Monitoring and Control Devices

7

Technical Information
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1) See Catalog ST 70 · 2009 "Products for Totally Integrated Automation and Micro Automation".

Introduction

Overview

The advantages at a glance


3UF7


6ED1 052


3RP15

		Type	Page
SIMOCODE 3UF motor management and control devices			
SIMOCODE pro 3UF7	• Compact, modular design • Unique flexibility in terms of functionality and hardware configuration • Wide functional range from the distributed I/O system to the autonomous motor management system • All control functions from the direct-on-line starter to the pole-changing switch with reversing contactor • All motor sizes • Integration in all PROFIBUS-capable automation systems • Application in low-voltage controlgear for motor control centers in the process industry • Increases plant availability • Saves costs during construction, commissioning and operation of the plant • Extensive data of the motor feeder available everywhere on the PROFIBUS • All protection, monitoring and control functions for the motor feeder in a single system	3UF7	7/6
3UF18 current transformers for overload protection	• Protection transformer for activating overload relays or for use with SIMOCODE 3UF • Ensures proportional current transfer up to a multiple of the primary rated current	3UF18	7/19
LOGO! logic modules			
LOGO! logic modules	• Compact, user-friendly and low-cost solution for simple control tasks • Universal: - Building installation and wiring (lighting, shutters, awnings, doors, access control, barriers, ventilation systems ...) - Control cabinet installation - Machine and device construction (pumps, small presses, compressors, hydraulic lifts, conveyors ...) - Special controls for conservatories and greenhouses - Signal preprocessing for other controllers • Flexible expansion depending on the application		
LOGO! Modular basic versions	• With display, pushbuttons and an interface for connecting expansion units	6ED1 052-1	7/21
LOGO! Modular pure versions	• Without display and pushbuttons but with an interface for connecting expansion units	6ED1 052-2	7/22
LOGO! Modular expansion modules	• For connection to LOGO! Modular basic versions with digital inputs and outputs or analog inputs and outputs	6ED1 055-1	7/23
LOGO! Modular communication modules	• For integrating LOGO! in an *instabus* KNX *EIB* system or as an AS-Interface slave	6BK1 700, 3RK1 400	7/24, 7/25
LOGO! Power	• Power supply for converting the mains voltage of 100 ... 240 V AC into an operational voltage of 24 V DC or 12 V DC	6EP1 3	Ch. 11
LOGO! Contact	• Switching module for switching resistive loads and motors directly	6ED1 057-4	7/27
LOGO! Software	• For switching program generation on the PC	6ED1 058	7/28
Timing relays			
SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm	• Low-cost solution with monofunctions such as response delay, off-delay, clock-pulse, wye-delta function and multifunction • Wide voltage range versions	3RP15	7/35
SIRIUS 3RP20 timing relays, 45 mm	• The solution for small mounting depths • The low mounting height reduces the tier spacing	3RP20	7/38
7PV15 timing relays in enclosure, 17.5 mm	• The solution for industry and infrastructure • Ideal modules for heating, ventilation and air conditioning systems • Wide voltage range 12 ... 240 V AC/DC and multifunction for flexible applications	7PV15	7/40
SIRIUS 3RT19 timing relays for mounting onto contactors	• Saves space because the relay is mounted onto the contactor • Wiring advantages thanks to direct contacting to the contactor	3RT1916, 3RT19 26	7/42

The advantages at a glance

3UG45 11

3UG46 16

3UG46 33

		Type	Page
SIRIUS 3UG monitoring relays for electrical and additional measurements			
Line monitoring			
Phase sequence	• Low-cost solution for monitoring the phase sequence	3UG45 11	7/45
Phase sequence, phase failure, phase unbalance	• Wide voltage range from 160 ... 690 V	3UG45 12	7/45
Phase sequence, phase failure, phase unbalance and undervoltage	• Analogically adjustable • Wide voltage range from 160 ... 690 V	3UG45 13	7/45
	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide voltage range from 160 ... 690 V	3UG46 14	7/45
Phase sequence, phase failure, phase unbalance over limit values, overvoltage and undervoltage	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide voltage range from 160 ... 690 V	3UG46 15	7/45
Phase sequence, phase and N conductor failure, phase unbalance over limit values, overvoltage and undervoltage		3UG46 16	7/45
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage		3UG46 17	7/45
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage		3UG46 18	7/45
Voltage monitoring			
Voltage monitoring with internal power supply for overvoltage and undervoltage	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide measuring ranges • Version for wide voltage range	3UG46 33	7/47
Voltage monitoring with auxiliary voltage for overvoltage and undervoltage		3UG46 31, 3UG46 32	7/47
Current monitoring			
Current monitoring with auxiliary voltage for overshoot and undershoot	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide measuring ranges • Version for wide voltage range	3UG46 21, 3UG46 22	7/48
Power factor and active current monitoring (motor load monitoring)			
Power factor and active current monitoring with internal power supply for overshoot, undershoot or range monitoring	• For load monitoring over the entire torque range • Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide voltage range from 90 ... 690 V	3UG46 41	7/49
Residual current monitoring			
Residual current monitoring relays	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Adjustable threshold values for warning and disconnection • For plant monitoring • Wide voltage range from 90 ... 690 V	3UG46 24	7/50
Summation current transformers	• For detection of fault currents in machines and plants	3UL22	7/51
Insulation monitoring			
Monitoring of the insulation resistance for ungrounded AC or DC networks from 1 to 110 kΩ	• Test button • With or without memory • Switchable measuring range	3UG30 81, 3UG30 82	7/52, 7/53
Level monitoring			
Fill level and resistance	• As single-step or two-step controls for inlet or outlet monitoring of conducting liquids or as resistance threshold switch • Adjustable, wide range from 2 ... 200 kΩ • UNDER/OVER adjustable	3UG45 01	7/54
Level monitoring sensors	• Wire, rod or bow electrodes	3UG32	7/55
Speed monitoring			
Speed monitoring for overshoot, undershoot or range monitoring	• Digitally adjustable with LCD for indication of ACTUAL value and device status • Wide measuring ranges • Version for wide voltage range • Together with a sensor for monitoring continuous pulses • With or without memory • Adjustable delay times	3UG46 51	7/56

Introduction

The advantages at a glance


3RS10


3RN1


3TK28

		Type	Page
SIRIUS 3RS10, 3RS11 temperature monitoring relays			
For monitoring the temperatures of solids, liquids, and gases			
Relays, analog adjustable, for 1 sensor	• Separate versions for overshoot and undershoot • For simple monitoring tasks • For PT100 or thermoelements J and K • Variable hysteresis	3RS10, 3RS11	7/58
Relays, digitally adjustable, for 1 sensor	• For two-or three-point controls • For monitoring heat generation plants • For PT100/1000, KTY83/84, NTC or thermoelements type J, K, T, E, N, R, S, B	3RS10, 3RS11, 3RS20, 3RS21	7/60
Relays, digitally adjustable for up to 3 sensors	• For simultaneously monitoring several sensors • Especially suited for monitoring motor winding temperatures • For PT100/1000, KTY83/84, NTC	3RS10	7/62
SIRIUS 3RN1 thermistor motor protection			
For PTC sensors	• Relays for monitoring motor winding temperatures with type A PTC sensors • Integrated with ATEX approval • Closed-circuit principle • Depending on the version: with short-circuit and open-circuit detection, protection against voltage failure, manual/auto/ remote RESET, 1 CO, 1 NO + 1 NC, 2 CO, 1 NO + 1 CO or 2 CO hard gold-plating	3RN1	7/64
SIRIUS 3TK28 safety relays			
With relay enabling circuits	• Compact design • Floating safe outputs • Also suitable for press and punch controls • Can be used up to an ambient temperature of max. 70 °C	3TK28 2, 3TK28 3	7/69
With electronic enabling circuits	• Permanent function checking • No wear because switched electronically • High switching frequency • Long electrical endurance • Evaluation of solid-state sensors • Sensor lead up to max. 2000 m • Cascading possible • Insensitive to vibrations and dirt • Compact design, low weight • Approved for the world market	3TK28 4	7/72
With contactor relay enabling circuits	• Enabling circuits, floating • AC-15/DC-13 switching capacity • Protective separation • Long mechanical and electrical endurance • Certified as a complete unit • Fault minimization and cost reduction through factory wiring • Low installation costs	3TK28 5	7/74
With special functions	• Floating safe outputs • Signaling outputs for status and diagnostic signals • Safe standstill monitoring	3TK28 1	7/76

The advantages at a glance

3RK3

3RS17

		Type	Page
SIRIUS 3RK3 modular safety system			
Freely configurable, modular safety relays	• More functionality and flexibility through freely configurable safety logic • For all safety applications thanks to compliance with the highest safety requirements (Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 or SIL3 according to IEC 62061) • Can be used globally • Modular hardware configuration • Parameterization by means of software instead of wiring • Removable terminals for greater plant availability	3RK3	7/78
SIRIUS 3RS17 interface converters			
Converters for standard signals and non-standard variables	• All terminals protected against polarity reversing and over-voltage up to 30 V • For electrical separation and conversion of analog signals • Short-circuit proof outputs • From 6.2 mm width • Switchable multi-range converters • Versions with manual/automatic switch for setpoint selection • Versions for conversion of analog variables into frequency	3RS17	7/81

Options

On the following pages you will find selection tables for monitoring and control devices.

Screw terminals

Spring-type terminals

The terminals are indicated in the selection and ordering data by orange backgrounds.

"Increased safety" type of protection EEx e/d according to ATEX directive 94/9/EC

The communication-capable, modularly designed SIMOCODE pro motor management system (SIRIUS Motor Management and Control Devices) protects motors of types of protection EEx e and EEx d in potentially explosive areas.

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and GD for gases and dust.

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

See Chapter 20 "Appendix" –> "Standards and approvals"–> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".

General data

Overview

SIMOCODE pro V with current/voltage measuring module, expansion modules and operator panel with display

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between I&C and motor feeder, increases plant availability and allows significant savings to be made for startup, operation and maintenance of a system.

When SIMOCODE pro is installed in the low-voltage switchboard, it is the intelligent interface between the higher-level automation system and the motor feeder and includes the following:

- Multifunctional, solid-state full motor protection which is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- Detailed operating, service and diagnostics data
- Open communication through PROFIBUS DP, the standard for fieldbus systems

SIMOCODE ES is the software package for SIMOCODE pro parameterization, start-up and diagnostics.

Two series

SIMOCODE pro is subdivided into two device series with different functional scopes:

- SIMOCODE pro C, as a compact system for direct-on-line starters and reversing starters or actuation of a motor starter protector or circuit breaker
- SIMOCODE pro V, as a variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules.

Expansion possibilities	SIMOCODE pro C, Basic Unit 1	SIMOCODE pro V, Basic Unit 2[1)]
Operator panels	✓	✓
Operator panels with display	--	✓
Current measuring modules	✓	✓
Current/voltage measuring modules	--	✓
Decoupling modules	--	✓
Expansion modules:		
• Digital modules (max. 2)	--	✓
• Analog module (max. 1)	--	✓
• Ground-fault module (max. 1)	--	✓
• Temperature module (max. 1)	--	✓

✓ Available -- Not available

1) Note: When an operator panel with display and/or a decoupling module is used, restrictions on the number of expansion modules connectable per basic unit must be observed, see page 7/9.

Per feeder each system always comprises one basic unit and one separate current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected as a unit (one behind the other) or separately (side by side). The motor current to be monitored is decisive only for the choice of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to Basic Unit 2 (SIMOCODE pro V) by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between the modules (e. g. between the basic unit and the current measuring module) must not exceed 2.5 m. The total length of all the connection cables in a single system must not be more than 3 m.

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of a bus significantly reduces the wiring outlay between the motor feeder and PLC
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operational, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of solid-state full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service

Multifunctional, solid-state full motor protection for rated motor currents up to 820 A

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Inverse-time delayed solid-state overload protection (Class 5 ... 40)
- Thermistor motor protection
- Phase failure/unbalance protection
- Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- Ground-fault monitoring
- Temperature monitoring, e. g. over PT100/PT1000
- Monitoring of operating hours, downtime and number of starts etc.

Recording of measuring curves

SIMOCODE pro can record measuring curves and therefore is able, for example, to present the progression of motor current during motor start-up.

Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing switch); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a circuit breaker
- Soft starter actuation, also with direction reversal.

These control functions are predefined in SIMOCODE pro and can be freely assigned to the inputs and outputs of the device (including PROFIBUS DP).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation ...) and with the help of standard functions (power failure monitoring, emergency start, external faults ...), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro makes a lot of additional hardware and wiring in the control circuit unnecessary which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

Detailed operational, service and diagnostics data

SIMOCODE pro makes different operational, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very quickly - there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase unbalance and phase sequence
- Time to trip
- Motor temperature
- Remaining cooling time etc.

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Consumed power
- Internal comments stored in the device etc.

Diagnostics data

- Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

Easy operation and diagnostics

Operator panels

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. This means that SIMOCODE pro or the feeder can be operated directly at the control cabinet. The operator panel also has all the status LEDs found on the basic unit and connects the system interface externally for easier parameterization or diagnostics using a PC or programming device, for example.

Operator panels with display

As an alternative to the 3UF7 20 standard operator panel for SIMOCODE pro V there is also an operator panel with display: the 3UF7 21 is thus able in addition to indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor while at the same time the display indicates current measured values, status information, fault messages or the device-internal fault protocol. Using the display settings each user can select for himself how the measured values are presented as standard and how the displayed unit is converted (e. g. °C -> °F).

Communication

SIMOCODE pro is equipped with an integral PROFIBUS DP interface (SUB-D or terminal connection) and can therefore replace all individual wiring (including marshalling racks), which would usually be required for exchanging data with the higher-level automation system, with a single 2-wire cable.

SIMOCODE pro supports among other things:

- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Communication with up to 3 masters
- Time synchronization over PROFIBUS (SIMATIC S7)
- Time stamp with high timing precision (SIMATIC S7)
- Cyclic services (DPV0) and acyclic services (DPV1)
- DPV1 communication after the Y-Link etc.

For SIMOCODE pro motor management and control devices with communication function see page 7/12 onwards.

For accessories, see page 7/14 onwards.

For more information see also Chapter 12 "Planning, Configuration and Visualizing for SIRIUS".

For accessories for PROFIBUS DP see Catalog IK PI "Industrial Communication".

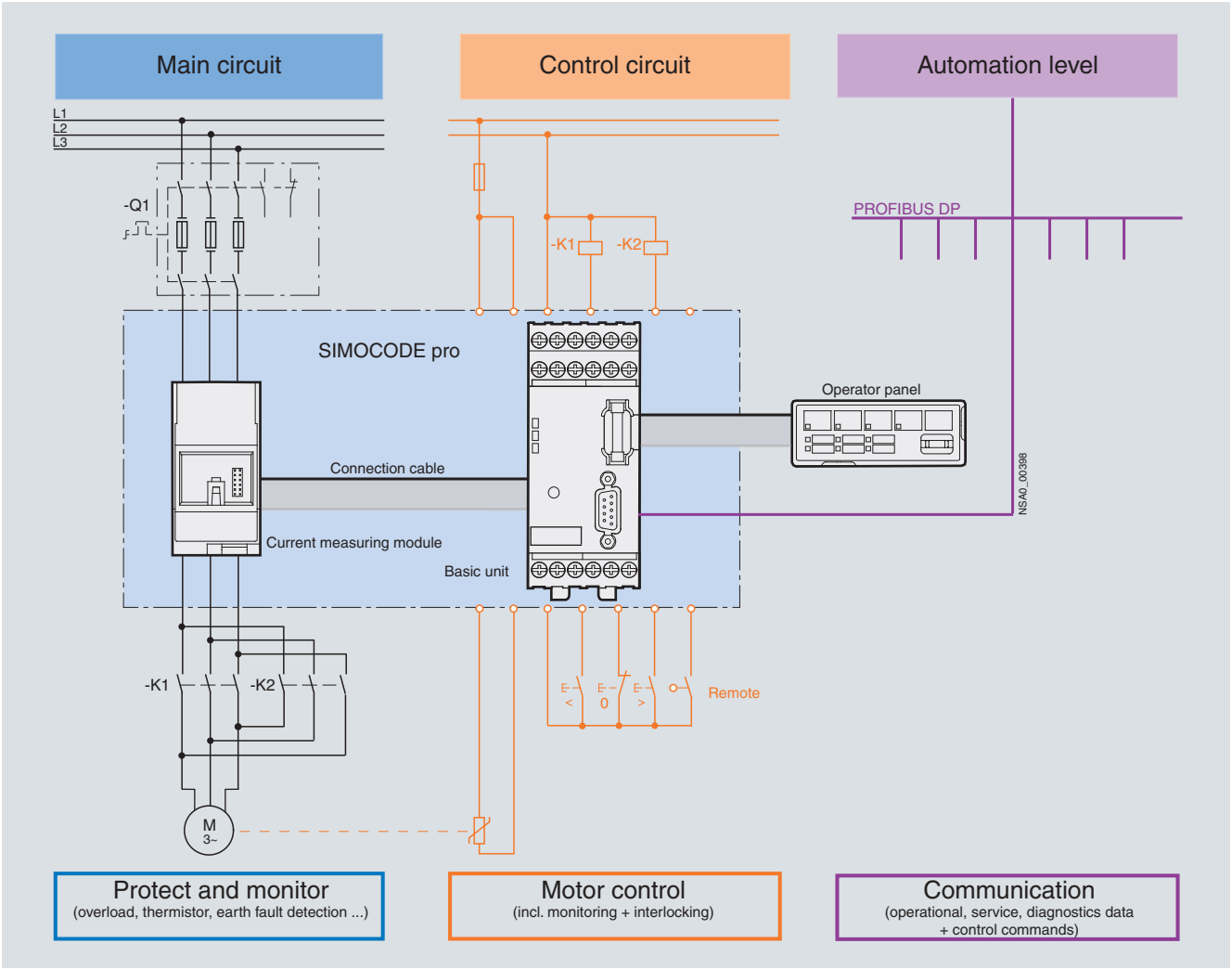
Autonomous operation

An essential feature of SIMOCODE pro is independent execution of all protection and control functions even if communication with the I&C system breaks down. If the bus or automation system fails, the full functionality of the feeder is ensured or a predefined response can be initiated, e. g. the feeder can be shut down in a controlled manner or certain configured control mechanisms can be performed (e. g. the direction of rotation can be reversed).

SIMOCODE pro designed for mixed operation

Depending on functional requirements, the two systems can be used simultaneously without any problems and without any additional outlay in a low-voltage system. SIMOCODE pro C is fully upward-compatible to SIMOCODE pro V. The same components are used. The parameterization of SIMOCODE pro C can be transferred without any problems. Both systems have the same removable terminals and the same terminal designations.

General data



SIMOCODE pro combines all the necessary functions for the motor feeder in a compact system.

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e. g. steel or cement industry) and where it is important to prevent plant downtimes through detailed operational, service and diagnostics data or to localize the fault very quickly in the event of a fault.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers in the process industry and for power plant technology.

Applications

Protection and control of motors

- In hazardous areas for types of protection EEx e/d according to ATEX directive 94/9/EC see Chapter 20 "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for explosion-protected areas (ATEX Explosion Protection)".
- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industry, power plants)

Industries

Today, SIMOCODE pro is mainly used in the chemical (incl. oil and gas), steel, water, paper, pharmaceutical, cement, and glass industry. It is also used for applications in power plants and large diamond, gold and platinum mines. Based on the experience made with the predecessor system SIMOCODE-DP, SIMOCODE pro has been tailored even more specifically to the requirements of these industries.

An essential requirement in these industries is the availability of the motors and thus the availability of the whole process. Plant downtimes caused by faults frequently result in high costs. For this reason, it is very important to detect potential faults early on and to initiate targeted countermeasures. SIMOCODE pro offers users an up-to-date motor management system based on years of experience.

More information

Configuration instructions when using an operator panel with display and/or a decoupling module

If you want to use an operator panel with display and/or a decoupling module in the SIMOCODE pro V system, then the following configuration instructions concerning the type and number of connectable expansion modules must be observed.

The following tables show the maximum possible configuration of the expansion modules for the various combinations.

Use of an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Only operator panel with display for Basic Unit 2 (24 V DC or 110 ... 240 V AC/DC)				
Max. 4 expansion modules can be used				
Operator panel with display and current/voltage measurement with Basic Unit 2 (110 ... 240 V AC/DC)				
Max. 3 expansion modules can be used or:				
--	--	✓	✓	--

Use of a decoupling module (voltage measurement in insulated networks)

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Basic Unit 2 (24 V DC)				
✓[1)]	✓[1)]	✓	✓	✓
Basic Unit 2 (110 ... 240 V AC/DC)				
✓	✓	--	✓	✓
✓[1)]	✓[1)]	✓	✓	--
✓	--	✓	✓	--
✓	--	✓	--	✓

Use of a decoupling module (voltage measurement in insulated networks) in combination with an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Basic Unit 2 (24 V DC)				
✓	--	✓	✓	✓
✓	✓	--	✓	✓
Basic Unit 2 (110 ... 240 V AC/DC)				
✓[2)]	--	✓	✓	✓
✓	✓	--	--	--
✓[1)]	✓[1)]	✓[3)]	--	--
✓	--	--	✓	✓

✓ Available

-- Not available

1) No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

2) No bistable relay outputs and no more than 3 of 5 relay outputs active simultaneously (> 3 s).

3) Analog module output is not used.

Protective separation

All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, Annex N. That is, they are designed with double creepages and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of Test Report No. 2668 must be complied with.

EEx e and EEx d types of protection

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-protected motors to the type of protection:

- EEx d "flameproof enclosure" e. g. according to EN 50018 or EN 60079-1
- EEx e "increased safety" e. g. according to EN 50019 or EN 60079-7.

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to EN 61558-2-6.

EC type test certificate: BVS 06 ATEX F 001
Test log: BVS PP 05.2029 EG.

Selection data for type-tested assemblies/load feeders

Configuration tables according to type of coordination 1 or 2 can be found in the manual "SIRIUS Configuration", Order No.: E86060-T1815-A101-A3 or in the SIMOCODE pro System Manual.

System manual

The SIMOCODE pro system manual describes the motor management system and its functions in detail. It contains information about configuration and commissioning as well as for servicing and maintenance. A typical example of a reversing starter application is used to teach the user quickly and practically how to use the system. In addition to help on how to identify and rectify faults in the event of a malfunction, the manual also contains special information for servicing and maintenance. For selection of equipment and for configuration, it is recommended that the 3UF7 970-0AA0.-0 system manual is consulted.

Internet

You can find further information on the Internet at:
www.siemens.com/simocode

General data

Technical specifications

General technical specifications

Permissible ambient temperature			
• During operation	°C	-25 ... +60 ; 3UF7 21: 0 ... +60	
• Storage and transport	°C	-40 ... +80 ; 3UF7 21: -20 ... +70	
Degree of protection (acc. to IEC 60529)			
• Measuring modules with busbar connection		IP00	
• Operator panel (front) and door adapter (front) with cover		IP54	
• Other components		IP20	
Shock resistance (sine pulse)	*g*/ms	15/11	
Mounting position		Any	
Frequency	Hz	50/60 ±5 %	
Immunity to electromagnetic interference (acc. to IEC 60947-1)		Corresponds to degree of severity 3	
• Line-induced interference, burst acc. to IEC 61000-4-4	kV	2 (power ports)	
	kV	1 (signal ports)	
• Line-induced interference, high frequency acc. to IEC 61000-4-6	V	10	
• Line-induced interference, surge acc. to IEC 61000-4-5	kV	2 (line to earth)	
	kV	1 (line to line)	
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge)	
	kV	6 (contact discharge); 3UF7 21: 4 (contact discharge)	
• Field-related interference acc. to IEC 61000-4-3	V/m	10	
Immunity to electromagnetic interference (acc. to IEC 60947-1)			
• Line-conducted and radiated interference emission		EN 55011/ EN 55022 (CISPR 11/CISPR 22) (corresponds to degree of severity A)	
Protective separation (acc. to IEC 60947-1, Annex N)		All circuits in SIMOCODE pro are safely separated from each other acc. to IEC 60947-1, they are designed with doubled creepage paths and clearances In this context, compliance with the instructions in the test report "Protective separation" No. 2668 is required.	

