

# Monitoring and Control Devices

# 7



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# Monitoring and Control Devices

## Introduction

### Overview

The advantages at a glance



3UF7



3UF5



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#### SIMOCODE 3UF Motor Management and Control Devices

**SIMOCODE pro 3UF7**  
**SIMOCODE-DP 3UF5**

- 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 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 on 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

**3UF18 current transformers for overload protection**

- Protection converter for activating overload relays or for use with SIMOCODE pro
- Ensures proportional current transfer up to a multiple of the primary rated current

**3UL22 summation current transformers**

- Senses fault currents in machines and plants
- Senses ground fault currents

#### 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 ...)
  - Controlgear cubicle 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 variants**

- With display, pushbuttons and an interface for connecting extension modules

**LOGO! Modular Pure variants**

- Without display and pushbuttons but with an interface for connecting extension modules

**LOGO! Modular extension modules**

- For connection to LOGO! Modular basic variants with digital inputs and outputs or analog inputs and outputs

**LOGO! Modular communications modules**

- For integrating LOGO! in an *instabus* KNX *EIB* system or as an AS-Interface slave

**LOGO! Power**

- Power supply for converting the supply voltage of 100 ... 240 V AC into an operating voltage of 24 V DC or 12 V DC

**LOGO! Contact**

- Switching module for switching resistive loads and motors directly

**LOGO! Software**

- For switchgear program generation on the PC

Order No.	Page
3UF7	7/5
3UF5	7/11
3UF18	7/15
3UL22	7/16
6ED1 052-1	7/18
6ED1 052-2	7/20
6ED1 055-1	7/22
3RK1 400	7/24
6EP1 3	Ch. 11
6ED1 057-4	7/26
6ED1 058	7/27

### The advantages at a glance



3RP



7PV



3UG45 11



3UG46 14

		Order No.	Page
<b>3RP, 7PV timing relays</b>			
<b>3RP15 timing relay in industrial enclosure, 22.5 mm</b>	<ul style="list-style-type: none"> <li>Low-cost solution with monofunctions such as response delay, off-delay, clock-pulse, wye-delta function, multifunction</li> <li>Wide-range voltage designs</li> </ul>	3RP15	7/28
<b>3RP20 timing relay, 45 mm</b>	<ul style="list-style-type: none"> <li>The solution for small mounting depths</li> <li>The low mounting height reduces the tier spacing</li> </ul>	3RP20	7/34
<b>7PV timing relay for panel mounting</b>	<ul style="list-style-type: none"> <li>Digital variant</li> </ul>	7PV	7/38
<b>3RT19 timing relay for mounting to contactors</b>	<ul style="list-style-type: none"> <li>Saves space because the relay is mounted onto the contactor</li> <li>Wiring advantages thanks to direct contacting with contactor</li> </ul>	3RT19	7/39
<b>3UG monitoring relays for electrical and additional measurements</b>			
<i>Line Monitoring</i>			
<b>Phase sequence</b>	<ul style="list-style-type: none"> <li>Low-cost solution for monitoring the phase sequence</li> </ul>	3UG45 11	7/42
<b>Phase sequence, phase failure, phase unbalance</b>	<ul style="list-style-type: none"> <li>Wide voltage range from 160 to 690 V</li> </ul>	3UG45 12	7/42
<b>Phase sequence, phase failure, phase unbalance and undervoltage</b>	<ul style="list-style-type: none"> <li>Analog adjustable</li> <li>Wide voltage range from 160 to 690 V</li> </ul>	3UG45 13	7/42
	<ul style="list-style-type: none"> <li>Digitally adjustable with LCD display for indication of ACTUAL value and device status</li> <li>Wide voltage range from 160 to 690 V</li> </ul>	3UG46 14	7/42
<b>Phase sequence, phase failure, phase unbalance and overvoltage and undervoltage</b>	<ul style="list-style-type: none"> <li>Digitally adjustable with LCD display for indication of ACTUAL value and device status</li> </ul>	3UG46 15	7/42
<b>Phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage</b>	<ul style="list-style-type: none"> <li>Wide voltage range from 160 to 690 V</li> </ul>	3UG46 16	7/42
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage</b>		3UG46 17	7/42
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage</b>		3UG46 18	7/42
<i>Voltage Monitoring</i>			
<b>Voltage monitoring with internal power supply for overvoltage and undervoltage</b>	<ul style="list-style-type: none"> <li>Digitally adjustable with LCD display for indication of ACTUAL value and device status</li> </ul>	3UG46 33	7/46
<b>Voltage monitoring with auxiliary voltage for overvoltage and undervoltage</b>	<ul style="list-style-type: none"> <li>Wide measuring ranges</li> <li>Variant for wide voltage range</li> </ul>	3UG46 31/32	7/46
<i>Current Monitoring</i>			
<b>Current monitoring with auxiliary voltage for overvoltage and undervoltage</b>	<ul style="list-style-type: none"> <li>Digitally adjustable with LCD display for indication of ACTUAL value and device status</li> <li>Wide measuring ranges</li> <li>Variant for wide voltage range</li> </ul>	3UG46 21/22	7/48
<i>Power factor monitoring (motor load monitoring)</i>			
<b>Monitoring relay for overshoot and undershoot monitoring with internal power supply (window monitoring)</b>	<ul style="list-style-type: none"> <li>Upper and lower threshold value can be adjusted separately</li> </ul>	3UG30 14	7/49
<i>Insulation resistance</i>			
<b>Monitoring of the insulation resistance for ungrounded AC or DC networks from 10 ... 110 kΩ</b>	<ul style="list-style-type: none"> <li>Test button</li> <li>With or without memory</li> <li>Switchable measuring range</li> </ul>	3UG30 81, 3UG30 82	7/50, 7/51
<i>Level Monitoring</i>			
<b>Fill level and resistance</b>	<ul style="list-style-type: none"> <li>As single-step or two-step controls for inlet or outlet monitoring of conducting liquids or as resistance threshold switch</li> <li>Variable, wide range from 5 ... 100 kΩ</li> <li>UNDER/OVER adjustable</li> </ul>	3UG35 01	7/52
<i>Speed Monitoring</i>			
<b>Underspeed monitoring</b>	<ul style="list-style-type: none"> <li>Together with a sensor for monitoring continuous pulses</li> <li>With or without memory</li> <li>Adjustable ON delay</li> <li>1, 2 and 3 changeover contacts</li> <li>Hard gold-plated contacts in combination and wide voltage range versions</li> </ul>	3UG30 51	7/54

# Monitoring and Control Devices

## Introduction

### The advantages at a glance



3RS10



3RN1



3TK28



3RS17

	Order No.	Page
<b>3RS10, 3RS11, 3RS20 temperature monitoring relays</b> <i>for monitoring the temperatures of solids, liquids, and gases</i>		
<b>Relay, analog adjustable</b>	<ul style="list-style-type: none"> <li>• Separate versions for overshoot and undershoot</li> <li>• For simple monitoring tasks</li> <li>• For PT100 or thermoelements J and K</li> <li>• Variable hysteresis</li> </ul>	3RS10, 3RS11 7/55
<b>Relay, digitally adjustable acc. to DIN 3440</b>	<ul style="list-style-type: none"> <li>• For two-step or three-step controls</li> <li>• For monitoring heat generation plants</li> <li>• For PT100/1000, KTY83/84, NTC or thermoelements type J, K, T, E, N, R, S, B</li> </ul>	3RS10, 3RS11, 3RS20 7/58
<b>Relay, digitally adjustable for up to 3 sensors</b>	<ul style="list-style-type: none"> <li>• For simultaneously monitoring several sensors</li> <li>• Especially suited for monitoring motor winding temperatures</li> <li>• For PT100/1000, KTY83/84, NTC</li> </ul>	3RS10 7/61
<b>3RN1 thermistor motor protection</b>		
<b>for PTC sensors</b>	<ul style="list-style-type: none"> <li>• Relays for monitoring motor winding temperatures with type A PTC sensors</li> <li>• Integrated with ATEX license</li> <li>• Closed-circuit principle</li> <li>• Depending on the version: With short-circuit and open-circuit detection, zero voltage safety, manual/auto/remote RESET, 1 CO, 1 NO + 1 NC, 2 CO, 1 NO + 1 CO or 2 CO hard gold-plated</li> </ul>	3RN1 7/63
<b>3TK28 safety relays</b>		
<b>with electronic enabling circuits</b>	<ul style="list-style-type: none"> <li>• Permanent function checking</li> <li>• No wear because switched electronically</li> <li>• High switching frequency</li> <li>• Long electrical endurance</li> <li>• Evaluation of solid-state sensors</li> <li>• Sensor lead up to max. 2000 m</li> <li>• Cascading possible</li> <li>• Insensitive to vibrations and dirt</li> <li>• Compact design, low weight</li> <li>• Approved for the world market</li> </ul>	3TK28 4 7/69
<b>with relay enabling circuits</b>	<ul style="list-style-type: none"> <li>• Compact design</li> <li>• Floating safe outputs</li> <li>• Also suitable for press and punch controls</li> <li>• Can be used up to an ambient temperature of max. 70 °C</li> </ul>	3TK28 2, 3TK28 3 7/71
<b>with contactor relay enabling circuits</b>	<ul style="list-style-type: none"> <li>• Floating enabling circuits</li> <li>• AC-15/DC-13 switching capacity</li> <li>• Safe isolation</li> <li>• Long mechanical and electrical endurance</li> <li>• Certified as a complete unit</li> <li>• Fault minimization and cost reduction through factory wiring</li> <li>• Low installation costs</li> </ul>	3TK28 5 7/75
<b>3RA71 load feeders with integrated safety functions</b>	<ul style="list-style-type: none"> <li>• Available in fused or fuseless configuration</li> <li>• Floating enabling circuits</li> <li>• AC-1/AC-3 switching capacity</li> <li>• Certified as a complete unit</li> <li>• Long mechanical and electrical endurance</li> <li>• Rated operating voltage up to 690 V</li> <li>• Safe isolation</li> </ul>	3TK28 5 Ch. 6
<b>3RS17 interface converters</b>		
<b>Converters for standard signals and non-standard variables</b>	<ul style="list-style-type: none"> <li>• All terminals protected against polarity reversing and overvoltage up to 30 V</li> <li>• For electrical isolation and conversion of analog signals</li> <li>• Short-circuit resistant outputs</li> <li>• From 6.2 mm width</li> <li>• Switchable multi-range converters</li> <li>• Variants with manual/automatic switch for setpoint input or for the conversion of analog variables into frequency</li> </ul>	3RS17 7/78

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7 motor management and control devices

### Overview

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 switchgear cabinet, 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
- Flexible software instead of hardware for the motor control
- Detailed operational, service and diagnostics data
- Open communication through PROFIBUS DP, the standard for fieldbus systems

### 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
- Distribution 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 system 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 software 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. using PT100/PT1000 as well as
- Monitoring of operating hours, downtime and number of starts etc.

#### Recording of measurement curves

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

#### Flexible motor control implemented with software (instead of comprehensive hardware interlocks)

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

- Direct-on-line and reversing starters
- Star/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)
- Slide control
- Solenoid valve actuation
- Activation of a circuit-breaker
- Soft starter actuation (also with direction reversal)

These control functions have been implemented by means of software and can be freely assigned to the inputs and outputs (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 ...).

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 status derived from the current flow in the main circuit
- All phase currents
- All line 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
- Internal comments stored in the device etc.

#### Diagnostic 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.

# SIMOCODE 3UF Motor Management and Control Devices

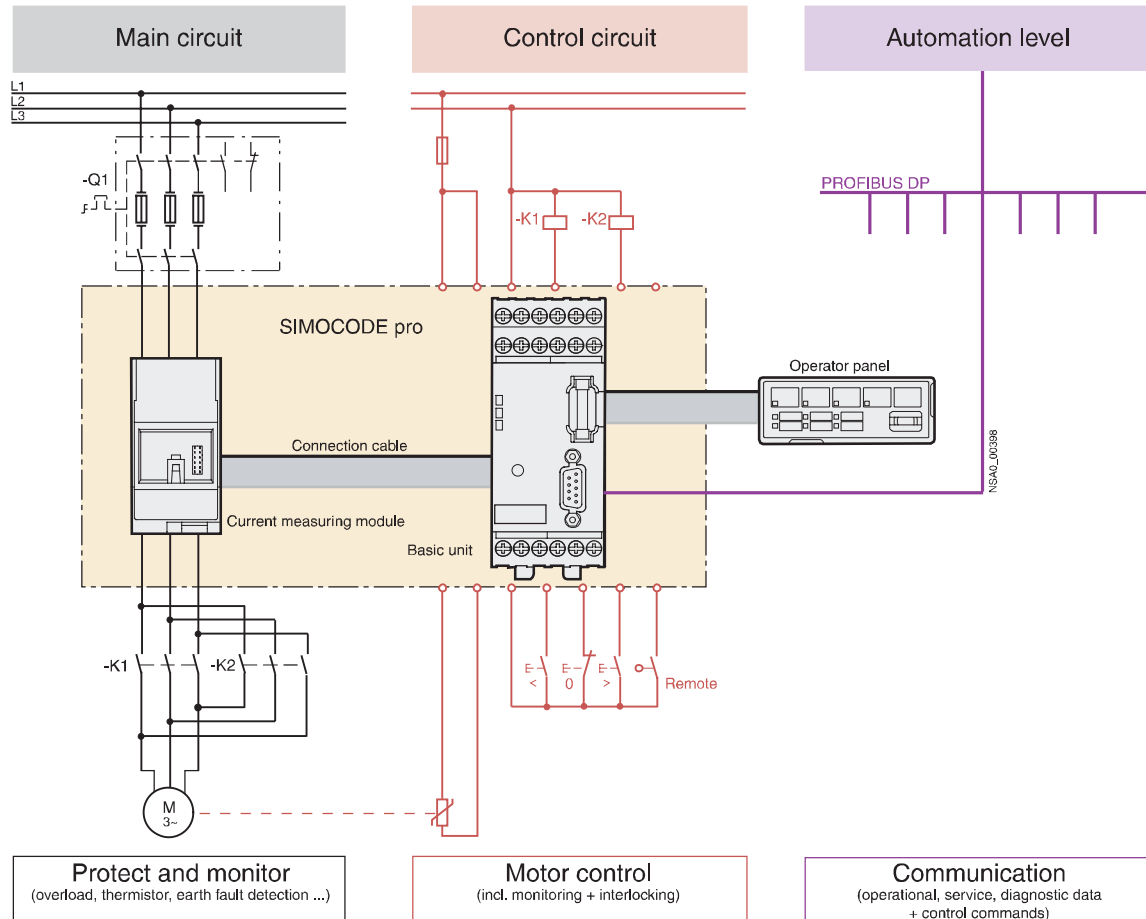
## SIMOCODE pro 3UF7 motor management and control devices

### Communication

SIMOCODE pro is equipped with an integral PROFIBUS DP interface (SUB-D or terminal connection) and can therefore replace all individual wiring (including terminal blocks), 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
- Cyclic services (DPV0) and acyclic services (DPV1) etc.



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

### Applications

- Protection and control of motors
- In hazardous areas (chemical, oil and gas industry)
- With heavy-duty 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, 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.

# SIMOCODE 3UF Motor Management and Control Devices


**SIMOCODE pro 3UF7**  
motor management and control devices

## Selection and ordering data

Version	Current setting	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
	A	mm							kg	
<b>SIMOCODE pro</b>										
 3UF7 000-1A.00-0	<b>SIMOCODE pro C, basic units 1,</b> 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 $U_S$ :									
	<ul style="list-style-type: none"> <li>• 24 V DC</li> <li>• 110 ... 240 V AC/DC</li> </ul>			A	<b>3UF7 000-1AB00-0</b>		1	1 unit	131	0.350
			A	<b>3UF7 000-1AU00-0</b>		1	1 unit	131	0.350	
 3UF7 010-1A.00-0	<b>SIMOCODE pro V, basic units 2,</b> 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 $U_S$ :									
	<ul style="list-style-type: none"> <li>• 24 V DC</li> <li>• 110 ... 240 V AC/DC</li> </ul>			A	<b>3UF7 010-1AB00-0</b>		1	1 unit	131	0.350
			A	<b>3UF7 010-1AU00-0</b>		1	1 unit	131	0.350	
<b>Current measuring modules</b>										
 3UF7 100-1AA00-0	Straight-through transformers									
	0.3 ... 3	45	A	<b>3UF7 100-1AA00-0</b>		1	1 unit	131	0.100	
	2.4 ... 25	45	A	<b>3UF7 101-1AA00-0</b>		1	1 unit	131	0.150	
	10 ... 100	55	A	<b>3UF7 102-1AA00-0</b>		1	1 unit	131	0.350	
	20 ... 200	120	A	<b>3UF7 103-1AA00-0</b>		1	1 unit	131	0.600	
	Busbar connection									
20 ... 200	120	A	<b>3UF7 103-1BA00-0</b>		1	1 unit	131	1.000		
63 ... 630	145	A	<b>3UF7 104-1BA00-0</b>		1	1 unit	131	1.750		
<b>Current/voltage measuring modules<sup>1)</sup></b>										
 3UF7 110-1AA00-0	Voltage measurement up to 690 V									
	Straight-through transformers									
	0.3 ... 3	45	A	<b>3UF7 110-1AA00-0</b>		1	1 unit	131	0.150	
	2.4 ... 25	45	A	<b>3UF7 111-1AA00-0</b>		1	1 unit	131	0.200	
	10 ... 100	55	A	<b>3UF7 112-1AA00-0</b>		1	1 unit	131	0.400	
	20 ... 200	120	A	<b>3UF7 113-1AA00-0</b>		1	1 unit	131	0.700	
Busbar connection										
20 ... 200	120	A	<b>3UF7 113-1BA00-0</b>		1	1 unit	131	1.000		
63 ... 630	145	A	<b>3UF7 114-1BA00-0</b>		1	1 unit	131	1.750		
<b>Operator panels</b>										
 3UF7 200-1AA00-0	Installation in control cabinet door or front plate, for plugging into basic unit, 10 LEDs for status indication and user-assignable buttons for manual control			A	<b>3UF7 200-1AA00-0</b>		1	1 unit	131	0.100

## Expansion modules

Note:  
Expansion modules can only be used in combination with basic unit 2! A total of up to 5 expansion modules can be connected in any order to one basic unit.

 3UF7 300-1AU00-0	<b>Digital modules</b> 4 binary inputs and 2 relay outputs, up to 2 digital modules can be connected per basic unit 2			A	<b>3UF7 3□0-1A□□0-0</b>		1	1 unit	131	0.150
	Relay outputs monostable bistable Input voltage 24 V DC 110 ... 240 V AC/DC				Order No. suffixes 0 1 B U					




1) Only possible with basic unit 2, product version E02 and higher (from April 2005).

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






# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7 motor management and control devices

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
 <p><b>Analog modules<sup>1)</sup></b> 2 inputs to input and 1 output to output 0/4 ...20 mA signals, up to 1 analog module can be connected per basic unit 2</p>	A	<b>3UF7 400-1AA00-0</b>		1	1 unit	131	0.150
 <p><b>Ground fault modules<sup>1)</sup></b> 1 input for connecting a 3UL22 summation current transformer, up to 1 ground fault module can be connected per basic unit 2</p>	A	<b>3UF7 500-1AA00-0</b>		1	1 unit	131	0.150
 <p><b>Temperature modules<sup>1)</sup></b> 3 inputs for connecting up to 3 analog temperature sensors, up to 1 temperature module can be connected for each basic unit 2</p>	A	<b>3UF7 700-1AA00-0</b>		1	1 unit	131	0.150

1) Only possible with basic unit 2, product version E02 and higher (from April 2005).

