access Point	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
• iPCF-MC Access Point	Yes; Only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF-MC client	Yes; Only in combination with 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
Number of iPCF-capable radio modules	2
Product function iREF	Yes; In combination only with 'KEY-PLUG W780 iFeatures'
Number of iREF-capable radio modules	2
Product function iPRP	Yes; In combination with the 'KEY-PLUG W780 iFeatures' only

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
Product functions management, configuration	
Number of manageable IP addresses in client	8
Product function	
• CLI	Yes
• web-based management	Yes
• MIB support	Yes
• TRAPs via email	Yes
• Configuration with STEP 7	Yes
• configuration with STEP 7 in the TIA Portal	Yes
• operation with IWLAN controller	No
• operation with Enterasys WLAN controller	No
• forced roaming on IP down with IWLAN	Yes
• forced roaming on link down with IWLAN	Yes
• WDS	Yes
Protocol is supported	
• Address Resolution Protocol (ARP)	Yes
• ICMP	Yes
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• DCP	Yes
• LLDP	Yes
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher-level designation/location designation	Yes
Product functions Diagnosis	
Product function	
• PROFINET IO diagnosis	Yes
• Link Check	No
• connection monitoring IP-Alive	No
• localization via Aeroscout	Yes
• SysLog	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions VLAN	
Product function	
• function VLAN with IWLAN	Yes
Product functions DHCP	
Product function	
• DHCP client	Yes
• in Client Mode DHCP server via LAN	Yes
• DHCP Option 82	Yes
Product functions Redundancy	
Protocol is supported	
• STP/RSTP	Yes
• MSTP	Yes
• RSTP	Yes

¹⁾ Wireless approval in the USA

²⁾ Wireless approval in the Israel

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W786-2 RJ45 for outdoor use

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
Product functions Security	
Product function	
• ACL - MAC-based	Yes
• Management security, ACL-IP based	Yes
• IEEE 802.1x (radius)	Yes
• NAT/NAPT	No
• access protection according to IEEE802.11i	Yes
• WPA/WPA2	Yes
• TKIP/AES	Yes
Protocol is supported	
• SSH	Yes
• RADIUS	Yes
Product functions Time	
Protocol is supported	
• NTP	Yes
• SNTP	Yes
• SIMATIC Time	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety from CSA and UL	UL 60950-1 CSA C22.2 No. 60950-1
• for hazardous zone from CSA and UL	
Certificate of suitability	
• EC declaration of conformity	Yes
• CE marking	Yes
• C-Tick	Yes
• E1 approval	Yes

Article number	6GK5786-2FC00-0AA0 6GK5786-2FC00-0AB0 ¹⁾ 6GK5786-2FC00-0AC0 ²⁾
Product type designation	SCALANCE W786-2 RJ45
• Railway application in accordance with EN 50155	No
• Railway application in accordance with EN 50121-4	Yes
• NEMA TS2	No
• IEC 61375	No
• IEC 61850-3	No
• NEMA4X	Yes
• Power-over-Ethernet according IEEE802.3at for type 1 and IEEE802.3af	Yes
• Power-over-Ethernet according to IEEE802.3at for type 2	Yes
Standard for wireless communication	
• IEEE 802.11a	Yes
• IEEE 802.11b	Yes
• IEEE 802.11e	Yes
• IEEE 802.11g	Yes
• IEEE 802.11h	Yes
• IEEE 802.11i	Yes
• IEEE 802.11n	Yes
Wireless approval	You will find the current list of countries at: www.siemens.com/wireless-approvals
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• Bureau Veritas (BV)	Yes
• DNV GL	Yes
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	Yes
• Royal Institution of Naval Architects (RINA)	Yes
Accessories	
accessories	24 V DC screw terminal included in scope of delivery

¹⁾ Wireless approval in the USA

²⁾ Wireless approval in the Israel

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W786-2 RJ45 for outdoor use

Selection and ordering data

Access Points SCALANCE W786

IWLAN access points with built-in wireless interfaces; wireless networks IEEE 802.11a/b/g/h/n at 2.4/5 GHz up to 450 Mbps; WPA2/AES; Power over Ethernet (PoE), IP65 degree of protection (-40 °C to +60 °C); scope of delivery: Mounting hardware, 2-pin screw terminal for 24 V DC; manual on CD-ROM; German/English

SCALANCE W786-2 RJ45

IWLAN access points with two integrated wireless interfaces and RJ45 connection

- Six connections for external antennas
 - National approvals for operation outside the USA
 - National approvals for operation within the USA ¹⁾
 - National approvals for operation in Israel ¹⁾

6GK5786-2FC00-0AA0

6GK5786-2FC00-0AB0

6GK5786-2FC00-0AC0

Accessories

KEY-PLUG W780 iFeatures

Swap medium for enabling additional iFeatures, for simple device replacement if a fault occurs and for storage of configuration data; Can be used in SCALANCE W access points with PLUG compartment

6GK5907-8PA00

C-PLUG

Swap medium for simple replacement of devices in the event of a fault; for storing configuration data; can be used in SIMATIC NET products with PLUG compartment

6GK1900-0AB00

Power supply PS791-2DC

24 V DC power supply for installation in SCALANCE W786 products; operating instructions in German/English

6GK5791-2DC00-0AA0

Power supply PS791-2AC

110 V AC to 230 V AC power supply for installation in the SCALANCE W786 products; operating instructions in German/English

6GK5791-2AC00-0AA0

MS1 mounting set

Mounting set for fixing SCALANCE W786 products to an S7-300 mounting rail or a 35 mm standard DIN rail

6GK5798-8MG00-0AA0

IE FC RJ45 Plug 4 x 2

RJ45 connector for Industrial Ethernet (10/100/1 000 Mbit/s) with a sturdy metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB11-2AA0

6GK1901-1BB11-2AB0

6GK1901-1BB11-2AE0

IE FC Standard Cable GP 4 x 2

8-core, shielded TP installation cable for connection to IE FC RJ45 Plug 4 x 2 and IE M12 Plug PRO 4 x 2; PROFINET-compatible; with UL approval; sold by the meter; max. length 1 000 m, minimum order quantity 20 m

6XV1878-2A

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6GK1901-1GA00

N-Connect/SMA female/female panel feedthrough

Cabinet bushing with fastening flange for wall thicknesses up to 5.5 mm, SMA female and N-Connect female connections

6GK5798-0PT00-2AA0

N-Connect/N-Connect female/female panel feedthrough

Cabinet bushing for wall thicknesses up to 4.5 mm, two N-Connect female connections

6GK5798-2PP00-2AA6

¹⁾ Note national approvals under <http://www.siemens.com/wireless-approvals>

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Wireless approvals:

Current approvals can be found on the Internet at:

<http://www.siemens.com/wireless-approvals>

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W788-2 M12 EEC

Overview



- Industrial Wireless LAN access point for installation in control cabinets or in indoor areas with support of IEEE 802.11a/b/g/h/n and data rates of up to 450 Mbps

Design

- Rugged aluminum housing, shock and vibration-resistant, for stringent mechanical requirements
- Special coating of the printed circuit boards (conformal coating)
- Resistant to condensation
- Railway approval in accordance with EN 50155 and NEMA TS2
- High IP65 degree of protection against dust and water jets
- For use at ambient temperatures from -40 °C to +70 °C
- 6 x N-Connect sockets for the connection of direct mountable and remote antennas
- Optimized antenna placement for the 3x3 MIMO technology; antennas do not interfere with each other when mounted directly on the device
- Suitable for 2.4 GHz and 5 GHz
- 1 x M12 connection for 10/100/1000 Mbps with Power-over-Ethernet according to IEEE 802.3at
- 1 x M12 socket for power supply (24 V DC)
- 1 x C-PLUG slot (KEY-PLUG/C-PLUG)
- Function LEDs for optical signaling of faults and operating states
- Mounting: Wall, S7-1500 mounting rail, S7-300 mounting rail or 35 mm standard mounting rail
- Two wireless cards are permanently installed in the device; functional scope can be expanded by using a KEY-PLUG W780 iFeatures

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W788-2 M12 EEC

Technical specifications

Article number	6GK5788-2GD00-0TA0 6GK5788-2GD00-0TB0 ¹⁾
Product type designation	SCALANCE W788-2 M12 EEC
Transmission rate	
Transmission rate	
• on WLAN, maximum	450 Mbps
• on Industrial Ethernet	10 Mbps, 100 Mbps, 1 000 Mbps, 10 Mbps, 1 000 Mbps
Interfaces	
Number of electrical connections	
• for network components or data terminal equipment	1
• for power supply	1
• for redundant power supply	1
Type of electrical connection	
• for network components or data terminal equipment	M12 interface (8-pin, X-coded), PoE
• for power supply	M12 interface (4-pin, A-coded)
Type of removable data storage medium	
• C-PLUG	Yes
• KEY-PLUG	Yes
Wireless interfaces	
Number of permanently installed wireless cards	2
Type of transmission for multiple input multiple output (MIMO)	3x3
Number of spatial streams	3
Number of electrical connections for external antenna(s)	6
Type of electrical connection for external antenna(s)	N-Connect (female)
Product property: external antenna can be mounted directly on device	Yes
Supply voltage, current consumption, power loss	
Type of supply voltage	DC
Supply voltage 1	
• from M12 power connector (A-coded) for redundant power supply	16.8 V
Supply voltage 2	
• from M12 power connector (A-coded) for redundant power supply	31.2 V
Supply voltage	
• from Power-over-Ethernet in accordance with IEEE802.3af for Type 1 and IEEE802.3af	48 V
• from Power-over-Ethernet in accordance with IEEE802.3af for Type 2	50 V
Current consumption	
• with 24 V DC, typical	0.63 A
• with Power-over-Ethernet in accordance with IEEE802.3af for Type 1 and IEEE802.3af, typical	0.22 A
• with Power-over-Ethernet in accordance with IEEE802.3af for Type 2, typical	0.3 A
Power loss [W]	
• with 24 V DC, typical	15 W
• with Power-over-Ethernet in accordance with IEEE802.3af for Type 1 and IEEE802.3af, typical	10.7 W
• with Power-over-Ethernet in accordance with IEEE802.3af for Type 2, typical	15 W

Article number	6GK5788-2GD00-0TA0 6GK5788-2GD00-0TB0 ¹⁾
Product type designation	SCALANCE W788-2 M12 EEC
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Relative humidity at 25 °C, without condensation during operation, maximum	100%
Ambient conditions for operation	When used under explosion protection conditions (Zone 2), the SCALANCE W788-x or W748-x product must be installed in an enclosure with at least IP54 degree of protection according to EN 60529 within the jurisdiction of EN 50021.
IP degree of protection	IP65
Design, dimensions and weights	
Width of housing without antenna	200 mm
Height of housing without antenna	176 mm
Depth of housing without antenna	79 mm
Net weight	1.7 kg
Mounting type	For 35 mm DIN rail mounting, an additional mounting adapter is needed
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	Yes
• Wall mounting	Yes
Radio frequencies	
Operating frequency	
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz
Product properties, functions, components - General	
Product function - Access point mode	Yes
Product function - Client mode	Yes
Number of SSIDs	16
Product function	
• Dual client	No
• iPCF access point	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
• iPCF-MC access point	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF-MC client	Yes; only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
Number of iPCF-enabled wireless modules	0
Product function - iREF	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
Number of iREF-enabled wireless modules	0
¹⁾ Wireless approval in the USA	

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W788-2 M12 EEC

Article number	6GK5788-2GD00-0TA0 6GK5788-2GD00-0TB0 ¹⁾
Product type designation	SCALANCE W788-2 M12 EEC
Product functions - Management, configuration, engineering	
Number of manageable IP addresses in the client	8
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• Configuration with STEP 7 in the TIA Portal	Yes
• Operation with IWLAN controller	No
• Operation with Enterasys WLAN controller	No
• Forced roaming with IWLAN	Yes
• WDS	Yes
Protocol is supported	
• Address Resolution Protocol (ARP)	Yes
• ICMP	Yes
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• DCP	Yes
• LLDP	Yes
Identification & Maintenance function	
• I&MO - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Product functions - Diagnostics	
Product function	
• PROFINET IO diagnostics	Yes
• Link check	No
• Connection monitoring IP-Alive	No
• SysLog	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions - VLAN	
Product function	
• VLAN function for IWLAN	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• In Client Mode, DHCP server via LAN	No
Product functions - Redundancy	
Protocol is supported	
• STP/RSTP	Yes
Product functions - Security	
Product function	
• Management security with IP-based ACL	Yes
• IEEE 802.1X (RADIUS)	Yes
• NAT/NAPT	No
• Access protection in accordance with IEEE802.11i	Yes
• WPA/WPA2	Yes
• TKIP/AES	Yes
Protocol is supported	
• SSH	Yes

Article number	6GK5788-2GD00-0TA0 6GK5788-2GD00-0TB0 ¹⁾
Product type designation	SCALANCE W788-2 M12 EEC
Product functions - Time of day	
Protocol is supported	
• SNTP	Yes
• SIMATIC Time	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. 1, Div. 2, GP A,B,C,D, T4 / CL. 1, Zone 2, GP IIC
Proof of suitability	
• EC Declaration of Conformity	Yes
• CE mark	Yes
• C-Tick	Yes
• CCC	No
• E1 approval	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	Yes
• NEMA TS2	Yes
• IEC 61375	No
• IEC 61850-3	No
• NEMA4X	No
• Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af	Yes
• Power-over-Ethernet in accordance with IEEE802.3at for Type 2	Yes
Standard for wireless communication	
• IEEE 802.11a	Yes
• IEEE 802.11b	Yes
• IEEE 802.11e	Yes
• IEEE 802.11g	Yes
• IEEE 802.11h	Yes
• IEEE 802.11i	Yes
• IEEE 802.11n	Yes
Wireless approval	You will find the current list of countries at: www.siemens.com/wireless-approvals
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	No
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanischer Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	No
• Nippon Kaiji Kyokai (NK)	No
• Polski Rejestr Statkow (PRS)	No

¹⁾ Wireless approval in the USA

Selection and ordering data

SCALANCE W788 M12 EEC Access Points

IWLAN access points with built-in wireless interfaces; wireless networks IEEE 802.11a/b/g/n at 2.4/5 GHz up to 450 Mbps; railway approval in accordance with EN 50155 / NEMA TS2; conformal coating; WPA2/AES; Power over Ethernet (PoE), IP65 degree of protection;

scope of delivery: mounting hardware; manual on CD-ROM, German/English

SCALANCE W788-2 M12 EEC

IWLAN dual access point with two built-in wireless interfaces

- National approvals for operation outside the U.S.
- National approvals for operation within the U.S.¹⁾

6GK5788-2GD00-0TA0

6GK5788-2GD00-0TB0

Accessories

KEY-PLUG W780 iFeatures

Removable data storage medium for activating additional iFeatures, for easy device replacement under fault conditions and for recording configuration data; can be used in SCALANCE W access points with PLUG slot

6GK5907-8PA00

C-PLUG

Removable data storage medium for easy replacement of devices under fault conditions; for recording configuration data; can be used in SIMATIC NET products with PLUG slot

6GK1900-0AB00

DIN Rail Mounting Adapter

DIN rail mounting adapter for SCALANCE W788 M12 and SCALANCE W788 RJ45; screw mounting for mounting on a 35 mm DIN rail according to EN 50022; scope of delivery: 3 units per pack

6GK5798-8ML00-0AB3

IE FC M12 Plug PRO 4 x 2

M12 plug connector (X-coded, IP65/IP67) that can be assembled in the field, metal enclosure, insulation displacement fast connection method, for SCALANCE W

- 1 unit
- 8 units

6GK1901-0DB30-6AA0
6GK1901-0DB30-6AA8

IE Train Cable GP 4x2

8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1878-2T

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Power M12 Cable Connector PRO

Connector socket for connection of SCALANCE W700 for 24 V DC supply voltage; 4-pin, A-coded, with assembly instructions, 3 units

6GK1907-0DC10-6AA3

Power Cable 2 x 0.75

Connecting cable for Power M12 Cable Connector PRO, sold by the meter

6XV1812-8A

¹⁾ Note national approvals under <http://www.siemens.com/wireless-approvals>

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Wireless approvals:

Current approvals can be found on the Internet at: <http://www.siemens.com/wireless-approvals>

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W1788-2 M12 EEC

Overview



- Industrial Wireless LAN access point for installation in control cabinets or in indoor areas with support of IEEE 802.11a/b/g/n/ac and data rates of up to 1733 Mbit/s

Design

- Rugged aluminum housing, shock and vibration-resistant, for stringent mechanical requirements
- Special coating of the printed circuit boards (conformal coating)
- Resistant to condensation
- Railway approval in accordance with EN 50155 and NEMA TS2
- Special features in addition to EN 50155, EN 45545-2, EN 50121-4, EN 50121-3-2, EN 50125-3
- High IP65 degree of protection against dust and water jets
- For use at ambient temperatures from -40 °C to +75 °C
- 8 x N-Connect sockets for the connection of direct mountable and remote antennas
- Optimized antenna placement for the 4x4 MIMO technology; antennas do not interfere with each other when mounted directly on the device
- Suitable for 2.4 GHz and 5 GHz
- 2 x M12 Ethernet x-coded Managed switch (1.000 Mbit/s), Power-over-Ethernet according to IEEE 802.3at
- 1 x M12 socket for power supply (24 V DC)
- 1 x C-PLUG slot (KEY-PLUG/C-PLUG)
- Function LEDs for optical signaling of faults and operating states
- VESA 100 mounting system
Wall mounting
DIN rail T35 (S7-1200) DIN rail S7-300
DIN rail S7-1500
- Two wireless cards are permanently installed in the device; functional scope can be expanded by using a CLP