Basic units

Control circuit

Rated control supply voltage U_s (acc. to EN 61131-2)		110 ... 240 V AC/DC; 50/60 Hz	24 V DC
Operating range		0.85 ... 1.1 x U_s	0.80 ... 1.2 x U_s
Power consumption			
• Basic Unit 1 (3UF7 000)		7 VA/5 W	5 W
• Basic Unit 2 (3UF7 010) incl. two expansion modules connected to Basic Unit 2		10 VA/7 W	7 W
Rated insulation voltage U_i	V	300 (at pollution degree 3)	
Rated impulse withstand voltage U_{imp}	kV	4	
Relay outputs			
• Number		3 monostable relay outputs	
• Specified short-circuit protection for auxiliary contacts (relay outputs)		• Fuse links, gL/gA operational class 6 A, quick-acting 10 A (IEC 60947-5-1) • Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1) • Miniature circuit breaker 6 A, C characteristic (I_k < 500 A)	
• Rated uninterrupted current	A	6	
• Rated switching capacity		**AC-15** 6 A/24 V AC; 6 A/120 V AC; 3 A/230 V AC **DC-13** 2 A/24 V DC; 0.55 A/60 V DC; 0.25 A/125 V DC	
Inputs (binary)		4 inputs supplied internally by the device electronics with 24 V DC and connected to a common potential	
Thermistor motor protection (binary PTC)			
• Summation cold resistance	kΩ	≤ 1.5	
• Response value	kΩ	3.4 ... 3.8	
• Return value	kΩ	1.5 ... 1.65	

Current measuring modules or current/voltage measuring modules

Main circuit

		3UF7 1.0	3UF7 1.1	3UF7 1.2
Current setting I_e	A	0.3 ... 3	2.4 ... 25	10 ... 100
Rated insulation voltage U_i	V	690; 3UF7 103 and 3UF7 104: 1000 (at pollution degree 3)		
Rated operational voltage U_e	V	690		
Rated impulse withstand voltage U_{imp}	kV	6; 3UF7 103 and 3UF7 104: 8		
Rated frequency	Hz	50/60		
Type of current		Three-phase current		
Short-circuit		Additional short-circuit protection is required in main circuit		
Accuracy of current measurement (in the range 1 x minimum current setting I_u to 8 x max. current setting I_o)	%	±3		
Typical voltage measuring ranges				
• Phase-to-phase voltage/line-to-line voltage (e. g. $U_{L1\,L2}$)	V	110 ... 690 (only the phase voltages are available in SIMOCODE pro as measured values)		
• Phase voltage (e. g. U_{L1})	V	65 ... 400		
Accuracy				
• Of voltage measurement (phase voltage U_L in the range 230 ... 400 V)	%	±3 (typical)		
• Of power factor measurement (in the rated load range power factor = 0.4 ... 0.8)	%	±5 (typical)		
• Of apparent power measurement (in the rated load range)	%	±5 (typical)		

Current measuring modules or current/voltage measuring modules (continued)				
Notes on voltage measurement • In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems • Feeder lines for voltage measurement		In these networks the current/voltage measuring module can be used only with an upstream decoupling module on the system interface. In the feeder lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection!		
Digital modules				
Control circuit				
Rated insulation voltage U_i	V	300 (at pollution degree 3)		
Rated impulse withstand voltage U_{imp}	kV	4		
Relay outputs • Number • Specified short-circuit protection for auxiliary contacts (relay outputs) • Rated uninterrupted current • Rated switching capacity	 A	2 monostable or bistable relay outputs (depending on the version) • Fuse links, gL/gG operational class 6 A, quick-acting 10 A (IEC 60947-5-1) • Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1) • Miniature circuit breaker 6 A, C characteristic (I_k<500 A) 6 **AC-15** 6 A/24 V AC 6 A/120 V AC 3 A/230 V AC **DC-13** 2 A/24 V DC 0.55 A/60 V DC 0.25 A/125 V DC		
Inputs (binary)		4 externally supplied floating inputs, 24 V DC or 110 ... 240 V AC/DC depending on the version; inputs jointly connected to common potential		
Ground-fault modules				
Control circuit				
Connectable 3UL22 summation current transformer with rated fault currents I_N • $I_{Ground\ fault} \leq 50\ \% I_N$ • $I_{Ground\ fault} \geq 100\ \% I_N$	A	0.3/0.5/1 No tripping Tripping		
Response delay (conversion time)	ms	300 ... 500, additionally delayable		
Temperature modules				
Sensor circuit				
Typical sensor circuits • PT100 • PT1000/KTY83/KTY84/NTC	 mA mA	 1 (typical) 0.2 (typical)		
Open-circuit/short-circuit detection • For sensor type • Open circuit • Short-circuit • Measuring range	 °C	PT100/PT1000 ✓ ✓ -50 ... +500	KTY83-110 ✓ ✓ -50 ... +175	KTY84 ✓ ✓ -40 ... +300
Measuring accuracy at 20 °C ambient temperature (T20)	K	< ±2		
Deviation due to ambient temperature (in % of measuring range)	%	0.05 per K deviation from T20		
Conversion time	ms	500		
Connection type		Two- or three-wire connection		
Analog modules				
Control circuit				
Inputs • Channels • Parameterizable measuring ranges • Shielding • Max. input current (destruction limit) • Accuracy • Input resistance • Conversion time • Resolution • Open-circuit detection	 mA mA % Ω ms bit	 2 (passive) 0/4...20 Up to 30 m shield recommended, from 30 m shield required 40 ±1 50 150 12 With measuring range 4 ... 20 mA		
Output • Channels • Parameterizable output range • Shielding • Max. voltage at output • Accuracy • Max. output load • Conversion time • Resolution • Short-circuit proof	 mA % Ω ms bit	 1 0/4...20 Up to 30 m shield recommended, from 30 m shield required 30 V DC ±1 500 25 12 Yes		
Connection type		Two-wire connection		
Electrical separation of inputs/output to the device electronics		No		

✓ Detection possible

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Basic units

Selection and ordering data

Version	Current setting	Width	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	mm							kg
SIMOCODE pro									
 3UF7 000-1A.00-0	**SIMOCODE pro C, Basic Unit 1** PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, rated control supply voltage U_s:								
	• 24 V DC		A	**3UF7 000-1AB00-0**		1	1 unit	131	0.350
	• 110 ... 240 V AC/DC		A	**3UF7 000-1AU00-0**		1	1 unit	131	0.350
 3UF7 010-1A.00-0	**SIMOCODE pro V, Basic Unit 2** PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules rated control supply voltage U_s:								
	• 24 V DC		A	**3UF7 010-1AB00-0**		1	1 unit	131	0.350
	• 110 ... 240 V AC/DC		A	**3UF7 010-1AU00-0**		1	1 unit	131	0.350
 3UF7 100-1AA00-0	**Current measuring modules**								
	Straight-through transformers	0.3 ... 3	45	A	**3UF7 100-1AA00-0**	1	1 unit	131	0.100
		2.4 ... 25	45	A	**3UF7 101-1AA00-0**	1	1 unit	131	0.150
		10 ... 100	55	A	**3UF7 102-1AA00-0**	1	1 unit	131	0.350
		20 ... 200	120	A	**3UF7 103-1AA00-0**	1	1 unit	131	0.600
	Busbar connections	20 ... 200	120	A	**3UF7 103-1BA00-0**	1	1 unit	131	1.000
		63 ... 630	145	A	**3UF7 104-1BA00-0**	1	1 unit	131	1.750
 3UF7 110-1AA00-0	**Current/voltage measuring modules For SIMOCODE pro V** Voltage measuring up to 690 V if required in connection with a decoupling module								
	Straight-through transformers	0.3 ... 3	45	A	**3UF7 110-1AA00-0**	1	1 unit	131	0.150
		2.4 ... 25	45	A	**3UF7 111-1AA00-0**	1	1 unit	131	0.200
		10 ... 100	55	A	**3UF7 112-1AA00-0**	1	1 unit	131	0.400
		20 ... 200	120	A	**3UF7 113-1AA00-0**	1	1 unit	131	0.700
	Busbar connections	20 ... 200	120	A	**3UF7 113-1BA00-0**	1	1 unit	131	1.000
		63 ... 630	145	A	**3UF7 114-1BA00-0**	1	1 unit	131	1.750
 3UF7 150-1AA00-0	**Decoupling modules** For connecting upstream from a current/voltage measuring module on the system interface when using voltage detection in insulated, high-resistance or asymmetrically grounded systems and in single-phase systems			A	**3UF7 150-1AA00-0**	1	1 unit	131	0.150
 3UF7 200-1AA00-0	**Operator panels** Installation in control cabinet door or front plate, for plugging into basic unit, 10 LEDs for status indication and user-assignable buttons for controlling the motor			A	**3UF7 200-1AA00-0**	1	1 unit	131	0.100
 3UF7 210-1AA00-0	**Operator panels with display for SIMOCODE pro V**[1] Installation in control cabinet door or front plate, for plugging into Basic Unit 2, 7 LEDs for status indication and user-assignable buttons for controlling the motor, multilingual display, e. g. for indication of measured values, status information or fault messages			►	**3UF7 210-1AA00-0**	1	1 unit	131	0.150

[1] Only possible with Basic Unit 2, product version E03 and higher (from 12/2006).

* You can order this quantity or a multiple thereof.

Selection and ordering data

Version		DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Expansion modules for SIMOCODE pro V								
With SIMOCODE pro V, it is possible to expand the type and number of inputs and outputs in steps. Each expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro V using a connection cable; through the second system interface, further expansion modules or the operator panel can be connected. The power supply for the expansion modules is provided by the connection cable through Basic Unit 2.								
Important: Please order connection cable separately, see page 7/14!								
 3UF7 300-1AU00-0	**Digital modules**							
	Up to two digital modules can be used to add additional binary inputs and relay outputs to basic unit. The input circuits of the digital modules are supplied from an external power supply.							
	4 binary inputs and 2 relay outputs, Up to 2 digital modules can be connected per Basic Unit 2							
	Relay outputs / Input voltage							
	Monostable / 24 V DC	A	**3UF7 300-1AB00-0**		1	1 unit	131	0.150
	Monostable / 110 ... 240 V AC/DC	A	**3UF7 300-1AU00-0**		1	1 unit	131	0.150
	Bistable / 24 V DC	A	**3UF7 310-1AB00-0**		1	1 unit	131	0.150
	Bistable / 110 ... 240 V AC/DC	A	**3UF7 310-1AU00-0**		1	1 unit	131	0.150
 3UF7 400-1AA00-0	**Analog modules**							
	Basic Unit 2 can be optionally expanded with analog inputs and outputs (0/4 ... 20 mA) by means of the analog module.	A	**3UF7 400-1AA00-0**		1	1 unit	131	0.150
	2 inputs (passive) for input and 1 output for output of 0/4 ... 20 mA signals, max. 1 analog module can be connected per Basic Unit 2							
 3UF7 500-1AA00-0	**Ground-fault modules**							
	Instead of ground-fault monitoring using the current measuring modules or current/voltage measuring modules, it may be necessary, especially in high-impedance grounded networks, to implement ground-fault monitoring for smaller ground fault currents using a summation current transformer.							
	1 input for connecting a summation current transformer 3UL22, up to 1 ground-fault module can be connected per Basic Unit 2	A	**3UF7 500-1AA00-0**		1	1 unit	131	0.150
	Note: For the corresponding summation current transformers for rated fault currents of 0.3 A, 0.5 A or 1 A see page 7/51.							
 3UF7 700-1AA00-0	**Temperature modules**							
	Independently of the thermistor motor protection of the basic units, up to 3 analog temperature sensors can be evaluated using a temperature module.	A	**3UF7 700-1AA00-0**		1	1 unit	131	0.150
	Sensor types: PT100/PT1000, KTY83/KTY84 or NTC							
	3 inputs for connecting up to 3 analog temperature sensors, up to 1 temperature module can be connected per Basic Unit 2							

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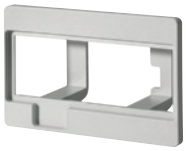
* You can order this quantity or a multiple thereof.

Accessories

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Connection cables (essential accessory)								
 3UF7 932-0AA00-0	**Connection cables** In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules or decoupling module:							
	• Length 0.025 m (flat) Note: Only suitable for connecting Basic Unit 2 to its expansion modules or for connecting expansion modules to each other; only when the front plates finish at the same height!	A	**3UF7 930-0AA00-0**		1	1 unit	131	0.010
	• Length 0.1 m (flat)	A	**3UF7 931-0AA00-0**		1	1 unit	131	0.010
	• Length 0.3 m (flat)	A	**3UF7 935-0AA00-0**		1	1 unit	131	0.020
	• Length 0.5 m (flat)	A	**3UF7 932-0AA00-0**		1	1 unit	131	0.020
	• Length 0.5 m (round)	A	**3UF7 932-0BA00-0**		1	1 unit	131	0.050
	• Length 1.0 m (round)	A	**3UF7 937-0BA00-0**		1	1 unit	131	0.100
	• Length 2.5 m (round)	A	**3UF7 933-0BA00-0**		1	1 unit	131	0.150
PC cables and adapters								
 3UF7 940-0AA00-0	**For PC/PG communication with SIMOCODE pro** Through the system interface, for connecting to the serial interface of the PC/PG	A	**3UF7 940-0AA00-0**		1	1 unit	131	0.150
	USB/serial adapters To connect an RS 232 PC cable to the USB port of a PC, we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor, AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	131	0.150
Memory modules								
 3UF7 900-0AA00-0	The memory module enables the complete parameter assignment of a system to be saved and transferred to a new system, e. g. when a device is replaced, without the need for additional aids or detailed knowledge of the the system interface	A	**3UF7 900-0AA00-0**		1	1 unit	131	0.010
Interface covers								
 3UF7 950-0AA00-0	**For system interface**	A	**3UF7 950-0AA00-0**		1	5 units	131	0.100
Addressing plugs								
 3UF7 910-0AA00-0	**For assigning the PROFIBUS addresses without using a PC or programming device** On SIMOCODE pro through the system interface	A	**3UF7 910-0AA00-0**		1	1 unit	131	0.030
Door adapters								
 3UF7 920-0AA00-0	**For external connection of the system interface** Outside, for example, a control cabinet	A	**3UF7 920-0AA00-0**		1	1 unit	131	0.030
Adapters for operator panel								
 3UF7 922-0AA00-0	The adapter enables the smaller 3UF7 20 operator panel from SIMOCODE pro to be used in a front panel cutout in which previously, e. g. after a change of system, a larger 3UF5 2 operator panel from SIMOCODE-DP had been used; degree of protection IP54	A	**3UF7 922-0AA00-0**		1	1 unit	131	0.150

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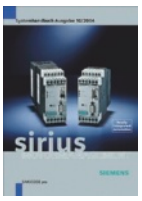
* You can order this quantity or a multiple thereof.

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Labeling strips								
 3UF7 925-0AA02-0	• For pushbuttons of the 3UF7 20 operator panel	A	**3UF7 925-0AA00-0**		100	400 units	131	15.000
	• For pushbuttons of the 3UF7 21 operator panel with display	A	**3UF7 925-0AA01-0**		100	600 units	131	15.000
	• For LEDs of the 3UF7 20 operator panel	A	**3UF7 925-0AA02-0**		100	1200 units	131	15.000
	Note: Pre-punched labeling strips for user-specific printing using the free inscription software "SIRIUS Label Designer" on a laser printer. Note the software version! Download from www.siemens.com/simocode							
Push-in lugs								
 3RB19 00-0B	**For screw fixing** e. g. on mounting plate, 2 units required per device							
	• Can be used with 3UF7 1.0, 3UF7 1.1 and 3UF7 1.2	A	**3RB19 00-0B**		100	10 units	101	0.100
	• Can be used with 3UF7 0, 3UF7 3, 3UF7 4, 3UF7 5 and 3UF7 7	▶	**3RP19 03**		1	10 units	101	0.002
Terminal covers								
 3RT19 56-4EA1	**Covers for cable lugs and busbar connections**							
	• Length 100 mm, can be used for 3UF7 1.3-1BA00-0	▶	**3RT19 56-4EA1**		1	1 unit	101	0.070
	• Length 120 mm, can be used for 3UF7 1.4-1BA00-0	▶	**3RT19 66-4EA1**		1	1 unit	101	0.130
 3RT19 56-4EA2	**Covers for box terminals**							
	• Length 25 mm, can be used for 3UF7 1.3-1BA00-0	▶	**3RT19 56-4EA2**		1	1 unit	101	0.030
	• Length 30 mm, can be used for 3UF7 1.4-1BA00-0	▶	**3RT19 66-4EA2**		1	1 unit	101	0.040
	Covers for screw terminals Between contactor and current measuring module or current/voltage measuring module for direct mounting							
	• Can be used for 3UF7 1.3-1BA00-0	▶	**3RT19 56-4EA3**		1	1 unit	101	0.020
	• Can be used for 3UF7 1.4-1BA00-0	▶	**3RT19 66-4EA3**		1	1 unit	101	0.060
Box terminal blocks								
 3RT19 5.-4G	For round and ribbon cables							
	• Up to 70 mm^2, can be used for 3UF7 1.3-1BA00-0	▶	**3RT19 55-4G**		1	1 unit	101	0.230
	• Up to 120 mm^2, can be used for 3UF7 1.3-1BA00-0	▶	**3RT19 56-4G**		1	1 unit	101	0.260
	• Up to 240 mm^2, can be used for 3UF7 1.4-1BA00-0	▶	**3RT19 66-4G**		1	1 unit	101	0.676
	For conductor cross-sections see note on Technical Information on page 7/1.							
Bus terminations								
	Bus termination module with separate supply voltage for terminating the bus following the last unit on the bus line. Supply voltage:							
	• 115/230 V AC	C	**3UF1 900-1KA00**		1	1 unit	131	0.286
	• 24 V DC	C	**3UF1 900-1KB00**		1	1 unit	131	0.192
System manuals								
 3UF7 970-0AA01-0	**SIMOCODE pro** With token fee, languages:							
	• German	A	**3UF7 970-0AA01-0**		1	1 unit	131	0.850
	• English	A	**3UF7 970-0AA00-0**		1	1 unit	131	0.850
	• French	A	**3UF7 970-0AA02-0**		1	1 unit	131	0.850

* You can order this quantity or a multiple thereof.

Software

Overview

General

In addition to device function and hardware design, a great deal of emphasis is placed on the case of communication-capable controls on the user-friendliness of the parameterization software and the ability of the system to be integrated easily into various different system configurations and process automation systems. For this reason, the SIMOCODE pro system provides suitable software tools for consistent, time-saving parameterization, configuration and diagnostics:

- SIMOCODE ES
  for totally integrated start-up and service
- OM SIMOCODE pro object manager
  for total integration into SIMATIC S7
- PCS 7 function block library SIMOCODE pro
  for total integration into PCS 7

SIMOCODE ES

With SIMOCODE ES, the SIMOCODE pro motor management system provides a user-friendly and clear-cut user interface with which to configure, operate, monitor and test SIMOCODE pro in the field or from a central location through PROFIBUS. By displaying all operating, service and diagnostics data, SIMOCODE ES supplies important information on whether maintenance work is required or, in the event of a fault, helps to prevent faults or to localize and rectify them once they have occurred.

Unnecessary plant downtimes can be prevented by changing parameters online (even during operation). The printing function integrated into SIMOCODE ES allows comprehensive documentation of all parameters according to EN ISO 7200.

In addition the graphical editor enables extremely ergonomic and user-friendly parameterization with Drag & Drop. Inputs and outputs of function blocks can be graphically linked and parameters can be set. The configured functions can be described in greater detail using comments and the device parameterization can be documented graphically - this speeds up start-up and simplifies the plant documentation.

The parameterization software for SIMOCODE pro can be run on a PC or programming device under Windows XP/Vista.

SIMOCODE ES	Basic	Standard	Premium
Access through the local interface on the device	✔	✔	✔
Parameter assignment	✔	✔	✔
Operating	✔	✔	✔
Diagnostics	✔	✔	✔
Test	✔	✔	✔
Service data	✔	✔	✔
Parameterizing with the integrated graphics editor	--	✔	✔
Creating typicals	--	✔	✔
Exporting parameters	--	✔	✔
Comparison functions	--	✔	✔
Trend display of measured values	--	✔	✔
Parameter comparison	--	✔	✔
Analog value recording[1)]	--	✔	✔
Standards-conform printout acc. to EN ISO 7200	--	✔	✔
Group functions	--	--	✔
Access through PROFIBUS	--	--	✔
Teleservice through MPI	--	--	✔
S7 Routing	--	--	✔
STEP7 Object Manager	--	--	✔

[1)] For SIMOCODE pro V. ✓ Function available -- Function not available

OM SIMOCODE pro object manager

The OM SIMOCODE pro object manager is a component of SIMOCODE ES. In contrast to a conventional GSD file, it enables SIMOCODE ES to be integrated into STEP 7 for convenient device parameterization. By installing SIMOCODE ES and OM SIMOCODE pro on a PC or programming device, which is used to configure the hardware of the SIMATIC S7, SIMOCODE ES can be called directly from the hardware configuration. This allows easy and consistent S7 configuration.

PCS 7 function block library for SIMOCODE pro

The SIMOCODE pro PCS 7 function block library can be used for simple and easy integration of SIMOCODE pro into the SIMATIC PCS 7 process control system. The SIMOCODE pro PCS 7 function block library contains the diagnostics and driver blocks corresponding with the diagnostics and driver concept of SIMATIC PCS 7 as well as the elements (symbols and faceplate) required for operator control and process monitoring. The application is integrated by graphic interconnection using the CFC Editor.

The technological and signal processing functions of the SIMOCODE pro PCS 7 function block library are based on the SIMATIC PCS 7 standard libraries (driver blocks, technological blocks) and are optimally tailored to SIMOCODE pro. Users who previously configured motor feeder circuits using conventional technology by means of signal blocks and motor or valve blocks, can now easily switch to the SIMOCODE pro PCS 7 function block library.

The SIMOCODE pro PCS 7 function block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

Note: More information can be found in Chapter 12.

Selection and ordering data

Parameterization and service software for SIMOCODE pro 3UF7

- Can be run under WIN XP PROF/ Windows Vista Ultimate 32/Business 32
- Without PC cable
  Please order PC cable separately, see page 7/14.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
SIMOCODE ES 2007 Basic							
 3ZS1 312-4CC10-0YA5							
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface							
• License key on USB stick, Class A	►	**3ZS1 312-4CC10-0YA5**		1	1 unit	131	0.230
SIMOCODE ES 2007 Standard							
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface							
• License key on USB stick, Class A	►	**3ZS1 312-5CC10-0YA5**		1	1 unit	131	0.230
Upgrade for SIMOCODE ES 2004 and later Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (English/French/German), communication through system interface	►	**3ZS1 312-5CC10-0YE5**		1	1 unit	131	0.230
Powerpack for SIMOCODE ES 2007 Basic Floating license for one user, E-SW, license key on USB stick, Class A, 3 languages (English/French/German), communication through the system interface	►	**3ZS1 312-5CC10-0YD5**		1	1 unit	131	0.230
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface	►	**3ZS1 312-5CC10-0YL5**		1	1 unit	131	0.230
SIMOCODE ES 2007 Premium							
Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface							
• License key on USB stick, Class A	►	**3ZS1 312-6CC10-0YA5**		1	1 unit	131	0.230
Upgrade for SIMOCODE ES 2004 and later Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (English/French/German), communication through PROFIBUS or the system interface	►	**3ZS1 312-6CC10-0YE5**		1	1 unit	131	0.230
Powerpack for SIMOCODE ES 2007 Standard Floating license for one user, E-SW, license key on USB stick, Class A, 3 languages (English/French/German), communication through PROFIBUS or the system interface	►	**3ZS1 312-6CC10-0YD5**		1	1 unit	131	0.230
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through PROFIBUS or the system interface	►	**3ZS1 312-6CC10-0YL5**		1	1 unit	131	0.230

* You can order this quantity or a multiple thereof.

Software: SIMOCODE pro function block library for SIMATIC PCS 7

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
SIMOCODE pro function block library for SIMATIC PCS 7							
 3UF7 982-0AA00-0 **SIMOCODE pro function block library for SIMATIC PCS 7** Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), English/French/German, Type of delivery: CD incl. electronic documentation							
• For PCS 7 Version V6.0	A	**3UF7 982-0AA00-0**		1	1 unit	131	0.240
• For PCS 7 Version V6.1	A	**3UF7 982-0AA02-0**		1	1 unit	131	0.240
• For PCS 7 Version V7.0	A	**3UF7 982-0AA10-0**		1	1 unit	131	0.240
AS modules for integrating SIMOCODE pro in the PCS 7 process control system Runtime software for execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation							
• For PCS 7 Version V6.x	A	**3UF7 982-0AA01-0**		1	1 unit	131	0.001
• For PCS 7 Version V7.x	A	**3UF7 982-0AA11-0**		1	1 unit	131	0.001
Upgrade for the PCS 7 function block library SIMOCODE pro, V6.0 or V6.1 on Version SIMOCODE pro V7.0 for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V7.0 (single license), German/English/French, Type of delivery: CD incl. electronic documentation	A	**3UF7 982-0AA13-0**		1	1 unit	131	0.240

* You can order this quantity or a multiple thereof.

Overview

The 3UF18 current transformers are protection transformers and are used for actuating overload relays. Protection transformers are designed to ensure proportional current transfer up to a multiple of the primary rated current. The 3UF18 current transformers convert the maximum current of the corresponding operating range into the standard value of 1 A secondary.

Selection and ordering data

Mounting type	Operating range A	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
For stand-alone installation								
 3UF18 43								
Screw fixing and snap-on mounting onto 35 mm standard mounting rail	0.25 … 2.5[1]	C	**3UF18 43-1BA00**		1	1 unit	131	0.488
	1.25 … 12.5[1]	C	**3UF18 43-2AA00**		1	1 unit	131	0.485
	2.5 … 25[1]	C	**3UF18 43-2BA00**		1	1 unit	131	0.490
	12.5 … 50	C	**3UF18 45-2CA00**		1	1 unit	131	0.694
	16 … 65	C	**3UF18 47-2DA00**		1	1 unit	131	1.182
	25 … 100	C	**3UF18 48-2EA00**		1	1 unit	131	1.232
For mounting onto contactors and stand-alone installation								
 3UF18 68								
Screw fixing	32 … 130	C	**3UF18 50-3AA00**		1	1 unit	131	1.745
	50 … 200	C	**3UF18 52-3BA00**		1	1 unit	131	1.890
	63 … 250	C	**3UF18 54-3CA00**		1	1 unit	131	3.618
	100 … 400	C	**3UF18 56-3DA00**		1	1 unit	131	3.851
	125 … 500	C	**3UF18 57-3EA00**		1	1 unit	131	4.138
	160 … 630	C	**3UF18 68-3FA00**		1	1 unit	131	7.782
	205 … 820	C	**3UF18 68-3GA00**		1	1 unit	131	8.920

[1] For the protection of EEx e motors the following setting ranges are applicable:
3UF18 43-1BA00, 0.25 A ... 1.25 A
3UF18 43-2AA00, 1.25 A ... 6.3 A
3UF18 43-2BA00, 2.5 A ... 12.5 A

Accessories

For contactor type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Terminal covers							
 3TX7 466-0A							
For transformer/contactor combinations and stand-alone installation for transformer (cover required per connection side)							
3UF18 45	D	**3TX7 446-0A**		1	1 unit	101	0.006
3UF18 48	D	**3TX7 466-0A**		1	1 unit	101	0.035
3UF18 50, 3UF18 52	D	**3TX7 506-0A**		1	1 unit	101	0.041
3UF18 54 to 3UF18 57	D	**3TX7 536-0A**		1	2 units	101	0.112
3UF18 68-3FA00	B	**3TX7 686-0A**		1	1 unit	101	0.410
3UF18 68-3GA00	B	**3TX7 696-0A**		1	1 unit	101	0.410
For covering the screw terminal for direct mounting on contactor (cover required per contactor/transformer combination)							
3UF18 48	D	**3TX7 466-0B**		1	1 unit	101	0.013
3UF18 50, 3UF18 52	D	**3TX7 506-0B**		1	1 unit	101	0.019
3UF18 54 to 3UF18 57	D	**3TX7 536-0B**		1	1 unit	101	0.057
3UF18 68-3FA00	C	**3TX7 686-0B**		1	1 unit	101	0.085
3UF18 68-3GA00	C	**3TX7 696-0B**		1	1 unit	101	0.102

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* You can order this quantity or a multiple thereof.