## Accessories






Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Connection cables</b>							
 <p><b>Connection cables</b> In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules:</p> <ul style="list-style-type: none"> <li>• Side by side Length 0.025 m (flat) Caution: 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</li> <li>• Length 0.1 m (flat)</li> <li>• Length 0.3 m (flat)</li> <li>• Length 0.5 m (flat)</li> <li>• Length 0.5 m (round)</li> <li>• Length 1.0 m (round)</li> <li>• Length 2.5 m (round)</li> </ul>	B	<b>3UF7 930-0AA00-0</b>		1	1 unit	131	0.010
	B	<b>3UF7 931-0AA00-0</b>		1	1 unit	131	0.010
	A	<b>3UF7 935-0AA00-0</b>		1	1 unit	131	0.020
	B	<b>3UF7 932-0AA00-0</b>		1	1 unit	131	0.020
	A	<b>3UF7 932-0BA00-0</b>		1	1 unit	131	0.050
	A	<b>3UF7 937-0BA00-0</b>		1	1 unit	131	0.100
	B	<b>3UF7 933-0BA00-0</b>		1	1 unit	131	0.100
<b>PC cables</b>							
 <p><b>for PC/PG communication with SIMOCODE pro</b> through the system interface, for connecting to the serial interface of the PC/PG</p>	B	<b>3UF7 940-0AA00-0</b>		1	1 unit	131	0.150
<b>Memory modules</b>							
 <p><b>for parameterizing SIMOCODE pro without a PC/PG</b> through the system interface</p>	A	<b>3UF7 900-0AA00-0</b>		1	1 unit	131	0.010

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



# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7 motor management and control devices

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg	
<b>Addressing plugs</b>								
		<b>for assigning the PROFIBUS addresses without using a PC/PG on a basic unit</b>	B	<b>3UF7 910-0AA00-0</b>	1	1 unit	131	0.030
<b>Door adapters</b>								
		<b>for external connection of the system interface outside, for example, a control cabinet</b>	A	<b>3UF7 920-0AA00-0</b>	1	1 unit	131	0.030
<b>System manuals</b>								
		<b>SIMOCODE pro</b> Token fee Languages: • German • English	B	<b>3UF7 970-0AA01-0</b>	1	1 unit	131	0.760
	B			<b>3UF7 970-0AA00-0</b>	1	1 unit	131	0.760
<b>PCS 7 function block libraries for SIMOCODE pro</b>								
		<b>for integrating SIMOCODE pro into the PCS 7 process control system</b> PCS 7 function block library for SIMOCODE pro, V6.0 Scope of delivery: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V6.0 Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), English/German, Type of supply: CD incl. documentation	A	<b>3UF7 982-0AA00-0</b>	1	1 unit	131	0.240
	A	PCS 7 function block library for SIMOCODE pro, V6.1 Scope of delivery: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V6.1 Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), English/German, Type of supply: CD incl. documentation		<b>3UF7 982-0AA02-0</b>	1	1 unit	131	0.240
	A	AS modules for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V6.x Runtime software for execution of the AS module in an automation system (single license), license without software and documentation		<b>3UF7 982-0AA01-0</b>	1	1 unit	131	0.001
<b>SIMOCODE ES</b>								
		<b>Parameterization and service software for SIMOCODE pro</b> Executes on PC/PG under Windows 2000/XP, without PC cable Type of supply: CD, single license Variants: • <b>SIMOCODE ES Smart</b> , for parameterizing through the system interface on the device • <b>SIMOCODE ES Professional</b> , for parameterizing through PROFIBUS or the system interface on the device, incl. STEP 7 object manager • <b>SIMOCODE ES Graphic</b> , optional expansion of SIMOCODE ES Smart/ Professional with a graphical editor for ergonomic and user-friendly parameterization by means of Drag & Drop Requirements (minimum): Installed SIMOCODE ES Smart 2004 with SP1 or installed SIMOCODE ES Professional 2004 with SP1	A	<b>3ZS1 312-1CC10-0YA0</b>	1	1 unit	131	0.230
	A			<b>3ZS1 312-2CC10-0YA0</b>	1	1 unit	131	0.230
	A			<b>3ZS1 312-3CC10-0YA0</b>	1	1 unit	131	0.230


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

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# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE pro 3UF7 motor management and control devices

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Push-in lugs</b>							
 <p><b>for screw fixing</b> e.g. on mounting plate, 2 units required per device can be used with 3UF7 1.0, 3UF7 1.1 and 3UF7 1.2 can be used with 3UF7 0, 3UF7 3, 3UF7 4, 3UF7 5 and 3UF7 7</p>		<b>3RB1 900-0B</b>		100	10 units	101	0.100
		<b>3RP1 903</b>		1	10 units	101	0.002

### More information

#### Important ordering notes

SIMOCODE pro is a modularly constructed motor management system which 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
- **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.

#### System manual

For selection of equipment and for planning, it is recommended that the 3UF7 970-0AA0.-0 system manual is consulted.

#### Internet

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

	SIMOCODE pro C Basic Unit 1	SIMOCODE pro V Basic Unit 2
Operator panel	•	•
Current measuring modules	•	•
Current/voltage measuring modules	—	•
Expansion modules:		
• Digital modules (max. 2)	—	•
• Analog module (max. 1)	—	•
• Ground fault module (max. 1)	—	•
• Temperature module (max. 1)	—	•

Protection, control and monitoring functions as well as the data and measured values deliverable by each system are directly dependent on the device configuration selected and on the expansion modules used. A detailed description of the functionality of all SIMOCODE pro system components can be found in the system manual or catalog LV 1 T.

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE-DP 3UF5 motor protection and control devices

### Overview



Basic unit, expansion module and operator module  
SIMOCODE-DP



SIMOCODE-DP is the predecessor of the SIMOCODE pro motor management system and offers the solution for a wide range of different tasks in a single unit:

- Multifunctional, electronic motor protection and plant monitoring
- Comprehensive motor and plant diagnostics
- Integrated control programs (instead of extensive hardware wiring)
- Open communication through PROFIBUS DP, the standard for fieldbus systems



# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE-DP 3UF5 motor protection and control devices

### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg																																			
<b>Basic units</b>																																										
 <p><b>4 inputs, 4 outputs</b> for snap-on mounting onto 35 mm standard mounting rail</p> <table border="1"> <thead> <tr> <th>Contactors that can be mounted externally</th> <th>Width mm</th> <th>Setting range A</th> <th></th> </tr> </thead> <tbody> <tr> <td>Type</td> <td>mm</td> <td>A</td> <td></td> </tr> <tr> <td>--</td> <td>70</td> <td>1.25<sup>1)</sup> ... 6.3</td> <td>C</td> </tr> <tr> <td>--</td> <td>70</td> <td>6.3 ... 25</td> <td>C</td> </tr> <tr> <td>--</td> <td>70</td> <td>25 ... 100</td> <td>C</td> </tr> <tr> <td>3RT1 05</td> <td>120</td> <td>50 ... 205</td> <td>C</td> </tr> <tr> <td>3RT1 06, 3RT1 07</td> <td>145</td> <td>125 ... 500</td> <td>C</td> </tr> <tr> <td>3RT1 26, 3RT1 27</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3TF6 8, 3TF6 9</td> <td>230</td> <td>200 ... 820</td> <td>C</td> </tr> </tbody> </table>		Contactors that can be mounted externally	Width mm	Setting range A		Type	mm	A		--	70	1.25 <sup>1)</sup> ... 6.3	C	--	70	6.3 ... 25	C	--	70	25 ... 100	C	3RT1 05	120	50 ... 205	C	3RT1 06, 3RT1 07	145	125 ... 500	C	3RT1 26, 3RT1 27				3TF6 8, 3TF6 9	230	200 ... 820	C					
Contactors that can be mounted externally	Width mm	Setting range A																																								
Type	mm	A																																								
--	70	1.25 <sup>1)</sup> ... 6.3	C																																							
--	70	6.3 ... 25	C																																							
--	70	25 ... 100	C																																							
3RT1 05	120	50 ... 205	C																																							
3RT1 06, 3RT1 07	145	125 ... 500	C																																							
3RT1 26, 3RT1 27																																										
3TF6 8, 3TF6 9	230	200 ... 820	C																																							
3UF5 001 to 021		<b>3UF5 001-3□□□□-1</b>		1	1 unit	131	0.800																																			
		<b>3UF5 011-3□□□□-1</b>		1	1 unit	131	0.800																																			
		<b>3UF5 021-3□□□□-1</b>		1	1 unit	131	0.800																																			
		<b>3UF5 031-3□□□□-1</b>		1	1 unit	131	1.640																																			
		<b>3UF5 041-3□□□□-1</b>		1	1 unit	131	2.420																																			
		<b>3UF5 051-3□□□□-1</b>		1	1 unit	131	4.330																																			
 <p><b>Inputs</b> Input for thermistor motor protection</p> <p>Ground-fault detection input (external) (sensing of ground fault currents of sizes 0.3 A, 0.5 A and 1 A with summation current transformers 3UL2 20.-A.)</p> <p><b>Rated control voltage</b> 24 V DC 115 V AC 230 V AC</p> <p><b>Behavior of the outputs in case of control supply voltage failure</b> monostable bistable</p>		Order No. suffixes	Add. price																																							
		<b>A</b>																																								
		<b>B</b>																																								
		<b>B</b>																																								
		<b>J</b>																																								
		<b>N</b>																																								
		<b>0</b>																																								
		<b>1</b>																																								



1) The current setting range of 0.25 A ... 1.25 A is obtained by multiple looping of the main circuits through the current transformers of the basic unit.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per unit approx. kg
<b>Expansion modules</b>							
 <p><b>8 inputs, 4 outputs</b> for snap-on mounting on 35 mm standard mounting rail External supply voltage for the inputs 24 V DC 115 V AC 230 V AC</p>		A					
		<b>3UF5 100-0AB00</b>		1	1 unit	131	0.422
		<b>3UF5 100-0AJ00</b>		1	1 unit	131	0.442
		<b>3UF5 100-0AN00</b>		1	1 unit	131	0.445
<b>Operator panels</b>							
 <p><b>for installation in the control cabinet door</b> for plugging into basic unit or expansion module</p>		A					
		<b>3UF5 202-1AA00-1</b>		1	1 unit	131	0.137

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE-DP 3UF5 motor protection and control devices






### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per unit approx. kg
<b>Configuration software</b>							
 3UF5 710-0AA00-0	A	<b>3UF5 710-0AA00-0</b>		1	1 unit	131	0.230
<p><b>Win-SIMOCODE-DP/Professional</b></p> <ul style="list-style-type: none"> <li>Parameterization, control, visualization and testing of SIMOCODE-DP: through PROFIBUS or the system interface on the device</li> <li>PC/PG requirement: Windows 95/98/2000/NT/ME or Windows XP</li> <li>PC/PG interface requirement: PROFIBUS system interface from Siemens or RS 232 with compatible 3RW2 920-1DA00 interface cable</li> <li>SIMOCODE-DP requirement: Delivery stage E10 (as of June 1998)</li> <li>Type of supply: CD-ROM, English/German incl. online Help and example parameter files, single license</li> </ul>							
 3UF5 711-0AA00-0	A	<b>3UF5 711-0AA00-0</b>		1	1 unit	131	0.231
<p><b>Win-SIMOCODE-DP/Smart</b></p> <ul style="list-style-type: none"> <li>Parameterization, control, visualization and testing: through the interface on the device</li> <li>PC/PG requirement: Windows 95/98/2000/NT/ME or Windows XP</li> <li>PC/PG interface requirement: RS 232 with compatible 3RW2 920-1DA00 interface cable</li> <li>Type of supply: CD-ROM, English/German incl. online Help and example parameter files, single license</li> </ul>							
	A	<b>3UF5 712-0AA00-0</b>		1	1 unit	131	0.231
<p><b>OM-SIMOCODE-DP</b></p> <p>STEP 7 Object Manager for integrating SIMOCODE-DP as S7 slave and for call of Win-SIMOCODE-DP/Professional from STEP 7</p> <ul style="list-style-type: none"> <li>Requirements: STEP 7, Version 4.0 or higher</li> <li>SIMOCODE-DP requirement: Delivery stage E10 (as of June 1998)</li> <li>Type of supply: CD-ROM, English/German incl. online Help, single license</li> </ul>							
	A	<b>3UF5 720-0AA10-0</b>		1	1 unit	131	0.230
<p><b>PCS 7 SIMOCODE-DP function modules</b></p> <p>Function module for integrating SIMOCODE-DP into the process control system, PCS 7, Version V6.0</p> <ul style="list-style-type: none"> <li>SIMOCODE-DP requirement: Delivery stage E10 and higher (as of June 1998)</li> <li>Type of supply: CD-ROM, English/German, single license</li> </ul>							
<b>Documentation</b>							
<b>System manuals</b>							
with description of the communication through PROFIBUS DP and a configuration example							
	A	<b>3UF5 700-0AA00-0</b>		1	1 unit	131	0.841
• German	A	<b>3UF5 700-0AA00-1</b>		1	1 unit	192	0.749
• English							

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

# SIMOCODE 3UF Motor Management and Control Devices

## SIMOCODE-DP 3UF5 motor protection and control devices

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per unit approx. kg
<b>Connecting cables, installation material</b>							
<b>Connection cables</b> for PC communication through the system interface on the device Length 5 m		▶ <b>3RW29 20-1DA00</b>		1	1 unit	131	0.176
<b>Connecting plugs/connecting leads</b> with 3UF5 9/3UF1 9 connectors							
	• For connecting the basic unit to the expansion module, 9-pole, 0.03 m, flat connector, shielded	A	<b>3UF5 900-1AA00</b>	1	1 unit	131	0.020
	• For connecting the basic unit to the expansion module or to the operator panel, 9-pole						
	- 0.5 m long, shielded connector 45° angular	A	<b>3UF1 900-1AA00</b>	1	1 unit	131	0.077
	- 2.0 m long, shielded connector 45° angular	A	<b>3UF1 900-1BA00</b>	1	1 unit	131	0.161
	- 2.5 m long, shielded connector 45° angular	A	<b>3UF1 900-1CA00</b>	1	1 unit	131	0.197
	- 0.5 m long, with flat connector, shielded	A	<b>3UF1 900-1DA00</b>	1	1 unit	131	0.062
	- 1.0 m long, with flat connector, shielded	A	<b>3UF1 900-1EA00</b>	1	1 unit	131	0.088
	• For connecting basic unit/expansion module to the control cabinet door It is possible to set parameters, operate and monitor using the PC from the control cabinet door, 9-pole						
- 0.5 m long, with flat connector and socket, shielded	A	<b>3UF5 900-0AA00</b>	1	1 unit	131	0.061	
- 1.0 m long, with flat connector and socket, shielded	A	<b>3UF5 900-0BA00</b>	1	1 unit	131	0.095	
<b>T-shaped terminals</b> Terminal for bus connection to PROFIBUS DP - RS 485		A	<b>3UF5 900-1GA00</b>	1	1 unit	131	0.048
<b>3UF1 900 bus terminations</b> 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 24 V DC		A	<b>3UF1 900-1KA00</b>	1	1 unit	131	0.286
		A	<b>3UF1 900-1KB00</b>	1	1 unit	131	0.192
<b>Push-in lugs</b>							
	for screw mounting on mounting plate 2 units are required for each 3UF5 0	▶	<b>3RB19 00-0B</b>	100	10 units	101	0.100
<b>Terminal covers</b>							
	• For stand-alone installation or on the output side for direct mounting						
	- 3UF5 031	D	<b>3TX7 506-0A</b>	1	1 unit	101	0.041
	- 3UF5 041	D	<b>3TX7 536-0A</b>	1	2 units	101	0.112
	- 3UF5 051 with 3TF6 8	B	<b>3TX7 686-0A</b>	1	1 set	101	0.410
	- 3UF5 051 with 3TF6 9	B	<b>3TX7 696-0A</b>	1	1 set	101	0.402
3TX7 506-0A							
	• Between contactor and overload relay for direct mounting						
	- 3UF5 031	D	<b>3TX7 506-0B</b>	1	1 unit	101	0.019
	- 3UF5 041	D	<b>3TX7 536-0B</b>	1	1 unit	101	0.057
	- 3UF5 051 with 3TF6 8	C	<b>3TX7 686-0B</b>	1	1 unit	101	0.085
	- 3UF5 051 with 3TF6 9	C	<b>3TX7 696-0B</b>	1	2 units	101	0.102
3TX7 506-0B							

### More information

#### System manual

For selection of equipment and for configuration, it is recommended that the 3UF5 7 system manual is consulted.

#### Internet

More information can be found on the Internet under <http://www.siemens.com/simocode-dp>

# SIMOCODE 3UF Motor Management and Control Devices



## 3UF18 current transformers for overload protection

### Overview

The 3UF18 current transformers are protection transformers and are used for actuating overload relays. Protection transformers are designed to ensure proportional current transfer up to a


multiple of the primary rated current. The 3UF18 current transformers convert the maximum current of the corresponding operating range into the standard signal 1 A secondary.

### Selection and ordering data

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

- 1) The following adjustment ranges for the protection of EEx e motors 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	
<b>Terminal covers</b>								
 3TX7 466-0A	for transformer/contactor combinations and stand-alone installation for transformer (one cover required per connection side)							
		D	<b>3TX7 446-0A</b>		1	1 unit	101	0.006
		D	<b>3TX7 466-0A</b>		1	1 unit	101	0.035
		D	<b>3TX7 506-0A</b>		1	1 unit	101	0.041
		D	<b>3TX7 536-0A</b>		1	2 units	101	0.112
		B	<b>3TX7 686-0A</b>		1	1 set	101	0.410
		B	<b>3TX7 696-0A</b>		1	1 set	101	0.402
	for covering the screw-type connection for direct mounting on contactor (one cover required per contactor/transformer combination)							
		D	<b>3TX7 466-0B</b>		1	1 unit	101	0.013
		D	<b>3TX7 506-0B</b>		1	1 unit	101	0.019
	D	<b>3TX7 536-0B</b>		1	1 unit	101	0.057	
	C	<b>3TX7 686-0B</b>		1	1 unit	101	0.085	
	C	<b>3TX7 696-0B</b>		1	2 units	101	0.102	

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



# SIMOCODE 3UF Motor Management and Control Devices

## 3UL22 summation current transformers

### Overview

The 3UL22 summation current transformers sense fault currents in machines and plants. Together with the 3UL21 evaluation unit or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

### Application

The residual-current operated circuit-breaker circuit is designed to prevent an excessively high touch voltage remaining in existence on a conductive part of the plant not belonging to the operating circuit. A fault current which exceeds a certain value will disconnect all poles of the incoming leads, as well as any neutral conductor that may be present, within 0.2 s.

### Selection and ordering data

Inlet opening diameter mm	Rated fault current $I_{\Delta n}$ A	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Summation current transformers for external ground fault monitoring</b>								
40	0.3	B	<b>3UL22 01-1A</b>		1	1 unit	101	0.571
	0.5	C	<b>3UL22 01-2A</b>		1	1 unit	101	0.408
	1	B	<b>3UL22 01-3A</b>		1	1 unit	101	0.324
65	0.3	B	<b>3UL22 02-1A</b>		1	1 unit	101	0.900
	0.5	B	<b>3UL22 02-2A</b>		1	1 unit	101	0.713
	1	B	<b>3UL22 02-3A</b>		1	1 unit	101	0.568
	10	B	<b>3UL22 02-2B</b>		1	1 unit	101	0.563
	16	B	<b>3UL22 02-3B</b>		1	1 unit	101	0.573
	25	B	<b>3UL22 02-4B</b>		1	1 unit	101	0.575
120	40	B	<b>3UL22 02-5B</b>		1	1 unit	101	0.564
	0.3	B	<b>3UL22 03-1A</b>		1	1 unit	101	3.435
	0.5	B	<b>3UL22 03-2A</b>		1	1 unit	101	2.810
	1	B	<b>3UL22 03-3A</b>		1	1 unit	101	1.965
	6	B	<b>3UL22 03-1B</b>		1	1 unit	101	1.955
	10	B	<b>3UL22 03-2B</b>		1	1 unit	101	1.990



3UL22 0.-.A

# LOGO! Logic Modules

## 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
- 34 different functions can be linked at a press of a button or with PC software; up to 130 times in total
- Functions can be changed simply using buttons; no complicated rewiring

### Catalog ST 70:

Information on LOGO! can also be found in the catalog ST 70:

[http://www.siemens.com/automation/simatic/ftp/st70/html\\_00/st70k1ad.pdf](http://www.siemens.com/automation/simatic/ftp/st70/html_00/st70k1ad.pdf)

### Application

The LOGO! logic module is the user-friendly, low-cost solution for simple control tasks.