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W1788-2 M12 EEC

Technical specifications

Article number	6GK5788-2GY01-0TA0 6GK1788-2GY01-0TB0 ¹⁾
Product type designation	SCALANCE W1788-2 M12 EEC
Transmission rate	
Transmission rate	
• on WLAN, maximum	1733 Mbps
• on Industrial Ethernet	10 Mbps, 100 Mbps, 1 000 Mbps
Interfaces	
Number of electrical connections	
• for network components or data terminal equipment	1
• for power supply	1
• for redundant power supply	1
Type of electrical connection	
• for network components or data terminal equipment	M12 interface (8-pin, X-coded), PoE
• for power supply	M12 interface (4-pin, A-coded)
Type of removable data storage medium	
• C-PLUG	Yes
• KEY-PLUG	Yes
Wireless interfaces	
Number of permanently installed wireless cards	2
Type of transmission for multiple input multiple output (MIMO)	4x4
Number of spatial streams	3
Number of electrical connections for external antenna(s)	8
Type of electrical connection for external antenna(s)	N-Connect (female)
Product property: external antenna can be mounted directly on device	Yes
Supply voltage, current consumption, power loss	
Type of supply voltage	DC
Supply voltage 1	
• from M12 power connector (A-coded) for redundant power supply	16.8 V
Supply voltage 2	
• from M12 power connector (A-coded) for redundant power supply	31.2 V
Supply voltage	
• from Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af	48 V
• from Power-over-Ethernet in accordance with IEEE802.3at for Type 2	50 V
Current consumption	
• with 24 V DC, typical	0.7 A
• with Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af, typical	0.385 A
• with Power-over-Ethernet in accordance with IEEE802.3at for Type 2, typical	0.3 A
Power loss [W]	
• with 24 V DC, typical	16.8 W
• with Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af, typical	18.5 W
• with Power-over-Ethernet in accordance with IEEE802.3at for Type 2, typical	15 W

Article number	6GK5788-2GY01-0TA0 6GK1788-2GY01-0TB0 ¹⁾
Product type designation	SCALANCE W1788-2 M12 EEC
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +75 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Relative humidity at 25 °C, without condensation during operation	90%
Ambient conditions for operation	When used under explosion protection conditions (Zone 2), the SCALANCE W788-x or W748-x product must be installed in an enclosure with at least IP54 degree of protection according to EN 60529 within the jurisdiction of EN 50021.
IP degree of protection	IP65
Design, dimensions and weights	
Width of housing without antenna	258 mm
Height of housing without antenna	258 mm
Depth of housing without antenna	80 mm
Net weight	2.7 kg
Mounting type	For 35 mm DIN rail mounting, an additional mounting adapter is needed
• S7-300 rail mounting	Yes
• S7-1500 rail mounting	Yes
• Wall mounting	Yes
Radio frequencies	
Operating frequency	
• for WLAN in 2.4 GHz frequency band	2.41 ... 2.48 GHz
• for WLAN in 5 GHz frequency band	4.9 ... 5.8 GHz
Product properties, functions, components - General	
Product function - Access point mode	Yes
Product function - Client mode	Yes
Number of SSIDs	16
Product function	
• Dual client	No
• iPCF access point	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF client	Yes; only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
• iPCF-MC access point	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
• iPCF-MC client	Yes; only in combination with the 'KEY-PLUG W780 iFeatures' or 'KEY-PLUG W740 iFeatures'
Number of iPCF-enabled wireless modules	0
Product function - iREF	Yes; only in combination with the 'KEY-PLUG W780 iFeatures'
Number of iREF-enabled wireless modules	0

¹⁾ Wireless approval in the USA

Network Components

SCALANCE W – Industrial Wireless LAN

SCALANCE W1788-2 M12 EEC

Article number	6GK5788-2GY01-0TA0 6GK1788-2GY01-0TB0 ¹⁾
Product type designation	SCALANCE W1788-2 M12 EEC
Product functions - Management, configuration, engineering	
Number of manageable IP addresses in the client	8
Product function	
• CLI	Yes
• Web-based management	Yes
• MIB support	Yes
• TRAPs via e-mail	Yes
• Configuration with STEP 7	Yes
• Configuration with STEP 7 in the TIA Portal	Yes
• Operation with IWLAN controller	No
• Operation with Enterasys WLAN controller	No
• Forced roaming with IWLAN	Yes
• WDS	Yes
Protocol is supported	
• Address Resolution Protocol (ARP)	Yes
• ICMP	Yes
• Telnet	Yes
• HTTP	Yes
• HTTPS	Yes
• TFTP	Yes
• DCP	Yes
• LLDP	Yes
Identification & Maintenance function	
• I&MO - Device-specific information	Yes
• I&M1 - Higher level designation/location designation	Yes
Product functions - Diagnostics	
Product function	
• PROFINET IO diagnostics	Yes
• Link check	No
• Connection monitoring IP-Alive	No
• SysLog	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v2	Yes
• SNMP v3	Yes
Product functions - VLAN	
Product function	
• VLAN function for IWLAN	Yes
Product functions - DHCP	
Product function	
• DHCP client	Yes
• In Client Mode, DHCP server via LAN	No
Product functions - Redundancy	
Protocol is supported	
• STP/RSTP	Yes
Product functions - Security	
Product function	
• Management security with IP-based ACL	Yes
• IEEE 802.1X (RADIUS)	Yes
• NAT/NAPT	No
• Access protection in accordance with IEEE802.11i	Yes
• WPA/WPA2	Yes
• TKIP/AES	Yes
Protocol is supported	
• SSH	Yes

Article number	6GK5788-2GY01-0TA0 6GK1788-2GY01-0TB0 ¹⁾
Product type designation	SCALANCE W1788-2 M12 EEC
Product functions - Time of day	
Protocol is supported	
• SNTP	Yes
• SIMATIC Time	Yes
Standards, specifications, approvals	
Standard	
• for FM	FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4
• for hazardous zone	EN 60079-15:2005, EN 60079-0:2006, II 3 G Ex nA II T4 KEMA 07 ATEX 0145X
• for safety, from CSA and UL	UL 60950-1, CSA C22.2 No. 60950-1
• for hazardous zone, from CSA and UL	ANSI/ISA 12.12.01-2013, CAN/CSA C22.2 No.213-M1987, CL. 1, Div. 2, GP A,B,C,D, T4 / CL. 1, Zone 2, GP IIC
Proof of suitability	
• EC Declaration of Conformity	Yes
• CE mark	Yes
• C-Tick	Yes
• CCC	No
• E1 approval	Yes
• Railway application in accordance with EN 50155	Yes
• Railway application in accordance with EN 50121-4	Yes
• Fire protection in accordance with EN 45545-2	Yes
• NEMA TS2	Yes
• IEC 61375	No
• IEC 61850-3	No
• NEMA4X	No
• Power-over-Ethernet in accordance with IEEE802.3at for Type 1 and IEEE802.3af	Yes
• Power-over-Ethernet in accordance with IEEE802.3at for Type 2	Yes
Standard for wireless communication	
• IEEE 802.11a	Yes
• IEEE 802.11ac	Yes
• IEEE 802.11b	Yes
• IEEE 802.11g	Yes
• IEEE 802.11n	Yes
Wireless approval	You will find the current list of countries at: www.siemens.com/wireless-approvals
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	No
• Bureau Veritas (BV)	No
• Det Norske Veritas (DNV)	No
• Germanischer Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	No
• Nippon Kaiji Kyokai (NK)	No
• Polski Rejestr Statkow (PRS)	No

¹⁾ Wireless approval in the USA

Selection and ordering data

SCALANCE W1788-2 M12 EEC Access Points

IWLAN access points with built-in wireless interfaces; wireless networks IEEE 802.11a/ac/b/g/n at 2.4/5 GHz up to 1733 Mbps; railway approval in accordance with EN 50155 / NEMA TS2; conformal coating; WPA2/AES; Power over Ethernet (PoE), IP65 degree of protection;

scope of delivery: mounting hardware; manual on CD-ROM, German/English

SCALANCE W1788-2 M12 EEC

IWLAN dual access point with two built-in wireless interfaces

- National approvals for operation outside the U.S.¹⁾
- National approvals for operation within the U.S.¹⁾

6GK5788-2GY01-0TA0

6GK5788-2GY01-0TB0

Accessories

KEY-PLUG W780 iFeatures

Removable data storage medium for activating additional iFeatures, for easy device replacement under fault conditions and for recording configuration data; can be used in SCALANCE W access points with PLUG slot

6GK5907-8PA00

C-PLUG

Removable data storage medium for easy replacement of devices under fault conditions; for recording configuration data; can be used in SIMATIC NET products with PLUG slot

6GK1900-0AB00

DIN Rail Mounting Adapter

DIN rail mounting adapter for SCALANCE W788 M12 and SCALANCE W788 RJ45; screw mounting for mounting on a 35 mm DIN rail according to EN 50022; scope of delivery: 3 units per pack

6GK5798-8ML00-0AB3

IE FC M12 Plug PRO 4 x 2

M12 plug connector (X-coded, IP65/IP67) that can be assembled in the field, metal enclosure, insulation displacement fast connection method, for SCALANCE W

- 1 unit
- 8 units

6GK1901-0DB30-6AA0

6GK1901-0DB30-6AA8

IE Train Cable GP 4x2

8-core, shielded TP installation cable for connection to IE FC M12 Plug PRO 4x2 for use in railway applications; with railway approval; sold by the meter; maximum delivery unit 1000 m, minimum order quantity 20 m

6XV1878-2T

IE FC Stripping Tool

Preset insulation stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Power M12 Cable Connector PRO

Connector socket for connection of SCALANCE W700 for 24 V DC supply voltage; 4-pin, A-coded, with assembly instructions, 3 units

6GK1907-0DC10-6AA3

Power Cable 2 x 0.75

Connecting cable for Power M12 Cable Connector PRO, sold by the meter

6XV1812-8A

¹⁾ Note national approvals under <http://www.siemens.com/wireless-approvals>

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Wireless approvals:

Current approvals can be found on the Internet at:

<http://www.siemens.com/wireless-approvals>

Network Components

SCALANCE W – Industrial Wireless LAN

ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

Overview



Remote antennas increase the reliability of wireless links by optimizing signal reception and emission.

- Use in Industrial Wireless LAN (IWLAN) and WLAN in accordance with IEEE 802.11 at 2.4 GHz and 5 GHz with transmission rates of up to 450 Mbps
- Coordinated range of antennas for the most diverse applications both indoors and outdoors

Benefits

- Investment protection thanks to compliance with the globally recognized standard IEEE 802.11 and – depending on the version – suitability for 2.4 GHz and/or 5 GHz
- Cost-effective connection to devices in remote, difficult-to-access or hostile environments
- Establishment of a reliable IWLAN wireless infrastructure through the use of remote antennas, even if the access points and client modules are installed in the control cabinet, for example

Application

Remote antennas optimize transmission and reception conditions and enable use of IWLAN products in a number of industrial applications.

With sector antennas, for example, conveyor lines or corridors can be specifically covered with radio links, or strongly directional antennas can be used to implement point-to-point connections over distances of up to several 1000 meters.

Alternatively, an omnidirectional antenna concentrates the radio field around the antenna in the shape of a disc, which enhances the quality of the connection.

Application examples:

Omnidirectional antennas

- Coverage of an area which has at its center a mast for mounting the antenna
- Installation of the antenna on the roof in the case of automated guided vehicle systems for reliable data exchange with the vehicles
- Wide-area coverage of a production cell or robot station

Directional antennas

- Communication between buildings over long distances with the help of an antenna with narrow beam angle and high gain

Sector antennas

- Selective coverage of warehouse/high-bay warehouse aisles with the help of a wide-angle antenna prevents interference with neighboring wireless fields

All antennas can be used with an N-Connect female connector.

Network Components

SCALANCE W – Industrial Wireless LAN

ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

Technical specifications

Article number	6GK5795-4MX00-0AA0	6GK5795-6MN10-0AA6	6GK5795-6MT00-0AA0
Product type designation	Antenna ANT795-4MX	Antenna ANT795-6MN	Antenna ANT795-6MT
Wireless frequencies			
Type of mobile network is supported	WLAN	WLAN	WLAN
Operating frequency			
• for WLAN in 2.4 GHz frequency band	2 ... 2.7 GHz	2.4 ... 2.7 GHz	2.4 ... 2.69 GHz
• for WLAN in 5 GHz frequency band 1	4.9 ... 5.15 GHz		5.15 ... 5.35 GHz
• for WLAN in 5 GHz frequency band 2	5.15 ... 6 GHz	4.9 ... 5.935 GHz	5.47 ... 5.935 GHz
Operating frequency	1575.42 MHz, 1700 MHz, 1800 MHz, 1900 MHz, 2100 MHz, 2200 MHz, 2600 MHz		
Electrical data			
Impedance	50 Ω	50 Ω	50 Ω
Polarization	linear vertical	linear vertical	3 ports: linear vertical
Radiation characteristic	omnidirectional	omnidirectional	omnidirectional
Antenna gain compared to spherical radiator			
• of the WLAN antenna in the 2.4 GHz frequency band	2 dB	6 dB	5 dB
• of the WLAN antenna in the 5 GHz frequency band	2.5 dB	8 dB	7 dB
Standing wave ratio (VSWR) maximum	2	1.8	1.5
Radiating angle of the antenna			
• in the 2.4 GHz frequency band horizontal	360°	360°	360°
• in the 2.4 GHz frequency band vertical			
• in the 5 GHz frequency band horizontal	360°	150°	360°
• in the 5 GHz frequency band vertical			
Opening angle Note		Note the antenna diagram regarding horizontal beam angle	
Number of electrical connections of the antenna	1		
Type of electrical connection of the antenna	N-Connector	N-Connector	QMA Connector
Design of plug-in connection	male, straight	female	female
Angle of inclination downward maximum	0°	0°	0°
Crosstalk attenuation between the antenna connections	10 W; at 25° ambient temperature		20 dB
Transmit power maximum	1	75 W; at 25° ambient temperature	10 W; at 25° ambient temperature
Mechanical data			
Material			
• of outer shell	ASA	Polycarbonate	Polycarbonate
Permitted ambient conditions			
Ambient temperature			
• during operation	-40 ... +85 °C	-40 ... +80 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +80 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +80 °C	-40 ... +85 °C
Protection class IP	IP68 / IP69K	IP65	IP65
Shock resistance	according to EN61373, category 1, class b (for railway carriage)		
Wind load maximum		10 N; at 160 km/h	
Resistance to salt-laden atmosphere conformity acc. to EN 60068-2-52			

Network Components

SCALANCE W – Industrial Wireless LAN

ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

Article number	6GK5795-4MX00-0AA0	6GK5795-6MN10-0AA6	6GK5795-6MT00-0AA0
Product type designation	Antenna ANT795-4MX	Antenna ANT795-6MN	Antenna ANT795-6MT
Design, dimensions and weight			
Width		86 mm	282 mm
Height	55 mm	43 mm	32 mm
Depth		86 mm	92 mm
Diameter	22 mm		
Net weight	50 g	300 g	320 g
Mounting type			
• mast mounting		No	No
• wall mounting	No	Yes	Yes
• roof mounting	No	Yes	Yes
• directly on the device	Yes	No	No
Product properties, functions, components general			
Product feature silicon-free	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability		Railway application in accordance with NF-F-16-101, NF-F-16-102	
Certificate of suitability			
• RoHS conformity	Yes	Yes	Yes
• Railway application in accordance with EN 50155	Yes		Yes
• Fire protection in accordance with EN 45545-2	Yes	Yes	Yes
Product conformity	UL 94-HB	UL 94-V0	UL 94-V0
Wireless approval	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals

Article number	6GK5793-8DL00-0AA0	6GK5793-8DP00-0AA0	6GK5795-6DC00-0AA0	6GK5793-6DG00-0AA0
Product type designation	Antenna ANT793-8DL	Antenna ANT793-8DP	Antenna ANT795-6DC	Antenna ANT793-6DG
Wireless frequencies				
Type of mobile network is supported	WLAN	WLAN	WLAN	WLAN
Operating frequency			2.4 ... 2.5 GHz	
• for WLAN in 2.4 GHz frequency band				
• for WLAN in 5 GHz frequency band 1	4.9 ... 5.9 GHz	4.9 ... 5.35 GHz	5.15 ... 5.875 GHz	5.15 ... 5.875 GHz
Electrical data				
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
Polarization	dual linear vertical-horizontal	linear vertical	linear vertical	dual linear +/- 45° slant
Antenna gain compared to spherical radiator			9 dB	
• of the WLAN antenna in the 2.4 GHz frequency band				
• of the WLAN antenna in the 5 GHz frequency band	14 dB	13.5 dB	9 dB	9 dB
Standing wave ratio (VSWR) maximum	2.5	1.5	2	2
Radiating angle of the antenna				
• in the 2.4 GHz frequency band horizontal			75°	
• in the 2.4 GHz frequency band vertical			55°	
• in the 5 GHz frequency band horizontal	30°	40°	55°	70°
• in the 5 GHz frequency band vertical	30°	35°	55°	60°
Opening angle Note	Note antenna diagram			
Number of electrical connections of the antenna	2	1		2
Type of electrical connection of the antenna	N-Connector	N-Connector	N-Connector	N-Connector

