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3RS2 temperature monitoring relays



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Selection and ordering data

- See Section 2, page 2/70

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**3UG5 monitoring relays for stand-alone installation**

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**3UG4 insulation monitoring**

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Selection and ordering data

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Coupling relays and interfaces

**3RQ1 and 3RQ2 standard width
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Coupling relays and interfaces

**3RS70 signal converter**

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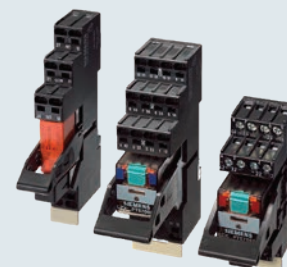
**3TG10 power relay,
20A max. resistance load pole**

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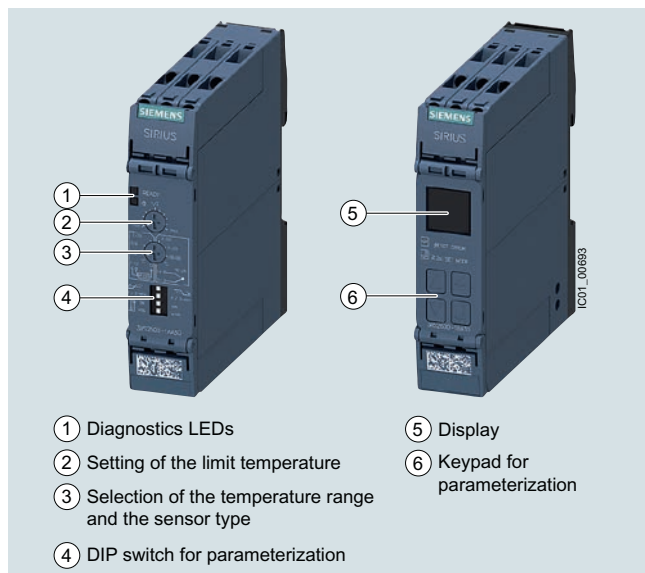
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Overview



SIRIUS 3RS2 temperature monitoring relays

More information

Homepage, see www.usa.siemens.com/relays
 Industry Mall, see www.siemens.com/product?3RS2
 Conversion tool for article numbers, see www.siemens.com/sirius/conversion-tool

The 3RS2 temperature monitoring relays can be used to measure temperatures in solid, liquid and gas media. The temperature is acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function).

The family comprises an analog multi-function device which can be set using DIP switches and potentiometers, and digital devices which can be parameterized via an intuitive LCD display. The digital device is also available as a version with IO-Link.

All 3RS26 digital devices, including the 3RS28 versions with IO-Link, have safety certification according to IEC 61508/62061 or ISO 13849 up to SIL 1/PL c as well as EN 14597 for heat generating systems and EN 50156 for burners.

Furthermore, the functionality of the 3RS26/3RS28 digital devices can be expanded using a 3RS29 sensor expansion module with two additional resistance sensors, e.g. for monitoring three-phase motors or transformers.

The 3RS29 sensor expansion module also features an additional relay for outputting the sensor status, and an additional analog input 4 to 20 mA. This analog input allows ATEX applications to be implemented when using an intrinsically safe temperature sensor or other appropriate type of protection. The 3RS29 is connected wirelessly via a SIL 1-certified infrared communication interface.

Notes:

The SIRIUS 3RS2 temperature monitoring relays fully replace the 3RS1 predecessor. The large number of 3RS1 analog devices can simply be replaced with the new 3RS25 analog multi-function device. The reduced variety of order numbers means the successors can be selected quickly and easily.

The 3RS2 digital devices fully supersede the functionality of the 3RS1 predecessor in a single device type that is now able to use resistance sensors and thermocouples – all at half the width of 22.5 mm instead of 45 mm.

Analog multi-function devices



SIRIUS 3RS25 analog multi-function device

The analog multi-function device is parameterized using DIP switches and potentiometers. The device can be used to monitor a sensor with a limit value for overshoot or undershoot. The most common temperature ranges with Pt100 resistance sensors or type J or K thermocouples can be used for this purpose. This device can therefore also be used as a compact, easy-to-adjust two-point controller. The relay CO contact output enables loads to be switched directly. The NC contact can optionally be used as a signaling contact.

Digital devices (1 sensor)



SIRIUS 3RS26 digital device (1 sensor) with 3RS29 sensor expansion module

The SIRIUS 3RS26 digital device with display enables sensors with two limit values to be monitored using all common resistance sensors and thermocouples.

The additional limit value means that, in addition to overshoot and undershoot, an additional warning value can be output to the relay outputs. Alternatively, the second monitoring value can also be used to implement range monitoring. The digital devices can thus also be used as compact two or three-point controllers, with Manual or Remote RESET.

Thanks to safety certification, this device can be used in a wide range of applications.

Relays

SIRIUS 3RS2 temperature monitoring relays

The functionality of the SIRIUS 3RS26 and 3RS28 digital devices can be expanded wirelessly with the sensor expansion module via a SIL 1-certified infrared communication interface. This combination then features three sensors and is designed for monitoring large three-phase motors and transformers. It goes without saying that the additional sensors can also be used for other applications.

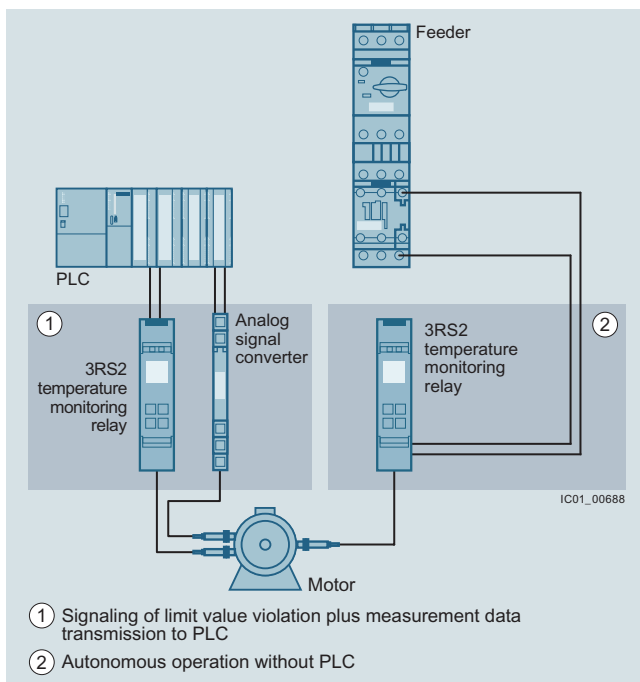
Digital devices (1 sensor) for IO-Link

SIRIUS 3RS28 digital device (1 sensor) for IO-Link with 3RS29 sensor expansion module

The 3RS28 digital temperature monitoring relays for IO-Link feature an IO-Link communication interface in addition to a display. They include all functions of the 3RS26 digital device and can also be operated on L+/L- as a stand-alone installation with 24 V DC.

Note:

The IO-Link devices can be reset on the display or via IO-Link.



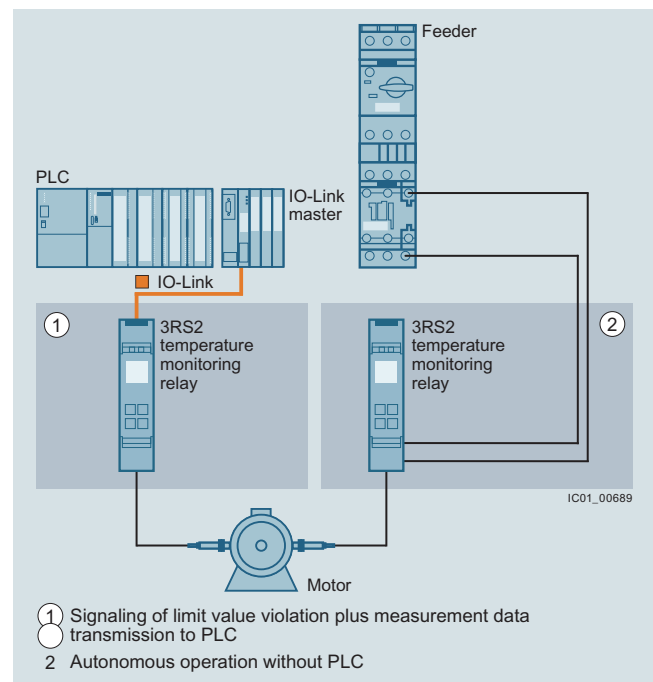
Conventional temperature monitoring relays

Notes:

Devices required for communication via IO-Link:

- Any controller that supports IO-Link (e.g. ET 200SP with CPU or S7-1200).
- IO-Link master (e.g. CM 4xIO-Link for SIMATIC ET 200SP).

Each monitoring relay requires an IO-Link channel.



Temperature monitoring relays for IO-Link

Notes on security

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information about the subject of Industrial Security, see www.usa.siemens.com/industrialsecurity

Article No. scheme

Product versions		Article number									
Temperature monitoring relays		3RS2	☐	0	0	-	☐	☐	☐	☐	0
Device type	e.g. 5 = analogically adjustable	☐									
Connection type	Screw terminals						1				
	Spring-loaded terminals (push-in)						2				
Number of CO contacts	e.g. A = 1 CO contact, B = 2 CO contacts							☐			
Rated control supply voltage	A = 24 V AC/DC, W = 24 ... 240 V AC/DC								☐		
Type of rated control supply voltage	3 = AC/DC, 4 = DC									☐	
Example		3RS2	5	0	0	-	1	A	A	3	0

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers. For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

- Customary screw and spring-loaded terminals for quick and reliable wiring
- Reduced space requirement in the control cabinet thanks to a consistent width of 22.5 mm
- Easy parameterization thanks to new display and intuitive operating concept
- Reduced stock keeping and logistics thanks to heavily reduced device variance
- Cost savings thanks to additional scalable functionality with integrated infrared interface
- Communication via IO-Link for 3RS28
- Global applicability and exportability thanks to compliance with international standards and certifications
- Problem-free use in a wide range of applications thanks to Safety bundle with certification according to SIL 1/PL c, ATEX, EN 14597 for heat generating systems and EN 50156 for burners
- All versions with removable terminals
- All versions with screw or spring-loaded terminals with push-in functionality

Application

The SIRIUS 3RS2 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:

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

Additionally for digital devices

- Simple and compact two or three-point control
- Burner acc. to EN 50156
- Temperature monitors or temperature limiters¹⁾ according to EN 14597
- ATEX explosion protection according to EN 50495

¹⁾ A 3RS29 sensor expansion module with an additional sensor is required for the function as a temperature limiter.

Technical specifications

More information

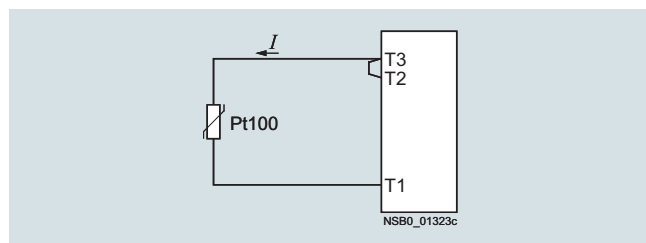
Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/25719/td>
 Equipment Manual and internal circuit diagrams, see
<https://support.industry.siemens.com/cs/ww/en/ps/25719/man>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/25719/faq>

Connection of resistance-type thermometers

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.



Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 K/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

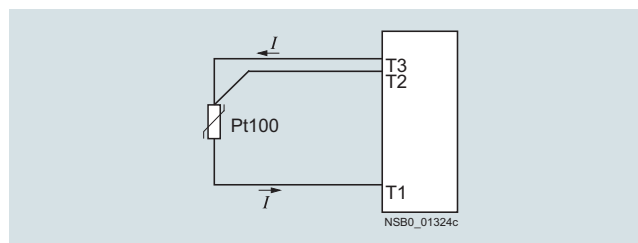
Temperature drift dependent on the length and cross-section of the cable with Pt100 sensors and an ambient temperature of 20 °C, in K:

Cable length in m	Cross-section mm ²			
	0.5	0.75	1	1.5
	Temperature drift in K:			
0	0	0	0	0
10	1.8	1.2	0.9	0.6
25	4.5	3.0	2.3	1.5
50	9.0	6.0	4.5	3.0
75	13.6	9.0	6.8	4.5
100	18.1	12.1	9.0	6.0
200	36.3	24.2	18.1	12.1
500	91.6	60.8	45.5	30.2

Example: On a Pt100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm² the temperature drift equals 0.9 K.

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The evaluation unit can then automatically calculate the line resistance and take it into account.



Connection of thermocouples

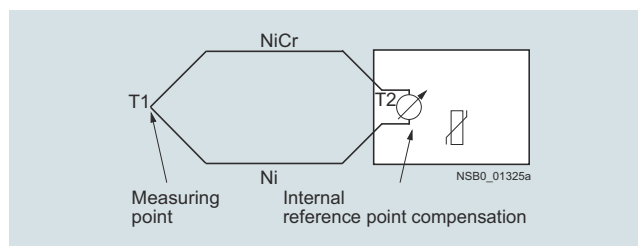
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the evaluation unit.

This principle assumes that the evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS2 temperature monitoring relays have an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must therefore be insulated.

The absolute temperature is therefore calculated from the ambient temperature of the evaluation unit and the temperature difference measured by the thermocouple.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermocouple. If a different type of conductor is used, an error will result in the measurement.



Monitoring and Control Devices

Relays

SIRIUS 3RS2 temperature monitoring relays

Principle of operation

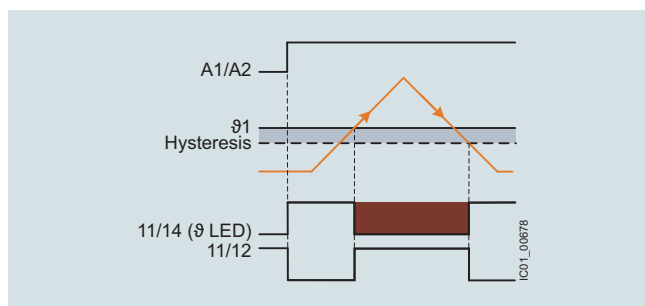
Once the temperature has reached the set threshold value ϑ_1 , the K1 output relay changes its switching state as soon as the set time t has elapsed (K2 responds in the same manner to ϑ_2). The delay time can only be adjusted with digital units (on analog units $t = 0$).

When Auto RESET (AUTO RST) is set, the relays return to their original state as soon as the temperature reaches the set hysteresis value.

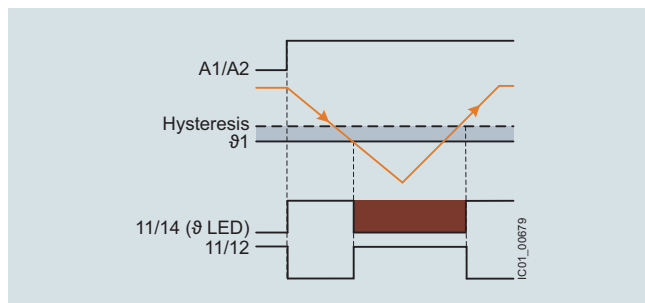
The memory function (MEMORY) allows the status to be saved even in the event of a power failure.

3RS25 analog multi-function devices

Temperature overshoot



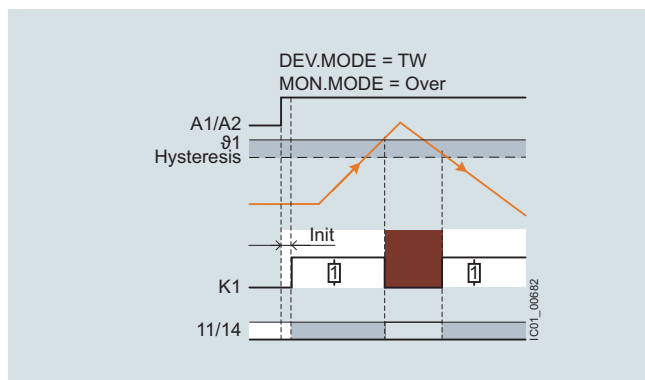
Temperature undershoot



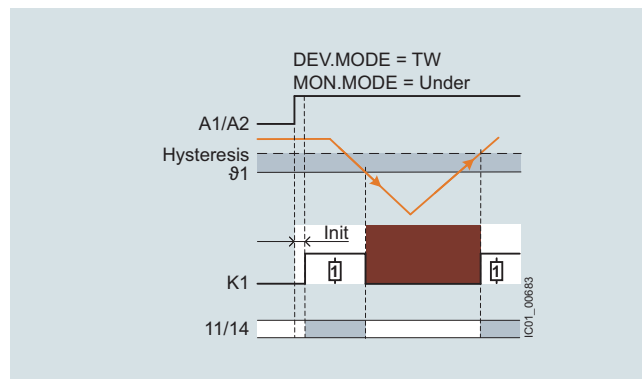
3RS26, 3RS28 digital devices (1 sensor) with Safety function

Temperature monitor according to EN 14597

Temperature overshoot

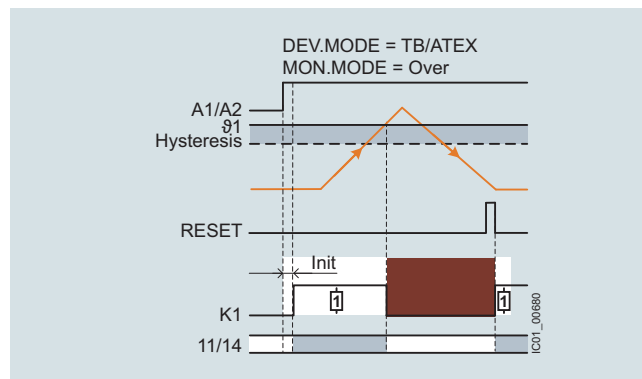


Temperature undershoot

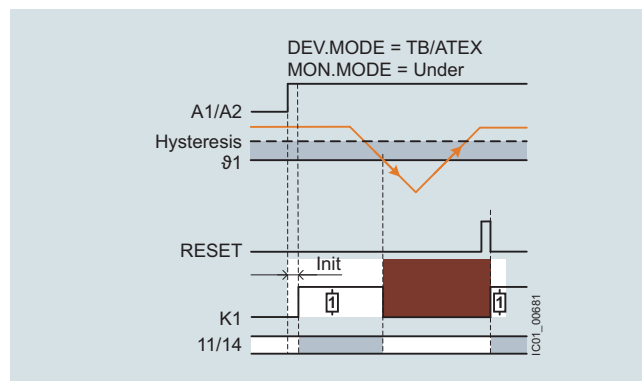


Temperature limiter according to EN 14597/ATEX

Temperature overshoot

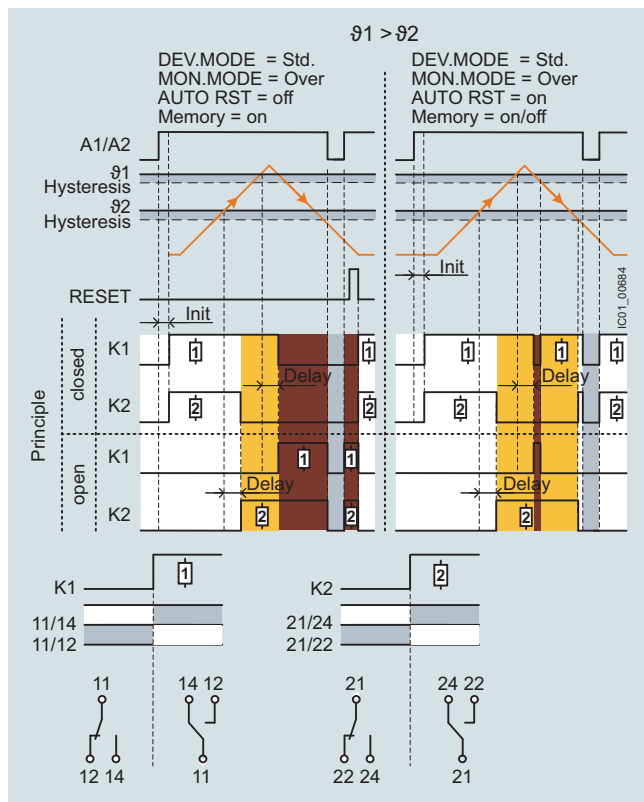


Temperature undershoot

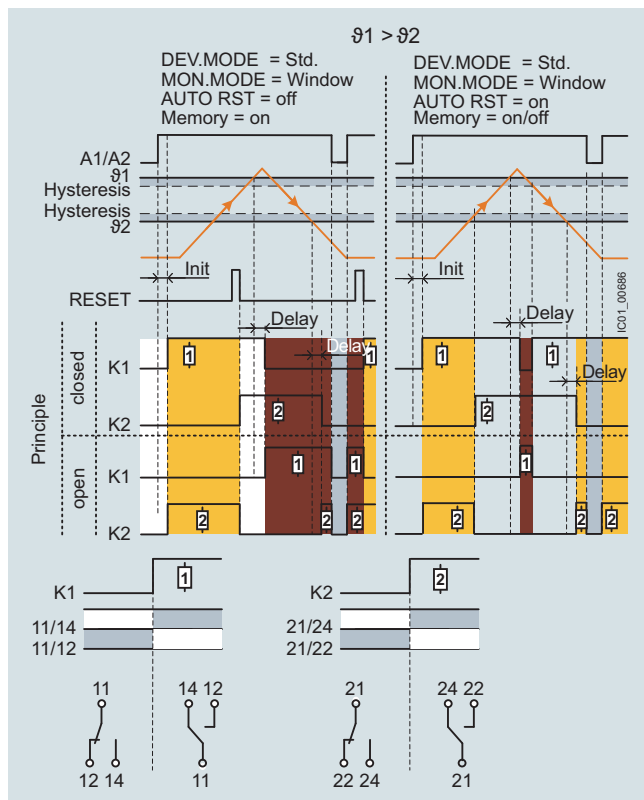


3RS26, 3RS28 digital devices (1 sensor)

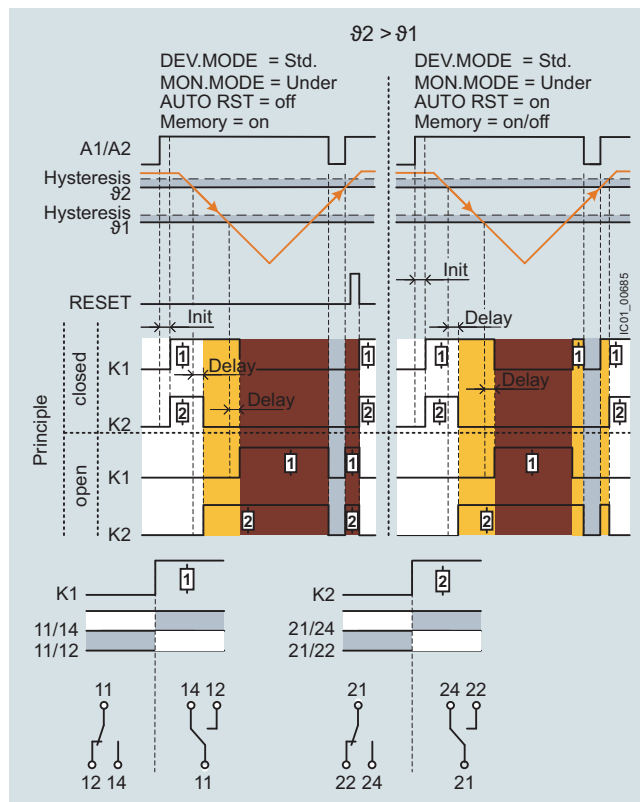
Temperature overshoot



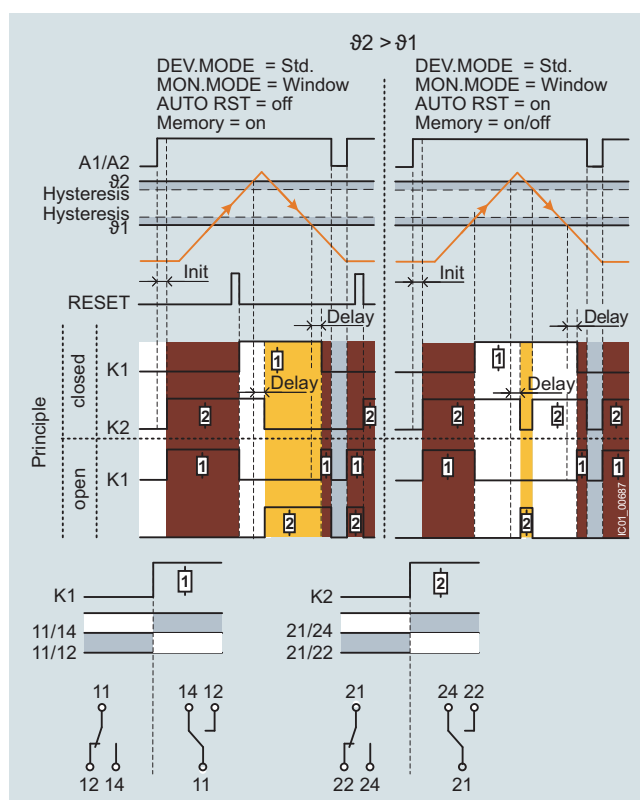
Range monitoring



Temperature undershoot

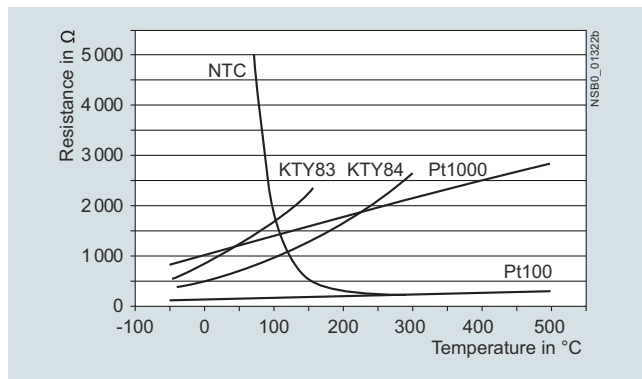


Range monitoring



Characteristic curves

For resistance sensors



Characteristic curves for resistance sensors

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

Measuring ranges and switch position for analog devices in °C for Pt100 resistance sensor

Measuring range in °C	Switch position in °C										
	min.					1/2					max.
0 ... +100	0	10	20	30	40	50	60	70	80	90	100
0 ... +200	0	20	40	60	80	100	120	140	160	180	200
-50 ... +50	-50	-40	-30	-20	-10	0	10	20	30	40	50

Measuring ranges for digital devices in °C for resistance sensor

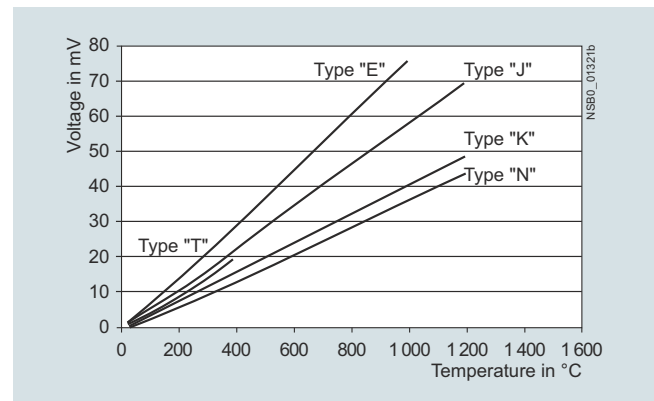
Sensor type	Short circuit	Open circuit	3RS26, 3RS28 Measuring range in °C	3RS26, 3RS28 Measuring range in °F
Pt100	✓	✓	-50 ... +750	-58 ... +1 382
Pt1000	✓	✓	-50 ... +500	-58 ... +932
KTY83-110	✓	✓	-50 ... +175	-58 ... +347
KTY84	✓	✓	-40 ... +300	-40 ... +572
NTC ¹⁾	✓	--	+80 ... +160	+176 ... +320

✓ Detection possible

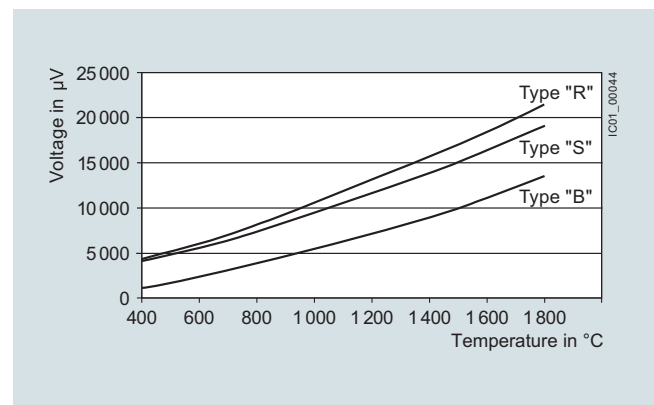
-- Detection not possible

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

For thermocouples



Characteristic curves for thermocouples J, K, T, E, N



Characteristic curves for thermocouples S, R and B

Measuring ranges and switch position for analog devices in °C for thermocouple types J, K

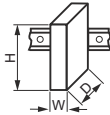
Measuring range in °C	Switch position in °C										
	min.					1/2					max.
0 ... +200	0	20	40	60	80	100	120	140	160	180	200
0 ... +600	0	60	120	180	240	300	360	420	480	540	600
+500 ... +1 000	500	550	600	650	700	750	800	850	900	950	1 000

Measuring ranges for digital devices in °C/°F for thermocouples

Sensor type	Short circuit	Open circuit	3RS26, 3RS28 Measuring range in °C	3RS26, 3RS28 Measuring range in °F
J	--	✓	-99 ... +1 200	-146.2 ... +2 192
K	--	✓	-99 ... +1 350	-146.2 ... +2 462
T	--	✓	-99 ... +400	-146.2 ... +752
E	--	✓	-99 ... +999	-146.2 ... +1 830.2
N	--	✓	-99 ... +1 300	-146.2 ... +2 372
S	--	✓	0 ... +1 750	+32 ... +3 182
R	--	✓	0 ... +1 750	+32 ... +3 182
B	--	✓	+400 ... +1 800	+752 ... +3 272

✓ Detection possible

-- Detection not possible

Type		3RS25	3RS26 3RS28	3RS29
General technical specifications				
Dimensions (W x H x D)		mm	22.5 x 100 x 90	
Permissible ambient temperature				
• During operation	°C	-25 ... +60		
• During transport	°C	-40 ... +85		
• During storage	°C	-40 ... +85		
Degree of protection		20		
Mounting position		Any		
Type of mounting		Screw fixing and snap-on mounting onto 35 mm standard mounting rail		
Connection type		 Screw terminals		
• Tightening torque	Nm	0.6 ... 0.8		
• Solid	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• AWG cables, solid	AWG	1 x (20 ... 12), 2 x (20 ... 14)		
Connection type		 Spring-loaded terminals (push-in)		
• Solid	mm ²	1 x (0.5 ... 4)		
• Finely stranded without end sleeve	mm ²	1 x (0.5 ... 4)		
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)		
Auxiliary circuit				
Type of voltage		AC/DC		
Operating range factor of the control supply voltage, rated value				
• At AC at 50 Hz		0.85 ... 1.1		
• At AC at 60 Hz		0.85 ... 1.1		
• At DC		0.85 ... 1.1		
Operating frequency, rated value	Hz	50 ... 60		
Number of measuring circuits		1		3
Number of CO contacts for auxiliary contacts		1	2	0
Product function				
• Removable terminal for auxiliary and control circuit		Yes		
• Auto RESET		Yes		--
• Error memory		--	Yes	
• External RESET		--	Yes	
ATEX				
Certificate of suitability				
• Relative to ATEX		--	Yes, with 3RS29 sensor expansion module	Yes, with 3RS26/3RS28 digital device
Safety integrity level (SIL) according to IEC 61508		--	1	
Performance level (PL) according to EN ISO 13849-1		--	c	

Selection and ordering data

Type of sensor/ connectable	Rated control supply voltage U_s 50/60 Hz AC	Suitability for use	SD	Screw terminals		SD	Spring-loaded terminals (push-in)	
	V		d	Article No.	Price per PU	d	Article No.	Price per PU

Temperature monitoring relays

**Analog multi-function device, 1 sensor,
1 threshold value**

3RS2500-1AA30

Resistance sensors:	24 AC/DC	--	10
Pt100	24 ... 240 AC/DC	--	10
Thermocouples:			
Type J, K			

3RS2500-1AA30	10
3RS2500-1AW30	10

3RS2500-2AA30	
3RS2500-2AW30	

Digital device, 1 sensor, 2 threshold values

3RS2600-1BA30

Resistance sensors:	24 AC/DC	--	10
Pt100, Pt1000, KTY83-110, KTY84, NTC	24 ... 240 AC/DC	--	10
Thermocouples:			
Type J, K, T, E, N, S, R, B			

3RS2600-1BA30	10
3RS2600-1BW30	10

3RS2600-2BA30	
3RS2600-2BW30	

Digital device for IO-Link, 1 sensor, 2 threshold values

3RS2800-1BA40

Resistance sensors:	24 DC	--	10
Pt100, Pt1000, KTY83-110, KTY84, NTC			
Thermocouples:			
Type J, K, T, E, N, S, R, B			

3RS2800-1BA40	10
----------------------	----

3RS2800-2BA40	
----------------------	--

Sensor expansion modules

**2 additional resistance sensors, analog input
4 ... 20 mA, ATEX via analog input, status relay**

3RS2900-1AA30

Resistance sensors:	24 AC/DC	For 3RS26/ 10
Pt100, Pt1000, KTY83-110, KTY84, NTC	24 ... 240 AC/DC	3RS28 digital devices 10

3RS2900-1AA30	10
3RS2900-1AW30	10

3RS2900-2AA30	
3RS2900-2AW30	

For accessories, see page 11/13.