LOGO! is universally applicable, e.g.:

- Building installation and wiring (lighting, shutters, awnings, doors, access control, barriers, ventilation systems ...)
- 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

# LOGO! Logic Modules

## LOGO! Modular basic variants

### Overview



- The space-saving basic variants
- With interface for connection of expansion modules

### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! Logic modules 24</b> Supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 2 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-1CC00-0BA5</b>		1	1 unit	200	0.191
<b>LOGO! 12/24RC logic modules</b> Supply voltage 12/24 V DC, 8 digital inputs 12/ 24 V DC, of which 2 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, Integrated time switch; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-1MD00-0BA5</b>		1	1 unit	200	0.228
<b>LOGO! 24RC logic modules</b> Supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, Integrated time switch; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-1HB00-0BA5</b>		1	1 unit	200	0.231
<b>LOGO! 230RC logic modules</b> Supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, Integrated time switch; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-1FB00-0BA5</b>		1	1 unit	200	0.232

# LOGO! Logic Modules

## LOGO! Modular basic variants

### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! manuals</b>							
• German	A	<b>6ED1 050-1AA00-0AE6</b>		1	1 unit	200	0.450
• English	A	<b>6ED1 050-1AA00-0BE6</b>		1	1 unit	200	0.401
• French	B	<b>6ED1 050-1AA00-0CE6</b>		1	1 unit	200	0.400
• Spanish	B	<b>6ED1 050-1AA00-0DE6</b>		1	1 unit	200	0.406
• Italian	B	<b>6ED1 050-1AA00-0EE6</b>		1	1 unit	200	0.402
<b>LOGO! Memory Cards</b> for copying, with know-how protection	A	<b>6ED1 056-5CA00-0BA0</b>		1	1 unit	200	0.004
<b>LOGO! Soft Comfort V5.0</b> for programming on the PC in LAD/FBD; executes under Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	<b>6ED1 058-0BA01-0YA0</b>		1	1 unit	200	0.101
<b>LOGO! Soft Comfort Upgrade</b> from V1.0 to V5.0	A	<b>6ED1 058-0CA01-0YE0</b>		1	1 unit	200	0.098
<b>LOGO! PC cables</b> for transferring programs between LOGO! and PC	A	<b>6ED1 057-1AA00-0BA0</b>		1	1 unit	200	0.159
<b>LOGO! News Box, 12/24 V</b> contains LOGO! 12/24RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3BA00-0AA4</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3BA00-0BA4</b>		1	1 unit	220	2.200
<b>LOGO! News Box, 230 V</b> contains LOGO! 230RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3AA01-0AA0</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3AA01-0BA0</b>		1	1 unit	220	2.340

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

# LOGO! Logic Modules

## LOGO! Modular Pure variants

### Overview



- The cost-optimized basic variants
- With integrated interface for connection of expansion modules

### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! Logic modules 24o</b> Supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 2 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; without display and keyboard; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-2CC00-0BA5</b>		1	1 unit	200	0.175
<b>LOGO! 12/24RCo logic modules</b> Supply voltage 12/24 V DC, 8 digital inputs 12/ 24 V DC, of which 2 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, Integrated time switch; without display and keyboard; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-2MD00-0BA5</b>		1	1 unit	200	0.213
<b>LOGO! 24RCo logic modules</b> Supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, Integrated time switch; without display and keyboard; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-2HB00-0BA5</b>		1	1 unit	200	0.220
<b>LOGO! 230RCo logic modules</b> 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; 130 function blocks can be combined, modular expandability	A	<b>6ED1 052-2FB00-0BA5</b>		1	1 unit	200	0.217

# LOGO! Logic Modules

## LOGO! Modular Pure variants

### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! manuals</b>							
• German	A	<b>6ED1 050-1AA00-0AE6</b>		1	1 unit	200	0.450
• English	A	<b>6ED1 050-1AA00-0BE6</b>		1	1 unit	200	0.401
• French	B	<b>6ED1 050-1AA00-0CE6</b>		1	1 unit	200	0.400
• Spanish	B	<b>6ED1 050-1AA00-0DE6</b>		1	1 unit	200	0.406
• Italian	B	<b>6ED1 050-1AA00-0EE6</b>		1	1 unit	200	0.402
<b>LOGO! Memory Cards</b>							
for copying, with know-how protection	A	<b>6ED1 056-5CA00-0BA0</b>		1	1 unit	200	0.004
<b>LOGO! Soft Comfort V5.0</b>							
for programming on the PC in LAD/FBD; executes under Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	<b>6ED1 058-0BA01-0YA0</b>		1	1 unit	200	0.101
<b>LOGO! Soft Comfort Upgrade</b>							
from V1.0 to V5.0	A	<b>6ED1 058-0CA01-0YE0</b>		1	1 unit	200	0.098
<b>LOGO! PC cables</b>							
for transferring programs between LOGO! and PC	A	<b>6ED1 057-1AA00-0BA0</b>		1	1 unit	200	0.159
<b>LOGO! News Box, 12/24 V</b>							
contains LOGO! 12/24RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3BA00-0AA4</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3BA00-0BA4</b>		1	1 unit	220	2.200
<b>LOGO! News Box, 230 V</b>							
contains LOGO! 230RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3AA01-0AA0</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3AA01-0BA0</b>		1	1 unit	220	2.340

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

# LOGO! Logic Modules

## LOGO! Modular extension modules

### Overview



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

### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! DM8 24</b> Supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	A	<b>6ED1 055-1CB00-0BA0</b>		1	1 unit	200	0.122
<b>LOGO! DM16 24</b> Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 digital outputs 24 V DC, 0.3 A	A	<b>6ED1 055-1CB10-0BA0</b>		1	1 unit	200	0.122
<b>LOGO! DM8 12/24R</b> Supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A	A	<b>6ED1 055-1MB00-0BA1</b>		1	1 unit	200	0.157
<b>LOGO! DM8 24R</b> Supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A	A	<b>6ED1 055-1HB00-0BA0</b>		1	1 unit	200	0.158
<b>LOGO! DM16 24R</b> Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A	A	<b>6ED1 055-1NB10-0BA0</b>		1	1 unit	200	0.159
<b>LOGO! DM8 230R</b> Supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A	A	<b>6ED1 055-1FB00-0BA1</b>		1	1 unit	200	0.159
<b>LOGO! DM16 230R</b> Supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 8 relay outputs 5 A	A	<b>6ED1 055-1FB10-0BA0</b>		1	1 unit	200	0.159
<b>LOGO! AM2</b> Supply voltage 12/24 V DC, 2 analog inputs 0 to 10 V or 0 to 20 mA, 10 bit resolution	A	<b>6ED1 055-1MA00-0BA0</b>		1	1 unit	200	0.119
<b>LOGO! AM2 PT 100</b> Supply voltage 12/24 V DC, 2 analog inputs for Pt100, temperature range -50 °C to 200 °C	A	<b>6ED1 055-1MD00-0BA0</b>		1	1 unit	200	0.120
<b>LOGO! AM2 AQ</b> Supply voltage 24 V DC, 2 analog outputs 0 to 10 V	A	<b>6ED1 055-1MM00-0BA0</b>		1	1 unit	200	0.120

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# LOGO! Logic Modules

## LOGO! Modular extension modules

### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! manuals</b>							
• German	A	<b>6ED1 050-1AA00-0AE6</b>		1	1 unit	200	0.450
• English	A	<b>6ED1 050-1AA00-0BE6</b>		1	1 unit	200	0.401
• French	B	<b>6ED1 050-1AA00-0CE6</b>		1	1 unit	200	0.400
• Spanish	B	<b>6ED1 050-1AA00-0DE6</b>		1	1 unit	200	0.406
• Italian	B	<b>6ED1 050-1AA00-0EE6</b>		1	1 unit	200	0.402
<b>LOGO! Memory Cards</b>							
for copying, with know-how protection	A	<b>6ED1 056-5CA00-0BA0</b>		1	1 unit	200	0.004
<b>LOGO! Soft Comfort V5.0</b>							
for programming on the PC in LAD/FBD; executes under Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	<b>6ED1 058-0BA01-0YA0</b>		1	1 unit	200	0.101
<b>LOGO! Soft Comfort Upgrade</b>							
from V1.0 to V5.0	A	<b>6ED1 058-0CA01-0YE0</b>		1	1 unit	200	0.098
<b>LOGO! PC cables</b>							
for transferring programs between LOGO! and PC	A	<b>6ED1 057-1AA00-0BA0</b>		1	1 unit	200	0.159
<b>LOGO! News Box, 12/24 V</b>							
contains LOGO! 12/24RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3BA00-0AA4</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3BA00-0BA4</b>		1	1 unit	220	2.200
<b>LOGO! News Box, 230 V</b>							
contains LOGO! 230RC, LOGO! PC cable, LOGO! Soft Comfort, Tips&Tricks manual, screw driver, information material							
• German	A	<b>6ED1 057-3AA01-0AA0</b>		1	1 unit	220	2.200
• English	A	<b>6ED1 057-3AA01-0BA0</b>		1	1 unit	220	2.340

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

# LOGO! Logic Modules

## LOGO! CM EIB/KNX communications modules

### Overview



- Expansion module for the LOGO! basic variants
- For communication between the LOGO! master and external *EIB* components via *EIB*.

### Application

The CM EIB/KNX communication module allows communication between the LOGO! master and external *EIB* components via

*EIB*. The module can be used to integrate LOGO! into an *EIB* system.

### Selection and ordering data

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

### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! manuals</b>							
• German	A	<b>6ED1 050-1AA00-0AE6</b>		1	1 unit	200	0.450
• English	A	<b>6ED1 050-1AA00-0BE6</b>		1	1 unit	200	0.401
• French	B	<b>6ED1 050-1AA00-0CE6</b>		1	1 unit	200	0.400
• Spanish	B	<b>6ED1 050-1AA00-0DE6</b>		1	1 unit	200	0.406
• Italian	B	<b>6ED1 050-1AA00-0EE6</b>		1	1 unit	200	0.402

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# LOGO! Logic Modules

## AS-Interface connections for LOGO!

### 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 devices in the system according to their functionality. Similarly, functionalities can be quickly and easily adapted to new requirements by exchanging the basic device.

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

### Selection and ordering data

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

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

# LOGO! Logic Modules

## LOGO! Contact

### Overview



- Switching module for switching resistive loads and motors directly

### Application

LOGO! Contact is a switching module for direct switching of resistive loads up to 20 A and motors (up to 4 kW). LOGO! Contact operates hum-free without noise pollution.

LOGO! Contact is universally applicable:

- Buildings/electrical installations
- Industry and commerce

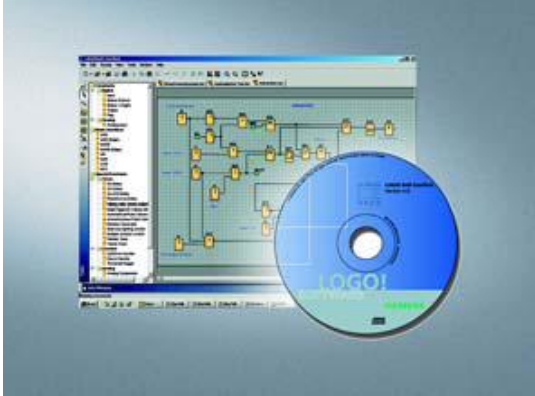
### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>LOGO! Contact</b> Switching module for direct switching of resistive loads up to 20 A and motors up to 4 kW							
<ul style="list-style-type: none"> <li>• Operating voltage 24 V</li> <li>• Operating voltage 230 V</li> </ul>							
	A	<b>6ED1 057-4CA00-0AA0</b>		1	1 unit	200	0.160
	A	<b>6ED1 057-4EA00-0AA0</b>		1	1 unit	200	0.160

# LOGO! Logic Modules

## LOGO! Software

### Overview



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

### Application

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

### Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	LG	Weight per PU approx. kg
<b>LOGO! Soft Comfort V5.0</b> for programming on the PC in LAD/FBD; runs on Windows 98 SE and higher, Linux, MAC OSX; on CD-ROM	A	<b>6ED1 058-0BA01-0YA0</b>		1	1 unit	200	0.101
<b>LOGO! Soft Comfort Upgrade</b> from V1.0 to V5.0	A	<b>6ED1 058-0CA01-0YE0</b>		1	1 unit	200	0.098

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

# 3RP, 7PV Timing Relays

## 3RP15 timing relays in industrial enclosure, 22.5 mm

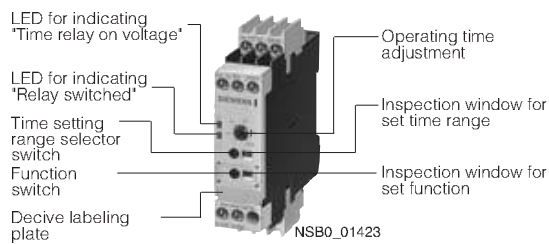
### Overview

#### Standards

The timing relays comply with:

- EN 60721-3-3  
"Environmental conditions"
- EN 61812-1/DIN VDE 0435 Part 2021  
"Solid-state relays, timing relays"
- EN 61000-6-2 and EN 61000-6-4  
"Electromagnetic compatibility"
- EN 60947-5-1; (VDE 0660 Part 200)  
"Low-voltage controlgear, switchgear and systems –  
Electromechanical controlgear"

#### 3RP15 timing relays, width 22.5 mm



#### Accessories

Push-in lugs for screw mounting



Sealable cap



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 design

All timing relays are suitable for snap-on mounting onto 35 mm standard mounting rails according to EN 50022 or for screw fixing.

# 3RP, 7PV Timing Relays

**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
- Switching position indication by LED
- Voltage indication by LED

Version	Time setting range $t$ adjustable by rotary switch to	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50/60 Hz DC		Order No. Price per PU				kg
		V V						


### 3RP15 05 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Indicator 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. 1)




with LED and	Time setting range $t$	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
1 CO contact, 8 functions	0.05 ... 1 s	24/100 ... 127	24	A	3RP15 05-1AA40	1	1 unit	101 0.125
	0.15 ... 3 s	24/200 ... 240	24	▶	3RP15 05-1AQ30	1	1 unit	101 0.140
	0.5 ... 10 s	24/200 ... 240	24	▶	3RP15 05-1AP30	1	1 unit	101 0.141
	1.5 ... 30 s	24 ... 240 <sup>3)</sup>	24 ... 240 <sup>3)</sup>	▶	3RP15 05-1AW30	1	1 unit	101 0.136
2 CO contacts, 16 functions	0.05 ... 1 min	24/100 ... 127	24	▶	3RP15 05-1BQ30	1	1 unit	101 0.162
	5 ... 100 s	24/200 ... 240	24	▶	3RP15 05-1BP30	1	1 unit	101 0.161
	0.15 ... 3 min	24 ... 240 <sup>3)</sup>	24 ... 240 <sup>3)</sup>	▶	3RP15 05-1BW30	1	1 unit	101 0.168
	0.5 ... 10 min	400 ... 440	--	A	3RP15 05-1BT20	1	1 unit	101 0.169
2 CO contacts, positively driven and hard gold-plated. 8 functions <sup>4)5)</sup>	1.5 ... 30 min	24 ... 240	24 ... 240	▶	3RP15 05-1RW30	1	1 unit	101 0.169
	0.05 ... 1 h							
	5 ... 100 min							
	0.15 ... 3 h							
	0.5 ... 10 h							
	1.5 ... 30 h							
	5 ... 100 h							
	$\infty$ <sup>2)</sup>							

### 3RP15 1. timing relays, ON-delay, 1 time setting range




with LED and 1 CO contact	Time setting range $t$	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
0.5 ... 10 s	24/100 ... 127	24	▶	3RP15 11-1AQ30	1	1 unit	101 0.108	
	24/200 ... 240	24	▶	3RP15 11-1AP30	1	1 unit	101 0.108	
1.5 ... 30 s	24/100 ... 127	24	▶	3RP15 12-1AQ30	1	1 unit	101 0.107	
	24/200 ... 240	24	▶	3RP15 12-1AP30	1	1 unit	101 0.104	
5 ... 100 s	24/100 ... 127	24	▶	3RP15 13-1AQ30	1	1 unit	101 0.107	
	24/200 ... 240	24	▶	3RP15 13-1AP30	1	1 unit	101 0.108	

### 3RP15 25 timing relays, ON-delay, 15 time setting ranges



with LED and	Time setting range $t$	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
1 CO contact	0.05 ... 1 s	24/100 ... 127	24	▶	3RP15 25-1AQ30	1	1 unit	101 0.109
	0.15 ... 3 s	24/200 ... 240	24	▶	3RP15 25-1AP30	1	1 unit	101 0.104
2 CO contacts	0.5 ... 10 s	42 ... 48/60	42 ... 48/60 <sup>6)</sup>	A	3RP15 25-1BR30	1	1 unit	101 0.152
	1.5 ... 30 s							
	0.05 ... 1 min	24/100 ... 127	24	▶	3RP15 25-1BQ30	1	1 unit	101 0.152
	5 ... 100 s	24/200 ... 240 <sup>6)</sup>	24	▶	3RP15 25-1BP30	1	1 unit	101 0.155
	0.15 ... 3 min	24 ... 240	24 ... 240 <sup>3)</sup>	▶	3RP15 25-1BW30	1	1 unit	101 0.159
	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							
		$\infty$ <sup>2)</sup>						

### 3RP15 27 timing relays, ON-delay, two-wire design, 4 time setting ranges



with LED and	Time setting range $t$	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
1 NO contact (semiconductor)	0.05 ... 1 s	24 ... 66	24...66 <sup>6)</sup>	A	3RP15 27-1EC30	1	1 unit	101 0.099
	0.2 ... 4 s	90 ... 240	90...240 <sup>3)</sup>	▶	3RP15 27-1EM30	1	1 unit	101 0.100
	1.5 ... 30 s							
	12 ... 240 s							

1) For functions, see 3RP19 01-0. label set.

2) With switch position  $\infty$ , 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 0.7 to 1.1 x  $U_s$ .

4) Positively driven: NO and NC are never closed simultaneously; contact gap  $\geq 0.5$  mm is ensured, minimum make-break capacity 12 V, 3 mA.

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

6) Operating range 0.8 to 1.1 x  $U_s$ .

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



# 3RP, 7PV Timing Relays

## 3RP15 timing relays in industrial enclosure, 22.5 mm

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
- Switching position indication by LED
- Voltage indication by LED

Version	Time setting range $t$ adjustable by rotary switch to	Rated control supply voltage $U_s$	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50/60 Hz DC		Order No.	Price per PU			kg
		V V						

### 3RP15 05 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Indicator 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.<sup>1)</sup>

with LED and									
1 CO contact, 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s	24/100 ... 127 24/200 ... 240 24 ... 240 <sup>3)</sup>	24 24 24 ... 240 <sup>3)</sup>	C A A	<b>3RP15 05-2AQ30</b> <b>3RP15 05-2AP30</b> <b>3RP15 05-2AW30</b>	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.125 0.126 0.132
2 CO contacts, 16 functions	1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s	24/100 ... 127 24/200 ... 240 24 ... 240 <sup>3)</sup>	24 24 24 ... 240 <sup>3)</sup>	A A A	<b>3RP15 05-2BQ30</b> <b>3RP15 05-2BP30</b> <b>3RP15 05-2BW30</b>	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.142 0.137 0.143
2 CO contacts, positively driven and hard gold-plated. 8 functions <sup>4)5)</sup>	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 $\infty$ <sup>2)</sup>	24 ... 240	24 ... 240	A	<b>3RP15 05-2RW30</b>	1	1 unit	101	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 24/200 ... 240	24 24	C A	<b>3RP15 11-2AQ30</b> <b>3RP15 11-2AP30</b>	1 1	1 unit 1 unit	101 101	0.092 0.092
	1.5 ... 30 s	24/100 ... 127 24/200 ... 240	24 24	C A	<b>3RP15 12-2AQ30</b> <b>3RP15 12-2AP30</b>	1 1	1 unit 1 unit	101 101	0.092 0.097
	5 ... 100 s	24/100 ... 127 24/200 ... 240	24 24	C C	<b>3RP15 13-2AQ30</b> <b>3RP15 13-2AP30</b>	1 1	1 unit 1 unit	101 101	0.094 0.094

### 3RP15 25 timing relays, ON-delay, 15 time setting ranges

with LED and									
1 CO contact	0.05 ... 1 s 0.15 ... 3 s	24/100 ... 127 24/200 ... 240	24 24	C A	<b>3RP15 25-2AQ30</b> <b>3RP15 25-2AP30</b>	1 1	1 unit 1 unit	101 101	0.095 0.093
2 CO contacts	0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h $\infty$ <sup>2)</sup>	24/100 ... 127 24/200 ... 240 24 ... 240 <sup>6)</sup> 24 ... 240 <sup>3)</sup>	24 24 24 ... 240 <sup>6)</sup> 24 ... 240 <sup>3)</sup>	C A A A	<b>3RP15 25-2BQ30</b> <b>3RP15 25-2BP30</b> <b>3RP15 25-2BW30</b>	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.128 0.127 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 90 ... 240	24...66 <sup>6)</sup> 90...240 <sup>3)</sup>	C C	<b>3RP15 27-2EC30</b> <b>3RP15 27-2EM30</b>	1 1	1 unit 1 unit	101 101	0.090 0.090
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- 1) For functions, see 3RP19 01-0. label set.
- 2) With switch position  $\infty$ , 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 0.7 to 1.1 x  $U_s$ .
- 4) Positively driven: NO and NC are never closed simultaneously; contact gap  $\geq 0.5$  mm is ensured, minimum make-break capacity 12 V, 3 mA.
- 5) The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).
- 6) Operating range 0.8 to 1.1 x  $U_s$ .