General data

Overview

- The compact, user-friendly, and low-cost solution for simple control tasks
- Compact, user-friendly, can be used universally without accessories
- All in one: The display and operator panel are integrated
- 4-line LOGO! TD text display can be connected directly to all LOGO! 6ED1 052-.....-0BA6 basic modules
- 39 different functions can be linked at a press of a button or with PC software; up to 200 blocks in total
- Functions can be changed simply using buttons; no complicated rewiring

Catalog ST 70:

Information on LOGO! can also be found in the catalog ST 70:
www.siemens.com/simatic/printmaterial

Application

LOGO! is universally applicable, e. g.:

- Building installation and wiring (lighting, shutters, awnings, doors, access control, barriers, ventilation systems ...)
- Control cabinet installation
- Machine and device construction (pumps, small presses, compressors, hydraulic lifts, conveyors ...)
- Special controls for conservatories and greenhouses
- Signal preprocessing for other controllers

The LOGO! Modular logic modules can be expanded easily for each application.

Marine approvals

American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyds Register of Shipping; Polski Rejestr Statków

Overview

- The space-saving basic versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- Interface for direct connection of the new LOGO! TD text display

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
LOGO! Modular basic versions							
LOGO! logic modules 24 Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1CC00-0BA6**		1	1 unit	200	0.191
LOGO! logic modules 12/24RC Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1MD00-0BA6**		1	1 unit	200	0.228
LOGO! logic modules 24RC Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC (N or P), 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1HB00-0BA6**		1	1 unit	200	0.231
LOGO! logic modules 230RC Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1FB00-0BA6**		1	1 unit	200	0.232

For accessories, see page 7/26.

* You can order this quantity or a multiple thereof.

LOGO! Modular pure versions

Overview

- The cost-optimized Pure versions
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- Interface for direct connection of the new LOGO! TD text display

Selection and ordering data

Version	DT	Screw terminals Order No.	Price € per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
LOGO! Modular pure versions							
LOGO! logic modules 24o Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2CC00-0BA6**		1	1 unit	200	0.175
LOGO! logic modules 12/24RCo logic modules Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2MD00-0BA6**		1	1 unit	200	0.213
LOGO! logic modules 24RCo logic modules Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC (N or P), 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2HB00-0BA6**		1	1 unit	200	0.220
LOGO! logic modules 230RCo logic modules Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2FB00-0BA6**		1	1 unit	200	0.217

For accessories, see page 7/26.

* You can order this quantity or a multiple thereof.

Overview

- Expansion modules for connection to LOGO! Basic modules
- With digital inputs and outputs, analog inputs or analog outputs

Selection and ordering data

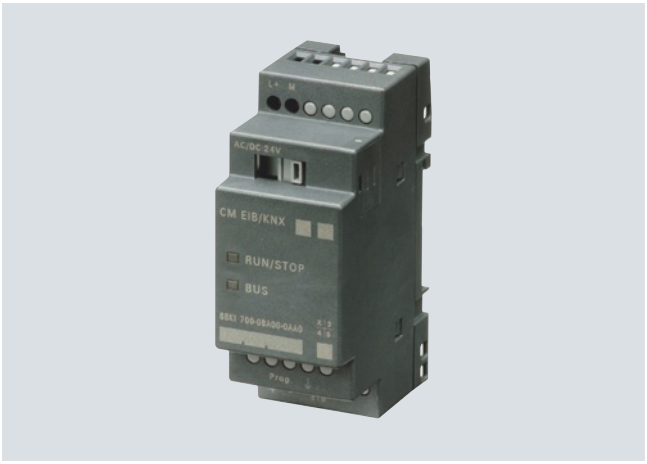
Version	DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
LOGO! Modular expansion modules							
LOGO! DM8 24 Control supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	A	**6ED1 055-1CB00-0BA0**		1	1 unit	200	0.122
LOGO! DM16 24 Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 digital outputs 24 V DC, 0.3 A	A	**6ED1 055-1CB10-0BA0**		1	1 unit	200	0.122
LOGO! DM8 12/24R Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A	A	**6ED1 055-1MB00-0BA1**		1	1 unit	200	0.157
LOGO! DM8 24R Control supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC (N or P), 4 relay outputs 5 A	A	**6ED1 055-1HB00-0BA0**		1	1 unit	200	0.158
LOGO! DM16 24R Control supply voltage 24 V DC, 8 digital inputs 24 V DC (N or P), 8 relay outputs 5 A	A	**6ED1 055-1NB10-0BA0**		1	1 unit	200	0.159
LOGO! DM8 230R Control supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A	A	**6ED1 055-1FB00-0BA1**		1	1 unit	200	0.159
LOGO! DM16 230R Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 8 relay outputs 5 A	A	**6ED1 055-1FB10-0BA0**		1	1 unit	200	0.159
LOGO! AM2 Control supply voltage 12/24 V DC, 2 analog inputs 0 to 10 V or 0/4 to 20 mA, 10 bit resolution	A	**6ED1 055-1MA00-0BA0**		1	1 unit	200	0.119
LOGO! AM2 PT100 Control supply voltage 12/24 V DC, 2 analog inputs PT100, two-wire or three-wire connection, temperature range -50 °C to 200 °C	A	**6ED1 055-1MD00-0BA0**		1	1 unit	200	0.120
LOGO! AM2 AQ Control supply voltage 24 V DC, 2 analog outputs 0 to 10 V or 0/4 to 20 mA	A	**6ED1 055-1MM00-0BA1**		1	1 unit	200	0.120

For accessories, see page 7/26.

* You can order this quantity or a multiple thereof.

LOGO! CM EIB/KNX communication modules

Overview



- Expansion module for the LOGO! Basic modules
- For communication between LOGO! master and external *EIB* components via *EIB*

Application

The CM EIB/KNX communication module allows communication between the LOGO! master and external *EIB* components via *EIB*. This module can be used to integrate LOGO! in an *EIB* system.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
LOGO! CM EIB/KNX communication modules							
For connection to *EIB*, control supply voltage 24 V DC	B	**6BK1 700-0BA00-0AA1**		1	1 unit	475	0.107

For accessories, see page 7/26.

* You can order this quantity or a multiple thereof.

Overview

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

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

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

Selection and ordering data

Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Order No. Price per PU				kg
AS-Interface connections for LOGO!						
Four virtual digital inputs, four virtual digital outputs	A	**3RK1 400-0CE10-0AA2**	1	1 unit	121	0.107

For accessories, see page 7/26.

* You can order this quantity or a multiple thereof.

Accessories

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
LOGO! TD text displays							
LOGO! TD text displays 4-line TD text display, for connection to all LOGO! 6ED1 052-....-0BA6 basic modules, degree of protection IP65, including connection cable	A	**6ED1 055-4MH00-0BA0**		1	1 unit	200	0.220
LOGO! manuals							
LOGO! manuals							
• German	A	**6ED1 050-1AA00-0AE7**		1	1 unit	200	0.750
• English	A	**6ED1 050-1AA00-0BE7**		1	1 unit	200	0.750
• French	C	**6ED1 050-1AA00-0CE7**		1	1 unit	200	0.750
• Spanish	C	**6ED1 050-1AA00-0DE7**		1	1 unit	200	0.750
• Italian	C	**6ED1 050-1AA00-0EE7**		1	1 unit	200	0.750
• Chinese	C	**6ED1 050-1AA00-0KE7**		1	1 unit	200	0.750
LOGO! cards							
LOGO! memory cards For copying, with know-how protection	A	**6ED1 056-1DA00-0BA0**		1	1 unit	200	0.004
LOGO! battery cards For adding a 2-year buffer to the integrated real-time clock	A	**6ED1 056-6XA00-0BA0**		1	1 unit	200	0.004
LOGO! memory/battery cards Combination of memory and additional 2-year buffer for the integrated real-time clock	A	**6ED1 056-7DA00-0BA0**		1	1 unit	200	0.004
LOGO! cables							
LOGO! PC cables For transferring programs between LOGO! and PC	A	**6ED1 057-1AA00-0BA0**		1	1 unit	200	0.168
LOGO! USB PC cables For transferring programs between LOGO! and PC, drivers on CD-Rom	A	**6ED1 057-1AA01-0BA0**		1	1 unit	200	0.160
LOGO! modem cables Adapter cable for analog modem communication	A	**6ED1 057-1CA00-0BA0**		1	1 unit	200	0.176
Front panel assembly kits							
Front panel assembly kits							
• Width: 4 MW	C	**6AG1 057-1AA00-0AA0**		1	1 unit	470	0.150
• Width: 4 MW, with pushbuttons	D	**6AG1 057-1AA00-0AA3**		1	1 unit	470	0.150
• Width: 8 MW	C	**6AG1 057-1AA00-0AA1**		1	1 unit	470	0.170
• Width: 8 MW, with pushbuttons	D	**6AG1 057-1AA00-0AA2**		1	1 unit	470	0.170
LOGO! News Box							
LOGO! News Box, 12/24 V Contains LOGO! 12/24RC, LOGO! USB PC cable, LOGO! Soft Comfort V6, manual, screwdriver, information material							
• German	A	**6ED1 057-3BA00-0AA5**		1	1 unit	2Z0	2.400
• English	A	**6ED1 057-3BA00-0BA5**		1	1 unit	2Z0	2.400
LOGO! News Box, 230 V Contains LOGO! 230RC, LOGO! USB PC cable, LOGO! Soft Comfort V6, manual, screwdriver, information material							
• German	A	**6ED1 057-3AA02-0AA0**		1	1 unit	2Z0	2.400
• English	A	**6ED1 057-3AA02-0BA0**		1	1 unit	2Z0	2.400
LOGO! TD News Box, 12/24 V Contains LOGO! 12/24RCo, LOGO! TD, LOGO! USB PC cable, LOGO! Soft Comfort V6, manual, screwdriver, information material							
• German	A	**6ED1 057-3BA10-0AA0**		1	1 unit	2Z0	2.700
• English	A	**6ED1 057-3BA10-0BA0**		1	1 unit	2Z0	2.700

* You can order this quantity or a multiple thereof.

Overview

- Switching module for switching resistive loads and motors directly

Application

LOGO! Contact is a switching module with $U \approx 400$ V, 3 NO contacts and 3 NC contacts for direct switching of resistive loads up (to 20 A) and motors (up to 4 kW). LOGO! Contact operates hum-free without noise pollution.

LOGO! Contact is universally applicable:

- Buildings/electrical installations
- Industry and commerce

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
LOGO! Contact							
Switching module for direct switching of resistive loads up to 20 A and motors up to 4 kW							
• Switching voltage 24 V	A	**6ED1 057-4CA00-0AA0**		1	1 unit	200	0.160
• Switching voltage 230 V	A	**6ED1 057-4EA00-0AA0**		1	1 unit	200	0.160

* You can order this quantity or a multiple thereof.

LOGO! Software

Overview

- The user-friendly software for switching program generation on the PC
- Switching program generation for function diagrams (FBD) or contact diagrams (LAD)
- Additional testing, simulation, online testing and archiving of the switching programs
- Professional documentation with the help of various comment and print functions

Application

LOGO! Soft Comfort is the multilingual software for switching program generation with LOGO! on the PC. LOGO! Soft Comfort can be used to program all devices of the LOGO! family.

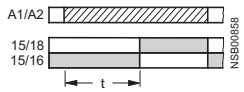
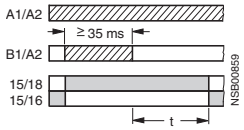
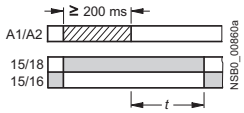
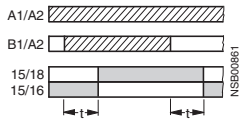
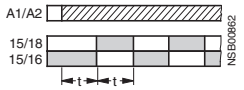
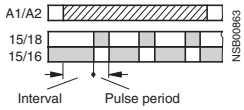
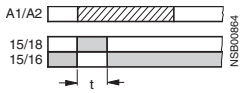
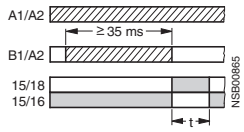
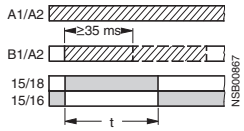
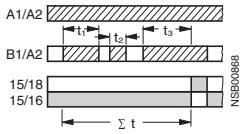
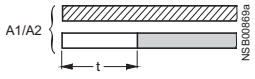
Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
LOGO! Software							
LOGO! Soft Comfort V6 For programming on the PC in LAD/FBD; runs on Windows 98 SE, Windows Vista/NT/XP/2000, Linux, MAC OS X; on CD-ROM	A	**6ED1 058-0BA02-0YA0**		1	1 unit	200	0.099
LOGO! Soft Comfort Upgrade From V1.0 to V6	A	**6ED1 058-0CA02-0YE0**		1	1 unit	200	0.100

* You can order this quantity or a multiple thereof.

Overview

3RP15 and 3RP20 function table

Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set									
	Timing relay energized Contact closed Contact open	3RP20 05-.A	3RP20 25	3RP15 05-.A	3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 7.
1 CO													
With ON-delay		■	■	■		A	■	■					
OFF-delay with auxiliary voltage		■		■		B[1]				■			
OFF-delay without auxiliary voltage *Observe minimum ON period for correct operation. For 3RP15 40-..W31:* *U_s 24 to 40 V AC/DC: 400 ms and* *U_s > 40 to 240 V AC/DC: 200 ms.*											■		
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)		■		■		C[1]							
Flashing, starting with interval (pulse/interval 1:1)		■		■		D							
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)												■	
Passing make contact		■		■		E							
Passing break contact with auxiliary voltage		■		■		F[1]							
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		■		■		G[1]							
Additive ON-delay with auxiliary voltage		■		■		H[1]							
1 NO contact (semiconductor)													
ON-delay The two-wire timing relay is connected in series with the load. Timing begins after application of the exciting voltage. The semiconductor output then becomes conducting, and the load is under power.									■				

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G, G● and H, H●, which are not retriggerable.

■ Function is possible

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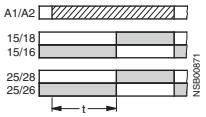
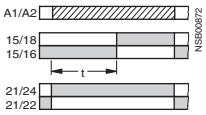
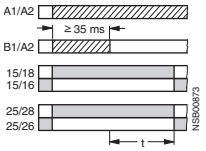
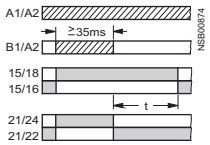
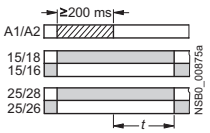
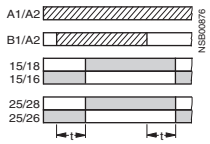
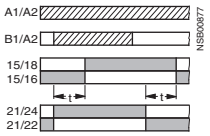
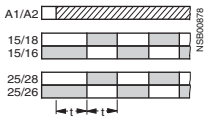
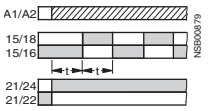
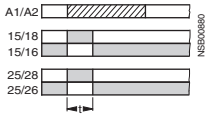
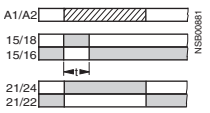
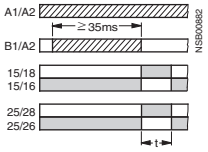
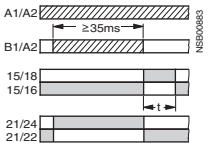
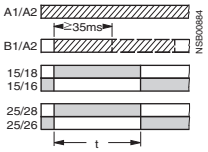
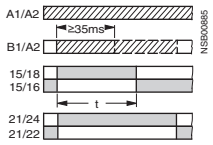
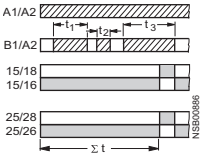
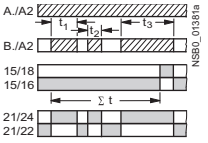
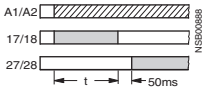
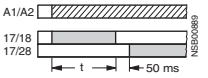
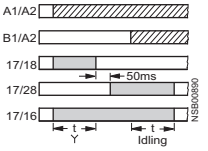
General data

Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set										
	Timing relay energized Contact closed Contact open	3RP20 05-.B	3RP20 25	3RP15 05-.B 3RP19 01-0B	3RP15 05-.R 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO														
With ON-delay		■		■	■	A		■						
ON-delay and instantaneous contact		■		■		A●								
OFF-delay with auxiliary voltage		■		■	■	B[1)]								
OFF-delay with auxiliary voltage and instantaneous contact		■		■		B[1)]								
OFF-delay without auxiliary voltage											■			
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)		■		■	■	C[1)]								
ON-delay and OFF-delay with auxiliary voltage and instantaneous contact ($t = t_{on} = t_{off}$)		■		■		C●[1)]								
Flashing, starting with interval (pulse/interval 1:1)		■		■	■	D								
Flashing, starting with interval (pulse/interval 1:1) and instantaneous contacts		■		■		D●								
Passing make contact		■		■	■	E								
Passing make contact and instantaneous contact		■		■		E●								

For footnote see page 7/31.

■ Function is possible

Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set											
	Timing relay energized Contact closed Contact open	3RP20 05-.B	3RP20 25	3RP15 05-.B 3RP19 01-0B	3RP15 05-.R 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO														
Passing break contact with auxiliary voltage		■		■	■	F[1]								
Passing break contact with auxiliary voltage and instantaneous contact		■		■		F●[1]								
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		■		■	■	G[1]								
Pulse-forming with auxiliary voltage and instantaneous contact) (pulse generation at the output does not depend on duration of energizing)		■		■		G●[1]								
Additive ON-delay with auxiliary voltage					■	H[1]								
Additive ON-delay with auxiliary voltage and instantaneous contact		■		■		H●[1]								
Wye-delta function		■		■		Y Δ								
2 NO														
Wye-delta function Y Δ														■
3 NO														
Wye-delta function with overtravel function[2] (idling)													■	

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G, G● and H, H●, which are not retriggerable.

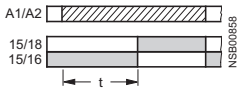
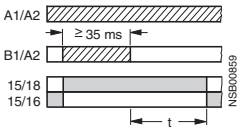
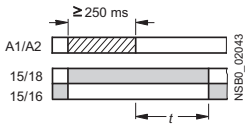
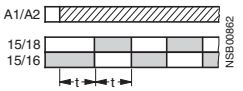
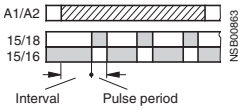
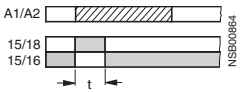
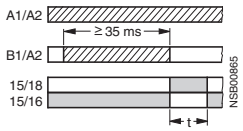
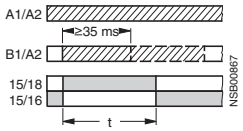
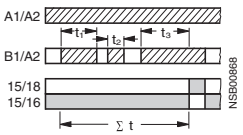
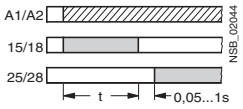
[2] For function diagrams showing the various possibilities of operation of the 3RP15 60-1S.30, see page 7/34.

■ Function is possible

7

General data

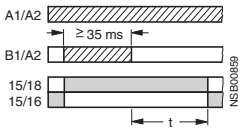
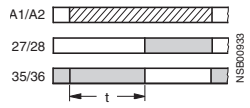
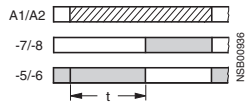
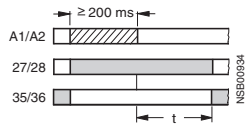
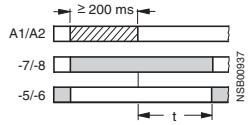
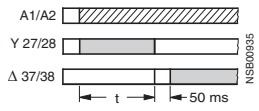
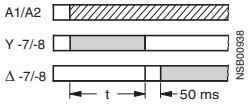
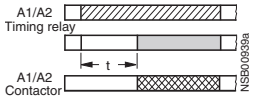
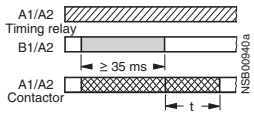
7PV15 function table

Function	Function chart	7PV15 timing relays						
	Timing relay energized Contact closed Contact open	7PV15 08	Identification letter	7PV15 12 7PV15 13 7PV15 18	7PV15 38	7PV15 40	7PV15 58	7PV15 78
1 CO								
With ON-delay		■	A	■				
OFF-delay with auxiliary voltage		■	B		■			
OFF-delay without auxiliary voltage						■		
Flashing, starting with interval (pulse/interval 1:1)		■	C					
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)							■	
Passing make contact		■	D					
Passing break contact with auxiliary voltage		■	E					
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		■	F					
Additive ON-delay with auxiliary voltage		■	G					
2 CO								
Wye-delta function								■

Note:

With the 7PV15 08 multifunction relay the identification letters A to G are printed on the front alongside the rotary selector switch. The related function can be found in the form of a bar graph on the side of the device.

Function table 3RT19 16, 3RT19 26

Function	Function chart	3RT19 16 timing relays						3RT19 26 timing relays				
	Timing relay energized Contact closed Contact open	3RT19 16-2C	3RT19 16-2D	3RP19 16-2E	3RT19 16-2F	3RT19 16-2G	3RT19 16-2L	3RT19 26-2C	3RT19 26-2D	3RT19 26-2E	3RT19 26-2F	3RT19 26-2G
1 CO												
OFF-delay with auxiliary voltage (varistor integrated)							■					
1 NO + 1 NC												
ON-delay (varistor integrated)				■								
With ON-delay										■		
OFF-delay without auxiliary voltage (varistor integrated)					■							
OFF-delay without auxiliary voltage											■	
2 NO												
Wye-delta function (varistor integrated) 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)						■						
Wye-delta function 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)												■
1 NO contact (semiconductor)												
ON-delay Two-wire design (varistor integrated)		■						■				
OFF-delay with auxiliary voltage (varistor integrated)			■						■			

■ Function is possible

General data

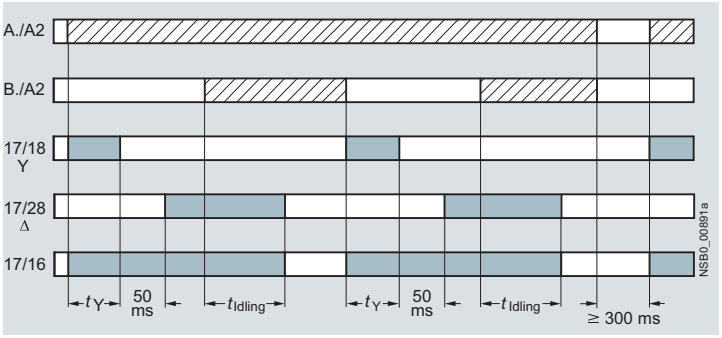
3RP15 function table

Possibilities of operation of the 3RP15 60-1S.30 timing relay

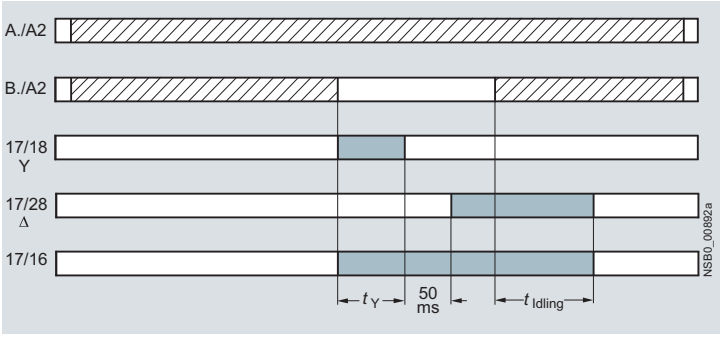
Timing relay energized
Contact closed
Contact open

t_Y = Star time 1 ... 20 s
t_{Idling} = Idling time (coasting time) 30 ... 600 s

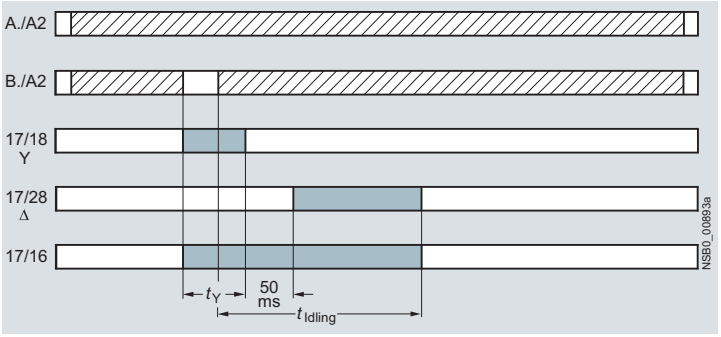
Operation 1



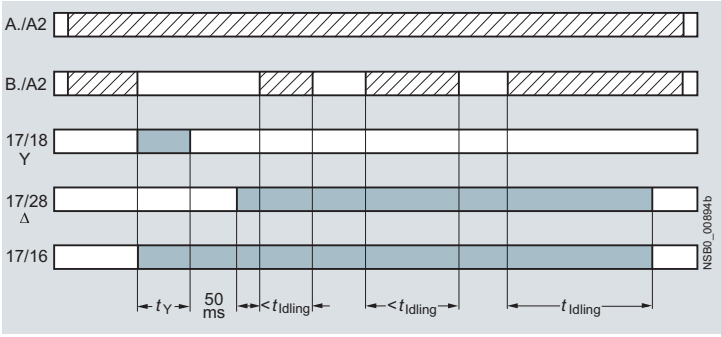
Operation 2



Operation 3



Operation 4



Note:
The following applies to all operations: The pressure switch controls the timing via B./A2.