Accessories

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
d					
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure					
 3ZY1122-1BA00	Removable terminals		Screw terminals 	1	6 units
	• 2-pole, up to 1 x 4 mm² or 2 x 2.5 mm²	2	3ZY1122-1BA00		
	• 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm²	2	Spring-loaded terminals (push-in) 	1	6 units
			3ZY1122-2BA00		
Accessories for enclosures					
 3ZY1311-0AA00	Push-in lugs For wall mounting		3ZY1311-0AA00	1	10 units
 3ZY1440-1AA00	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals		3ZY1440-1AA00	1	12 units
 3ZY1450-1AB00	Hinged cover Replacement cover, without terminal labeling, titanium gray		3ZY1450-1AB00	1	5 units
	• 22.5 mm wide	2			
 3RA2908-1A	Screwdrivers For all SIRIUS devices with spring-loaded terminals		Spring-loaded terminals (push-in) 	1	1 unit
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	2	3RA2908-1A		

Relays

SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

General data

Overview



SIRIUS 3RS14, 3RS15 temperature monitoring relay

More information

Homepage, see www.siemens.com/relaysIndustry Mall, see www.siemens.com/product?3RS14

The temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media.

The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored up to two limit values for overshooting or undershooting a working range (window function).

In addition to warnings and disconnection in case of temperature deviations, the devices can also be used as a temperature controller (one-point, two-point or three-point control).

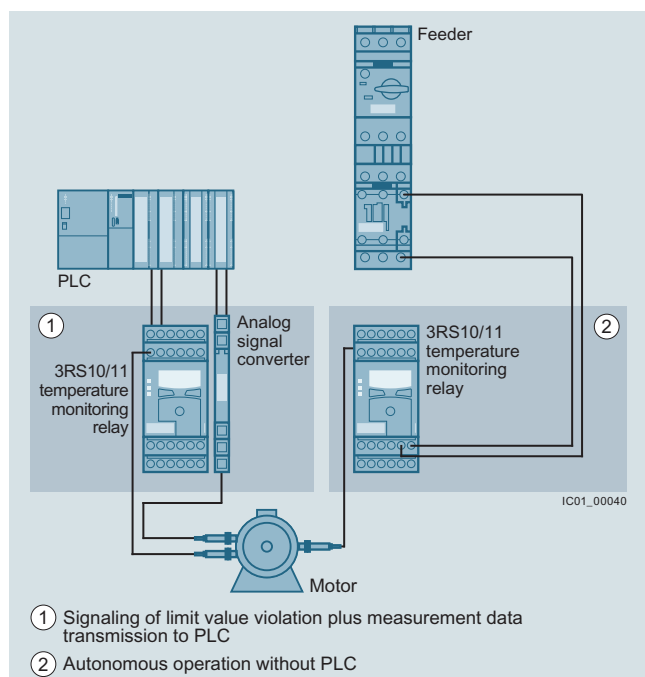
The devices differ from one another in terms of the type and number of connectable temperature sensors.

- 3RS14: Connection for resistance sensor
- 3RS15: Connection for thermocouples

Function	Temperature monitoring relays		
	3RS1440	3RS1441	3RS1540
Connectable sensor type			
Number of sensors monitored	1	3	1
Resistance sensor	✓	✓	--
Thermocouples	--	--	✓
Temperature monitoring			
Temperature monitoring – overshoot	✓	✓	✓
Temperature monitoring – undershoot	✓	✓	✓
Number of adjustable limit values	2	2	2

✓ Function supported

-- Function not supported



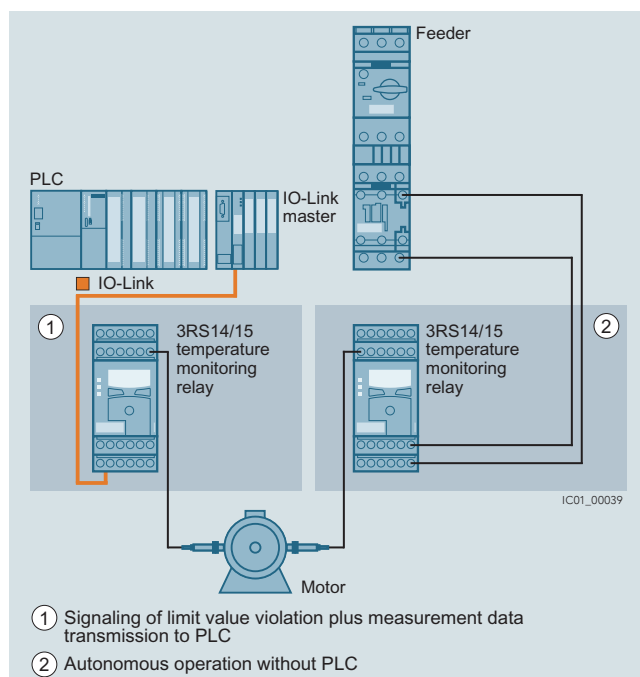
Conventional temperature monitoring relays

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports IO-Link (e.g. ET 200SP with CPU or S7-1200), see [Catalog ST 70](#).

Each monitoring relay requires an IO-Link channel.



Temperature monitoring relays for IO-Link

Notes on security

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions represent only one component of such a concept.

For more information on Industrial Security, see www.usa.siemens.com/industrialsecurity.

Overview



SIRIUS 3RN2 thermistor motor protection

More information

Homepage, see www.usa.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RN2

For the conversion tool, e.g. from 3RN1 to 3RN2, see www.siemens.com/sirius/conversion-tool

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

Article No. scheme

Product versions		Article number						
Thermistor motor protection relay with PTC sensor, type A		3RN20	□	□	–	□	□	□
Number and version of the sensor circuits	1 sensor circuit, supply voltage = root voltage	0						
	1 sensor circuit	1						
	2 sensor circuits for warning and disconnection	2						
RESET	Auto RESET	0						
	Manual RESET, with open-circuit and short-circuit detection	1						
	Manual/Auto/Remote RESET, non-volatile, with open-circuit and short-circuit detection	2						
	Manual/Auto/Remote RESET, non-volatile, with open-circuit and short-circuit detection, with protective separation	3						
Connection method	Screw terminals	1						
	Spring-type terminals (push-in)	2						
Auxiliary switches	1 CO	A						
	2 CO	B						
	1 NO + 1 NC	C						
	1 NO + 1 CO	D						
	2 CO, hard gold-plated	G						
Rated control supply voltage	24 V AC/DC	A 3						
	24 ... 240 V AC/DC	W 3						
Response to failure	Monostable	0						
	Bistable	1						
Example		3RN20	0	0	–	1	A	A 3 0

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

Versions

SIRIUS 3RN2 thermistor motor protection relays are available in the following versions:

- 3RN2000 compact evaluation unit
- 3RN2010 compact/standard evaluation unit
- 3RN2012-.BW31 bistable evaluation unit
- 3RN2011, 3RN2012-...30, 3RN2013 standard evaluation unit with ATEX approval
- 3RN2023 evaluation unit with ATEX approval and 2 sensor circuits for warning and disconnection

They comply with

- IEC 60947-8. Low-voltage switchgear and controlgear – Part 8: "Control units for built-in thermal protection (PTC) for rotating electrical machines"
- IEC 61000-6-2, IEC 61000-6-4. "Electromagnetic compatibility for industrial-process measurement and control equipment"

The 3RN2 thermistor motor protection relays with ATEX approval fulfill SIL1 in compliance with EN 50495.

The terminals of the auxiliary contacts are designated in accordance with EN 60947-1.

3RN2 evaluation units are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing using an adapter (accessory).

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

Benefits

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

Application

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

Direct motor protection

- At increased ambient temperatures
- When switching frequency is too high
- When start up and braking procedures are too long

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN2011, 3RN2012-...30, 3RN2013 and 3RN2023 thermistor motor protection relays for PTC sensors are certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads.

Motor protection using current- and temperature-dependent protective devices

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

For motors with frequent starting and braking and in environments where cooling may be impaired (e.g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN2 thermistor motor protection devices.

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

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs stall protection, and the 3RN2 thermistor motor protection relay monitors the temperature of the motor windings.

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

- ✓ Full protection
- Conditional protection
- No protection

Technical specifications

More information

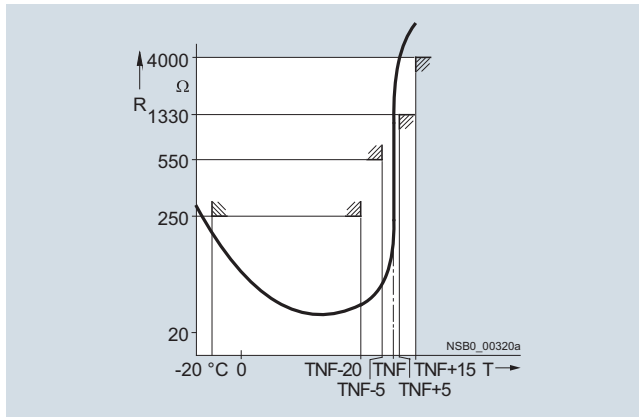
Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/24302/td>
 Operating instructions and internal circuit diagrams, see
<https://support.industry.siemens.com/cs/ww/en/ps/24302/man>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/24302/faq>
 For more information on explosion protection (ATEX), see
www.siemens.com/sirius/atex

Type A PTC temperature sensor

If a Type A temperature sensor is connected to a Type A evaluation unit, compliance with the operating temperatures is assured (on pick-up and reset) according to IEC 60947-8.

The characteristic curves of the Type A temperature sensors are described in IEC 60947-8, EN 44081 and EN 44082 standards.



Characteristic curve of the 3RN2 evaluation unit

Bimetallic switch

In some applications, bimetallic switches (e.g. Klixon, Thermo-click) are used as sensors instead of PTC temperature sensors. Bimetallic switches are temperature- and current-dependent NC contacts and are available for different temperature ranges. Because bimetallic switches have practically no resistance below their opening temperature, short-circuit detection is not possible when using bimetallic switches. A bimetallic switch can be used for versions 3RN2000 and 3RN2010 on the SIRIUS thermistor motor protection relay.

Note:

Never use bimetallic switches in applications subject to an explosion hazard! Because of their non-standardized tripping characteristic, bimetallic switches must not be used in applications where there is an explosion hazard. Use Type A PTC sensors instead!

Use in hazardous areas

Increased danger in hazardous areas means it is necessary to observe the following notes and standards carefully:

- EN 60079-14/VDE 0165-1 for electrical apparatus for explosive gas atmospheres
- EN 60079-17 Explosive atmospheres – Electrical installations inspection and maintenance
- EN 50495 Safety devices required for the safe functioning of equipment with respect to explosion risks

The following SIRIUS 3RN2 thermistor motor protection relays with short-circuit detection are approved for Equipment Group II, Category (2) in Area "G" (areas in which potentially explosive gas, vapor, mist, or air mixtures are present) and are additionally approved for Area "D" (areas containing combustible dust):

- 3RN2011
- 3RN2012-...30
- 3RN2013
- 3RN2023

PTB 15 ATEX 3011 ex II (2) G (Ex E) (Ex d) (Ex px)
 PTB 15 ATEX 3011 ex II (2) D (Ex T) (Ex p)

For 3RN2 thermistor motor protection relays, the EC type examination certificate is available for Group II, Category (2) G [Ex e] [Ex d] [Ex px] and D [Ex t] [Ex p]. The number is PTB 15 ATEX 3011.

SIRIUS 3RN2 thermistor motor protection relays are not intended for installation in hazardous areas. If they are installed in a potentially explosive atmosphere, the SIRIUS 3RN2 thermistor motor protection relays must be adapted to the applicable type of protection.

The machine or plant must shut down immediately if the SIRIUS 3RN2 thermistor motor protection relay is tripped, even if connected through a frequency converter. This must be implemented with circuitry.

SIRIUS 3RN2 thermistor motor protection relays with functional safety in accordance with EN 50495 are suitable for protecting explosion-proof motors/machines.

On evaluation units with a supply voltage of 24 V AC/DC, you must ensure electrical separation with a battery network or a power supply unit with electrical separation (e.g. isolating transformer) (does not apply to 3RN2013-BA30).

A SIRIUS 3RN2 thermistor motor protection relay set to "automatic RESET" mode will be reset automatically after the recovery time has elapsed, without the RESET button being pressed. An additional ON button has to be used to ensure that the motor does not start up automatically following tripping. "Automatic RESET" mode must not be used in applications where there is a risk of personal injury or damage to property if the motor restarts unexpectedly.

Thermistor Motor Protection

3RN2

▲ NOTICE!

When used in a hazardous area, the thermistor motor protection relay must not be operated with automatic RESET (terminal Y1 and Y2 permanently jumpered).

A risk analysis must be performed for the complete plant or machine. If this analysis yields a lower hazard potential (category 1), all SIRIUS 3RN2 thermistor motor protection relays can be used, provided the safety regulations are observed.

▲ WARNING!

All work involved in connecting, commissioning and maintenance must be carried out by qualified, responsible personnel. Improper handling may result in serious personal injury and considerable damage to property.

Cable routing

The measuring circuit leads must be routed as separate control cables. It is not permitted to use cores from the supply line of the motor or any other main supply cables. If extreme inductive or capacitive interference is expected as a result of power lines routed in parallel, shielded control cables must be used.

Maximum length of sensor circuit cables for evaluation units without short-circuit detection in the sensor circuit:

Cable cross-section	3RN2000, 3RN2010
2.5 mm ²	2 x 2800 m
1.5 mm ²	2 x 1500 m
0.5 mm ²	2 x 500 m

Maximum length of sensor circuit cables for evaluation units with short-circuit detection¹⁾

Cable cross-section	3RN2011, 3RN2012, 3RN2013, 3RN2023
2.5 mm ²	2 x 250 m
1.5 mm ²	2 x 150 m
0.5 mm ²	2 x 50 m

¹⁾ A short circuit in the sensor circuit will be detected up to this maximum cable length.

Principle of operation

SIRIUS 3RN2 thermistor motor protection relays are thermal protection devices that are suitable, in combination with type A PTC thermistors, for monitoring temperatures of electrical drives, transformer windings, oils, bearings, air, etc.

The most frequent application is monitoring of three-phase motors in which the motor manufacturer has fitted a PTC sensor into every winding overhang and in which these PTC sensors are connected in series.

The SIRIUS 3RN2 thermistor motor protection relays operate in accordance with the closed-circuit principle and therefore monitor themselves for loss of supply voltage. The exceptions are the warning output on 3RN2023, which always works on the open-circuit principle and the bistable relays of the 3RN2012-.BW31, which always retain the last switching state.

A micro-interruption in the power supply of less than 30 ms does not change the status of the output relays.

For devices with the "Manual RESET" function, the test function can be activated and a trip simulated by pressing the blue Test/RESET button for > 2 seconds.

The 3RN2011, 3RN2012, 3RN2013 and 3RN2023 devices are additionally equipped with open-circuit and short-circuit detection in the sensor circuit. The unit will trip in the event of a short-circuit (resistance in sensor circuit < 10 Ω) or open circuit in the sensor circuit (dynamic open-circuit detection). Tripping as the result of a short-circuit in the sensor circuit is indicated by a flickering red LED (TRIPPED). In the event of a short-circuit in the sensor circuit for warning on the 3RN2023, the yellow warning LED (WARNING) flickers. The devices with dynamic open-circuit detection evaluate the rise time of the sensor circuit resistance. If the sensor circuit resistance rises from 3 300 Ω to 12 kΩ within 200 ms, the unit will not only trip, but also indicate the open circuit via a flashing red LED (TRIPPED). In the event of an open circuit in a sensor circuit, the yellow warning LED (WARNING) flashes for the 3RN2023.

All evaluation units (except for the 3RN2000 compact evaluation unit) feature electrical separation between the control circuit and the sensor circuit. The relay outputs are also electrically separated from all other circuits. The 3RN2013 and 3RN2023 evaluation units incorporate protective electrical separation between all circuits up to $U_i = 300$ V.

3RN2000 compact evaluation unit

The compact unit, which is only 17.5 mm wide, is equipped with a red LED (TRIPPED) for the tripped indicator and a changeover contact. After the unit has tripped, it is automatically reset once the thermistors have cooled down. The root of the changeover contact is connected to the control voltage (terminal 11 is connected to terminal A1). This unit is particularly suitable in circuits in which the control circuit and signaling circuit have the same potential, e.g. in local control boxes.

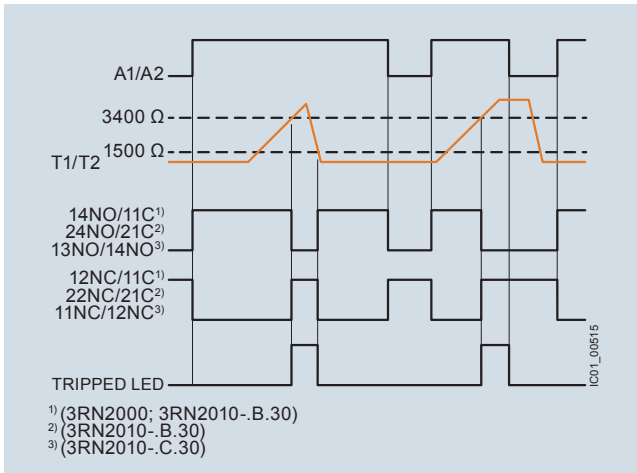
3RN2010, 3RN2011, 3RN2012 and 3RN2013 compact/standard evaluation units

The units are equipped with two LEDs (READY and TRIPPED) for an operating and tripped display and are available with either 1 NO + 1 NC contacts (3RN2010, overall width 17.5 mm) or with 2 CO contacts. Depending on the version, they are available with Auto RESET (3RN2010), Manual/Remote RESET (3RN2011) or Manual/Auto and Remote RESET (3RN2012 and 3RN2013). Remote RESET can be achieved by connecting an external pushbutton with a normally-open function to terminals Y1 and Y2. If terminals Y1 and Y2 are jumpered, the unit is automatically reset once the thermistors have cooled down (Auto RESET). 3RN2012 and 3RN2013 are non-volatile. This means a previous trip remains stored in the event of a control supply voltage failure – the thermistor motor protection relay remains in the safe state with an opened output relay until it is intentionally reset by pressing the TEST/RESET button of the unit or an external pushbutton.

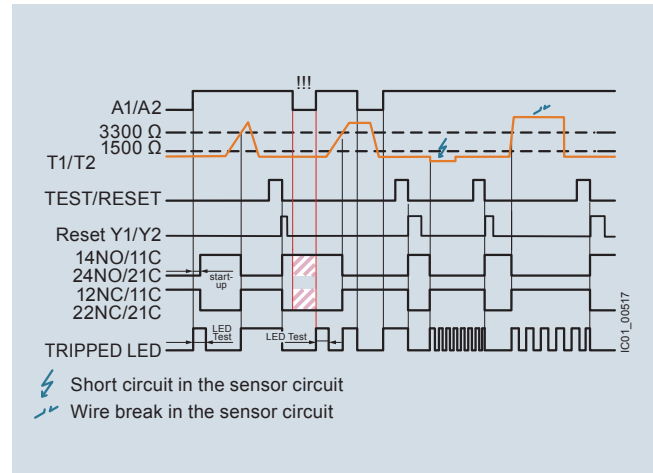
3RN2023 "warning and disconnection" evaluation units

Two sensor circuits can be connected to one 3RN2023 evaluation unit that act on two separate output relays with 1 NO contact for warning and 1 CO contact for disconnection. Thermistors with different rated response temperatures TNF are used to implement the "Warning" and "Disconnection" functions. When sensor circuit 2 for "Warning" responds, a yellow LED is lit and when the "Disconnection" circuit responds, a red LED is lit. The sensor circuits have a different reset response and operating behavior: The "Warning" thermistor sensor circuit 2 (terminals 2T1, 2T2) works only with Auto RESET and according to the open-circuit principle (output relay K2, NO contact). The "Disconnection" thermistor sensor circuit 1, (terminals 1T1, 1T2) can be changed from Manual RESET to Auto RESET by jumpering terminals Y1 and Y2. Remote RESET is implemented by connecting an external pushbutton with a normally-open function to these terminals.

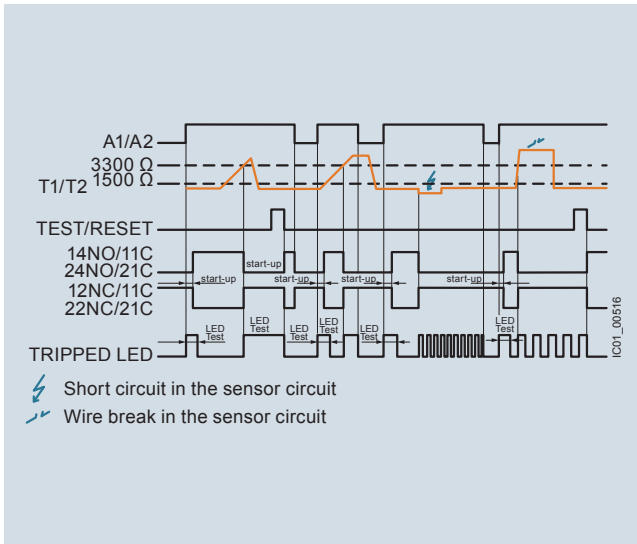
Function diagrams



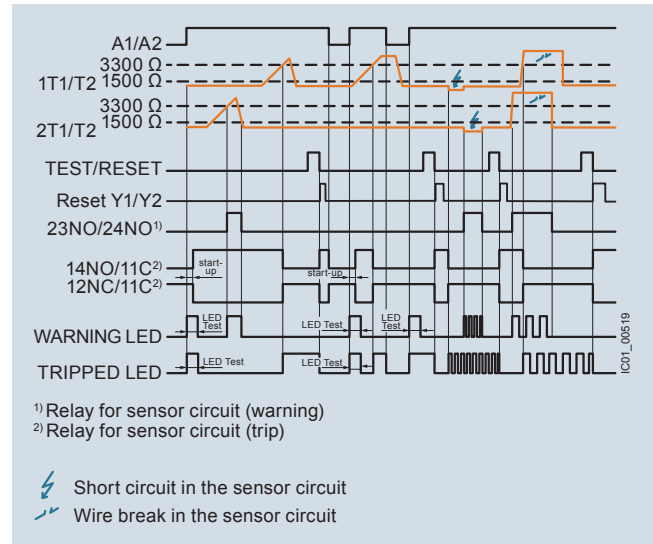
3RN2000, 3RN2010



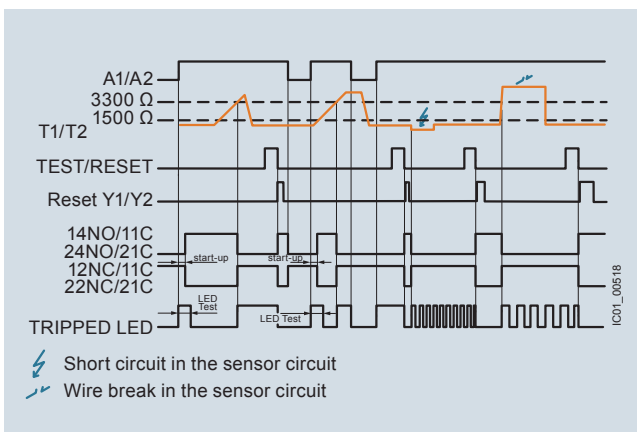
3RN2012-BW31: resetting via the TEST/RESET button or external push-button



3RN2011: resetting via external pushbutton or interruption of the supply voltage

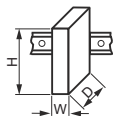


3RN2023: resetting via the TEST/RESET button or external pushbutton



3RN2012-B.30, 3RN2013: resetting via the TEST/RESET button or external pushbutton

Article number	3RN2000-.A, 3RN2010-.C	3RN201-.B, 3RN2013-.G, 3RN2023-.D
Width x height x depth	100 × 17.5 × 90	100 × 22.5 × 90



Article number	3RN2000-.AA30	3RN2000-.AW30, 3RN2010-.BW30, 3RN2010-.CW30	3RN2010-.BA30, 3RN2010-.CA30	3RN2011-.BA30, 3RN2012-.BA30	3RN2011-.BW30, 3RN2012-.BW30	3RN2012-.BW31	3RN2013-.BA30	3RN2013-.BW30, 3RN2013-.GW30	3RN2023-.DW30
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General technical specifications					
Type of electrical isolation		None	Isolated		Protective separation
Electrical endurance (operating cycles) for AC-15 at 230 V		100 000			
Mechanical endurance (operating cycles)		10 000 000			
Insulation voltage for overvoltage category III according to IEC 60664 for pollution degree 3 / rated value	V	300			
Impulse withstand voltage, rated value	kV	4		6	
Minimum mains failure buffering time	ms	40			30
Pollution degree		3			
Degree of protection		IP20			
Vibration resistance acc. to IEC 60068-2-27		11g/15 ms			
Vibration resistance acc. to IEC 60068-2-6		10 ... 55 Hz: 0.35 mm			
Type of mounting • Mounting position • Installation altitude at height above sea level, maximum	m	For screw-fixing and snap-on mounting to 35 mm standard mounting rail Any 2 000			
Ambient temperature during operation	°C	-25 ... +60			
Relative humidity during operation, maximum	%	70			
ATEX					
Ex device group and Ex category according to ATEX product directive 2014/34/EU		--	II 2G, II 2D	--	II 2G, II 2D
Safety device type according to IEC 61508-2		--	Type B	--	Type B
Safety integrity level (SIL) according to IEC 61508		--	SIL1	--	SIL1
Performance level (PL) according to EN ISO 13849-1		--	c	--	c
T1 value for proof test interval or service duration according to IEC 61508	y	--	3	--	3
Measuring circuit					
Number of measuring circuits		1			2
Relative measuring accuracy	%	9		2	
Maximum number of sensors in series		6			
Cable length of sensor, maximum	m	2 800		250	
Thermistor resistance response value	Ω	1 500 ... 1 650		1 500 ... 1 550	
Thermistor resistance return value	Ω	3 400 ... 3 600		3 300 ... 3 350	

Article number			3RN2000- .AA30	3RN2000- .AW30, 3RN2010- .BW30, 3RN2010- .CW30	3RN2010- .BA30, 3RN2010- .CA30	3RN2011- .BA30, 3RN2012- .BA30	3RN2011- .BW30, 3RN2012- .BW30	3RN2012- .BW31	3RN2013- .BA30	3RN2013- .BW30, 3RN2013- .GW30	3RN2023- .DW30
Control circuit											
Current carrying capacity of the output relay											
• At AC-15 at 250 V at 50/60 Hz	A	3									
• At DC-13 at 24 V	A	1									
• At DC-13 at 125 V	A	0.2									
• At DC-13 at 250 V	A	0.1									
Thermal current of the non-solid-state contact blocks, maximum	A	5									
Continuous current of the output relay's DIAZED fuse link	A	6									
Supply voltage											
Control supply voltage											
• At AC											
- At 50 Hz rated value	V	24 ... 24	24 ... 240	24 ... 24		24 ... 240		24 ... 24	24 ... 240		
- At 60 Hz rated value	V	24 ... 24	24 ... 240	24 ... 24		24 ... 240		24 ... 24	24 ... 240		
• At DC, rated value	V	24 ... 24	24 ... 240	24 ... 24		24 ... 240		24 ... 24	24 ... 240		
Operating range factor of the control supply voltage, rated value											
• At AC at 50 Hz		0.85 ... 1.1									
• At AC at 60 Hz		0.85 ... 1.1									
• At DC		0.85 ... 1.1									

Article number		3RN20..-1	3RN20..-2
Type of electrical connection		 Screw terminals	 Spring-type terminals (push-in)
Tightening torque	Nm	0.6 ... 0.8	--
Type of connectable conductor cross-sections			
• Solid	mm ²	1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²)	1x (0.5 ... 4 mm ²)
• Finely stranded with end sleeve	mm ²	1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²)	1x (0.5 ... 2.5 mm ²)
• For AWG cables			
- Solid	AWG	1x (20 ... 12), 2x (20 ... 14)	1x (20 ... 12)
- Stranded	AWG	--	1x (20 ... 12)

Selection and ordering data



3RN2000-1AA30



3RN2010-1BA30



3RN2011-1BA30



3RN2012-1BW30



3RN2023-1DW30

Product function	Number of CO contacts for auxiliary contacts	Number of NO contacts for auxiliary contacts	Number of NC contacts for auxiliary contacts	Material of switching contacts	Control supply voltage For AC at 50 Hz rated value	For DC, rated value	SD	Article No.	PU (UNIT, SET, M)	PS*
					V	V	d			

Compact evaluation unit, suitable for bimetallic switch

Terminal A1 jumpered with root of changeover contact

Auto RESET	1	0	0	AgSnO2	24 ... 24	24 ... 24	2	3RN2000-□AA30	1	1 unit
					24 ... 240	24 ... 240	2	3RN2000-□AW30	1	1 unit
	0	1	1	AgSnO2	24 ... 24	24 ... 24	2	3RN2010-□CA30	1	1 unit
					24 ... 240	24 ... 240	2	3RN2010-□CW30	1	1 unit

Standard evaluation unit, suitable for bimetallic switch

Auto RESET	2	0	0	AgSnO2	24 ... 24	24 ... 24	2	3RN2010-□BA30	1	1 unit
					24 ... 240	24 ... 240	2	3RN2010-□BW30	1	1 unit

Bistable evaluation unit, open-circuit and short-circuit detection in the sensor circuit

Does not trigger in the event of control supply voltage failure

Auto RESET	2	0	0	AgSnO2	24 ... 240	24 ... 240	2	3RN2012-□BW31	1	1 unit
Manual RESET										
External RESET										
Error memory										

Standard evaluation unit with ATEX approval, open-circuit and short-circuit detection in the sensor circuit¹⁾

Manual RESET	2	0	0	AgSnO2	24 ... 24	24 ... 24	2	3RN2011-□BA30	1	1 unit
External RESET					24 ... 240	24 ... 240	2	3RN2011-□BW30	1	1 unit

Non-volatile³⁾

Auto RESET	2	0	0	AgSnO2	24 ... 24	24 ... 24	2	3RN2012-□BA30	1	1 unit
Manual RESET					24 ... 240	24 ... 240	2	3RN2012-□BW30	1	1 unit
External RESET										
Error memory										

Protective separation, non-volatile²⁾³⁾

Auto RESET	2	0	0	AgSnO2	24 ... 24	24 ... 24	2	3RN2013-□BA30	1	1 unit
Manual RESET					24 ... 240	24 ... 240	2	3RN2013-□BW30	1	1 unit
External RESET				AgSnO2	24 ... 240	24 ... 240	2	3RN2013-□GW30	1	1 unit
Error memory				Hard gold-plated						

Evaluation unit with ATEX approval and 2 sensor circuits for warning and disconnection, open-circuit and short-circuit detection in both sensor circuits

Protective separation, non-volatile²⁾³⁾

Auto RESET	1	1	0	AgSnO2	24 ... 240	24 ... 240	2	3RN2023-□DW30	1	1 unit
Manual RESET										
External RESET										
Error memory										

Type of electrical connection

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

¹⁾ For 3RN2011: The unit can be reset with the RESET button or by disconnecting the control supply voltage.

²⁾ Protective separation up to 300 V acc. to DIN/VDE 0160, IEC 60947-1.

³⁾ Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

Accessories

Version	SD	Article No.	PU (UNIT, SET, M)	PS*
d				
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure				
 3ZY1122-1BA00	Removable terminals	Screw terminals 		
	• 2-pole, up to 2 x 2.5 mm² or 1 x 4 mm²	2	3ZY1122-1BA00	1 6 units
	• 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm²	2	Spring-type terminals (push-in) 	
			3ZY1122-2BA00	1 6 units
Accessories for enclosures				
 3ZY1311-0AA00	Push-in lugs For wall mounting	2	3ZY1311-0AA00	1 10 units
 3ZY1440-1AA00	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure. They enable the mechanical coding of terminals, see Manual "SIRIUS 3RN2 thermistor motor protection", https://support.industry.siemens.com/cs/ww/en/ps/24302/man	2	3ZY1440-1AA00	1 12 units
Tools for opening spring-type terminals				
 3RA2908-1A	Screwdrivers For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	2	Spring-type terminals (push-in) 	
			3RA2908-1A	1 1 unit

Timing Relays

3RP25 / 3RP20 / 7PV15

Overview



7PV15, SIRIUS 3RP25 and SIRIUS 3RP20 timing relays

Electronic timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. Their fully developed concept and space-saving, compact design make the SIRIUS 3RP timing relays ideal modules for control cabinet, switchgear and control manufacturers in the industry.

With their narrow design, the 7PV15 timing relays are ideal in particular for use in heating, ventilation and air-conditioning systems and in compressors. All 7PV15 timing relays in this enclosure version are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60175. The enclosure complies with DIN 43880.

Benefits

- Clear-cut basic range with five basic units in the case of the 7PV15 timing relays, and seven basic units in the case of the 3RP timing relays
- Logistic advantages provided by versions with wide voltage range and wire setting range
- No tools required for assembly or disassembly on standard mounting rails
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure
- Optimum price/performance ratio
- Versions with logical separation
- Low variance: One design for distribution boards and for control cabinets
- Compliance with EMC requirements for buildings
- Environmentally friendly laser inscription instead of printing containing solvents
- Timing relays suitable for the 3RT miniature contactors allow smaller tier spacing
- Versions with screw terminals or alternatively with spring-type terminals

Application

Timing relays with ON-delay

- Interference pulse suppression (gating of interference pulses)
- Gradual startup of motors so as not to overload the power supply

Timing relays with OFF-delay

- Generation of overtravel functions following removal of voltage
- Gradual, delayed shutdown, e.g. of motors or fans, to allow a plant to be shut down selectively

Wye-delta timing relay

- Switchover of motors from wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

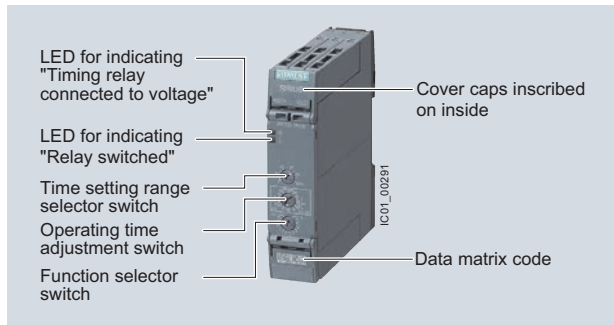
Multifunctional timing relays

- Maximum flexibility, with a device for every application
- Available with relay and semiconductor output

Timing Relays

3RP25 timing relays

Overview



SIRIUS 3RP25 timing relays

Electronic timing relays for general use in control systems and mechanical engineering with:

- 1 or 2 CO, 1 NO (semiconductor) or 3 NO
- Monofunction or multifunction
- Combination voltage
- Wide voltage range
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

Standards

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1/DIN VDE 0435 Part 221 "Specified time relays for industrial use"
- IEC 61000-6-2, IEC 61000-6-3 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"

3RP2505 multifunctional timing relays

The functions of the 3RP2505 multifunctional timing relays can be set by means of the function selector switch. Whether both CO contacts are switched in parallel or one CO contact with a delay and one instantaneously and the choice of time setting range are set by means of the time setting range selector switch. The exact operating time can be adjusted with the operating time switch.