# 3RP, 7PV Timing Relays

## 3RP15 timing relays in industrial enclosure, 22.5 mm

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
- Switching position indication by LED
- Voltage indication by LED

Version	Time setting range $t$ adjustable by rotary switch to	Rated control supply voltage $U_s$		DT	Screw-type connection		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.  kg	
		AC 50/60 Hz V	DC V		Order No.	Price per PU					
<b>3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range</b>											
	with LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127 24/200 ... 240	24 24	A ▶	<b>3RP15 31-1AQ30</b> <b>3RP15 31-1AP30</b>	1 1	1 unit 1 unit	101 101	0.140 0.140	
	The same potential must be applied to terminals A and B.	1.5 ... 30 s	24/100 ... 127 24/200 ... 240	24 24	A ▶	<b>3RP15 32-1AQ30</b> <b>3RP15 32-1AP30</b>	1 1	1 unit 1 unit	101 101	0.138 0.139	
		5 ... 100 s	24/100 ... 127 24/200 ... 240	24 24	A ▶	<b>3RP15 33-1AQ30</b> <b>3RP15 33-1AP30</b>	1 1	1 unit 1 unit	101 101	0.139 0.140	
	3RP15 3.-1A...										
<b>3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges<sup>1)</sup></b>											
	with LED and										
	1 CO contact	0.05 ... 1 s	24	24 <sup>2)</sup>	▶	<b>3RP15 40-1AB30</b>	1	1 unit	101	0.116	
		0.15 ... 3 s	100 ... 127	100...127 <sup>3)</sup>	▶	<b>3RP15 40-1AJ30</b>	1	1 unit	101	0.119	
		0.3 ... 6 s	200 ... 240	200...240 <sup>3)</sup>	▶	<b>3RP15 40-1AN30</b>	1	1 unit	101	0.120	
	2 CO contacts	0.5 ... 10 s	24	24 <sup>2)</sup>	▶	<b>3RP15 40-1BB30</b>	1	1 unit	101	0.159	
		1.5 ... 30 s	100 ... 127	100...127 <sup>3)</sup>	A	<b>3RP15 40-1BJ30</b>	1	1 unit	101	0.161	
3 ... 60 s		200 ... 240	200...240 <sup>3)</sup>	▶	<b>3RP15 40-1BN30</b>	1	1 unit	101	0.161		
5 ... 100 s											
3RP15 40-1A...											
<b>3RP15 55 timing relays, clock-pulse relay, 15 time setting ranges</b>											
	with LED and										
	1 CO contact	0.05 ... 1 s	42 ... 48/60	42...48/ 60 <sup>5)</sup>	A	<b>3RP15 55-1AR30</b>	1	1 unit	101	0.111	
		0.15 ... 3 s									
		0.5 ... 10 s	24/100 ... 127	24	▶	<b>3RP15 55-1AQ30</b>	1	1 unit	101	0.111	
	5 ... 100 s	1.5 ... 30 s	24/200 ... 240	24	▶	<b>3RP15 55-1AP30</b>	1	1 unit	101	0.111	
		0.05 ... 1 min									
		0.15 ... 3 min									
		0.5 ... 10 min									
		1.5 ... 30 min									
		0.05 ... 1 h									
		0.15 ... 3 h									
		0.5 ... 10 h									
1.5 ... 30 h											
5 ... 100 h											
3RP15 55-1A...											
<b>3RP15 60 timing relays, wye-delta function, dead interval 50 ms and overtravel time, 1 time setting range</b>											
	3 NO contacts <sup>3)</sup> (common contact root terminal 17)	wye-delta	24/100 ... 127 24/200 ... 240	24 24	A ▶	<b>3RP15 60-1SQ30</b> <b>3RP15 60-1SP30</b>	1 1	1 unit 1 unit	101 101	0.172 0.175	
		overtravel time (idling)									
		30 ... 600 s									
3RP15 60-1S...											
<b>3RP15 7. timing relays, wye-delta function<sup>6)</sup>, dead interval 50 ms, 1 time setting range</b>											
	1 NO contact instantaneous and 1 NO contact delayed (common contact root terminal 17)	1 ... 20 s	24/100 ... 127	24	▶	<b>3RP15 74-1NQ30</b>	1	1 unit	101	0.113	
			24/200 ... 240	24	▶	<b>3RP15 74-1NP30</b>	1	1 unit	101	0.113	
			200 ... 240/ 380 ... 440	--	B	<b>3RP15 74-1NM20</b>	1	1 unit	101	0.113	
		3 ... 60 s	24/100 ... 127	24	▶	<b>3RP15 76-1NQ30</b>	1	1 unit	101	0.112	
	24/200 ... 240	24	▶	<b>3RP15 76-1NP30</b>	1	1 unit	101	0.113			
	200 ... 240/ 380 ... 440	--	B	<b>3RP15 76-1NM20</b>	1	1 unit	101	0.113			
3RP15 7.-1N...											

- 1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.
- 2) Operating range 0.7 to 1.25 x  $U_s$ .
- 3) Operating range 0.85 to 1.1 x  $U_s$ .

- 4) With switch position  $\infty$ , 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 typical circuit see Schematics.

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

# 3RP, 7PV Timing Relays

## 3RP15 timing relays in industrial enclosure, 22.5 mm

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
- Switching position indication by LED
- Voltage indication by LED

Version	Time setting range $t$ adjustable by rotary switch to	Rated control supply voltage $U_s$		DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per unit/set/meter approx.	
		AC 50/60 Hz	DC		Order No.	Price per PU			kg	
		V	V							
<b>3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range</b>										
with LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127	24	C	<b>3RP15 31-2AQ30</b>		1	1 unit	101	0.124
The same potential must be applied to terminals A and B	1.5 ... 30 s	24/100 ... 127	24	C	<b>3RP15 32-2AQ30</b>		1	1 unit	101	0.125
		24/200 ... 240	24	C	<b>3RP15 32-2AP30</b>		1	1 unit	101	0.121
	5 ... 100 s	24/100 ... 127	24	C	<b>3RP15 33-2AQ30</b>		1	1 unit	101	0.123
		24/200 ... 240	24	C	<b>3RP15 33-2AP30</b>		1	1 unit	101	0.125
<b>3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges<sup>1)</sup></b>										
with LED and 1 CO contact	0.05 ... 1 s	24	24 <sup>2)</sup>	A	<b>3RP15 40-2AB30</b>		1	1 unit	101	0.105
	0.15 ... 3 s	100 ... 127	100...127 <sup>3)</sup>	A	<b>3RP15 40-2AJ30</b>		1	1 unit	101	0.108
	0.3 ... 6 s	200 ... 240	200...240 <sup>3)</sup>	A	<b>3RP15 40-2AN30</b>		1	1 unit	101	0.110
2 CO contacts	0.5 ... 10 s	24	24 <sup>2)</sup>	A	<b>3RP15 40-2BB30</b>		1	1 unit	101	0.136
	1.5 ... 30 s	100 ... 127	100...127 <sup>3)</sup>	C	<b>3RP15 40-2BJ30</b>		1	1 unit	101	0.136
	3 ... 60 s	200 ... 240	200...240 <sup>3)</sup>	C	<b>3RP15 40-2BN30</b>		1	1 unit	101	0.136
	5 ... 100 s									
<b>3RP15 55 timing relays, clock-pulse relay, 15 time setting ranges</b>										
with LED and 1 changeover contact	0.05 ... 1 s	42 ... 48/60	42...48/60 <sup>5)</sup>	C	<b>3RP15 55-2AR30</b>		1	1 unit	101	0.102
	0.15 ... 3 s	24/100 ... 127	24	C	<b>3RP15 55-2AQ30</b>		1	1 unit	101	0.100
	0.5 ... 10 s	24/200 ... 240	24	A	<b>3RP15 55-2AP30</b>		1	1 unit	101	0.104
	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									
	$\infty$ <sup>4)</sup>									
<b>3RP15 60 timing relays, wye-delta function, dead interval 50 ms and overtravel time, 1 time setting range</b>										
3 NO contacts <sup>3)</sup> (common contact root terminal 17)	wye-delta 1 ... 20 s, overtravel time (idling) 30 ... 600 s	24/200 ... 240	24	C	<b>3RP15 60-2SP30</b>		1	1 unit	101	0.152
<b>3RP15 7. timing relays, wye-delta function<sup>6)</sup>, dead interval 50 ms, 1 time setting range</b>										
1 NO contact instantaneous and 1 NO contact delayed (common contact root terminal 17)	1 ... 20 s	24/200 ... 240	24	A	<b>3RP15 74-2NP30</b>		1	1 unit	101	0.104
		200 ... 240/380 ... 440		B	<b>3RP15 74-2NM20</b>		1	1 unit	101	0.100
	3 ... 60 s	24/100 ... 127	24	C	<b>3RP15 76-2NQ30</b>		1	1 unit	101	0.102
		24/200 ... 240	24	A	<b>3RP15 76-2NP30</b>		1	1 unit	101	0.104
		200 ... 240/380 ... 440		B	<b>3RP15 76-2NM20</b>		1	1 unit	101	0.100

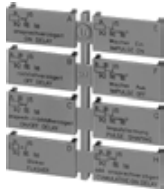
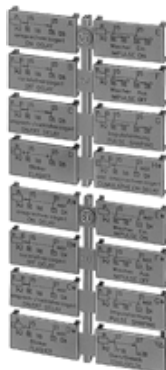


- 1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.
- 2) Operating range  $0.7$  to  $1.25 \times U_s$ .
- 3) Operating range  $0.85$  to  $1.1 \times U_s$ .
- 4) With switch position  $\infty$ , 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  $1.1 \times U_s$ .
- 6) For typical circuit see Schematics.

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

# 3RP, 7PV Timing Relays

**3RP15 timing relays in industrial enclosure, 22.5 mm**

## Accessories

Version	Function	Code letter	Application	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Label sets</b>										
Accessory for 3RP 15 05 (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.										
	1 label set (1 unit) with 8 functions	With ON-delay	A	for devices with 1 CO contact and 3RP15 05-.RW30	<b>3RP19 01-0A</b>		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							
	1 label set (1 unit) with 16 functions	With ON-delay	A	for devices with 2 CO contacts	<b>3RP19 01-0B</b>		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	YΔ								
<b>Blank labeling plates</b>										
	Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>			C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000
<b>Covering caps and push-in lugs</b>										
	<b>Push-in lugs</b> for screw mounting			for devices with 1 or 2 CO contacts	<b>3RP19 03</b>		1	10 units	101	0.002
	<b>Sealable caps</b> for securing against unauthorized adjustment of setting knobs			for devices with 1 or 2 CO contacts	<b>3RP19 02</b>		1	5 units	101	0.004

1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

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

# 3RP, 7PV Timing Relays

## 3RP20 timing relays, 45 mm

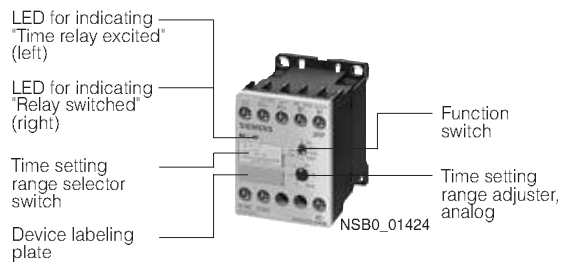
### Overview

#### Standards

The timing relays comply with:

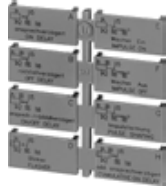
- EN 60721-3-3  
"Environmental conditions"
- EN 61812-1/DIN VDE 0435 Part 2021  
"Solid-state relays, timing relays"
- EN 61000-6-2 and EN 61000-6-4  
"Electromagnetic compatibility"
- EN 60947-5-1; (VDE 0660 Part 200)  
"Low-voltage controlgear, switchgear and systems –  
Electromechanical controlgear"
- EN 61140  
"Safe electrical isolation"

#### 3RP20 timing relay, width 45 mm



### Accessories

Label set for marking the multifunction relay



# 3RP, 7PV Timing Relays



## 3RP20 timing relays, 45 mm

### Selection and ordering data

#### Multifunction

The functions can be adjusted by means of rotary switches<sup>1)</sup>. Indicator 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..

Version	Time setting range	Rated control supply voltage $U_s$		DT	Screw-type connection		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50-60 Hz	DC		Order No.	Price per PU				
<b>3RP20 05 timing relays, multifunction, 15 time setting ranges</b>										
 3RP20 05-1BW30	with LED and 1 CO contact, 8 functions <sup>1)2)</sup>	0.05 ... 1 s	24/100 ... 127	24	▶	<b>3RP20 05-1AQ30</b>	1	1 unit	101	0.118
		0.15 ... 3 s	24/200 ... 240	24	▶	<b>3RP20 05-1AP30</b>	1	1 unit	101	0.119
		0.5 ... 10 s								
		1.5 ... 30 s								
	with LED and 2 CO contacts, 16 functions <sup>1)</sup>	0.05 ... 1 min	24 ... 240 <sup>4)</sup>	24 ... 240 <sup>5)</sup>	D	<b>3RP20 05-1BW30</b>	1	1 unit	101	0.128
		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								
	$\infty$ <sup>3)</sup>									
<b>3RP20 25 timing relays, ON-delay, 15 time setting ranges</b>										
 3RP20 25-1AP30	with LED and 1 CO contact <sup>2)</sup>	0.05 ... 1 s	24/100 ... 127	24	▶	<b>3RP20 25-1AQ30</b>	1	1 unit	101	0.106
		0.15 ... 3 s	24/200 ... 240	24	▶	<b>3RP20 25-1AP30</b>	1	1 unit	101	0.106
		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								
	$\infty$ <sup>3)</sup>									

- 1) For functions, see 3PR19 01-0. label set.
- 2) Units with safe electrical isolation.
- 3) With switch position  $\infty$ , 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.
- 4) Operating range  $0.8 \dots 1.1 \times U_s$ .
- 5) Operating range  $0.7 \dots 1.1 \times U_s$ .

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

# 3RP, 7PV Timing Relays

## 3RP20 timing relays, 45 mm

### Selection and ordering data

#### Multifunction

The functions can be adjusted by means of rotary switches<sup>1)</sup>. Indicator 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..

Version	Time setting range $t$	Rated control supply voltage $U_s$		DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50-60 Hz	DC		Order No.	Price per PU			kg
		V	V						
<b>3RP20 05 timing relays, multifunction, 15 time setting ranges</b>									
with LED and 1 CO contact, 8 functions <sup>1)2)</sup>	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s	24/ 100 ... 127 24	24	D	<b>3RP20 05-2AQ30</b> <b>3RP20 05-2AP30</b>	1	1 unit	101	0.120 0.121
with LED and 2 CO contacts, 16 functions <sup>1)</sup>	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 $\infty$ <sup>3)</sup>	24 ... 240 <sup>4)</sup>	24 ... 240 <sup>5)</sup>	A	<b>3RP20 05-2BW30</b>	1	1 unit	101	0.131
<b>3RP20 25 timing relays, ON-delay, 15 time setting ranges</b>									
with LED and 1 CO contact <sup>2)</sup>	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 $\infty$ <sup>3)</sup>	24/ 100 ... 127 24	24	D	<b>3RP20 25-2AQ30</b> <b>3RP20 25-2AP30</b>	1	1 unit	101	0.110 0.108
		24/ 200 ... 240 24		A		1	1 unit	101	0.108

- 1) For functions, see 3PR19 01-0. label set.
- 2) Units with safe electrical isolation.
- 3) With switch position  $\infty$ , 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.
- 4) Operating range 0.8 to 1.1 x  $U_s$ .
- 5) Operating range 0.7 to 1.1 x  $U_s$ .

# 3RP, 7PV Timing Relays

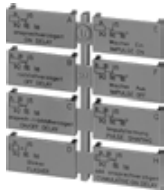
## 3RP20 timing relays, 45 mm

### Accessories

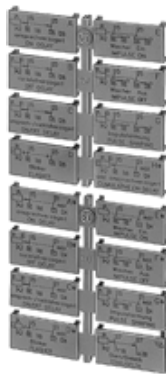
Version	Function	Code letter	Application	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
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### Label sets

Accessory for 3RP 15 05 (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.



1 label set (1 unit) with 8 functions	With ON-delay	A	for devices with 1 CO contact and 3RP15 05-.RW30	▶	<b>3RP19 01-0A</b>		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								



1 label set (1 unit) with 16 functions	With ON-delay	A	for devices with 2 CO contacts	▶	<b>3RP19 01-0B</b>		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	YΔ								

### Blank labeling plates

Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>			100	340 units	101	22.000
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1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.



# 3RP, 7PV Timing Relays

## 7PV timing relays for panel mounting

### Selection and ordering data

Version	Time setting range $t$	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
		AC 50 ... 60 Hz DC V V							

#### 7PV33 48 timing relays, multifunction, digitally adjustable, 11 time setting ranges



7PV33 48-2AX34

- with LCD display, 1 CO contact
  - ON-delay
  - OFF-delay with auxiliary voltage<sup>1)</sup>
  - Flashing, starting with pulse
  - Flashing, starting with interval
  - Passing make contact
  - Pulse-forming
- Non-volatile setting parameters; the elapsed time is not saved<sup>2)</sup>

0.01 s ... 9999 h 24/110 ... 240 24 ▶

**7PV33 48-2AX34**

1 1 unit 101 0.133

1) Function is retriggerable, i.e. a new start signal at terminal B after the operating time has started resets the operating time to zero.

2) Possibility of connecting parallel load to terminal B1!

### Accessories

Version	Function	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
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#### Sockets



7PX9 921

**Sockets** 11-pole socket with rear connection ▶

**7PX9 921**

1 1 unit 101 0.049



LZX:MT78750

11-pole socket for DIN rail and mounting ▶

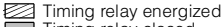
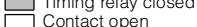

**LZX:MT78750**

1 1 unit 101 0.063

# 3RP, 7PV Timing Relays

## 3RT19 timing relays for mounting to contactors

### Selection and ordering data

For contactors	Auxiliary contacts Function	Rated control supply voltage $U_s$	Time setting range $t$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type	 Timing relay energized  Timing relay closed  Contact open	V	s							kg

### for size S00<sup>1)</sup>, with screw connection



3RT19 16-2...

#### Terminal designations acc. to EN 46199 Part 5

##### • ON-delay (varistor integrated)

3RT101, 3RH11	1 NO + 1 NC	AC/DC 24	0.05 ... 1	▶	<b>3RT19 16-2EJ11</b>	1	1 unit	101	0.085
A1/A2			0.5 ... 10	▶	<b>3RT19 16-2EJ21</b>	1	1 unit	101	0.084
27/28			5 ... 100	B	<b>3RT19 16-2EJ31</b>	1	1 unit	101	0.086
35/36		AC 100 ... 127	0.05 ... 1	C	<b>3RT19 16-2EC11</b>	1	1 unit	101	0.087
			0.5 ... 10	▶	<b>3RT19 16-2EC21</b>	1	1 unit	101	0.087
			5 ... 100	▶	<b>3RT19 16-2EC31</b>	1	1 unit	101	0.086
		AC 200 ... 240	0.05 ... 1	D	<b>3RT19 16-2ED11</b>	1	1 unit	101	0.088
			0.5 ... 10	▶	<b>3RT19 16-2ED21</b>	1	1 unit	101	0.089
			5 ... 100	▶	<b>3RT19 16-2ED31</b>	1	1 unit	101	0.090

##### • OFF-delay without auxiliary voltage (varistor integrated)<sup>2)</sup>

	1 NO + 1 NC	AC/DC 24	0.05 ... 1	▶	<b>3RT19 16-2FJ11</b>	1	1 unit	101	0.087
A1/A2			0.5 ... 10	▶	<b>3RT19 16-2FJ21</b>	1	1 unit	101	0.088
27/28			5 ... 100	▶	<b>3RT19 16-2FJ31</b>	1	1 unit	101	0.089
35/36		AC 100 ... 127	0.05 ... 1	D	<b>3RT19 16-2FK11</b>	1	1 unit	101	0.086
			0.5 ... 10	▶	<b>3RT19 16-2FK21</b>	1	1 unit	101	0.087
			5 ... 100	▶	<b>3RT19 16-2FK31</b>	1	1 unit	101	0.088
		AC 200 ... 240	0.05 ... 1	D	<b>3RT19 16-2FL11</b>	1	1 unit	101	0.089
			0.5 ... 10	▶	<b>3RT19 16-2FL21</b>	1	1 unit	101	0.089
			5 ... 100	▶	<b>3RT19 16-2FL31</b>	1	1 unit	101	0.089

##### • OFF-delay with auxiliary voltage

	1 CO contact	AC/DC 24	0.5 ... 10	B	<b>3RT19 16-2LJ21</b>	1	1 unit	101	0.083
		AC 100 ... 127		B	<b>3RT19 16-2LC21</b>	1	1 unit	101	0.085
		AC 200 ... 240		B	<b>3RT19 16-2LD21</b>	1	1 unit	101	0.085

##### • Wye-delta function (varistor integrated)

	1 NO, delayed + 1 NO, instantaneous, dead time 50 ms	AC/DC 24	1.5 ... 30	▶	<b>3RT19 16-2GJ51</b>	1	1 unit	101	0.086
A1/A2		AC 100 ... 127		D	<b>3RT19 16-2GC51</b>	1	1 unit	101	0.087
Y 27/28		AC 200 ... 240		▶	<b>3RT19 16-2GD51</b>	1	1 unit	101	0.090
Δ 37/38									

### for sizes S0 to S12<sup>3)</sup>, with screw connection



3RT19 26-2...