Operation 1:
Start contact B./A2 is open when control supply voltage A./A2 is applied.

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the Y/Δ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time t_{Idling} (30 ... 600 s) has elapsed, the output relays (17/16 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Comments:

Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.

Operation 2:
Start contact B./A2 is closed when control supply voltage A./A2 is applied.

If the control signal B./A2 is already present when the supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.

Operation 3:
Start contact B./A2 closes while star time is running.

If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.

Operation 4:
Start contact B./A2 opens while delta time is running and is applied again.

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (coasting time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.

Application example based on standard operation (operation 1): For example, use of 3RP15 60 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 for a specific time which can be set from 30 ... 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

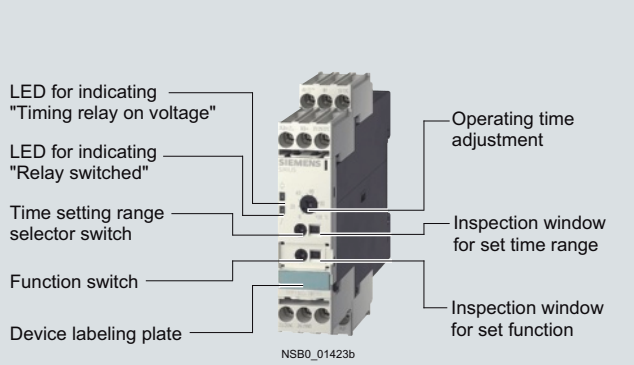
The pressure switch controls the timing via B./A2.

The control supply voltage is applied to A./A2 and the start contact B./A2 is open, i. e. there is no control signal on B./A2 when the control supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters Y/Δ operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (coasting time) is started, and the compressor enters no-load operation for the set period of time from 30 ... 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

Overview



Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1 (DIN VDE 0435 Part 2021) "Specified time relays for industrial use"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"

Accessories

Push-in lugs for screw fixing

Sealable covers

Label set for marking the multifunction relay

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 EN 60715 or for screw fixing.

SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

Selection and ordering data

Solid-state timing relays for general use in control systems and mechanical engineering with:
- 1 changeover contact or 2 changeover contacts
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

PU (UNIT, SET, M) = 1, PS* = 1 unit, PG = 101


3RP15 05-1BP30


3RP15 11-1AP30


3RP15 25-1BW30


3RP15 27-1EM30


3RP15 05-2BP30


3RP15 11-2AP30


3RP15 25-2BW30

Version	Time setting range *t* adjustable by rotary switch to	Rated control supply voltage U_s AC 50/60 Hz V	DC V	DT	Screw terminals Order No.	Price per PU	Weight per PU approx. kg	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx. kg
3RP15 05 timing relays, multifunction, 15 time setting ranges											
The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP15 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B. For functions see 3RP19 01 label set, page 7/44.											
With LED and											
1 CO contacts, 8 functions	0.05 ... 1 s	--	12	A	**3RP15 05-1AA40**	0.125			**--**		
	0.15 ... 3 s	24/100 ... 127	24	▶	**3RP15 05-1AQ30**	0.140	C		**3RP15 05-2AQ30**		0.125
	0.5 ... 10 s	24/200 ... 240	24	▶	**3RP15 05-1AP30**	0.141	A		**3RP15 05-2AP30**		0.126
	1.5 ... 30 s	24 ... 240[5]	24 ... 240[2]	▶	**3RP15 05-1AW30**	0.136	A		**3RP15 05-2AW30**		0.132
2 CO contacts, 16 functions	0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min	24/100 ... 127	24	▶	**3RP15 05-1BQ30**	0.162	A		**3RP15 05-2BQ30**		0.142
		24/200 ... 240	24	▶	**3RP15 05-1BP30**	0.161	A		**3RP15 05-2BP30**		0.137
		24 ... 240[5]	24 ... 240[2]	▶	**3RP15 05-1BW30**	0.168	A		**3RP15 05-2BW30**		0.143
		400 ... 440	-	A	**3RP15 05-1BT20**	0.169			**--**		
2 CO contacts, positively driven and hard gold-plated. 8 functions[3][4]	0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	24 ... 240	24 ... 240	▶	**3RP15 05-1RW30**	0.169	A		**3RP15 05-2RW30**		0.143
3RP15 1. timing relays, ON-delay, 1 time setting range											
With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127	24	▶	**3RP15 11-1AQ30**	0.108	C		**3RP15 11-2AQ30**		0.092
		24/200 ... 240	24	▶	**3RP15 11-1AP30**	0.108	A		**3RP15 11-2AP30**		0.092
	1.5 ... 30 s	24/100 ... 127	24	▶	**3RP15 12-1AQ30**	0.107	C		**3RP15 12-2AQ30**		0.092
		24/200 ... 240	24	▶	**3RP15 12-1AP30**	0.104	A		**3RP15 12-2AP30**		0.097
	5 ... 100 s	24/100 ... 127	24	▶	**3RP15 13-1AQ30**	0.107	C		**3RP15 13-2AQ30**		0.094
		24/200 ... 240	24	▶	**3RP15 13-1AP30**	0.108	A		**3RP15 13-2AP30**		0.094
3RP15 25 timing relays, ON-delay, 15 time setting ranges											
With LED and											
1 CO	0.05 ... 1 s	24/100 ... 127	24	▶	**3RP15 25-1AQ30**	0.109	C		**3RP15 25-2AQ30**		0.095
	0.15 ... 3 s	24/200 ... 240	24	▶	**3RP15 25-1AP30**	0.104	A		**3RP15 25-2AP30**		0.093
2 CO	0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	42 ... 48/60	42 ... 48/ 60[5]	A	**3RP15 25-1BR30**	0.152			**--**		
		24/100 ... 127	24	▶	**3RP15 25-1BQ30**	0.152	C		**3RP15 25-2BQ30**		0.128
		24/200 ... 240	24	▶	**3RP15 25-1BP30**	0.155	A		**3RP15 25-2BP30**		0.127
		24 ... 240[5]	24 ... 240[2]	▶	**3RP15 25-1BW30**	0.159	A		**3RP15 25-2BW30**		0.134
3RP15 27 timing relays, ON-delay, two-wire design, 4 time setting ranges											
1 NO contact (semiconductor)	0.05 ... 1 s 0.2 ... 4 s 1.5 ... 30 s 12 ... 240 s	24 ... 66	24...66[5]	A	**3RP15 27-1EC30**	0.099	C		**3RP15 27-2EC30**		0.090
		90 ... 240	90...240[5]	▶	**3RP15 27-1EM30**	0.100	C		**3RP15 27-2EM30**		0.090

[1] With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

[2] Operating range 0.7 to 1.1 x U_s.

[3] Positively driven: NO and NC are never closed simultaneously; contact gap ≥ 0.5 mm is ensured, minimum make-break capacity 12 V, 3 mA.

[4] The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).

[5] Operating range 0.8 to 1.1 x U_s.

* You can order this quantity or a multiple thereof.

SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

PU (UNIT, SET, M) = 1, PS* = 1 unit, PG = 101


3RP15 33-1AP30


3RP15 40-1BB31


3RP15 55-1AP30


3RP15 60-1SP30


3RP15 76-2NP30


3RP15 33-2AP30


3RP15 40-2BB31

Version	Time setting range *t* adjustable by rotary switch to	Rated control supply voltage U_s AC 50/60 Hz V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Screw terminals Price per PU	Weight per PU approx. kg	DT	Spring-type terminals Order No.	Spring-type terminals Price per PU	Weight per PU approx. kg
3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range											
With LED and 1 CO contact The same potential must be applied to terminals A and B	0.5 ... 10 s	24/100 ... 127	24	A	**3RP15 31-1AQ30**		0.140	C	**3RP15 31-2AQ30**		0.124
		24/200 ... 240	24	▶	**3RP15 31-1AP30**		0.140	C	**3RP15 31-2AP30**		0.122
	1.5 ... 30 s	24/100 ... 127	24	A	**3RP15 32-1AQ30**		0.138	C	**3RP15 32-2AQ30**		0.125
		24/200 ... 240	24	▶	**3RP15 32-1AP30**		0.139	A	**3RP15 32-2AP30**		0.121
	5 ... 100 s	24/100 ... 127	24	A	**3RP15 33-1AQ30**		0.139	C	**3RP15 33-2AQ30**		0.123
		24/200 ... 240	24	▶	**3RP15 33-1AP30**		0.140	C	**3RP15 33-2AP30**		0.125
3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 9 time setting ranges[1]											
With LED and											
1 CO	0.05 ... 1 s 0.15 ... 3 s 0.3 ... 6 s 0.5 ... 10 s 1.5 ... 30 s 3 ... 60 s 5 ... 100 s 15 ... 300 s 30 ... 600 s	24	24[2]	▶	**3RP15 40-1AB31**		0.116	A	**3RP15 40-2AB31**		0.105
		100 ... 127	100...127[3]	▶	**3RP15 40-1AJ31**		0.119	A	**3RP15 40-2AJ31**		0.108
		200 ... 240	200...240[3]	▶	**3RP15 40-1AN31**		0.120	A	**3RP15 40-2AN31**		0.110
		24 ... 240	24 ... 240[3]	▶	**3RP15 40-1AW31**		0.116	A	**3RP15 40-2AW31**		0.105
2 CO		24	24[2]	▶	**3RP15 40-1BB31**		0.159	A	**3RP15 40-2BB31**		0.136
		100 ... 127	100...127[3]	A	**3RP15 40-1BJ31**		0.161	A	**3RP15 40-2BJ31**		0.136
		200 ... 240	200...240[3]	▶	**3RP15 40-1BN31**		0.161	C	**3RP15 40-2BN31**		0.136
		24 ... 240	24 ... 240[3]	▶	**3RP15 40-1BW31**		0.159	A	**3RP15 40-2BW31**		0.136
3RP15 55 timing relays, clock-pulse relay, 15 time setting ranges											
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [4]	42 ... 48/60	42...48/ 60[5]	A	**3RP15 55-1AR30**		0.111	C	**3RP15 55-2AR30**		0.102
		24/100 ... 127	24	▶	**3RP15 55-1AQ30**		0.111	C	**3RP15 55-2AQ30**		0.100
		24/200 ... 240	24	▶	**3RP15 55-1AP30**		0.111	A	**3RP15 55-2AP30**		0.104
3RP15 60 timing relays, wye-delta function, dead interval 50 ms and coasting time, 1 time setting range											
3 NO contacts[3] (common contact root terminal 17)	Wye-delta 1 ... 20 s, coasting time (idling) 30 ... 600 s	24/100 ... 127	24	A	**3RP15 60-1SQ30**		0.172	C	**3RP15 60-2SP30**		0.152
		24/200 ... 240	24	▶	**3RP15 60-1SP30**		0.175		**--**		
3RP15 7. timing relays, wye-delta function[6], dead interval 50 ms, 1 time setting range											
1 NO contact instantaneous and 1 NO contact delayed (common contact root terminal 17)	1 ... 20 s	24/100 ... 127	24	▶	**3RP15 74-1NQ30**		0.113	A	**3RP15 74-2NP30**		0.104
		24/200 ... 240	24	▶	**3RP15 74-1NP30**		0.113	B	**3RP15 74-2NM20**		0.100
		200 ... 240/ 380 ...440	--	B	**3RP15 74-1NM20**		0.113		**--**		
	3 ... 60 s	24/100 ... 127	24	▶	**3RP15 76-1NQ30**		0.112	A	**3RP15 76-2NQ30**		0.102
		24/200 ... 240	24	▶	**3RP15 76-1NP30**		0.113	A	**3RP15 76-2NP30**		0.104
		200 ... 240/ 380 ...440	--	B	**3RP15 76-1NM20**		0.113	B	**3RP15 76-2NM20**		0.100

For accessories, see page 7/44.

1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact changeover to the correct setting.

2) Operating range 0.7 to 1.25 x U_s.

3) Operating range 0.85 to 1.1 x U_s.

4) With switch position ∞ no timing. For test purposes (ON/OFF function) on site. For dead time "infinite", the relay is always off. For pulse time "infinite", the relay is always on.

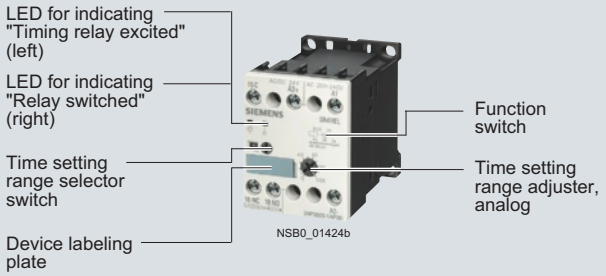
5) Operating range 0.8 to 1.1 x U_s.

6) For example circuit see note on Technical Information on page 7/1.

* You can order this quantity or a multiple thereof.

SIRIUS 3RP20 timing relays, 45 mm

Overview

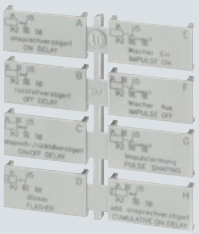


Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1 (DIN VDE 0435 Part 2021) "Specified time relays for industrial use"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- EN 61140 "Electrical protective separation"

Accessories



Label set for marking the multifunction relay

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.

Selection and ordering data

Multifunction

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP20 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

For functions see 3RP19 01 label set, page 7/44.

PU (UNIT, SET, M) = 1, PS* = 1 units, PG = 101

3RP20 05-1BW30

3RP20 25-1AP30

3RP20 05-2BW30

3RP20 25-2AP30

Version	Time setting range *t*	Rated control supply voltage U_s AC 50/60 Hz V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Screw terminals Price per PU	Weight per PU approx. kg	DT	Spring-type terminals Order No.	Spring-type terminals Price per PU	Weight per PU approx. kg
3RP20 05 timing relays, multifunction, 15 time setting ranges											
With LED and 1 CO contact, 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP20 05-1AQ30** **3RP20 05-1AP30**		0.118 0.119	D ▶	**3RP20 05-2AQ30** **3RP20 05-2AP30**		0.120 0.121
With LED and 2 CO contact, 16 functions[1]		24 ... 240[3]	24 ... 240[4]	▶	**3RP20 05-1BW30**		0.128	D	**3RP20 05-2BW30**		0.131
3RP20 25. timing relays, ON-delay, 15 time setting ranges											
With LED and 1 CO contact[1]	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP20 25-1AQ30** **3RP20 25-1AP30**		0.106 0.106	▶ ▶	**3RP20 25-2AQ30** **3RP20 25-2AP30**		0.110 0.108

For accessories, see page 7/44.

[1] Units with electrical protective separation.

[2] With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

[3] Operating range 0.8 ... 1.1 x U_s.

[4] Operating range 0.7 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.

7PV15 timing relays in enclosure, 17.5 mm

Overview

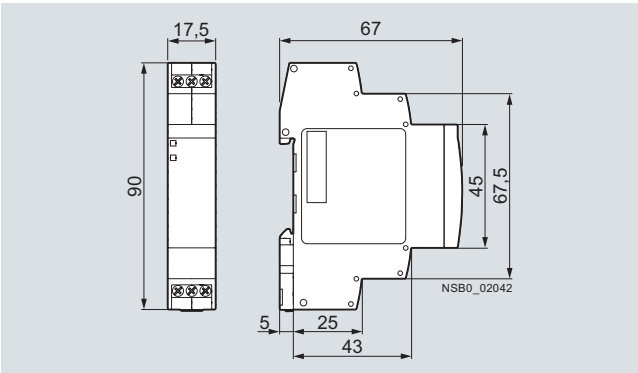
Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1 (DIN VDE 0435 Part 2021) "Specified time relays for industrial use"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- DIN 43880 "Modular installation devices; enclosure dimensions and related mounting dimensions"

Enclosure version

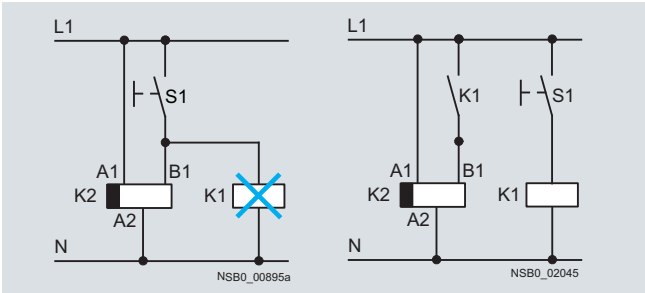
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to EN 60715. The enclosure complies with DIN 43880, 1 MW.



Dimensions

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).



Benefits

- Wide voltage range 12 ... 240 V AC/DC
- High switching capacity, e. g. AC15 at 230 V, 3 A
- Combination voltage, e. g. 24 V AC/DC and 200 ... 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays,
e. g. in functional buildings, airports, industrial buildings etc.

Selection and ordering data

Solid-state timing relays for general use and in control systems, mechanical engineering and infrastructure with:

- 1 changeover contact or 2 changeover contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED


7PV15 08-1AW30


7PV15 12-1AP30


7PV15 18-1AW30


7PV15 38-1AW30


7PV15 40-1AW30


7PV15 58-1AW30


7PV15 78-1BW30

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s AC 50/60 Hz V	Rated control supply voltage U_s DC V	DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
7PV15 08 timing relays, multifunction, 7 time setting ranges										
The functions can be adjusted by means of rotary switches. The same potential must be applied to terminals A. and B.										
With LED and 1 CO contact, 7 functions	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 08-1AW30**		1	1 unit	101	0.136
7PV15 1. timing relays, ON-delay, 1 time setting range										
With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127	24	▶	**7PV15 12-1AQ30**		1	1 unit	101	0.108
		24/200 ... 240	24	▶	**7PV15 12-1AP30**		1	1 unit	101	0.108
	5 ... 100 s	24/100 ... 127	24	▶	**7PV15 13-1AQ30**		1	1 unit	101	0.107
		24/200 ... 240	24	▶	**7PV15 13-1AP30**		1	1 unit	101	0.108
7PV15 18 timing relays, ON-delay, 7 time setting ranges										
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 18-1AW30**		1	1 unit	101	0.159
7PV15 38 timing relays, OFF-delay, with auxiliary voltage, 7 time setting ranges										
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 38-1AW30**		1	1 unit	101	0.140
7PV15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges										
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3s 0.3 ... 6 s 0.5 s ... 10 s 1.5 min ... 30 s 3 ... 60 s 5 ... 100 s	12 ... 240	12 ... 240	▶	**7PV15 40-1AW30**		1	1 unit	101	0.116
7PV15 58 timing relays, clock-pulse relay, 7 time setting ranges										
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 58-1AW30**		1	1 unit	101	0.111
7PV15 78 timing relays, wye-delta function, 7 time setting ranges										
With LED and 2 CO contacts, dead interval 0.05 ... 1 s adjustable	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 78-1BW30**		1	1 unit	101	0.113

* You can order this quantity or a multiple thereof.

SIRIUS 3RT19 timing relays for mounting onto contactors

Selection and ordering data

For contactors	Version	Time setting range *t*	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type		s	V							kg
For size S00[1]										
 3RT19 16-2...	3RT10 1, 3RH11	**Terminal designations acc. to EN 46199-5**								
	• ON-delay (varistor integrated)									
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	**3RT19 16-2EJ11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2EJ21**		1	1 unit	101	0.090
		5 ... 100		B	**3RT19 16-2EJ31**		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127	C	**3RT19 16-2EC11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2EC21**		1	1 unit	101	0.090
		5 ... 100		▶	**3RT19 16-2EC31**		1	1 unit	101	0.090
		0.05 ... 1	200 ... 240	D	**3RT19 16-2ED11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2ED21**		1	1 unit	101	0.090
		5 ... 100		▶	**3RT19 16-2ED31**		1	1 unit	101	0.090
	• OFF-delay without auxiliary voltage (varistor integrated)[2]									
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	**3RT19 16-2FJ11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2FJ21**		1	1 unit	101	0.090
		5 ... 100		▶	**3RT19 16-2FJ31**		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127	C	**3RT19 16-2FK11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2FK21**		1	1 unit	101	0.090
		5 ... 100		B	**3RT19 16-2FK31**		1	1 unit	101	0.090
		0.05 ... 1	200 ... 240	D	**3RT19 16-2FL11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 16-2FL21**		1	1 unit	101	0.090
		5 ... 100		▶	**3RT19 16-2FL31**		1	1 unit	101	0.090
	• OFF-delay with auxiliary voltage (varistor integrated)									
	1 CO	0.5 ... 10	24 AC/DC	B	**3RT19 16-2LJ21**		1	1 unit	101	0.090
			100 ... 127	B	**3RT19 16-2LC21**		1	1 unit	101	0.090
			200 ... 240	C	**3RT19 16-2LD21**		1	1 unit	101	0.090
	• Wye-delta function (varistor integrated)									
	1 NO, delayed + 1 NO, instantaneous, dead time 50 ms	1.5 ... 30	24 AC/DC	▶	**3RT19 16-2GJ51**		1	1 unit	101	0.090
			100 ... 127	D	**3RT19 16-2GC51**		1	1 unit	101	0.090
			200 ... 240	▶	**3RT19 16-2GD51**		1	1 unit	101	0.090
For sizes S0 to S12[3]										
 3RT19 26-2...	3RT10 2, 3RT10 3, 3RT10 4	**Terminal designations acc. to EN 46199-5**								
	• ON-delay									
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	D	**3RT19 26-2EJ11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 26-2EJ21**		1	1 unit	101	0.090
		5 ... 100		A	**3RT19 26-2EJ31**		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127	C	**3RT19 26-2EC11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 26-2EC21**		1	1 unit	101	0.090
		5 ... 100		D	**3RT19 26-2EC31**		1	1 unit	101	0.090
		0.05 ... 1	200 ... 240	D	**3RT19 26-2ED11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 26-2ED21**		1	1 unit	101	0.090
		5 ... 100		B	**3RT19 26-2ED31**		1	1 unit	101	0.090
	• OFF-delay without auxiliary voltage[2]									
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	**3RT19 26-2FJ11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 26-2FJ21**		1	1 unit	101	0.090
		5 ... 100		▶	**3RT19 26-2FJ31**		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127	D	**3RT19 26-2FK11**		1	1 unit	101	0.090
		0.5 ... 10		▶	**3RT19 26-2FK21**		1	1 unit	101	0.090
		5 ... 100		C	**3RT19 26-2FK31**		1	1 unit	101	0.090
		0.05 ... 1	200 ... 240	D	**3RT19 26-2FL11**		1	1 unit	101	0.090
		0.5 ... 10		A	**3RT19 26-2FL21**		1	1 unit	101	0.090
		5 ... 100		A	**3RT19 26-2FL31**		1	1 unit	101	0.090
	• Wye-delta function (varistor integrated)									
	1 NO, delayed + 1 NO, instantaneous, dead time 50 ms	1.5 ... 30	24 AC/DC	▶	**3RT19 26-2GJ51**		1	1 unit	101	0.090
			100 ... 127	▶	**3RT19 26-2GC51**		1	1 unit	101	0.090
			200 ... 240	▶	**3RT19 26-2GD51**		1	1 unit	101	0.090

[1] The terminals for the rated control supply voltage are connected to the contactor beneath by the integrated spring-type contacts of the solid-state time-delay auxiliary switch block when mounting.

[2] Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact changeover to the correct setting.

[3] Terminals A1 and A2 for the control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting cables.

* You can order this quantity or a multiple thereof.

SIRIUS 3RT19 timing relays for mounting onto contactors

For contactors Type	Version	Time setting range t s	Rated control supply voltage U_s V	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
For size S00, with semiconductor output										
3RT1. 1, 3RH11	**For mounting onto the front of contactors** The electrical connection between the timing relay block and the contactor beneath is established automatically when it is snapped on.									
 3RT19 16-2C...	• ON-delay, two-wire design (varistor integrated)									
		0.05 ... 1	24 ... 66	B	**3RT19 16-2CG11**		1	1 unit	101	0.050
		0.5 ... 10		▶	**3RT19 16-2CG21**		1	1 unit	101	0.050
		5 ... 100		B	**3RT19 16-2CG31**		1	1 unit	101	0.050
		0.05 ... 1	90 ... 240	D	**3RT19 16-2CH11**		1	1 unit	101	0.050
		0.5 ... 10		▶	**3RT19 16-2CH21**		1	1 unit	101	0.050
		5 ... 100		▶	**3RT19 16-2CH31**		1	1 unit	101	0.050
 3RT19 16-2D...	• OFF-delay with auxiliary voltage (varistor integrated)									
		0.05 ... 1	24 ... 66	C	**3RT19 16-2DG11**		1	1 unit	101	0.060
		0.5 ... 10		B	**3RT19 16-2DG21**		1	1 unit	101	0.060
		5 ... 100		B	**3RT19 16-2DG31**		1	1 unit	101	0.060
		0.05 ... 1	90 ... 240	D	**3RT19 16-2DH11**		1	1 unit	101	0.060
		0.5 ... 10		▶	**3RT19 16-2DH21**		1	1 unit	101	0.060
		5 ... 100		B	**3RT19 16-2DH31**		1	1 unit	101	0.060
For sizes S0 to S3, with semiconductor output										
3RT10 2, 3RT10 3, 3RT10 4[1]	**For mounting onto coil terminals on top of the contactors** The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the timing relay block to coil terminals A1/A2 on top of the contactor.									
	• ON-delay, two-wire design (varistor integrated)									
 3RT19 26-2C...		0.05 ... 1	24 ... 66	D	**3RT19 26-2CG11**		1	1 unit	101	0.050
		0.5 ... 10		B	**3RT19 26-2CG21**		1	1 unit	101	0.050
		5 ... 100		D	**3RT19 26-2CG31**		1	1 unit	101	0.050
		0.05 ... 1	90 ... 240	▶	**3RT19 26-2CH11**		1	1 unit	101	0.050
		0.5 ... 10		▶	**3RT19 26-2CH21**		1	1 unit	101	0.050
		5 ... 100		▶	**3RT19 26-2CH31**		1	1 unit	101	0.050
	• OFF-delay with auxiliary voltage (varistor integrated)									
 3RT19 26-2D...		0.05 ... 1	24 ... 66	D	**3RT19 26-2DG11**		1	1 unit	101	0.050
		0.5 ... 10		D	**3RT19 26-2DG21**		1	1 unit	101	0.050
		5 ... 100		D	**3RT19 26-2DG31**		1	1 unit	101	0.050
		0.05 ... 1	90 ... 240	C	**3RT19 26-2DH11**		1	1 unit	101	0.050
		0.5 ... 10		D	**3RT19 26-2DH21**		1	1 unit	101	0.050
		5 ... 100		C	**3RT19 26-2DH31**		1	1 unit	101	0.050

[1] Not for 3RT10 4 contactor with 24 ... 42 V rated control supply voltage.