Network Components

SCALANCE W – Industrial Wireless LAN

ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

Article number	6GK5793-8DL00-0AA0	6GK5793-8DP00-0AA0	6GK5795-6DC00-0AA0	6GK5793-6DG00-0AA0
Product type designation	Antenna ANT793-8DL	Antenna ANT793-8DP	Antenna ANT795-6DC	Antenna ANT793-6DG
Design of plug-in connection	female	female	female	female
Angle of inclination downward maximum		0°	0°	0°
Crosstalk attenuation between the antenna connections	19 dB		25 dB	20 dB
Front-to-back ratio	35 dB	20 dB	15 dB	20 dB
Transmit power maximum		10 W; at 25° ambient temperature	10 W; at 25° ambient temperature	10 W; at 25° ambient temperature
Mechanical data				
Material				
• of outer shell	ASA	Lexan EXL 9330	Lexan EXL 9330	Lexan EXL 9330
Permitted ambient conditions				
Ambient temperature				
• during operation	-40 ... +70 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
• during storage	-40 ... +70 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
• during transport	-40 ... +70 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Protection class IP	IP66	IP66 / 67	IP66 / 67	IP66 / 67
Wind load maximum	suitable for wind speeds up to 200 km/h	15 N; frontal at 160 km/h	15 N; at 160 km/h	15 N; frontal at 160 km/h
Design, dimensions and weight				
Width	100 mm	80 mm	80 mm	80 mm
Height	283 mm; incl. bracket	101 mm	101 mm	101 mm
Depth	40 mm	35 mm	35 mm	35 mm
Net weight	520 g	110 g	110 g	110 g
Mounting type				
• mast mounting	No	Yes	Yes	Yes
• flat-roof mounting	No			
• wall mounting	Yes	Yes	Yes	Yes
• roof mounting	Yes	No	No	No
• directly on the device	No	No	No	No
Product properties, functions, components general				
Product feature silicon-free	Yes	Yes	Yes	
Standards, specifications, approvals				
Certificate of suitability				
• RoHS conformity	Yes	Yes	Yes	Yes
• Railway application in accordance with EN 50155	Yes		Yes	Yes
• Fire protection in accordance with EN 45545-2	Yes	Yes	Yes	Yes
Product conformity	Yes	Yes	UL 94-V0	
Wireless approval		UL 94-V0	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals	Current national approvals can be found on the Internet under www.siemens.com/wireless-approvals

Network Components

SCALANCE W – Industrial Wireless LAN

ANT795-4MX / ANT795-6MN / ANT795-6MT / ANT793-8DL / ANT793-8DP / ANT795-6DC / ANT793-6DG

Selection and ordering data

Antennas with omnidirectional characteristic		Directional antennas	
National approvals, compact instructions on paper German/English		Including mounting hardware for wall or mast mounting	
<u>Direct mount</u>		<u>Strongly directional antennas</u>	
• ANT795-4MX IWLAN antenna with omnidirectional characteristic; incl. N-Connect Male connector straight: 2/2.5 dBi; IP67/69K (-40 to +85 °C), 2.4/5GHz; Wi-Fi compliance and Observe national approvals;	6GK5795-4MX00-0AA0	• ANT793-8DL IWLAN antenna Vertical-horizontal polarized antenna; antenna gain incl. two N-Connect connectors 14 dBi, 5 GHz; -45 to +70 °C, suitable for railway applications (especially for the railway line)	6GK5793-8DL00-0AA0
<u>Wall or mast mounting</u>		• ANT793-8DP IWLAN antenna Antenna gain 13.5 dBi incl. N-connect connector, 4.9 GHz, -40 to +85 °C, especially for use in Japan	6GK5793-8DP00-0AA0
• ANT795-6MN IWLAN antenna Antenna gain incl. N-Connect connector 6/8 dBi, 2.4/5 GHz; IP65 (-40 to +80 °C) with terminating resistor 1 x TI795-1R	6GK5795-6MN10-0AA6	Sector antennas	
• Antenna Mounting Tool (ANT795-6MN) Mounting aid for installing ANT795-6MN below a roof	6GK5795-6MN01-0AA6	Including mounting hardware for wall or mast mounting	
• ANT795-6MT IWLAN antenna MIMO antenna with 3 QMA sockets, antenna gain 6 dBi, 2.4/5 GHz; (-40 to +85 °C), incl. mounting bracket	6GK5795-6MT00-0AA0	• ANT795-6DC IWLAN antenna with weak directional effect; incl. N-female connector: 9 dBi; IP67 (-40 to +80 °C), 2.4/5GHz; Wi-Fi compliance and Observe national approvals	6GK5795-6DC00-0AA0
		• ANT793-6DG IWLAN antenna Dual-slant antenna with weak directional effect incl. 2x N-female connectors: 9 dBi; IP67 (-40 to +80 °C), 5 GHz; Wi-Fi compliance and Observe national approvals	6GK5793-6DG00-0AA0

More information

Selection tools:

To assist in selecting Industrial Ethernet components, the TIA Selection Tool is available at:

<http://www.siemens.com/tia-selection-tool>

Cabling range:

You can order components supplementary to the SIMATIC NET cabling range from your local contact. Technical advice on this subject is available from:

J. Hertlein

I IA SC CI PRM 4

Phone: +49 (911) 750-4465

E-Mail: juergen.hertlein@siemens.com

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RSG907R and RSG909R

Overview



The RUGGEDCOM RSG907R and RSG909R, two full Gigabit switches in a compact design, offering both HSR and PRP functionality to mitigate the risk of communication disruptions and downtime. These rugged Gigabit switches are designed to operate in harsh environments with widely varying climatic and environmental conditions. Tested and certified to withstand extreme temperature, vibration and shock, the RUGGEDCOM RSG907R and RSG909R offer exceptional reliability for industrial applications such as electric utility substations, transportation systems and oil&gas.

The RUGGEDCOM RSG907R and RSG909R are ideal for applications that require high bandwidths and accommodate future network expansions. Three Redundant Network Access SFP ports providing ultimate flexibility in media and distance, with support for Gigabit bandwidth. The RSG907R connects up to 4 IEDs via 100BASE-FX fiber optics and RSG909R connects up to 6 IEDs via copper Ethernet on the Singly Attached Node ports.

Both products offer various network design options and cost savings through increased redundancy, reduced downtimes and high reliability.

HSR / PRP with Gigabit/s interfaces

Avoid revenue loss by mitigating the risk of communication disruptions and downtime with a redundant fault tolerant network supporting high bandwidth.

SFP RNA ports

SFP ports can be modified at any time allowing deployment flexibility for varying customer needs.

Power redundancy

Maintain continuous safe and reliable operations even during power failures, diminishing the risk of revenue and data loss.

Full fiber solution

Reduce failure rates due to increased immunity from electromagnetic phenomena. IEEE 1588The RSG907R and RSG909R enable the creation of a future proof network with support for IEEE 1588 time synchronisation.

Technical specifications

Article number	6GK6498-0RB00....	6GK6490-7RB00....
Product type designation	RUGGEDCOM RSG909R	RUGGEDCOM RSG907R
Ethernet interfaces		
Ports	4 x 100BASE-FX + 3 x 1000 BASE-X (SFP)	6 x 10/100/1000 BASE-T + 3 x 1000 BASE-X (SFP)
RNA uplinks (A / B) & coupler port	3 x 1 Gbit/s SFP ports	
Supported specifications	IEEE 1588	
Power supply characteristics		
Supported input voltage ranges	24/48 VDC (12 – 60 VDC) HI (85 – 264 VAC / 88 – 300 VDC)	
Mechanical specifications		
Dimensions (w x h x d) in mm	91 mm x 177 mm x 173 mm	
Weight	2.9 kg	
Mounting	DIN rail and panel mount	
Ambient conditions		
Operating temperature	-40° C to +85° C	
IP rating	IP40	
Other features		
IEEE 1588	Transparent Clock	

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RSG907R and RSG909R

Selection and ordering data

RUGGEDCOM RSG909R

RUGGEDCOM RSG909R is a 9 port industrially hardened, fully managed Ethernet switch featuring an integrated HSR/PRP RedBox for use in harsh industrial environments.
The product has 3x 1Gbit/s SFP slots and 6x 10/100/1000Mbit/s RJ45 Ethernet ports.
-40°C to +85°C operating temperature (fanless).

6GK6498-0RB00-...N.

RUGGEDCOM RSG907R

RUGGEDCOM RSG907R is a 7 port industrially hardened, fully managed Ethernet switch featuring an integrated HSR/PRP RedBox for use in harsh industrial environments.
The product has 3x 1Gbit/s SFP slots and 4x 100Mbit/s multimode LC ports (max 2km).
-40°C to +85°C operating temperature (fanless).

6GK6490-7RB00-...N.

RUGGEDCOM accessories

- **USB Console cable**
USB 2.0 A type to B type
Cable Assembly 10 feet / 3 meters
- **Panel mounting kit**
Allows wall and other lateral mounting possible, requires assembly and even mounting plane
- **Power cable without lugs**
Power Cable with north-american plug for pluggable terminal blocks (6 ft.) for RUGGEDCOM products

6GK6000-8DT01-0AA0

6GK6000-8MR00-0AA1

6GK6000-8BB00-0AA0

Fiber Optic SFPs (Gigabit)

- **RUGGEDCOM SFP1122-1SX**
1000BASE-SX, LC-Interface,
Optical: Multi Mode Fiber Optic up to max. 500m, 850nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1122-1SX2**
1000BASE-SX, LC-Interface,
Optical: Multi Mode Fiber Optic up to max. 2km, 1310nm,
-40 °C ...+85 °C

6GK6000-8FG51-0AA0

6GK6000-8FE58-0AA0

- **RUGGEDCOM SFP1132-1LX10**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 10km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX25**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 25km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX40**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 40km, 1550nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX70**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 70km, 1550nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX100**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 100km, 1550nm,
0 °C ...+70 °C
- **RUGGEDCOM SFP1132-1LX115**
1000BASE-LX, LC-Interface, Optical: Single Mode Fiber Optic up to max. 115km, 1550nm,
-10 °C ...+70 °C

6GK6000-8FG52-0AA0

6GK6000-8FG53-0AA0

6GK6000-8FG57-0AA0

6GK6000-8FG54-0AA0

6GK6000-8FG55-0AA0

6GK6000-8FE56-0AA0

Fiber Optic Bi-Directional SFPs (Gigabit)

- **RUGGEDCOM SFP1132-1BX10R**
1000BASE-BX-U, LC-Interface, Optical: Single Mode Fiber Optic up to max. 10km, 1310nm
TX/1490 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX10T**
1000BASE-BX-D, LC-Interface, Optical: Single Mode Fiber Optic up to max. 10km, 1490nm
TX/1310 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX40R**
1000BASE-BX-U, LC-Interface, Optical: Single Mode Fiber Optic up to max. 40km, 1310nm
TX/1490 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX40T**
1000BASE-BX-D, 1 X
1000MBIT/S, LC-Interface, Optical: Single Mode Fiber Optic up to max. 40km, 1490nm
TX/1310 nm RX, -40 °C ...+85 °C

6GK6000-8FB51-0AA0

6GK6000-8FB52-0AA0

6GK6000-8FB53-0AA0

6GK6000-8FB54-0AA0

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview



The RUGGEDCOM RSG920P is a rugged Layer 2 Gigabit switch with high port density in small form factor with Power-over-Ethernet (PoE) capability that has been designed for control cabinets with limited space and for high bandwidth requirements. The RUGGEDCOM RSG920P provides maximum reliability for industrial applications, such as in transportation and oil & gas applications, and is tested and certified to withstand extreme temperatures, vibrations and shocks.

The Power-over-Ethernet interfaces of the RUGGEDCOM RSG920P are fed by an external power supply. RUGGEDCOM RPS1300 is the related power supply. It is adequately sized to operate all 4 Power-over-Ethernet interfaces simultaneously.

Technical specifications

Ethernet interfaces	
RJ45	16 x 10/100/1000 Mbps
SFP FO	4 x 100/1000 Mbps
Maximum bandwidth	20 Gbps full duplex
Power over Ethernet (PoE)	
Number of ports	4
Supported specifications	IEEE 802.3af, IEEE 802.3at
Bandwidth	10/100/1000 Mbps
Maximum power	120 W (max. 30 W/port)
Power supply properties	
Input voltage ranges	85-64 V AC / 100-300 V DC, 9-60 V DC
PoE input voltage	44-57 V DC (IEEE 802.3af), 50-57 V DC (IEEE 802.3at)
Power consumption	< 30 W

Design, dimensions and weight	
Dimensions (W x H x D) in mm	154 x 152 x 176
Weight	4.7 kg
Mounting	DIN rail and panel mounting
Permissible ambient conditions	
Ambient temperature	-40 °C to +85 °C
Degree of protection	IP40

Selection and ordering data

RUGGEDCOM RSG920PNC RUGGEDCOM RSG920PNC is a fully-managed Ethernet switch with 56-bit encryption and 20 non-blocking Gigabit Ethernet ports; supports 4 SFP modules and 4 PoE ports; operating temperature -40°C to +85°C (without fan)	6GK6092-0PS1-.....
RUGGEDCOM RSG920P RUGGEDCOM RSG920P is a fully-managed Ethernet switch with 128-bit encryption and 20 non-blocking Gigabit Ethernet ports; supports 4 SFP modules and 4 PoE ports; operating temperature -40°C to +85°C (without fan)	6GK6092-0PS2-.....

RUGGEDCOM RPS1300 Power Supply 54 V/2.6 A power supply, input: 120/230 V AC, output: 54 V DC / 2.6 A, -40°C to 75°C, suitable for RUGGEDCOM PoE applications	6GK6000-8HS01-0AA0
--	---------------------------

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RS900G / RUGGEDCOM RS900GP

Overview



The RUGGEDCOM RS900 product family for use in the power supply sector comprises a number of fully-managed Ethernet switches that are specially designed for reliable use in hostile operating environments for electrical equipment and demanding climatic conditions. They provide a high degree of immunity to electromagnetic interference and strong electrical disturbances, which are typically present in factory buildings and in roadside traffic control cabinets. A temperature range from -40 °C to +85 °C enables them to be placed almost anywhere.

Characteristics

- Many different copper and fiber-optic port configurations with transmission rates up to 1 Gbps
- Fiber-optic cable variants are available with multimode or single-mode optical transceiver-receivers and various interfaces (LC, SC, SFP)
- Options for 24 V DC to 48 V DC or high voltage (88-300 V DC / 85-264 V AC) for worldwide operation
- Operation without fans for operating temperatures from -40 °C to +85 °C
- Variety of management interfaces: web-based, Telnet, command line
- Available in a version that supports Power over Ethernet (PoE)

Product versions

RUGGEDCOM RS900G

- Managed Ethernet switch with 10 ports, Gigabit fiber-optic uplinks and 56- or 128-bit encryption

RUGGEDCOM RS900GP

- Managed Ethernet switch with 10 ports, including 8 Power over Ethernet (PoE) ports and 2 Gigabit uplinks, with 56- or 128-bit encryption

Selection and ordering data

RUGGEDCOM RS900G

The RUGGEDCOM RS900G is a fully-managed Ethernet switch that has two Gigabit Ethernet fiber-optic ports and eight Fast Ethernet copper ports; 56- or 128-bit encryption; 2 Gigabit Ethernet fiber-optic ports (1000BaseX); 8 Fast Ethernet ports (10/100BaseTX); various fiber-optic connection options (pluggable LC, SC, SFP optics); support of bidirectional single strand fiber-optic cable; long-distance fiber-optic connections enable distances up to 70 km in the Gigabit range

- **RUGGEDCOM RS900GNC**
(not subject to export controls)
- **RUGGEDCOM RS900G**
(subject to export controls)

6GK6090-0GS1-....

6GK6090-0GS2-....

RUGGEDCOM RS900GP

The RUGGEDCOM RS900GP is a fully-managed Ethernet switch that has two Gigabit Ethernet fiber-optic ports and eight Fast Ethernet copper ports; 56- or 128-bit encryption; 2 Gigabit Ethernet fiber-optic ports (1000BaseX); 8 Fast Ethernet ports (10/100BaseTX); various fiber-optic connection options (pluggable LC, SC, SFP optics); support of bidirectional single strand fiber-optic cable; long-distance fiber-optic connections enable distances up to 70 km in the Gigabit range

- **RUGGEDCOM RS900GPNC**
(not subject to export controls)
- **RUGGEDCOM RS900GP**
(subject to export controls)

6GK6090-0PS1-0.A.

6GK6090-0PS2-0.A.

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RSG2100 / RUGGEDCOM RSG2300

Overview



RUGGEDCOM RSG2100



RUGGEDCOM RSG2300

RUGGEDCOM RSG2100

The RUGGEDCOM RSG2100 is a modular fully-managed Ethernet switch that is especially well-suited for use in hostile operating environments for electrical equipment and demanding climatic conditions.

RUGGEDCOM RSG2300

The RUGGEDCOM RSG2300 product family consists of fully-managed Ethernet switches with 32 ports and 4 modular Gigabit uplink ports.

Characteristics

- Fully integrated dual redundant (optional) high voltage and low voltage power supplies
- Operation without fans for operating temperatures from -40 °C to +85 °C

RUGGEDCOM RSG2100

- Modular managed Ethernet switch with 19 ports, Gigabit uplinks and 56- or 128-bit encryption
- Up to 3 Gigabit Ethernet ports and 16 Fast Ethernet ports - copper and/or fiber-optic
- 2-port modules for outstanding flexibility
- Store und Forward switching
- Support of many different fiber-optic cable types (multimode, single-mode) with a variety of connections (ST, MTRJ, LC, SC, SFP)
- Variant with 4 fixed 10/100BaseTX, 802.3af-compliant (PoE) Ethernet ports (RUGGEDCOM RSG2100P and RSG2100PNC)

RUGGEDCOM RSG2300

- Managed Ethernet switch with 32 ports, Gigabit uplinks and 56- or 128-bit encryption
- 24 Fast Ethernet copper ports
- Optional: Up to 4x 1000LX Gigabit Ethernet ports (copper and/or fiber-optic) and up to 8x 100FX Fast Ethernet fiber-optic ports
- Non-blocking, Store und Forward switching
- Support of many different fiber-optic cable types (multimode, single-mode, bidirectional single strand) with a variety of connections (ST, MTRJ, LC, SC, SFP)
- Variant available with up to four 802.3af-compliant ports (10/100BaseTX) (RUGGEDCOM RSG2300P and RSG2300PNC)

Selection and ordering data

RUGGEDCOM RSG2100

The RUGGEDCOM RSG2100 is a fully-managed Ethernet switch; 56- or 128-bit encryption; up to 3 Gigabit Ethernet ports - copper and/or fiber-optic; up to 16 Fast Ethernet ports - copper and/or fiber-optic; 2-port modules for outstanding flexibility; non-blocking, Store and Forward switching; support of many different fiber-optic cable types (multimode, single-mode, bidirectional single strand); long-distance fiber-optic connections enable distances up to 70 km in the Gigabit range; variety of connection types (ST, MTRJ, LC, SC, RJ45, Micro-D)

- **RUGGEDCOM RSG2100NC**
(not subject to export controls)
- **RUGGEDCOM RSG2100**
(subject to export controls)
- **RUGGEDCOM RSG2100PNC**
(not subject to export controls)
- **RUGGEDCOM RSG2100P**
(subject to export controls)

6GK6021-0AS1-....