##### • ON-delay

3RT102, 3RT103, 3RT104	1 NO + 1 NC	AC/DC 24	0.05 ... 1	D	<b>3RT19 26-2EJ11</b>	1	1 unit	101	0.081
A1/A2			0.5 ... 10	▶	<b>3RT19 26-2EJ21</b>	1	1 unit	101	0.081
-7/-8			5 ... 100	A	<b>3RT19 26-2EJ31</b>	1	1 unit	101	0.082
-5/-6		AC 100 ... 127	0.05 ... 1	C	<b>3RT19 26-2EC11</b>	1	1 unit	101	0.083
			0.5 ... 10	▶	<b>3RT19 26-2EC21</b>	1	1 unit	101	0.083
			5 ... 100	D	<b>3RT19 26-2EC31</b>	1	1 unit	101	0.083
		AC 200 ... 240	0.05 ... 1	D	<b>3RT19 26-2ED11</b>	1	1 unit	101	0.085
			0.5 ... 10	▶	<b>3RT19 26-2ED21</b>	1	1 unit	101	0.085
			5 ... 100	B	<b>3RT19 26-2ED31</b>	1	1 unit	101	0.085

##### • OFF-delay without auxiliary voltage<sup>2)</sup>

	1 NO + 1 NC	AC/DC 24	0.05 ... 1	▶	<b>3RT19 26-2FJ11</b>	1	1 unit	101	0.085
A1/A2			0.5 ... 10	▶	<b>3RT19 26-2FJ21</b>	1	1 unit	101	0.084
-7/-8			5 ... 100	▶	<b>3RT19 26-2FJ31</b>	1	1 unit	101	0.085
-5/-6		AC 100 ... 127	0.05 ... 1	D	<b>3RT19 26-2FK11</b>	1	1 unit	101	0.087
			0.5 ... 10	▶	<b>3RT19 26-2FK21</b>	1	1 unit	101	0.086
			5 ... 100	C	<b>3RT19 26-2FK31</b>	1	1 unit	101	0.087
		AC 200 ... 240	0.05 ... 1	D	<b>3RT19 26-2FL11</b>	1	1 unit	101	0.086
			0.5 ... 10	A	<b>3RT19 26-2FL21</b>	1	1 unit	101	0.084
			5 ... 100	A	<b>3RT19 26-2FL31</b>	1	1 unit	101	0.086

##### • Wye-delta function

	1 NO, delayed + 1 NO, instantaneous, dead time 50 ms	AC/DC 24	1.5 ... 30	▶	<b>3RT19 26-2GJ51</b>	1	1 unit	101	0.084
A1/A2		AC 100 ... 127		▶	<b>3RT19 26-2GC51</b>	1	1 unit	101	0.085
Y -7/-8		AC 200 ... 240		▶	<b>3RT19 26-2GD51</b>	1	1 unit	101	0.088
Δ -7/-8									

- 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 voltage once results in contact changeover to the correct setting.

- 3) The terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch block must be connected to the corresponding contactor by connecting leads.

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

# 3RP, 7PV Timing Relays

## 3RT19 timing relays for mounting to contactors

For contactors	Function	Rated control supply voltage $U_s$	Time setting range $t$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Type	 Timing relay energized Contact closed Contact open Contactor energized	V	s							kg
<b>for size S00, with semiconductor output and screw connection</b>										
<b>for mounting onto the front of contactors</b>										
The electrical connection between the time-relay block and the contactor beneath is established automatically when it is snapped on.										
• ON-delay, two-wire design (varistor integrated)										
 3RT19 16-2C...	3RT11, 3RH11 	AC/DC 24 ... 66	0.05 ... 1	B	<b>3RT19 16-2CG11</b>		1	1 unit	101	0.051
			0.5 ... 10	B	<b>3RT19 16-2CG21</b>		1	1 unit	101	0.051
			5 ... 100	B	<b>3RT19 16-2CG31</b>		1	1 unit	101	0.054
 3RT19 16-2D...		AC/DC 90 ... 240	0.05 ... 1	D	<b>3RT19 16-2CH11</b>		1	1 unit	101	0.052
			0.5 ... 10	B	<b>3RT19 16-2CH21</b>		1	1 unit	101	0.052
			5 ... 100	B	<b>3RT19 16-2CH31</b>		1	1 unit	101	0.051
• OFF-delay with auxiliary voltage (varistor integrated)										
 3RT19 16-2D...		AC/DC 24 ... 66	0.05 ... 1	C	<b>3RT19 16-2DG11</b>		1	1 unit	101	0.057
			0.5 ... 10	B	<b>3RT19 16-2DG21</b>		1	1 unit	101	0.057
			5 ... 100	B	<b>3RT19 16-2DG31</b>		1	1 unit	101	0.057
 3RT19 16-2D...		AC/DC 90 ... 240	0.05 ... 1	D	<b>3RT19 16-2DH11</b>		1	1 unit	101	0.053
			0.5 ... 10	B	<b>3RT19 16-2DH21</b>		1	1 unit	101	0.060
			5 ... 100	B	<b>3RT19 16-2DH31</b>		1	1 unit	101	0.058
<b>for sizes S0 to S3, with semiconductor output and screw connection</b>										
<b>for mounting onto coil terminals on top of the contactors</b>										
The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the time-relay block to coil terminals A1/A2 on top of the contactor.										
• ON-delay, two-wire design (varistor integrated)										
 3RT19 26-2C...	3RT10 2, 3RT10 3, 3RT10 4 <sup>1)</sup> 	AC/DC 24 ... 66	0.05 ... 1	D	<b>3RT19 26-2CG11</b>		1	1 unit	101	0.048
			0.5 ... 10	B	<b>3RT19 26-2CG21</b>		1	1 unit	101	0.049
			5 ... 100	D	<b>3RT19 26-2CG31</b>		1	1 unit	101	0.048
 3RT19 26-2D...		AC/DC 90 ... 240	0.05 ... 1	B	<b>3RT19 26-2CH11</b>		1	1 unit	101	0.048
			0.5 ... 10	B	<b>3RT19 26-2CH21</b>		1	1 unit	101	0.047
			5 ... 100	B	<b>3RT19 26-2CH31</b>		1	1 unit	101	0.048
• OFF-delay with auxiliary voltage (varistor integrated)										
 3RT19 26-2D...		AC/DC 24 ... 66	0.05 ... 1	D	<b>3RT19 26-2DG11</b>		1	1 unit	101	0.050
			0.5 ... 10	D	<b>3RT19 26-2DG21</b>		1	1 unit	101	0.051
			5 ... 100	D	<b>3RT19 26-2DG31</b>		1	1 unit	101	0.051
 3RT19 26-2D...		AC/DC 90 ... 240	0.05 ... 1	C	<b>3RT19 26-2DH11</b>		1	1 unit	101	0.050
			0.5 ... 10	D	<b>3RT19 26-2DH21</b>		1	1 unit	101	0.050
			5 ... 100	C	<b>3RT19 26-2DH31</b>		1	1 unit	101	0.050

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

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Line monitoring

#### 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. 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 to 690 V AC worldwide thanks to wide voltage range
- Variably adjustable to overvoltage, undervoltage or window monitoring
- Freely configurable delay times and reset response
- Width 22.5 mm
- Permanent display of ACTUAL value and network fault type on the digital variants
- Automatic correction of the direction of rotation by distinguishing between network faults and wrong phase sequence
- All versions with removable terminal
- All versions with screw-type connection or alternatively with innovative spring-loaded 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	<ul style="list-style-type: none"> <li>• Direction of rotation of the drive</li> </ul>
Phase failure	<ul style="list-style-type: none"> <li>• A fuse has tripped</li> <li>• Failure of the control supply voltage</li> <li>• Broken cable</li> </ul>
Phase unbalance	<ul style="list-style-type: none"> <li>• Overheating of the motor due to asymmetrical voltage</li> <li>• Detection of asymmetrically loaded networks</li> </ul>
Undervoltage	<ul style="list-style-type: none"> <li>• Increased current on a motor with corresponding overheating</li> <li>• Unintentional resetting of a device</li> <li>• Network collapse, particularly with battery power</li> </ul>
Overvoltage	<ul style="list-style-type: none"> <li>• Protection of a plant against destruction due to overvoltage</li> </ul>

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Line monitoring

#### Selection and ordering data



Hysteresis	Under-voltage detection	Over-voltage detection	ON-delay	Tripping delay	Auxiliary contacts Version	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
					CO contact	V		Order No.	Price per PU			kg	
<b>Monitoring of phase sequence</b>													
Auto-RESET													
--	No	No	--	--	1	AC 160 ... 260 A		<b>3UG45 11-1AN20</b>		1	1 unit	101	0.147
					2	A		<b>3UG45 11-1BN20</b>		1	1 unit	101	0.147
					1	AC 320 ... 500 A		<b>3UG45 11-1AP20</b>		1	1 unit	101	0.147
					2	A		<b>3UG45 11-1BP20</b>		1	1 unit	101	0.147
					1	AC 420 ... 690 A		<b>3UG45 11-1AQ20</b>		1	1 unit	101	0.147
					2	A		<b>3UG45 11-1BQ20</b>		1	1 unit	101	0.147
<b>Monitoring of phase sequence, phase failure and phase unbalance</b>													
Auto-RESET, closed-circuit principle, unbalance threshold 10 %													
--	No	No	--	--	1	AC 160 ... 690 A		<b>3UG45 12-1AR20</b>		1	1 unit	101	0.147
					2	A		<b>3UG45 12-1BR20</b>		1	1 unit	101	0.147
<b>Monitoring of phase sequence, phase failure, phase unbalance and undervoltage</b>													
Analog adjustable, Auto-RESET, closed-circuit principle, fixed unbalance threshold 20 %													
5 % of set value	Yes	No	--	0.1 ... 20	2	AC 160 ... 690 A		<b>3UG45 13-1BR20</b>		1	1 unit	101	0.147
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	No	0.1 ... 20	0.1 ... 20	2	AC 160 ... 690 A		<b>3UG46 14-1BR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Monitoring of phase sequence, phase failure, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 <sup>1)</sup> 2 <sup>1)</sup>		AC 160 ... 690 A		<b>3UG46 15-1CR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 <sup>1)</sup> 2 <sup>1)</sup>		AC 160 ... 690 A		<b>3UG46 16-1CR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	Yes	--	0.1 ... 20 2 <sup>2)</sup>		AC 160 ... 690 A		<b>3UG46 17-1CR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	Yes	--	0.1 ... 20 2 <sup>2)</sup>		AC 160 ... 690 A		<b>3UG46 18-1CR20</b>		1	1 unit	101	0.147
1 ... 20 V													

1) 1 CO contact each and 1 tripping delay time each for  $U_{min}$  and  $U_{max}$ .

2) 1 CO contact each for phase sequence correction.

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

Line monitoring



Hysteresis	Under-voltage detection	Over-voltage detection	ON-delay	Tripping delay	Auxiliary contacts Version	Rated control supply voltage $U_s$	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
					CO contact	V		Order No.	Price per PU			kg	
<b>Monitoring of phase sequence</b>													
Auto-RESET													
--	No	No	--	--	1	AC 160 ... 260	A	<b>3UG45 11-2AN20</b>		1	1 unit	101	0.147
					2		A	<b>3UG45 11-2BN20</b>		1	1 unit	101	0.147
					1	AC 320 ... 500	A	<b>3UG45 11-2AP20</b>		1	1 unit	101	0.147
					2		A	<b>3UG45 11-2BP20</b>		1	1 unit	101	0.147
					1	AC 420 ... 690	A	<b>3UG45 11-2AQ20</b>		1	1 unit	101	0.147
					2		A	<b>3UG45 11-2BQ20</b>		1	1 unit	101	0.147
<b>Monitoring of phase sequence, phase failure and phase unbalance</b>													
Auto-RESET, closed-circuit principle, unbalance threshold 10 %													
--	No	No	--	--	1	AC 160 ... 690	A	<b>3UG45 12-2AR20</b>		1	1 unit	101	0.147
					2		A	<b>3UG45 12-2BR20</b>		1	1 unit	101	0.147
<b>Monitoring of phase sequence, phase failure, phase unbalance and undervoltage</b>													
Analog adjustable, Auto-RESET, closed-circuit principle, unbalance threshold 20 %													
5 % of set value	Yes	No	--	0.1 ... 20	2	AC 160 ... 690	A	<b>3UG45 13-2BR20</b>		1	1 unit	101	0.147
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	No	0 ... 20	0.1 ... 20	2	AC 160 ... 690	A	<b>3UG46 14-2BR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Monitoring of phase sequence, phase failure, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 <sup>1)</sup> 2 <sup>1)</sup>		AC 160 ... 690	A	<b>3UG46 15-2CR20</b>		1	1 unit	101	0.140
1 ... 20 V													
<b>Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 <sup>1)</sup> 2 <sup>1)</sup>		AC 160 ... 690	A	<b>3UG46 16-2CR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	Yes	--	0.1 ... 20	2 <sup>2)</sup>	AC 160 ... 690	A	<b>3UG46 17-2CR20</b>		1	1 unit	101	0.147
1 ... 20 V													
<b>Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage</b>													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 5 ... 20 %													
Adjustable	Yes	Yes	--	0.1 ... 20	2 <sup>2)</sup>	AC 160 ... 690	A	<b>3UG46 18-2CR20</b>		1	1 unit	101	0.147
1 ... 20 V													

1) 1 CO contact each and 1 tripping delay time each for  $U_{min}$  and  $U_{max}$ .

2) 1 CO contact each for phase sequence correction.

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



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# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Line monitoring

#### Accessories

Application	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Blank labeling plates</b>								
	Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>		100	340 units	101	22,000
<b>Covering caps and push-in lugs</b>								
	for devices with 1 or 2 CO contacts	<b>Push-in lugs</b> for screw mounting	▶ <b>3RP19 03</b>		1	10 units	101	0,002
	for devices with 1 or 2 CO contacts	<b>Sealable caps</b> for securing against unauthorized adjustment of setting knobs	▶ <b>3RP19 02</b>		1	5 units	101	0,004

1) Computer labeling system for individual labeling of device labeling plates available from:  
murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Voltage monitoring

#### Overview



The relays monitor single-phase AC and DC voltages against the set threshold for overshoot and undershoot. The products differ with regard to their power supply (internal or external).

#### Benefits

- Variants with wide voltage supply range
- Variably adjustable to overvoltage, undervoltage or window 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-type connection or alternatively with innovative spring-loaded 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 supply voltages, particularly with battery power
- Threshold switch for 0.1 to 10 V analog signals



# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Voltage monitoring



#### Selection and ordering data

Measuring range	Hysteresis	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	V		Order No.	Price per PU			kg
<b>Internal power supply without auxiliary supply, On delay and tripping delay can be adjusted separately 0.1 ... 20 s</b>								
Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 17 ... 275	0.1...150	AC/DC 17 ... 275	A	<b>3UG46 33-1AL30</b>		1	1 unit	101 0.147
<b>Supplied from an external auxiliary supply, tripping delay adjustable 0.1 ... 20 s</b>								
Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 0.1 ... 60	0.1...30	AC/DC 24	A	<b>3UG46 31-1AA30</b>		1	1 unit	101 0.147
AC/DC 10 ... 600	0.1...300		A	<b>3UG46 32-1AA30</b>		1	1 unit	101 0.147
AC/DC 0.1 ... 60	0.1...30	AC/DC 24 ... 240	A	<b>3UG46 31-1AW30</b>		1	1 unit	101 0.147
AC/DC 10 ... 600	0.1...300		A	<b>3UG46 32-1AW30</b>		1	1 unit	101 0.147

Measuring range	Hysteresis	Rated control supply voltage $U_s$	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	V		Order No.	Price per PU			kg
<b>Internal power supply without auxiliary supply, On delay and tripping delay can be adjusted separately 0.1 ... 20 s</b>								
Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 17 ... 275	0.1 ... 150	AC/DC 17 ... 275	A	<b>3UG46 33-2AL30</b>		1	1 unit	101 0.147
<b>Supplied from an external auxiliary supply, tripping delay adjustable 0.1 ... 20 s</b>								
Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 0.1 ... 60	0.1 ... 30	AC/DC 24	A	<b>3UG46 31-2AA30</b>		1	1 unit	101 0.147
AC/DC 10 ... 600	0.1 ... 300		A	<b>3UG46 32-2AA30</b>		1	1 unit	101 0.147
AC/DC 0.1 ... 60	0.1 ... 30	AC/DC 24 ... 240	A	<b>3UG46 31-2AW30</b>		1	1 unit	101 0.147
AC/DC 10 ... 600	0.1 ... 300		A	<b>3UG46 32-2AW30</b>		1	1 unit	101 0.147



#### Accessories

Application	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
<b>Blank labeling plates</b>								
	Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000
<b>Covering caps and push-in lugs</b>								
	for devices with 1 or 2 CO contacts	<b>Push-in lugs</b> for screw mounting	<b>3RP19 03</b>		1	10 units	101	0.002
	for devices with 1 or 2 CO contacts	<b>Sealable caps</b> for securing against unauthorized adjustment of setting knobs	<b>3RP19 02</b>		1	5 units	101	0.004

1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Current monitoring

#### Overview



The relays monitor single-phase AC and DC currents against the set threshold for overshoot and undershoot. They differ with regard to their measuring ranges and supply voltage types.

#### Benefits

- Variants with wide voltage supply range
- Variably adjustable to overvoltage, undervoltage or window 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-type connection or alternatively with innovative spring-loaded terminals

#### Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for 4 signaling elements from 4 to 20 mA

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Current monitoring

#### Selection and ordering data

Measuring range	Hysteresis	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				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 display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact

AC/DC 3 ... 500 mA	0.1 ... 250 mA	AC/DC 24	A	<b>3UG46 21-1AA30</b>	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A	AC/DC 24	A	<b>3UG46 22-1AA30</b>	1	1 unit	101	0.147
AC/DC 3 ... 500 mA	0.1 ... 250 mA	AC/DC 24 ... 240	A	<b>3UG46 21-1AW30</b>	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A	AC/DC 24 ... 240	A	<b>3UG46 22-1AW30</b>	1	1 unit	101	0.147

Measuring range	Hysteresis	Rated control supply voltage $U_s$	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				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 display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact

AC/DC 3 ... 500 mA	0.1 ... 250 mA	AC/DC 24	A	<b>3UG46 21-2AA30</b>	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A	AC/DC 24	A	<b>3UG46 22-2AA30</b>	1	1 unit	101	0.147
AC/DC 3 ... 500 mA	0.1 ... 250 mA	AC/DC 24 ... 240	A	<b>3UG46 21-2AW30</b>	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A	AC/DC 24 ... 240	A	<b>3UG46 22-2AW30</b>	1	1 unit	101	0.147

#### Accessories

Application	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg

#### Blank labeling plates

Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>	100	340 units	101	22.000
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#### Covering caps and push-in lugs



for devices with 1 or 2 CO contacts  
**Push-in lugs** for screw mounting

<b>3RP19 03</b>	1	10 units	101	0.002
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for devices with 1 or 2 CO contacts  
**Sealable caps** for securing against unauthorized adjustment of setting knobs

<b>3RP19 02</b>	1	5 units	101	0.004
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1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Power factor monitoring

#### Overview

The 3UG30 14 power factor monitoring device enables the load monitoring of motors.