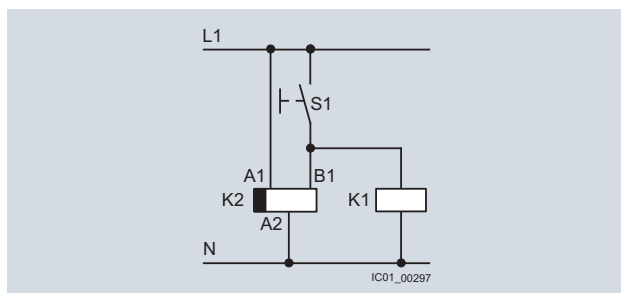
With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay.

The same potential must be applied to terminals A. and B.

Functions, [see the overview of functions on page 11/26](#).

Note:

The activation of loads parallel to the start input is permissible when using AC/DC control voltage ([see diagram](#)).



Diagram

Accessories



Push-in lugs for wall mounting



Sealable cover 17.5 mm

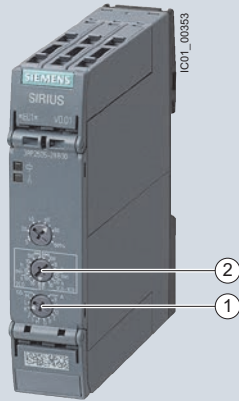


Sealable cover 22.5 mm

Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

Two setting options for implementing the multifunctions (A-M):



- ① Determination of 13 functions by the setting A to M, with 1 CO, 1 NO, 2 CO that switch in parallel.
- ② Extended function variance by selecting the time range and determining, whether 2 CO switch in parallel or whether 1 CO switches with delay + 1 CO switches immediately (1 CO + 1 CO)

Setting the functions on the device

Overview of functions of the 3RP2505 multifunctional timing relay

Identification letter	13 functions 1 CO, 1 NO (semiconductor) or 2 CO switched in parallel	27 functions 13 functions (A - M) 2 CO switched in parallel + 13 functions (A - M) 1 CO delayed + 1 CO instantaneous (1 CO + 1 CO) and wye-delta function
A	ON-delay	ON-delay and instantaneous contact
B	OFF-delay with control signal	OFF-delay with control signal and instantaneous contact
C	ON-delay/OFF-delay with control signal	ON-delay/OFF-delay with control signal and instantaneous contact
D	Flashing, symmetrical, starting with interval	Flashing, symmetrical, starting with interval and instantaneous contact
E	Passing make contact, interval relay	Passing make contact, interval relay and instantaneous contact
F	Retriggerable interval relay with deactivated control signal (passing break contact with control signal)	Retriggerable interval relay with deactivated control signal (passing break contact with control signal) and instantaneous contact
G	Passing make contact, with control signal, not retriggerable (pulse-forming with control signal)	Passing make contact, with control signal, not retriggerable (pulse-forming with control signal) and instantaneous contact
H	Additive ON-delay, instantaneous OFF with control signal	Additive ON-delay, instantaneous OFF with control signal and instantaneous contact
I	Additive ON-delay with control signal	Additive ON-delay with control signal and instantaneous contact
J	Flashing, symmetrical, starting with pulse	Flashing, symmetrical, starting with pulse and instantaneous contact
K	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
L	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay)	Pulse-delayed with control signal (fixed pulse (at 1 s) and settable pulse delay) and instantaneous contact
M	Retriggerable interval relay with activated control signal (watchdog)	Retriggerable interval relay with activated control signal and instantaneous contact (watchdog)
--	--	Wye-delta function

Note:

Conversion tool e.g. from 3RP15 to 3RP25, [see
www.siemens.com/sirius/conversion-tool](http://www.siemens.com/sirius/conversion-tool).

Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

Article No. scheme

Digit of the Article No.	1 st - 5 th	6 th	7 th		8 th	9 th	10 th	11 th	12 th
	□□□□□	□	□	-	□	□	□	□	0
Timing relays in industrial enclosure 17.5 mm and 22.5 mm	3 R P 25								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	3 R P 25	0	5	-	1	A	W	3	0

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

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

Benefits

- Easy stock keeping and logistics thanks to low variance of devices
- Reduced space requirement in the control cabinet thanks to variants in width 17.5 mm and 22 mm
- Consistent for all functions thanks to wide voltage range from 12 to 240 V AC/DC
- Up to 27 functions according to IEC 61812 in the multifunctional timing relay with wide voltage range
- Multifunctional timing relay with semiconductor output for high switching frequencies, bounce-free and wear-free switching

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Enclosure version

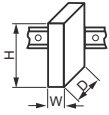
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw fixing.

Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

Technical specifications

Type	3RP2505-.A, 3RP2505-.C, 3RP251., 3RP2525-.A, 3RP2527, 3RP253., 3RP255.		3RP2505-.B, 3RP2505-.R, 3RP2525-.B, 3RP254., 3RP256., 3RP257.	
Width	mm	17.5	22.5	
Height	mm	100	100	
Depth	mm	90	90	

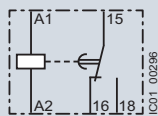


Type	3RP25...-AB30, 3RP25...-AW30, 3RP25...-BB30, 3RP25...-BW30, 3RP25...-NW30, 3RP25...-SW30		3RP25...-BT20, 3RP25...-NM20	3RP25...-CW30	3RP25...-EW30	3RP25...-RW30
Insulation voltage For overvoltage category III According to IEC 60664 For pollution degree 3, rated value	V AC	300	500	300	--	300
Ambient temperature • During operation • During storage	°C	-25 ... +60 -40 ... +85				-40 ... +70
Operating range factor Of the control supply voltage, rated value • At AC - At 50 Hz - At 60 Hz • At DC		0.85 ... 1.1 0.85 ... 1.1 0.85 ... 1.1	--	0.85 ... 1.1	0.85 ... 1.1	0.7 ... 1.1 0.7 ... 1.1 0.7 ... 1.1
Switching capacity current With inductive load	A	0.01 ... 3	0.01 ... 3	0.01 ... 1	0.01 ... 6	0.01 ... 3
Operational current of the auxiliary contacts • At AC-15 - At 24 V - At 250 V - At 400 V • At DC-12 - At 24 V - At 125 V - At 250 V • At DC-13 - At 24 V - At 125 V - At 250 V	A	3 3 -- -- -- -- -- 1 0.2 0.1	3 3 3 -- -- -- -- 1 0.2 0.1	1 1 -- 1 -- -- -- -- -- --	-- -- -- -- -- -- -- -- -- --	3 3 -- -- -- -- -- 1 0.2 0.1
Uninterrupted thermal current I_{th}	A	5	5	1	0.6	5
Mechanical endurance (Operating cycles) Typical		10 x 10 ⁶				
Electrical endurance For AC-15 at 230 V, typical		1 x 10 ⁵				

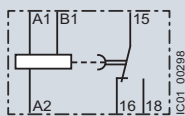
Type	3RP25	
Connection type	Screw terminals	
• Design of thread of connection screw	M3	
• Solid	mm ²	1 x (0.5 ... 4.0)/2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 4)/2 x (0.5 ... 1.5)
• Solid for AWG cables	AWG	1 x (20 ... 12), 2 x (20 ... 14)
• Stranded for AWG cables	AWG	1 x (20 ... 12), 2 x (20 ... 14)
• Tightening torque	Nm	0.6 ... 0.8
Connection type	Spring-type terminals	
• Solid	mm ²	1 x (0.5 ... 4)
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 2.5)
• AWG cables, solid	AWG	1 x (20 ... 12)

Internal circuit diagrams 3RP25

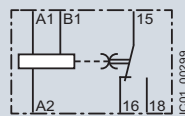
Multifunction 3RP2505-.A, 13 functions, 1 CO



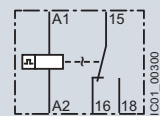
3RP2505-.A (A)
ON-delay



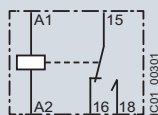
3RP2505-.A (B)
OFF-delay with control signal



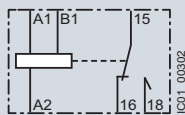
3RP2505-.A (C)
ON-delay/OFF-delay
with control signal



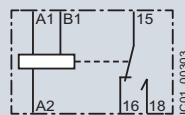
3RP2505-.A (D)
Flashing, symmetrical,
starting with interval



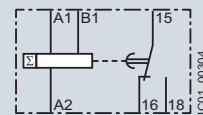
3RP2505-.A (E)
Passing make contact, interval relay



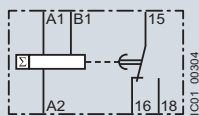
3RP2505-.A (F)
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



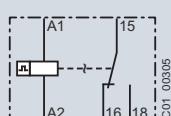
3RP2505-.A (G)
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



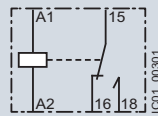
3RP2505-.A (H)
Additive ON-delay, instantaneous OFF
with control signal



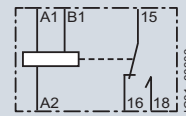
3RP2505-.A (I)
Additive ON-delay with control signal



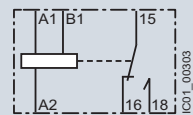
3RP2505-.A (J)
Flashing, symmetrical,
starting with pulse



3RP2505-.A (K)
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)



3RP2505-.A (L)
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)

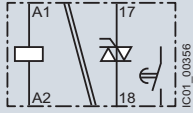


3RP2505-.A (M)
Retriggerable interval relay with
activated control signal (watchdog)

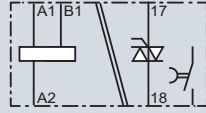
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

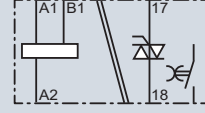
Multifunction 3RP2505-.C, 13 functions, 1 NO (semiconductor)



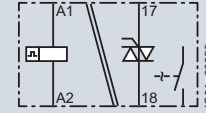
3RP2505-.C (A)
ON-delay



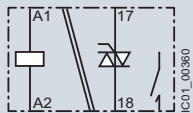
3RP2505-.C (B)
OFF-delay with control signal



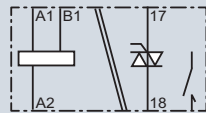
3RP2505-.C (C)
ON-delay/OFF-delay
with control signal



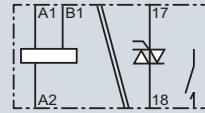
3RP2505-.C (D)
Flashing, symmetrical,
starting with interval



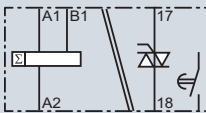
3RP2505-.C (E)
Passing make contact, interval relay



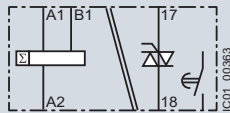
3RP2505-.C (F)
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



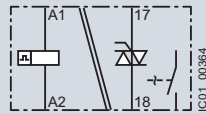
3RP2505-.C (G)
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



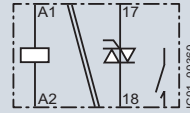
3RP2505-.C (H)
Additive ON-delay, instantaneous OFF
with control signal



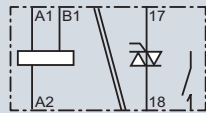
3RP2505-.C (I)
Additive ON-delay with control signal



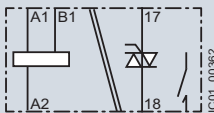
3RP2505-.C (J)
Flashing, symmetrical,
starting with pulse



3RP2505-.C (K)
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)



3RP2505-.C (L)
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)

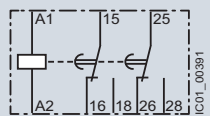


3RP2505-.C (M)
Retriggerable interval relay with
activated control signal (watchdog)

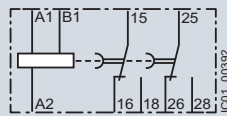
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

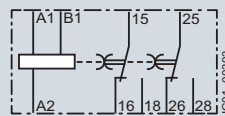
Multifunction 3RP2505-.B, 27 functions, 2 CO switched in parallel with delay/
multifunction 3RP2505-.R, 13 functions, 2 CO positively driven, and switched in parallel with delay (see also note below)



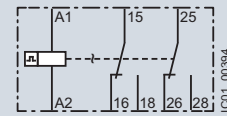
3RP2505-.B (A)
ON-delay



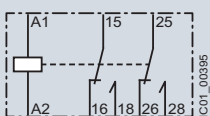
3RP2505-.B (B)
OFF-delay with control signal



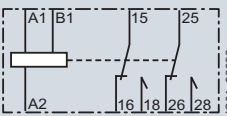
3RP2505-.B (C)
ON-delay/OFF-delay
with control signal



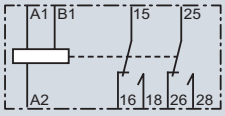
3RP2505-.B (D)
Flashing, symmetrical,
starting with interval



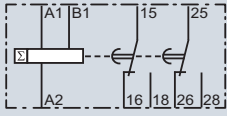
3RP2505-.B (E)
Passing make contact, interval relay



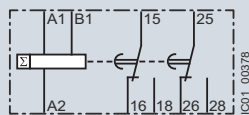
3RP2505-.B (F)
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



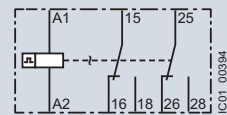
3RP2505-.B (G)
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



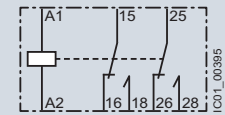
3RP2505-.B (H)
Additive ON-delay, instantaneous OFF
with control signal



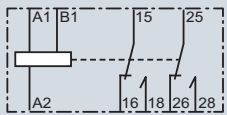
3RP2505-.B (I)
Additive ON-delay with control signal



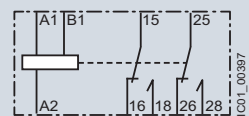
3RP2505-.B (J)
Flashing, symmetrical,
starting with pulse



3RP2505-.B (K)
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)



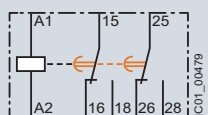
3RP2505-.B (L)
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)



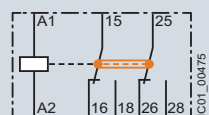
3RP2505-.B (M)
Retriggerable interval relay with
activated control signal (watchdog)

Note:

3RP2505-.RW30 has 13 functions (A to M) like 3RP2505-.B switched in parallel with delay, but with positively driven contacts. The circuit diagrams are identical except for the representation of the symbols for these contacts, see also the example on the right for 3RP2505-.RW30 of the function (A) with ON-delay.



3RP2505-.B (A)
ON-delay

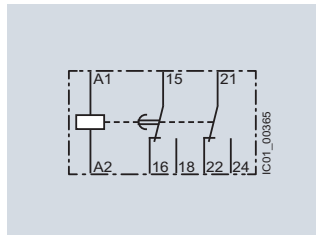


3RP2505-.R (A)
with positively driven contacts
ON-delay

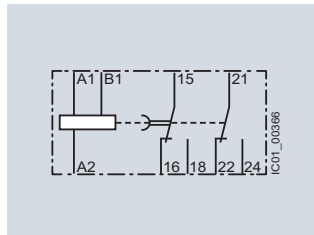
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

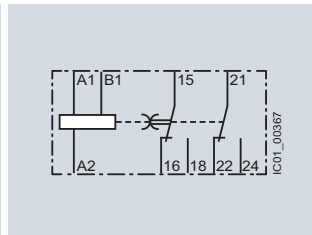
Multifunction 3RP2505-.B, 27 functions, 1 CO delayed + 1 CO instantaneous (continued)



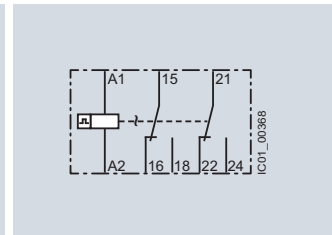
3RP2505-.B (A)
ON-delay and instantaneous contact



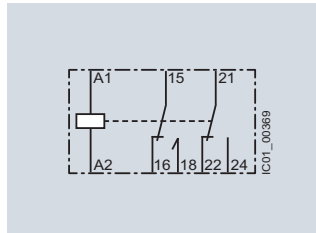
3RP2505-.B (B)
OFF-delay with control signal and
instantaneous contact



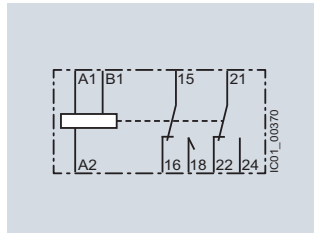
3RP2505-.B (C)
ON-delay/OFF-delay with control
signal and instantaneous contact



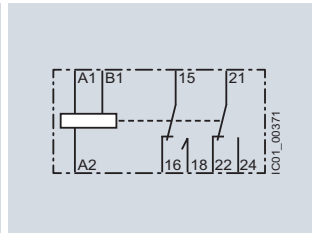
3RP2505-.B (D)
Flashing, symmetrical, starting with
interval and instantaneous contact



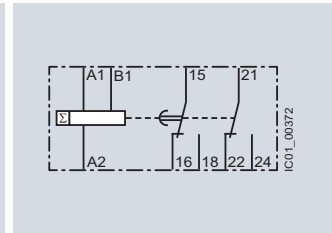
3RP2505-.B (E)
Passing make contact, interval relay
and instantaneous contact



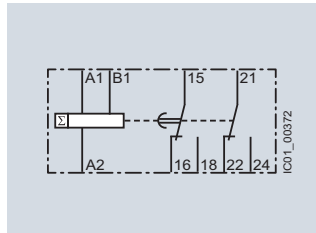
3RP2505-.B (F)
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)
and instantaneous contact



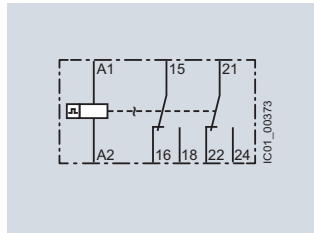
3RP2505-.B (G)
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)
and instantaneous contact



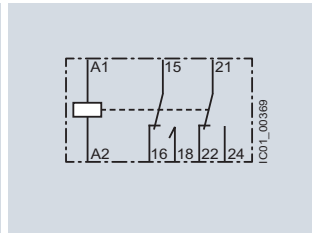
3RP2505-.B (H)
Additive ON-delay, instantaneous OFF
with control signal and instantaneous
contact



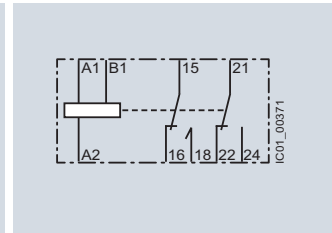
3RP2505-.B (I)
Additive ON-delay with control signal
and instantaneous contact



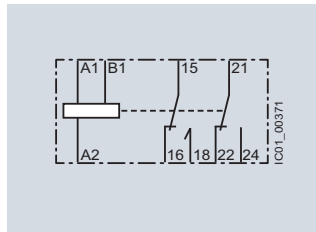
3RP2505-.B (J)
Flashing, symmetrical, starting with
pulse and instantaneous contact



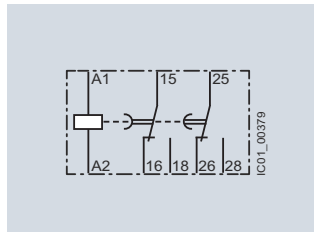
3RP2505-.B (K)
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay) and
instantaneous contact



3RP2505-.B (L)
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)
and instantaneous contact



3RP2505-.B (M)
Retriggerable interval relay with
activated control signal and
instantaneous contact (watchdog)

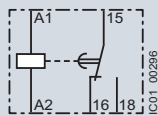


3RP2505-.B
Wye-delta function

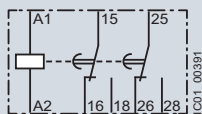
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

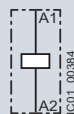
Monofunctions 3RP251. up to 3RP257.¹⁾



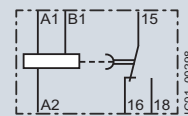
3RP251., 3RP2525-A
ON-delay



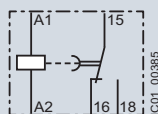
3RP2525-B
ON-delay



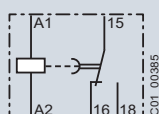
3RP2527
ON-delay, two-wire design



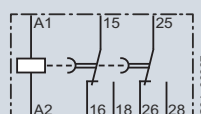
3RP2535
OFF-delay with control signal



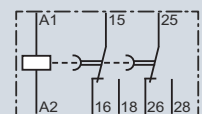
3RP2540-A (N)¹⁾
OFF-delay



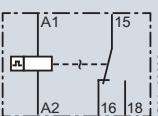
3RP2540-A (O)¹⁾
Positive passing make contact



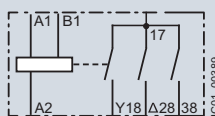
3RP2540-B (N)¹⁾
OFF-delay



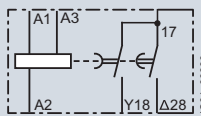
3RP2540-B (O)¹⁾
Positive passing make contact



3RP2555
Flashing, asymmetrical, starting with interval (clock-pulse relay)



3RP2560
Wye-delta function with overtravel function (idling)



3RP257.
Wye-delta function

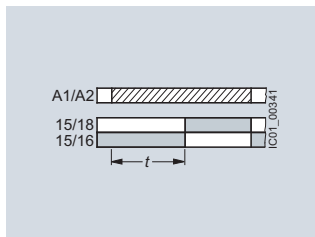
¹⁾ 3RP2540 has a double function:
Function N = OFF-delay
Function O = Positive passing make contact.

Timing Relays

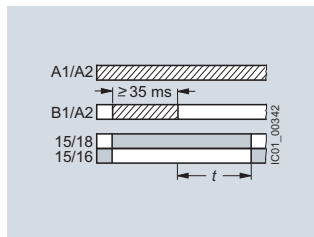
3RP25 timing relays, 17.5 mm and 22.5 mm

3RP25 function diagrams

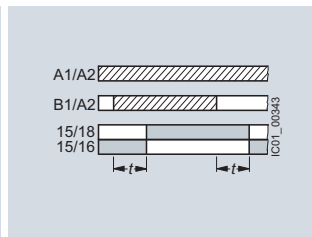
Multifunction 3RP2505-.A, 1 CO, 13 functions and 3RP2505-.C, 1 NO (semiconductor), 13 functions



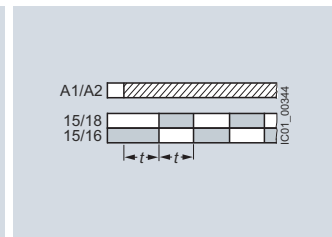
A
ON-delay



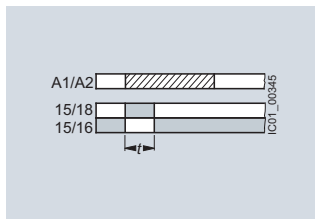
B
OFF-delay with control signal



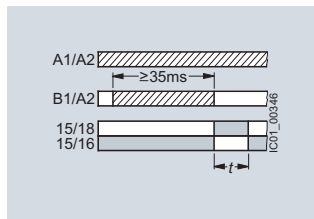
C
ON-delay/OFF-delay
with control signal



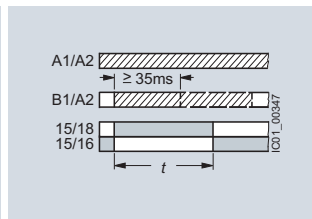
D
Flashing, symmetrical,
starting with interval



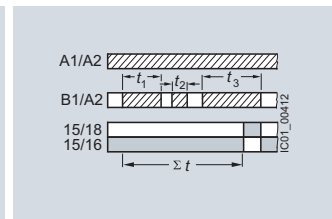
E
Passing make contact, interval relay



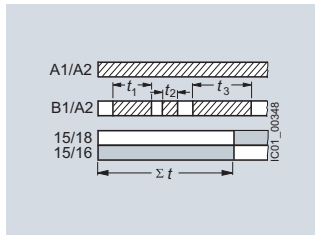
F
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



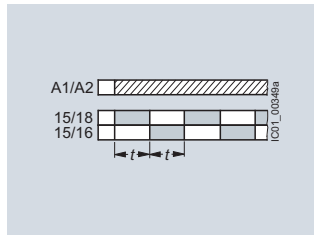
G
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



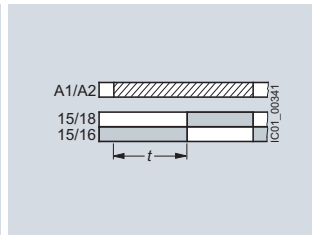
H
Additive ON-delay, instantaneous OFF
with control signal



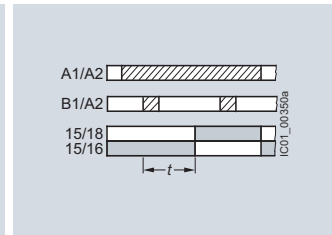
I
Additive ON-delay, with control signal



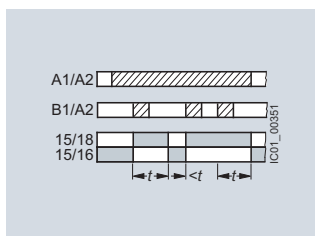
J
Flashing, symmetrical,
starting with pulse



K
Pulse-delayed (fixed pulse (at 1 s)
and settable pulse delay)



L
Pulse-delayed with control signal (fixed
pulse (at 1 s) and settable pulse delay)



M
Retriggerable interval relay with
activated control signal (watchdog)

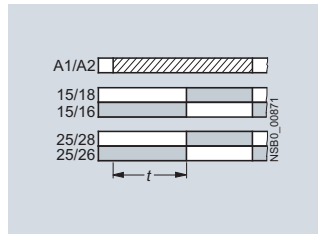
Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

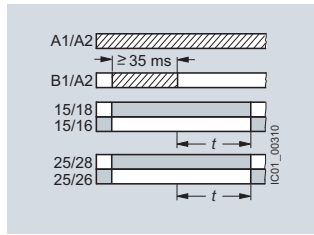
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

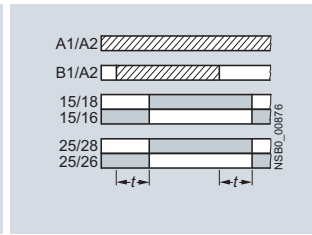
Multifunction 3RP2505-B, 13 functions, 2 CO positively driven and switched in parallel with delay



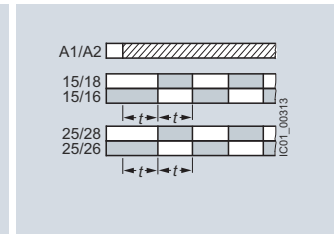
A
ON-delay



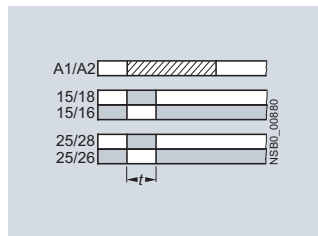
B
OFF-delay with control signal



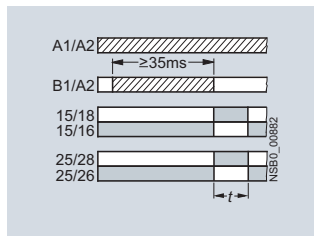
C
ON-delay/OFF-delay
with control signal



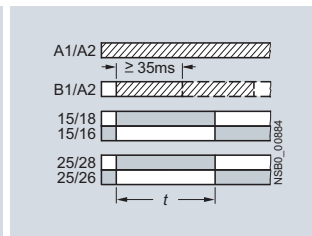
D
Flashing, symmetrical,
starting with interval



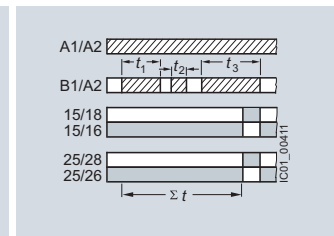
E
Passing make contact, interval relay



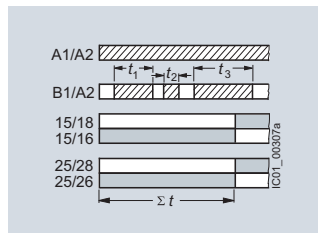
F
Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)



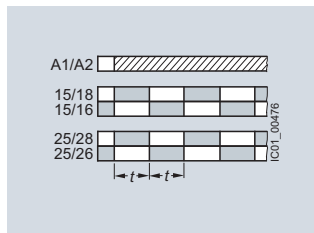
G
Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)



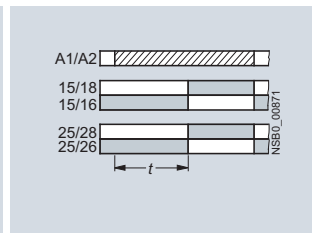
H
Additive ON-delay, instantaneous OFF
with control signal



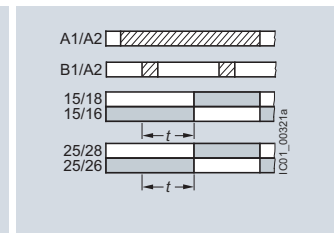
I
Additive ON-delay with control signal



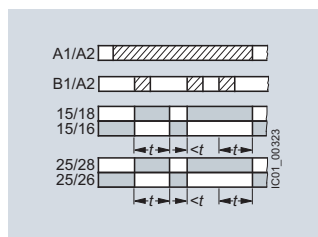
J
Flashing, symmetrical,
starting with pulse



K
Pulse-delayed (fixed pulse at 1 s
and settable pulse delay)



L
Pulse-delayed with control signal (fixed
pulse at 1 s and settable pulse delay)



M
Retriggerable interval relay with
activated control signal (watchdog)

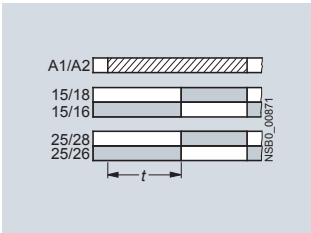
Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

Multifunction 3RP2505-.B, 27 functions, 2 CO

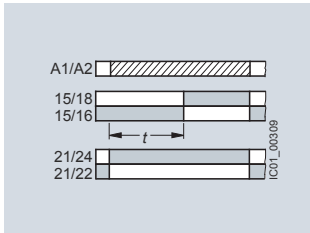
A

2 CO switched in parallel



ON-delay

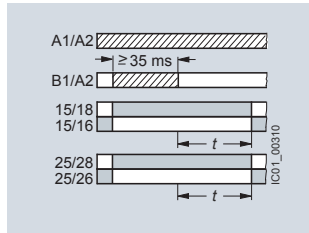
1 CO delayed +
1 CO instantaneous



ON-delay and instantaneous contact

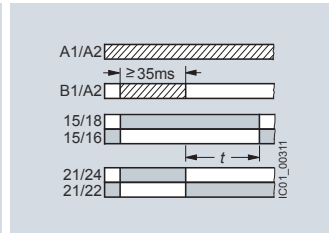
B

2 CO switched in parallel



OFF-delay with control signal

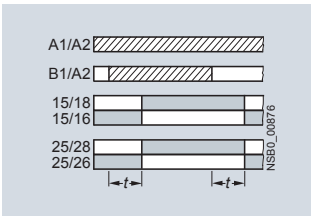
1 CO delayed +
1 CO instantaneous



OFF-delay with control signal and
instantaneous contact

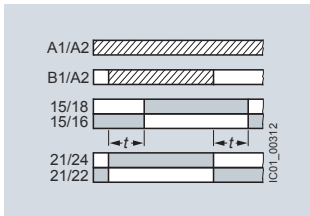
C

2 CO switched in parallel



ON-delay/OFF-delay
with control signal

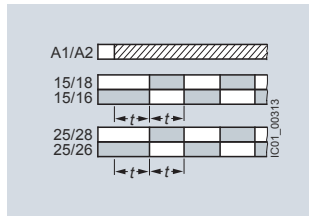
1 CO delayed +
1 CO instantaneous



ON-delay/OFF-delay with control
signal and instantaneous contact

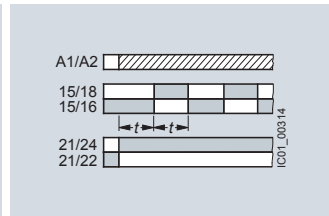
D

2 CO switched in parallel



Flashing, symmetrical,
starting with interval

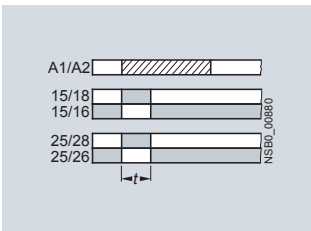
1 CO delayed +
1 CO instantaneous



Flashing, symmetrical, starting with
interval and instantaneous contact

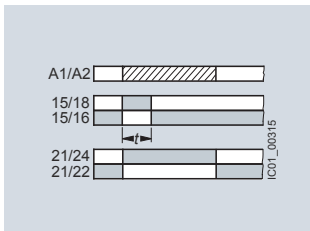
E

2 CO switched in parallel



Passing make contact, interval relay

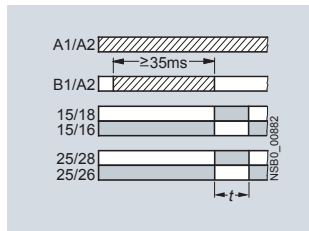
1 CO delayed +
1 CO instantaneous



Passing make contact, interval relay
and instantaneous contact

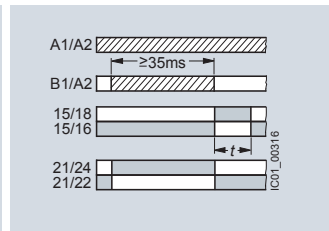
F

2 CO switched in parallel



Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)