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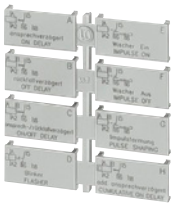
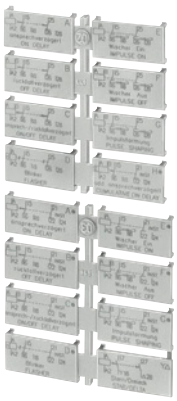
* You can order this quantity or a multiple thereof.

Accessories

Selection and ordering data

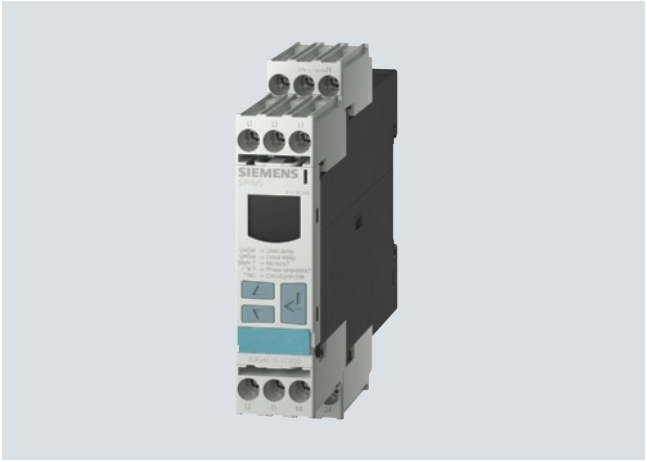
Accessories for 3RP15 and 3RP20

	Version	Function	Identification letter	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
											kg
Label set for 3RP15 and 3RP20											
	Accessory for 3RP15 05 and 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German.										
 3RP19 01-0A	1 label set (1 unit) with 8 functions	With ON-delay	A	for devices with 1 CO contact and 3RP15 05-.RW30	▶	**3RP19 01-0A**		1	5 units	101	0.003
		OFF-delay with auxiliary voltage	B								
		ON-delay and OFF-delay with auxiliary voltage	C								
		Flashing, starting with interval	D								
		Passing make contact	E								
		Passing break contact with auxiliary voltage	F								
		Pulse-forming with auxiliary voltage	G								
		Additive ON-delay with auxiliary voltage	H								
 3RP19 01-0B	1 label set (1 unit) with 16 functions	With ON-delay	A	for devices with 2 CO contacts	▶	**3RP19 01-0B**		1	5 units	101	0.006
		OFF-delay with auxiliary voltage	B								
		ON-delay and OFF-delay with auxiliary voltage	C								
		Flashing, starting with interval	D								
		Passing make contact	E								
		Passing break contact with auxiliary voltage	F								
		Pulse-forming with auxiliary voltage	G								
		Additive ON-delay with auxiliary voltage and instantaneous contact	H•								
		ON-delay and instantaneous contact	A•								
		OFF-delay with auxiliary voltage and instantaneous contact	B•								
		ON-delay and OFF-delay with auxiliary voltage and instantaneous contact	C•								
		Flashing, starting with interval, and instantaneous contact	D•								
		Passing make contact and instantaneous contact	E•								
		Passing break contact with auxiliary voltage and instantaneous contact	F•								
		Pulse-forming with auxiliary voltage and instantaneous contact	G•								
		Wye-delta function	Y Δ								
Blank labels for 3RP15 and 3RP20											
	Blank labels, 20 mm x 7 mm, pastel turquoise[1]			For 3RP15, 3RP20	C	**3RT19 00-1SB20**		100	340 units	101	0.200
Covering caps and push-in lugs for 3RP15											
 3RP19 03	**Push-in lugs** For screw fixing, 2 units are required for each device			For 3RP15 with 1 or 2 CO contacts	▶	**3RP19 03**		1	10 units	101	0.002
 3RP19 02	**Sealable covers** For securing against unauthorized adjustment of setting knobs			For 3RP15 with 1 or 2 CO contacts	▶	**3RP19 02**		1	5 units	101	0.004

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de

* You can order this quantity or a multiple thereof.

Overview



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 unbalance is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exists when at least one phase voltage deviates by 20 % from the set rated system voltage or the directly set limit values are overshot or undershot. The rms value of the voltage is measured.

With the 3UG46 17 or 3UG46 18 relay, a wrong direction of rotation can also be corrected automatically.

Benefits

- Can be used without auxiliary voltage in any network from 160 ... 600 V AC worldwide thanks to wide voltage range
- Variably adjustable to overvoltage, undervoltage 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 terminals or alternatively with innovative 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

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Line monitoring

Selection and ordering data


3UG45 11-1AP20


3UG46 15-1CR20


3UG46 16-1CR20


3UG46 17-1CR20


3UG46 18-1CR20


3UG45 11-2BP20


3UG45 12-2BR20

PU (UNIT, SET, M) =1
PS* = 1 unit
PG = 101

Hysteresis	Under-voltage detection	Over-voltage detection	ON-delay	Tripping delay	Auxiliary contacts Version	Rated control supply voltage U_s [1]	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx.
			s	s	CO contact	V							kg
Monitoring of phase sequence													
Auto-RESET													
--	--	--	--	--	1	160 … 260 AC	A	**3UG45 11-1AN20**		B	**3UG45 11-2AN20**		0.147
					2		A	**3UG45 11-1BN20**		B	**3UG45 11-2BN20**		0.147
					1	320 … 500 AC	A	**3UG45 11-1AP20**		A	**3UG45 11-2AP20**		0.147
					2		A	**3UG45 11-1BP20**		B	**3UG45 11-2BP20**		0.147
					1	420 … 690 AC	B	**3UG45 11-1AQ20**		B	**3UG45 11-2AQ20**		0.147
					2		B	**3UG45 11-1BQ20**		B	**3UG45 11-2BQ20**		0.147
Monitoring of phase sequence, phase failure and phase unbalance													
Auto-RESET, closed-circuit principle, unbalance threshold 10 %													
--	--	--	--	--	1	160 … 690 AC	A	**3UG45 12-1AR20**		A	**3UG45 12-2AR20**		0.147
					2		A	**3UG45 12-1BR20**		A	**3UG45 12-2BR20**		0.147
Monitoring of phase sequence, phase failure, unbalance and undervoltage													
Analog adjustable, Auto-RESET, closed-circuit principle, fixed unbalance threshold 20 %													
5 % of set value	✓	--	--	0.1 … 20	2	160 … 690 AC	A	**3UG45 13-1BR20**		A	**3UG45 13-2BR20**		0.147
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %													
Adjustable 1 ... 20 V	✓	--	0.1 ... 20	0.1 … 20	2	160 … 690 AC	A	**3UG46 14-1BR20**		A	**3UG46 14-2BR20**		0.147
Monitoring of phase sequence, phase failure, overvoltage and undervoltage													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20 [2]	2 [2]	160 … 690 AC	A	**3UG46 15-1CR20**		A	**3UG46 15-2CR20**		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	A	**3UG46 16-1CR20**		A	**3UG46 16-2CR20**		0.147
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage													
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5...20 %													
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2 [3]	160 … 690 AC	A	**3UG46 17-1CR20**		B	**3UG46 17-2CR20**		0.147
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage													
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5...20 %													
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2 [3]	90… 400 AC against N	A	**3UG46 18-1CR20**		B	**3UG46 18-2CR20**		0.147

✓ Function available -- Function not available

[1] Absolute limit values.

[2] 1 CO contact each and 1 tripping delay time each for U_{min} and U_{max}.

[3] 1 CO contact each for power system fault and phase sequence correction.

For accessories, see page 7/57.

* You can order this quantity or a multiple thereof.

Overview

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 overvoltage, undervoltage 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 terminals or alternatively with innovative 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 against overloaded control supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 ... 10 V

Selection and ordering data

3UG46 31-1AA30

3UG46 33-2AL30

PU (UNIT, SET, M) =1
PS* = 1 unit
PG = 101

Measuring range	Hysteresis	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx.
V	V	V							kg
Internal power supply without auxiliary voltage, ON-delay and tripping delay can be adjusted separately 0.1 ... 20 s									
Digitally adjustable, LC display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact									
17 … 275 AC/DC	0.1 ... 150	17 … 275 AC/DC[1]	A	**3UG46 33-1AL30**		A	**3UG46 33-2AL30**		0.147
Supplied from an external auxiliary voltage, tripping delay adjustable 0.1 ... 20 s									
Digitally adjustable, LC display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact									
0.1 … 60 AC/DC	0.1 ... 30	24 AC/DC	A	**3UG46 31-1AA30**		B	**3UG46 31-2AA30**		0.147
10 … 600 AC/DC	0.1 ... 300		A	**3UG46 32-1AA30**		B	**3UG46 32-2AA30**		0.147
0.1 … 60 AC/DC	0.1 ... 30	24 … 240 AC/DC	A	**3UG46 31-1AW30**		B	**3UG46 31-2AW30**		0.147
10 … 600 AC/DC	0.1 ... 300		A	**3UG46 32-1AW30**		B	**3UG46 32-2AW30**		0.147

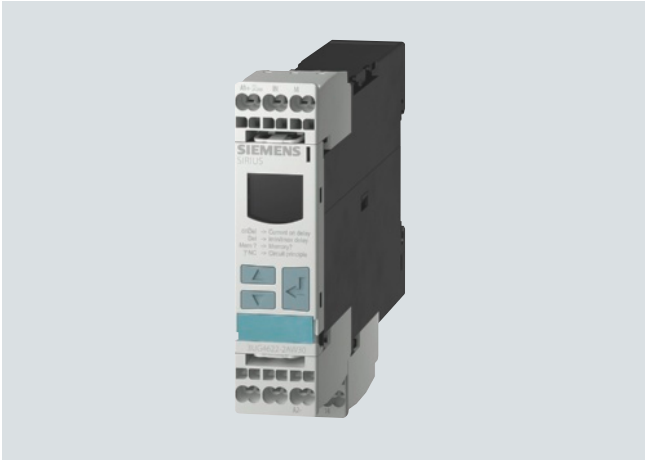
For accessories, see page 7/57.

[1] Absolute limit values.

* You can order this quantity or a multiple thereof.

Current monitoring

Overview



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 supply voltage types.

Benefits

- Versions with wide voltage supply range
- Variably adjustable to overvoltage, undervoltage 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 terminals or alternatively with innovative spring-type terminals

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for analog signals from 4 ... 20 mA

Selection and ordering data

3UG46 21-1AA30

3UG46 22-2AW30

PU (UNIT, SET, M) =1
PS* = 1 unit
PG = 101

Measuring range	Hysteresis	Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals	Weight per PU approx.
		V		Order No. / Price per PU		Order No. / Price per PU	kg
Monitoring of undercurrent and overcurrent, on-delay and tripping delay can be adjusted separately 0.1 ... 20 s							
Digitally adjustable, LCD, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact							
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 AC/DC[1]	A	**3UG46 21-1AA30**	B	**3UG46 21-2AA30**	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	**3UG46 22-1AA30**	B	**3UG46 22-2AA30**	0.147
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 ... 240[2] AC/DC	A	**3UG46 21-1AW30**	B	**3UG46 21-2AW30**	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	**3UG46 22-1AW30**	A	**3UG46 22-2AW30**	0.147

For accessories, see page 7/57.

With currents I > 10 A it is possible to use 4NC current transformers as an accessory, see Chapter 16.

1) No electrical separation. Load supply voltage 24 V.

2) Electrical separation between control circuit and measuring circuit. Load supply voltage for safe isolation max. 300 V, for simple isolation max. 500 V.

* You can order this quantity or a multiple thereof.

Overview

The 3UG46 41 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Benefits

- Can be used world-wide thanks to wide voltage range from 90 ... 690 V[1)]
- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values through the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor or active current can be selected as measurement principle

1) Absolute limit values.

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e. g. in the event of pump no-load operation
- Monitoring of overload, e. g. due to a dirty filter system
- Simple power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

Selection and ordering data

Relay for monitoring the power factor and the active current I_{res} (p.f. x I)

- Suitable for single- and three-phase currents
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring
- Upper and lower threshold value can be adjusted separately
- Permanent display of actual value and tripping state
- 1 changeover contact each for undershoot/overshoot
- All terminals are removable
- Width 22.5 mm

Measuring range		Hysteresis		ON-delay	OFF-delay	Rated control supply voltage U_s[1)]	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
For power factor	For active current	For power factor	For active current			AC 50/60 Hz		Order No. / Price per PU				
p.f.	A	p.f.	A	s	s	V						kg
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	A	**3UG46 41-1CS20**	1	1 unit	101	0.147

Measuring range		Hysteresis		ON-delay	OFF-delay	Rated control supply voltage U_s[1)]	DT	**Spring-type terminals**	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
For power factor	For active current	For power factor	For active current			AC 50/60 Hz		Order No. / Price per PU				
p.f.	A	p.f.	A	s	s	V						kg
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	B	**3UG46 41-2CS20**	1	1 unit	101	0.147

For accessories, see page 7/57.

With active currents > 10 A it is possible to use 4NC current transformers as an accessory, see Chapter 16.

1) Absolute limit values.

* You can order this quantity or a multiple thereof.

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Residual current monitoring: Residual-current monitoring relays

Overview

The 3UG46 24 residual current monitoring relay is used together with the 3UL22 summation current transformer for plant monitoring.

Application

- Plant monitoring

Selection and ordering data

Relay for monitoring residual currents $I_{\Delta n}$ 0.3 ... 40 A

- For 3UL22 summation current transformers with feed-through opening 40 ... 120 mm
- Digital adjustable, with illuminated LC display
- Separately adjustable limit value and warning threshold
- Permanent display of actual value and tripping state
- 1 CO contact each for limit violation and warning threshold
- All terminals are removable
- Width 22.5 mm

Display range	Setting range	Hysteresis		ON / tripping delay time	Rated control supply voltage U_s [2]	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Limit value	Warning value				Order No.	Price per PU				
A	A	A	A	s	V							kg
10 ... 120 % of $I_{\Delta n}$	10 ... 100 % of $I_{\Delta n}$	LSB [1] up to 50 % of $I_{\Delta n}$	5 % of $I_{\Delta n}$	0.1 ... 20	90 ... 690	A	**3UG46 24-1CS20**		1	1 unit	101	0.147

Display range	Setting range	Hysteresis		ON / tripping delay time	Rated control supply voltage U_s [2]	DT	**Spring-type terminals**		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		Limit value	Warning value				Order No.	Price per PU				
A	A	A	A	s	V							kg
10 ... 120 % of $I_{\Delta n}$	10 ... 100 % of $I_{\Delta n}$	LSB [1] up to 50 % of $I_{\Delta n}$	5 % of $I_{\Delta n}$	0.1 ... 20	90 ... 690	B	**3UG46 24-2CS20**		1	1 unit	101	0.130

For accessories, see page 7/57.

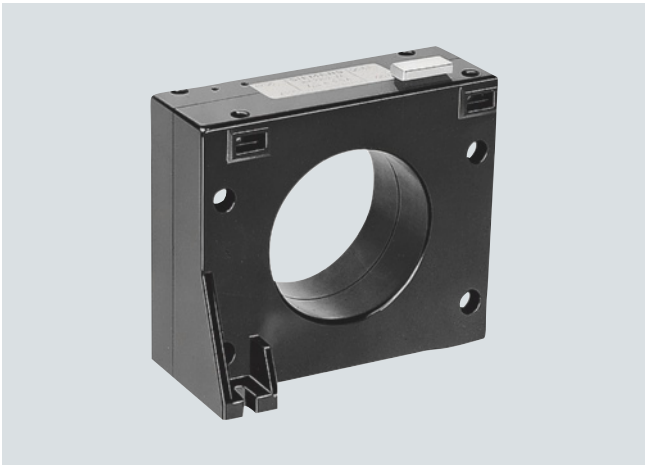
For 3UL22 summation current transformers see page 7/51.

[1] LSB: Smallest adjustable value, transformer-dependent, ≤ 1 % of $I_{\Delta n}$.

[2] Absolute limit values.

* You can order this quantity or a multiple thereof.

Overview



The 3UL22 summation current transformers sense fault currents in machines and plants. Together with the 3UG46 24 residual current monitoring relay or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

Application

- Plant monitoring

Selection and ordering data

	Feed-through opening diameter	Rated insulation voltage U_i	Rated fault current $I_{\Delta n}$	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm	V	A							kg
Summation current transformer (essential accessory for 3UG46 24 or SIMOCODE 3UF)										
 3UL22	40	690	0.3	B	**3UL22 01-1A**		1	1 unit	101	0.571
			0.5	B	**3UL22 01-2A**		1	1 unit	101	0.408
			1	B	**3UL22 01-3A**		1	1 unit	101	0.324
	65	690	0.3	B	**3UL22 02-1A**		1	1 unit	101	0.900
			0.5	B	**3UL22 02-2A**		1	1 unit	101	0.713
			1	B	**3UL22 02-3A**		1	1 unit	101	0.568
			6	C	**3UL22 02-1B**		1	1 unit	101	0.561
			10	C	**3UL22 02-2B**		1	1 unit	101	0.563
			16	C	**3UL22 02-3B**		1	1 unit	101	0.573
			25	C	**3UL22 02-4B**		1	1 unit	101	0.575
			40	C	**3UL22 02-5B**		1	1 unit	101	0.564
	120	1000	0.3	B	**3UL22 03-1A**		1	1 unit	101	3.435
			0.5	B	**3UL22 03-2A**		1	1 unit	101	2.810
			1	B	**3UL22 03-3A**		1	1 unit	101	1.965
			6	C	**3UL22 03-1B**		1	1 unit	101	1.955
			10	C	**3UL22 03-2B**		1	1 unit	101	1.990
			16	C	**3UL22 03-3B**		1	1 unit	101	1.917
			25	C	**3UL22 03-4B**		1	1 unit	101	1.851
			40	C	**3UL22 03-5B**		1	1 unit	101	1.905

* You can order this quantity or a multiple thereof.

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded AC networks

Overview

Relay for monitoring the insulation resistance between the ungrounded single or three-phase AC supply and a protective conductor

- Measuring principle with superimposed DC voltage
- Two selectable measuring ranges of 1 ... 110 kΩ
- Stepless setting within the measuring range
- Selectable:
  - Auto reset function with fixed hysteresis or
  - Storage of the tripping operation
- Test function with test button on the front and over terminal connections
- Switching output: 1 CO
- Insulation fault indication with a red LED
- Control supply voltage indication with a green LED
- Electromagnetically compatible according to EN 61000-6-2 and EN 61000-6-4

Application

The 3UG30 81 monitoring device is suitable for insulation monitoring of AC systems with one or three phases in ungrounded networks (IT networks).

Control supply voltage

The 3UG30 81-1AK20 has alternative voltage terminals. Only one control supply voltage is permitted to be connected to it! Terminals A1 and A2 are used to connect 230 V AC and terminals A1 and B2 are used to connect 115 V AC.

The 3UG30 81-1AW30 has a wide-range input of 24 ... 240 V AC/DC on terminals A1 and A2.

Selection and ordering data

	Measuring range U_e	Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU				
	kΩ	V							kg
Insulation monitors for ungrounded AC networks									
	1 ... 110	115 / 230 AC	A	**3UG30 81-1AK20**		1	1 unit	101	0.327
		24 ... 240 AC/DC	B	**3UG30 81-1AW30**		1	1 unit	101	0.242

3UG30 81-1AK20

For accessories, see page 7/57.

* You can order this quantity or a multiple thereof.

Overview

Relay for monitoring the insulation resistance between ungrounded pure DC networks and a protective conductor

- Measuring principle for residual current measurement
- Response value can be adjustable steplessly from 10 to 110 kΩ
- Selectable
  - Auto reset function with hysteresis or
  - Storage of the tripping operation
- Front selector switch for open-circuit and closed-circuit principle for the output relay
- Test function with test buttons on the front for L+ and L- and over terminal connections
- Switching output: 1 CO
- Insulation fault indicator for L+ and L- through two red LEDs
- Control supply voltage indication with a green LED
- Electromagnetically compatible according to EN 61000-6-2 and EN 61000-6-4

Application

The 3UG30 82 monitoring relay has been designed for insulation monitoring in ungrounded, purely DC networks with or without filtering.
It is mainly used to monitor ungrounded DC voltage networks as well as to monitor battery-powered systems.

Control supply voltage

Due to the electrical isolation of the supply voltage and the measuring circuit, the relay can be used for DC networks in which the auxiliary voltage is either supplied externally or where the network to be monitored also serves as the power supply.

Note:

If the monitoring relay is supplied with an external voltage, then the terminals A1 and L+ as well as A2 and L- must not be connected with each other!

Selection and ordering data

Measuring range U_e	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			Order No. / Price per PU				
kΩ	V						kg
Insulation monitors for ungrounded DC networks							
10 ... 110	24 ... 240	B	**3UG30 82-1AW30**	1	1 unit	101	0.233

3UG30 82-1AW30

For accessories, see page 7/57.

* You can order this quantity or a multiple thereof.

SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Level monitoring: Level monitoring relays

Overview

The 3UG45 01 level monitoring relay is used together with 2- or 3-pole sensors to monitor the levels of conductive liquids.

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry run protection
- Leak monitoring

Selection and ordering data

Level monitoring relay for conductive liquids
- Control principle: inlet or outlet control per rotary switch
- Single-point and two-point control possible
- Analog adjustable sensitivity (specific resistance of the liquid)
- Analog adjustable tripping delay time
- 1 yellow LED for indicating the relay state
- 1 green LED for indicating the applied control supply voltage
- 1 CO
- All terminals are removable
- Width 22.5 mm

PU (UNIT, SET, M) =1, PS* =1 units, PG =101

Sensitivity	Tripping delay time	Rated control supply voltage U_s	DT	**Screw terminals**		DT	**Spring-type terminals**		Weight per PU approx.
kΩ	s	V AC/DC		Order No.	Price per PU		Order No.	Price per PU	kg
2 ... 200	0.5 ... 10	24[1)]	A	**3UG45 01-1AA30**		A	**3UG45 01-2AA30**		0.110
		24 ... 240	A	**3UG45 01-1AW30**		A	**3UG45 01-2AW30**		0.120

For accessories, see page 7/57.

For level monitoring sensors see page 7/55.

1) The rated control supply voltage and the measuring circuit are not electrically separated.

* You can order this quantity or a multiple thereof.

Selection and ordering data

Version	Assignment Cables	Assignment Electrode	Application	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Level monitoring sensors (essential accessory)										
With Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm², 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar The wire electrodes can be cut or bent to the required length before or after installation. The Teflon insulation must be removed over a length of approx. 5 mm.										
 3UG32 07-3A **Three-pole wire electrode** 500 mm long	Brown White Green	Center electrode Not assignable	For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	▶	**3UG32 07-3A**		1	1 unit	101	0.254
 3UG32 07-2A **Two-pole wire electrode** 500 mm long	Brown White	Not assignable	For alarm indication in the event of overflow or low level and for 2-point liquid level control, when the conductive tank is used as the reference electrode.	▶	**3UG32 07-2A**		1	1 unit	101	0.230
 3UG32 07-2B **Two-pole bow electrode**	Brown White Green	Gland Not assignable	Thanks to the small space requirements due to lateral fitting, ideal for use in small containers and pipes, as a leak monitor and level monitor or for warning of water entering an enclosure.	▶	**3UG32 07-2B**		1	1 unit	101	0.128
 3UG32 07-1B **Single-pole bow electrode for lateral fitting**	Brown White	Gland Electrode	As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	▶	**3UG32 07-1B**		1	1 unit	101	0.122
 3UG32 07-1C **Single-pole rod electrode for lateral fitting**	Brown White	Gland Electrode	For high flow velocities or for intensively sparkling fluids.	C	**3UG32 07-1C**		1	1 unit	101	0.144

* You can order this quantity or a multiple thereof.

Speed monitoring

Overview

The 3UG46 51 monitoring relay is used together with a sensor to monitor motor drives for overspeed and/or underspeed.

Furthermore, this 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).

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Selection and ordering data

Relay for speed monitoring in min $^{-1}$ (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Integrated sensor supply 24 V DC/50 mA
- Input frequency 0.1 ... 2200 pulses min $^{-1}$ (0.0017 ... 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring
- 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
- All terminals are removable
- Width 22.5 mm

PU (UNIT, SET, M) =1, PS* =1 units, PG =101

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revolution	Rated control supply voltage U_s AC/DC	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx.
rpm	rpm	s	s		V							kg
0.1 ... 2200	OFF	0 ... 900	0.1 ... 99.9	1 ... 10	24[1]	A	**3UG46 51-1AA30**		A	**3UG46 51-2AA30**		0.120
	0.1 ... 99.9				24 ... 240	A	**3UG46 51-1AW30**		A	**3UG46 51-2AW30**		0.130

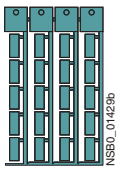
For accessories, see page 7/57.