#### Application

- No-load monitoring
- Underload monitoring in the low rating range
- Simple power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

#### Selection and ordering data

Mounting onto standard mounting rail and screw fixing  
 Width 45 mm  
 Relay for power factor monitoring, single and three-phase

- Monitoring of the power factor for undershoot/overshoot for motor underload and overload
- Upper and lower threshold value can be adjusted separately
- 1 changeover contact each for undershoot/overshoot
- 1 yellow LED each for indicating undervoltage or overvoltage
- 1 green LED each for indicating the applied control supply voltage
- Flashes with 1 Hz during the operating time T1 and T2
- Flashes with 2 Hz if  $p.f.\text{-min} \geq p.f.\text{-max}$

Version	Measuring range $U_e$	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	AC 50/60 Hz	AC 50/60 Hz		Order No.	Price per PU			kg
	p.f.	V						
 Measuring-circuit voltage = control supply voltage	0.1 ... 0.99	Phase conductor voltage						
		3x 230	B	<b>3UG30 14-1BL60</b>	1	1 unit	101	0.311
		3x 400	▶ B	<b>3UG30 14-1BP60</b>	1	1 unit	101	0.308
		3x 480	B	<b>3UG30 14-1BR60</b>	1	1 unit	101	0.355
		3x 575	B	<b>3UG30 14-1BS60</b>	1	1 unit	101	0.350

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

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### 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 ground conductor

- Measuring principle with superimposed DC voltage
- Two selectable measuring ranges of 1 ... 110 k $\Omega$
- Stepless setting within the measuring range
- Selectable:
  - Auto reset function with fixed hysteresis or
  - Storage of the tripping operation
- Test function with test button and terminal connections on the front
- Switching output: 1 CO contact
- Insulation fault indication with a red LED
- Supply voltage indication with a green LED
- Electro-magnetically compatible according to EN 50081 and EN 61000-6-2.

#### Application


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

#### Supply voltage

The 3UG30 81-1AK20 has alternative voltage terminals. Only one 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 V to 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-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	k $\Omega$	V						
<b>Insulation monitors for ungrounded AC networks</b>								
	10 ... 110	AC 115 / 230	A	<b>3UG30 81-1AK20</b>	1	1 unit	101	0.327
	10 ... 110	AC/DC 24 ... 240	B	<b>3UG30 81-1AW30</b>	1	1 unit	101	0.242
<b>Accessories</b>								
	Sealable, transparent covers		D	<b>3UG32 08-1A</b>	1	1 unit	101	0.010

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

Insulation monitoring  
for ungrounded DC networks

### Overview

Relay for monitoring the insulation resistance between ungrounded purely DC networks and a protective-ground conductor

- Measuring principle for differential current measurement
- Response threshold can be set continuously 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 contact
- Insulation fault indicator for L+ and L- through two red LEDs
- Supply voltage indication with a green LED
- Electro-magnetically compatible according to EN 50081 and EN 61000-6-2.

### 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.


#### Supply voltage

Due to the electrical insulation of the supply voltage and the measurement 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 AC 230 V voltage, for example, 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-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	kΩ	V		Order No.	Price per PU			kg
<b>Insulation monitors for ungrounded DC networks</b>								
	10 ... 110	AC/DC 24 ... 240	B	<b>3UG30 82-1AW30</b>		1	1 unit	101 0.233
	<b>Accessories</b>							
	Sealable, transparent covers		D	<b>3UG32 08-1A</b>		1	1 unit	101 0.010

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

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Level monitoring

#### Overview

The 3UG35 01 level monitoring relay is used together with the 2- or 3-pole sensors to monitor the levels of conductive liquids.


#### Application

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

#### Selection and ordering data

Standard mounting rail fixing  
Width 22.5 mm  
Level monitoring relay for conductive liquids

- Inlet or outlet monitoring adjustable
- Sensitivity adjustment by potentiometer
- 1 yellow LED for indicating the relay state
- 1 green LED for indicating the applied control supply voltage
- 1 CO contact






Version	Sensitivity	Rated control supply voltage $U_s$	DT	Screw-type connection		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	AC 50/60 Hz	AC 50/60 Hz		Order No.	Price per PU				
 Inlet or outlet monitoring (UNDER/OVER function) with switch, adjustable	k $\Omega$	V							kg
	5 ... 100	24	▶	<b>3UG35 01-1AC20</b>		1	1 unit	101	0.143
		120	▶	<b>3UG35 01-1AG20</b>		1	1 unit	101	0.142
		230	▶	<b>3UG35 01-1AL20</b>		1	1 unit	101	0.139

# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Level monitoring

#### Sensors for level monitoring

Version	Assignment		Application	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	Cable	Electrode								
 Three-pole wire electrode, 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting lead, 3 x 0.5 mm <sup>2</sup> , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	brown white green	center electrode not assignable	The 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. Application: For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	▶	<b>3UG32 07-3A</b>		1	1 unit	101	0.254
 Two-pole wire electrode, 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting lead, 3 x 0.5 mm <sup>2</sup> , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	brown white	not assignable	For installation see 3UG32 07-3A  Application: For alarm indication in the event of overflow or low level and for 2-step liquid-level control, when the conductive tank is used as the reference electrode.	▶	<b>3UG32 07-2A</b>		1	1 unit	101	0.230
 Two-pole bow electrode, 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting lead, 3 x 0.5 mm <sup>2</sup> , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	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.	▶	<b>3UG32 07-2B</b>		1	1 unit	101	0.128
 Single-pole bow electrode for lateral fitting, screw-in gland width A/F 22, 3/8 inch thread, PVC connecting lead, 3 x 0.5 mm <sup>2</sup> , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	brown white	gland electrode	As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	▶	<b>3UG32 07-1B</b>		1	1 unit	101	0.122
 Single-pole bow electrode for lateral fitting, 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting lead, 3 x 0.5 mm <sup>2</sup> , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	brown white	gland electrode	For high flow velocities or for alarm indication in conductive tanks or pipes.	C	<b>3UG32 07-1C</b>		1	1 unit	101	0.144

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



# Monitoring Relays

## 3UG Monitoring Relays for Electrical and Additional Measurements

### Speed monitoring

#### Overview

The 3UG30 51 monitoring relay is used together with a sensor to monitor drives for underspeeding.


#### Application

- Slip or tear of a belt drive
- Standstill monitoring (no protection of persons)
- Transport monitoring for completeness

#### Selection and ordering data

Mounting onto standard mounting rail and screw fixing  
Width 45 mm  
Underspeed monitoring relay

- 4 measuring ranges adjustable on front panel
- 1 green LED for indicating the applied control supply voltage
- 1 yellow LED for indicating the relay state, flashes during the operating time T
- 1 CO contact

Version	Measuring range	Rated control supply voltage $U_s$	DT	Screw-type connection		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU				
 Measuring range with or without memory, start-up override 0.3 ... 30 s, electrical isolation AC: Yes DC: No	0.1 ... 600 (4 ranges)	24	--	▶	<b>3UG30 51-1AC20</b>	1	1 unit	101	0.273
		120	--	▶	<b>3UG30 51-1AG20</b>	1	1 unit	101	0.274
		230	--	▶	<b>3UG30 51-1AL20</b>	1	1 unit	101	0.272
		--	24 <sup>1)</sup>	▶	<b>3UG30 51-1AC40</b>	1	1 unit	101	0.161

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

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, analog adjustable

### Overview

The 3RS10/3RS11 analog temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed 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 setting.

### Benefits

- All devices are available alternatively with spring-loaded terminals
- All devices except for 24 V AC/DC feature electrical isolation
- Extremely easy operation using a rotary potentiometer
- Variable hysteresis
- Adjustable working principle for devices with 2 thresholds.

### Application

The analog adjustable 3RS10 and 3RS11 SIMIREL 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 plant protection
- Switchgear 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
- Bearing and gear oil monitoring
- Monitoring of coolants

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays



### Relays, analog adjustable

#### Selection and ordering data

##### Analog adjustable evaluation units with one and two threshold values

For analog adjustable units, the threshold values and the hysteresis of 2 to 20 % are set using a rotary potentiometer. For units with 2 threshold values, the adjustable hysteresis only

applies to threshold value 1. For the second threshold value, a fixed hysteresis of 5 % applies. The product range has been developed for applications where a setting accuracy of  $\pm 5$  % is sufficient.

Sensor	Function	Measuring range	Rated control supply voltage $U_s$	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		°C	V		Order No.	Price per PU			kg	
<b>Analog adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC</b>										
 3RS10 00-1CD10	PT100 (resistance sensor)	Overshoot	- 50 ... + 50	AC/DC 24	B	<b>3RS10 00-1CD00</b>	1	1 unit	101	0.150
			0 ... + 100	AC 110 / 230	B	<b>3RS10 00-1CK00</b>	1	1 unit	101	0.190
		0 ... + 200	AC/DC 24	A	<b>3RS10 00-1CD10</b>	1	1 unit	101	0.145	
			AC 110 / 230	A	<b>3RS10 00-1CK10</b>	1	1 unit	101	0.189	
		Under-shoot	- 50 ... + 50	AC/DC 24	B	<b>3RS10 00-1CD20</b>	1	1 unit	101	0.145
			0 ... + 100	AC 110 / 230	A	<b>3RS10 00-1CK20</b>	1	1 unit	101	0.186
	Type J (thermocouple)	Overshoot	0 ... + 100	AC/DC 24	B	<b>3RS10 10-1CD10</b>	1	1 unit	101	0.150
			0 ... + 200	AC 110 / 230	B	<b>3RS10 10-1CK10</b>	1	1 unit	101	0.190
		0 ... + 200	AC/DC 24	B	<b>3RS10 10-1CD20</b>	1	1 unit	101	0.150	
			AC 110 / 230	B	<b>3RS10 10-1CK20</b>	1	1 unit	101	0.191	
		0 ... + 600	AC/DC 24	B	<b>3RS11 00-1CD20</b>	1	1 unit	101	0.150	
			AC 110 / 230	B	<b>3RS11 00-1CK20</b>	1	1 unit	101	0.190	
Type K (thermocouple)	Overshoot	0 ... + 200	AC/DC 24	B	<b>3RS11 00-1CD30</b>	1	1 unit	101	0.149	
		0 ... + 600	AC 110 / 230	B	<b>3RS11 00-1CK30</b>	1	1 unit	101	0.190	
	0 ... + 200	AC/DC 24	B	<b>3RS11 01-1CD20</b>	1	1 unit	101	0.150		
		AC 110 / 230	B	<b>3RS11 01-1CK20</b>	1	1 unit	101	0.190		
	0 ... + 600	AC/DC 24	B	<b>3RS11 01-1CD30</b>	1	1 unit	101	0.150		
		AC 110 / 230	B	<b>3RS11 01-1CK30</b>	1	1 unit	101	0.190		
+ 500 ... + 1.000	AC/DC 24	B	<b>3RS11 01-1CD40</b>	1	1 unit	101	0.150			
	AC 110 / 230	B	<b>3RS11 01-1CK40</b>	1	1 unit	101	0.190			
<b>Analog adjustable for warning and tripping (2 threshold values), width 22.5 mm; open/closed-circuit principle switchable; without memory; 1 NO + 1 CO</b>										
 3RS11 21-1DD40	PT100 (resistance sensor)	Overshoot	- 50 ... + 50	AC/DC 24	B	<b>3RS10 20-1DD00</b>	1	1 unit	101	0.166
			0 ... + 100	AC/DC 24 ... 240	B	<b>3RS10 20-1DW00</b>	1	1 unit	101	0.175
		0 ... + 200	AC/DC 24	B	<b>3RS10 20-1DD10</b>	1	1 unit	101	0.164	
			AC/DC 24 ... 240	B	<b>3RS10 20-1DW10</b>	1	1 unit	101	0.175	
		Under-shoot	-50 ... + 50	AC/DC 24	B	<b>3RS10 20-1DD20</b>	1	1 unit	101	0.166
			0 ... + 100	AC/DC 24 ... 240	B	<b>3RS10 20-1DW20</b>	1	1 unit	101	0.175
	Type J (thermocouple)	Overshoot	0 ... + 200	AC/DC 24	B	<b>3RS10 30-1DD00</b>	1	1 unit	101	0.165
			0 ... + 100	AC/DC 24 ... 240	B	<b>3RS10 30-1DW00</b>	1	1 unit	101	0.174
		0 ... + 200	AC/DC 24	B	<b>3RS10 30-1DD10</b>	1	1 unit	101	0.166	
			AC/DC 24 ... 240	B	<b>3RS10 30-1DW10</b>	1	1 unit	101	0.175	
		0 ... + 200	AC/DC 24	B	<b>3RS10 30-1DD20</b>	1	1 unit	101	0.163	
			AC/DC 24 ... 240	B	<b>3RS10 30-1DW20</b>	1	1 unit	101	0.173	
	Type K (thermocouple)	Overshoot	0 ... + 200	AC/DC 24	B	<b>3RS11 20-1DD20</b>	1	1 unit	101	0.165
			0 ... + 600	AC/DC 24 ... 240	B	<b>3RS11 20-1DW20</b>	1	1 unit	101	0.175
		0 ... + 200	AC/DC 24	B	<b>3RS11 20-1DD30</b>	1	1 unit	101	0.167	
			AC/DC 24 ... 240	B	<b>3RS11 20-1DW30</b>	1	1 unit	101	0.175	
		0 ... + 600	AC/DC 24	B	<b>3RS11 21-1DW20</b>	1	1 unit	101	0.179	
			AC/DC 24 ... 240	B	<b>3RS11 21-1DW30</b>	1	1 unit	101	0.176	
+ 500 ... + 1.000	AC/DC 24	B	<b>3RS11 21-1DD40</b>	1	1 unit	101	0.167			

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

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, analog adjustable

### Analog adjustable evaluation units with one and two threshold values

For analog adjustable units, the threshold values and the hysteresis of 2 to 20 % are set using a rotary potentiometer. For units with 2 threshold values, the adjustable hysteresis only applies to threshold value 1.

For the second threshold value, a fixed hysteresis of 5 % applies. The product range has been developed for applications where a setting accuracy of  $\pm 5\%$  is sufficient.

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

### Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
<b>Blank labeling plates,</b> 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000 kg

Matching sensors can be found at <http://www.siemens.com/temperature>

1) Computer labeling system for individual labeling of device labeling plates available from:  
murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable to DIN 3440

### Overview

The 3RS10/3RS11 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function). The 3RS10 40, 3RS20 40, 3RS11 40 and 3RS21 40 relays comply with the requirements of DIN 3440 as temperature monitors; the 3RS10 42 and 3RS11 42 relays comply with the requirements of DIN 3440 as temperature limiters. The relays are also an excellent alternative to temperature controls in the low-end performance range (2 or 3-point closed-loop control).

### Benefits

- Very simple operation without complicated menu selections
- Certification to DIN 3440
- All devices are available alternatively with spring-loaded terminals
- 2 or 3-point closed-loop control can be configured quickly

### 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

The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

#### Measuring range in °C for thermocouples

Sensor type	Short-circuit	Wire break	3RS11 40 Measuring range in °C	3RS11 42 Measuring range in °C
J	--	x	-99 ... +999	-99 ... +1200
K	--	x	-99 ... +999	-99 ... +1350
T	--	x	-99 ... +400	-99 ... +400
E	--	x	-99 ... +999	-99 ... +999
N	--	x	-99 ... +999	-99 ... +999
S	--	x	--	0 ... 1750
R	--	x	--	0 ... 1750
B	--	x	--	400 ... 1800

#### Measuring range in °C for resistance sensors

Sensor type	Short-circuit	Wire break	3RS10 40/41 Measuring range in °C	3RS10 42 Measuring range in °C
PT100	x	x	-50 ... +500	-50 ... +750
PT1000	x	x	-50 ... +500	-50 ... +500
KTY 83-110	x	x	-50 ... +175	-50 ... +175
KTY 84	x	x	-40 ... +300	-40 ... +300
NTC <sup>1)</sup>	x	--	80 ... 160	80 ... 160

1) Not for NTC B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable to DIN 3440

### Selection and ordering data


#### Digitally adjustable evaluation units according to DIN 3440

Temperature monitoring relays are very easy to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:

- Sensor type
- 2 threshold values, 91, 92
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Open/closed-circuit principle switchable
- Manual/remote RESET
- Function: Overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated. The temperature ranges depend on the sensor type.

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage $U_s$ AC 50-60 Hz	DT	Screw-type connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
				Order No.	Price per PU			kg	
<b>"Temperature monitors" according to DIN 3440, 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</b>									
	PT100/1000;	- 50 ... + 500 °C	AC/DC 24	A	<b>3RS10 40-1GD50</b>	1	1 unit	101	0.317
	KTY83/84; NTC (resistance sensors) <sup>1)</sup>	- 50 ... + 932 °F	AC/DC 24	B	<b>3RS10 40-1GW50</b>	1	1 unit	101	0.329
		- 50 ... + 932 °F	AC/DC 24	B	<b>3RS20 40-1GD50</b>	1	1 unit	101	0.189
		- 50 ... + 932 °F	AC/DC 24 ... 240	B	<b>3RS20 40-1GW50</b>	1	1 unit	101	0.186
	TYPE J, K, T, E, N (thermocouple)	- 99 ... + 999 °C	AC/DC 24	A	<b>3RS11 40-1GD60</b>	1	1 unit	101	0.318
		- 99 ... + 999 °C	AC/DC 24 ... 240	B	<b>3RS11 40-1GW60</b>	1	1 unit	101	0.329
	- 99 ... + 1830 °F	AC/DC 24	B	<b>3RS21 40-1GD60</b>	1	1 unit	101	0.317	
	- 99 ... + 1830 °F	AC/DC 24 ... 240	B	<b>3RS21 40-1GW60</b>	1	1 unit	101	0.317	
<b>"Temperature limiters" and "Temperature monitors" according to DIN 3440, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile</b>									
	PT100/1000;	- 50 ... + 750 °C	AC/DC 24	B	<b>3RS10 42-1GD70</b>	1	1 unit	101	0.317
	KTY83/84; NTC (resistance sensors) <sup>1)</sup>	- 50 ... + 750 °C	AC/DC 24 ... 240	B	<b>3RS10 42-1GW70</b>	1	1 unit	101	0.331
	TYPE J, K, T, E, N, R, S, B (thermocouple)	- 99 ... + 1.800 °C	AC/DC 24	B	<b>3RS11 42-1GD80</b>	1	1 unit	101	0.318
		- 99 ... + 1.800 °C	AC/DC 24 ... 240	B	<b>3RS11 42-1GW80</b>	1	1 unit	101	0.329

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.

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable to DIN 3440

### Digitally adjustable evaluation units according to DIN 3440

Temperature monitoring relays are very easy to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:


- Sensor type
- 2 threshold values, 91, 92
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 99 s)
- Open/closed-circuit principle switchable
- Manual/remote RESET
- Function: Overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated. The temperature ranges depend on the sensor type.

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage $U_s$ AC 50-60 Hz	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU			kg
V								
<b>"Temperature monitors" acc. to DIN 3440, 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</b>								
PT100/1000; KTY83/84;	- 50 ... + 500 °C	AC/DC 24	B	<b>3RS10 40-2GD50</b>	1	1 unit	101	0.267
NTC (resistance sensors) <sup>1)</sup>	- 50 ... + 932 °F	AC/DC 24 ... 240	B	<b>3RS10 40-2GW50</b>	1	1 unit	101	0.281
		AC/DC 24	C	<b>3RS20 40-2GD50</b>	1	1 unit	101	0.100
		AC/DC 24 ... 240	C	<b>3RS20 40-2GW50</b>	1	1 unit	101	0.100
TYPE J, K, T, E, N (thermocouple)	- 99 ... + 999 °C	AC/DC 24	B	<b>3RS11 40-2GD60</b>	1	1 unit	101	0.269
		AC/DC 24 ... 240	B	<b>3RS11 40-2GW60</b>	1	1 unit	101	0.300
	- 99 ... + 1830 °F	AC/DC 24	C	<b>3RS21 40-2GD60</b>	1	1 unit	101	0.100
		AC/DC 24 ... 240	C	<b>3RS21 40-2GW60</b>	1	1 unit	101	0.100
<b>"Temperature limiters" and "Temperature monitors" acc. to DIN 3440, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile</b>								
PT100/1000; KTY83/84;	-50 ... +750 °C	AC/DC 24	C	<b>3RS10 42-2GD70</b>	1	1 unit	101	0.267
NTC (resistance sensors) <sup>1)</sup>		AC/DC 24 ... 240	C	<b>3RS10 42-2GW70</b>	1	1 unit	101	0.281
TYPE J, K, T, E, N, R, S, B (thermocouple)	-99 ... +1.800 °C	AC/DC 24	C	<b>3RS11 42-2GD80</b>	1	1 unit	101	0.269
		AC/DC 24 ... 240	C	<b>3RS11 42-2GW80</b>	1	1 unit	101	0.300

1) NTC type: B57227-K333-A1 (100 °C: 1.8 k $\Omega$ ; 25 °C: 32.762 k $\Omega$ ).