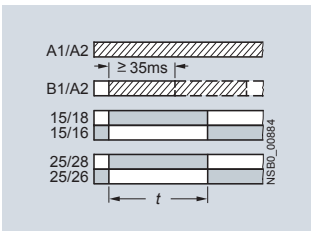
1 CO delayed +
1 CO instantaneous



Retriggerable interval relay with
deactivated control signal (passing
break contact with control signal)
and instantaneous contact

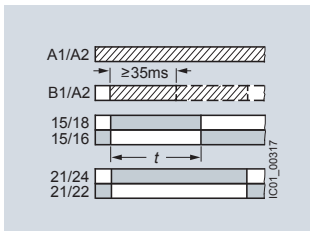
G

2 CO switched in parallel



Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)

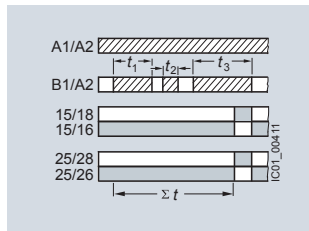
1 CO delayed +
1 CO instantaneous



Passing make contact with
control signal, not retriggerable
(pulse-forming with control signal)
and instantaneous contact

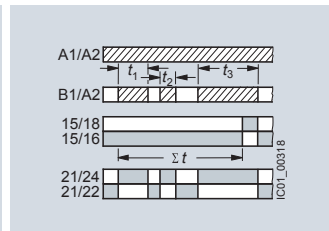
H

2 CO switched in parallel



Additive ON-delay, instantaneous
OFF with control signal

1 CO delayed +
1 CO instantaneous



Additive ON-delay, instantaneous OFF
with control signal and instantaneous
contact

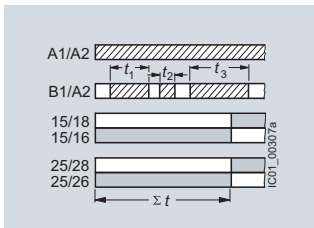
Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

Multifunction 3RP2505-.B, 27 functions, 2 CO (continued)

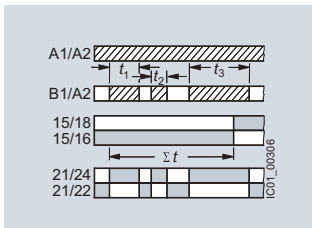
I

2 CO switched in parallel



Additive ON-delay with control signal

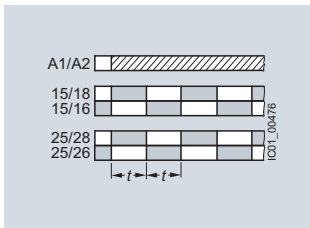
1 CO delayed +
1 CO instantaneous



Additive ON-delay with control signal
and instantaneous contact

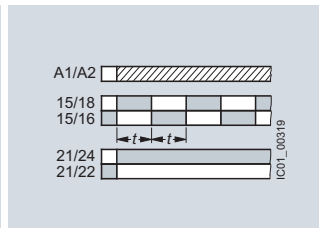
J

2 CO switched in parallel



Flashing, symmetrical,
starting with pulse

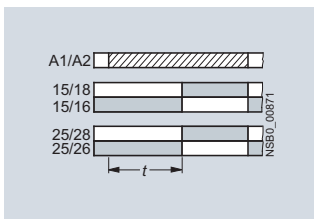
1 CO delayed +
1 CO instantaneous



Flashing, symmetrical, starting with
pulse and instantaneous contact

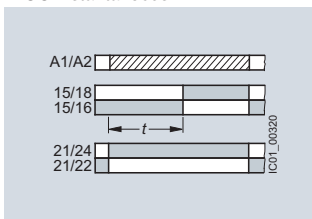
K

2 CO switched in parallel



Pulse-delayed (fixed pulse at 1 s
and settable pulse delay)

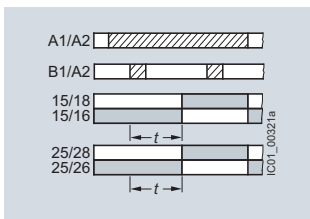
1 CO delayed +
1 CO instantaneous



Pulse-delayed (fixed pulse at 1 s
and settable pulse delay) and
instantaneous contact

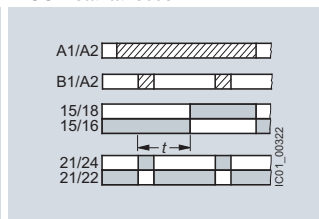
L

2 CO switched in parallel



Pulse-delayed with control signal
(fixed pulse at 1 s and settable pulse
delay)

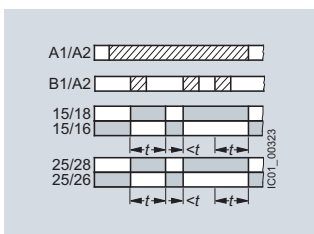
1 CO delayed +
1 CO instantaneous



Pulse-delayed with control signal
(fixed pulse at 1 s and settable pulse
delay) and instantaneous contact

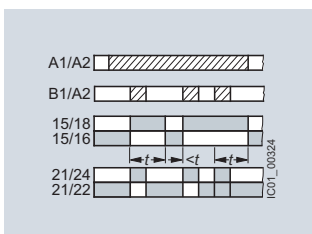
M

2 CO switched in parallel



Retriggerable interval relay with
activated control signal (watchdog)

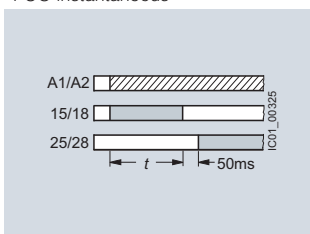
1 CO delayed +
1 CO instantaneous



Retriggerable interval relay with
activated control signal and
instantaneous contact (watchdog)

YΔ

2 CO switched in parallel or 1 CO
delayed +
1 CO instantaneous



Wye-delta function

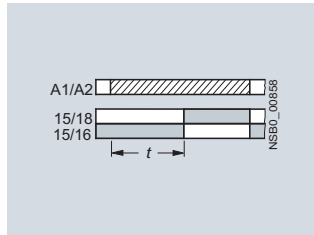
Legend

- A ... M** Identification letters
- Timing relay energized
- Contact closed
- Contact open

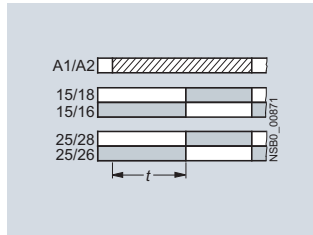
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

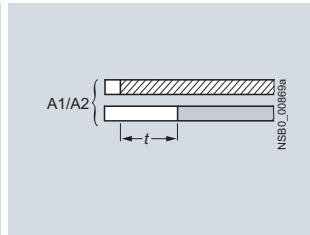
Monofunctions 3RP251.. up to 3RP257.¹⁾



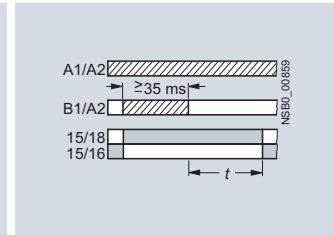
3RP251..-AW30, 1 CO, ON-delay



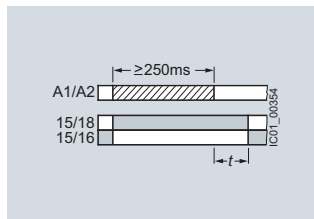
3RP2525..-W30, 2 CO, ON-delay



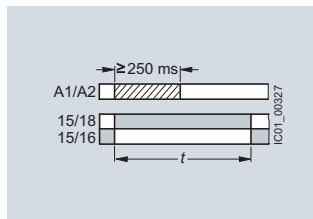
3RP2527..-EW30, 1 NO (semiconductor), ON-delay



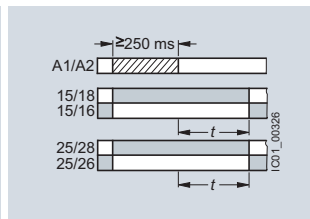
3RP2535..-AW30, 1 CO, OFF-delay with control signal



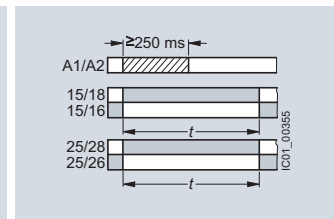
3RP2540..-A.30, 1 CO, OFF-delay (N)¹⁾



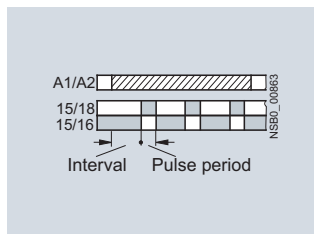
3RP2540..-A.30, 1 CO, positive passing make contact (O)¹⁾



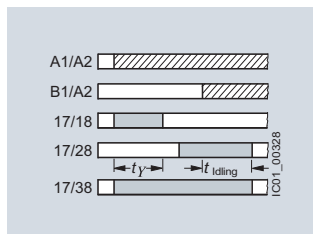
3RP2540..-B.30, 2 CO, OFF-delay (N)¹⁾



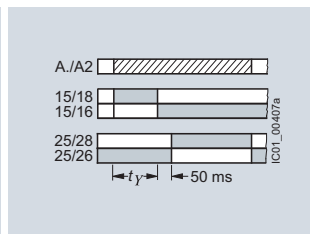
3RP2540..-B.30, 2 CO, positive passing make contact (O)¹⁾



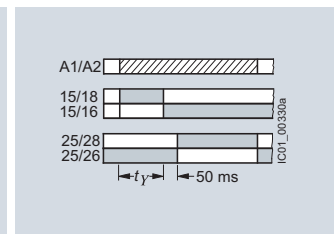
3RP2555..-AW30, 1 CO, flashing, asymmetrical, starting with interval (clock-pulse relay)



3RP2560..-SW30, 3 NO, wye-delta function with overtravel function (idling)



3RP257..-NM20, 2 NO, wye-delta function



3RP257..-NM30, 2 NO, wye-delta function

Legend

- Timing relay energized
- Contact closed
- Contact open

¹⁾ 3RP2540 has a double function:
Function N = OFF-delay
Function O = positive passing make contact.

Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

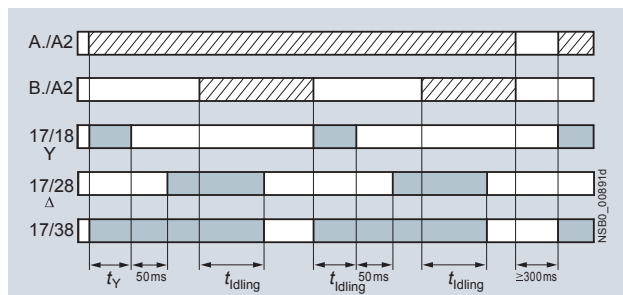
Possibilities of operation of the 3RP2560-.SW30 timing relay

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

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the $\Upsilon\Delta$ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time t_{idling} (30 ... 600 s) has elapsed, the output relays (17/38 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Note:

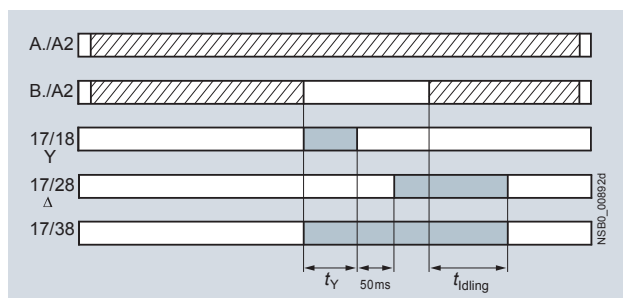
Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.



Operation 1

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

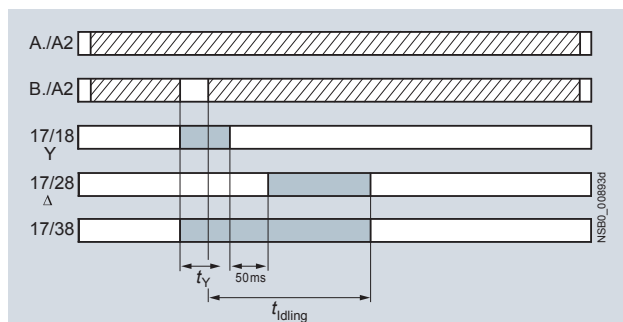
If the control signal B./A2 is already present when the control supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.



Operation 2

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

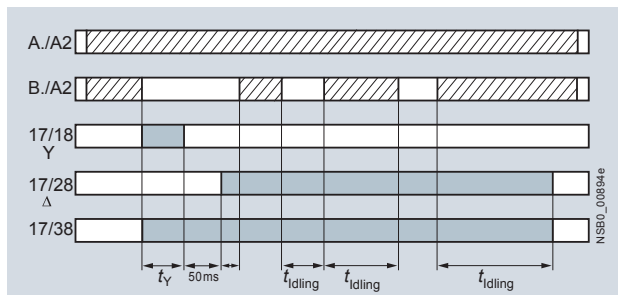
If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.



Operation 3

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

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



Operation 4

Legend

- Timing relay energized
- Contact closed
- Contact open

t_Y = Star time 1 ... 20 s

t_{idling} = Idling time (coasting time) 30 ... 600 s

Note:

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

Application example based on standard operation (operation 1): For example, use of 3RP2560 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode, i.e. in no-load operation for a specific time which can be set from 30 ... 600 s.

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

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

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

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

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

Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

Selection and ordering data



3RP2505-2AB30



3RP2505-2BB30



3RP2525-2AW30



3RP2540-2AW30



3RP2555-2AW30



3RP2576-2NW30

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

Number of NO contacts		Number of CO contacts		Semi-conductor output	Adjustable time	Control supply voltage		DT	Screw terminals		DT	Spring-type terminals (push-in)	
Instantaneous switching	Delayed switching	Instantaneous switching	Delayed switching			At AC 50/60 Hz	At DC		Article No.	Price per PU		Article No.	Price per PU
						V	V						

3RP2505-.A and 3RP2505-.C timing relays, 13 functions

The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, [see the overview functions on page 11/26](#).

0	0	0	1	--	0.05 s ... 100 h	24	24	A	3RP2505-1AB30	A	3RP2505-2AB30
						12 ... 240	12 ... 240	A	3RP2505-1AW30	A	3RP2505-2AW30
0	1	0	0	✓	0.05 s ... 100 h	12 ... 240	12 ... 240	A	3RP2505-1CW30	A	3RP2505-2CW30

3RP2505-.R timing relays suitable for railway applications, 13 functions

Start of delivery planned for 11/2015

The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, [see the overview functions on page 11/26](#).

0	0	--	2 ¹⁾	--	0.05 s ... 100 h	24 ... 240	24 ... 240	A	3RP2505-1RW30	A	3RP2505-2RW30
---	---	----	-----------------	----	------------------	------------	------------	---	---------------	---	---------------

3RP2505-.B timing relay, 27 functions

The functions can be adjusted by means of function selector switches on the device. With a set of foil labels the timing relay can be legibly marked with the functions which can be selected on the timing relay. This is supplied together with the multifunctional timing relay. The same potential must be applied to terminals A. and B. Functions, [see the overview functions on page 11/26](#).

0	0	--	2 ²⁾	--	0.05 s ... 100 h	24	24	A	3RP2505-1BB30	A	3RP2505-2BB30
						400 ... 440	--	A	3RP2505-1BT20	A	3RP2505-2BT20
						12 ... 240	12 ... 240	A	3RP2505-1BW30	A	3RP2505-2BW30

3RP251. and 3RP252. timing relays, ON-delay

0	0	0	1	--	0.5 ... 10 s	12 ... 240	12 ... 240	A	3RP2511-1AW30	A	3RP2511-2AW30
					1 ... 30 s	12 ... 240	12 ... 240	A	3RP2512-1AW30	A	3RP2512-2AW30
					5 ... 100 s	12 ... 240	12 ... 240	A	3RP2513-1AW30	A	3RP2513-2AW30
					0.05 s ... 100 h	12 ... 240	12 ... 240	A	3RP2525-1AW30	A	3RP2525-2AW30
0	0	0	2	--	0.05 s ... 100 h	24	24	A	3RP2525-1BB30	A	3RP2525-2BB30
						12 ... 240	12 ... 240	A	3RP2525-1BW30	A	3RP2525-2BW30
0	1	0	0	✓	0.05 s ... 240 s	12 ... 240	12 ... 240	A	3RP2527-1EW30	A	3RP2527-2EW30

3RP2535 timing relays, OFF-delay with control signal

0	0	0	1	--	0.05 s ... 100 h	12 ... 240	12 ... 240	A	3RP2535-1AW30	A	3RP2535-2AW30
---	---	---	---	----	------------------	------------	------------	---	---------------	---	---------------

3RP2540 timing relays, OFF-delay, without control signal, non-volatile, passing make contact

0	0	0	1	--	0.05 s ... 600 s	24	24	A	3RP2540-1AB30	A	3RP2540-2AB30
						12 ... 240	12 ... 240	A	3RP2540-1AW30	A	3RP2540-2AW30
0	0	0	2	--	0.05 s ... 600 s	24	24	A	3RP2540-1BB30	A	3RP2540-2BB30
						12 ... 240	12 ... 240	A	3RP2540-1BW30	A	3RP2540-2BW30

3RP2555 timing relays, clock-pulse relay, flashing, asymmetrical

0	0	0	1	--	0.05 s ... 100 h	12 ... 240	12 ... 240	A	3RP2555-1AW30	A	3RP2555-2AW30
---	---	---	---	----	------------------	------------	------------	---	---------------	---	---------------

3RP2560 timing relays, wye-delta function with overtravel function (idling)

1	2	0	0	--	1 ... 20 s	12 ... 240	12 ... 240	A	3RP2560-1SW30	A	3RP2560-2SW30
---	---	---	---	----	------------	------------	------------	---	---------------	---	---------------

3RP257. timing relays, wye-delta function

1	1	0	0	--	1 ... 20 s	380 ... 440 ³⁾	--	A	3RP2574-1NM20	A	3RP2574-2NM20
						12 ... 240	12 ... 240	A	3RP2574-1NW30	A	3RP2574-2NW30
1	1	0	0	--	3 ... 60 s	380 ... 440 ³⁾	--	A	3RP2576-1NM20	A	3RP2576-2NM20
						12 ... 240	12 ... 240	A	3RP2576-1NW30	A	3RP2576-2NW30

✓ Available

-- Not available

¹⁾ Positively-driven contacts.

²⁾ Optionally 1 CO delayed + 1 CO instantaneous.

³⁾ With 3RP2574-.NM20 and 3RP2576-.NM20, connection of 200 ... 240 V AC, 50/60 Hz control voltage is also possible.

For accessories, [see page 11/41](#).

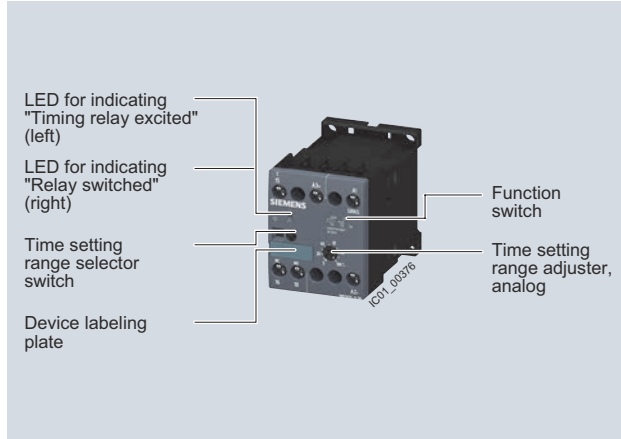
Timing Relays

3RP25 timing relays, 17.5 mm and 22.5 mm

Accessories

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Accessories for enclosures					
 3ZY1321-1AA00	Sealing covers • 17.5 mm				
	A	3ZY1321-1AA00		1	5 units
 3ZY1321-2AA00	Sealing covers • 22.5 mm				
	A	3ZY1321-2AA00		1	5 units
 3ZY1311-0AA00	Push-in lugs For wall mounting				
	A	3ZY1311-0AA00		1	10 units
 3ZY1440-0AA00	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; enable the mechanical coding of terminals				
	A	3ZY1440-1AA00		1	12 units
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure					
 3ZY1122-1BA00	Removable terminals • 2-pole, screw terminals 1 x 4 mm ²				
	A	3ZY1122-1BA00		1	6 units
 3ZY1122-2BA00	Spring-type terminals (push-in) • 2-pole, push-in terminals 1 x 4 mm ²				
	A	3ZY1122-2BA00		1	6 units
Tools for opening spring-type terminals					
 3RA2908-1A	Screwdrivers For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated				
	A	3RA2908-1A		1	1 unit

Overview



SIRIUS 3RP20 timing relays

SIRIUS 3RP20 electronic timing relays for use in control systems and mechanical engineering with:

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

Standards

The timing relays comply with:

- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Time relays for industrial and residential use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- IEC 60947-1, Appendix N "Protective separation"

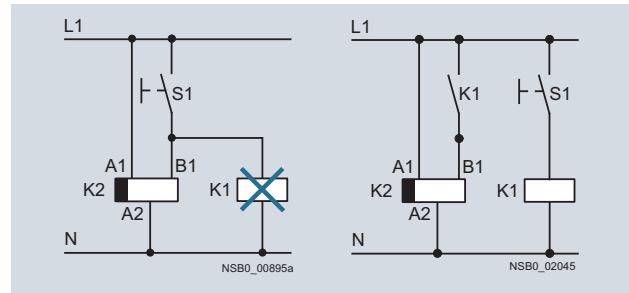
Multifunction

The functions of the 3RP2005 multifunctional timing relays can be set by means of the function selector switch. Insert labels can be used to adjust different functions of the timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

For functions, see 3RP2901 label set, page 11/47.

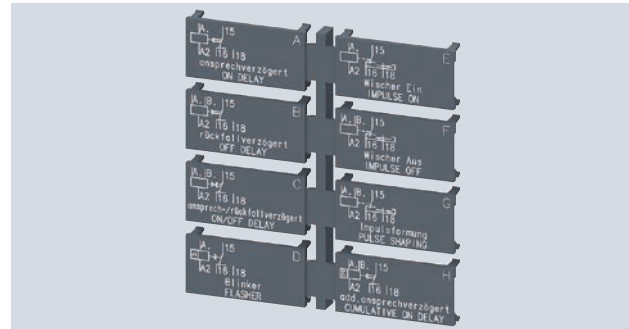
Note:

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



Diagrams

Accessories



Label set for marking the multifunctional relay

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th	8th	9th	10th	11th	12th
	□□□□□	□	□	-	□	□	□	0
SIRIUS timing relays, enclosure 45 mm	3 R P 2 0							
Functions/time setting ranges		□	□					
Connection type					□			
Contacts						□		
Rated control supply voltage							□	□
Example	3 R P 2 0 0 5 - 1 A P 3 0							

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

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

Benefits

- Suitable for 3RT miniature contactors
- Uniform design
- Ideal for small distance between standard mounting rails and/or for low mounting depth, e.g. in control boxes
- Labels are used on the multifunctional time relay to document the function that has been set

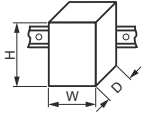
Timing Relays

3RP20 timing relays, 45 mm

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

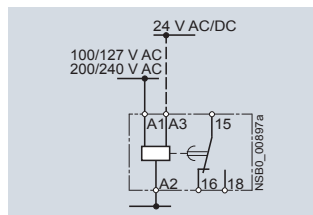
Technical specifications

Type	3RP2005, 3RP2025	
Dimensions (W x H x D)		mm 45 x 57 x 73
Rated insulation voltage Pollution degree 3 Overvoltage category III	V AC	300
Permissible ambient temperature • During operation • During storage	°C °C	-25 ... +60 -40 ... +85
Operating range at excitation¹⁾		0.85 ... 1.1 x U_N at AC; 0.8 ... 1.25 x U_N at DC; 0.95 ... 1.05 times the rated frequency
Mechanical endurance	Operating cycles	10 x 10 ⁶
Electrical endurance at I_N	Operating cycles	1 x 10 ⁵
Connection type	 Screw terminals	
• Terminal screw • Solid • Finely stranded with end sleeve • Stranded • AWG cables • Tightening torque	mm ² mm ² AWG AWG Nm	M3 (for standard screwdriver, size 2 and Pozidriv 2) 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (0.5 ... 1.5) ²⁾ , 2 x (0.75 ... 2.5) ²⁾ 2 x (18 ... 14) 0.8 ... 1.2
Connection type	 Spring-type terminals	
• Solid • Finely stranded with end sleeve • Finely stranded without end sleeve • AWG cables, solid or stranded • Max. external diameter of the conductor insulation	mm ² mm ² mm ² AWG mm	2 x (0.25 ... 2.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 2.5) 2 x (24 ... 14) 3.6

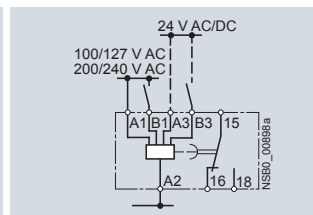
¹⁾ If nothing else is stated.

²⁾ If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

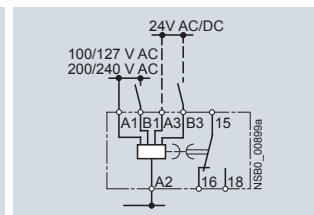
3RP20 internal circuit diagrams



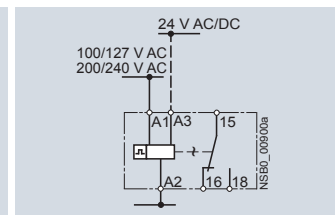
3RP2005, 3RP2025
ON-delay



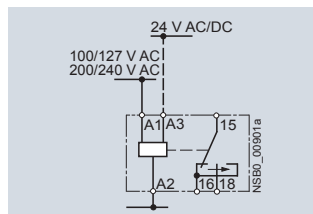
3RP2005
OFF-delay
with control signal



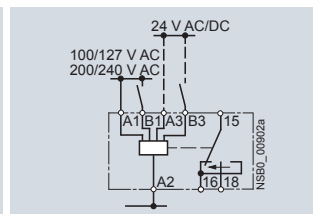
3RP2005
ON-delay and OFF-delay
with control signal



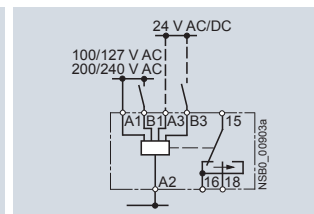
3RP2005
Flashing, starting with interval



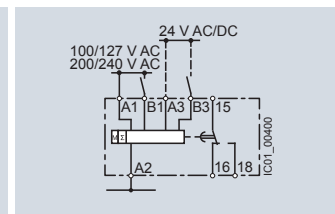
3RP2005
Passing make contact



3RP2005
Passing break contact
with control signal



3RP2005
Pulse-forming
with control signal



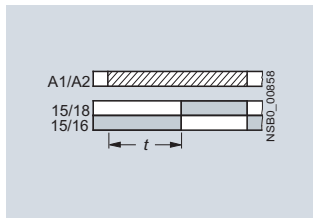
3RP2005
Additive ON-delay
with control signal

Timing Relays

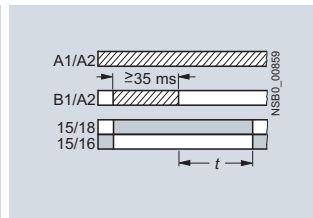
3RP20 timing relays, 45 mm

3RP20 function diagrams and 3RP2901 label set

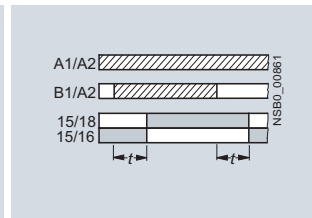
1 CO contact



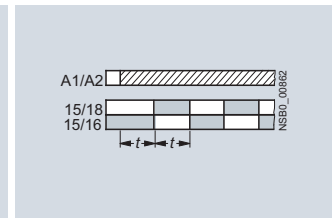
A
3RP2005-.A, 3RP2025
ON-delay



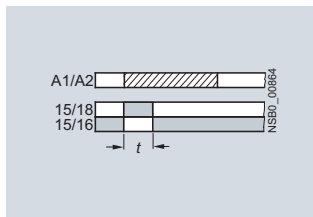
B¹⁾
3RP2005-.A
OFF-delay with control signal



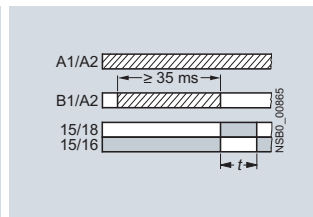
C¹⁾
3RP2005-.A
ON-delay and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



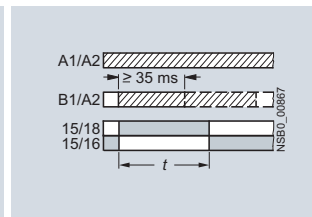
D
3RP2005-.A
Flashing, starting with interval
(pulse/interval 1:1)



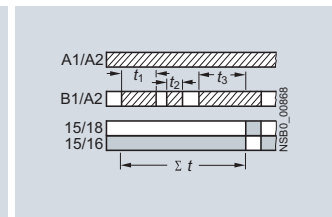
E
3RP2005-.A
Passing make contact



F¹⁾
3RP2005-.A
Passing break contact
with control signal



G¹⁾
3RP2005-.A
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



H¹⁾
3RP2005-.A
Additive ON-delay with control signal

Legend

A ... H Identification letters for 3RP2005

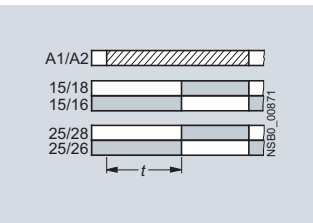
▨ Timing relay energized

■ Contact closed

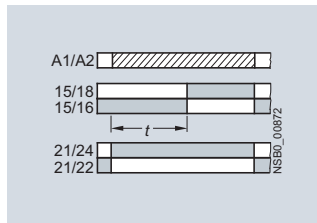
□ Contact open

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

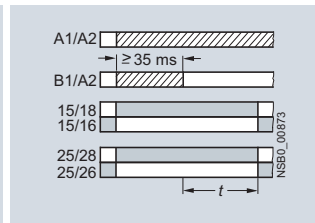
2 CO contacts



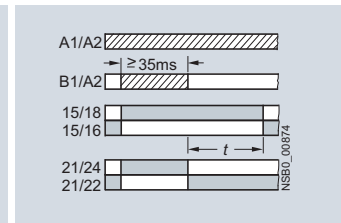
A
3RP2005-B
ON-delay



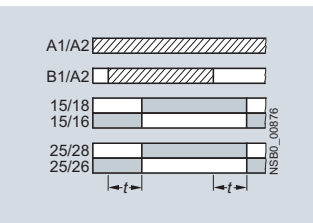
A•
3RP2005-B
ON-delay and instantaneous contact



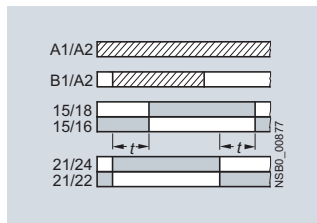
B¹)
3RP2005-B
OFF-delay with control signal



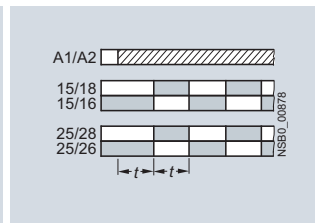
B•¹)
3RP2005-B
OFF-delay with control signal
and instantaneous contact



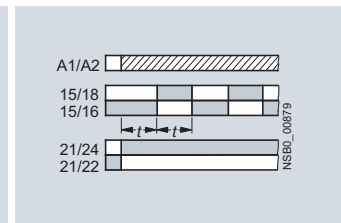
C¹)
3RP2005-B
ON-delay and OFF-delay
with control signal ($t = t_{on} = t_{off}$)



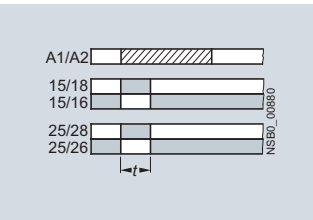
C•¹)
3RP2005-B
ON-delay and OFF-delay
with control signal and instantaneous
contact
($t = t_{on} = t_{off}$)



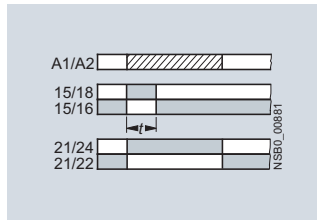
D
3RP2005-B
Flashing, starting with interval
(pulse/interval 1:1)



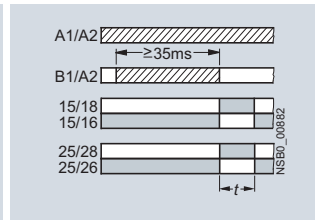
D•
3RP2005-B
Flashing, starting with interval
(pulse/interval 1:1) and instantaneous
contact



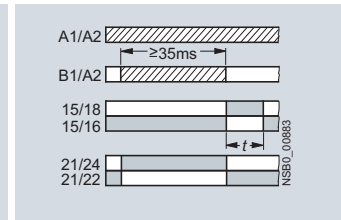
E
3RP2005-B
Passing make contact



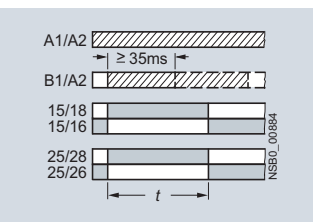
E•
3RP2005-B
Passing make contact and
instantaneous contact



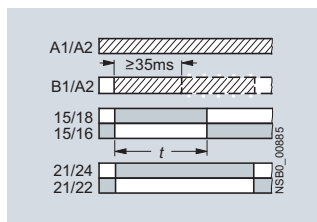
F¹)
3RP2005-B
Passing break contact
with control signal



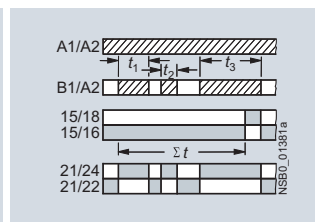
F•¹)
3RP2005-B
Passing break contact
with control signal
and instantaneous contact



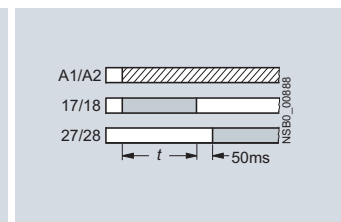
G¹)
3RP2005-B
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



G•¹)
3RP2005-B
Pulse-forming with control signal
and instantaneous contact (pulse
generation at the output does not
depend on duration of energizing)



H•¹)
3RP2005-B
Additive ON-delay with control signal
and instantaneous contact



YΔ
3RP2005-B
Wye-delta function

Legend

A ... H Identification letters for 3RP2005

Timing relay energized

Contact closed

Contact open

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

Timing Relays

3RP20 timing relays, 45 mm

Selection and ordering data

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



3RP2005-1AP30



3RP2005-1BW30



3RP2005-2AP30



3RP2025-2BW30

Version	Time setting range t	Rated control supply voltage U_s		DT	Screw terminals	DT	Spring-type terminals
		50/60 Hz AC	DC				
		V	V		Article No.	Price per PU	Article No.