6GK6021-0AS2-....

6GK6021-0PS1-....

6GK6021-0PS2-....

RUGGEDCOM RSG2300

The RUGGEDCOM RSG2300 is a modular fully-managed Ethernet switch; 24x 10/100TX copper ports; optional: up to 4x 1000LX Gigabit Ethernet ports (copper and/or fiber-optic) and up to 8x 100FX Fast Ethernet fiber-optic ports; 2-port modules for outstanding flexibility; non-blocking, Store and Forward switching; multimode, single-mode; long-distance fiber-optic connections enable distances up to 90 km; variety of connection types (ST, MTRJ, LC, SC)

- **RUGGEDCOM RSG2300NC**
(not subject to export controls)
- **RUGGEDCOM RSG2300**
(subject to export controls)
- **RUGGEDCOM RSG2300PNC**
(not subject to export controls)
- **RUGGEDCOM RSG2300P**
(subject to export controls)

6GK6023-0AS1-....

6GK6023-0AS2-....

6GK6023-0PS1-....

6GK6023-0PS2-....

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

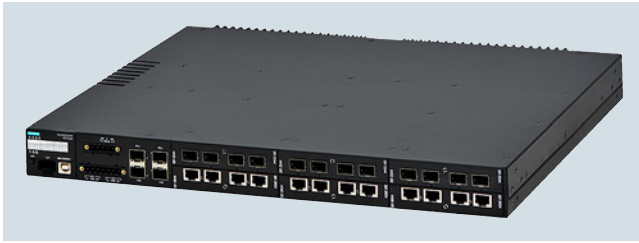
<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RST2228

Overview



The RUGGEDCOM RST2228 is a high port density field modular 19" Layer 2 rack switch with 10 Gbit/s uplinks, support for IEEE 1588.

Design

- Up to 28 Ethernet ports – 4 x 1000BASE-X/10GBASE-X integrated uplinks and up to 24 x 10/100/1000BASE-X ports
- 6 slots for 4-port Media Modules for tremendous flexibility
- Media modules with 4 x 10/100/1000 Mbit/s RJ45, FastConnect or 100/1000 Mbit/s SFP interfaces
- Supports precision timing according to IEEE 1588 (transparent clock)
- Non-blocking, store and forward switching
- Dual-redundant (optional), load sharing, high-voltage power supplies
- For use at ambient temperatures from –40 °C to +85 °C without the use of fans
- Power-over-Ethernet variant available supporting IEEE 802.3at/802.3bt (draft) with up to 60W/port and a maximum power budget from 500W.

Product versions

RUGGEDCOM RST2228

- 28-port field modular managed layer 2 Gigabit/s switch with 10 Gbit/s uplinks supporting IEEE 1588

RUGGEDCOM RST2228P

- 28-port field modular managed layer 2 Gigabit/s switch with 10 Gbit/s uplinks supporting IEEE 1588 and Power-over-Ethernet according IEEE 802.3at/803.bt (draft)

Benefits

- Future-proof Ethernet switch with high port density to minimize capital expense by reducing the number of devices needed.
- Field-modular media modules with RJ45, FastConnect & SFP interfaces and build-to-order design ensures seamless servicing and tremendous flexibility in tailoring the device configuration resulting in lower operating expenses
- Suitable for usage in electric power, transportation and oil & gas applications due to a utility grade design with immunity against EMI and heavy electrical surges
- Future-proof due to support of modern IEEE 1588 time synchronization features
- Suitable for usage in harsh environments with the minimal risk of mechanical failures due to an operating temperature from –40 °C to +85 °C without fans

Selection and ordering data

RUGGEDCOM RST2228

RUGGEDCOM RST2228 is a field modular, fully managed Layer 2 Ethernet switch with 4 x 1/10 Gbit/s and 24 x 100/1000 Mbit/s non-blocking ethernet ports. Support for up to six 4-port media modules with RJ45, SFP or LC interfaces; –40 °C ... +85 °C operating temperature (fanless)

6GK6222-6AB00-....

RUGGEDCOM RST2228P

RUGGEDCOM RST2228P is a field modular, fully managed Layer 2 Ethernet switch with 4 x 1/10 Gbit/s and 24 x 100/1000 Mbit/s non-blocking ethernet ports with Power-over-Ethernet support. Support for up to six 4-port media modules with RJ45, SFP or LC interfaces; –40 °C ... +85 °C operating temperature (fanless)

6GK6222-6PB00-....

RUGGEDCOM accessories

- **USB Console cable**
USB 2.0 A type to B type
Cable Assembly 10 feet / 3 meters
6GK6000-8DT01-0AA0
- **Power cable with lugs**
Power Cable with north-american plug for screw terminal blocks (6 ft.) for RUGGEDCOM products
6GK6000-8BA00-0AA0
- **Power cable without lugs**
Power Cable with north-american plug for pluggable terminal blocks (6 ft.) for RUGGEDCOM products
6GK6000-8BB00-0AA0
- **Pluggable terminal block RST2228**
Connector Kit RST2228
Pluggable terminal blocks (5 sets)
6GK6000-8HC05-0AA0
- **Screw terminal block RST2228**
Connector Kit RST2228
Screw terminal blocks (5 sets)
6GK6000-8HC06-0AA0
- **Rack / Panel Mounting Kit for RUGGEDCOM RST2228**
Allows for mounting in a 19" rack or in a panel
6GK6000-8MA01-0AA0

RUGGEDCOM Storage Media

- **RUGGEDCOM CLP 2GB**
Storage media for simple device exchange in case of failure, for storage of configuration or user data with 2 GB capacity.
6GK6000-8RA00-1HA0
- **RUGGEDCOM CLP 2GB CC**
Storage media for simple device exchange in case of failure, for storage of configuration or user data with 2 GB capacity and Conformal Coating.
6GK6000-8RA00-1HA1

RUGGEDCOM SFPs**Copper Ethernet SFP**

- **RUGGEDCOM SFP1112-1**
Copper SFP, 10/100/1000MBIT/S,
RJ45-Interface, Copper, up to
max. 100m, 0 °C ...+70 °C

Fiber Optic SFPs (Fast Ethernet)

- **RUGGEDCOM SFP1121-1FX2**
100BASE-FX, LC-Interface,
Optical: Multi Mode Fiber Optic
up to max. 2km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1121-1FX2A**
100BASE-FX, LC-Interface,
Optical: Multi Mode Fiber Optic
up to max. 2km, 1310nm,
-40 °C ...+85 °C. Active SFP which
is only compatible with the
RUGGEDCOM RX1400 and
RST2228 uplink interfaces.
- **SFP1131-1FX20**
100BASE-FX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 20km, 1310nm,
-40 °C ...+85 °C
- **SFP1131-1XF50**
100BASE-FX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 50km, 1310nm,
-40 °C ...+85 °C
- **SFP1131-1FX90**
100BASE-FX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 90km, 1550nm,
-40 °C ...+85 °C

Fiber Optic SFPs (Gigabit)

- **RUGGEDCOM SFP1122-1SX**
1000BASE-SX, LC-Interface,
Optical: Multi Mode Fiber Optic
up to max. 500m, 850nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1122-1SX2**
1000BASE-SX, LC-Interface,
Optical: Multi Mode Fiber Optic
up to max. 2km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX10**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 10km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX25**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 25km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX40**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 40km, 1550nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1LX70**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 70km, 1550nm,
-40 °C ...+85 °C

6GK6000-8CG01-0AA0

6GK6000-8FE51-0AA0

6GK6000-8FE50-0AA0

6GK6000-8FE52-0AA0

6GK6000-8FE53-0AA0

6GK6000-8FE54-0AA0

6GK6000-8FG51-0AA0

6GK6000-8FE58-0AA0

6GK6000-8FG52-0AA0

6GK6000-8FG53-0AA0

6GK6000-8FG57-0AA0

6GK6000-8FG54-0AA0

- **RUGGEDCOM SFP1132-1LX100**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 100km, 1550nm,
0 °C ...+70 °C

- **RUGGEDCOM SFP1132-1LX115**
1000BASE-LX, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 115km, 1550nm,
-10 °C ...+70 °C

Fiber Optic Bi-Directional SFPs (Gigabit)

- **RUGGEDCOM SFP1132-1BX10R**
1000BASE-BX-U, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 10km, 1310nm
TX/1490 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX10T**
1000BASE-BX-D, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 10km, 1490nm
TX/1310 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX40R**
1000BASE-BX-U, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 40km, 1310nm
TX/1490 nm RX, -40 °C ...+85 °C
- **RUGGEDCOM SFP1132-1BX40T**
1000BASE-BX-D, 1 X
1000MBIT/S, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 40km, 1490nm
TX/1310 nm RX, -40 °C ...+85 °C

Fiber Optic SFP+ (10 Gigabit)

- **RUGGEDCOM SFP2133-1LR10**
10GBASE-LR, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 10km, 1310nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP2133-1ER40**
10GBASE-ER, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 40km, 1550nm,
-40 °C ...+85 °C
- **RUGGEDCOM SFP2133-1ZR80**
10GBASE-ZR, LC-Interface,
Optical: Single Mode Fiber Optic
up to max. 80km, 1550nm,
-40 °C ...+85 °C

6GK6000-8FG55-0AA0

6GK6000-8FE56-0AA0

6GK6000-8FB51-0AA0

6GK6000-8FB52-0AA0

6GK6000-8FB53-0AA0

6GK6000-8FB54-0AA0

6GK6000-8FT51-0AA0

6GK6000-8FT53-0AA0

6GK6000-8FT52-0AA0

More information

To assist in selecting the right RUGGEDCOM products as well as configuration of variants, the RUGGEDCOM Selector is available at:

<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 2 Switches

RUGGEDCOM RSG2488

Overview



The RUGGEDCOM RSG2488 is the first locally upgradable Layer 2 switch with 28 non-blocking Gigabit ports and dual redundant power supplies that are replaceable during operation.

Characteristics

- Up to 28 Gigabit Ethernet ports - copper and/or fiber-optic; 19-inch, 1 HU rack mounting
- Fully modular; field-replaceable Ethernet media modules with 2/4 ports for outstanding flexibility
- Support of media modules with 100FX or 1000SX fiber-optic ports
- Optional PTP module provides GPS time source and IRIG-B input/output
- Support of IEEE 1588 (PTP), SNTP, IRIG-B; the time of day can be converted between all these formats
- Non-blocking, Store and Forward switching
- Support of many different fiber-optic cable types (multimode, single-mode, bidirectional single strand) with a variety of connections (LC, SC, SFP, ST)
- Dual redundant (optional) load-dividing high voltage and low voltage power supplies that are replaceable during operation
- Operation without fans for operating temperatures from -40 °C to +85 °C

Product versions

RUGGEDCOM RSG2488

- Modular managed Gigabit Ethernet switch with 28 ports and 128-bit encryption

RUGGEDCOM RSG2488NC

- Modular managed Gigabit Ethernet switch with 28 ports and 56-bit encryption

Selection and ordering data

RUGGEDCOM RSG2488

The RUGGEDCOM RSG2488 is a rugged fully-managed Ethernet switch; up to 28 non-blocking ports; configured as follows: 10/100/1000TX copper ports, 100FX or 1000SX fiber-optic ports; support of six 4-port modules plus two 2-port modules; combination of Gigabit copper and fiber-optic ports with up to 28 Gigabit Ethernet ports; operating temperatures from -40 °C to +85 °C (operation without fan)

- **RUGGEDCOM RSG2488NC**
(not subject to export controls)
- **RUGGEDCOM RSG2488**
(subject to export controls)

6GK6024-8GS1-....

6GK6024-8GS2-....

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview



The RUGGEDCOM RX1400 is a rugged Industrial Ethernet switch and TCP/IP router with LTE and fiber-optic WAN options in compact size for reliable, cost-effective implementation of comprehensive communication applications and a high processing output in harsh industrial environments.

Characteristics

- 4x Fast Ethernet copper ports and 2x Gigabit SFP (small form factor pluggable) slots
- Support of multimode and single-mode SFPs for distances of 500 m up to 100 km
- Equipped with GPS input
- Available with or without LTE modem for Europe, North America, the Asia-Pacific region and Japan. Fully integrated power supply, +/-12-24 V DC
- Operation without fans for operating temperatures from -40 °C to +85 °C
- RUGGEDCOM VPE1400: Virtualization enables a complete Linux image (with dedicated memory media and I/O ports) that can run in parallel with the RUGGEDCOM ROX II operating system.

Technical specifications

Transmission rate	
On Industrial Ethernet	Autosensing with 10/100 Mbps
Through WAN connection	Up to 100 Mbps
Through fiber-optic connection	1 Gbps
WAN connection	
EDGE/GPRS/GSM	850/900/1800/1900 MHz
UMTS/HSDPA+	850/900/1900/2100 MHz
LTE	B1, B2, B3, B4, B7, B8, B13, B17, B19, B20, B21, B25
Number of supported SIM cards	2
Interfaces	
Communication interfaces	LAN: 4 x RJ45 10/100, 2 x SFP slot 1000 LX SFP / Serial: 2 x DB9 connector/ Console: 1 x DB9 connector
WAN (Wide Area Network) interfaces	2 x SMA-type
GPS interface	1 x SMA-type
Permissible ambient conditions	
Operating temperature	-40 °C to +85 °C
Degree of protection	IP40
Design, dimensions and weight	
Dimensions (W x H x D) in mm	88 x 120 x 150
Weight	2.5 kg
Mounting	DIN rail, control panel, rack
Power consumption	< 15 W
Reliability	
MTBF (calculated in accordance with MIL-HDBK-217)	52 years (at 55 °C)

Selection and ordering data

RUGGEDCOM RX1400	6GK6014-0AM2-....
The RUGGEDCOM RX1400 is a rugged Industrial Ethernet switch and TCP/IP router in compact size with 4 Gigabit Ethernet copper ports, 2 serial ports (DB9) and 2 SFP slots. Optionally equipped with LTE modem, SFPs and GPS/GLONASS support.	
RUGGEDCOM VPE1400 License	6GK6014-0AL50-0AA0
License for activating the RUGGEDCOM VPE1400 virtual environment on the RX1400	
RUGGEDCOM RX1400 Layer 3 Security License	6GK6014-0AL53-0AA0
License for activating the Layer 3 security functions on the RX1400	

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 3 Switches / Routers

RUGGEDCOM RX1500 / RUGGEDCOM RX1501 / RUGGEDCOM RX1510

Overview



RUGGEDCOM RX1500



RUGGEDCOM RX1501



RUGGEDCOM RX1510

The RUGGEDCOM RX1500 series is a multi-service platform for the power supply sector, available in different sizes for 19-inch rack mounting and DIN/panel mounting. The RUGGEDCOM RX1500 series has a modular, field-replaceable platform that allows customers to choose between various WAN options, serial options and Ethernet options and is thus extremely well-suited for rail and traffic control systems.