For matching sensors see Catalog FS 10 "Sensors for Production Automation".

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

* You can order this quantity or a multiple thereof.

Selection and ordering data

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels									
 3RT19 00-1SB10	For 3UG4	**Unit labeling plates** For SIRIUS devices							
		20 mm x 7 mm, pastel turquoise [1]	C	**3RT19 00-1SB20**		100	340 units	101	0.200
	For 3UG4	**Inscription labels for sticking** For SIRIUS devices							
		19 mm x 6 mm, pastel turquoise	D	**3RT19 00-1SB60**		100	3060 units	101	15.000
		19 mm x 6 mm, zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	101	12.000
Push-in lugs and covers									
 3RP19 03	For 3UG4	**Push-in lugs** For screw fixing, 2 units are required for each device	►	**3RP19 03**		1	10 units	101	0.002
 3RP19 02	For 3UG4	**Sealable covers** For securing against unauthorized adjustment of setting knobs	►	**3RP19 02**		1	5 units	101	0.004
Covers for insulation monitoring relays									
	For 3UG30 81, 3UG30 82	**Sealable, transparent covers**	C	**3UG32 08-1A**		1	1 unit	101	0.010
Tools for opening spring-type terminals by hand									
 8WH9 200-0AA00	For auxiliary circuit connections	**Screwdrivers,** 2.5 mm x 0.4 mm, length approx. 160 mm; green, suitable for a max. conductor cross-section of 1.5 mm^2	C	**8WH9 200-0AA00**		1	10 units	044	0.032
Tools for opening screw terminals									
 8WA2 803	For main and auxiliary circuit connections	**Screwdrivers,** 3.5 mm x 0.5 mm, suitable for a max. conductor cross-section of 2.5 mm^2							
		Length approx. 175 mm; green, partially insulated	C	**8WA2 880**		1	1 unit	041	0.034
		Length approx. 175 mm; green	C	**8WA2 803**		1	1 unit	041	0.024

[1] PC labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH
www.murrplastik.de

Note: SIPLUS CMS1000 condition monitoring for bearings

Condition monitoring has become an indispensable aspect of machine and plant monitoring systems. It puts the user in a better position to plan and verify his maintenance operations and to perform them when they are actually necessary.

With the SIPLUS CMS1000 bearing monitor and a sensor, rolling bearings (e. g. motor rolling bearings) are monitored for long-term damage.

The compact system offers:
- A cost-efficient solution for monitoring bearings
- Monitoring of bearings on motors with variable and non-variable speed
- Monitoring of motors with rolling bearings based on VDI3832
- Teach mode for easy start-up
- Digitally adjustable with LCD for configuration and indication of the diagnostics value
- Adjustable threshold values for warning and alarm
- Two relay outputs for switching in case of warning and alarm
- An acceleration sensor for mounting on the motor to be monitored

Technical information is available at
www.siemens.com/siplus-cms

* You can order this quantity or a multiple thereof.

Relays, analog adjustable, for 1 sensor

Overview

The 3RS10/3RS11 analog temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensors in the medium, evaluated by the device and monitored for overshoot or undershoot. When the threshold values are reached, the output relay switches on or off depending on the parameterization.

Benefits

- All devices except for 24 V AC/DC feature electrical separation
- Extremely easy operation using a rotary potentiometer
- Variable hysteresis
- Adjustable working principle for devices with 2 threshold values
- All versions with removable terminals
- All versions with screw terminals, many versions alternatively with spring-type connections

Application

The analogically adjustable SIRIUS 3RS10/3RS11 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e. g. in the monitoring of set temperature limits and the output of alarm messages for:

- Motor and system protection
- Control cabinet temperature monitoring
- Freeze monitoring
- Temperature limits for process variables e. g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Selection and ordering data

Temperature monitoring relays with resistance sensors or thermoelements

- Temperature range -55 °C ... +1000 °C, depending on sensor type
- Wide voltage range versions are electrically isolated.
- Analog adjustable, setting accuracy ±5 %
- Versions with 2 separately adjustable threshold values and adjustable open/closed-circuit principle
- Hysteresis for threshold value 1 is adjustable (2 ... 20 %), hysteresis for threshold 2 is non-adjustable (5 %)
- 1 NC + 1 NO for versions with one threshold value
- 1 CO for threshold value 1 and 1 NO for threshold value 2
- All terminals are removable
- Width 22.5 mm

	Sensor	Function	Measuring range	Rated control supply voltage U_s AC 50/60 Hz	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			°C	V							kg
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC											
 3RS10 00-1CD10	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS10 00-1CD00**		1	1 unit	101	0.150
				110 / 230 AC	A	**3RS10 00-1CK00**		1	1 unit	101	0.190
			0 … + 100	24 AC/DC	C	**3RS10 00-1CD10**		1	1 unit	101	0.145
				110 / 230 AC	A	**3RS10 00-1CK10**		1	1 unit	101	0.189
			0 … + 200	24 AC/DC	C	**3RS10 00-1CD20**		1	1 unit	101	0.145
				110 / 230 AC	A	**3RS10 00-1CK20**		1	1 unit	101	0.186
		Undershoot	- 50 … + 50	24 AC/DC	C	**3RS10 10-1CD00**		1	1 unit	101	0.150
				110 / 230 AC	A	**3RS10 10-1CK00**		1	1 unit	101	0.186
			0 … + 100	24 AC/DC	C	**3RS10 10-1CD10**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS10 10-1CK10**		1	1 unit	101	0.190
			0 … + 200	24 AC/DC	C	**3RS10 10-1CD20**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS10 10-1CK20**		1	1 unit	101	0.191
 3RS11 00-1CK30	Type J (thermoelement)	Overshoot	0 … + 200	24 AC/DC	A	**3RS11 00-1CD20**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS11 00-1CK20**		1	1 unit	101	0.190
			0 … + 600	24 AC/DC	C	**3RS11 00-1CD30**		1	1 unit	101	0.149
				110 / 230 AC	C	**3RS11 00-1CK30**		1	1 unit	101	0.190
	Type K (thermoelement)	Overshoot	0 … + 200	24 AC/DC	C	**3RS11 01-1CD20**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS11 01-1CK20**		1	1 unit	101	0.190
			0 … + 600	24 AC/DC	C	**3RS11 01-1CD30**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS11 01-1CK30**		1	1 unit	101	0.190
			+ 500 … + 1000	24 AC/DC	C	**3RS11 01-1CD40**		1	1 unit	101	0.150
				110 / 230 AC	C	**3RS11 01-1CK40**		1	1 unit	101	0.190

* You can order this quantity or a multiple thereof.

Relays, analog adjustable, for 1 sensor

	Sensor	Function	Measuring range	Rated control supply voltage U_s AC 50/60 Hz	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			°C	V		Order No. / Price per PU				kg
Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO										
 3RS10 20-1DD00	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS10 20-1DD00**	1	1 unit	101	0.166
				24 … 240 AC/DC	C	**3RS10 20-1DW00**	1	1 unit	101	0.175
			0 … + 100	24 AC/DC	C	**3RS10 20-1DD10**	1	1 unit	101	0.164
				24 … 240 AC/DC	C	**3RS10 20-1DW10**	1	1 unit	101	0.175
			0 … + 200	24 AC/DC	C	**3RS10 20-1DD20**	1	1 unit	101	0.166
				24 … 240 AC/DC	A	**3RS10 20-1DW20**	1	1 unit	101	0.175
		Undershoot	-50 … + 50	24 AC/DC	C	**3RS10 30-1DD00**	1	1 unit	101	0.165
				24 … 240 AC//DC	C	**3RS10 30-1DW00**	1	1 unit	101	0.174
			0 … + 100	24 AC/DC	C	**3RS10 30-1DD10**	1	1 unit	101	0.166
				24 … 240 AC/DC	C	**3RS10 30-1DW10**	1	1 unit	101	0.175
			0 … + 200	24 AC/DC	C	**3RS10 30-1DD20**	1	1 unit	101	0.163
				24 … 240 AC/DC	C	**3RS10 30-1DW20**	1	1 unit	101	0.173
 3RS11 21-1DD40	Type J (thermoelement)	Overshoot	0 … + 200	24 AC/DC	C	**3RS11 20-1DD20**	1	1 unit	101	0.165
				24 … 240 AC/DC	C	**3RS11 20-1DW20**	1	1 unit	101	0.175
			0 … + 600	24 AC/DC	C	**3RS11 20-1DD30**	1	1 unit	101	0.167
				24 … 240 AC/DC	C	**3RS11 20-1DW30**	1	1 unit	101	0.175
	Type K (thermoelement)	Overshoot	0 ... + 200	24 … 240 AC/DC	C	**3RS11 21-1DW20**	1	1 unit	101	0.179
			0 ... + 600	24 … 240 AC/DC	C	**3RS11 21-1DW30**	1	1 unit	101	0.176
			+ 500 … + 1000	24 AC/DC	C	**3RS11 21-1DD40**	1	1 unit	101	0.167

	Sensor	Function	Measuring range	Rated control supply voltage U_s AC 50/60 Hz	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			°C	V		Order No. / Price per PU				kg
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC										
 3RS10 00-2CD10	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS10 00-2CD00**	1	1 unit	101	0.125
				110 / 230 AC	C	**3RS10 00-2CK00**	1	1 unit	101	0.163
			0 … + 100	24 AC/DC	C	**3RS10 00-2CD10**	1	1 unit	101	0.125
				110 / 230 AC	C	**3RS10 00-2CK10**	1	1 unit	101	0.165
			0 … + 200	24 AC/DC	C	**3RS10 00-2CD20**	1	1 unit	101	0.121
				110 / 230 AC	C	**3RS10 00-2CK20**	1	1 unit	101	0.165
	Type J (thermoelement)	Overshoot	0 ... + 200	24 AC/DC	C	**3RS11 00-2CD20**	1	1 unit	101	0.125
Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO										
 3RS11 20-2DD20	PT100 (resistance sensor)	Overshoot	0 ... + 200	24 … 240 AC/DC	C	**3RS10 20-2DW20**	1	1 unit	101	0.153
		Undershoot	0 ... + 200	24 AC/DC	C	**3RS10 30-2DD20**	1	1 unit	101	0.145
	Type J (thermoelement)	Overshoot	0 ... + 200	24 AC/DC	C	**3RS11 20-2DD20**	1	1 unit	101	0.140

For accessories, see page 7/63.

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* You can order this quantity or a multiple thereof.

Relays, digitally adjustable, for 1 sensor

Overview

The 3RS10/3RS11 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function).

The relays are also an excellent alternative to temperature controllers in the low-end performance range (2-or 3-point control).

Benefits

- Very simple operation without complicated menu selections
- Two- or three-point control can be configured quickly
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-type terminals

Application

The 3RS10 40, 3RS10 42, 3RS11 40, 3RS11 42, 3RS20 40 and 3RS21 40 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e. g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e. g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Selection and ordering data

Temperature monitoring relays with resistance sensors or thermoelements

- Temperature range -99 ... +1800 °C, depending on sensor type
- Wide voltage range versions are electrically isolated.
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring
- Exact sensor type can be set
- 2 separately adjustable threshold values
- 1 hysteresis applies to both thresholds (0 ... 99 K)
- 1 delay time applies to both thresholds (0 ... 999 s)
- Adjustable open/closed-circuit principle
- Adjustable manual/remote reset
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring
- All terminals are removable
- Width 45 mm

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s AC 50/60 Hz	DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		V							kg
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile									
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 500 °C	24 AC/DC	A	**3RS10 40-1GD50**		1	1 unit	101	0.317
		24 … 240 AC/DC	A	**3RS10 40-1GW50**		1	1 unit	101	0.329
	- 58 … + 932 °F	24 AC/DC	C	**3RS20 40-1GD50**		1	1 unit	101	0.189
		24 … 240 AC/DC	C	**3RS20 40-1GW50**		1	1 unit	101	0.186
TYPE J, K, T, E, N (thermoelement)	- 99 … + 999 °C	24 AC/DC	A	**3RS11 40-1GD60**		1	1 unit	101	0.318
		24 … 240 AC/DC	A	**3RS11 40-1GW60**		1	1 unit	101	0.329
	- 99 … + 1830 °F	24 AC/DC	C	**3RS21 40-1GD60**		1	1 unit	101	0.317
		24 … 240 AC/DC	C	**3RS21 40-1GW60**		1	1 unit	101	0.317
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile									
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 750 °C	24 AC/DC	A	**3RS10 42-1GD70**		1	1 unit	101	0.317
		24 … 240 AC/DC	A	**3RS10 42-1GW70**		1	1 unit	101	0.331
TYPE J, K, T, E, N, R, S, B (thermoelement)	- 99 … +1800 °C	24 AC/DC	C	**3RS11 42-1GD80**		1	1 unit	101	0.318
		24 … 240 AC/DC	A	**3RS11 42-1GW80**		1	1 unit	101	0.329

3RS10 40-1GD50

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

* You can order this quantity or a multiple thereof.

Relays, digitally adjustable, for 1 sensor

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s AC 50/60 Hz	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		V		Order No. / Price per PU				kg
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile								
 3RS10 40-2GW50								
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 500 °C	24 AC/DC	A	**3RS10 40-2GD50**	1	1 unit	101	0.267
		24 … 240 AC/DC	A	**3RS10 40-2GW50**	1	1 unit	101	0.281
	- 58 … + 932 °F	24 AC/DC	C	**3RS20 40-2GD50**	1	1 unit	101	0.100
		24 … 240 AC/DC	C	**3RS20 40-2GW50**	1	1 unit	101	0.100
TYPE J, K, T, E, N (thermoelement)	- 99 … + 999 °C	24 AC/DC	C	**3RS11 40-2GD60**	1	1 unit	101	0.269
		24 … 240 AC/DC	C	**3RS11 40-2GW60**	1	1 unit	101	0.300
	- 99 … + 1830 °F	24 AC/DC	C	**3RS21 40-2GD60**	1	1 unit	101	0.100
		24 … 240 AC/DC	C	**3RS21 40-2GW60**	1	1 unit	101	0.100
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile								
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	-50 … +750 °C	24 AC/DC	C	**3RS10 42-2GD70**	1	1 unit	101	0.267
		24 … 240 AC/DC	C	**3RS10 42-2GW70**	1	1 unit	101	0.281
TYPE J, K, T, E, N, R, S, B (thermoelement)	-99 … +1800 °C	24 AC/DC	C	**3RS11 42-2GD80**	1	1 unit	101	0.269
		24 … 240 AC/DC	C	**3RS11 42-2GW80**	1	1 unit	101	0.300

For accessories, see page 7/63.

1) NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

* You can order this quantity or a multiple thereof.

Relays, digitally adjustable, for up to 3 sensors

Overview

The 3RS10 41 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function). The evaluation unit can evaluate up to 3 resistance sensors at the same time and is specially designed for monitoring motor windings and bearings.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- All devices are available alternatively with spring-type terminals
- Two- or three-point control can be configured quickly
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-type terminals

Application

The 3RS10 41 temperature monitoring relays can be used in almost any application in which several temperatures have to be monitored simultaneously for overshoot or undershoot or within a range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e. g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or
- warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Selection and ordering data

Relay for monitoring the temperatures of solids, liquids, and gases

- For two- and three-conductor resistance sensors or thermoelements
- Temperature range -99 ...+1800 °C, depending on sensor type
- Wide voltage range versions are electrically isolated.
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring
- Exact sensor type and number of sensors can be set
- 2 separately adjustable threshold values
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Adjustable open/closed-circuit principle
- With connectable and disconnectable error memory
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring
- All terminals are removable
- Width 45 mm

Sensor	Number of sensors	Measuring range	Rated control supply voltage U_s	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		°C	V		Order No. / Price per PU				kg
Motor monitoring relay, digitally adjustable for 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO									
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	1 ... 3 sensors	-50 ... +500	24 ...240 AC/DC	A	**3RS10 41-1GW50**	1	1 unit	101	0.333

3RS10 41-1GW50

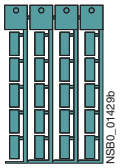
Sensor	Number of sensors	Measuring range	Rated control supply voltage U_s	DT	**Spring-type terminals**	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		°C	V		Order No. / Price per PU				kg
Motor monitoring relay, digitally adjustable for 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO									
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	1 ... 3 sensors	-50 ... +500	24 ...240 AC/DC	A	**3RS10 41-2GW50**	1	1 unit	101	0.283

For accessories, see page 7/63.

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

* You can order this quantity or a multiple thereof.

Selection and ordering data

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels									
 3RT19 00-1SB10	For 3RS1	**Unit labeling plates** For SIRIUS devices							
		20 mm x 7 mm, pastel turquoise[1]	C	**3RT19 00-1SB20**		100	340 units	101	0.200
	For 3RS1	**Inscription labels for sticking** For SIRIUS devices							
		19 mm x 6 mm, pastel turquoise	D	**3RT19 00-1SB60**		100	3060 units	101	15.000
		19 mm x 6 mm, zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	101	12.000
Push-in lugs and covers									
 3RP19 03	For 3RS1	**Push-in lugs** For screw fixing, 2 units are required for each device	►	**3RP19 03**		1	10 units	101	0.002
 3RP19 02	For 3RS1	**Sealable covers** For securing against unauthorized adjustment of setting knobs	►	**3RP19 02**		1	5 units	101	0.004
Tools for opening spring-type terminals by hand									
 8WH9 200-0AA00	For auxiliary circuit connections	**Screwdrivers,** 2.5 mm x 0.4 mm, length approx. 160 mm; green, suitable for a max. conductor cross-section of 1.5 mm^2	C	**8WH9 200-0AA00**		1	10 units	044	0.032
Tools for opening screw terminals									
 8WA2 803	For main and auxiliary circuit connections	**Screwdrivers,** 3.5 mm x 0.5 mm, suitable for a max. conductor cross-section of 2.5 mm^2							
		Length approx. 175 mm; green, partially insulated	C	**8WA2 880**		1	1 unit	041	0.034
		Length approx. 175 mm; green	C	**8WA2 803**		1	1 unit	041	0.024

Matching sensors can be found at www.siemens.com/temperature

[1] PC labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH
www.murrplastik.de

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* You can order this quantity or a multiple thereof.

For PTC sensors

Overview

Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their limit temperature.

Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No settings on the device are necessary
- Solid-state compatible output thanks to versions with hard gold-plated contacts
- Rapid error diagnosis thanks to versions that indicate open- and short-circuit in the sensor circuit
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-type terminals

Application

Direct motor protection through temperature monitoring of the motor winding offers 100 % motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Motor protection:

- At increased ambient temperatures
- For high switching frequency
- For long start-up and braking procedures
- Used together with frequency converters (low speeds)

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and GD for gases and dust. See "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for explosion-protected areas (ATEX Explosion Protection)".

Motor protection using current- and temperature-dependent protective devices

EN 60204 and IEC 60204 stipulate that motors must be protected from overheating at a rating of 0.5 kW and higher. The protection can take the form of overload protection, overtemperature protection or current limiting.

For motors with frequent starting and braking and in environments where cooling may be impaired (e. g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN1 thermistor motor protection devices.

On rotor-critical motors, overtemperature detection in the stator windings can lead to delayed and hence inadequate protection. In this case the standards stipulate additional protection, e. g. by means of an overload relay.

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs the stall protection, and the 3RN1 thermistor motor protection device monitors the temperature of the motor windings.

Application	Motor protection		
	Only current-dependent, e. g. with overload relay	Only temperature-dependent, e. g. with thermistor motor protection relay	Current- and temperature-dependent
Motor protection in case of			
Overloading in uninterrupted duty	✔	✔	✔
Long start-up and braking operations	❍	✔	✔
Irregular intermittent duty	❍	✔	✔
Excessively high switching frequency	❍	✔	✔
Single-phase operation and current unbalance	✔	✔	✔
Voltage and frequency fluctuations	✔	✔	✔
Stalling of the rotor	✔	✔	✔
Switching on a stalled rotor of a stator-critical motor	✔	✔	✔
Switching on a stalled rotor of a stator-critical motor	✔	❍	✔
Elevated ambient temperature	--	✔	✔
Impeded cooling	--	✔	✔

✔ Full protection
❍ Conditional protection
-- No protection

Selection and ordering data

Thermistor motor protection relays for monitoring the motor winding temperature using temperature-dependent resistors (PTCs, type A) that are directly installed in the motor winding by the manufacturer.

- Monostable versions with closed-circuit principle, i. e. relays respond in the event of control supply voltage failure
- 3RN10 13-.BW01: Bistable version, does not trigger in the event of control supply voltage failure
- All devices have PTB01 ATEX approval for dust or gas see "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".
- All devices except for 24 V AC/DC feature electrical isolation
- Versions with safe isolation up to 300 V according to EN 61140
- Non-volatile versions
- Versions with short-circuit and open-circuit detection in sensor circuit
- Versions with solid-state compatible contacts with hard gold-plating
- Versions for up to 6 sensor circuits
- Versions with manual, remote, autoreset and test button
- Terminal labeling according to DIN 50005
- All terminals are removable
- Width 22.5 mm (45 mm on version for several sensor circuits)

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		V		Order No.	Price per PU				kg
Compact signal evaluation units, width 22.5 mm, 1 LED									
Terminal A1 is jumpered with the root of the changeover contact									
Auto	1 CO	24 AC/DC	▶	**3RN10 00-1AB00**		1	1 unit	101	0.114
		110 AC	A	**3RN10 00-1AG00**		1	1 unit	101	0.157
		230 AC	▶	**3RN10 00-1AM00**		1	1 unit	101	0.156
Standard evaluation units, width 22.5 mm, 2 LEDs									
Auto	1 NO + 1 NC	24 AC/DC	▶	**3RN10 10-1CB00**		1	1 unit	101	0.134
		110 AC	▶	**3RN10 10-1CG00**		1	1 unit	101	0.174
		230 AC	▶	**3RN10 10-1CM00**		1	1 unit	101	0.175
		24 … 240 AC/DC	▶	**3RN10 10-1CW00**		1	1 unit	101	0.146
	2 CO	24 AC/DC	A	**3RN10 10-1BB00**		1	1 unit	101	0.162
		110 AC	A	**3RN10 10-1BG00**		1	1 unit	101	0.213
		230 AC	A	**3RN10 10-1BM00**		1	1 unit	101	0.213
	2 CO, gold-plated	24 AC/DC	A	**3RN10 10-1GB00**		1	1 unit	101	0.154
Manual/ Remote[1]	1 NO + 1 NC	24 AC/DC	▶	**3RN10 11-1CB00**		1	1 unit	101	0.147
		110 / 230 AC	▶	**3RN10 11-1CK00**		1	1 unit	101	0.188
Short-circuit detection for sensor circuit									
Manual/ Remote[1]	2 CO	24 AC/DC	A	**3RN10 11-1BB00**		1	1 unit	101	0.163
		110 AC	A	**3RN10 11-1BG00**		1	1 unit	101	0.214
		230 AC	A	**3RN10 11-1BM00**		1	1 unit	101	0.212
	2 CO, gold-plated	24 AC/DC	A	**3RN10 11-1GB00**		1	1 unit	101	0.165
Non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 NC	24 AC/DC	▶	**3RN10 12-1CB00**		1	1 unit	101	0.148
		110 / 230 AC	▶	**3RN10 12-1CK00**		1	1 unit	101	0.188
Non-volatile[2], short-circuit detection in sensor circuit									
Manual/ Auto/ Remote	2 CO	24 AC/DC	A	**3RN10 12-1BB00**		1	1 unit	101	0.164
		110 AC	A	**3RN10 12-1BG00**		1	1 unit	101	0.214
		230 AC	A	**3RN10 12-1BM00**		1	1 unit	101	0.216
	2 CO, gold-plated	24 AC/DC	A	**3RN10 12-1GB00**		1	1 unit	101	0.155
Non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit; wide voltage range versions with screw terminal with safe isolation									
Manual/ Auto/ Remote	2 CO	24 AC/DC	▶	**3RN10 13-1BB00**		1	1 unit	101	0.160
		24 … 240 AC/DC	▶	**3RN10 13-1BW10**		1	1 unit	101	0.172
	2 CO, gold-plated	24 … 240 AC/DC	A	**3RN10 13-1GW10**		1	1 unit	101	0.168
Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs									
Test/RESET button, non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 CO	24 … 240 AC/DC	▶	**3RN10 22-1DW00**		1	1 unit	101	0.173
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs									
Test/RESET button, non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 NC	24 … 240 AC/DC	▶	**3RN10 62-1CW00**		1	1 unit	101	0.296
Bistable evaluation units, width 22.5 mm									
Test / RESET button, non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit Manual/ Auto/ Remote	2 CO	24 … 240 AC/DC	▶	**3RN10 13-1BW01**		1	1 unit	101	0.169

3RN10 11-1BB00

3RN10 13-1BB00

[1] The unit can be reset with the RESET button or by disconnecting the control supply voltage.

[2] For protection against voltage failure see note on Technical Information on page 7/1.