3RP2005 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP2505 timing relay clearly and unmissably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B. For functions, see 3RP2901 label set, page 11/47.

With LED and 1 CO contact ¹⁾ , 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	3RP2005-1AQ30 3RP2005-1AP30	A ▶	3RP2005-2AQ30 3RP2005-2AP30
With LED and 2 CO contacts, 16 functions	1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ ²⁾	24 ... 240 ³⁾	24 ... 240 ⁴⁾	▶	3RP2005-1BW30	A	3RP2005-2BW30

3RP2025. timing relays, ON-delay, 15 time setting ranges

With LED and 1 CO contact ¹⁾	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ ²⁾	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	3RP2025-1AQ30 3RP2025-1AP30	▶ ▶	3RP2025-2AQ30 3RP2025-2AP30
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For accessories, see page 11/47.

¹⁾ Units with protective separation.

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

³⁾ Operating range 0.8 to 1.1 $\times U_s$.

⁴⁾ Operating range 0.7 to 1.1 $\times U_s$.

Timing Relays

3RP20 timing relays, 45 mm

Accessories

Version	Function	Identifi- cation letter	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Label sets for 3RP20								
Accessories for 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German.								
	1 label set (1 unit) with 8 functions	ON-delay	A	For devices with 1 CO	3RP2901-0A		1	5 units
	OFF-delay with control signal	B						
	ON-delay and OFF-delay with control signal	C						
	Flashing, starting with interval	D						
	Passing make contact	E						
	Passing break contact with control signal	F						
	Pulse-forming with control signal	G						
	Additive ON-delay with control signal	H						
	1 label set (1 unit) with 16 functions	ON-delay	A	For devices with 2 CO contacts	3RP2901-0B		1	5 units
	OFF-delay with control signal	B						
	ON-delay and OFF-delay with control signal	C						
	Flashing, starting with interval	D						
	Passing make contact	E						
	Passing break contact with control signal	F						
	Pulse-forming with control signal	G						
	ON-delay and instantaneous contact	A•						
	OFF-delay with control signal and instantaneous contact	B•						
	ON-delay and OFF-delay with control signal and instantaneous contact	C•						
	Flashing, starting with interval, and instantaneous contact	D•						
	Passing make contact and instan- taneous contact	E•						
	Passing break contact with control signal and instantaneous contact	F•						
	Pulse-forming with control signal and instantaneous contact	G•						
	Additive ON-delay with control signal and instantaneous contact	H•						
	Wye-delta function	YΔ						
Blank inscription labels for 3RP20								
Blank labels, 20 mm x 7 mm, pastel turquoise				For 3RP20 D	3RT1900-1SB20		100	340 units

Timing Relays

7PV15 timing relays in enclosure, 17.5 mm

Overview



7PV15 timing relay

Electronic timing relays for general use and in control systems, mechanical engineering and infrastructure with:

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

Standards

The timing relays comply with:

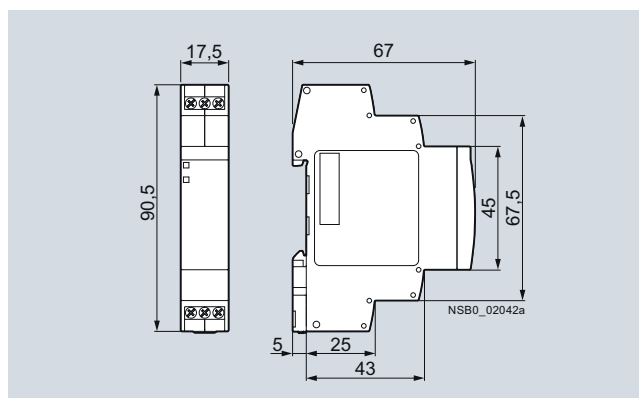
- IEC 60721-3-3 "Classification of environmental conditions"
- IEC 61812-1 "Time relays for industrial and residential use"
- IEC 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- DIN 43880 "Built-in equipment for electrical installations; overall dimensions and related mounting dimensions"

Multifunction

The functions of the 7PV1508-1A multifunctional timing relays can be set by means of rotary switches. The identification letters A to G are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

Enclosure version

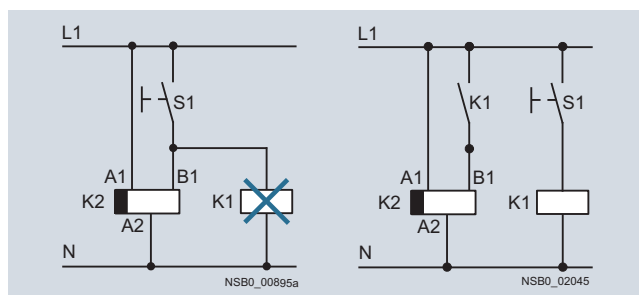
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715. The enclosure complies with DIN 43880, 1 MW.



Dimensions

Note:

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



Diagrams

Article No. scheme

Digit of the Article No.	1st - 5th	6th	7th	8th	9th	10th	11th	12th
	□ □ □ □ □	□	□	-	□	□	□	0
Timing relays in industrial enclosure, 17.5 mm	7 P V 1 5							
Functions/time setting ranges	□ □							
Connection type	□							
Contacts	□							
Rated control supply voltage	□ □							
Example	7 P V 1 5 0 8 - 1 A W 3 0							

Note:

The Article No. scheme is presented here merely for information purposes and for better understanding of the logic behind the article numbers.

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

Timing Relays

7PV15 timing relays in enclosure, 17.5 mm

Benefits

- Wide voltage range 12 to 240 V AC/DC
- High switching capacity, e.g. AC-15 at 230 V, 3 A
- Combination voltage, e.g. 24 V AC/DC and 200 to 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

Application

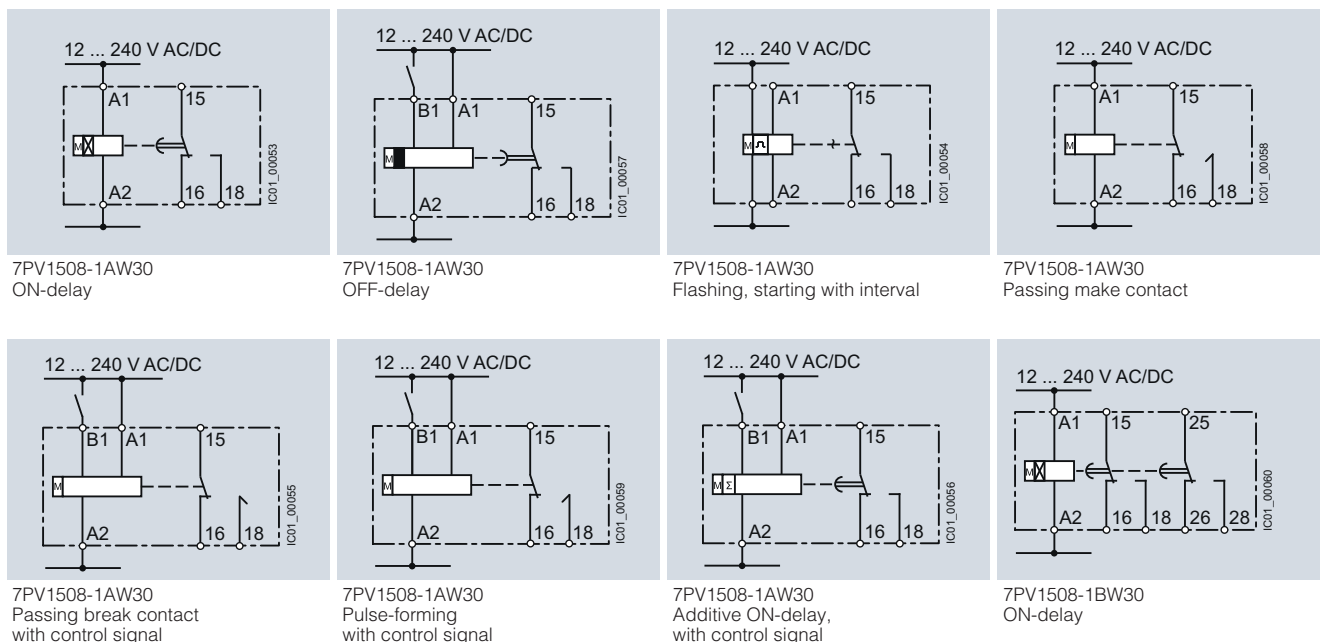
Timing relays are used in control, starting and protective circuits for all switching operations involving time delays, e.g. in non-residential buildings, airports, industrial buildings etc.

Technical specifications

Type	7PV15	
Rated insulation voltage Pollution degree 2, overvoltage category III	V AC	300
Permissible ambient temperature • During operation • During storage	°C °C	-25 ... +55 -40 ... +70
Operating range at excitation¹⁾		0.85 ... 1.1 x U_N at V AC/DC, 50/60 Hz 0.8 ... 1.25 x U_N 24 V DC 0.95 ... 1.05 times the rated frequency
Rated operational current I_N • AC-15 at 24 ... 240 V, 50 Hz • DC-13 at - 24 V - 125 V	A A A	3 1 0.2
Uninterrupted thermal current I_{th}	A	5
Mechanical endurance	Operating cycles	1 x 10 ⁶
Electrical endurance at I_N	Operating cycles	1 x 10 ⁵
Connection type	Screw terminals	
• Terminal screw • Solid • Finely stranded with end sleeve • Finely stranded without end sleeve • AWG cables, solid or stranded • Tightening torque	mm ² mm ² mm ² AWG Nm	M3 (for standard screwdriver, size 2 and Pozidriv 2) 1 x (0.2 ... 2.5) 1 x (0.25 ... 1.5) 1 x (0.2 ... 1.5) 1 x (24 ... 14) 0.4 ... 0.5

¹⁾ If nothing else is stated.

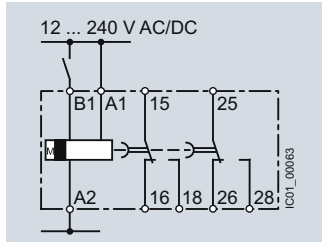
7PV15 internal circuit diagrams



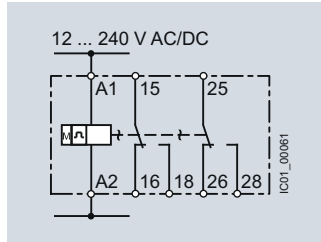
Timing Relays

7PV15 timing relays in enclosure, 17.5 mm

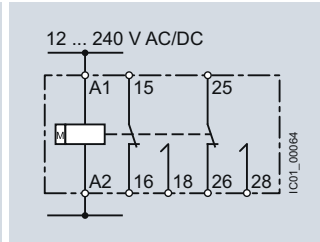
7PV15 internal circuit diagrams (continued)



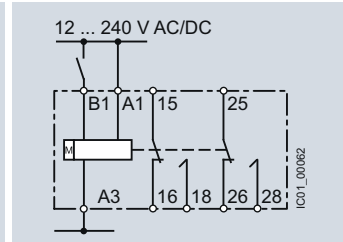
7PV1508-1BW30
OFF-delay
with control signal



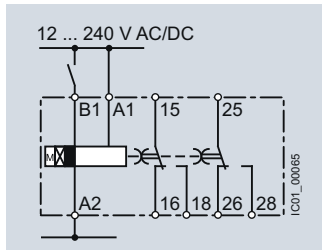
7PV1508-1BW30
Flashing,
starting with interval



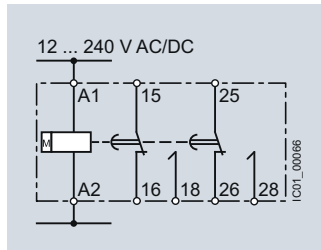
7PV1508-1BW30
Passing make contact



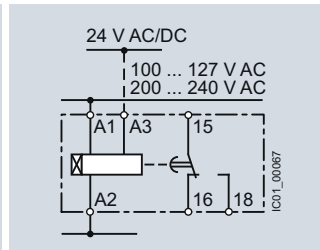
7PV1508-1BW30
Pulse-forming
with control signal



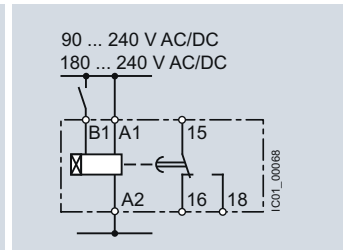
7PV1508-1BW30
ON and OFF-delay



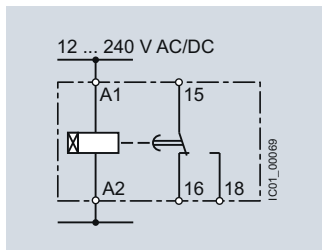
7PV1508-1BW30
Fixed pulse after ON-delay



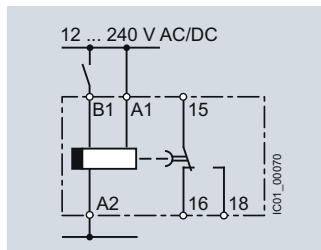
7PV151.-1AQ30, 7PV151.-1AP30
ON-delay



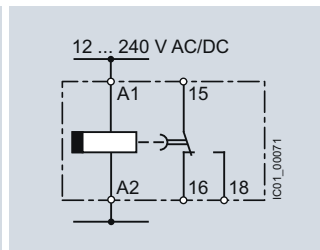
7PV1518-1AJ30, 7PV1518-1AN30
ON-delay



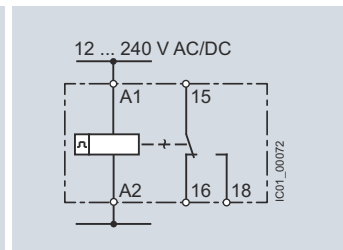
7PV1518-1AW30
ON-delay



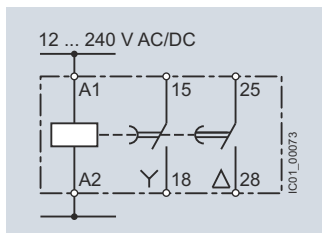
7PV1538-1AW30
OFF-delay
with control signal



7PV1540-1AW30
OFF-delay
without control signal



7PV1558-1AW30
Clock-pulse relay



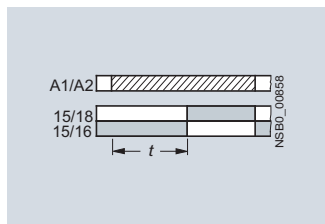
7PV1578-1BW30
Wye-delta

Timing Relays

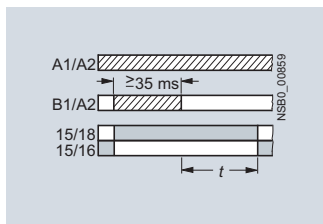
7PV15 timing relays in enclosure, 17.5 mm

7PV15 function diagrams

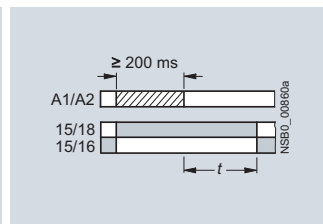
1 CO contact



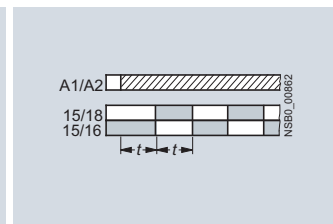
A
7PV1508-1A, 7PV1511, 7PV1512,
7PV1513, 7PV1518
ON-delay



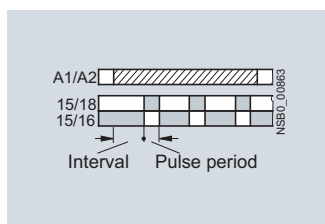
B¹⁾
7PV1508-1A, 7PV1538
OFF-delay with control signal



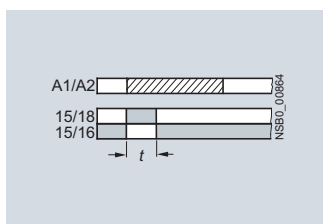
-
7PV1540
OFF-delay without control signal



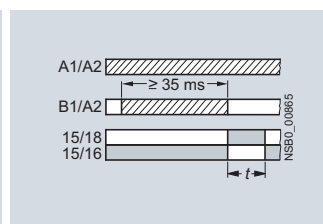
C
7PV1508-1A
Flashing, starting with interval
(pulse/interval 1:1)



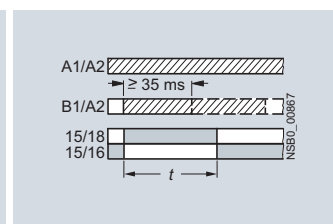
-
7PV1558
Clock-pulse, starting with interval
(dead period, pulse time, and time
setting ranges each separately
adjustable)



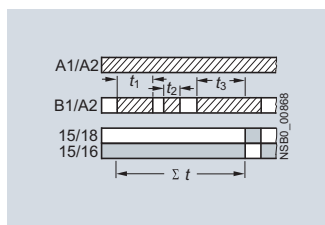
D
7PV1508-1A
Passing make contact



E¹⁾
7PV1508-1A
Passing break contact with control
signal



F¹⁾
7PV1508-1A
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of energizing)



G¹⁾
7PV1508-1A
Additive ON-delay with control signal

Legend

A ... G Identification letters for 7PV1508

▨ Timing relay energized

■ Contact closed

□ Contact open

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

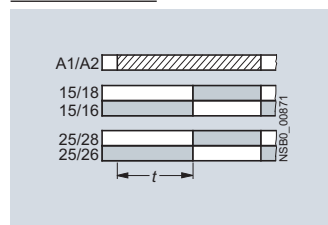
Note:

With the 7PV1508-1A multifunctional relay the identification letters A to G are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

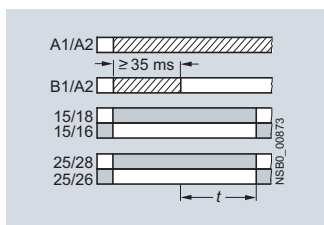
Timing Relays

7PV15 timing relays in enclosure, 17.5 mm

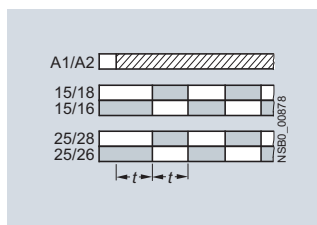
2 CO contacts



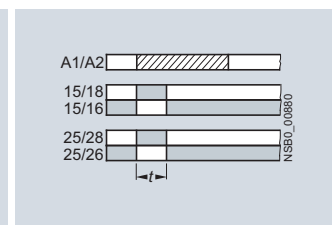
A
7PV1508-1B
ON-delay



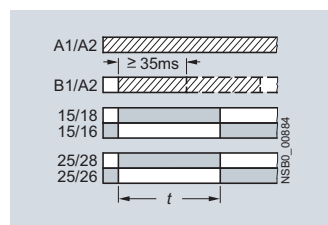
B¹⁾
7PV1508-1B
OFF-delay with control signal



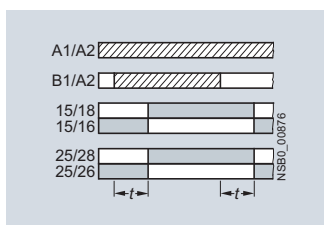
C
7PV1508-1B
Flashing, starting with interval
(pulse/interval 1:1)



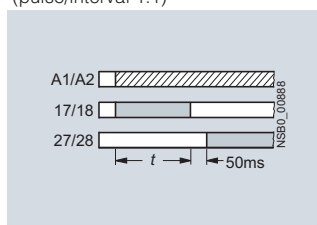
D
7PV1508-1B
Passing make contact



F¹⁾
7PV1508-1B
Pulse-forming with control signal
(pulse generation at the output does
not depend on duration of
energizing)

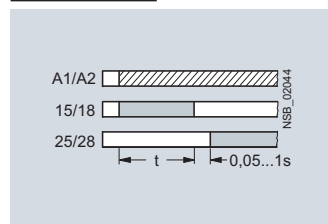


H¹⁾
7PV1508-1B
ON-delay and OFF-delay
with control signal



I
7PV1508-1B
Fixed pulse after ON-delay

2 NO contacts



--
7PV1578
Wye-delta function²⁾

Legend

A ... D, F, H, I Identification letters for 7PV1508

▨ Timing relay energized

■ Contact closed

□ Contact open

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

²⁾ With 7PV1578 the contacts 16 and 26 are not needed for the wye-delta function.

Note:

With the 7PV1508-1B multifunctional relay the identification letters A to D, F, H, I are printed on the front alongside the rotary selector switch of the unit. The related function can be found in the form of a bar graph on the side of the device.

Timing Relays

7PV15 timing relays in enclosure, 17.5 mm

Selection and ordering data

						
7PV1508-1AW30	7PV1512-1AP30	7PV1518-1AW30	7PV1538-1AW30	7PV1540-1AW30	7PV1558-1AW30	7PV1578-1BW30
Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*
		50/60 Hz AC V	DC V	Article No.	Price per PU	
7PV1508 timing relays, multifunction, 7 time setting ranges						
The functions can be adjusted by means of rotary switches. The same potential must be applied to terminals A. and B.						
With LED and 1 CO contact, 7 functions	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s	12 ... 240	12 ... 240	▶ 7PV1508-1AW30	1	1 unit
With LED and 2 CO contacts, 7 functions	30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶ 7PV1508-1BW30	1	1 unit
7PV151. timing relays, ON-delay, 1 time setting range						
With LED and 1 CO contact	0.05 ... 1 s	24/200 ... 240	24	▶ 7PV1511-1AP30	1	1 unit
	0.5 ... 10 s	24/100 ... 127	24	▶ 7PV1512-1AQ30	1	1 unit
		24/200 ... 240	24	▶ 7PV1512-1AP30	1	1 unit
	5 ... 100 s	24/100 ... 127	24	▶ 7PV1513-1AQ30	1	1 unit
		24/200 ... 240	24	▶ 7PV1513-1AP30	1	1 unit
7PV1518 timing relays, ON-delay, 7 time setting ranges						
With LED and 1 CO contact	0.05 ... 1 s	12 ... 240	12 ... 240	▶ 7PV1518-1AW30	1	1 unit
	0.5 ... 10 s	90 ... 127	90 ... 127	▶ 7PV1518-1AJ30	1	1 unit
	5 ... 100 s	180 ... 240	180 ... 240	▶ 7PV1518-1AN30	1	1 unit
	30 s ... 10 min					
	3 min ... 1 h					
	30 min ... 10 h					
	5 ... 100 h					
7PV1538 timing relays, OFF-delay, with control signal, 7 time setting range						
With LED and 1 CO contact	0.05 ... 1 s	12 ... 240	12 ... 240	▶ 7PV1538-1AW30	1	1 unit
	0.5 ... 10 s					
	5 ... 100 s					
	30 s ... 10 min					
	3 min ... 1 h					
	30 min ... 10 h					
	5 ... 100 h					
7PV1540 timing relays, OFF-delay, without control signal, 7 time setting ranges						
With LED and 1 CO contact	0.05 ... 1 s	12 ... 240	12 ... 240	▶ 7PV1540-1AW30	1	1 unit
	0.15 ... 3 s					
	0.3 ... 6 s					
	0.5 ... 10 s					
	1.5 ... 30 s					
	3 ... 60 s					
	5 ... 100 s					
7PV1558 timing relays, clock-pulse relay, 7 time setting ranges						
With LED and 1 CO contact	0.05 ... 1 s	12 ... 240	12 ... 240	▶ 7PV1558-1AW30	1	1 unit
	0.5 ... 10 s					
	5 ... 100 s					
	30 s ... 10 min					
	3 min ... 1 h					
	30 min ... 10 h					
	5 ... 100 h					
7PV1578 timing relays, wye-delta function, 7 time setting ranges						
With LED and 2 NO contacts, dead interval 0.05 ... 1 s adjustable	0.05 ... 1 s	12 ... 240	12 ... 240	▶ 7PV1578-1BW30	1	1 unit
	0.5 ... 10 s					
	5 ... 100 s					
	30 s ... 10 min					
	3 min ... 1 h					
	30 min ... 10 h					
	5 ... 100 h					

Overview



SIRIUS 3UG5 monitoring relays

More information

Homepage, see www.siemens.com/sirius-monitoring-relays
 SiePortal, see www.siemens.com/product?3UG5
 TIA Selection Tool Cloud (TST Cloud), see www.siemens.com/tstcloud/?node=SIRIUSRelais
 Conversion tool, see www.siemens.com/conversion-tool

The SIRIUS 3UG5 monitoring relays for electrical and mechanical quantities enable constant monitoring of all important characteristic quantities that provide information about the reliability performance of the plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected. Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components as well as alerting (e.g. by switching a warning lamp).

Thanks to adjustable delay times the monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes. This avoids unnecessary alarms and disconnections while enhancing plant availability.

The individual 3UG5 monitoring relays offer the following functions in various combinations:

- Undershooting and/or overshooting of limit values for voltage for 1-phase monitoring
- Undershooting and/or overshooting of the frequency
- Power monitoring
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of power factor limit values
- Monitoring of the active current or the apparent current
- Monitoring of the residual current
- Undershooting and/or overshooting of the liquid level
- Undershooting and/or overshooting of limit values for speed

The device family comprises devices with fixed function, analogically adjustable and digitally adjustable devices that can be parameterized using an intuitive LC display. There are further variants with Bluetooth, a Safety version or IO-Link.

Note:

The SIRIUS 3UG5 relays supersede the predecessor 3UG4. Exception: 3UG4 insulation monitoring relays, see page 10/116.

Devices with fixed function or analogically adjustable devices

SIRIUS 3UG5512 and 3UG5514 relays

In addition to devices with a fixed function, such as 3UG5511 and 3UG5512, there are analogically adjustable devices, such as 3UG5514, whose parameters are set using potentiometers.

Digitally adjustable devices

SIRIUS 3UG5616 relays

Using the display, the digitally adjustable relays, such as SIRIUS 3UG5616 or 3UG5618, can be simply and intuitively parameterized via a menu and four buttons.

Devices with Bluetooth



Parameter assignment via Bluetooth with SENTRON Powerconfig app

The 3UG5716 and 3UG5742 relays can also be supplied with Bluetooth. They can be easily parameterized using a smartphone with the SENTRON Powerconfig app. This provides a clearer way of setting the parameters. It is also possible to transfer parameter assignments already made to several devices.

Devices in the Safety version

Selected devices are available with Safety certification up to SIL 1/PL c according to IEC 62061/IEC 61508 or ISO 13849-1.

Digitally adjustable devices for IO-Link



SIRIUS 3UG5816 relay for IO-Link

Most functions are available as versions for IO-Link. This enables simple connection to the controller and use of the measured values of the device, for example, for maintenance.

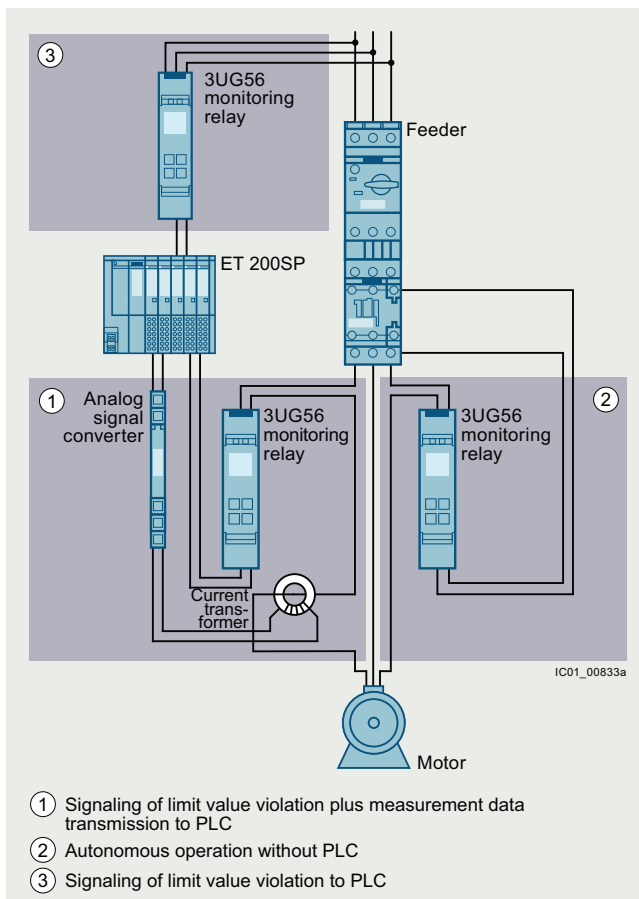
Notes:

The IO-Link devices can be reset on the display or via IO-Link.

More information on IO-Link, [see page 2/88 onwards](#).

Monitoring Relays For Stand-alone Installation

3UG5 General data



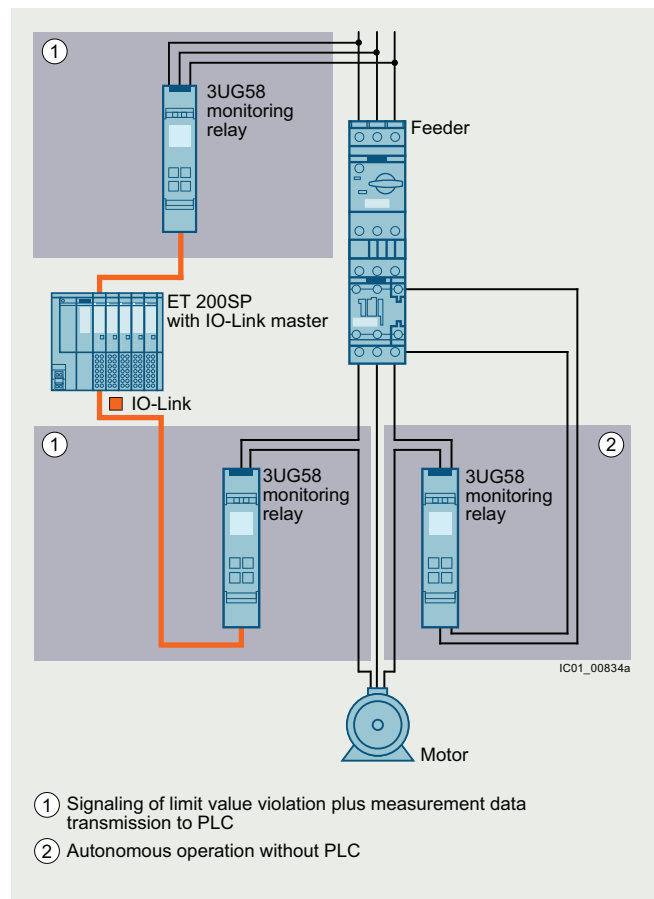
Use of conventional monitoring relays

Notes:

Devices required for communication via IO-Link:

- Any controller that supports IO-Link (e.g. ET 200SP with CPU or S7-1200), [see Catalog ST 70](#).
- IO-Link master (e.g. CM 4xIO-Link for SIMATIC ET 200SP, [see page 2/99](#) or SM 1278 for S7-1200, [see page 2/98](#)).

Each monitoring relay requires an IO-Link channel.



Monitoring relays for IO-Link

Notes on security:

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens products and solutions represent one component of such a concept.

For more information on industrial cybersecurity, [see www.siemens.com/cybersecurity-industry](http://www.siemens.com/cybersecurity-industry).

Article number scheme

Product versions		Article number	
Monitoring relays		3UG5 □ □ □ – □ □ □ □ 0	
Type of setting	e.g. 5 = digitally adjustable	□	
Functions	e.g. 33 = voltage monitoring	□ □	
Connection type	Screw terminals		1
	Spring-loaded terminals (push-in)		2
Contacts	e.g. A = 1 CO contact	□	
Supply voltage	e.g. L3 = 24 ... 240 V AC/DC		□ □
Example		3UG5 5 3 3 – 1 A L 3 0	

Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

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

Monitoring Relays For Stand-alone Installation

3UG5 General data

Benefits

- Configurable monitoring functions, delay times, RESET response, etc.
- Versions for IO-Link and Bluetooth
- Safety versions
- Reduced stock-keeping thanks to minimized variance and large measuring ranges
- Wide-voltage power supply units for global applicability
- Reliable system diagnostics thanks to actual value display and connectable fault storage
- Fast commissioning thanks to menu-guided parameterization and actual value display for limit value determination
- Reduced space requirement in the control cabinet thanks to a consistent width of 22.5 mm
- Customary screw and spring-loaded terminals (push-in) for quick and reliable wiring
- Device replacement without renewed wiring thanks to removable terminals

Application

The SIRIUS 3UG5 monitoring relays monitor the most diverse electrical and mechanical quantities in the feeder, and provide reliable protection against damage in the plant. For this purpose, they offer freely configurable limit values and diverse options for adapting to the respective task, and in the event of a fault, they provide clear diagnostics information.