Characteristics

- General device characteristics
 - Field-replaceable line modules
- RUGGEDCOM RX1500:
 - Up to 24x 100FX ports
 - Up to 24x 10/100TX ports
 - Up to 12x 10FL/100SX ports
 - Up to 8 Gigabit Ethernet ports
 - Up to 24 serial ports
- RUGGEDCOM RX1501:
 - Up to 36 ports 100FX
 - Up to 36 ports 10/100TX
 - Up to 18 ports 10FL / 100SX
 - Up to 4 ports Gigabit Ethernet
 - Up to 36 Serial Ports
- RUGGEDCOM RX1510:
 - Up to 24x 100FX ports
 - Up to 24x 10/100TX ports
 - Up to 12x 10FL/100SX ports
 - Up to 8 Gigabit Ethernet ports
 - Up to 24 serial ports

- WAN port options
 - T1/E1 (channelized)
 - E1 75 ohms via BNC
 - Mobile wireless
 - DDS
- Power supply
 - RUGGEDCOM RX1500, RX1510:
 - Modular power supply that is replaceable during operation
 - Input voltage range 24 V DC, 48 V DC, 88-300 V DC and 85-264 V AC for worldwide operation
 - Fully integrated power supply (no external adapters)
 - Safety approval according to CSA/UL 60950 up to +85 °C
- Cyber security
 - Integrated router, firewall and VPN functionality
 - Stateful firewall with NAT
 - Complete IPsec Virtual Private Networking
 - VPN with support for 3DES, AES128, AES256
 - RUGGEDCOM CROSSBOW for cyber security conformity in accordance with NERC CIP
 - Central RADIUS password management
 - Multilevel passwords
 - SSH/SSL encryption
 - Enable/disable ports, MAC-based port security
 - VLAN (802.1Q) for separation and protection of network traffic
 - SNMPv3-encrypted authentication and access protection
 - Optional checkpoint firewall and IPS (see RUGGEDCOM APE module)
- WAN protocols
 - Frame relay RFC 1490 or RFC 1294
 - PPP RFC 1661, 1332, 1321, 1334, PAP, CHAP authentication
 - GOOSE message support
- IP
 - Routing: OSPF, BGP, RIPv1 and RIPv2
 - VRRP
 - Traffic control, NTP server
 - IP multicast routing
 - DHCP agent (option 82 possible)
 - MPLS
- Reliability in harsh environments
 - EMC and immunity from electrical interference in the high voltage range
 - Meets requirements of IEEE 1613 (electric power stations for power supply and distribution)
 - Exceeds requirements of IEEE 61850-3 (electric power stations for power supply and distribution)
 - Exceeds requirements of IEC 61800-3 (drive systems with variable speed)
 - Exceeds requirements of IEC 61000-6-2 (general industrial environment)
 - Exceeds requirements of NEMA TS-2 (traffic control systems)
 - Operating temperature -40°C to +85°C (operation without fan)
 - Fail-safe output relay: For signaling of critical failures or errors
 - Zinc-plated steel housing (18 AWG) and adapter for 19-inch rack mounting

Product versions

RUGGEDCOM RX1500

- Modular, 19-inch rack-mounted Layer 2 and Layer 3 switch and router with optional redundant power supply

RUGGEDCOM RX1501

- Modular, 19-inch rack-mounted Layer 2 and Layer 3 switch and router with single power supply

RUGGEDCOM RX1510

- Modular Layer 2 and Layer 3 switch and router in compact size

Network Components

RUGGEDCOM – Layer 3 Switches / Routers

RUGGEDCOM RX1500 / RUGGEDCOM RX1501 / RUGGEDCOM RX1510

Selection and ordering data

RUGGEDCOM RX1500

The RUGGEDCOM RX1500 series comprises Layer 2 and Layer 3 switches and routers. 2x power supplies (replaceable during operation); locally replaceable line modules; up to 24x 100FX ports; up to 24x 10/100TX ports; up to 8x Gigabit Ethernet ports; up to 12x 10FL/100SX ports - SC, ST, LC and MTRJ; pluggable fiber-optic connection (SFP); up to 4x T1/E1 ports; mobile wireless (EVDO / HSPA); DDS (56K masters/slaves, 64K slaves); up to 24x RS232/422/485 ports

RUGGEDCOM RX1501

The RUGGEDCOM RX1501 series is a utility grade Layer 2 and Layer 3 switch and router. 1x power supply Field replaceable line modules Up to 36-ports 100FX; up to 36-ports 10/100TX; up to 4-ports Gigabit Ethernet up to 18 ports 10FL/100SX SC, ST, LC and MTRJ; pluggable Optics (SFP); up to 4 T1/E1 ports cellular (EVDO / HSPA); DDS (56K master/slave, 64K slave); up to 24 RS232/422/485

6GK6015-0AM2-....

6GK6015-0BM2-....

RUGGEDCOM RX1510

The RUGGEDCOM RX1510 series comprises Layer 2 and Layer 3 switches and routers in compact size. 2x power supplies - redundant, load-dividing power supplies; locally replaceable line modules; up to 24x 100FX ports; up to 24x 10/100TX ports; up to 8x Gigabit Ethernet ports; up to 12x 10FL/100SX ports - SC, ST, LC and MTRJ; pluggable fiber-optic connection (SFP); up to 4x T1/E1 ports; mobile wireless (EVDO / HSPA); DDS (56K masters/slaves, 64K slaves); up to 24x RS232/422/485 ports

6GK6015-1AM2-....

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Network Components

RUGGEDCOM – Layer 3 Switches / Routers

RUGGEDCOM RX5000

Overview



The RUGGEDCOM RX5000 is an Ethernet routing and switching platform with high connection density for use in harsh environments. These integrated switches and routers can withstand strong electromagnetic interference and radio frequency interference as well as a wide temperature range from -40 °C to +85 °C. The platform was developed for demanding climatic and environmental conditions, such as in power generation and distribution grids as well as in the industrial and military sectors.

Characteristics

- RUGGEDCOM RX5000:
 - Up to two 10 Gigabit uplinks
 - Up to 26 Gigabit ports
 - Up to 96x 10/100TX copper ports
 - Up to 48x 100 FX optical ports
 - Long-distance fiber-optic connections enable distances up to 90 km
- Power supply
 - Modular, redundant power supplies
 - Universal high voltage ranges: 88-300 V DC or 85-264 V AC
- Reliability in harsh environments
 - EMC and immunity from electrical interference in the high voltage range
 - Exceeds requirements of NEMA TS-2 (traffic control systems)
- Operating temperature -40°C to +85°C (operation without fan)
- Printed-circuit boards with protective coating (optional)

Selection and ordering data

RUGGEDCOM RX5000

The RUGGEDCOM RX5000 is a routing and switching platform with high port density. Up to 96x 10/100TX copper ports + 2x 10/100/1000T copper ports; up to 48x 100FX fiber-optic ports; up to 2x Gigabit Ethernet ports; long-distance fiber-optic connections enable distances up to 90 km

6GK6050-0AM2-....

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM switches and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview



The RUGGEDCOM WIN7200 is a light-weight IEEE 802.16e-compliant wireless broadband base station that has been developed for use in unlicensed and "lightly" licensed or completely licensed frequency bands in harsh environments. The RUGGEDCOM WIN7200 is a light-weight base station with a sector antenna that can be easily mounted on masts, street lamps or walls. It supports subscribers in a stationary or mobile environment. The RUGGEDCOM Win7200, which is singly powered and connected via a single Power over Ethernet (PoE) connection, reduces operating costs and complexity. The RUGGEDCOM WIN7200 system is powered by OFDMA radio technology, which has proven to be robust in adverse channel conditions and enables non-line-of-sight (NLOS) operation. Algorithms for link adjustment, modulation and coding are continuously adapted to the prevailing link conditions for an optimal balance between robustness and efficiency.

Characteristics

- Mobile WiMAX-compliant in accordance with IEEE 802.16e and WiMAX Forum Wave 2 (MIMO) certification
- Support of worldwide WiMAX usage in the 2.X-GHz, 3.X-GHz, 4.9-GHz and 5.8-GHz bands
- Adaptive modulation: For optimization of throughput and improvement of performance
- Ecosystem compatibility with all RUGGEDCOM WIN products or 802.16e-compliant WiMAX network equipment
- Large range: Transmission and reception diversity in combination with high output power for improved range and NLOS performance
- High bandwidth: RUGGEDCOM WIN has two integrated wireless units that operate simultaneously on the same frequency (MIMO) for improving the bandwidth (up to 40 Mbps) and spectral efficiency.
- Efficient frequency use: Use of OFDMA technology and integrated GPS so that users can use a complete network on a single frequency channel.
- Usage models: Developed for support of long-distance connections to stationary, portable and mobile end points with simultaneous support of seamless mobility of vehicles and backhaul mode
- Quality of service (QoS): With RUGGEDCOM WIN, users can separate data traffic types by air as well as guarantee latency, minimal bandwidth and jitter according to application requirements.
- Rugged design: RUGGEDCOM WIN features a rugged design and can be used flexibly outdoors. The RUGGEDCOM products have been developed for use in harsh environments, such as are found in power stations, oil refineries, the military sector, roadside traffic control cabinets and metal and mineral processing plants.
- Standalone architecture: Commercial wireless broadband equipment requires the existence of a complete network infrastructure. This includes a special mobile router called an ASN gateway that acts as a central point for all network traffic. This infrastructure can be very costly and complicated to implement. Siemens has developed a mode that requires this comprehensive infrastructure but at the same time retains the interoperability and technological advantages of wireless broadband.
- Secure: RUGGEDCOM WIN is equipped with many integrated functions for assuring compliance with NERC CIP, such as mutual authentication, AES encryption and protection of integrity of messages using CMAC

Network Components

RUGGEDCOM – Wireless

RUGGEDCOM WIN7200

Selection and ordering data

RUGGEDCOM WIN7225-5

The RUGGEDCOM WIN7225-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 2483 MHz to 2690 MHz

RUM:WIN7225-5

RUGGEDCOM WIN7233-5

The RUGGEDCOM WIN7233-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 3300 MHz to 3400 MHz

RUM:WIN7233-5

RUGGEDCOM WIN7235-5

The RUGGEDCOM WIN7235-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 3400 MHz to 3600 MHz

RUM:WIN7235-5

RUGGEDCOM WIN7237-5

The RUGGEDCOM WIN7237-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 3600 MHz to 3720 MHz

RUM:WIN7237-5

RUGGEDCOM WIN7249-5

The RUGGEDCOM WIN7249-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 4900 MHz to 5000 MHz

RUM:WIN7249-5

RUGGEDCOM WIN7251

The RUGGEDCOM WIN7251 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 5000 MHz to 5150 MHz

RUM:WIN7251

RUGGEDCOM WIN7258-5

The RUGGEDCOM WIN7258-5 base station in compact size for outside use includes a power supply, 2x antenna cables 1.6 m, GPS receiver, GPS antenna and mounting set - antenna and data cables must be ordered separately, from 5725 MHz to 5850 MHz

RUM:WIN7258-5

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview

The RUGGEDCOM WIN5100 is an IEEE 802.16e-compliant wireless broadband subscriber unit that is equipped with external radio frequency connections for stationary or mobile applications in harsh environments. The self-learning subscriber device automatically detects the base station using the best

available signal and enables plug-and-play installation and maintenance-free operation. The RUGGEDCOM WIN5100 has external antenna ports and is available with optional 10-30 V DC power input.

Characteristics

- Mobile WiMAX-compliant in accordance with IEEE 802.16e and WiMAX Forum Wave 2 profiles
- 2 N-type antenna ports for connection of roof antennas
- Excellent performance in NLOS conditions – insensitive to multipath and deep fade, providing for an extended range and easy installation
- Automatic Transmit Power Control (ATPC) for optimal power system utilization, tight frequency reuse and interference prevention
- Numerous applications and services – guaranteed voice, video and data services based on enhanced quality of service (QoS)
- Rugged hardware supports an operating temperature range from -40 °C to +75 °C
- Developed for mast installation or installation in the vehicle or control cabinet

Selection and ordering data

RUGGEDCOM WIN5114-5-AC RUGGEDCOM WIN5114-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1350 MHz to 1525 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5114-5-AC	RUGGEDCOM WIN5123-5-AC RUGGEDCOM WIN5123-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 2300 MHz to 2400 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5123-5-AC
RUGGEDCOM WIN5114-5-DC RUGGEDCOM WIN5114-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1350 MHz to 1525 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5114-5-DC	RUGGEDCOM WIN5123-5-DC RUGGEDCOM WIN5123-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 2300 MHz to 2400 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5123-5-DC
RUGGEDCOM WIN5118-5-AC RUGGEDCOM WIN5118-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1800 MHz to 1830 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5118-5-AC	RUGGEDCOM WIN5125-5-AC RUGGEDCOM WIN5125-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 2496 MHz to 2690 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5125-5-AC
RUGGEDCOM WIN5118-5-DC RUGGEDCOM WIN5118-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1800 MHz to 1830 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5118-5-DC	RUGGEDCOM WIN5125-5-DC RUGGEDCOM WIN5125-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 2496 MHz to 2690 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5125-5-DC

Network Components

RUGGEDCOM – Wireless

RUGGEDCOM WIN5100

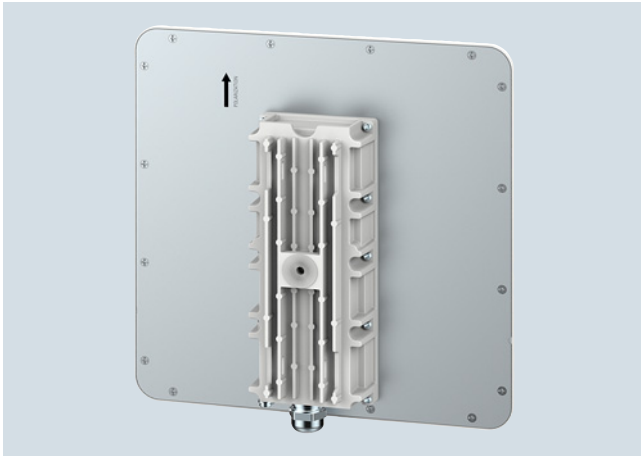
RUGGEDCOM WIN5135-5-AC RUGGEDCOM WIN5135-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 3300 MHz to 3600 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5135-5-AC	RUGGEDCOM WIN5149-5-DC RUGGEDCOM WIN5149-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 4900 MHz to 5000 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5149-5-DC
RUGGEDCOM WIN5135-5-DC RUGGEDCOM WIN5135-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 3300 MHz to 3600 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5135-5-DC	RUGGEDCOM WIN5151-5-AC RUGGEDCOM WIN5151-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 4900 MHz to 5200 MHz, with commercially available AC power injector, power/data cables must be ordered separately This product is intended for the air transportation market and AeroMACS frequency bands.	RUM:WIN5151-5-AC
RUGGEDCOM WIN5137-5-AC RUGGEDCOM WIN5137-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 3600 MHz to 3800 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5137-5-AC	RUGGEDCOM WIN5151-5-DC RUGGEDCOM WIN5151-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 4900 MHz to 5250 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately This product is intended for the air transportation market and AeroMACS frequency bands.	RUM:WIN5151-5-DC
RUGGEDCOM WIN5137-5-DC RUGGEDCOM WIN5137-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 3600 MHz to 3800 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5137-5-DC	RUGGEDCOM WIN5158-5-AC RUGGEDCOM WIN5158-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 5725 MHz to 5850 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5158-5-AC
RUGGEDCOM WIN5149-5-AC RUGGEDCOM WIN5149-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 4900 MHz to 5000 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5149-5-AC	RUGGEDCOM WIN5158-5-DC RUGGEDCOM WIN5158-5-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 5725 MHz to 5850 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately	RUM:WIN5158-5-DC

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Overview



The RUGGEDCOM WIN5200 is an IEEE 802.16e-compliant wireless broadband subscriber unit that is equipped with an integrated dual-slant directional antenna for harsh environments. The RUGGEDCOM WIN5200 is much simpler to install thanks to LEDs for signal strength alignment, automatic connection to the strongest available base station and automatic service delivery based on authentication data. Specially developed for point-to-multipoint broadband applications with wireless access, the RUGGEDCOM WIN5200 enables efficient use of the wireless frequency spectrum and supports many different applications.

Characteristics

- Mobile WiMAX-compliant in accordance with IEEE 802.16e and WiMAX Forum Wave 2 profiles
- Integrated antenna with high strength
- Excellent performance in NLOS conditions – insensitive to multipath and deep fade, providing for an extended range and easy installation
- Automatic Transmit Power Control (ATPC) for optimal power system utilization, tight frequency reuse and interference prevention
- Numerous applications and services – guaranteed voice, video and data services based on enhanced quality of service (QoS)
- Low operating costs due to easy installation and needs-based expansion so that owners can quickly enter new market segments with minimum investment
- Rugged hardware supports an operating temperature range from -40 °C to +75 °C
- Mean time between failures (MTBF) of over 1 million hours
- A single Power over Ethernet (PoE) cable
- Broad frequency band supports worldwide use
- Subscriber unit for outside use

Network Components

RUGGEDCOM – Wireless

RUGGEDCOM WIN5200

Selection and ordering data

RUGGEDCOM WIN5218-1-WR-AC RUGGEDCOM WIN5218-1-WR-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1785 MHz to 1805 MHz, with commercially available AC power injector, power/data cables must be ordered separately This article number can only be ordered for China	RUM:WIN5218-1-WR-A	RUGGEDCOM WIN5235-5 RUGGEDCOM WIN5235-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 3300 MHz to 3600 MHz	RUM:WIN5235-5
RUGGEDCOM WIN5218-1-WR-DC RUGGEDCOM WIN5218-1-WR-DC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 1785 MHz to 1805 MHz, direct 10-30 V DC power input with separate Ethernet connection, equipped with DC power cable, data cables must be ordered separately This article number can only be ordered for China	RUM:WIN5218-1-WR-D	RUGGEDCOM WIN5237-5 RUGGEDCOM WIN5237-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 3600 MHz to 3800 MHz	RUM:WIN5237-5
RUGGEDCOM WIN5218-1-WR-OD RUGGEDCOM WIN5218-1-WR-OD subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 1785 MHz to 1805 MHz This article number can only be ordered for China	RUM:WIN5218-1-WR-O	RUGGEDCOM WIN5249-5 RUGGEDCOM WIN5249-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 4900 MHz to 5000 MHz	RUM:WIN5249-5
RUGGEDCOM WIN5218-5 RUGGEDCOM WIN5218-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 1800 MHz to 1830 MHz	RUM:WIN5218-5	RUGGEDCOM WIN5251 RUGGEDCOM WIN5251 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 4900 MHz to 5200 MHz This product is intended for the air transportation market and AeroMACS frequency bands.	RUM:WIN5251
RUGGEDCOM WIN5223-5 RUGGEDCOM WIN5223-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 2300 MHz to 2400 MHz	RUM:WIN5223-5	RUGGEDCOM WIN5137-5-DC RUGGEDCOM WIN5258-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 5725 MHz to 5850 MHz	RUM:WIN5137-5-DC
RUGGEDCOM WIN5225-5 RUGGEDCOM WIN5225-5 subscriber unit for outside use with high strength and integrated dual-slant directional antenna, includes commercial-quality power supply, from 2496 MHz to 2690 MHz	RUM:WIN5225-5	RUGGEDCOM WIN5258-5 RUGGEDCOM WIN5149-5-AC vehicle subscriber unit with external antenna ports, radio frequency cable - 5 m, power cable - 5 m (use of power supply in the vehicle as well as external power supply), mounting set, from 4900 MHz to 5000 MHz, with commercially available AC power injector, power/data cables must be ordered separately	RUM:WIN5258-5

More information

The RUGGEDCOM Selector assists you in selecting the right RUGGEDCOM products and in configuring variants and is available at:

<http://www.siemens.com/ruggedcom-selector>

Appendix



8/2	Ordering notes
8/8	Further documentation
8/13	Standards and approvals
8/19	Quality management
8/20	Partners at Siemens
8/21	Industry Services
8/24	Online Support
8/25	Software licenses
8/27	Conditions of sale and delivery

Appendix

Ordering notes

Things you should know about Catalog IC 12

Catalog IC 12 contains all selection and order-relevant data.