*** You can order this quantity or a multiple thereof.**

For PTC sensors

	RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			V		Order No. / Price per PU				kg
Compact signal evaluation units, width 22.5 mm, 1 LED									
	Terminal A1 is jumpered with the root of the changeover contact								
	Auto	1 CO	24 AC/DC	A	**3RN10 00-2AB00**	1	1 unit	101	0.104
			110 AC	B	**3RN10 00-2AG00**	1	1 unit	101	0.153
			230 AC	B	**3RN10 00-2AM00**	1	1 unit	101	0.153
Standard evaluation units, width 22.5 mm, 2 LEDs									
 3RN10 12-2CK00	Auto	1 NO + 1 NC	24 AC/DC	▶	**3RN10 10-2CB00**	1	1 unit	101	0.116
			110 AC	A	**3RN10 10-2CG00**	1	1 unit	101	0.153
			230 AC	A	**3RN10 10-2CM00**	1	1 unit	101	0.159
			24 … 240 AC/DC	A	**3RN10 10-2CW00**	1	1 unit	101	0.127
		2 CO	24 AC/DC	A	**3RN10 10-2BB00**	1	1 unit	101	0.137
			110 AC	C	**3RN10 10-2BG00**	1	1 unit	101	0.139
			230 AC	A	**3RN10 10-2BM00**	1	1 unit	101	0.190
		2 CO, gold-plated	24 AC/DC	C	**3RN10 10-2GB00**	1	1 unit	101	0.139
	Manual/ Remote[1]	1 NO + 1 NC	24 AC/DC	A	**3RN10 11-2CB00**	1	1 unit	101	0.125
			110 / 230 AC	A	**3RN10 11-2CK00**	1	1 unit	101	0.164
	Short-circuit detection for sensor circuit								
	Manual/ Remote[1]	2 CO	24 AC/DC	A	**3RN10 11-2BB00**	1	1 unit	101	0.138
			110 AC	C	**3RN10 11-2BG00**	1	1 unit	101	0.190
			230 AC	A	**3RN10 11-2BM00**	1	1 unit	101	0.192
		2 CO, gold-plated	24 AC/DC	A	**3RN10 11-2GB00**	1	1 unit	101	0.154
	Non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 NC	24 AC/DC	A	**3RN10 12-2CB00**	1	1 unit	101	0.125
			110 / 230 AC	A	**3RN10 12-2CK00**	1	1 unit	101	0.161
	Non-volatile[2], short-circuit detection in sensor circuit								
	Manual/ Auto/ Remote	2 CO	24 AC/DC	C	**3RN10 12-2BB00**	1	1 unit	101	0.130
			110 AC	C	**3RN10 12-2BG00**	1	1 unit	101	0.130
			230 AC	C	**3RN10 12-2BM00**	1	1 unit	101	0.181
		2 CO, gold-plated	24 AC/DC	C	**3RN10 12-2GB00**	1	1 unit	101	0.140
	Non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit								
	Manual/ Auto/ Remote	2 CO	24 AC/DC	A	**3RN10 13-2BB00**	1	1 unit	101	0.140
			24 … 240 AC/DC	A	**3RN10 13-2BW00**	1	1 unit	101	0.151
		2 CO, gold-plated	24 … 240 AC/DC	C	**3RN10 13-2GW00**	1	1 unit	101	0.143
Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs									
	Test/RESET button, non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 CO	24 … 240 AC/DC	A	**3RN10 22-2DW00**	1	1 unit	101	0.147
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs									
	Test/RESET button, non-volatile[2] Manual/ Auto/ Remote	1 NO + 1 NC	24 … 240 AC/DC	A	**3RN10 62-2CW00**	1	1 unit	101	0.251
Bistable evaluation units, width 22.5 mm									
	Test / RESET button, non-volatile[2], short-circuit and open-circuit detection and indication in sensor circuit Manual/ Auto/ Remote	2 CO	24 … 240 AC/DC	A	**3RN10 13-2BW01**	1	1 unit	101	0.139

[1] The unit can be reset with the RESET button or by disconnecting the control supply voltage.

[2] For protection against voltage failure see note on Technical Information on page 7/1.

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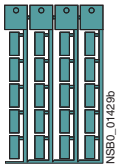
* You can order this quantity or a multiple thereof.

Accessories

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels									
 3RT19 00-1SB10	For 3RN1	**Unit labeling plates** For SIRIUS devices							
		20 mm x 7 mm, pastel turquoise [1]	C	**3RT19 00-1SB20**		100	340 units	101	0.200
	For 3RN1	**Inscription labels for sticking** For SIRIUS devices							
		19 mm x 6 mm, pastel turquoise	D	**3RT19 00-1SB60**		100	3060 units	101	15.000
		19 mm x 6 mm, zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	101	12.000
Push-in lugs and covers									
 3RP19 03	For 3RN1	**Push-in lugs** For screw fixing, 2 units are required for each device	►	**3RP19 03**		1	10 units	101	0.002
 3RP19 02	For 3RN1	**Sealable covers** For securing against unauthorized adjustment of setting knobs	►	**3RP19 02**		1	5 units	101	0.004
Tools for opening spring-type terminals by hand									
 8WH9 200-0AA00	For auxiliary circuit connections	**Screwdrivers,** 2.5 mm x 0.4 mm, length approx. 160 mm; green, suitable for a max. conductor cross-section of 1.5 mm^2	C	**8WH9 200-0AA00**		1	10 units	044	0.032
Tools for opening screw terminals									
 8WA2 803	For main and auxiliary circuit connections	**Screwdrivers,** 3.5 mm x 0.5 mm, suitable for a max. conductor cross-section of 2.5 mm^2							
		Length approx. 175 mm; green, partially insulated	C	**8WA2 880**		1	1 unit	041	0.034
		Length approx. 175 mm; green	C	**8WA2 803**		1	1 unit	041	0.024

[1] PC labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH
www.murrplastik.de

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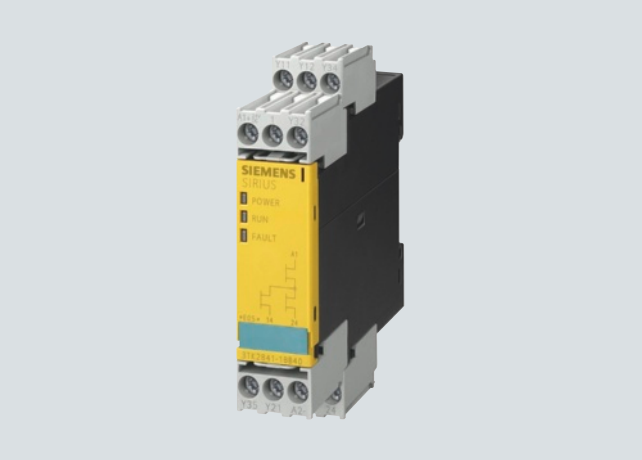
* You can order this quantity or a multiple thereof.

General data

Overview

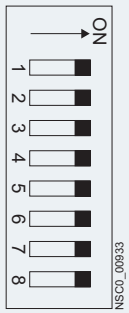


SIRIUS safety relays are the key modules of a consistent and cost-effective safety chain. Be it EMERGENCY-STOP disconnection, protective door monitoring or the protection of presses or punches – with SIRIUS safety relays every safety application can be implemented to optimum effect in terms of engineering and price.

SIRIUS safety relays provide numerous safety-related functions:
- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct operation of the safety relay
- Monitoring actuators for stoppage
- Safety-oriented disconnection when dangers arise

Depending on the version, SIRIUS safety relays meet the highest requirements (PL e) according to ISO 13849-1 and achieve the highest safety integrity level (SIL 3) according to IEC 61508.

3TK28 26 with DIP switch

OFF	Schematic	DIP switch No.	ON
Without crossover monitoring		1	Switching mat operation
NC/NO contact evaluation		2	NC/NC contact evaluation
2 x 1-channel		3	1 x 2-channel
Debounce time for sensor inputs ≈ 50 ms		4	Debounce time for sensor inputs ≈ 10 ms
Sensor input for autostart		5	Sensor input for monitored start
Cascading input for autostart		6	Cascading input for monitored start
With start test		7	Without start test
Automatic start after mains failure (not permitted in conjunction with start test)		8	Without automatic start after mains failure

Benefits

General

- Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to ISO 13849-1 or SIL 3 according to IEC 61508)
- Suitable for use all over the world through compliance with all globally established certifications
- Compact, service-proven SIRIUS design creates more space in the control cabinet
- Flexible connectability and expendability make subsequent changes easy
- Removable terminals for greater plant availability
- Yellow front plate clearly identifies the device as an item of safety technology
- Sensor cable up to 2000 m long enables use in large-scale plants

Relay outputs

- Different voltages can be switched through the floating contacts
- Higher currents can be switched with relay contacts

Solid-state outputs

- Wear-free
- Suitable for operation in fast switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

Microprocessor systems

- Flexible use thanks to many different integrated functions
- Easy parameterization using DIP switches on the front
- High functional reliability based on extensive monitoring functions
- Operated by the machine control
- Also connection of non-contact sensors (light arrays, light barriers etc.)

Application

SIRIUS safety relays are used mainly in autonomous safety applications which are not connected to a safety-oriented bus system. Their function here is to evaluate the sensors and the safety-oriented shutdown of hazards. Also they check and monitor the sensors, actuators and safety-oriented functions of the safety relay.

Selection and ordering data

Type	3TK28 20 Basic units	3TK28 21 Basic units	3TK28 22 Basic units	3TK28 23 Basic units	3TK28 24 Basic units	3TK28 25 Basic units
Sensors						
• Inputs	1	1	1	1	1	1
• Electronic	✔[1)]	--	--	--	--	--
• With contacts	✔	✔	✔[2)]	✔	✔	✔
Safety mats	--	--	--	--	--	--
Start						
• Auto	✔	✔	✔	--	✔	✔
• Monitored	✔	--	--	✔	--	✔
Cascading input 24 V DC	--	--	--	--	--	--
Key-operated switch	--	--	--	--	--	--
Enabling circuit, floating						
• Stop category 0	3 NO	3 NO	2 NO	2 NO	2 NO	3 NO
• Stop category 1	--	--	--	--	--	--
Enabling circuit, solid-state						
• Stop category 0	--	--	--	--	--	--
• Stop category 1	--	--	--	--	--	--
Signaling outputs						
• Floating	1 NC	1 NC	--	--	--	2 NC
• Electronic	--	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, ISO 13849-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Compliance to standards	TÜV, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA
Category acc. to EN 954-1 max	4 (acc. to ISO 13849-1)	3[3)]	4	4	3[3)]	4
SIL level max. acc. to IEC 61508	3	1	3	3	1	3
Performance level PL acc. to ISO 13849-1	e	c	e	e	c	e
Probability of a dangerous failure per hour (PFH_d)	9.38 x 10^{-10} 1/h	1.1 x 10^{-9} 1/h	1.3 x 10^{-9} 1/h	1.3 x 10^{-9} 1/h	8.7 x 10^{-10} 1/h	1.5 x 10^{-9} 1/h
Rated control supply voltage						
• 24 V DC	--	--	--	--	✔	✔
• 24 V AC/DC	✔	✔	✔	✔	✔	--
• 24 V AC	--	--	--	--	--	✔
• 115 V AC	✔	--	--	--	✔	✔
• 230 V AC	✔	--	--	--	✔	✔
• 24 ... 240 V AC/DC	--	--	--	--	--	--

✔ = Available
-- = Not available

1) With restrictions. Further information available from Technical Assistance.

2) The ON button is not monitored.

3) Depending on the hazard assessment, additional measures may be necessary in the sensor circuit (e. g. protected laying).

With relay enabling circuits

Type	3TK28 26				3TK28 27	3TK28 28	3TK28 30	3TK28 34
	Basic units 4 V DC	Basic units Wide voltage range	Basic units 4 V DC t_v	Basic units Wide voltage range t_v	Basic units t_v	Basic units t_v	Expansion units[2]	Two-hand control devices
Sensors								
• Inputs	1	1	1	1	1	1	--	1
• Electronic	✔	✔	✔	✔	--	--	--	--
• With contacts	✔	✔	✔	✔	✔	✔	--	✔
Safety mats	✔	✔	✔	✔	--	--	--	--
Start								
• Auto	✔	✔	✔	✔	--	✔	--	--
• Monitored	✔	✔	✔	✔	✔	--	--	--
Cascading input 24 V DC	✔	✔	✔	✔	--	--	--	--
Key-operated switch	--	--	--	--	--	--	--	--
Enabling circuit, floating								
• Stop category 0	4 NO	4 NO	2 NO	2 NO	2 NO	2 NO	4 NO	2 NO+2 NC
• Stop category 1	--	--	2 NO	2 NO	2 NO	2 NO	--	--
Enabling circuit, solid-state								
• Stop category 0	--	--	--	--	--	--	--	--
• Stop category 1	--	--	--	--	--	--	--	--
Signaling outputs								
• Floating	1 NC	1 NO + 1 NC	2 NC	1 NO + 2 NC	1 NC	1 NC	--	2
• Electronic	2	--	2	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508, EN 574
Compliance to standards	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA, TÜV	BG, SUVA, UL, CSA, TÜV
Category acc. to EN 954-1 max	4	4	4	4	4[1]	4[1]	As basic unit	4
SIL level max. acc. to IEC 61508	3	3	3	3	3[3]	3[3]	As basic unit	--
Performance level PL acc. to ISO 13849-1	e	e	e	e	e[3]	e[3]	As basic unit	--
Probability of a dangerous failure per hour (PFH_d)	7.8 x 10^{-9}1/h	7.8 x 10^{-9}1/h	7.8 x 10^{-9}1/h	7.8 x 10^{-9}1/h	2.7 x 10^{-9}1/h	2.7 x 10^{-9}1/h	1.2 x 10^{-9}1/h	1.4 x 10^{-9}1/h
Rated control supply voltage								
• 24 V DC	✔	--	✔	--	✔	✔	--	✔
• 24 V AC/DC	--	--	--	--	--	--	✔	--
• 24 V AC	--	--	--	--	✔	✔	--	✔
• 115 V AC	--	--	--	--	✔	✔	✔	✔
• 230 V AC	--	--	--	--	✔	✔	✔	✔
• 24 ... 240 V AC/DC	--	✔	--	✔	--	--	--	--

✔ = Available
-- = Not available

1) Only possible for instantaneous enabling contacts, otherwise Category 3.
2) For expansion of Siemens safety products.
3) Only possible for instantaneous enabling contacts, otherwise SIL 2 or Performance Level PL d.

Selection and ordering data

3TK28 21-1CB30

3TK28 25-1BB40

3TK28 26-2BB40

3TK28 27-1BB41

PU (UNIT, SET, M) = 1
PS* = 1 units
PG = 102

Rated control supply voltage U_s	OFF-delay t_v	DT	Screw terminals		Weight per PU approx.	DT	Spring-type terminals		Weight per PU approx.
			Order No.	Price per PU			Order No.	Price per PU	
V	s				kg				kg
Rated control supply voltages U_s 24 V DC and AC 50/60 Hz, 24, 115, 230 V									
3TK28 20 basic units									
24 AC/DC	--	▶	**3TK28 20-1CB30**		0.245	▶	**3TK28 20-2CB30**		0.245
115 AC	--	▶	**3TK28 20-1AJ20**		0.285	▶	**3TK28 20-2AJ20**		0.285
230 AC	--	▶	**3TK28 20-1AL20**		0.285	▶	**3TK28 20-2AL20**		0.285
3TK28 21 basic units									
24 AC/DC	--	▶	**3TK28 21-1CB30**		0.276	▶	**3TK28 21-2CB30**		0.246
3TK28 22 basic units									
24 AC/DC	--	▶	**3TK28 22-1CB30**		0.271	A	**3TK28 22-2CB30**		0.250
3TK28 23 basic units									
24 AC/DC	--	▶	**3TK28 23-1CB30**		0.271	A	**3TK28 23-2CB30**		0.247
3TK28 24 basic units									
24 AC/DC	--	▶	**3TK28 24-1CB30**		0.254	A	**3TK28 24-2CB30**		0.230
24 DC	--	▶	**3TK28 24-1BB40**		0.249	▶	**3TK28 24-2BB40**		0.228
115 AC	--	C	**3TK28 24-1AJ20**		0.294	C	**3TK28 24-2AJ20**		0.265
230 AC	--	▶	**3TK28 24-1AL20**		0.288	B	**3TK28 24-2AL20**		0.270
3TK28 25 basic units									
24 DC	--	▶	**3TK28 25-1BB40**		0.423	▶	**3TK28 25-2BB40**		0.374
24 AC	--	A	**3TK28 25-1AB20**		0.421	C	**3TK28 25-2AB20**		0.375
115 AC	--	▶	**3TK28 25-1AJ20**		0.519	B	**3TK28 25-2AJ20**		0.472
230 AC	--	▶	**3TK28 25-1AL20**		0.516	B	**3TK28 25-2AL20**		0.475
3TK28 26 basic units									
24 DC	--	▶	**3TK28 26-1BB40**		0.370	A	**3TK28 26-2BB40**		0.370
24 ... 240 AC/DC	--	▶	**3TK28 26-1CW30**		0.400	A	**3TK28 26-2CW30**		0.400
3TK28 26 basic units t_v									
24 DC	0.05 ... 3	A	**3TK28 26-1BB41**		0.370	A	**3TK28 26-2BB41**		0.370
24 ... 240 AC/DC		A	**3TK28 26-1CW31**		0.400	A	**3TK28 26-2CW31**		0.400
24 DC	0.5 ... 30	A	**3TK28 26-1BB42**		0.370	A	**3TK28 26-2BB42**		0.370
24 ... 240 AC/DC		A	**3TK28 26-1CW32**		0.400	A	**3TK28 26-2CW32**		0.400
24 DC	5 ... 300	A	**3TK28 26-1BB44**		0.370	A	**3TK28 26-2BB44**		0.370
24 ... 240 AC/DC		A	**3TK28 26-1CW34**		0.400	A	**3TK28 26-2CW34**		0.400
3TK28 27 basic units t_v									
24 DC	0.05 ... 3	▶	**3TK28 27-1BB41**		0.495	A	**3TK28 27-2BB41**		0.454
24 AC		B	**3TK28 27-1AB21**		0.499	B	**3TK28 27-2AB21**		0.454
115 AC		B	**3TK28 27-1AJ21**		0.650	B	**3TK28 27-2AJ21**		0.240
230 AC		A	**3TK28 27-1AL21**		0.650	B	**3TK28 27-2AL21**		0.605
24 DC	0.5 ... 30	▶	**3TK28 27-1BB40**		0.497	A	**3TK28 27-2BB40**		0.455
24 AC		A	**3TK28 27-1AB20**		0.496	C	**3TK28 27-2AB20**		0.454
115 AC		▶	**3TK28 27-1AJ20**		0.650	C	**3TK28 27-2AJ20**		0.606
230 AC		▶	**3TK28 27-1AL20**		0.650	B	**3TK28 27-2AL20**		0.604
3TK28 28 basic units t_v									
24 DC	0.05 ... 3	▶	**3TK28 28-1BB41**		0.499	A	**3TK28 28-2BB41**		0.450
24 AC		B	**3TK28 28-1AB21**		0.501	C	**3TK28 28-2AB21**		0.454
115 AC		B	**3TK28 28-1AJ21**		0.657	B	**3TK28 28-2AJ21**		0.240
230 AC		A	**3TK28 28-1AL21**		0.650	B	**3TK28 28-2AL21**		0.608
24 DC	0.5 ... 30	▶	**3TK28 28-1BB40**		0.496	▶	**3TK28 28-2BB40**		0.457
24 AC		B	**3TK28 28-1AB20**		0.500	B	**3TK28 28-2AB20**		0.468
115 AC		A	**3TK28 28-1AJ20**		0.650	B	**3TK28 28-2AJ20**		0.609
230 AC		A	**3TK28 28-1AL20**		0.650	B	**3TK28 28-2AL20**		0.612
3TK28 30 expansion units									
24 AC/DC	--	▶	**3TK28 30-1CB30**		0.267	▶	**3TK28 30-2CB30**		0.244
115 AC		A	**3TK28 30-1AJ20**		0.306	B	**3TK28 30-2AJ20**		0.276
230 AC		A	**3TK28 30-1AL20**		0.306	B	**3TK28 30-2AL20**		0.276
3TK28 34 two-hand control devices									
24 DC	--	▶	**3TK28 34-1BB40**		0.432	A	**3TK28 34-2BB40**		0.383
24 AC		A	**3TK28 34-1AB20**		0.424	B	**3TK28 34-2AB20**		0.376
115 AC		A	**3TK28 34-1AJ20**		0.519	C	**3TK28 34-2AJ20**		0.472
230 AC		A	**3TK28 34-1AL20**		0.519	B	**3TK28 34-2AL20**		0.472

* You can order this quantity or a multiple thereof.

With electronic enabling circuits

Selection and ordering data

Type	3TK28 40 Basic units	3TK28 41 Basic units	3TK28 42 Basic units t_v	3TK28 45 Multi-function units "automatic and monitored start" t_v	Multi-function units "automatic and monitored start" t_v	Multi-function units "monitored start" t_v	Multi-function units "monitored start" t_v	Multi-function units OK button t_v	Multi-function unit OK button t_v	Multifunction units "spring-type interlocking tumbler" t_v	Multifunction units "solenoid-interlocking tumbler" t_v
Sensors											
• Inputs	1	1	1	2	2	2	2	2	2	2	2
• Electronic	--	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
• With contacts	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Safety mats	--	✔	✔	✔	✔	✔	✔	--	--	--	--
Start											
• Auto	✔	✔	✔	1	1	--	--	1	1	--	--
• Monitored	✔	✔	✔	1	1	2	2	1	1	2	2
Cascading input 24 V DC	--	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Key-operated switch	--	--	--	✔	✔	✔	✔	✔	✔	✔	✔
Enabling circuit, floating											
• Stop category 0	--	--	--	2 NO	1 NO	2 NO	1 NO	2 NO	1 NO	1 NO	1 NO
• Stop category 1	--	--	--	--	1 NO	--	1 NO	--	1 NO	1 NO	1 NO
Enabling circuit, solid-state											
• Stop category 0	2[1)]	2	1	2	1	2	1	2	1	1	1
• Stop category 1	--	--	1	--	1	--	1	--	1	1	1
Signaling outputs											
• Floating	--	--	--	--	--	--	--	--	--	--	--
• Electronic	--	--	--	1	1	1	1	1	1	1	1
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508 DIN EN 50156-1		EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508							
Test certificates	TÜV, UL, CSA										
Category acc. to EN 954-1 max	3	4	4	4	4	4	4	4	4	4	4
SIL level max. acc. to IEC 61508	2	3	3	3	3	3	3	3	3	3	3
Performance level PL acc. to ISO 13849-1	d	e	e	e	e	e	e	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	1.1×10^{-8} 1/h	5.4×10^{-11} 1/h	5.4×10^{-11} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h
Rated control supply voltage 24 V DC	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

✔ = Available
-- = Not available

1) The outputs are only safe when an external contactor is used.

With electronic enabling circuits


3TK28 41-1BB40


3TK28 42-1BB41


3TK28 45-1HB40


3TK28 45-1HB41


3TK28 45-2DB40

PU (UNIT, SET, M) = 1
PS* = 1 units
PG = 102

Rated control supply voltage U_s	OFF-delay t_v	DT	Screw terminals		Weight per PU approx.	DT	Spring-type terminals		Weight per PU approx.
			Order No.	Price per PU			Order No.	Price per PU	
V	s				kg				kg
Rated control supply voltage U_s 24 V DC									
3TK28 40 basic units									
24 DC	--	A	**3TK28 40-1BB40**		0.180	B	**3TK28 40-2BB40**		0.150
3TK28 41 basic units									
24 DC	--	A	**3TK28 41-1BB40**		0.166	A	**3TK28 41-2BB40**		0.143
3TK28 42 basic units t_v									
24 DC	0.05 ... 3	A	**3TK28 42-1BB41**		0.168	B	**3TK28 42-2BB41**		0.143
	0.5 ... 30	A	**3TK28 42-1BB42**		0.166	A	**3TK28 42-2BB42**		0.146
	5 ... 300	A	**3TK28 42-1BB44**		0.166	B	**3TK28 42-2BB44**		0.149
3TK28 45 multi-function units "automatic and monitored start"									
24 DC	--	A	**3TK28 45-1HB40**		0.350	B	**3TK28 45-2HB40**		0.350
3TK28 45 multi-function units t_v "automatic and monitored start"									
24 DC	0.05 ... 3	A	**3TK28 45-1HB41**		0.350	B	**3TK28 45-2HB41**		0.350
	0.5 ... 30	A	**3TK28 45-1HB42**		0.350	B	**3TK28 45-2HB42**		0.350
	5 ... 300	A	**3TK28 45-1HB44**		0.350	B	**3TK28 45-2HB44**		0.350
3TK28 45 multi-function units "monitored start"									
24 DC	--	A	**3TK28 45-1DB40**		0.350	B	**3TK28 45-2DB40**		0.350
3TK28 45 multi-function units t_v "monitored start"									
24 DC	0.05 ... 3	A	**3TK28 45-1DB41**		0.350	B	**3TK28 45-2DB41**		0.350
	0.5 ... 30	A	**3TK28 45-1DB42**		0.350	B	**3TK28 45-2DB42**		0.350
	5 ... 300	C	**3TK28 45-1DB44**		0.350	B	**3TK28 45-2DB44**		0.350
3TK28 45 multi-function units "OK button"									
24 DC	--	A	**3TK28 45-1EB40**		0.350	B	**3TK28 45-2EB40**		0.350
3TK28 45 multi-function units t_v "OK button"									
24 DC	0.05 ... 3	A	**3TK28 45-1EB41**		0.350	B	**3TK28 45-2EB41**		0.350
	0.5 ... 30	A	**3TK28 45-1EB42**		0.350	B	**3TK28 45-2EB42**		0.350
	5 ... 300	C	**3TK28 45-1EB44**		0.350	B	**3TK28 45-2EB44**		0.350
3TK28 45 multi-function units t_v "spring-type interlocking tumbler"									
24 DC	0.05 ... 3	A	**3TK28 45-1FB41**		0.350	B	**3TK28 45-2FB41**		0.350
	0.5 ... 30	A	**3TK28 45-1FB42**		0.350	B	**3TK28 45-2FB42**		0.350
	5 ... 300	B	**3TK28 45-1FB44**		0.350	B	**3TK28 45-2FB44**		0.350
3TK28 45 multi-function units t_v "solenoid interlocking tumbler"									
24 DC	0.05 ... 3	A	**3TK28 45-1GB41**		0.350	B	**3TK28 45-2GB41**		0.350
	0.5 ... 30	A	**3TK28 45-1GB42**		0.350	B	**3TK28 45-2GB42**		0.350
	5 ... 300	C	**3TK28 45-1GB44**		0.350	B	**3TK28 45-2GB44**		0.350

* You can order this quantity or a multiple thereof.