The digitally adjustable products also display the current measured values direct on the device. This not only facilitates the display of valuable plant status information during operation, it also enables adjustment of the monitored limit values in accordance with the actual conditions.

The positive result: More selective avoidance of production faults – sustained increases in availability and productivity.

The 3UG5 monitoring relays are available for the following applications:

- Line monitoring
- 1-phase voltage monitoring
- 1-phase current monitoring or power factor and active current monitoring
- Load monitoring
- Residual current monitoring
- Level monitoring
- Speed monitoring

Selected devices are approved for applications up to SIL 1 according to IEC 62061/IEC 61508 or PL c according to ISO 13849-1.

Monitoring Relays For Stand-alone Installation

3UG5 Line monitoring

Overview



SIRIUS 3UG5 line monitoring relays



Video: Line monitoring relays SIRIUS 3UG5 - Detecting and signalling network and voltage faults in time

Electronic line monitoring relays provide maximum protection for mobile machines and plants or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

The device family comprises devices with fixed or analogically adjustable functions and digitally adjustable devices that can be parameterized using an intuitive LC display. The 3UG5816 device is available as a version for IO-Link. The 3UG5716 relay is digitally adjustable with Bluetooth. It can be parameterized via a menu and four buttons or via the Powerconfig app.

Application	Line monitoring relay						
	3UG5 511	3UG5 512	3UG5 514	3UG5 616	3UG5 618	3UG5 716	3UG5 816
Phase sequence	✓						
Phase failure	--	✓					
Phase asymmetry	--	✓ (fixed)	✓				
Undervoltage	--		✓				
Overvoltage	--			✓			
Frequency	--			✓			
N conductor failure	--			✓			
Correction of the direction of rotation	--				✓	--	
SIL 1/PL c	--	✓	--		✓	--	
IO-Link	--						✓
Bluetooth	--					✓	--

✓ Available

-- Not available

Depending on the version, the relays monitor phase sequence, phase failure with and without N conductor monitoring, phase asymmetry, frequency, undervoltage or overvoltage.

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

With the SIRIUS 3UG5618 line monitoring relay, a wrong direction of rotation can be corrected automatically.

The 3UG5512 and 3UG5618 devices are also available as versions with Safety certification up to SIL 1/PL c according to IEC 62061/IEC 61508 or ISO 13849-1.

The 3UG5511 and 3UG5512 devices have a fixed function. The 3UG5514 relays can be parameterized using a potentiometer.

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 overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Reduced stock-keeping and logistics thanks to heavily reduced device variance
- Permanent display of actual value and power system fault type in case of digital versions
- Automatic correction of the direction of rotation by distinguishing between power system faults and wrong phase sequence
- Devices with frequency monitoring
- Devices with Safety certification according to SIL 1/PL c
- Devices with Bluetooth
- Communication via IO-Link with SIRIUS 3UG5816 relay and display and transmission of actual value and power system fault type to controller
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

Application

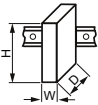
The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

Function	Application
Phase sequence	• Direction of rotation of the drive
Phase failure	• A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase asymmetry	• Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	• Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	• Protection of a plant against destruction due to overvoltage
Frequency	• Ensuring power quality • Deviation of speed affecting cycle times

Monitoring Relays For Stand-alone Installation

3UG5 Line monitoring

Technical specifications

More information	
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td	FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq
Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940	
Article number	3UG5511-.AR20, 3UG5511-.BR20, 3UG5512-.AR20, 3UG5512-.BR20 3UG5512-.AR21, 3UG5512-.BR21 3UG5514-.BR20 3UG5616-.CR20, 3UG5618-.CR20 3UG5618-.CR21 3UG5716-.CR20 3UG5816-.AA40
General technical specifications	
Width x height x depth	mm 22.5 x 100 x 90
	
Ambient temperature	
• During operation	°C -25 ... +60
• During storage	°C -40 ... +85
• During transport	°C -40 ... +85
Degree of protection IP	IP20
Mounting position	Any
Installation altitude at height above sea level, maximum	m 2 000
Electrical endurance (operating cycles) for AC-15 at 230 V typical	100 000
Mechanical endurance (operating cycles), typical	10 000 000
Adjustable ON-delay time	
• On starting	s --
• On upper or lower limit violation	s --
Performance Level (PL) according to ISO 13849-1	-- PL c -- PL c --
Safety Integrity Level (SIL) according to IEC 62061	-- SIL 1 -- SIL 1 --
Vibration resistance according to IEC 60068-2-6	Hz; mm 10 ... 55; 0.35
Shock resistance according to IEC 60068-2-27	g/ms Half-sine wave 15/11
Electromagnetic compatibility	IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Electrical separation between input and output	Yes
Type of electrical separation	Electrical separation Protective separation
Electromagnetic interference emission according to IEC 60947-1	Class A
IO-Link protocol is supported	No Yes
Type of interface Bluetooth	No Yes No
Measuring circuit	
Number of CO contacts with delayed switching	0 2 1
Control circuit	
Current-carrying capacity of the output relay	
• At AC-15 at 50/60 Hz at 250 V	A 3
• At DC-13	
- At 24 V	A 1
- At 125 V	A 0.2
- At 250 V	A 0.1
Thermal current of the non-solid-state contact blocks, maximum	A 5
Insulation voltage for overvoltage category III according to IEC 60664 for pollution degree 3	V 690
Impulse withstand voltage	kV 6
Control supply voltage	
• At AC	
- At 50 Hz	V 200 ... 690 120 ... 690 --
- At 60 Hz	V 200 ... 690 120 ... 690 --
• At DC	V -- 24

Monitoring Relays For Stand-alone Installation

3UG5 Line monitoring

Article number	3UG5511-.AR20, 3UG5511-.BR20, 3UG5512-.AR20, 3UG5512-.BR20		3UG5512-.AR21, 3UG5512-.BR21	3UG5514-.BR20	3UG5616-.CR20, 3UG5618-.CR20	3UG5618-.CR21	3UG5716-.CR20	3UG5816-.AA40
Control circuit (continued)								
Operating range factor of the control supply voltage, rated value at AC								
• At 50 Hz			0.85 ... 1.1					
• At 60 Hz			0.85 ... 1.1					
Measurable voltage at AC			V	160 ... 760		90 ... 760		
Supply voltage frequency			Hz	15 ... 70		--		
Adjustable open-/closed-circuit principle			No			Yes		
Contact reliability of the auxiliary contacts			One contact failure per 100 million (17 V, 5 mA)					

Article number	3UG551.-1....., 3UG561.-1....., 3UG571.-1....., 3UG581.-1.....		3UG551.-2....., 3UG561.-2....., 3UG571.-2....., 3UG581.-2.....
Type of electrical connection		Screw terminals	 Spring-loaded terminals (push-in)
Tightening torque	0.6 ... 0.8 Nm		--
Type of connectable conductor cross-sections			
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)		1 x (0.5 ... 4 mm ²)
• Finely stranded	--		1 x (0.5 ... 4 mm ²)
- Without end sleeves	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)		1 x (0.5 ... 2.5 mm ²)
- With end sleeves	--		1 x (0.5 ... 2.5 mm ²)
• For AWG cables	1 x (20 ... 12), 2 x (20 ... 14)		1 x (20 ... 12)
- Solid	--		1 x (20 ... 12)
- Stranded	--		1 x (20 ... 12)

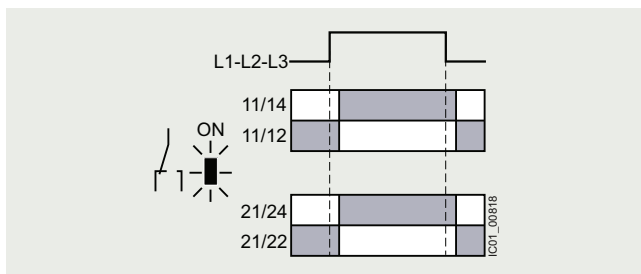
3UG5511 monitoring relays

The 3UG5511 phase sequence relay monitors the phase sequence in a 3-phase network. No adjustments are required for operation. The device has an internal power supply and works using the closed-circuit principle. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up after the corresponding response time and the green LED is lit. If the phase sequence is wrong, the output relay remains in its rest position.

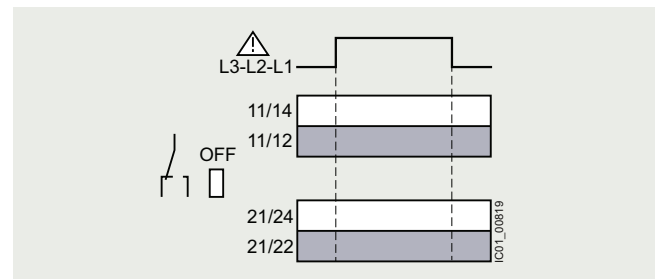
Note:

When one phase fails, connected loads (motor windings, lamps, transformers, coils, etc.) create a feedback voltage at the terminal of the failed phase due to the network coupling. Since the 3UG5511 relays are not resistant to voltage feedback, such a phase failure is not detected. If this is required, the 3UG5512 monitoring relay must be used.

Correct phase sequence



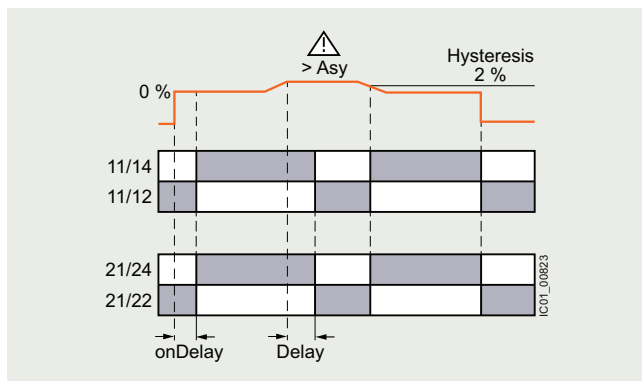
Wrong phase sequence



Monitoring Relays For Stand-alone Installation

3UG5 Line monitoring

Phase asymmetry



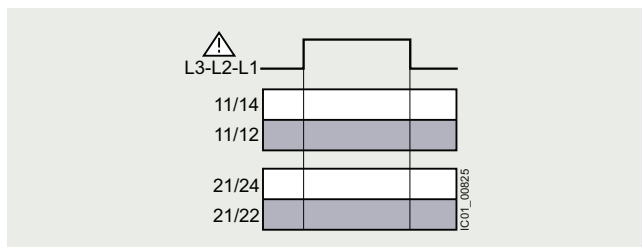
3UG5616 and 3UG5716 monitoring relays

The 3UG5616 or 3UG5716 line monitoring relay has a wide voltage range input and an internal power supply. The device is equipped with a display and is parameterized using four buttons. The 3UG5716 relay can be additionally configured via Bluetooth using the SENTRON Powerconfig app. The 3UG5616 or 3UG5716 relay monitors 3-phase networks for phase failure, undervoltage, overvoltage, frequency and phase sequence. The hysteresis is adjustable from 0.1 to 300 V. In addition the device has two separately adjustable delay times for overshooting and undershooting limits. If the direction of rotation is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 80%.

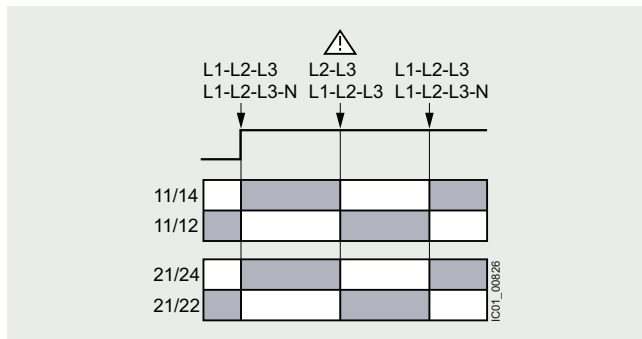
The 3UG5616 or 3UG5716 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or automatic RESET.

With the closed-circuit principle selected

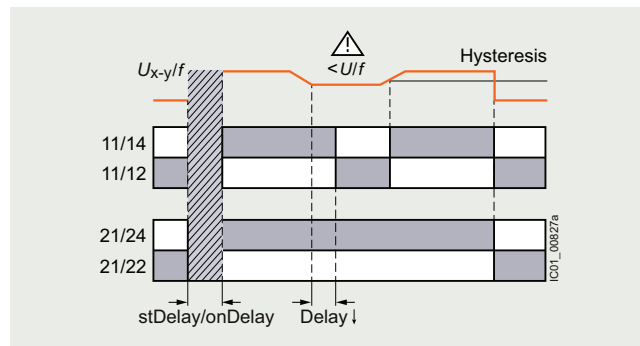
Wrong phase sequence



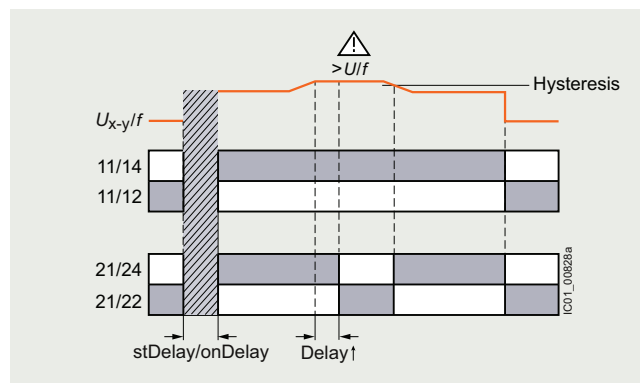
Phase failure



Undervoltage, frequency undershoot



Overvoltage, frequency overshoot



3UG5816 monitoring relays

The 3UG5816 line monitoring relays have a wide voltage range input and are supplied with power through IO-Link or from an external 24 V DC source.

The device is equipped with a display and is parameterized using four buttons. The 3UG5816 monitoring relay monitors a 3-phase network for phase sequence, phase failure, phase asymmetry, frequency, undervoltage and overvoltage. The hysteresis is adjustable from 0.1 to 300 V.

In addition the device has two separately adjustable delay times for overshooting and undershooting limits. If the direction of rotation is incorrect or a phase fails, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from and potentially high feedback through the load.

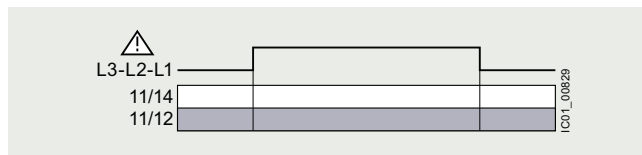
The 3UG5816 monitoring relays can be operated based on either the open-circuit or closed-circuit principle and with manual or automatic RESET.

Monitoring Relays For Stand-alone Installation

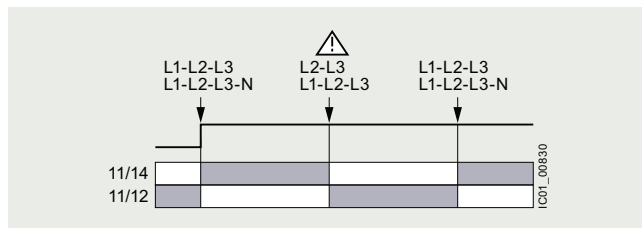
3UG5 Line monitoring

With the closed-circuit principle selected

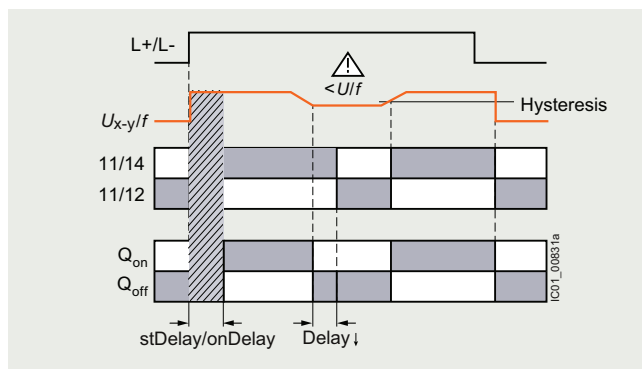
Wrong phase sequence



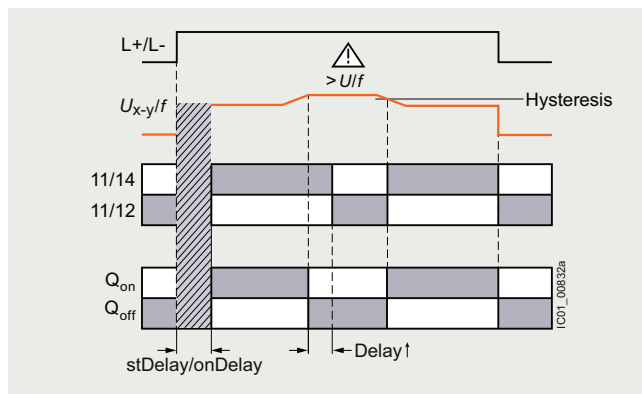
Phase failure



Undervoltage, frequency undershoot



Overvoltage, frequency overshoot



3UG5618 monitoring relays

The 3UG5618 line monitoring relay has an internal power supply and can automatically correct a wrong direction of rotation. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 80%.

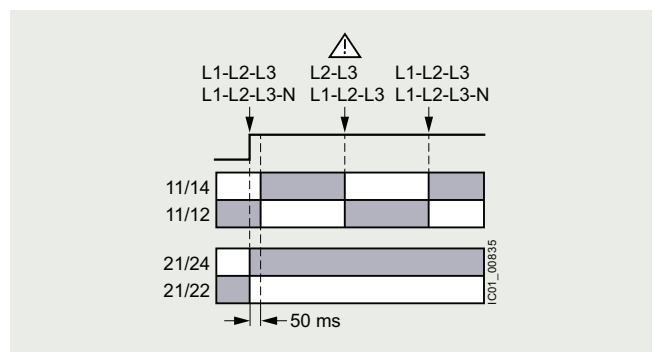
The device is equipped with a display and is parameterized using three buttons. It monitors 3-phase networks for phase sequence, phase failure, phase asymmetry, frequency, undervoltage and overvoltage. The hysteresis is adjustable from 0.1 to 300 V.

In addition the device has two separately adjustable delay times for overshooting and undershooting limits. The monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or automatic RESET.

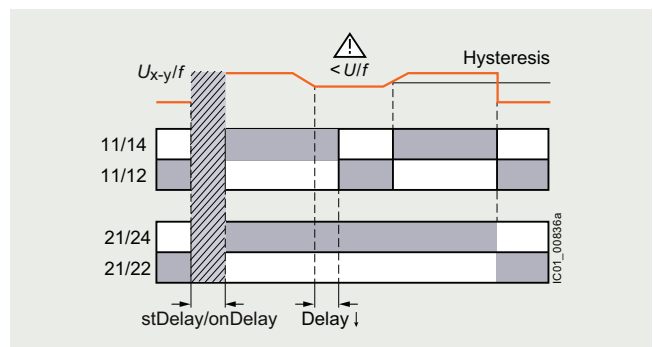
One of the CO contacts is used for warning or disconnection in the event of power system faults (voltage, frequency, asymmetry), the other one responds only to a wrong phase sequence. In conjunction with a contactor reversing assembly it is thus possible to change the direction of rotation automatically. The device is also available as a version with SIL 1/PL c certification.

With the closed-circuit principle selected

Phase failure



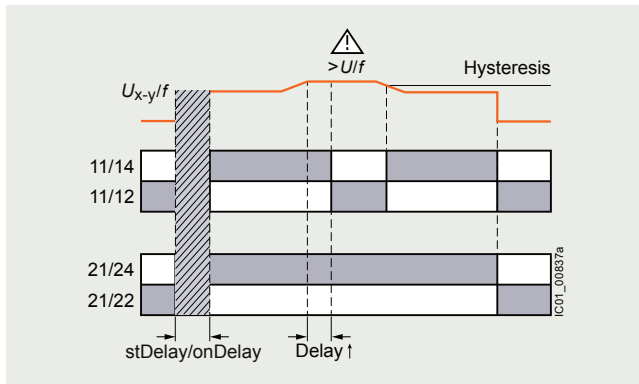
Undervoltage, frequency undershoot



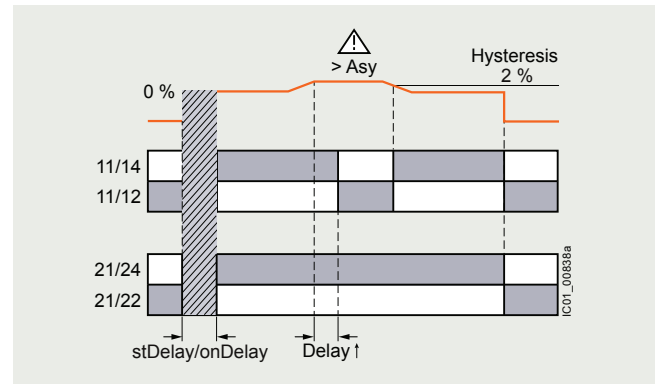
Monitoring Relays For Stand-alone Installation

3UG5 Line monitoring

Overvoltage, frequency overshoot



Phase asymmetry



Selection and ordering data

PE (UNIT, SZ, M) = 1, PS* = 1 unit, PG = 41H

Multi-unit packaging,
see page 16/7.

3UG5511-2AR20



3UG5514-2BR20



3UG5816-2AA40

Phase failure detection	Undervoltage detection in 3 phases	Overvoltage detection in 3 phases	Frequency measurement	Adjustable ON-delay time	Number of CO contacts with delayed switching	Screw terminals	Spring-loaded terminals (push-in)
				on starting	on upper or lower limit violation		
				s	s	Article No.	Article No.
						Price per PU	Price per PU

Line monitoring relays with fixed function

Monitoring of phase sequence

--	--	--	--	--	--	0	3UG5511-1AR20	3UG5511-2AR20
						0	3UG5511-1BR20	3UG5511-2BR20

Monitoring of phase sequence, phase failure, and phase asymmetry

✓	--	--	--	--	--	0	3UG5512-1AR20	3UG5512-2AR20
						0	3UG5512-1BR20	3UG5512-2BR20

• For safety applications

✓	--	--	--	--	--	0	3UG5512-1AR21	3UG5512-2AR21
						0	3UG5512-1BR21	3UG5512-2BR21

Analogically adjustable line monitoring relays

Monitoring of phase sequence, phase failure, phase asymmetry, and undervoltage

✓	✓	--	--	--	0.1 ... 20	2	3UG5514-1BR20	3UG5514-2BR20
---	---	----	----	----	------------	---	---------------	---------------

Digitally adjustable line monitoring relays

Monitoring of phase sequence, phase failure, phase asymmetry, N conductor (adjustable), frequency, undervoltage and overvoltage

✓	✓	✓	✓	0.1 ... 30	0.1 ... 30	2	3UG5616-1CR20	3UG5616-2CR20
---	---	---	---	------------	------------	---	---------------	---------------

• With Bluetooth

✓	✓	✓	✓	0.1 ... 30	0.1 ... 30	2 NEW	3UG5716-1CR20	3UG5716-2CR20
---	---	---	---	------------	------------	--------------	---------------	---------------

• For IO-Link

✓	✓	✓	✓	0.1 ... 30	0.1 ... 30	1	3UG5816-1AA40	3UG5816-2AA40
---	---	---	---	------------	------------	---	---------------	---------------

Automatic correction of direction of rotation in case of wrong phase sequence, monitoring of phase failure, phase asymmetry, N conductor (adjustable), frequency, undervoltage and overvoltage

✓	✓	✓	✓	0.1 ... 30	0.1 ... 30	2	3UG5618-1CR20	3UG5618-2CR20
---	---	---	---	------------	------------	---	---------------	---------------

• For safety applications

✓	✓	✓	✓	0.1 ... 30	0.1 ... 30	2	3UG5618-1CR21	3UG5618-2CR21
---	---	---	---	------------	------------	---	---------------	---------------

✓ Function available -- Function not available

Accessories, see page 10/115.

Monitoring Relays For Stand-alone Installation

3UG5 Voltage monitoring **NEW****Overview**

SIRIUS 3UG5532 monitoring relays

The analogically adjustable relays monitor 1-phase AC voltages (rms value) and DC voltages against the set threshold value for overshoot and undershoot. The devices differ with regard to their power supply (internal or external).

Note:

Digital monitoring relay with voltage monitoring, [see page 10/90](#).

Benefits

- All versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

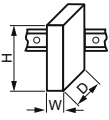
Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 to 10 V

Monitoring Relays For Stand-alone Installation

3UG5 Voltage monitoring **NEW**

Technical specifications

More information			
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td		Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq	
Article number		3UG5532-AW30	3UG5533-AL30
General data			
Width x height x depth	 mm	22.5 x 100 x 90	
Ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
• During transport		°C	-40 ... +80
Degree of protection IP		IP20	
Mounting position		Any	
Installation altitude at height above sea level, maximum		m	2 000
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000	
Mechanical endurance (operating cycles), typical		10 000 000	
Adjustable ON-delay time on upper or lower limit violation		s	0.5 ... 30
Vibration resistance according to IEC 60068-2-6		$f = 4 \dots 5.81 \text{ Hz}$, $d_{\max} = 15 \text{ mm}$; $f = 5.81 \dots 500 \text{ Hz}$, $A_{\max} = 20 \text{ m/s}^2$; 10 cycles	
Shock resistance according to IEC 60068-2-27		g/ms	Half-sine wave 15/11
Electromagnetic compatibility		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4	
Electrical separation between input and output		Yes	
Type of electrical separation		Electrical separation	
Insulation voltage for overvoltage category III according to IEC 60664			
• For pollution degree 2		V	690
• For pollution degree 3		V	690
Impulse withstand voltage		kV	6
Measuring circuit			
Measurable voltage			
• At AC		V	10 ... 760
• At DC		V	10 ... 760
Adjustable voltage range		V	10 ... 760
Control circuit			
Thermal current of the non-solid-state contact blocks, maximum		A	5
Current-carrying capacity of the output relay			
• At AC-15 at 400 V at 50/60 Hz		A	3
• At DC-13			
- At 24 V		A	1
- At 125 V		A	0.2
- At 250 V		A	0.1
Operational current at 17 V, minimum		mA	5
Article number		3UG553.-1A.30	3UG553.-2A.30
Type of electrical connection		 Screw terminals	 Spring-loaded terminals (push-in)
Tightening torque		0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections			
• Solid		1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 4 mm ²)
• Finely stranded		--	1 x (0.5 ... 4 mm ²) 1 x (0.5 ... 2.5 mm ²)
- Without end sleeves		1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	
- With end sleeve			
• For AWG cables		1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Solid		--	1 x (20 ... 12)
- Stranded			

Monitoring Relays For Stand-alone Installation

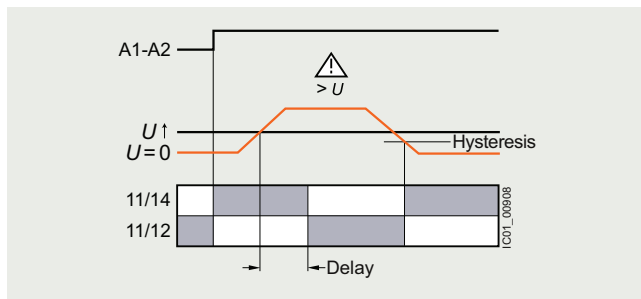
3UG5 Voltage monitoring **NEW****3UG5532 monitoring relays**

The externally powered 3UG5532 voltage monitoring relay performs overshoot, undershoot or range monitoring of the voltage depending on parameterization.

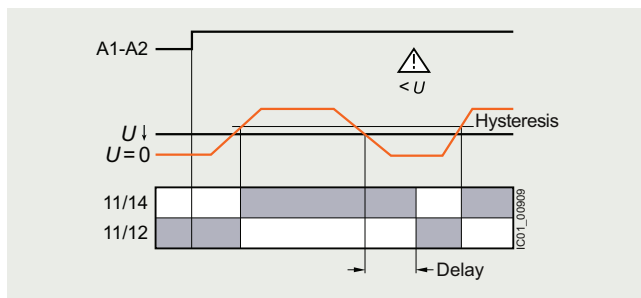
If one of these threshold values is reached, the output relay responds as soon as the delay time has elapsed. This delay time can be adjusted between 0.5 s and 30 s. The devices are parameterized using rotary switches.

The device works on the closed-circuit principle. One output changeover contact is available as signaling contact.

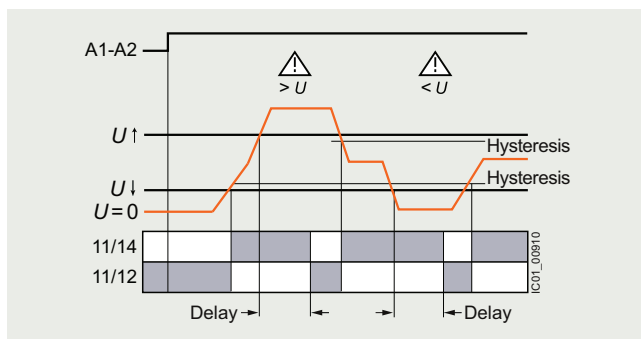
Overvoltage



Undervoltage



Range monitoring

**3UG5533 monitoring relays**

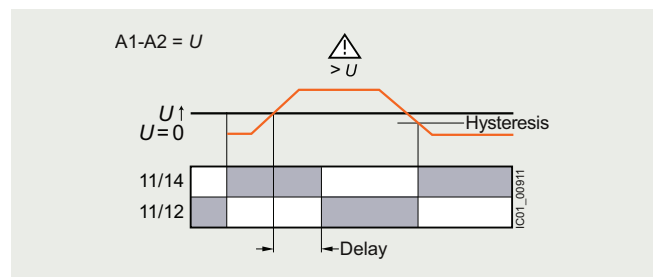
The analogically adjustable 3UG5533 voltage monitoring relay has an internal power supply and performs overshoot, undershoot or range monitoring of the voltage depending on parameterization.

The operating and measuring range extends from 20 to 275 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds as soon as the tripping delay time has elapsed. This delay time can be adjusted between 0.5 s and 30 s.

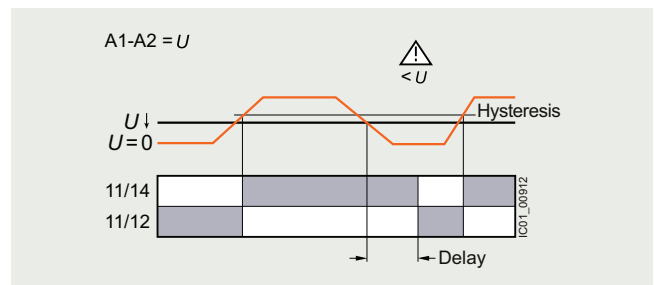
The device works on the closed-circuit principle. One output changeover contact is available as signaling contact.

Digital monitoring relay with voltage monitoring, [see page 10/90](#).

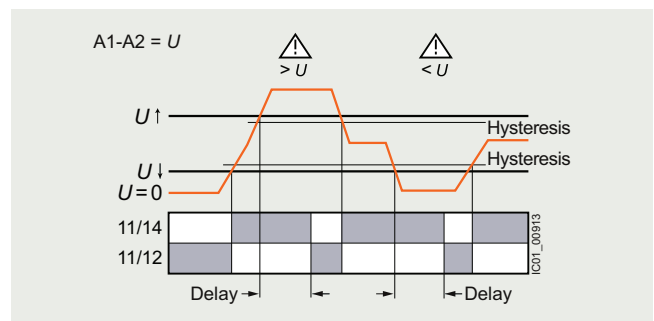
Overvoltage



Undervoltage



Range monitoring



Monitoring Relays For Stand-alone Installation

3UG5 Voltage monitoring

NEW

Selection and ordering data

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

Multi-unit packaging,
 see page 16/7.



3UG5532-1AW30



3UG5533-2AL30

Adjustable voltage range	Control supply voltage		Adjustable ON-delay time on upper or lower limit violation	Number of CO contacts with delayed switching	Screw terminals 	
	at AC at 50 Hz	at DC			Spring-loaded terminals (push-in) 	
V	V	V	s		Article No.	Price per PU

Analogically adjustable voltage monitoring relay

Monitoring of undervoltage and overvoltage, internally powered without auxiliary voltage

20 ... 275 AC/DC	24 ... 240	24 ... 240	0.5 ... 30	1
------------------	------------	------------	------------	---

3UG5533-1AL30

3UG5533-2AL30

Monitoring of undervoltage and overvoltage, externally powered with auxiliary voltage

10 ... 760 AC/DC	24 ... 240	24 ... 240	0.5 ... 30	1
------------------	------------	------------	------------	---

3UG5532-1AW30

3UG5532-2AW30

Accessories, see page 10/115.

Overview

SIRIUS 3UG5522 monitoring relays

The analogically adjustable relays monitor 1-phase AC (rms value) and DC currents against the set threshold value for overshoot and undershoot.

Note:

Digital monitoring relays with current monitoring, [see page 10/90](#).