Standard delivery time (SD)

- SD in days (d)
 ► Preferred type
 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 one day.
 The delivery times specified here represent the situation in October 2017. They are continuously optimized. For more up-to-the-minute information, please visit www.siemens.com/sirius/mall.

Packaging sizes (PS)

The packaging size defines the number, e.g. of units, sets or meters, contained in an 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 8/5.

Price groups (PG)

Each product is assigned to a price group.

Example

3RA2110-0FA15-1AP0

SD: 2 working days
 PG: 41D
 Order quantity 1 unit or a multiple thereof

3RV1901-0H

SD: Preferred type
 PG: 41E
 Order quantity 10 units or a multiple thereof

3SU1900-0AB71-0AB0

SD: 5 working days
 PG: 41J
 Order quantity 10 units or a multiple thereof

SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
d					
2	3RA2110-0FA15-1AP0		1	1 unit	41D
►	3RV1901-0H		1	10 units	41E
5	3SU1900-0AB71-0AB0		100	10 units	41J

Dimensions

All dimensions in mm.

Symbols

In Catalog IC 12 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	Insulation piercing method	
	Straight-through transformers	
	Spring-type terminals or spring-type terminals (push-in)	
	Flat connectors	
	Solder pin connections	
	Push-in terminals	
	Ring terminal lug connections	
	Screw terminals	
	Socket terminals (THT)	
Types of coordination	Type of coordination "1"	
	Type of coordination "2"	
Distinguishing between units	Complete units	
	Modular system	

Appendix

Ordering notes

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.

Our delivery processes are designed such that, as a rule, a confirmed deadline is not generally exceeded. In fact, wherever possible, we aim to deliver up to three working days ahead of schedule to optimize the overall delivery situation (e.g. in anticipation of holidays and peak order periods).

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
- 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. Order No. of the operating instructions is also specified. This can be obtained from your local Siemens representative, [see www.siemens.com/automation/partner](http://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.

Multi-unit and reusable packagings

The devices listed in the table on page 8/6 can be ordered in multi-unit or reusable packagings (other versions available 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 (one 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 (one 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	596	219	396
W95	575	190	375
W96	375	190	290
W97	290	190	195
W98	290	100	195

Appendix

Ordering notes

Multi-unit and reusable packaging, quantity in units, supplied in indivisible pack quantities with delivery time on request

Devices	Size	Reusable	Multi-unit			
SIRIUS		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	--
3RT203...-...0	S2	30	--	15	6	--
3RT203...-...4	S2	30	--	15	--	--
Snap-on auxiliary switch blocks						
3RH2911-1F./GA/HA...	--	351	--	240	120	60
3RH2911-2F./G./H./N./X...	--	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/circuit breakers						
3RV2011-...1/0/5	S00	43	--	24	12	--
3RV2011-...2/0/5	S00	40	--	16	8	--
3RV2021-...1/0/5	S0	43	--	24	12	--
3RV2021-...2/0/5	S0	35	--	16	8	--
3RV2031-...0/5	S2	24	--	12	5	--
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	--
3RU2136-...B0	S2	36	--	18	9	--
3RP25 electronic timing relays	On request					

Devices	Multi-unit
SIRIUS ACT	X90
3SU1 pushbuttons and indicator lights	
Complete units (3SU11)	20
Compact units (3SU12)	
• Acoustic signaling devices, pushbuttons with extended stroke, potentiometers	50
Actuating and signaling elements (3SU10)	
• Pushbuttons, illuminated pushbuttons, indicator lights	100
• Stop switches, twin pushbuttons, mushroom pushbuttons 30/40 mm, EMERGENCY STOP mushroom pushbuttons 30/40 mm, toggle switches, selector switches, key-operated switches, ID key-operated switches, coordinate switches	50
• Mushroom pushbuttons 60 mm, EMERGENCY STOP mushroom pushbuttons 60 mm	40
Holders (3SU15)	100
Modules for actuators and indicators (3SU14)	
• Contact modules, LED modules	150
Accessories (3SU19)	
• Blanking plugs, label holders, EMERGENCY STOP backing plates, labeling plates for potentiometers, EMERGENCY STOP labeling plate for enclosures without cutouts and without inscription	100

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**.

Ordering 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**.

Ordering example:
3RT2024-1AB00-Z X95
+ quantity: 48

Ordering special versions

When 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.– to cover our costs for order processing and invoicing for all orders with a net goods value of less than € 250.–.

Appendix

Further documentation

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

Low-Voltage Power Distribution and Electrical Installation Technology on the WWW



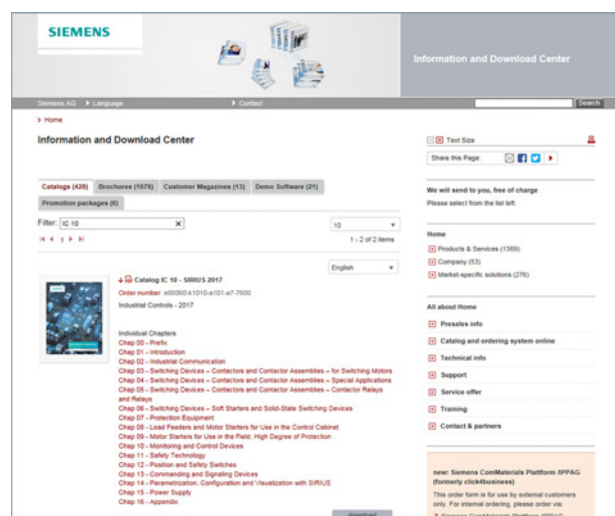
We regard product support to be just as important as the products and systems themselves.

Visit our website for a comprehensive offering of support for low-voltage power distribution and electrical installation products, such as:

- Overview of the entire product portfolio
- Keeping up to date via newsletters, podcasts, blogs and Twitter
- Access to interesting videos on YouTube
- Contact with partners around the world
- Operating instructions and manuals for direct download and much more - all conveniently and easily accessible.

www.siemens.com/lowvoltage

Information and download center



You will find information material such as catalogs, customer magazines, brochures and trial versions of software for low-voltage power distribution and electrical installations on the Internet at

www.siemens.com/industry/infocenter

Here you can order your copy of the available documentation or download it in common file formats (PDF, ZIP).



Select products and assemble orders with the CA 01, determine the availability of the selected products and track & trace via the Industry Mall.

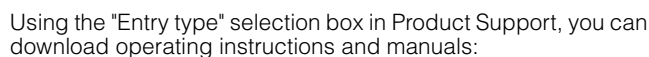
More information and download:
www.siemens.com/automation/ca01

The Industry Mall

Powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAX data types are also provided here.

Data transfer allows the whole procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, customer-specific discounts and bid creation are also possible.

www.siemens.com/industrymall



www.siemens.com/sirius/support

Here you will also find application examples, downloads, FAQs, characteristic curves, product reports, technical specifications and certificates.

Appendix

Further documentation

Übersicht

Apps for SIRIUS Planning Efficiency

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 cabinet¹⁾ at www.siemens.com/sirius/cabinet.



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



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".

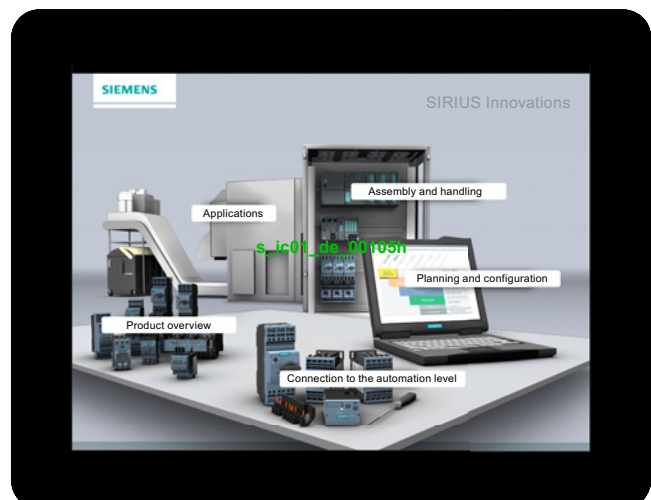
For more information, see www.siemens.com/industry/online-support-app.



SIRIUS Innovations DVD – also available as a web app

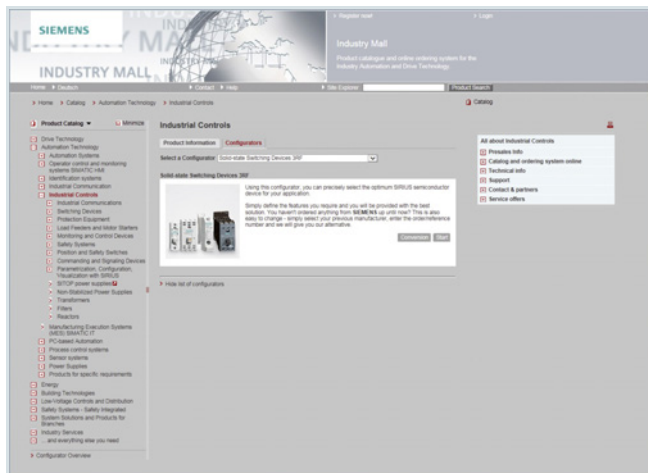
Thanks to the modular design of SIRIUS Innovations, our products are particularly easy to plan for the control cabinet, install and monitor. All the advantages of SIRIUS Innovations are available offline in 9 languages with 3D animations, films and screen recordings of our planning and configuring tools.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

The SIRIUS Innovations DVD is now also available as a web app¹⁾ (de/en): www.siemens.com/sirius/dvd.



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

Product configurator



Get to the right product faster with intuitive product selection

- Full selection of products and systems on the basis of technical features or in accordance with application requirements
- Simple and intuitive operation
- Configuration and ordering lists can be saved in the file format of your choice (txt, pdf, xls, csv)
- Direct transfer of the ordering list to the Siemens Industry Mall shopping cart
- Fast access to product data, pictures, certificates and CAx data for the selected product and system configuration
- Available in several languages for global use

The configurators are available online in the Siemens Industry Mall and offline in the CA01 Catalog. Product selection doesn't come any faster, clearer or easier.

You will find our configurators on the Internet at

www.siemens.com/sirius/configurators

Appendix

Further documentation

CAx Download Manager

With the CAx Download Manager, all the CAx data types required for use in all commonly used CAE and CAD systems are provided for your desired products in just four selection steps, free of charge and with daily updates. Your individual download package is then available to you for further use as a zip file. This will save up to 80% of your time, because there is no need for manual data collection thanks to the universal manufacturer data for all commonly used CAE and CAD systems.

My Documentation Manager

We have developed a configurator for manuals to support you in creating plant documentation. With My Documentation Manager, the standard-compliant plant documentation can be compiled individually with just a few clicks. Simply select the desired chapters from the existing manuals of the installed Siemens products.

EPLAN Electric P8 Macro – the benefits for EPLAN users

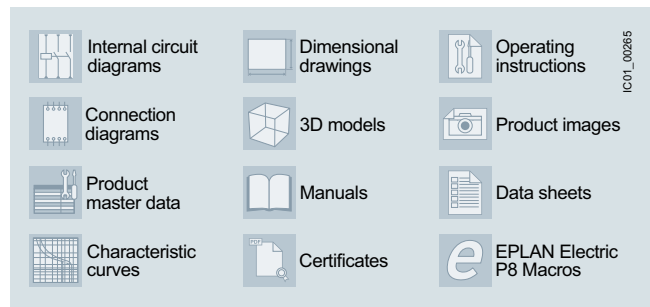
With EPLAN Electric P8 in .edz exchange format (EPLAN Data Archived Zipped), the overall time required for data integration can be reduced even further. With just a few clicks, the contained data types can be imported for any number of article numbers, and they remain linked. In this way, the installed Siemens products can be represented across different circuit diagram pages quickly and easily.

At a glance

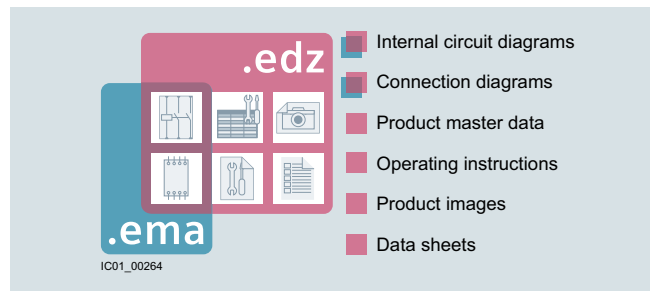
Without Planning Efficiency a lot of time used to be wasted in manual data transmission. Now you can concentrate on the essentials again. All the information and product data you need are provided by Siemens Industry and are easily accessible.

This makes configuring control cabinets more efficient and makes your everyday work easier.

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



The CAx Download Manager makes 11 universal data types and the EPLAN Electric P8 Macro available



The EPLAN Electric P8 Macro in .edz exchange format offers a lot more than the .ema exchange format



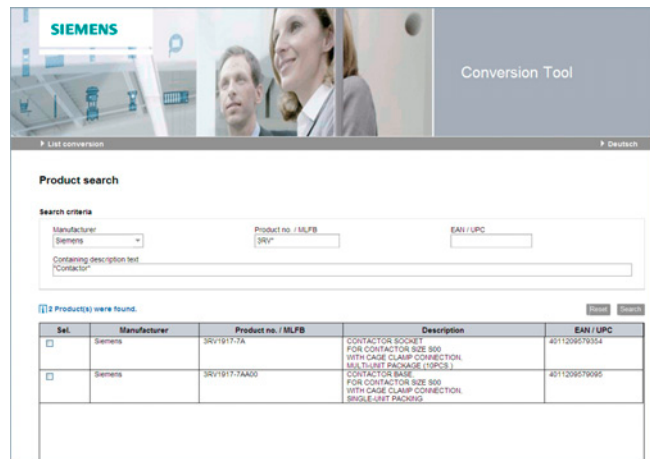
Find out more about Planning Efficiency in demonstrative videos

From old to new: The conversion tool

Every automation system becomes obsolete at some time. Replacing installed products used to involve significant time and costs. But now, with the 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

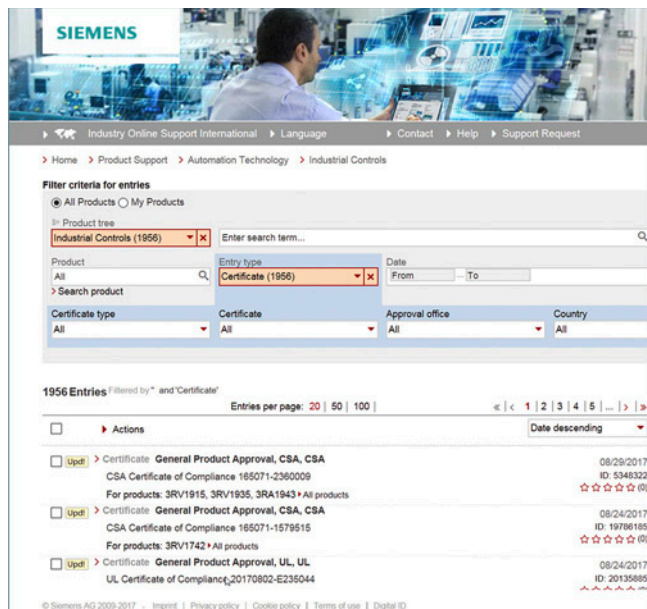
For more information, see www.siemens.com/sirius/conversion-tool.



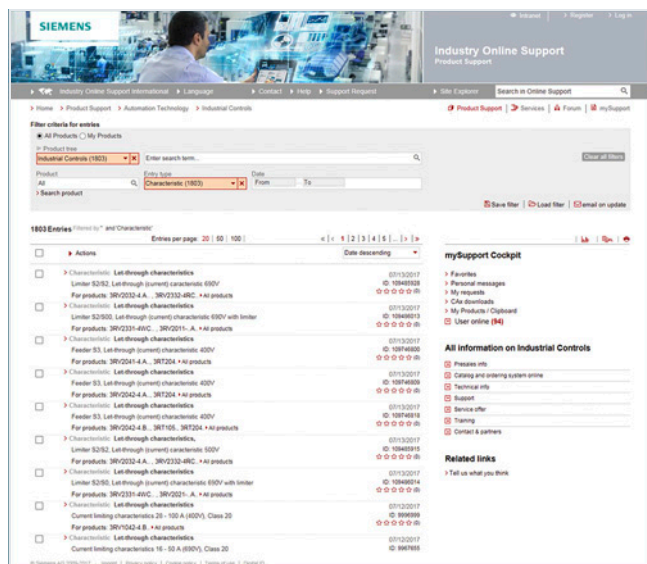
Approvals, test certificates, characteristic curves

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
- EN ISO 13849
- EN 61511-1

The TÜV-tested Safety Evaluation Tool assists in calculating the safety function as verification for the machine documentation. It is available as a free download 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 repairable 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.

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.