### Accessories

Design	Language used for labels	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
<b>Push-in lugs for screw mounting</b>								
	for each thermistor motor protection device, 2 units are required. 1 package contains 10 units for 5 devices	3RN1	<b>3RP19 03</b>		1	10 units	101	0.002
<b>Replaceable cover labels for digital devices</b>								
Devices acc. to DIN 3440	German	B	<b>3RS19 01-1A</b>		1	5 units	101	0.005
Matching sensors can be found on the Internet at <a href="http://www.siemens.com/temperature">www.siemens.com/temperature</a>	English	B	<b>3RS19 01-1C</b>		1	5 units	101	0.005
<b>Blank labeling plates</b>								
20 mm x 7 mm, pastel turquoise <sup>1)</sup>		C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000

Matching sensors can be found at <http://www.siemens.com/temperature>

1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

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 sensed 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 signal evaluator 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-loaded terminals
- 2 or 3-point closed-loop control can be configured quickly

### 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

The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

#### Measuring range in °C for resistance sensors

Sensor type	Open-circuit	Short-circuit	Measuring range in °C
PT100	x	x	-50 ... +500
PT1000	x	x	-50 ... +500
KTY 83-110	x	x	-50 ... +175
KTY 84	x	x	-40 ... +300
NTC	--	x	+80 ... +160



# Monitoring Relays

## 3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable for up to 3 sensors

### Selection and ordering data


#### Digitally adjustable signal evaluators

The digitally adjustable temperature monitoring relays are very simple to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:

- Sensor type
- 2 threshold values,  $\vartheta_1$ ,  $\vartheta_2$
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Open/closed-circuit principle
- Function: Overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated. The temperature ranges depend on the sensor type.

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


3RS10 41-1GW50

1) NTC type: B57227-K333-A1 (100 °C: 1.8 k $\Omega$ ; 25 °C: 32.762 k $\Omega$ ).

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

1) NTC type: B57227-K333-A1 (100 °C: 1.8 k $\Omega$ ; 25 °C: 32.762 k $\Omega$ ).

### Accessories

Design	Language used for labels	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
<b>Push-in lugs for screw mounting</b>								
	for each thermistor motor protection device, 2 units are required. 1 package contains 10 units for 5 devices	3RN1	<b>3RP19 03</b>		1	10 units	101	0.002
<b>Replaceable cover labels for digital devices</b>								
Devices acc. to DIN 3440	German	B	<b>3RS19 01-1B</b>		1	5 units	101	0.005
	English	B	<b>3RS19 01-1D</b>		1	5 units	101	0.001
<b>Blank labeling plates</b>								
20 mm x 7 mm, pastel turquoise <sup>1)</sup>		C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000

1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

# Monitoring Relays

## 3RN1 Thermistor Motor Protection

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 additional overload protection equipment is necessary.
- No settings on the device are necessary.
- Electronically optimized output thanks to variants with gold-plated contacts.
- Rapid error diagnosis thanks to variants that indicate open- and short-circuit in the sensor circuit.
- Screw-type or spring-loaded 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 gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control:

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

# Monitoring Relays

## 3RN1 Thermistor Motor Protection



For PTC sensors

### Selection and ordering data

#### Thermistor motor protection relays for PTC thermistors (Type A PTCs)

- Monostable version with closed-circuit principle, triggers in the event of control supply voltage failure

- PTB01 ATEX approval, see Catalog LV 1 T.
- 3RN10 13-.BW01: bistable version, does not trigger in the event of control supply voltage failure
- All units except for 24 V AC/DC feature electrical isolation

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

- 1) The unit can be reset with the RESET button or by disconnecting the control supply voltage.
- 2) For more information on protection against voltage failure, see Catalog LV 1 T.


# Monitoring Relays 3RN1 Thermistor Motor Protection

For PTC sensors

## Thermistor motor protection relays for PTC thermistors (Type A PTCs)

- Monostable version with closed-circuit principle, triggers in the event of control supply voltage failure

- PTB01 ATEX approval, see Catalog LV 1 T.
- 3RN10 13-BW01: bistable version, does not trigger in the event of control supply voltage failure
- All units except for 24 V AC/DC feature electrical isolation

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


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

# Monitoring Relays

## 3RN1 Thermistor Motor Protection

For PTC sensors

### Accessories

Version	For type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
<b>Push-in lugs for screw mounting</b>								
	For each thermistor motor protection device, 2 units are required. 1 pack contains 10 units for 5 devices	3RN1 ▶	<b>3RP19 03</b>		1	10 units	101	0.002
<b>Blank labeling plates</b>								
	Blank labeling plates, 20 mm x 7 mm, pastel turquoise <sup>1)</sup>	C	<b>3RT19 00-1SB20</b>		100	340 units	101	22.000

1) Computer labeling system for individual labeling of device labeling plates available from: murrplastik Systemtechnik GmbH.

## Application

### Classification of a machine in categories acc. to EN 954-1

The 98/37/EG machinery directive stipulates that every machine must comply with the applicable guidelines and standards. Measures must be taken to keep the risk to persons as small as possible.

The first step is for the project engineer to perform a risk evaluation according to EN 1050 "Guidelines for risk assessment". The ambient conditions of the machine have to be considered, for example. Then any overall risk must be evaluated. Risk evaluation must be performed in such a manner that the procedure and conclusions can be retraced.

The dangers and possible technical measures for reducing risk must also be specified.

After risk assessment, the category according to which the safety circuits will be designed and implemented is specified with the aid of EN 954-1.

This category defines the technical requirements for the configuration of the safety equipment. There are five categories (B, 1, 2, 3 and 4), whereby B (for Basic category) is the category of the lowest risk and the one which defines the minimum demands made on the control system.

### Possible selection of the categories acc. to EN 954-1

Starting point for risk assessment of the safety related part of the control	S Severity of the injury	F Frequency and/or duration of the exposure to danger	P Possibility to avoid the danger
	S1 Minor (usually reversible) injury	F1 From rarely to often and/or short duration of exposure	P1 Possible under certain conditions
	S2 Serious (normally irreversible) injury including death	F2 From frequently to constantly and/or long duration of exposure	P2 Hardly possible

#### Selection of the category

B, 1 to 4: Categories for parts of controllers with relevance for safety

- Preferred categories for reference points
- Possible categories which demand additional measures
- Measures that may be excessive with respect to the particular risk

### Summary of the requirements for categories acc. to EN 954-1

Category (not to be applied in any specific hierarchy)	Summary of requirements	System response	Principles for achieving safety
B	The safety related parts of controllers and/or their protective devices as well as their components must be designed, constructed, selected, assembled and combined in accordance with the applicable standards in such a way that they can resist the expected external influences.	The occurrence of a fault can result in loss of the safety function.	Mainly characterized by the selection of components
1	The requirements of B must be met. Well-proven components and well-proven safety principles must be implemented.	The occurrence of a fault can result in loss of the safety function but the probability of it occurring is less than for Category B.	
2	The requirements of B must be met and well-proven safety principles must be implemented. The safety functions must be tested at regular intervals by the machine control.	The occurrence of a fault can result in loss of the safety function between tests. The loss of the safety function will be detected by the test.	Mainly characterized by the structure
3	The requirements of B must be met and well-proven safety principles must be implemented. Parts with relevance for safety must be implemented such that a single fault in any of these components does not result in loss of the safety function, and whenever reasonably possible, the individual fault is detected.	When the single fault occurs, the safety function is always maintained. Some but not all faults are detected. An accumulation of undetected faults may lead to loss of the safety function.	
4	The requirements of B must be met and well-proven safety principles must be implemented. Parts with relevance for safety must be implemented such that a single fault in any of these components does not result in loss of the safety function, and the individual fault is detected during or before the next activation of the safety function or, if this is not possible, an accumulation of faults will not result in loss of the safety function.	When faults occur, the safety function is always maintained. The faults are detected early to prevent loss of the safety function.	

# 3TK28 Safety Relays

## General data

### Standards for "Safety of machines"

- EN 60204-1 "Electrical equipment of industrial machines"
- EN 418 "EMERGENCY-STOP equipment, functional aspects, basic design principles"
- EN 574 "Two-hand switching"
- EN 954-1 "Safety-related parts of controls"
- EN 1050 "Guidelines for risk assessment"
- EN 1088 "Locking facilities in combination with isolating protective devices"
- IEC 61508 "Functional safety of electrical/programmable solid-state safety related systems"

### Stop categories

Potential dangers posed by a machine must be eliminated as quickly as possible.

As a rule, the "danger-free status" is standstill with respect to hazardous motions. All SIRIUS safety relays are de-energized in the event of danger or a fault, i.e. the machine drives are switched to standstill. The EN 60204 standard requires that every machine must be equipped with the Stop function of Category 0. Stop functions of Categories 1 and/or 2 must be implemented when this is necessary for the safety and/or functional requirements of the machine.

There are 3 categories of Stop functions:

- Stop category 0:  
Shutdown by immediate switch-off of the energy infeed to the machine drives.
- Stop category 1:  
Controlled shutdown, whereby the energy infeed to the machine drives is maintained during shutdown and is only switched off when standstill has been achieved.
- Stop category 2:  
Controlled shutdown, whereby the energy infeed to the machine drives is maintained.

The devices support autostart or monitored start depending on their versions.

### Autostart/Manual start

Autostart: The device switches on the enabling circuits automatically as soon as the switch-on conditions (sensor and feedback circuits closed) are satisfied.

Manual start: If an ON pushbutton is installed in the feedback circuit, a manual start can be provided with the autostart function.

*Caution: Not permissible for EMERGENCY-STOP Category 4!*

### Monitored start

To switch on the enabling circuits the switch-on conditions (sensor and feedback circuits closed) must be satisfied. In addition the device must be started with an ON pushbutton. The device responds in this case to the negative edge of the ON signal.

### Crossover protection

Crossover protection is the ability of the safety relay to detect faults (e.g. through cable compression or ground faults) in the safety chain to be monitored and to suppress the enabling of the enabling circuits until the external fault has been rectified.

### EMERGENCY-STOP

EMERGENCY-STOP devices must have priority over all other functions.

The energy infeed to the machine drives that can cause dangerous situations must be switched off as quickly as possible without causing any further danger. Resetting of the drives must not result in restarting of the equipment. EMERGENCY-STOP must either function as a Stop of Category 0 or Category 1.

Resetting of the command device must only be possible as a result of a manual action on the command device. Resetting of the command device must not initiate a restart command. Restarting of the machine must not be possible until all actuated operator controls have been reset deliberately and individually by hand (EN 418).

The basic units of the SIRIUS safety relays can be used for EMERGENCY-STOP applications up to Category 4 of EN 954-1, Category 3 or 4 of EN 954-1 or SIL 2/3 (Safety Integrity Level) acc. to IEC 61508 must be achieved depending on the external circuit and routing of the sensor leads.

### Protective door monitoring

EN 1088 distinguishes between interlocked, isolating protection devices and interlocked, isolating protective devices with tumbler.

SIRIUS safety relays are also used in this case for EMERGENCY-STOP applications. Control systems for up to Category 4 of EN 954-1 or SIL 2/3 of IEC 61508 are possible.

### Presses and punches

The two-hand control unit is a device that requires both hands of the operator to be used simultaneously as a means of protecting the operator from danger.

The devices are suitable for installation in control systems for eccentric, hydraulic and screw presses. They can be used up to Category 4 of EN 954-1. Type III C according to EN 574 is possible specifically for presses.

# 3TK28 Safety Relays

with electronic enabling circuits

## Overview

The SIRIUS safety pilot guides you quickly to the right device

Type	Connection		Crossover protection	Category acc. to EN 954-1				EMERGENCY-STOP	Protective door	Solid-state sensors	Cascade input 24 V DC	Safety mats
	1-channel	2-channel		B	1	2	3					
3TK28 40 basic unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--
3TK28 41 standard unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓
3TK28 42 standard unit tv	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓
3TK28 45 multi-function unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓

Type	Enabling circuit, floating		Enabling circuit, solid-state		Signal-ing circuit	Autostart	Monitored start	Switching capacity		Rated operational voltage			Rated control supply voltage			Control inputs
	STOP cate-gory 0	Stop cate-gory 1	Stop cate-gory 0	Stop cate-gory 1				AC -15 at U = 230 V	DC -13 at U = 24 V	DC 24 V	AC 230 V	AC 600 V	DC 24 V	AC 115 V	AC 230 V	
3TK28 40 basic unit	--	--	2 <sup>1)</sup>	--	--	✓	✓	--	0.5 A	✓	--	--	✓	--	--	--
3TK28 41 standard unit	--	--	2	--	--	✓	✓	--	1.5 A	✓	--	--	✓	--	--	--
3TK28 42 standard unit tv	--	--	1	1	--	✓	✓	--	1.5 A	✓	--	--	✓	--	--	--
3TK28 45 multi-function unit	1	1	1	1	1 HL	✓	✓	2 A	1.5 A	✓	✓	--	✓	--	--	--
	2	--	2	--	1 HL											

✓ = available

-- = not available

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



# 3TK28 Safety Relays



with electronic enabling circuits

## Selection and ordering data

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 115, 230 V

Enabling circuit, floating	Enabling circuit, solid-state			Signal-ing circuit	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per unit approx.
	Stop cate-gory 0	Stop cate-gory 1	Stop cate-gory 0					Stop cate-gory 1	Order No.				

### Safety relays, solid-state, for EMERGENCY-STOP and protective doors

Basic units													
	--	--	2 <sup>1)</sup>	--	-- <sup>4)</sup>	3	DC 24	A	<b>3TK28 40-1BB40</b>	1	1 unit	102	0.180
Standard devices													
	--	--	2 <sup>2)</sup>	--	-- <sup>4)</sup>	4	DC 24	A	<b>3TK28 41-1BB40</b>	1	1 unit	102	0.166
Standard devices tv													
	--	--	1	1, A <sup>3)</sup>	--	4	DC 24	A	<b>3TK28 42-1BB41</b>	1	1 unit	102	0.168
				1, B <sup>3)</sup>				A	<b>3TK28 42-1BB42</b>	1	1 unit	102	0.166
				1, C <sup>3)</sup>				A	<b>3TK28 42-1BB44</b>	1	1 unit	102	0.166
Multi-function units													
	1	1	1	1, A <sup>3)</sup>	1HL	4	DC 24	A	<b>3TK28 45-1BB41</b>	1	1 unit	102	0.400
	1	1	1	1, B <sup>3)</sup>				A	<b>3TK28 45-1BB42</b>	1	1 unit	102	0.400
	2	--	2	--				A	<b>3TK28 45-1BB40</b>	1	1 unit	102	0.415

- 1) The outputs are only safe in conjunction with external actuators with positively-driven contacts.  
 2) Suitable for solid-state sensor input.


- 3)  $t_V$  = Off-delay  
 A = 0.05 ... 3 s,  
 B = 0.5 ... 30 s,  
 C = 5 ... 300 s.

- 4) An enabling circuit can be used as a signaling circuit.

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 115, 230 V

Enabling circuit, floating	Enabling circuit, solid-state			Signal-ing circuit	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With spring-loaded terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Stop cate-gory 0	Stop cate-gory 1	Stop cate-gory 0					Stop cate-gory 1	Order No.				

### Safety relays, solid-state, for EMERGENCY-STOP and protective doors

Basic units													
	--	--	2 <sup>1)</sup>	--	-- <sup>2)</sup>	3	DC 24	B	<b>3TK28 40-2BB40</b>	1	1 unit	102	0.150
Standard devices													
	--	--	2	--	-- <sup>2)</sup>	4	DC 24	A	<b>3TK28 41-2BB40</b>	1	1 unit	102	0.143
Standard devices tv													
	--	--	1	1, A <sup>3)</sup>	--	4	DC 24	B	<b>3TK28 42-2BB41</b>	1	1 unit	102	0.143
				1, B <sup>3)</sup>				A	<b>3TK28 42-2BB42</b>	1	1 unit	102	0.146
				1, C <sup>3)</sup>				B	<b>3TK28 42-2BB44</b>	1	1 unit	102	0.149
Multi-function units													
	1	1	1	1, A <sup>3)</sup>	1HL	4	DC 24	B	<b>3TK28 45-2BB41</b>	1	1 unit	102	0.360
	1	1	1	1, B <sup>3)</sup>				B	<b>3TK28 45-2BB42</b>	1	1 unit	102	0.360
	2	--	2	--				B	<b>3TK28 45-2BB40</b>	1	1 unit	102	0.361

- 1) The outputs are only safe in conjunction with external actuators with positively-driven contacts.

- 2) An enabling circuit can be used as a signaling circuit.

- 3)  $t_V$  = Off-delay  
 A = 0.05 ... 3 s,  
 B = 0.5 ... 30 s,  
 C = 5 ... 300 s.

# 3TK28 Safety Relays

with relay enabling circuits

## Overview

The SIRIUS safety pilot guides you quickly to the right device

Type	1-channel connection	2-channel connection	Crossover protection	Category acc. to EN 954-1					EMER-GENCY-STOP	Protective door	Enabling contacts	Signaling contacts	Autostart	Monitored start	
				B	1	2	3	4							
<b>Basic units</b>															
3TK28 21	✓	✓	✓	✓	✓	✓	✓	✓	--	✓	✓	3 NO	1 NC	✓	--
3TK28 22	--	✓	✓	✓	✓	✓	✓	✓	✓ <sup>2)</sup>	✓	✓	2 NO	--	✓	--
3TK28 23	--	✓	✓	✓	✓	✓	✓	✓	✓	--	✓	2 NO	--	--	✓
3TK28 24	✓	✓	✓	✓	✓	✓	✓	--	✓	✓	✓	2 NO	--	✓	--
3TK28 25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3 NO	2 NC	✓	✓
3TK28 27	✓	✓	✓	✓	✓	✓	✓	✓ <sup>1)</sup>	✓	--	✓	2 NO + 2 NC, delayed	1 NC	--	✓
3TK28 28	✓	✓	✓	✓	✓	✓	✓	✓ <sup>1)</sup>	✓	✓	✓	2 NO + 2 NC, delayed	1 NC	✓	--
<b>Expansion devices (category as for basic unit)</b>															
3TK28 30	--	--	●	●	●	●	●	●	--	--	✓	4 NO	--	--	--
<b>Press control devices according acc. to EN 574</b>															
3TK28 34	--	✓	✓	✓	✓	✓	✓	✓	--	--	✓	2 NO +2 NC	--	--	--
3TK28 35	--	--	--	✓	✓	✓	✓	✓	--	--	✓	3 NO + 1 NC	--	--	--

✓ = available

-- = not available

● = corresponds to basic unit

1) Only possible for instantaneous enabling contacts.

2) The ON button is not monitored.