Benefits

- Wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

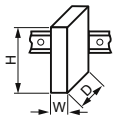
Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring

Monitoring Relays For Stand-alone Installation

3UG5 Current monitoring **NEW**

Technical specifications

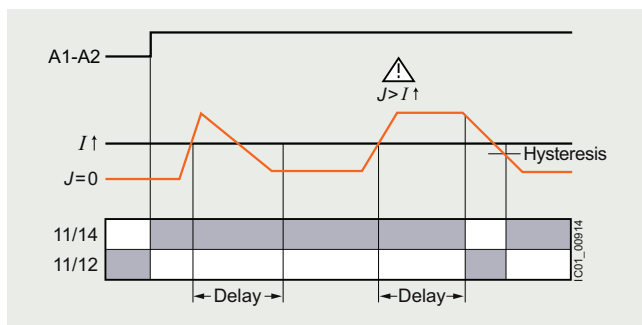
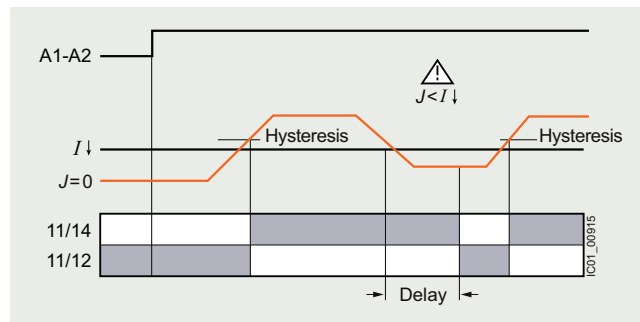
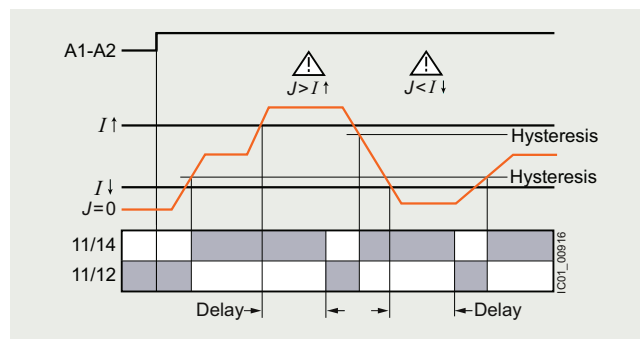
More information		
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td		Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq
Article number		3UG5522-AW30
General data		
Width x height x depth	 mm	22.5 x 100 x 90
Ambient temperature		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
• During transport	°C	-40 ... +80
Degree of protection IP		IP20
Mounting position		Any
Installation altitude at height above sea level, maximum		m 2 000
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000
Mechanical endurance (operating cycles), typical		10 000 000
Adjustable ON-delay time on upper or lower limit violation		s 0.5 ... 30
Vibration resistance according to IEC 60068-2-6		$f = 4 \dots 5.81 \text{ Hz}$, $d_{\text{max}} = 15 \text{ mm}$; $f = 5.81 \dots 500 \text{ Hz}$, $A_{\text{max}} = 20 \text{ m/s}^2$; 10 cycles
Shock resistance according to IEC 60068-2-27		g/ms Half-sine wave 15/11
Electromagnetic compatibility		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Electrical separation between input and output		Yes
Type of electrical separation		Electrical separation
Insulation voltage for overvoltage category III according to IEC 60664		
• For pollution degree 2	V	690
• For pollution degree 3	V	690
Impulse withstand voltage		kV 6
Measuring circuit		
Measurable current		A 0.05 ... 15
Control circuit		
Thermal current of the non-solid-state contact blocks, maximum		A 5
Current-carrying capacity of the output relay		
• At AC-15 at 400 V at 50/60 Hz	A	3
• At DC-13		
- At 24 V	A	1
- At 125 V	A	0.2
- At 250 V	A	0.1
Operational current at 17 V, minimum		A 5
Article number		3UG5522-1AW303UG5522-2AW30
Type of electrical connection	 Screw terminals	 Spring-loaded terminals (push-in)
Tightening torque	0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
• Finely stranded		
- Without end sleeves	--	1 x (0.5 ... 4 mm ²)
- With end sleeve	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
• For AWG cables		
- Solid	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Stranded	--	1 x (20 ... 12)

Monitoring Relays For Stand-alone Installation

3UG5 Current monitoring **NEW****3UG5522 monitoring relays**

The 3UG5522 current monitoring relay is supplied with an auxiliary voltage of 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the current depending on parameterization. The device is parameterized using three rotary switches and has a changeover contact.

The measuring range extends from 0.05 to 10 A. The rms value of the current is measured. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds as soon as the tripping delay time has elapsed. This time can be adjusted between 0.5 s and 30 s. The device works on the closed-circuit principle.

Current overshoot**Current undershoot****Range monitoring****Selection and ordering data**

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

Multi-unit packaging,
see page 16/7.



3UG5522-1AW30



3UG5522-2AW30

Measurable current	Control supply voltage		Adjustable ON-delay time on upper or lower limit violation	Number of CO contacts with delayed switching	Screw terminals	Spring-loaded terminals (push-in)
	at AC at 50 Hz	at DC				
A	V	V	s		Article No.	Article No.
					Price per PU	Price per PU

Analogically adjustable current monitoring relays**Monitoring of undercurrent and overcurrent, externally powered with auxiliary voltage**

0.05 ... 15 24 ... 240 24 ... 240 0.5 ... 30 1

3UG5522-1AW30**3UG5522-2AW30**

Accessories, see page 10/115.

For AC currents $I > 10$ A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10.

Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

Overview



SIRIUS 3UG5643 monitoring relays

With the 3UG5 current, active current, voltage, power factor and power monitoring relay, it is possible to perform load monitoring of motors.

The 3UG5742 relay can be conveniently, easily and clearly parameterized on a smartphone using the SENTRON Powerconfig app. The current values can also be displayed.

The 3UG5842 relay can be parameterized via IO-Link using a PC. By connection to the controller, the values of the device can be used for ongoing operation or for maintenance.

The 3UG5642 relay is available as a version with SIL 1/PL c.

Benefits

- Can be used worldwide thanks to wide voltage range from 90 to 690 V
- Monitoring of even small 1-phase motors with a no-load current below 0.5 A
- Simple determination of threshold values by directly referencing measured variables to motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Selectable device function: Current, voltage, power factor (I_{res}) and power
- Devices with Safety certification according to SIL 1/PL c
- Devices with Bluetooth
- Communication via IO-Link with the SIRIUS 3UG5842 relay and display and transmission of actual values and diagnostics to the controller
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

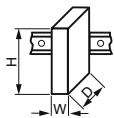
Application

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

Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

Technical specifications

More information					
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td			Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq		
Type	3UG5642-.CW30 3UG5642-.CW31 3UG5643-.CS20 3UG5742-.CW30 3UG5842-.AA40				
General data					
Width x height x depth		mm	22.5 x 100 x 90		
Ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
• During transport		°C	-40 ... +80		
Degree of protection IP			IP20		
Mounting position			Any		
Installation altitude at height above sea level, maximum	m		2 000		
Electrical endurance (operating cycles) for AC-15 at 230 V typical			100 000		
Mechanical endurance (operating cycles), typical			10 000 000		
Adjustable ON-delay time					
• On starting	s		0 ... 999.9		
• On upper or lower limit violation	s		0 ... 999.9		
Safety Integrity Level (SIL) according to IEC 62061		--	SIL 1	--	
Performance Level (PL) according to ISO 13849-1		--	PL c	--	
Vibration resistance according to IEC 60068-2-6			$f = 4 \dots 5.81 \text{ Hz}$, $d_{\text{max}} = 15 \text{ mm}$; $f = 5.81 \dots 500 \text{ Hz}$, $A_{\text{max}} = 20 \text{ m/s}^2$; 10 cycles		
Shock resistance according to IEC 60068-2-27	g/ms		Half-sine wave 15/11		
Electromagnetic compatibility			IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4		
Electrical separation between input and output			Yes		
Insulation voltage for overvoltage category III according to IEC 60664					
• For pollution degree 2	V		690		
• For pollution degree 3	V		690		
Impulse withstand voltage	kV		6		
Type of interface Bluetooth		--		Yes	--
IO-Link protocol is supported		--			Yes
Measuring circuit					
Adjustable current response value					
• 1	A		0.003 ... 15	0.05 ... 15	0.003 ... 15
• 2	A		0.003 ... 15	0.05 ... 15	0.003 ... 15
Measurable voltage					
• At AC	V		0.1 ... 760	76 ... 760	0.1 ... 760
Type of voltage for monitoring	V		AC/DC	AC	AC/DC
Control circuit					
Number of CO contacts with delayed switching		2			1
Thermal current of the non-solid-state contact blocks, A maximum	A		5		
Current-carrying capacity of the output relay					
• At AC-15 at 400 V at 50/60 Hz	A		3		
• At DC-13					
- At 24 V	A		1		
- At 125 V	A		0.2		
- At 250 V	A		0.1		
Operational current at 17 V, minimum	mA		5		

Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

Article number	3UG5642-1...., 3UG5643-1...., 3UG5742-1...., 3UG5842-1....	3UG5642-2...., 3UG5643-2...., 3UG5742-2...., 3UG5842-2....
Type of electrical connection	 Screw terminals	 Spring-loaded terminals (push-in)
Tightening torque	0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 4 mm ²)
• Finely stranded	--	1 x (0.5 ... 4 mm ²)
- Without end sleeves	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
- With end sleeve	--	--
• For AWG cables		
- Solid	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Stranded	--	1 x (20 ... 12)

3UG5642, 3UG5643, and 3UG5742 monitoring relays

The 3UG5642 and 3UG5742 monitoring relays are supplied with an auxiliary voltage of 24 to 240 V AC/DC. The 3UG5643 monitoring relay has an internal power supply.

The 3UG56 and 3UG57 relays have a display and are parameterized with four buttons.

The 3UG5742 monitoring relay can be additionally configured via Bluetooth using the SENTRON Powerconfig app, [see page 10/73](#).

Depending on the function selected, the devices are used for 1-phase monitoring of voltage, active and apparent current, active and apparent power, power factor and frequency for overshooting, undershooting or range monitoring.

If the load current overshoots the lower measuring range limit 0.05 A, the set ON-delay time begins (onDel). During this time, if the set limit values are undershot or exceeded, this does not lead to a relay reaction of the changeover contacts.

The set tripping delay time starts if one of the measured values overshoots or undershoots the corresponding set threshold value. After expiry of this time, the K1 and K2 output relays change the switching state, depending on the set relay switching response.

Using the "transformer transmission factor" parameter (I scale), the display can reproduce the measured primary current. The maximum primary current that can be measured is 9999 A.

To adapt the monitoring relay to different external circuit connections and applications, the device can be operated according to the open-circuit or closed-circuit principle.

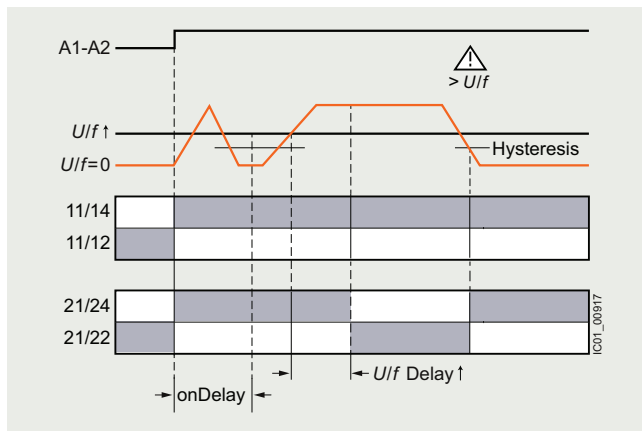
If manual RESET is selected in the menu, the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continue to be displayed, even when the measured variable reaches a permissible value again. This stored fault condition can be reset by pressing the Back key and confirming with the Enter key.

Monitoring Relays For Stand-alone Installation

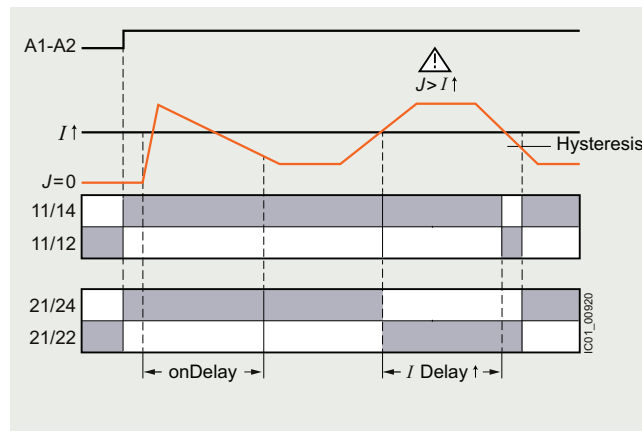
3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

With the closed-circuit principle selected

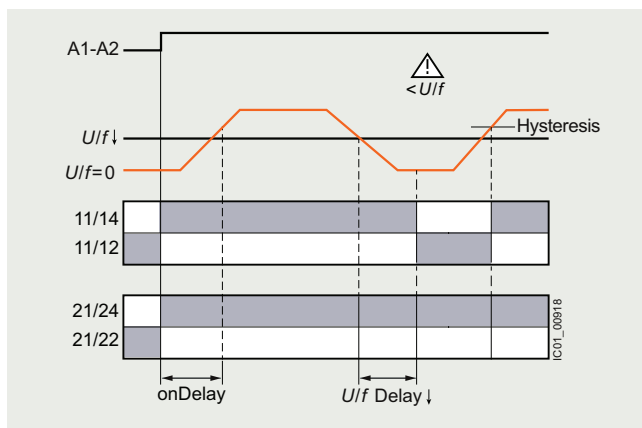
Overshooting of voltage or frequency



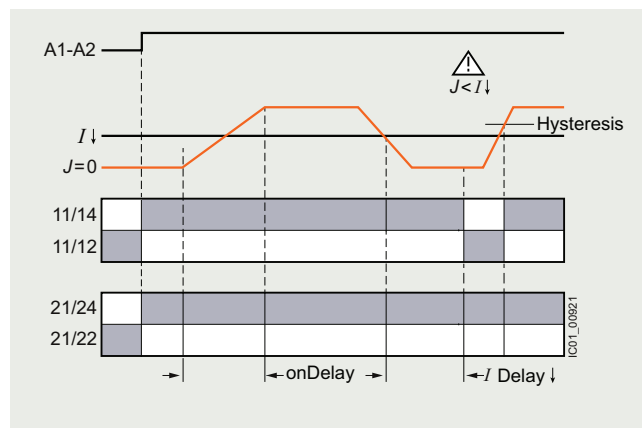
Overshooting of current



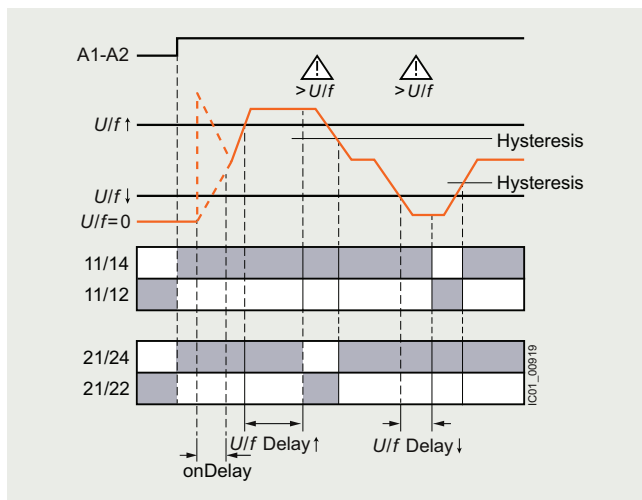
Undershooting of voltage or frequency



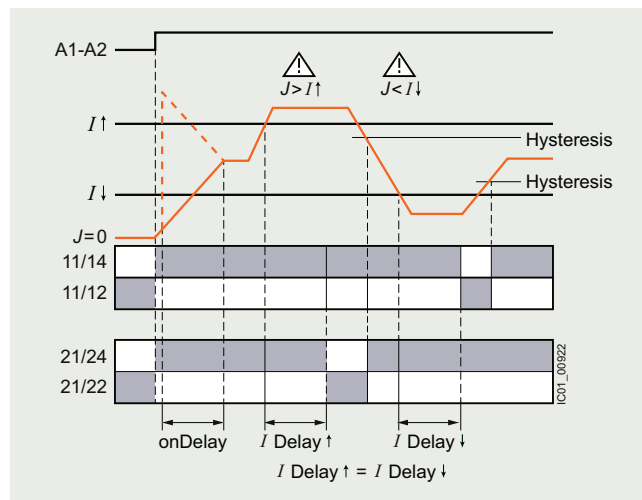
Undershooting of current



Range monitoring of voltage or frequency



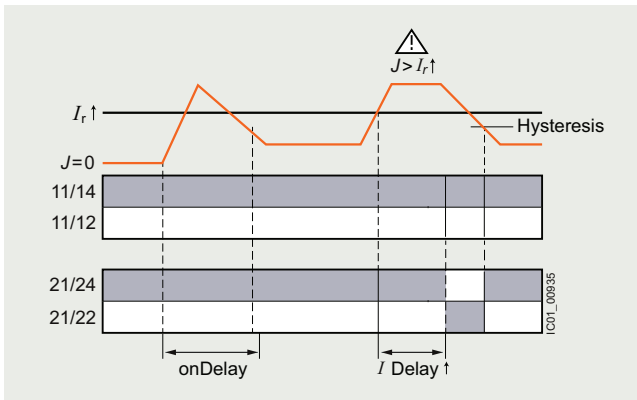
Range monitoring of current



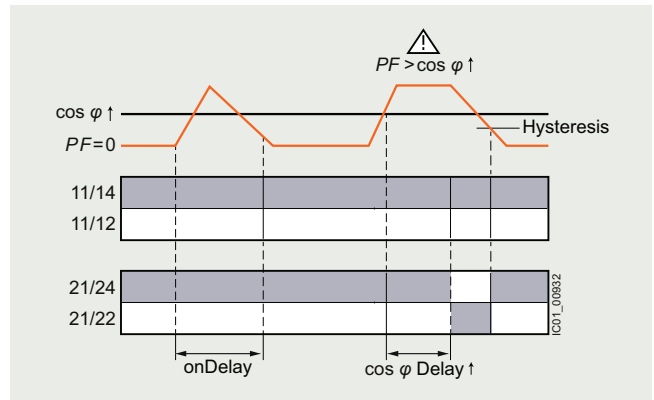
Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

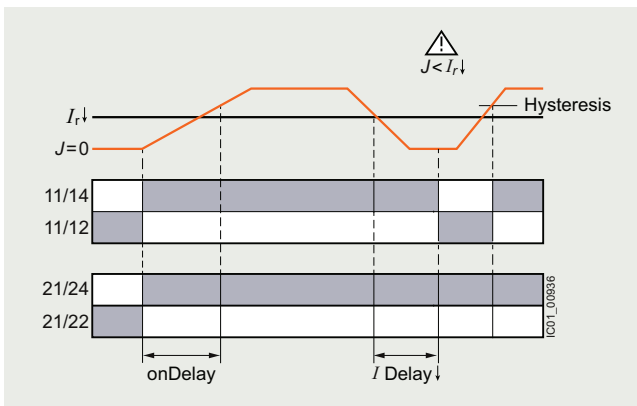
Overshooting of active current



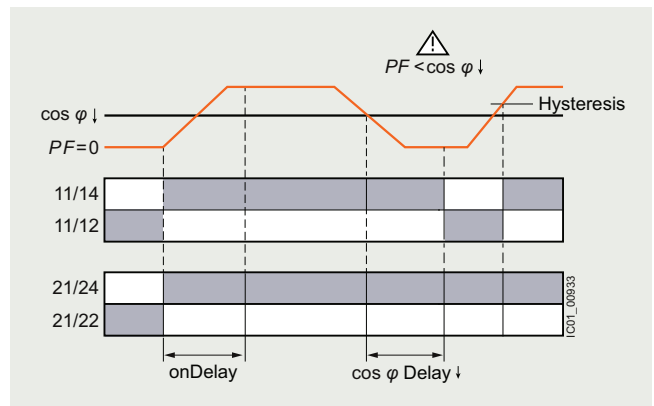
Overshooting of power factor



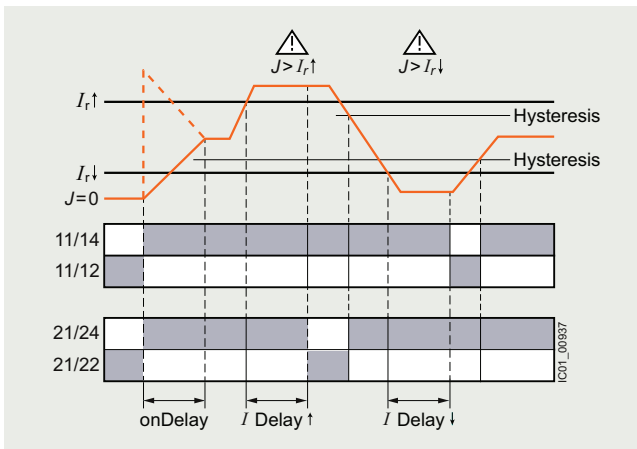
Undershooting of active current



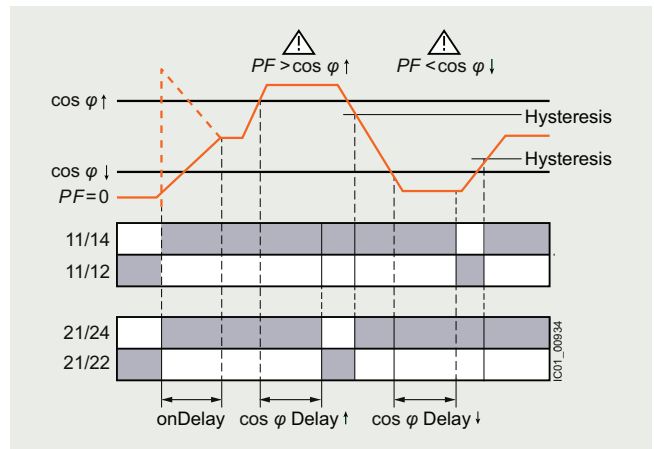
Undershooting of power factor



Range monitoring of active current



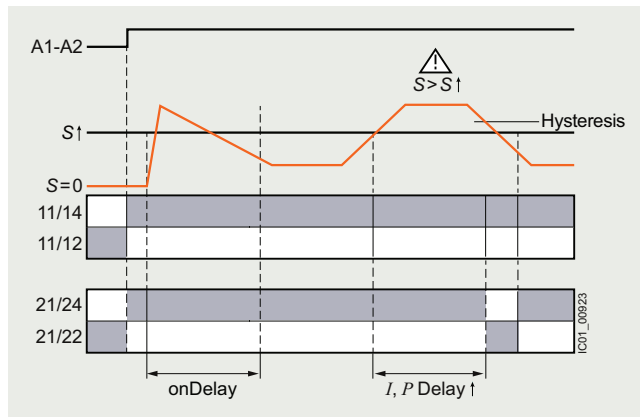
Range monitoring of power factor



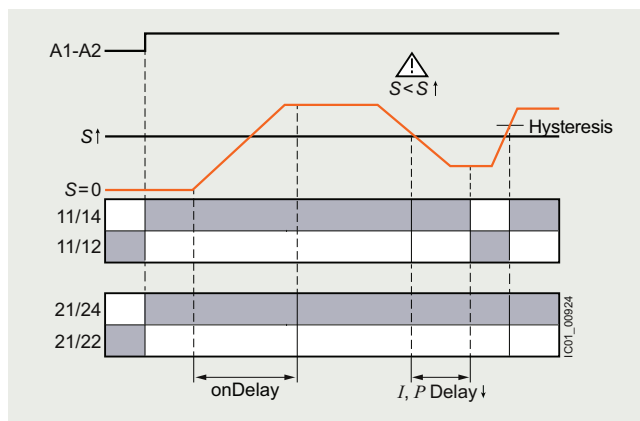
Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

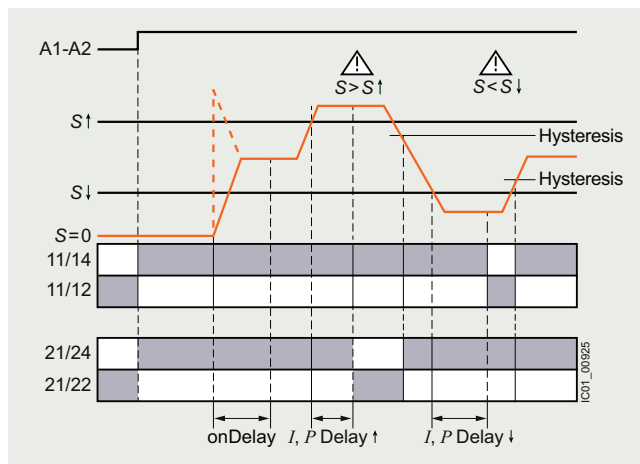
Overshooting of power



Undershooting of power



Range monitoring of power

**3UG5842 monitoring relays**

The 3UG5842 monitoring relay is supplied with an auxiliary voltage of 24 V DC and, depending on the function selected, the devices are used for 1-phase monitoring of voltage, active and apparent current, active and apparent power, power factor and frequency for overshooting, undershooting, or range monitoring.

The 3UG5842 relays have a display and are parameterized with four buttons.

If the supply voltage is switched on and no load current is flowing, the display indicates ---. If the load current overshoots the lower measuring range limit 0.05 A, the set ON-delay time begins (onDel). During this time, undershooting or overshooting of the set threshold values will not result in a relay response of the CO contact. The set tripping delay time starts if one of the measured values overshoots or undershoots the corresponding set threshold value.

After expiry of this time, the K1 output relay changes the switching state, depending on the set relay switching response. Using the "transformer transmission factor" parameter (I scale), the display and transmission of the measured values via IO-Link can reproduce the measured primary current. The maximum primary current that can be measured is 9999 A. To adapt the current monitoring relay to different external circuit connections and applications, the device can be operated according to the open-circuit or closed-circuit principle.

The 3UG5842 monitoring relays are equipped with a C/Q connection to IO-Link. If the IO-Link connection is not used for communication via IO-Link, the 3UG5842 relays for IO-Link operate in standard I/O mode (SIO mode). In this mode, the C/Q terminal is used as a semiconductor output that switches when the warning threshold for undershoot or overshoot is violated.

- Qoff: 24 V DC supply voltage present.
- Qon: The output has a high resistance.

Note:

For function diagrams of the 3UG5842 devices, see [Manual](#).

Monitoring Relays For Stand-alone Installation

3UG5 Current, active current, voltage, power factor, and power monitoring **NEW**

Selection and ordering data

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

Multi-unit packaging,
 see page 16/7.



3UG5642-1CW30



3UG5643-2CS20

Measurable current	Control supply voltage	Number of CO contacts with delayed switching	Screw terminals	Spring-loaded terminals (push-in)
A	V		Article No.	Price per PU
			Article No.	Price per PU

Digitally adjustable monitoring relay

Monitoring of current, active current, voltage, power factor and power, internally powered without auxiliary voltage

0.05 ... 15	90 ... 690 AC	2	3UG5643-1CS20	3UG5643-2CS20
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Monitoring of current, active current, voltage, power factor and power, externally powered with auxiliary voltage

0.003 ... 15	24 ... 240 AC/DC	2	3UG5642-1CW30	3UG5642-2CW30
• For safety applications				
0.003 ... 15	24 ... 240 AC/DC	2	3UG5642-1CW31	3UG5642-2CW31
• With Bluetooth				
0.003 ... 15	24 ... 240 AC/DC	2	3UG5742-1CW30	3UG5742-2CW30
• For IO-Link				
0.003 ... 15	24 ... 24 DC	1	3UG5842-1AA40	3UG5842-2AA40

Accessories, see page 10/115.

For AC active currents $I_{res} > 10$ A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10.

Monitoring Relays For Stand-alone Installation

3UG5 Residual current monitoring > Residual current monitoring relays **NEW**

Overview



SIRIUS 3UG5625 monitoring relays

The 3UG5625 residual current monitoring relays are used in conjunction with the 3UL23 residual-current transformers for monitoring plants in which higher residual currents are increasingly expected due to ambient conditions.

Monitoring encompasses pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer, type A according to DIN VDE 0100-530/IEC TR 60755).

The 3UG5825 device is available as a version for IO-Link.

Benefits

- Worldwide use thanks to wide voltage range from 24 to 240 V AC/DC
- High measurement accuracy of 7.5%
- Permanent self-monitoring
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Permanent display of the actual value and fault diagnostics via the display
- High level of flexibility and space saving through installation of the transformer inside or outside the control cabinet
- Communication via IO-Link with the SIRIUS 3UG5825 relay as well as display and transmission of actual values and diagnostics to the controller
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

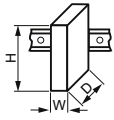
Application

Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads, or capacitive residual currents.

Monitoring Relays For Stand-alone Installation

3UG5 Residual current monitoring > Residual current monitoring relays **NEW**

Technical specifications

More information		
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td		Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq
Article number	3UG5625-.CW30	3UG5825-.AA40
General data		
Width x height x depth	 mm	22.5 x 100 x 90
Ambient temperature		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
• During transport	°C	-40 ... +80
Degree of protection IP		IP20
Mounting position		Any
Installation altitude at height above sea level, maximum	m	2 000
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000
Mechanical endurance (operating cycles), typical		10 000 000
Adjustable ON-delay time		
• On starting	s	0 ... 999.9
Vibration resistance according to IEC 60068-2-6		$f = 4 \dots 5.81 \text{ Hz}$, $d_{\text{max}} = 15 \text{ mm}$; $f = 5.81 \dots 500 \text{ Hz}$, $A_{\text{max}} = 20 \text{ m/s}^2$; 10 cycles
Shock resistance according to IEC 60068-2-27	g/ms	Half-sine wave 15/11
Electromagnetic compatibility		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Electrical separation between input and output		Yes
Type of electrical separation		Electrical separation
Insulation voltage for overvoltage category III according to IEC 60664		
• For pollution degree 2	V	690
• For pollution degree 3	V	690
IO-Link protocol is supported		No Yes
Measuring circuit		
Measurable line frequency	Hz	16 ... 400
Adjustable current response value		
• 1	A	0.03 ... 40
• 2	A	0.03 ... 40
Control circuit		
Number of CO contacts with delayed switching	2	1
Thermal current of the non-solid-state contact blocks, maximum	A	5
Current-carrying capacity of the output relay		
• At AC-15 at 400 V at 50/60 Hz	A	3
• At DC-13		
- At 24 V	A	1
- At 125 V	A	0.2
- At 250 V	A	0.1
Operational current at 17 V, minimum	mA	5
Article number	3UG5625-1...0, 3UG5825-1...0	3UG5625-2...0, 3UG5825-2...0
Type of electrical connection	 Screw terminals	 Spring-loaded terminals (push-in)
Tightening torque	0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 4 mm ²)
• Finely stranded	--	1 x (0.5 ... 4 mm ²)
- Without end sleeves	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
- With end sleeve		
• For AWG cables		
- Solid	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Stranded	--	1 x (20 ... 12)

Monitoring Relays For Stand-alone Installation

3UG5 Residual current monitoring > Residual current monitoring relays **NEW****3UG5625 monitoring relays**

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the toroidal core of a residual-current transformer. A secondary winding is placed around this toroidal core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs, the sum of the inflowing currents is greater than that of the outward currents. The differential current – i.e. the residual current – induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshoot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the relay symbol flashes on the display. On expiry of this time, the associated changeover contact changes the switching state.

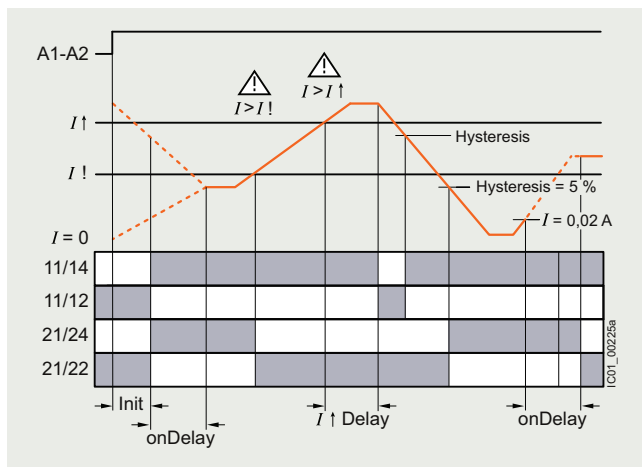
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshoot during this period.

With the closed-circuit principle selected

Residual current monitoring with automatic RESET



The 3UG5625 monitoring relays can be operated based on either the open-circuit or closed-circuit principle and with manual or automatic RESET.

3UG5825 monitoring relays

The main conductor, and any neutral conductor to which a load is connected, are routed through the opening of the toroidal core of a residual-current transformer. A secondary winding is placed around this toroidal core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. No current is then induced in the secondary winding of the residual-current transformer.

However, if an insulation fault occurs, the sum of the inflowing currents is greater than that of the outward currents. The differential current – i.e. the residual current – induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshoot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display.

If the measured residual current exceeds the set tripping value, the set delay time begins and the relay symbol flashes on the display. On expiry of this time, the associated changeover contact changes the switching state.

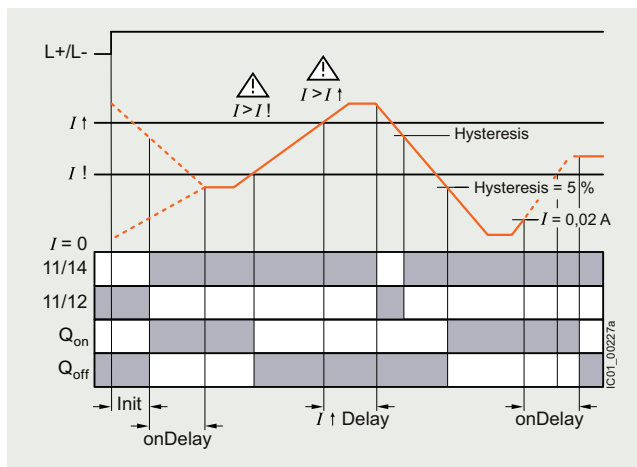
ON-delay time for motor start

To be able to start a drive when a residual current is detected, the output relays switch to the OK state for an adjustable ON-delay time depending on the selected open-circuit principle or closed-circuit principle.