The safety characteristics of electromechanical SIRIUS products can be found at

<https://support.industry.siemens.com/cs/ww/en/view/109739348> or in the SIEMENS Industry Online Support Portal (<http://support.industry.siemens.com>) under the Entry ID: 109739348.

Appendix

Standards and approvals

Standards

IEC	EN	Title
60947-1 60947-2 60947-3	60947-1 60947-2 60947-3	Low-voltage switchgear and controlgear: General rules • Circuit-breakers • Switches, disconnectors, switch-disconnectors and fuse-combination units
60947-4-1 60947-4-2 60947-4-3	60947-4-1 60947-4-2 60947-4-3	• Contactors and motor starters - Electromechanical contactors and motor starters • Contactors and motor starters - AC semiconductor motor controllers and starters, soft starters • AC semiconductor controllers and contactors for non-motor loads
60947-5-1 60947-5-2 60947-5-3 60947-5-5 60947-5-6	60947-5-1 60947-5-2 60947-5-3 60947-5-5 60947-5-6	• Control circuit devices and switching elements - Electromechanical control circuit devices • Control circuit devices and switching elements - Proximity switches • Requirements for proximity devices with defined behaviour under fault conditions • Electrical emergency stop device with mechanical latching function • Control circuit devices and switching elements - DC interface for proximity switches and switching amplifiers (NAMUR)
60947-5-7 60947-5-8 60947-5-9	60947-5-7 60947-5-8 60947-5-9	• Requirements for proximity devices with analogue output • Three-position enabling switches • Flow rate switches
60947-6-1 60947-6-2	60947-6-1 60947-6-2	• Multiple function equipment - Transfer switching equipment • Multiple function equipment - Control and protective switching devices (or equipment) (CPS)
60947-7-1 60947-7-2 60947-7-3 60947-7-4	60947-7-1 60947-7-2 60947-7-3 60947-7-4	• Ancillary equipment - Terminal blocks for copper conductors • Ancillary equipment - Protective conductor terminal blocks for copper conductors • Ancillary equipment - Safety requirements for fuse terminal blocks • Ancillary equipment - PCB terminal blocks for copper conductors
60947-8	60947-8	• Control units for built-in thermal protection (PTC) for rotating electrical machines
62026-2	62026-2	• Actuator sensor interface (AS-i)
60269-1 60269-4	60269-1 60269-4	Low-voltage fuses: General requirements 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 61439-2 61439-3	61439-1 61439-2 61439-3	Low-voltage switchgear and controlgear assemblies: General rules Low-voltage switchgear and controlgear assemblies: Power switchgear and controlgear assemblies Low-voltage switchgear and controlgear assemblies: Distribution boards intended to be operated by ordinary persons (DBO)
61439-4	61439-4	Low-voltage switchgear and controlgear assemblies: Particular requirements for assemblies for construction sites (ACS)
61439-5 61439-6 --	61439-5 61439-6 50274	Low-voltage switchgear and controlgear assemblies: Assemblies for power distribution in public networks Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems (busways) 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 -- 60079-14	60204-1 50178 60079-14	Electrical equipment of machines: General requirements Electronic equipment for use in power installations Electrical apparatus for explosive gas atmospheres Electrical installations in hazardous areas (other than mines)
60079-2	60079-2	Electrical apparatus for explosive gas atmospheres - Part 2: Pressurized Enclosures M "p"
61810-1 61812-1	61810-1 61812-1	Electromechanical elementary relays; General requirements Time relays for industrial and residential use: Part 1: Requirements and tests
60999-1	60999-1	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 1: General requirements and particular requirements for clamping units for conductors from 0.2 mm ² up to 35 mm ² (included)
60999-2	60999-2	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units: Particular requirements for clamping units for conductors above 35 mm ² up to 300 mm ² (included)
IEC/TR 61000-4-1	61000-4-1	Electromagnetic compatibility (EMC) - Part 4-1: Testing and measuring techniques; Overview of IEC 61000-4 series
61000-6-2 61000-6-3	61000-6-2 61000-6-3	Electromagnetic compatibility (EMC); Generic standards - Immunity for industrial environments 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
61869-1	61869-1	Instrument transformers: General requirements
61869-2	61869-2	Instrument transformers: Additional requirements for current transformers

Standards and approvals

UL	CSA C22.2	ASME	JIS	Title
508	--	--	--	Industrial control equipment
60947-1	No. 60947-1	--	--	Low-voltage switchgear and controlgear – Part 1: General rules
60947-4-1	No. 60947-4-1	--	--	Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor starters – Electromechanical contactors and motor starters
60947-4-2	No. 60947-4-2	--	--	Low-voltage switchgear and controlgear – Part 4-2: Contactors and motor starters – AC semiconductor motor controllers and starters
60947-5-1	No. 60947-5-1	--	--	Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices
489	No. 5	--	--	Molded case circuit breakers, molded case switches, and circuit breaker enclosures
1012	--	--	--	Power units other than CLASS 2
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. 14	--	--	Industrial control equipment
--	No. 107.1	--	--	General use power supplies
--	--	A17.5 / CSA 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 an approval is required for certain low-voltage switchgear and controlgear components (see table below). 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	USA	China	Russia / Belarus / Kazakhstan / ...
Government-appointed or private, officially recognized testing bodies	CSA UL (USA)	UL	CQC	Official national regulation / TR
Mark of conformity	   c    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.			Eurasian customs union

For more information about the approval marks, see page 8/18.

Marine classification societies

Country	Germany Norway	United Kingdom	France	CIS	Italy	Poland	USA
Name	DNV-GL	Lloyds Register of Shipping	Bureau Veritas	Russian Maritime Register of Shipping	Registro Italiano Navale	Polski Rejestr Statków	American Bureau of Shipping
Codes	DNV-GL	LR	BV	RS	RINA	PRS	ABS

Appendix

Standards and approvals

CE marking

Manufacturers of products which fall within the subject area to which EU 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 relevant specific EU directives and bear the CE mark of conformity **CE**.

- Low-voltage directive
- EMC directive
- Machinery directive
- ATEX directive
- RED directive
- RoHS directive

ALPHA/LOVAG

Siemens AG sits in the ALPHA committee of "ALPHA in VDE".

The responsibility of manufacturers and the high quality of products are promoted by "ALPHA in VDE" by means of supportive procedural guidelines for testing equipment according to the currently valid standards.

Providing specific conditions are fulfilled, "ALPHA in VDE" can also issue officially recognized product certificates if required. As a member of LOVAG, "ALPHA in 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	Belgium
Division SGS CEBEC	
ALPHA in VDE	Germany
ASEFA	France
ACAE	Italy
IMQ S.p.A	
Intertek SEMKO	Sweden
APPLUSS + Laboratories	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) TÜV and VDE are available for some devices in safety control systems. For details, [see the respective product descriptions](#).

Ex protection certificates for SIRIUS controls

Controls that are installed in a potentially explosive atmosphere or 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 50495
- EN 60079-0
- EN 60079-1
- EN 60079-2
- EN 60079-14
- EN 60079-17
- EN 60079-31
- EN 60947-1
- EN 60947-4-1
- EN 60947-4-2
- EN 60947-5-1
- EN 60947-8
- EN ISO/IEC 80079-34

Certification

The enactment of EU Directive 94/9/EC (July 2003) ushered in a new era in the field of explosion protection. Since then, only those devices and protection systems that comply with the EU directive can be brought into circulation within the European Union for operation in potentially explosive atmospheres. Since April 20, 2016 this Directive has been superseded by the new EU Directive 2014/34/EU.

Controls and motor protection devices that are brought into circulation within the member states of the EU in accordance with EU directive 2014/34/EU must have been constructed and tested according to the above-mentioned standards and must have a declaration of conformity from the manufacturer based on a prototype test certificate. Prototype test certificates that were issued in accordance with 94/9/EC have retained their validity even after 2014/34/EU came into force.

The quality management (QM) system of the manufacturer is subject 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 GmbH¹⁾ with the number BVS 11 ATEX ZQS/E111 of DEKRA EXAM GmbH¹⁾ according to Directive 94/9/EC (from April 20, 2016 2014/34/EU).

This certificate is valid for equipment groups I and II and categories M2 and 2: Safety and control devices for electrical equipment.

Certificates

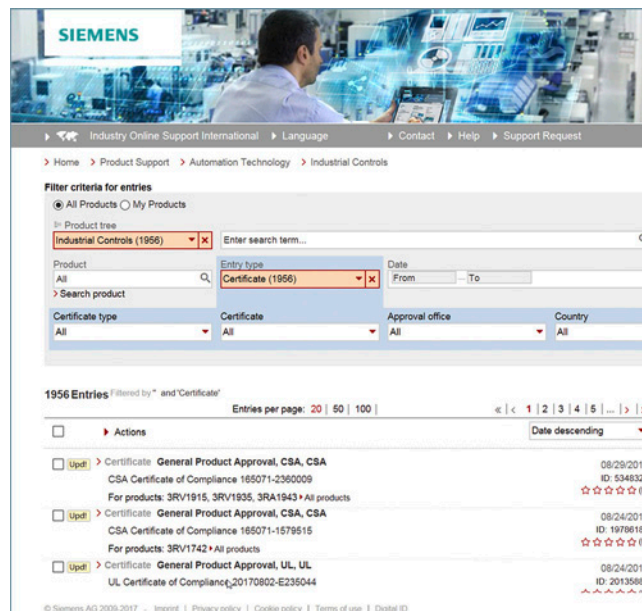
For the 3RV, 3RU, 3RB, 3UF, 3RN and 3RW motor protection devices, the corresponding declarations of conformity and prototype test certificates for Category 2D, 2G, and in some cases M2, are available and can be supplied on request.

Declarations of conformity and prototype test certificates are available at <http://support.industry.siemens.com> for viewing and downloading.

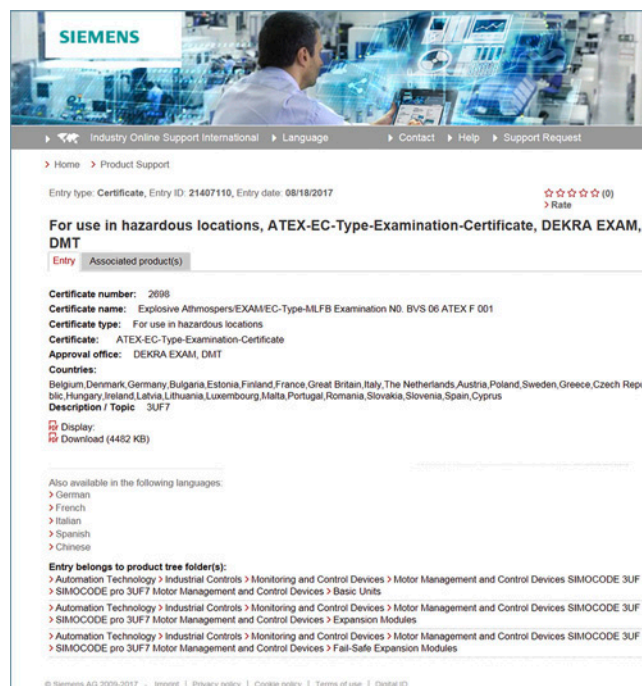
You can find more information about industrial controls for applications in explosion-protected areas at www.siemens.com/sirius/atex.

¹⁾ DEKRA EXAM GmbH

The certification authority of "DEKRA EXAM GmbH" with authority number 0158 according to Article 13 of Directive 2014/34/EC of the European Parliament and Council, certifies that Siemens Amberg, Cham and Trutnov maintains a quality assurance system for production that satisfies Appendices IV and VII of this Directive.



Selection box



Description of certificate with view and download option

Identifying markings

All equipment must be marked 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.

Appendix

Standards and approvals

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.

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".

Differentiating 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:  cULus Canada:  cULus	Devices are identified using the "UL listing mark" on the rating plate e.g. USA:  LISTED XXX Canada: cUL LISTED XXX IND. CONT. EQ. 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 cUL approved as "listed products", they are also approved as  or cUL "recognized components".

For more information about UL and CSA, [see page 8/15](#).

Special standards for Russia, Australia and China

EAC approval for Russia/Belarus/Kazakhstan/...



EAC mark

Since 2013-02-15, Russia, Kazakhstan, Belarus and other countries have been united in the Eurasian 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 the customs union must have these customs certifications.

RCM approval for Australia



RCM mark

The RCM mark is required for marketing Siemens electronic devices 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 "RCM" mark. These requirements have been in force since October 1, 1999.

Quality management

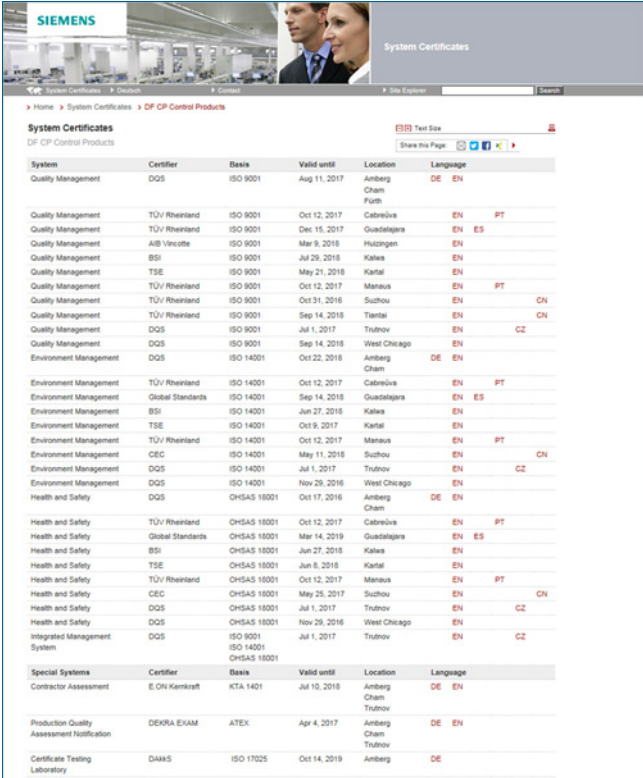
The quality management system of our "Control Products" Business Unit of the "Digital Factory" Division complies with the international standard EN ISO 9001.

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.

Certificates

For information about available certifications of the quality management system for Industrial Controls products, please visit website address:

www.siemens.com/system-certificates/cp



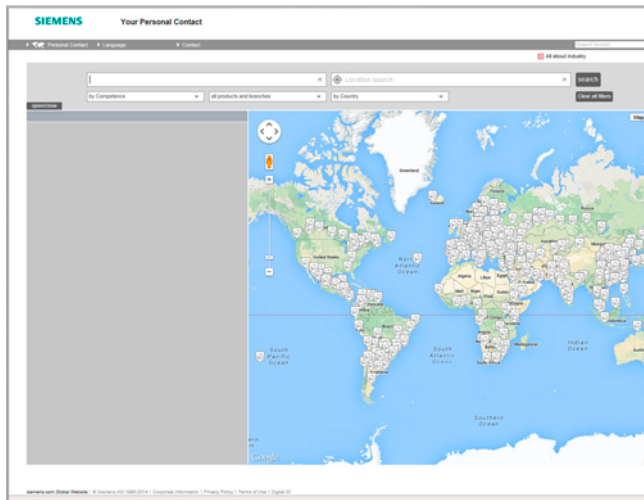
The screenshot shows the 'System Certificates' page for 'CP Control Products'. It features a table with columns: System, Certifier, Basis, Valid until, Location, and Language. The table lists various certifications for Quality Management, Environment Management, and Health and Safety across different locations and languages.

System	Certifier	Basis	Valid until	Location	Language
Quality Management	DQS	ISO 9001	Aug 11, 2017	Amberg Cham Furt	DE EN
Quality Management	TÜV Rheinland	ISO 9001	Oct 12, 2017	Cabreús	EN PT
Quality Management	TÜV Rheinland	ISO 9001	Dec 15, 2017	Guadalajara	EN ES
Quality Management	AIB Vincotte	ISO 9001	Mar 9, 2018	Hulzingen	EN
Quality Management	BSI	ISO 9001	Jul 29, 2018	Kalra	EN
Quality Management	TSE	ISO 9001	May 21, 2018	Kartal	EN
Quality Management	TÜV Rheinland	ISO 9001	Oct 12, 2017	Manaus	EN PT
Quality Management	TÜV Rheinland	ISO 9001	Oct 31, 2016	Suzhou	EN CN
Quality Management	TÜV Rheinland	ISO 9001	Sep 14, 2018	Tianjin	EN CN
Quality Management	DQS	ISO 9001	Jul 1, 2017	Trnava	EN CZ
Quality Management	DQS	ISO 9001	Sep 14, 2018	West Chicago	EN
Environment Management	DQS	ISO 14001	Oct 22, 2018	Amberg Cham	DE EN
Environment Management	TÜV Rheinland	ISO 14001	Oct 12, 2017	Cabreús	EN PT
Environment Management	Global Standards	ISO 14001	Sep 14, 2018	Guadalajara	EN ES
Environment Management	BSI	ISO 14001	Jun 27, 2018	Kalra	EN
Environment Management	TSE	ISO 14001	Oct 9, 2017	Kartal	EN
Environment Management	TÜV Rheinland	ISO 14001	Oct 12, 2017	Manaus	EN PT
Environment Management	CEC	ISO 14001	May 11, 2018	Suzhou	EN CN
Environment Management	DQS	ISO 14001	Jul 1, 2017	Trnava	EN CZ
Environment Management	DQS	ISO 14001	Nov 29, 2016	West Chicago	EN
Health and Safety	DQS	OHSAS 18001	Oct 17, 2016	Amberg Cham	DE EN
Health and Safety	TÜV Rheinland	OHSAS 18001	Oct 12, 2017	Cabreús	EN PT
Health and Safety	Global Standards	OHSAS 18001	Mar 14, 2019	Guadalajara	EN ES
Health and Safety	BSI	OHSAS 18001	Jun 27, 2018	Kalra	EN
Health and Safety	TSE	OHSAS 18001	Jun 8, 2018	Kartal	EN
Health and Safety	TÜV Rheinland	OHSAS 18001	Oct 12, 2017	Manaus	EN PT
Health and Safety	CEC	OHSAS 18001	May 25, 2017	Suzhou	EN CN
Health and Safety	DQS	OHSAS 18001	Jul 1, 2017	Trnava	EN CZ
Health and Safety	DQS	OHSAS 18001	Nov 29, 2016	West Chicago	EN
Integrated Management System	DQS	ISO 9001 ISO 14001 OHSAS 18001	Jul 1, 2017	Trnava	EN CZ
Special Systems					
Contractor Assessment	E.ON Kernkraft	KTA 1401	Jul 10, 2018	Amberg Cham Trnava	DE EN
Production Quality Assessment Notification	DEXRA EXAM	ATEX	Apr 4, 2017	Amberg Cham Trnava	DE EN
Certificate Testing Laboratory	DAKS	ISO 17025	Oct 14, 2019	Amberg	DE

Appendix

Partner at Siemens

Overview



At your service locally, around the globe for consulting, sales, training, service, support, spare parts on the entire portfolio of Digital Factory and Process Industries and Drives.