# 3TK28 Safety Relays

with relay enabling circuits

## Selection and ordering data

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 24 115, 230 V

Enabling contacts	Signaling contacts	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					Order No.	Price per PU				
V										
kg										
<b>Basic units for EMERGENCY-STOP and protective doors</b>										
<b>Autostart</b>										
3 NO	1 NC	B, 1, 2, 3	AC/DC 24	▶	<b>3TK28 21-1CB30</b>		1	1 unit	102	0.276
2 NO	--	B, 1, 2, 3, 4	AC/DC 24	▶	<b>3TK28 22-1CB30</b>		1	1 unit	102	0.271
<b>Monitored start</b>										
2 NO	--	B, 1, 2, 3, 4	AC/DC 24	▶	<b>3TK28 23-1CB30</b>		1	1 unit	102	0.271
<b>Autostart</b>										
2 NO	--	B, 1, 2, 3	AC/DC 24	▶	<b>3TK28 24-1CB30</b>		1	1 unit	102	0.254
			DC 24	▶	<b>3TK28 24-1BB40</b>		1	1 unit	102	0.249
			AC 115	A	<b>3TK28 24-1AJ20</b>		1	1 unit	102	0.294
			AC 230	▶	<b>3TK28 24-1AL20</b>		1	1 unit	102	0.288
<b>Autostart / monitored start</b>										
3 NO	2 NC	B, 1, 2, 3, 4	DC 24	▶	<b>3TK28 25-1BB40</b>		1	1 unit	102	0.423
			AC 24	▶	<b>3TK28 25-1AB20</b>		1	1 unit	102	0.421
			AC 115	▶	<b>3TK28 25-1AJ20</b>		1	1 unit	102	0.519
			AC 230	▶	<b>3TK28 25-1AL20</b>		1	1 unit	102	0.516
<b>Monitored start</b>										
OFF-delay, $t_v = 0.5 \dots 30$ s										
2 NO + 2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 27-1BB40</b>		1	1 unit	102	0.497
			AC 24	▶	<b>3TK28 27-1AB20</b>		1	1 unit	102	0.496
			AC 115	▶	<b>3TK28 27-1AJ20</b>		1	1 unit	102	0.650
			AC 230	▶	<b>3TK28 27-1AL20</b>		1	1 unit	102	0.650
<b>Monitored start</b>										
OFF-delay, $t_v = 0.05 \dots 3$ s										
2 NO + 2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 27-1BB41</b>		1	1 unit	102	0.495
			AC 24	B	<b>3TK28 27-1AB21</b>		1	1 unit	102	0.499
			AC 115	B	<b>3TK28 27-1AJ21</b>		1	1 unit	102	0.650
			AC 230	A	<b>3TK28 27-1AL21</b>		1	1 unit	102	0.650
<b>Autostart</b>										
OFF-delay, $t_v = 0.5 \dots 30$ s										
2 NO + 2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 28-1BB40</b>		1	1 unit	102	0.496
			AC 24	B	<b>3TK28 28-1AB20</b>		1	1 unit	102	0.500
			AC 115	A	<b>3TK28 28-1AJ20</b>		1	1 unit	102	0.650
			AC 230	A	<b>3TK28 28-1AL20</b>		1	1 unit	102	0.650
<b>Autostart</b>										
OFF-delay, $t_v = 0.05 \dots 3$ s										
2 NO + 2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 28-1BB41</b>		1	1 unit	102	0.499
			AC 24	B	<b>3TK28 28-1AB21</b>		1	1 unit	102	0.501
			AC 115	B	<b>3TK28 28-1AJ21</b>		1	1 unit	102	0.657
			AC 230	A	<b>3TK28 28-1AL21</b>		1	1 unit	102	0.650

For multi-unit/reusable packaging, see Appendix.

1) Only applicable to the instantaneous enabling contacts.

# 3TK28 Safety Relays

with relay enabling circuits

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 24 ... 115, 230 V

Enabling contacts	Signal-ing contacts	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					Order No.	Price per PU			kg
<b>Basic units for EMERGENCY-STOP and protective doors</b>									
<b>Autostart</b>									
3 NO	1 NC	B, 1, 2, 3	AC/DC 24	▶	<b>3TK28 21-2CB30</b>	1	1 unit	102	0.246
2 NO	--	B, 1, 2, 3, 4	AC/DC 24	A	<b>3TK28 22-2CB30</b>	1	1 unit	102	0.250
<b>Monitored start</b>									
2 NO	--	B, 1, 2, 3, 4	AC/DC 24	A	<b>3TK28 23-2CB30</b>	1	1 unit	102	0.247
<b>Autostart</b>									
2 NO	--	B, 1, 2, 3	AC/DC 24	A	<b>3TK28 24-2CB30</b>	1	1 unit	102	0.230
			DC 24	▶	<b>3TK28 24-2BB40</b>	1	1 unit	102	0.228
			AC 115	B	<b>3TK28 24-2AJ20</b>	1	1 unit	102	0.265
			AC 230	B	<b>3TK28 24-2AL20</b>	1	1 unit	102	0.270
<b>Autostart / monitored start</b>									
3 NO	2 NC	B, 1, 2, 3, 4	DC 24	▶	<b>3TK28 25-2BB40</b>	1	1 unit	102	0.374
			AC 24	B	<b>3TK28 25-2AB20</b>	1	1 unit	102	0.375
			AC 115	B	<b>3TK28 25-2AJ20</b>	1	1 unit	102	0.472
			AC 230	B	<b>3TK28 25-2AL20</b>	1	1 unit	102	0.475
<b>Monitored start</b>									
OFF-delay, $t_v = 0.5 \dots 30$ s									
2 NO+2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 27-2BB40</b>	1	1 unit	102	0.455
			AC 24	B	<b>3TK28 27-2AB20</b>	1	1 unit	102	0.454
			AC 115	B	<b>3TK28 27-2AJ20</b>	1	1 unit	102	0.606
			AC 230	B	<b>3TK28 27-2AL20</b>	1	1 unit	102	0.604
<b>Monitored start</b>									
OFF-delay, $t_v = 0.05 \dots 3$ s									
2 NO+2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	A	<b>3TK28 27-2BB41</b>	1	1 unit	102	0.454
			AC 24	B	<b>3TK28 27-2AB21</b>	1	1 unit	102	0.454
			AC 115	B	<b>3TK28 27-2AJ21</b>	1	1 unit	102	0.240
			AC 230	B	<b>3TK28 27-2AL21</b>	1	1 unit	102	0.605
<b>Autostart</b>									
OFF-delay, $t_v = 0.5 \dots 30$ s									
2 NO+2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	▶	<b>3TK28 28-2BB40</b>	1	1 unit	102	0.457
			AC 24	B	<b>3TK28 28-2AB20</b>	1	1 unit	102	0.468
			AC 115	B	<b>3TK28 28-2AJ20</b>	1	1 unit	102	0.609
			AC 230	B	<b>3TK28 28-2AL20</b>	1	1 unit	102	0.612
<b>Autostart</b>									
OFF-delay, $t_v = 0.05 \dots 3$ s									
2 NO+2 NO	1 NC	B, 1, 2, 3, 4 <sup>1)</sup>	DC 24	A	<b>3TK28 28-2BB41</b>	1	1 unit	102	0.450
			AC 24	C	<b>3TK28 28-2AB21</b>	1	1 unit	102	0.454
			AC 115	B	<b>3TK28 28-2AJ21</b>	1	1 unit	102	0.240
			AC 230	B	<b>3TK28 28-2AL21</b>	1	1 unit	102	0.608

For multi-unit/reusable packaging, see Appendix.

1) Only applicable to the instantaneous enabling contacts.

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

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# 3TK28 Safety Relays

## with relay enabling circuits

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 24, 115, 230 V

Enabling contacts	Signal-ing contacts	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					Order No.	Price per PU			kg
<b>Expansion units</b>									
<b>for expansion of the contacts for the safety relays</b> (1 enabling contact of the basic unit is required for connecting to the basic unit)									
4 NO	--	corresponds to basic unit	AC/DC 24 AC 115 AC 230	▶ A A	<b>3TK28 30-1CB30</b> <b>3TK28 30-1AJ20</b> <b>3TK28 30-1AL20</b>	1 1 1	1 unit 1 unit 1 unit	102 102 102	0.267 0.306 0.306
3TK28 30									
<b>Press control devices</b>									
<b>for use in presses and punches</b> <b>Two-hand control unit, two-channel</b>									
2 NO	2 NC	4	DC 24 AC 24 AC 115 AC 230	▶ ▶ ▶ ▶	<b>3TK28 34-1BB40</b> <b>3TK28 34-1AB20</b> <b>3TK28 34-1AJ20</b> <b>3TK28 34-1AL20</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	102 102 102 102	0.432 0.424 0.519 0.519
<b>Slowing down test apparatus</b>									
3 NO	1 NC		DC 24	B	<b>3TK28 35-1BB40</b>	1	1 unit	102	0.495
3TK28 34 and 3TK28 35									



For multi-unit/reusable packaging, see Appendix.

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 24, 115, 230 V

Enabling contacts	Signal-ing contacts	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
					Order No.	Price per PU			kg
<b>Expansion units</b>									
<b>for expansion of the contacts for the safety relays</b> (1 enabling contact of the basic unit is required for connecting to the basic unit)									
4 NO	--	corresponds to basic unit	AC/DC 24 AC 115 AC 230	▶ B B	<b>3TK28 30-2CB30</b> <b>3TK28 30-2AJ20</b> <b>3TK28 30-2AL20</b>	1 1 1	1 unit 1 unit 1 unit	102 102 102	0.244 0.276 0.276
<b>Press control devices</b>									
<b>for use in presses and punches</b> <b>Two-hand control unit, two-channel</b>									
2 NO	2 NC	4	DC 24 AC 24 AC 115 AC 230	A B B B	<b>3TK28 34-2BB40</b> <b>3TK28 34-2AB20</b> <b>3TK28 34-2AJ20</b> <b>3TK28 34-2AL20</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	102 102 102 102	0.383 0.376 0.472 0.472
<b>Slowing down test apparatus</b>									
3 NO	1 NC		AC 24	B	<b>3TK28 35-2AB20</b>	1	1 unit	102	0.454

For multi-unit/reusable packaging, see Appendix.

## Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
	▶	<b>3RP19 02</b>		1	5 units	101	0.004
to secure against unauthorized adjustment, for 3TK28 27 and 3TK28 28 devices							
	▶	<b>3RP19 03</b>		1	10 units	101	0.002
for 3TK28 21 to 3TK28 35 devices (1 set = 2 units)							

# 3TK28 Safety Relays

## with contactor relay enabling circuits

### Overview

The SIRIUS safety pilot guides you quickly to the right device

Type	Connection		Crossover protection	Category acc. to EN 954-1				EMERGENCY-STOP	Protective door	Solid-state sensors	Cascade input 24 V DC	Safety mats
	1-channel	2-channel		B	1	2	3					
<b>with contactor relays mounted on the front</b>												
3TK28 50 basic unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--
3TK28 51 basic unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--
3TK28 52 basic unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--
3TK28 53 basic unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	✓
3TK28 56 expansion unit	--	--	●	●	●	●	●	●	--	--	1	--
3TK28 57 expansion unit tv	--	--	●	●	●	●	●	●	--	--	1	--

Type	Enabling circuit, floating		Enabling circuit, solid-state		Signal-ing circuit	Autostart	Moni-tored start	Switching capacity		Rated operational voltage			Rated control supply voltage			Control inputs
	Stop cate-gory 0	Stop cate-gory 1	Stop cate-gory 0	Stop cate-gory 1				AC -15 at U = 230 V	DC -13 at U = 24 V	DC 24 V	AC 230 V	AC 600 V	DC 24 V	AC 115 V	AC 230 V	

<b>with contactor relays mounted on the front</b>																
3TK28 50 basic unit	3	--	--	--	--	✓	✓	6 A	10 A	✓	✓	✓	✓	✓	✓	--
3TK28 51 basic unit	2	--	--	--	1 NC	✓	✓	6 A	10 A	✓	✓	✓	✓	✓	✓	--
3TK28 52 basic unit	6	--	--	--	1 NC	✓	✓	6 A	10 A	✓	✓	✓	✓	✓	✓	--
3TK28 53 basic unit	3	--	1	--	--	✓	✓	6 A	10 A	✓	✓	✓	✓	--	--	1
3TK28 56 expansion unit	6	--	1	--	1 NC	--	--	6 A	10 A	✓	✓	✓	✓	--	--	1
3TK28 57 expansion unit tv	--	3	1	--	--	--	--	6 A	10 A	✓	✓	✓	✓	--	--	1

- ✓ = available
- = not available
- = corresponds to basic unit

# 3TK28 Safety Relays

with contactor relay enabling circuits

## Selection and ordering data

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 115, 230 V

Enabling circuit, floating		Enabling circuit, solid-state		Signaling circuit	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Stop category 0	Stop category 1	Stop category 0	Stop category 1			V		Order No.	Price per PU			kg
<b>Safety relays, solid-state, with contactor relays, for EMERGENCY-STOP and protective doors</b>												
<b>Basic units</b>												
3	--	--	--	--	3	DC 24	A	<b>3TK28 50-1BB40</b>	1	1 unit	102	0.819
						AC 115	B	<b>3TK28 50-1AJ20</b>	1	1 unit	102	0.765
						AC 230	B	<b>3TK28 50-1AL20</b>	1	1 unit	102	0.770
<b>Basic units</b>												
2	--	--	--	1 NC	3	DC 24	B	<b>3TK28 51-1BB40</b>	1	1 unit	102	0.821
						AC 115	B	<b>3TK28 51-1AJ20</b>	1	1 unit	102	0.770
						AC 230	B	<b>3TK28 51-1AL20</b>	1	1 unit	102	0.767
<b>Basic units</b>												
6	--	--	--	1 NC	3	DC 24	A	<b>3TK28 52-1BB40</b>	1	1 unit	102	0.919
						AC 230	B	<b>3TK28 52-1AL20</b>	1	1 unit	102	0.870
<b>Basic units</b>												
3	--	1 <sup>1)</sup>	--	--	4	DC 24	A	<b>3TK28 53-1BB40</b>	1	1 unit	102	0.714
<b>Expansion units<sup>2)</sup></b>												
6	--	1	--	1 NC	corresponds to basic unit	DC 24	B	<b>3TK28 56-1BB40</b>	1	1 unit	102	0.785
<b>Expansion units tv<sup>2)</sup></b>												
--	3, A	1	--	--	corresponds to basic unit	DC 24	B	<b>3TK28 57-1BB41</b>	1	1 unit	102	0.682
	3, B						B	<b>3TK28 57-1BB42</b>	1	1 unit	102	0.679
	3, C						B	<b>3TK28 57-1BB44</b>	1	1 unit	102	0.650




1) Suitable for solid-state sensor input.

2) For expansion of the contacts for the 3TK28 41, 3TK28 42, 3TK28 45, 3TK28 50, 3TK28 51, 3TK28 52, 3TK28 53 standard and basic units.

# 3TK28 Safety Relays

with contactor relay enabling circuits

Rated control supply voltages  $U_s$  24 V DC and AC 50/60 Hz, 115, 230 V

Enabling circuit, floating	Enabling circuit, solid-state		Signaling circuit	Achievable category acc. to EN 954-1	Rated control supply voltage $U_s$	DT	With spring-loaded terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
	Stop category 0	Stop category 1					Order No.	Price per PU					
<b>Safety relays, solid-state, with contactor relays, for EMERGENCY-STOP and protective doors</b>													
<b>Basic units</b>													
	3	--	--	--	3	DC 24	B	<b>3TK28 50-2BB40</b>	1	1 unit	102	0.820	
						AC 115	B	<b>3TK28 50-2AJ20</b>	1	1 unit	102	0.650	
						AC 230	B	<b>3TK28 50-2AL20</b>	1	1 unit	102	0.761	
<b>Basic units</b>													
	2	--	--	1 NC	3	DC 24	B	<b>3TK28 51-2BB40</b>	1	1 unit	102	0.650	
						AC 115	B	<b>3TK28 51-2AJ20</b>	1	1 unit	102	0.650	
						AC 230	B	<b>3TK28 51-2AL20</b>	1	1 unit	102	0.768	
<b>Basic units</b>													
	6	--	--	1 NC	3	DC 24	B	<b>3TK28 52-2BB40</b>	1	1 unit	102	0.935	
						AC 230	B	<b>3TK28 52-2AL20</b>	1	1 unit	102	0.878	
<b>Basic units</b>													
	3	--	1 <sup>1)</sup>	--	--	4	DC 24	B	<b>3TK28 53-2BB40</b>	1	1 unit	102	0.705
<b>Expansion units<sup>2)</sup></b>													
	6	--	1	--	1 NC	corresponds to basic unit	DC 24	B	<b>3TK28 56-2BB40</b>	1	1 unit	102	0.750
<b>Expansion units tv<sup>2)</sup></b>													
	--	3, A	1	--	--	corresponds to basic unit	DC 24	B	<b>3TK28 57-2BB41</b>	1	1 unit	102	0.650
		3, B						B	<b>3TK28 57-2BB42</b>	1	1 unit	102	0.677
		3, C						C	<b>3TK28 57-2BB44</b>	1	1 unit	102	0.650

1) Suitable for solid-state sensor input.

2) For expansion of the contacts for the 3TK28 41, 3TK28 42, 3TK28 45, 3TK28 50, 3TK28 51, 3TK28 52, 3TK28 53 standard and basic units.

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

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# Interface Converters

## 3RS17 interface converters

### 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 isolation is essential due to the different supply systems. The resistance of the wiring causes potential differences and losses which must be prevented. Electromagnetic disturbance and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS17 interface converters are safe up to a voltage of 30 V DC and protected against switching poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to

- EN 50081 (basic technical standard for emitted interference),
- EN 61000-6-2 (basic technical standard for immunity to interference).

The analog signals comply with

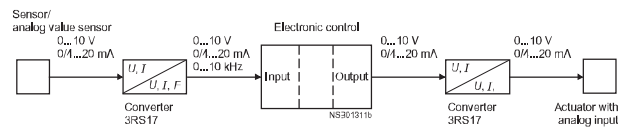
- IEC 60381-1/2.

### Application

Converters are used in analog signal processing for

- Electrical isolation
- 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

#### Application example: Interface converter in analog signal evaluation



#### 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 mA ... 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.


# Interface Converters

## 3RS17 interface converters

### Selection and ordering data

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

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



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

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

# Interface Converters

## 3RS17 interface converters

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

Input	Output	Width	Rated control supply voltage $U_s$	Electrical isolation	DT	Spring-loaded terminal	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		mm	V			Order No.	Price per PU			kg
<b>Single interface converters, active</b>										
0 ... 10 V	0 ... 10 V	6.2	AC/DC 24	2 paths	A	<b>3RS17 00-2AD00</b>		1	1 unit	101 0.047
	0 ... 20 mA	6.2	AC/DC 24	2 paths	A	<b>3RS17 00-2CD00</b>		1	1 unit	101 0.047
	4 ... 20 mA	6.2	AC/DC 24	2 paths	A	<b>3RS17 00-2DD00</b>		1	1 unit	101 0.047
0 ... 20 mA	0 ... 10 V	6.2	AC/DC 24	2 paths	C	<b>3RS17 02-2AD00</b>		1	1 unit	101 0.047
	0 ... 20 mA	6.2	AC/DC 24	2 paths	A	<b>3RS17 02-2CD00</b>		1	1 unit	101 0.045
	4 ... 20 mA	6.2	AC/DC 24	2 paths	A	<b>3RS17 02-2DD00</b>		1	1 unit	101 0.048
4 ... 20 mA	0 ... 10 V	6.2	AC/DC 24	2 paths	A	<b>3RS17 03-2AD00</b>		1	1 unit	101 0.047
	0 ... 20 mA	6.2	AC/DC 24	2 paths	C	<b>3RS17 03-2CD00</b>		1	1 unit	101 0.049
	4 ... 20 mA	6.2	AC/DC 24	2 paths	A	<b>3RS17 03-2DD00</b>		1	1 unit	101 0.047
<b>Switchable multi-range converters, active</b>										
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable	6.2	AC/DC 24	2 paths	A	<b>3RS17 05-2FD00</b>		1	1 unit	101 0.048
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable	17.5	AC/DC 24 ... 240	3 paths	A	<b>3RS17 05-2FW00</b>		1	1 unit	101 0.092
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable	6.2	AC/DC 24	2 paths	C	<b>3RS17 05-2KD00</b>		1	1 unit	101 0.047
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable	17.5	AC/DC 24 ... 240	3 paths	A	<b>3RS17 05-2KW00</b>		1	1 unit	101 0.092
<b>Switchable universal converters, active, with 16 input ranges and 3 output ranges</b>										
	0 ... 60 mV, 0 ... 100 mV, 0 ... 300 mV, 0 ... 500 mV, switchable	17.5	AC/DC 24	2 paths	A	<b>3RS17 06-2FD00</b>		1	1 unit	101 0.078
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable		AC/DC 24 ... 240	3 paths	A	<b>3RS17 06-2FE00</b>		1	1 unit	101 0.077
	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, switchable		AC/DC 24 ... 240	3 paths	A	<b>3RS17 06-2FW00</b>		1	1 unit	101 0.094
<b>Switchable multi-range converters, active, with manual/automatic switch and single potentiometer as manual analog signal transmitter</b>										
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable	17.5	AC/DC 24	2 paths	A	<b>3RS17 25-2FD00</b>		1	1 unit	101 0.078
	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, switchable		AC/DC 24 ... 240	3 paths	A	<b>3RS17 25-2FW00</b>		1	1 unit	101 0.095
<b>Single interface converters, passive</b>										
0/4 ... 20 mA	0/4 ... 20 mA	6.2	1	2 paths	A	<b>3RS17 20-2ET00</b>		1	1 unit	101 0.044
		12.5	1	2 paths	A	<b>3RS17 21-2ET00</b>		1	1 unit	101 0.057
			2	2 paths	A	<b>3RS17 22-2ET00</b>		1	1 unit	101 0.066