With contactor relay enabling circuits

Selection and ordering data

Type	**3TK28 50** Basic units	**3TK28 51** Basic units	**3TK28 52** Basic units	**3TK28 53** Basic units	**3TK28 56** Expansion units[1]	**3TK28 57** Expansion units[1] t_v
Sensors						
• Inputs	1	1	1	1	--	--
• Electronic	--	--	--	✔	--	--
• With contacts	✔	✔	✔	✔	--	--
Safety mats	✔	✔	✔	✔	--	--
Start						
• Auto	✔	✔	✔	✔	--	--
• Monitored	✔	✔	✔	✔	--	--
Cascading input 24 V DC	--	--	--	✔	✔	✔
Key-operated switch	--	--	--	--	--	--
Enabling circuit, floating						
• Stop category 0	3 NO	2 NO	6 NO	3 NO	6 NO	--
• Stop category 1	--	--	--	--	--	3 NO
Enabling circuit, solid-state						
• Stop category 0	--	--	--	1	1	1
• Stop category 1	--	--	--	--	--	--
Signaling outputs						
• Floating	--	1 NC	1 NC	--	1 NC	--
• Electronic	--	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA
Category acc. to EN 954-1 max	3	3	3	4	As basic unit	As basic unit
SIL level max. acc. to IEC 61508	2	2	2	--	As basic unit	As basic unit
Performance level PL acc. to ISO 13849-1	d	d	d	e	As basic unit	As basic unit
Probability of a dangerous failure per hour (PFH_d)	1.2 x 10^{-8}1/h	1.1 x 10^{-8}1/h	1.1 x 10^{-8}1/h	1.1 x 10^{-8}1/h	1.1 x 10^{-8}1/h	1.1 x 10^{-8}1/h
Rated control supply voltage						
• 24 V DC	✔	✔	✔	✔	✔	✔
• 24 V AC/DC	--	--	--	--	--	--
• 24 V AC	✔	✔	--	--	--	--
• 115 V AC	✔	✔	--	--	--	--
• 230 V AC	✔	✔	✔	--	--	--
• 24 ... 240 V AC/DC	--	--	--	--	--	--
Rated operational voltage						
• 24 V DC	✔	✔	✔	✔	✔	✔
• 230 V AC	✔	✔	✔	✔	✔	✔
• 600 V AC	✔	✔	✔	✔	✔	✔
Switching capacity						
• AC-15 at U = 230 V	6 A	6 A	6 A	6 A	6 A	6 A
• DC-13 at U = 24 V	10 A	10 A	10 A	10 A	10 A	10 A

✔ = Available
-- = Not available

[1] For expansion of Siemens safety products.

With contactor relay enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 units
PG = 102


3TK28 50-2BB40


3TK28 51-2BB40


3TK28 52-2BB40

Rated control supply voltage U_s	OFF-delay t_v	DT	**Screw terminals**	Weight per PU approx.	DT	**Spring-type terminals**	Weight per PU approx.
V	s		Order No. Price per PU	kg		Order No. Price per PU	kg
Rated control supply voltages U_s 24 V DC and 50/60 Hz, 115, 230 V AC							
3TK28 50 basic units							
24 DC	--	A	**3TK28 50-1BB40**	0.819	B	**3TK28 50-2BB40**	0.820
115 AC		B	**3TK28 50-1AJ20**	0.765	B	**3TK28 50-2AJ20**	0.650
230 AC		B	**3TK28 50-1AL20**	0.770	B	**3TK28 50-2AL20**	0.761
3TK28 51 basic units							
24 DC	--	B	**3TK28 51-1BB40**	0.821	B	**3TK28 51-2BB40**	0.650
115 AC		C	**3TK28 51-1AJ20**	0.770	B	**3TK28 51-2AJ20**	0.650
230 AC		C	**3TK28 51-1AL20**	0.767	B	**3TK28 51-2AL20**	0.768
3TK28 52 basic units							
24 DC	--	A	**3TK28 52-1BB40**	0.919	B	**3TK28 52-2BB40**	0.935
230 AC		B	**3TK28 52-1AL20**	0.870	B	**3TK28 52-2AL20**	0.878
3TK28 53 basic units							
24 DC	--	A	**3TK28 53-1BB40**	0.714	B	**3TK28 53-2BB40**	0.705
3TK28 56 expansion units							
24 DC	--	B	**3TK28 56-1BB40**	0.785	B	**3TK28 56-2BB40**	0.750
3TK28 57 expansion units t_v							
24 DC	0.05 ... 3	A	**3TK28 57-1BB41**	0.682	B	**3TK28 57-2BB41**	0.650
24 DC	0.5 ... 30	B	**3TK28 57-1BB42**	0.679	B	**3TK28 57-2BB42**	0.677
24 DC	5 ... 300	B	**3TK28 57-1BB44**	0.684	B	**3TK28 57-2BB44**	0.684

* You can order this quantity or a multiple thereof.

With special functions

Selection and ordering data

Type	3TK28 10 Standstill monitors
Sensors	
• Inputs	3
• Electronic	--
• With contacts	--
• Without sensors (measuring inputs)	3
Safety mats	--
Start	
• Auto	✔
• Monitored	--
Cascading input 24 V DC	--
Key-operated switch	--
Enabling circuit, floating	
• Stop category 0	3 NO + 1 NC
• Stop category 1	--
Enabling circuit, solid-state	
• Stop category 0	--
• Stop category 1	--

Type	3TK28 10 Standstill monitors
Signaling outputs	
• Floating	1 CO
• Electronic	2
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Test certificates	TÜV, UL, CSA
Category acc. to EN 954-1 max	4
SIL level max. acc. to IEC 61508	3
Performance level PL acc. to ISO 13849-1	e
Probability of a dangerous failure per hour (PFH_d)	1.5×10^{-8} 1/h
Rated control supply voltage	
• 24 V DC	✔
• 230 V AC	✔
• 400 V AC	✔

✔ = Available
-- = Not available

3TK28 10-0BA01

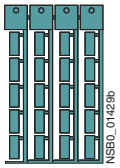
3TK28 10-0GA02

PU (UNIT, SET, M) = 1
PS* = 1 units
PG = 102

Rated control supply voltage U_s	OFF-delay t_v	DT	Screw terminals Order No.	Price per PU	Weight per PU approx.	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx.
V	s				kg				kg
Rated control supply voltages U_s 24 V DC and 50/60 Hz, 230, 400 V AC									
3TK28 10 standstill monitors									
24 DC	0.2... 6	A	**3TK28 10-0BA01**		0.500	A	**3TK28 10-0BA02**		0.500
230 AC		A	**3TK28 10-0GA01**		0.500	A	**3TK28 10-0GA02**		0.500
400 AC		A	**3TK28 10-0JA01**		0.500	A	**3TK28 10-0JA02**		0.500

* You can order this quantity or a multiple thereof.

Accessories

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels									
 3RT19 00-1SB10	For 3TK28	**Unit labeling plates** For SIRIUS devices							
		20 mm x 7 mm, pastel turquoise [1]	C	**3RT19 00-1SB20**		100	340 units	101	0.200
	For 3TK28	**Inscription labels for sticking** For SIRIUS devices							
		19 mm x 6 mm, pastel turquoise	D	**3RT19 00-1SB60**		100	3060 units	101	15.000
		19 mm x 6 mm, zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	101	12.000
Push-in lugs and covers									
 3RP19 03	For 3TK28	**Push-in lugs** For screw fixing, 2 units are required for each device	►	**3RP19 03**		1	10 units	101	0.002
 3RP19 02	For 3TK28 21 to 3TK28 25, 3TK28 27, 3TK28 28, 3TK28 3.	**Sealable covers** For securing against unauthorized adjustment of setting knobs	►	**3RP19 02**		1	5 units	101	0.004
	For 3TK28 26		B	**3TK28 26-0DA00-0HA0**		1	5 units	102	0.004
	For 3TK28 20	**Sealing foil** For securing against unauthorized adjustment of setting knobs	►	**3TK28 20-0AA00**		2	1 unit	102	0.276
Tools for opening spring-type terminals by hand									
 8WH9 200-0AA00	For auxiliary circuit connections	**Screwdrivers,** 2.5 mm x 0.4 mm, length approx. 160 mm; green, suitable for a max. conductor cross-section of 1.5 mm^2	C	**8WH9 200-0AA00**		1	10 units	044	0.032
Tools for opening screw terminals									
 8WA2 803	For main and auxiliary circuit connections	**Screwdrivers,** 3.5 mm x 0.5 mm, suitable for a max. conductor cross-section of 2.5 mm^2							
		Length approx. 175 mm; green, partially insulated	C	**8WA2 880**		1	1 unit	041	0.034
		Length approx. 175 mm; green	C	**8WA2 803**		1	1 unit	041	0.024

[1] PC labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH
www.murrplastik.de

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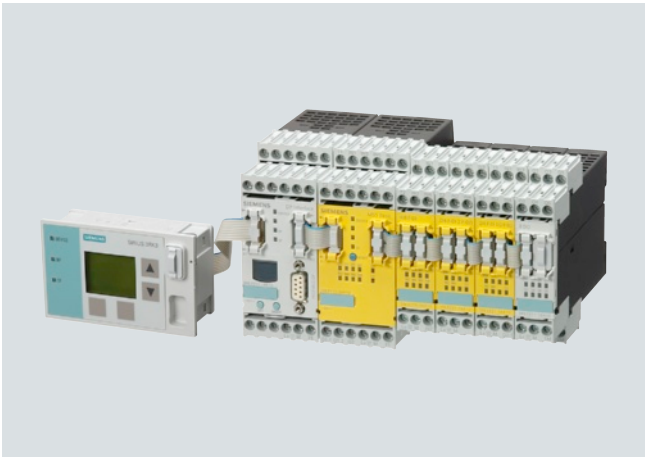
* You can order this quantity or a multiple thereof.

General data

Overview



The 3RK3 modular safety system (MSS) is a freely parameterizable modular safety relay. Depending on the type of external connection, safety-orientated applications up to Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 and SIL3 according to IEC 62061 can be realized.

The modular safety relay permits several safety applications to be interconnected. The safety functions are easily created on the PC using a graphic parameterizing tool. For example, disconnection ranges can be set and other dependencies defined.

With additional safety-oriented expansion modules the system is flexibly adapted to the required safety applications.

The MSS comprises the following system components:
- Central module
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

Optional interface modules send the diagnostics data to higher-level bus systems (e. g. PROFIBUS DP). These data are then available for further processing in the automation system.

Benefits

- More functionality and flexibility through freely configurable safety logic
- For all safety applications thanks to compliance with the highest safety requirements (Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 or SIL3 according to IEC 62061)
- Suitable for use all over the world through compliance with all globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability

Communication

The 3RK3 modular safety system can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

The MSS supports among other things:
- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data
- Diagnostics using data record invocations

For MSS with communication function see from page 7/79.

For accessories, see page 7/80 onwards.

For more information see also Chapter 12 "Planning, Configuration and Visualizing for SIRIUS".

Application

The 3RK3 modular safety system can be used for all safety-oriented requirements in the manufacturing industry and offers the following safety functions:
- EMERGENCY-STOP:
  With this function, signals from EMERGENCY-STOP devices with positive-opening contacts are evaluated.
- Protective door monitoring:
  Signals from protective doors or protective flaps with positive-opening contacts a combination of NC and NO contacts are evaluated.
- Non-contact protective devices (BWS):
  Signals from e. g. light curtains and laser scanners are evaluated.
- Switching mats:
  Signals from switching mats with NC contacts or crossover monitoring are evaluated.
- Two-hand operator controls:
  With this function, signals from a two-hand operator control device are evaluated.
- OK buttons:
  Signals from OK buttons with NO contact are evaluated.
- Operating mode selector switches:
  With this function signals from an operating mode selector switch with NO contacts are evaluated. Up to 5 operating modes can be defined. The operating mode to be implemented can be freely configured in the downstream logic.
- Logic operation functions:
  AND, OR, XOR, NAND, NOR, negation (NEG), flip-flop (FF-RS)
- Counter functions:
  - The safety relay supports the counting function "counter 0 -> 1". The count value is changed only when there is a positive edge at the count inputs. The current count value can be counted forwards or backwards through one own count input each.
  - The safety relay supports the counting function "For negative edge 1 -> 0". The count value is changed only when there is a negative edge. The current count value can be counted forwards or backwards through one own count input each.
  - The safety relay supports the counting function "For both edges". The count value is changed both when there is a positive edge and when there is a negative edge. The current count value can be counted forwards or backwards through one own count input each.
- Time functions:
  ON delay, ON delay (trigger), passing make contact, passing make contact (trigger), OFF delay, OFF delay (trigger), clock-pulsing.
- Start functions:
  Manual and automatic start
- Output functions:
  Standard outputs and fail-safe outputs can be actuated.

Selection and ordering data

3RK3 111-1AA10

3RK3 211-1AA10
3RK3 221-1AA10
3RK3 231-1AA10
3RK3 242-1AA10

3RK3 251-1AA10

3RK3 311-1AA10
3RK3 321-1AA10

3RK3 511-1BA10

3RK3 611-3AA00

PU (UNIT, SET, M) = 1
PS* = 1 units
PG = 102

Version	DT	Screw terminals Order No.	Price per PU	Weight per PU approx. kg	DT	Spring-type terminals Order No.	Price per PU	Weight per PU approx. kg
Central modules								
3RK3 Basic								
Central modules with safety-orientated inputs and outputs • 8 inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 7 expansion modules can be connected, including 3RK3 931-0AA00 memory module	A	**3RK3 111-1AA10**		0.300	A	**3RK3 111-2AA10**		0.300
Expansion modules								
4/8 F-DI								
Safety-orientated expansion module • 8 inputs	A	**3RK3 211-1AA10**		0.150	A	**3RK3 211-2AA10**		0.150
2/4 F-DI 1/2 F-RO								
Safety-orientated mixed expansion module • 4 inputs • 2 single-channel relay outputs	A	**3RK3 221-1AA10**		0.150	A	**3RK3 221-2AA10**		0.150
2/4 F-DI 2F-DO								
Safety-orientated mixed expansion module • 4 inputs • 2 two-channel solid-state outputs	A	**3RK3 231-1AA10**		0.150	A	**3RK3 231-2AA10**		0.150
4/8 F-RO								
Safety-oriented output modules • 8 relay outputs	A	**3RK3 251-1AA10**		0.150	A	**3RK3 251-2AA10**		0.150
4 F-DO								
Safety-oriented output modules • 4 two-channel solid-state outputs	A	**3RK3 242-1AA10**		0.150	A	**3RK3 242-2AA10**		0.150
8 DI								
Standard input modules • 8 inputs	A	**3RK3 321-1AA10**		0.150	A	**3RK3 321-2AA10**		0.150
8 DO								
Standard output module • 8 solid-state outputs	A	**3RK3 311-1AA10**		0.150	A	**3RK3 311-2AA10**		0.150
Interface modules								
DP interface								
• PROFIBUS DP interface, 12 Mbit/s, RS 485	A	**3RK3 511-1BA10**		0.300	A	**3RK3 511-2BA10**		0.300
Operating and monitoring modules								
Diagnostics modules	A	**3RK3 611-3AA00**		0.300		**--**		

To connect the central module to expansion modules or interface module you need the 3UF7 930-0AA00-0 connection cable. See page 7/80.

* You can order this quantity or a multiple thereof.

Accessories

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Connection cables (essential accessory)								
	Connection cables For connecting the central module, expansion modules and the interface module							
	• Length 0.025 m (flat)	A	**3UF7 930-0AA00-0**		1	1 unit	131	0.010
PC cables and adapters								
 3UF7 940-0AA00-0	**PC cables for PC/PG communication with 3RK3 modular safety system** Through the system interface, for connecting to the serial interface of the PC/PG	A	**3UF7 940-0AA00-0**		1	1 unit	131	0.150
	USB/serial adapters To connect an RS 232 PC cable to the USB port of a PC, recommended for use in conjunction with 3RK3	B	**3UF7 946-0AA00-0**		1	1 unit	131	0.150
Interface covers								
 3UF7 950-0AA00-0	**For system interface**	A	**3UF7 950-0AA00-0**		1	5 units	131	0.100
Memory modules								
 3RK3 931-0AA00	**For parameterizing the 3RK3 modular safety system without a PC/PG through the system interface**	A	**3RK3 931-0AA00**		1	1 unit	121	0.100
Door adapters								
 3UF7 920-0AA00-0	**For external connection of the system interface, e. g. outside a control cabinet**	A	**3UF7 920-0AA00-0**		1	1 unit	131	0.030
Push-in lugs								
 3RP19 03	**For screw fixing** e. g. on mounting plate, 2 units required per device							
	• Can be used for 3RK3	►	**3RP19 03**		1	10 units	101	0.002
Modular Safety System ES 2008 Basic								
 3ZS1 314-4CC10-0YA5	**Parameterization, start-up and diagnostics software for the 3RK3** Runs under Win XP PROF/Win VISTA: Business32, Ultimate32; without PC cable							
	Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface							
	• License key on USB stick, Class A	►	**3ZS1 314-4CC10-0YA5**		1	1 unit	131	0.230
Modular Safety System ES 2008 Standard								
 3ZS1 314-5CC10-0YA5	**Floating license for one user** E-SW, software and documentation on CD, 3 languages (German/English/French), communication through the system interface							
	• License key on USB stick, Class A	►	**3ZS1 314-5CC10-0YA5**		1	1 unit	131	0.230
	Powerpack Floating license for one user, E-SW, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	►	**3ZS1 314-5CC10-0YD5**		1	1 unit	131	0.230
	Software Update Service For 1 year with automatic extension, assuming the current software version is in use, E-SW, software and documentation on CD, communication through the system interface	►	**3ZS1 314-5CC10-0YL5**		1	1 unit	131	0.230

* You can order this quantity or a multiple thereof.

Overview

Interface converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. This means that electrical separation is essential due to the different supply systems. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic faults and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS17 interface converters are safe up to a voltage of 30 V DC and protected against interchanging poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to

- EN 61000-6-4 (basic specification for emitted interference)
- EN 61000-6-2 (basic specification for interference immunity).

The analog signals comply with

- IEC 60381-1/2.

Application

Converters are used in analog signal processing for

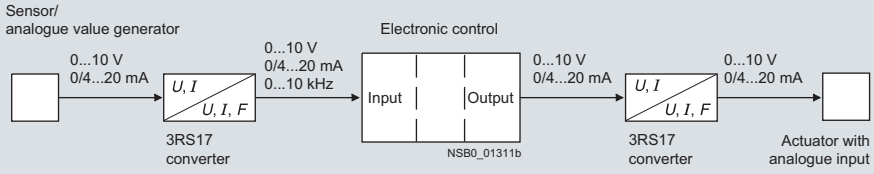
- Electrical isolations
- Conversion of normalized and non-normalized signals
- Matching of gain and impedances
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs
- Potential duplication

3RS17 25 manual/automatic converter

For special applications in which analog signals have to be simulated, or during plant commissioning when the actual process value is not yet available, the 3RS17 25 devices feature an adjustable potentiometer for entering setpoints manually and a manual/automatic switch.

The adjustable potentiometer for the 3RS17 25 devices is used to simulate analog output signals when the changeover switch is set to "Manual" and the control supply voltage is applied, without the need for an analog input signal; the scale ranges from 0 ... 100 %.

Example: When it is set for an output of 4 ... 20 mA, the 0 % scale value on the potentiometer represents an output current of 4 mA and the 100 % scale value represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer setting.



Application example: Interface converter in analog signal evaluation

SIRIUS 3RS17 interface converters

Selection and ordering data

All converters except the passive single interface converters have a yellow LED for indicating "Power on".

Inputs	Output	Width	Rated control supply voltage U_s	Electrical isolation	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm	V			Order No.				kg
Single interface converters, active										
0 ... 10 V	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 00-1AD00**	1	1 unit	101	0.053
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 00-1CD00**	1	1 unit	101	0.052
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 00-1DD00**	1	1 unit	101	0.052
0 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 02-1AD00**	1	1 unit	101	0.052
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 02-1CD00**	1	1 unit	101	0.052
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 02-1DD00**	1	1 unit	101	0.052
4 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 03-1AD00**	1	1 unit	101	0.052
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 03-1CD00**	1	1 unit	101	0.052
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 03-1DD00**	1	1 unit	101	0.053
Switchable multi-range converters, active										
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	6.2	24 AC/DC	2 paths	A	**3RS17 05-1FD00**	1	1 unit	101	0.053
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS17 05-1FW00**	1	1 unit	101	0.090
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 50 Hz, 0 ... 100 Hz, 0 ... 1 kHz, 0 ... 10 kHz, selectable	6.2	24 AC/DC	2 paths	A	**3RS17 05-1KD00**	1	1 unit	101	0.053
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS17 05-1KW00**	1	1 unit	101	0.099
Switchable universal converters, active, with 16 input ranges and 3 output ranges										
 3RS17 06-1FD00	0 ... 60 mV, 0 ... 100 mV, 0 ... 300 mV, 0 ... 500 mV, 0 ... 1 V, 0 ... 2 V, 0 ... 5 V, 0 ... 10 V, 0 ... 20 V, 2 ... 10 V, 0 ... 5 mA, 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, +/-5 mA, +/-20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS17 06-1FD00**	1	1 unit	101	0.082
					3 paths	A	**3RS17 06-1FE00**	1	1 unit	101	0.082
				24 ... 240 AC/DC	3 paths	A	**3RS17 06-1FW00**	1	1 unit	101	0.090
Switchable multi-range converters, active, with manual/automatic switch and single potentiometer as manual analog signal transmitter										
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS17 25-1FD00**	1	1 unit	101	0.085
			24 ... 240 AC/DC	3 paths	A	**3RS17 25-1FW00**	1	1 unit	101	0.102

Inputs	Output	Width	Number of channels	Electrical isolation	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm				Order No.				kg
Single interface converters, passive										
 3RS17 20-1ET00	0/4 ... 20 mA	6.2	1	2 paths	A	**3RS17 20-1ET00**	1	1 unit	101	0.049
		12.5	1	2 paths	A	**3RS17 21-1ET00**	1	1 unit	101	0.059
			2	2 paths	A	**3RS17 22-1ET00**	1	1 unit	101	0.070

* You can order this quantity or a multiple thereof.

All converters except the passive single interface converters have a yellow LED for indicating "Power on".

Inputs	Output	Width	Rated control supply voltage U_s	Electrical isolation	DT	Spring-type terminals	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm	V									kg
Single interface converters, active												
0 ... 10 V	0 ... 10 V	6.2	24 AC/DC	2 paths	A		**3RS17 00-2AD00**		1	1 unit	101	0.047
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A		**3RS17 00-2CD00**		1	1 unit	101	0.047
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A		**3RS17 00-2DD00**		1	1 unit	101	0.047
0 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	C		**3RS17 02-2AD00**		1	1 unit	101	0.047
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A		**3RS17 02-2CD00**		1	1 unit	101	0.045
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A		**3RS17 02-2DD00**		1	1 unit	101	0.048
4 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A		**3RS17 03-2AD00**		1	1 unit	101	0.047
	0 ... 20 mA	6.2	24 AC/DC	2 paths	C		**3RS17 03-2CD00**		1	1 unit	101	0.049
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A		**3RS17 03-2DD00**		1	1 unit	101	0.047
Switchable multi-range converters, active												
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	6.2	24 AC/DC	2 paths	A		**3RS17 05-2FD00**		1	1 unit	101	0.048
		17.5	24 ... 240 AC/DC	3 paths	A		**3RS17 05-2FW00**		1	1 unit	101	0.092
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 50 Hz, 0 ... 100 Hz, 0 ... 1 kHz, 0 ... 10 kHz, selectable	6.2	24 AC/DC	2 paths	C		**3RS17 05-2KD00**		1	1 unit	101	0.047
		17.5	24 ... 240 AC/DC	3 paths	A		**3RS17 05-2KW00**		1	1 unit	101	0.092
Switchable universal converters, active, with 16 input ranges and 3 output ranges												
0 ... 60 mV, 0 ... 100 mV, 0 ... 300 mV, 0 ... 500 mV, 0 ... 1 V, 0 ... 2 V, 0 ... 5 V, 0 ... 10 V, 0 ... 20 V, 2 ... 10 V, 0 ... 5 mA, 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, +/-5 mA, +/-20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A		**3RS17 06-2FD00**		1	1 unit	101	0.078
				3 paths	A		**3RS17 06-2FE00**		1	1 unit	101	0.077
			24 ... 240 AC/DC	3 paths	A		**3RS17 06-2FW00**		1	1 unit	101	0.094
Switchable multi-range converters, active, with manual/automatic switch and single potentiometer as manual analog signal transmitter												
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A		**3RS17 25-2FD00**		1	1 unit	101	0.078
			24 ... 240 AC/DC	3 paths	A		**3RS17 25-2FW00**		1	1 unit	101	0.095

3RS17 05-2FD00

3RS17 25-2FD00

Inputs	Output	Width	Number of channels	Electrical isolation	DT	Spring-type terminals	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm										kg
Single interface converters, passive												
0/4 ... 20 mA	0/4 ... 20 mA	6.2	1	2 paths	A		**3RS17 20-2ET00**		1	1 unit	101	0.044
		12.5	1	2 paths	A		**3RS17 21-2ET00**		1	1 unit	101	0.057
			2	2 paths	A		**3RS17 22-2ET00**		1	1 unit	101	0.066

* You can order this quantity or a multiple thereof.

Notes