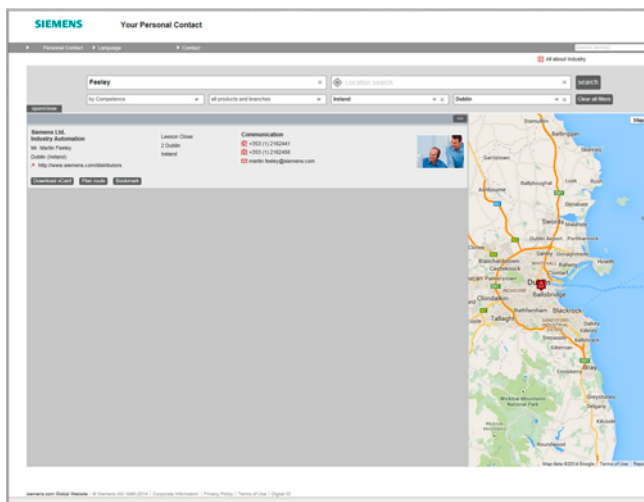
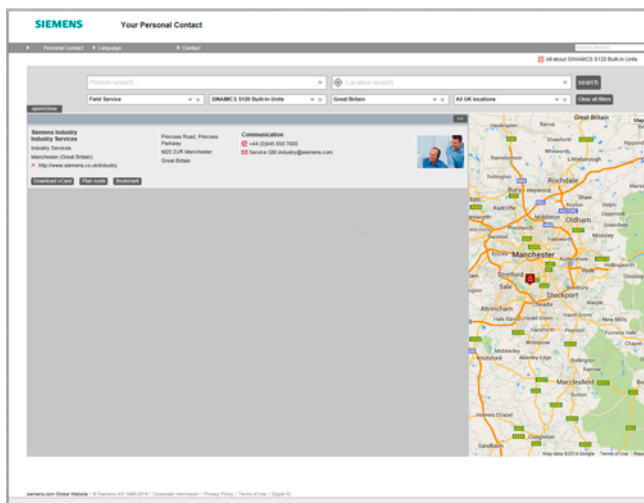
Your partner can be found in our Personal Contacts Database at: www.siemens.com/automation-contact

You start by selecting

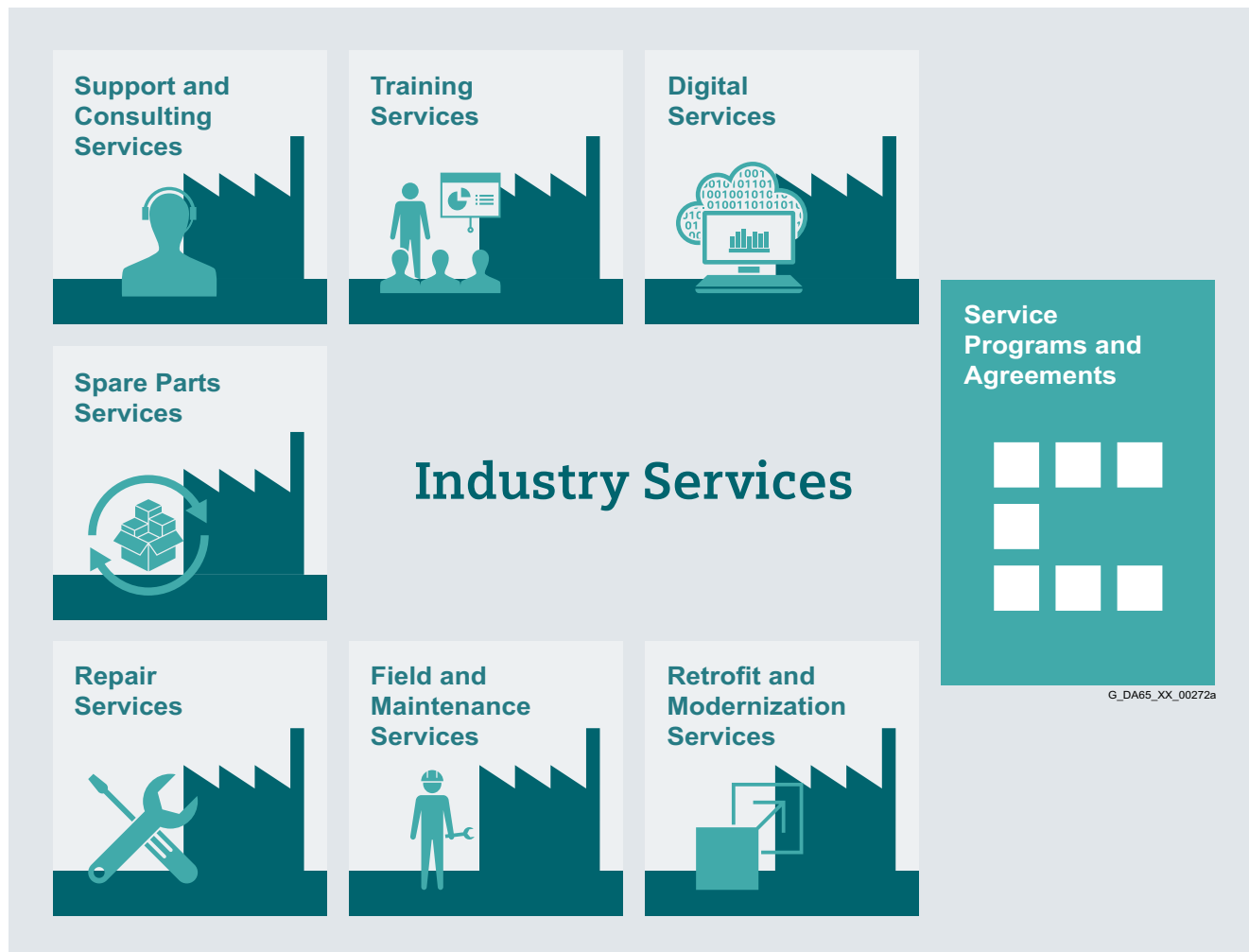
- the required competence,
- products and branches,
- a country and a city

or by a

- location search or free text search.



Overview

**Keep your business running and shaping your digital future – with Industry Services**

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

<https://www.siemens.com/global/en/home/products/services/industry.html>

Appendix

Industry Services

Overview

Digital Services



Digital Services make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber-attack threats.

<https://www.siemens.com/global/en/home/products/services/industry/digital-services.html>

Training Services



From the basics right through to advanced specialist skills, SITRAIN courses provide expertise directly from the manufacturer – and encompass the entire spectrum of Siemens products and systems for industry.

Worldwide, SITRAIN courses are available wherever you need a training course in more than 170 locations in over 60 countries.

<https://support.industry.siemens.com/cs/ww/en/sc/2226>

Support and Consulting Services



Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance. The Service Card as prepaid support for value added services such as Priority Call Back or Extended Support offers the clear advantage of quick and easy purchasing.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.

<https://support.industry.siemens.com/cs/ww/en/sc/2235>

Spare Parts Services



Spare Parts Services are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Since not all spare parts can be kept in stock at all times, Siemens offers a preventive measure for spare parts provisioning on the customer's premises with optimized **Spare Parts Packages** for individual products, custom-assembled drive components and entire integrated drive trains – including risk consulting.

Asset Optimization Services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.

<https://support.industry.siemens.com/cs/ww/en/sc/2110>

Overview (continued)**Repair Services**

Repair Services are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.

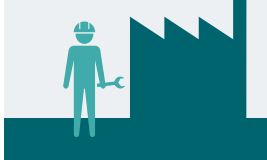
<https://support.industry.siemens.com/cs/ww/en/sc/2154>

Retrofit and Modernization Services

Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants.

<https://support.industry.siemens.com/cs/ww/en/sc/2286>

Field and Maintenance Services

Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance.

All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.

<https://support.industry.siemens.com/cs/ww/en/sc/2265>

Service Programs and Agreements

A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.

<https://support.industry.siemens.com/cs/ww/en/sc/2275>

Appendix

Online Support

Overview

Online Support – fast, intuitive, whenever you want, wherever you need



Web
support.industry.siemens.com

App
SIEMENS

Get it on Google Play | Get it on the App Store | Microsoft Store

Scan the QR code for information on our Online Support app.



	FAQ / Application examples Information about industrial products, programming and configuration as well as application examples
	Technical Information Videos, documentation, manuals, updates, product notes, compatibility tool, certificates, planning data such as dimensional drawings, product data, 3D models
	Forum Exchange information and experience with other users and experts

Online Support for Siemens Products for Industry

Siemens Industry and Online Support with some 1.7 million visitors per month is one of the most popular web services provided by Siemens. It is the central access point for comprehensive technical know-how about products, systems and services for automation and drives applications as well as for process industries.

In connection with the challenges and opportunities related to digitalization you can look forward to continued support with innovative offerings.

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

The demo floating license corresponds to the demo 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).

Certificate of License (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.

The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.

A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.

The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.

A separate upgrade must be purchased for each original license of the software to be upgraded.

Appendix

Software licenses

Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"¹⁾ and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾.

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office outside of Germany"¹⁾ and
- for other supplies and services, the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"¹⁾.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export Regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export of goods listed in this catalog may be subject to licensing requirements. We will indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required i .a. due to the final disposition and intended use of goods.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

If required for the purpose of conducting export control checks, you (upon request by us) shall promptly provide us with all information pertaining to the particular end customer, final disposition and intended use of goods delivered by us respectively works and services provided by us, as well as to any export control restrictions existing in this relation.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

Errors excepted and subject to change without prior notice.

¹⁾ The text of the Terms and Conditions of Siemens AG can be downloaded at www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Appendix

Notes

Further information can be obtained from our branch offices listed at www.siemens.com/automation-contact

Interactive Catalog on DVD		<i>Catalog</i>	
Products for Automation and Drives		CA 01	
Building Control			
GAMMA Building Control		ET G1	
Drive Systems			
SINAMICS G130 Drive Converter Chassis Units		D 11	
SINAMICS G150 Drive Converter Cabinet Units			
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters		D 12	
<i>Digital: SINAMICS PERFECT HARMONY GH180 Medium-Voltage Air-Cooled Drives (Germany Edition)</i>		D 15.1	
SINAMICS G180 Converters – Compact Units, Cabinet Systems, Cabinet Units Air-Cooled and Liquid-Cooled		D 18.1	
SINAMICS S120 Chassis Format Converter Units		D 21.3	
SINAMICS S120 Cabinet Modules			
SINAMICS S150 Converter Cabinet Units			
SINAMICS S120 and SIMOTICS		D 21.4	
SINAMICS DCM DC Converter, Control Module		D 23.1	
SINAMICS Inverters for Single-Axis Drives · Built-In Units		D 31.1	
SINAMICS Inverters for Single-Axis Drives · Distributed Inverters		D 31.2	
<i>Digital: SINAMICS S210 Servo Drive System</i>		D 32	
<i>Digital: SINAMICS V90 Basic Servo Drive System</i>		D 33	
<i>Digital: SINAMICS G120P and SINAMICS G120P Cabinet pump, fan, compressor converters</i>		D 35	
LOHER VARIO High Voltage Motors Flameproof, Type Series 1PS4, 1PS5, 1MV4 and 1MV5 Frame Size 355 to 1000, Power Range 80 to 7100 kW		D 83.2	
<i>Digital: Three-Phase Induction Motors SIMOTICS HV, SIMOTICS TN</i>		D 84.1	
<i>Digital: Three-Phase Induction Motors SIMOTICS HV</i>		D 84.3	
High Voltage Three-phase Induction Motors		D 84.9	
SIMOTICS HV Series A-compact PLUS			
<i>Digital: Modular Industrial Generators SIGENTICS M</i>		D 85.1	
Three-Phase Induction Motors SIMOTICS HV, Series H-compact		D 86.1	
Synchronous Motors with Permanent-Magnet Technology, HT-direct		D 86.2	
DC Motors		DA 12	
SIMOVERT PM Modular Converter Systems		DA 45	
MICROMASTER 420/430/440 Inverters		DA 51.2	
MICROMASTER 411/COMBIMASTER 411		DA 51.3	
<u>Low-Voltage Three-Phase-Motors</u>			
SIMOTOCS S-1FG1 Servo geared motors		D 41	
SIMOTICS Low-Voltage Motors		D 81.1	
SIMOTICS FD Low-Voltage Motors		D 81.8	
LOHER Low-Voltage Motors		D 83.1	
<i>Digital: MOTOX Geared Motors</i>		D 87.1	
SIMOGEAR Geared Motors		MD 50.1	
SIMOGEAR Electric-monorail geared motors		MD 50.8	
Light-load and heavy-load applications			
SIMOGEAR Gearboxes with adapter		MD 50.11	
<u>Mechanical Driving Machines</u>			
FLENDER Standard Couplings		MD 10.1	
FLENDER High Performance Couplings		MD 10.2	
FLENDER Backlash-free Couplings		MD 10.3	
FLENDER SIP Standard industrial planetary gear units		MD 31.1	
Process Instrumentation and Analytics		<i>Catalog</i>	
<i>Digital: Field Instruments for Process Automation</i>		FI 01	
<i>Digital: Display Recorders SIREC D</i>		MP 20	
<i>Digital: SIPART Controllers and Software</i>		MP 31	
Products for Weighing Technology		WT 10	
<i>Digital: Process Analytical Instruments</i>		AP 01	
<i>Digital: Process Analytics, Components for Continuous Emission Monitoring</i>		AP 11	
Low-Voltage Power Distribution and Electrical Installation Technology			
SENTRON · SIVACON · ALPHA Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems		LV 10	
Standards-Compliant Components for Photovoltaic Plants		LV 11	
Electrical Components for the Railway Industry		LV 12	
Power Monitoring Made Simple		LV 14	
Components for Industrial Control Panels according to UL Standards		LV 16	
3WT Air Circuit Breakers up to 4000 A		LV 35	
3VT Molded Case Circuit Breakers up to 1600 A		LV 36	
<i>Digital: SIVACON System Cubicles, System Lighting and System Air-Conditioning</i>		LV 50	
<i>Digital: ALPHA Distribution Systems</i>		LV 51	
ALPHA FIX Terminal Blocks		LV 52	
SIVACON S4 Power Distribution Boards		LV 56	
SIVACON 8PS Busbar Trunking Systems		LV 70	
<i>Digital: DELTA Switches and Socket Outlets</i>		ET D1	
Vacuum Switching Technology and Components for Medium Voltage		HG 11.01	
Motion Control			
SINUMERIK 840 Equipment for Machine Tools		NC 62	
SINUMERIK 808 Equipment for Machine Tools		NC 81.1	
SINUMERIK 828 Equipment for Machine Tools		NC 82	
SIMOTION Equipment for Production Machines		PM 21	
<i>Digital: Drive and Control Components for Cranes</i>		CR 1	
Power Supply			
SITOP Power supply		KT 10.1	
Safety Integrated			
Safety Technology for Factory Automation		SI 10	
SIMATIC HMI / PC-based Automation			
Human Machine Interface Systems/ PC-based Automation		ST 80/ ST PC	
SIMATIC Ident			
Industrial Identification Systems		ID 10	
SIMATIC Industrial Automation Systems			
Products for Totally Integrated Automation		ST 70	
SIMATIC PCS 7 Process Control System System components		ST PCS 7	
SIMATIC PCS 7 Process Control System Technology components		ST PCS 7 T	
Add-ons for the SIMATIC PCS 7 Process Control System		ST PCS 7 AO	
SIMATIC S7-400 advanced controller		ST 400	
SIMATIC NET			
Industrial Communication		IK PI	
SIRIUS Industrial Controls			
<i>Digital: SIRIUS Industrial Controls</i>		IC 10	

Information and Download Center

Digital versions of the catalogs are available on the Internet at:

www.siemens.com/industry/infocenter

There you'll find additional catalogs in other languages.

Please note the section "Downloading catalogs" on page "Online services" in the appendix of this catalog.

Digital: These catalogs are only available as a PDF.

Get more information

www.siemens.com/railway-components

Siemens AG
Digital Factory
Control Products
Postfach 23 55
90713 Fürth
Germany

© Siemens AG 2018
Subject to change without prior notice
PDF (E86060-K1012-A101-A2-7600)
Online version
KG 0718 702 En
Produced in Germany

The information provided in this catalog contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. Availability and technical specifications are subject to change without notice.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

Token fee: 5.00 €

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit

<http://www.siemens.com/industrialsecurity>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
<http://www.siemens.com/industrialsecurity>.

Electrical
components
for the railway
industry