The changeover contacts do not react if the set threshold values are overshoot during this period.

With the closed-circuit principle selected

Residual current monitoring with automatic RESET



The 3UG5825 monitoring relays can be operated based on either the open-circuit or closed-circuit principle and with manual or automatic RESET.

3UG5 Residual current monitoring > Residual current monitoring relays **NEW**

Siemens Industry Inc., Industrial Control Catalog

Monitoring Relays For Stand-alone Installation

3UG5 Residual current monitoring > 3UL23 residual-current transformers

Overview



SIRIUS 3UL23 residual-current transformer

The 3UL23 residual-current transformers detect residual currents in machines and plants. They are suitable for pure AC residual currents or AC residual currents with a pulsating DC fault current component (transformer type A according to DIN VDE 0100-530/IEC TR 60755).

Together with the 3UG5625 residual current monitoring relays or the 3UG5825 IO-Link version or the SIMOCODE 3UF motor management and control device, they enable residual current and ground fault monitoring.

The 3UL2302-1A and 3UL2303-1A residual-current transformers with a feed-through opening of 35 and 55 mm can be mounted in conjunction with the 3UL2900 accessories on a TH 35 DIN rail according to IEC 60715.

Selection and ordering data

Diameter of the feed-through opening	Rated residual current	Connectable cross-section of the connecting terminal	Screw terminals	PU (UNIT, SET, M)	PS*
mm		mm ²	Article No. Price per PU		
Residual-current transformers (essential accessories for 3UG5625, 3UG5825 and 3UF75, 3UF76 and 3UF80)					
35	30 mA ... 40 A	2.5	3UL2302-1A	1	1 unit
55	30 mA ... 40 A	2.5	3UL2303-1A	1	1 unit
80	30 mA ... 40 A	2.5	3UL2304-1A	1	1 unit
105	30 mA ... 40 A	2.5	3UL2305-1A	1	1 unit
140	30 mA ... 40 A	2.5	3UL2306-1A	1	1 unit
210	30 mA ... 40 A	4	3UL2307-1A	1	1 unit

Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Adapters				
 Adapters For mounting on DIN rail for 3UL23 to diameter 55 mm	3UL2900		1	1 unit

3UL2900

Monitoring Relays For Stand-alone Installation

3UG5 Level monitoring **NEW**

Overview



SIRIUS 3UG5501 monitoring relays

The 3UG5501 level monitoring relay is used in combination with 2-pole or 3-pole sensors to monitor the levels of conductive liquids.

The 3UG5501 relay is available as a version with SIL 1/PL c.

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V
- Individually shortenable 2- and 3-pole wire electrodes for easy mounting from above/below
- Bow electrodes for installation from the side, for larger filling levels and minimum space requirements
- Can be flexibly adapted to different conductive liquids through analog setting of the sensitivity from 0.5 to 500 k
- Compensation for wave movements through tripping delay times from 0.5 to 30 s
- Upstream or downstream function selectable
- Devices with Safety certification according to SIL 1/PL c
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry-running protection
- Leak monitoring
- Applications according to the German Water Resources Act

Monitoring Relays For Stand-alone Installation

3UG5 Level monitoring **NEW**

Technical specifications

More information		
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td	Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq	
Article number	3UG5501-.AW30	3UG5501-.AW31
General data		
Width x height x depth	mm	22.5 x 100 x 90
Ambient temperature	°C	-25 ... +60
• During operation	°C	-40 ... +80
• During storage	°C	-40 ... +80
• During transport	°C	-40 ... +80
Degree of protection IP		IP20
Mounting position		Any
Installation altitude at height above sea level, maximum	m	2 000
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000
Mechanical endurance (operating cycles), typical		10 000 000
Adjustable ON-delay time on upper or lower limit violation	s	0.5 ... 30
Performance Level (PL) according to ISO 13849-1	--	PL c
Safety Integrity Level (SIL) according to IEC 62061	--	SIL 1
Vibration resistance according to IEC 60068-2-6		$f = 4 \dots 5.81 \text{ Hz}$, $d_{\text{max}} = 15 \text{ mm}$; $f = 5.81 \dots 500 \text{ Hz}$, $A_{\text{max}} = 20 \text{ m/s}^2$; 10 cycles
Shock resistance according to IEC 60068-2-27	g/ms	Half-sine wave 15/11
Electromagnetic compatibility		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4
Electrical separation between input and output		Yes
Insulation voltage for overvoltage category III according to IEC 60664		
• For pollution degree 3	V	300
Impulse withstand voltage	kV	6
Measuring circuit		
Measuring electrode voltage, maximum	V	3.5
Control circuit		
Number of CO contacts with delayed switching		1
Thermal current of the non-solid-state contact blocks, maximum	A	5
Current-carrying capacity of the output relay		
• At AC-15 at 400 V at 50/60 Hz	A	3
• At DC-13		
- At 24 V	A	1
- At 125 V	A	0.2
- At 250 V	A	0.1
Operational current at 17 V, minimum	mA	5
Article number	3UG5501-1AW3.	3UG5501-2AW3.
Type of electrical connection	Screw terminals	Spring-loaded terminals (push-in)
Tightening torque	0.6 ... 0.8 Nm	--
Type of connectable conductor cross-sections		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 4 mm ²)
• Finely stranded	--	1 x (0.5 ... 4 mm ²)
- Without end sleeves	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (0.5 ... 2.5 mm ²)
- With end sleeve	--	--
• For AWG cables		
- Solid	1 x (20 ... 12), 2 x (20 ... 14)	1 x (20 ... 12)
- Stranded	--	1 x (20 ... 12)

Monitoring Relays For Stand-alone Installation

3UG5 Level monitoring **NEW**

3UG5501 monitoring relays

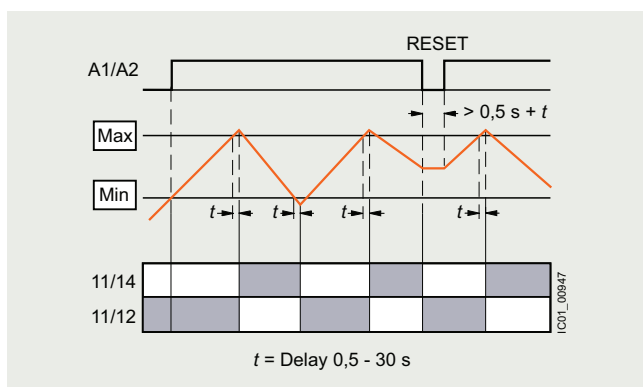
The principle of operation of the 3UG5501 level monitoring relay is based on measuring the electrical resistance of the liquid between two immersion sensors and a reference terminal. If the measured value is lower than the sensitivity set on the front, the output relay changes its switching state. In order to preclude active current undershooting of the liquid, the sensors are supplied with alternating current.

The level monitoring relay is also available as a version with SIL 1/PL c certification and for inflow control according to the German Water Resources Act (WHG). With these devices, it is possible to use sensors with an internal parallel resistor both to monitor the connection to the sensor and to detect a cable break.

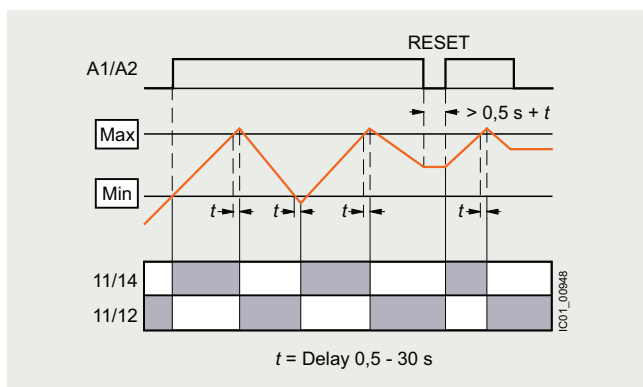
Two-point control

The output relay changes its switching state as soon as the liquid level reaches the maximum sensor, while the minimum sensor is submerged. The relay returns to its original switching state as soon as the minimum sensor no longer has contact with the liquid.

Outflow control, two-point control



Inflow control, two-point control



Note:

It is also possible to connect other resistance sensors to the Min and Max terminals in the range 0.5 to 500 k Ω , e.g. photoresistors, temperature sensors, encoders based on resistance, etc. The monitoring relay can therefore also be used for other applications as well as for monitoring the levels of liquids.

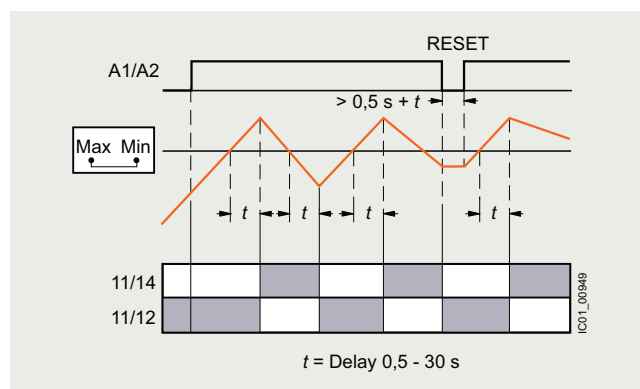
Single-point control

If only one level is being controlled, the terminals for Min and Max on the monitoring relay are bridged. The output relay changes its switching state as soon as the liquid level is reached and returns to its original switching state once the sensor no longer has contact with the liquid.

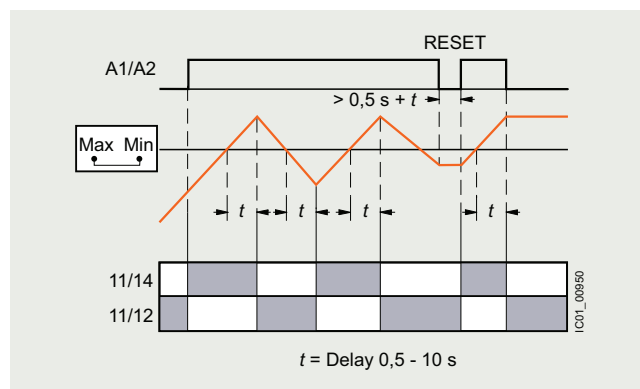
In order to prevent premature tripping of the switching function caused by wave motion or frothing, even though the set level has not been reached, it is possible to delay this function by 0.5 to 30 s.

For safe resetting, the control supply voltage must be interrupted for at least the set delay time of +0.5 s.

Outflow control, single-point control

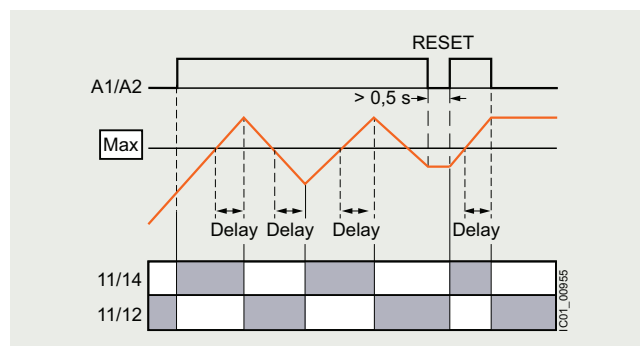


Inflow control, single-point control



In the WHG (German Water Resources Act) monitoring type, only single-point control is possible.

Single-point control for monitoring type WHG



Monitoring Relays For Stand-alone Installation

3UG5 Level monitoring **NEW**

Selection and ordering data

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

Multi-unit
 packaging,
 see page 16/7.



3UG5501-1AW30



3UG5501-2AW30

Control supply voltage			Number of CO contacts with delayed switching	Screw terminals		Spring-loaded terminals (push-in)	
at AC		at DC		Article No.	Price per PU	Article No.	Price per PU
at 50 Hz	at 60 Hz						
V	V	V					
Analogically adjustable level monitoring relays							
Monitoring level, external power supply with auxiliary voltage							
24 ... 240	24 ... 240	24 ... 240	1	3UG5501-1AW30		3UG5501-2AW30	
• For safety applications							
24 ... 240	24 ... 240	24 ... 240	1	3UG5501-1AW31		3UG5501-2AW31	

Accessories, [see page 10/115](#).

Note:

Sensors for level monitoring, [see SiePortal](#).

These must be used to apply the devices according to WHG (German Water Resources Act). For the Safety versions, it is necessary to use sensors with a parallel resistor. We recommend use of our sensors.

Monitoring Relays For Stand-alone Installation

3UG5 Speed monitoring **NEW**

Overview



SIRIUS 3UG5651 monitoring relays

The 3UG5651 monitoring relay is used in combination with a sensor to monitor motor drives for overspeed and/or underspeed.

Furthermore, the monitoring relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

The 3UG5851 device is available as a version for IO-Link. Moreover, there is a 3UG5651 version with SIL 1/PL c.

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Permanent display of actual value and fault type
- Use of up to 10 sensors per rotation for extremely slowly rotating motors
- Two-wire or three-wire sensors and sensors with a mechanical switching output or solid-state output can be connected
- Auxiliary voltage for sensor integrated
- Devices with Safety certification according to SIL 1/PL c
- Communication via IO-Link with the SIRIUS 3UG5851 relay as well as display and transmission of actual values and diagnostics to the controller
- Width 22.5 mm
- All versions with removable terminals
- All versions with screw or spring-loaded terminals (push-in)

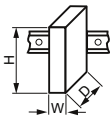
Application

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

Monitoring Relays For Stand-alone Installation

3UG5 Speed monitoring **NEW**

Technical specifications

More information				
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td		Equipment Manual, see https://support.industry.siemens.com/cs/document/109814940 FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq		
Article number		3UG5651-.CW30	3UG5651-.CW31	3UG5851-.AA40
General data				
Width x height x depth		 mm	22.5 x 100 x 90	
Ambient temperature		°C	-25 ... +60	
• During operation		°C	-40 ... +80	
• During storage		°C	-40 ... +80	
• During transport		°C	-40 ... +80	
Degree of protection IP		IP20		
Mounting position		Any		
Installation altitude at height above sea level, maximum		m	2 000	
Electrical endurance (operating cycles) for AC-15 at 230 V typical		100 000		
Mechanical endurance (operating cycles), typical		10 000 000		
Adjustable ON-delay time				
• On starting		s	0 ... 999.9	
• On upper or lower limit violation		s	0 ... 999.9	
Vibration resistance according to IEC 60068-2-6		f = 4 ... 5.81 Hz, d _{max} = 15 mm; f = 5.81 ... 500 Hz, A _{max} = 20 m/s ² ; 10 cycles		
Shock resistance according to IEC 60068-2-27		g/ms	Half-sine wave 15/11	
Electromagnetic compatibility		IEC 60947-1/IEC 61000-6-2/IEC 61000-6-4		
Performance Level (PL) according to ISO 13849-1		--	PL c	--
Safety Integrity Level (SIL) according to IEC 62061		--	SIL 1	--
Electrical separation between input and output		Yes		
IO-Link protocol is supported		--		
		Yes		
Measuring circuit				
Input current at digital input 1, maximum		mA	--	50
Control circuit				
Number of CO contacts with delayed switching		2		1
Thermal current of the non-solid-state contact blocks, maximum		A	5	
Current-carrying capacity of the output relay				
• At AC-15 at 400 V at 50/60 Hz		A	3	
• At DC-13				
- At 24 V		A	1	
- At 125 V		A	0.2	
- At 250 V		A	0.1	
Operational current at 17 V, minimum		mA	5	
Article number		3UG5651-1.... 3UG5851-1....	3UG5651-2...., 3UG5851-2....	
Type of electrical connection		 Screw terminals	 Spring-loaded terminals (push-in)	
Tightening torque		0.6 ... 0.8 Nm		--
Type of connectable conductor cross-sections				
• Solid		1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)		--
• Finely stranded				
- Without end sleeves		--	1 x (0.5 ... 4 mm ²)	
- With end sleeve		1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)		1 x (0.5 ... 2.5 mm ²)
• For AWG cables				
- Solid		1 x (20 ... 12), 2 x (20 ... 14)		1 x (20 ... 12)
- Stranded		--	1 x (20 ... 12)	

Monitoring Relays For Stand-alone Installation

3UG5 Speed monitoring **NEW****3UG5551 monitoring relays**

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in revolutions per minute.

It is also possible to implement the function of a meter with the relay.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the OK state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with automatic RESET (Reset = AUTO)

If the device is set to automatic RESET, the output relay switches to the OK state, once the adjustable hysteresis threshold is reached in the range of 0.1 to 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with manual RESET (Reset = Manual)

If manual RESET is selected in the menu, the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continue to be displayed, even when the measured variable reaches a permissible value again. This stored fault condition can be reset by pressing the Back key and confirming with the Enter key.

The device is also available as a version with SIL 1/PL c certification.

3UG5851 monitoring relays

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in revolutions per minute.

It is also possible to implement the function of a meter with the relay.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the OK state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with automatic RESET (Reset = AUTO)

If the device is set to automatic RESET, the output relay switches to the OK state, once the adjustable hysteresis threshold is reached in the range of 0.1 to 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with manual RESET (Reset = Manual)

If manual RESET is selected in the menu, the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continue to be displayed, even when the measured variable reaches a permissible value again. This stored fault condition can be reset by pressing the Back key and confirming with the Enter key.

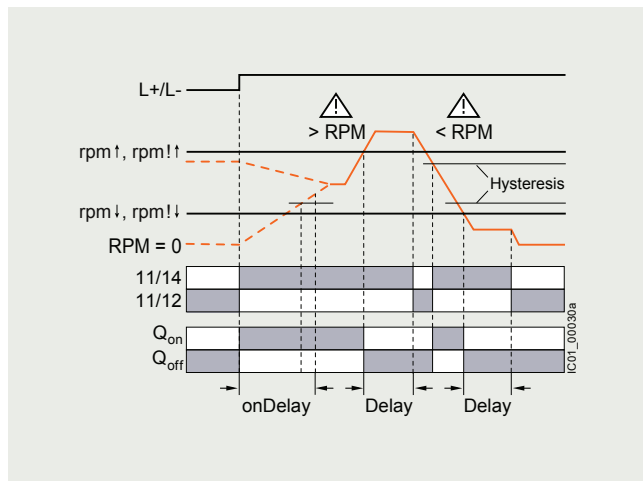
With manual RESET through IO-Link it is possible in addition to set whether fault messages are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

Monitoring Relays For Stand-alone Installation

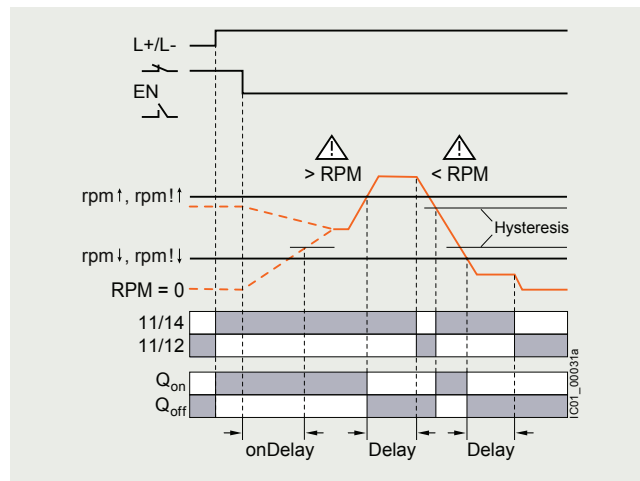
3UG5 Speed monitoring **NEW**

With the closed-circuit principle selected

Range monitoring without enable input



Range monitoring with enable input



Selection and ordering data

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

Multi-unit packaging,
 see page 16/7.



3UG5651-1CW30



3UG5651-2CW30

Control supply voltage		Number of CO contacts with delayed switching	Screw terminals		Spring-loaded terminals (push-in)	
at AC	at DC		Article No.	Price per PU	Article No.	Price per PU
50 Hz	60 Hz	V				
Digitally adjustable speed monitoring relays						
Monitoring of speed, external power supply with auxiliary voltage						
24 .. 240	24 .. 240	24 .. 240	2	3UG5651-1CW30	3UG5651-2CW30	
• For safety applications				3UG5651-1CW31	3UG5651-2CW31	
24 .. 240	24 .. 240	24 .. 240	2	3UG5851-1AA40	3UG5851-2AA40	
• For IO-Link						
--	--	24 ... 24	1			

Accessories, see page 10/115.

Monitoring Relays For Stand-alone Installation

3UG5 DC load monitoring

Overview



SIRIUS 3UG546 DC load monitoring relays

More information

Homepage, see www.siemens.com/sirius-monitoring-relays

SiePortal, see www.siemens.com/product?3UG5

The SIRIUS 3UG546 DC load monitoring relays are suitable for monitoring motors, batteries and other DC equipment. They are also suitable for applications where batteries are used. The devices monitor the direct current, voltage and actual power for overshooting or undershooting of the set limit values in 1 or 2 channels. The relays have a CO contact output for alarms and operate on the closed-circuit principle (NC).

The devices are parameterized via PROFINET, and transfer the measured values and diagnostic messages to a controller. Besides providing detailed fault diagnostics, the integrated energy counters, operating hours counters, and operating cycles counters can also be read out and reset.

When metering energy consumption, the SIRIUS 3UG546 DC load monitoring relays distinguish the direction of current flow and can thus, for example, separately sense the quantities of energy stored in or drawn from a battery.

Features

3UG5461-1AA4.,
3UG5462-1AA4.

DC monitoring

Monitoring the direct current for undershoot	✓
Monitoring the direct current for overshoot	✓
Range monitoring	✓

Voltage monitoring

Monitoring the voltage for undershoot	✓
Monitoring the voltage for overshoot	✓
Range monitoring	✓

Power monitoring

Monitoring the power for undershoot	✓
Monitoring the power for overshoot	✓
Range monitoring	✓

Delay times

ON-delay	✓
Tripping delay	✓

Operating hours counter

Monitoring for overshoot	✓
--------------------------	---

Operating cycles counter

Monitoring for overshoot	✓
--------------------------	---

Energy recovery counter

Monitoring for overshoot	✓
--------------------------	---

Energy consumption counter

Monitoring for overshoot	✓
--------------------------	---

PROFINET IO functions

Ethernet services	✓
Port diagnostics	✓
Minimum update time	2 ms
Resetting of communication parameters to factory settings	✓
PROFINET RT (real-time communication)	✓
Firmware update via PROFINET IO	✓
I&M identification data 0 to 3	✓

✓ Available

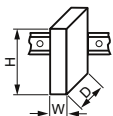
Benefits

- Wide voltage measuring range of up to 800 V
- 60 V version, in particular for applications where batteries are used
- Detection and monitoring of current, voltage and power in a single device
- Detailed fault diagnostics
- Energy metering with distinction of direction of current flow
- Communication and visualization via PROFINET and thus quick and easy integration for visualizing plant energy values
- Integration in the TIA Portal
- Widths 22.5 and 45 mm
- Customary screw terminals for quick and reliable wiring
- Device replacement without renewed wiring thanks to removable terminals

Application

- Exhaustive discharge protection on battery-operated vehicles
- Acquisition of energy flows, including energy recovery, e.g. for robots
- DC line monitoring
- DC heaters
- Lighting systems
- Energy management
- Condition monitoring

Technical specifications

More information				
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25412/td		Equipment Manual, see https://support.industry.siemens.com/cs/ww/en/ps/25412/man FAQs, see https://support.industry.siemens.com/cs/ww/en/ps/25412/faq		
Article number		3UG5461-1AA40	3UG5461-1AA41	3UG5462-1AA40 3UG5462-1AA41
General technical specifications				
Dimensions (W x H x D)		22.5 x 100 x 141.6		45 x 100 x 141.6
				
Type of electrical separation		Protective separation		
Electrical endurance (operating cycles) for relay outputs, maximum		100 000, 0.5 A, 125 V AC, for resistive load up to 40 °C		
Mechanical endurance (operating cycles), typical		10 000 000		
Power loss [W], maximum		W	3	
Adjustable response value current 1		A	-8 ... +8	-63 ... +63
Adjustable response value current 2		A	-8 ... +8	--
Adjustable ON-delay time				
• On starting		s	0 ... 999	
• On upper or lower limit violation		s	0 ... 999	
Adjustable voltage range		V	0 ... 800	0 ... 60 0 ... 800 0 ... 60
Minimum supply voltage failure buffering time		ms	10	
Reaction time, maximum		ms	100	
Degree of protection IP on the front according to IEC 60529		IP20		
Touch protection on the front according to IEC 60529		Finger-safe		Finger-safe for vertical touching from the front
Type of mounting		Screw and snap-on mounting on 35 mm DIN rail		
• Mounting position		Any		
Installation altitude at height above sea level, maximum		m	2 000	
Ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Relative temperature-related measurement deviation		%	0.5	
Number of ports at the interface 1		1		
Product function				
• Operating cycles counter		Yes		
• Operating hours counter		Yes		
• Automatic RESET		Yes		
• Manual RESET		Yes		
• Overvoltage detection DC		Yes		
• Overcurrent detection DC		Yes		
• Undervoltage detection DC		Yes		
• Undercurrent detection DC		Yes		
Product component				
• Removable terminal for main circuit		Yes		No
• Removable terminal for auxiliary and control circuit		Yes		
Measuring circuit				
Relative measurement accuracy with reference to the upper range value		%	2	
Number of CO contacts for auxiliary contacts		1		
Control circuit				
Current-carrying capacity of the output relay at DC-13 at 24 V		A	1	
Thermal current of the non-solid-state contact blocks, maximum		A	1	
Type of voltage for monitoring		DC		
Type of current for monitoring		DC		
Supply voltage type		DC		
Supply voltage 1 at DC		V	24	
Supply voltage				
Operating range factor of the supply voltage, rated value at DC		0.85 ... 1.15		

Monitoring Relays For Stand-alone Installation

3UG5 DC load monitoring

Article number	3UG5461-1AA4.	3UG5462-1AA4.
Type of electrical connection	Screw terminals	
Connectable conductor cross-section for auxiliary contacts		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	
• Finely stranded with end sleeve	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 1.5 mm ²)	
• For AWG cables	1 x (20 ... 12 mm ²), 2 x (20 ... 14 mm ²)	
Connectable conductor cross-section for main contacts		
• Solid	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (1 ... 16 mm ²), 2 x (1 ... 16 mm ²)
• Finely stranded with end sleeve	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (1 ... 35 mm ²), 2 x (1 ... 25 mm ²)
• Stranded	1 x (0.5 ... 4 mm ²), 2 x (0.5 ... 2.5 mm ²)	1 x (1 ... 16 mm ²), 2 x (1 ... 16 mm ²)
• For AWG cables	1 x (20 ... 12), 2 x (20 ... 14)	1 x (18 ... 1), 2 x (18 ... 2)

The SIRIUS 3UG546 DC load monitoring relays monitor a DC load current circuit for undershooting or overshooting of set limit values in 1 or 2 channels. Current, voltage, and power can be monitored separately. When the relays measure the current, they also detect the direction of current and have separate counters for measuring energy consumption and energy recovery.

The devices count the operating cycles and the operating hours of the connected loads as well as the operating cycles of the internal relay. All counters can be monitored for settable limit values and the counter statuses can be reset (with the exception of the operating cycle counter of the internal relay).

The SIRIUS 3UG546 DC load monitoring relays are parameterized exclusively via a PROFINET interface. All measured values and counter values as well as other diagnostics data are transmitted to a controller via PROFINET. The relays can also be operated without PROFINET. If communication fails, the monitoring function continues to be reliably executed. The internal relay, which is switched as a signaling output that responds when a set limit value is undershot or overshoot, responds to detected system faults.

All monitored counter values and measured values can be additionally assigned a warning limit, which generates an alarm via PROFINET when the set value is undershot or overshoot. Violations of the set limit values are also signaled as an alarm via PROFINET.

The devices are supplied via an external 24 V DC voltage source.

The integral counters for operating hours and operating cycles support operators in requirement-oriented preventive plant maintenance. The operating hours counter outputs the time during which a measurable current flows. The properties of the insulation material of the motor windings, for example, deteriorate during operation due to the thermal load. The operating hours serve as an indicator of upcoming preventive maintenance or replacement of machine parts and system components.

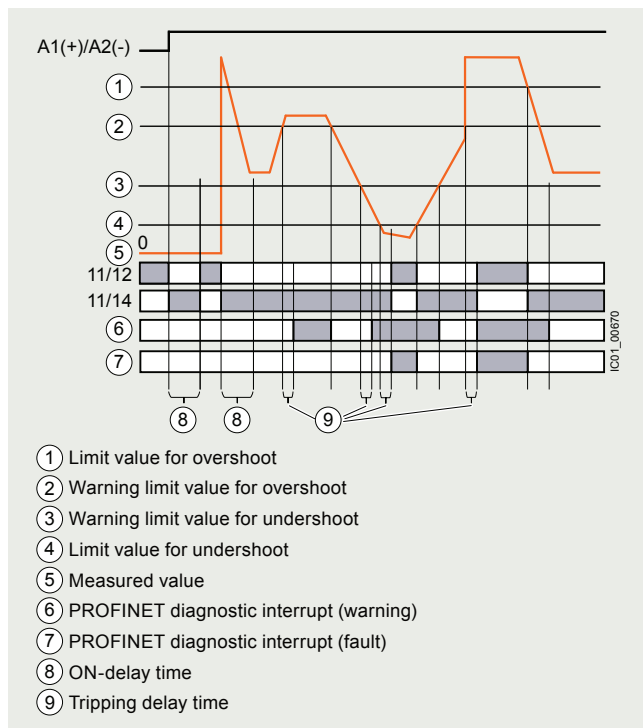
The operating cycles counter is incremented by one each time a breaking operation of the monitored load is detected (transition from current flow to no measurable current flow). The number of operating cycles serves as an indicator of upcoming preventive maintenance or replacement of contact blocks. Arcs in breaking operations cause high loads and wear in particular in DC current circuits.

Monitoring Relays For Stand-alone Installation

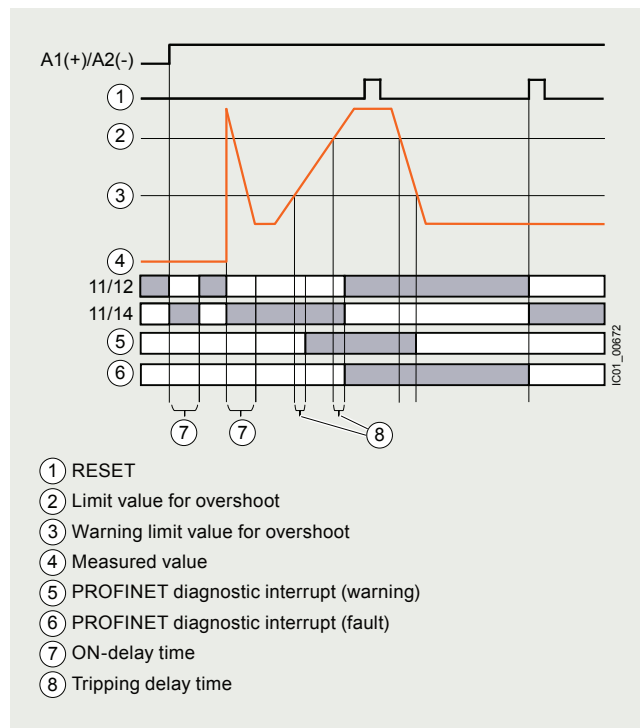
3UG5 DC load monitoring

With the closed-circuit principle selected upon application of the control supply voltage

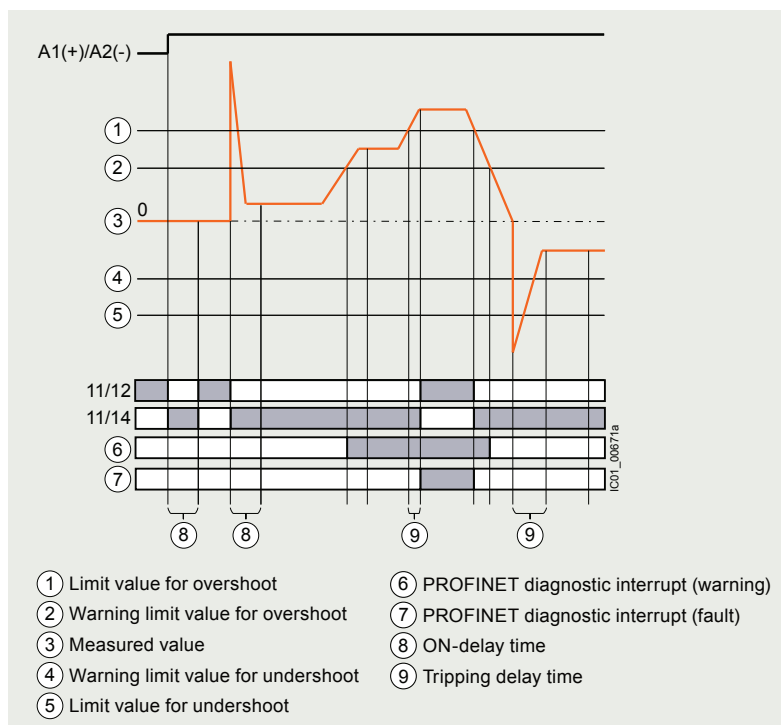
Monitoring for overshooting and undershooting of a measured value including parameterized warning limit/current flow in one direction only/automatic RESET



Monitoring for overshooting of a measured value including parameterized warning limit/manual RESET



Monitoring for overshooting and undershooting of a measured value including parameterized warning limit/current flow in both directions (energy consumption and energy recovery)/ automatic RESET



Selection and ordering data



3UG5461-1AA40

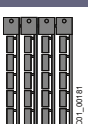


3UG5462-1AA40

Measurable voltage	Measurable current	Width	Screw terminals	PU (UNIT, SET, M)	PS*
V	A	mm	Article No.	Price per PU	
DC load monitoring relay					
• For PROFINET					
0 ... 800	2 x 8/1 x 16	22.5	3UG5461-1AA40	1	1 unit
	1 x 63	45	3UG5462-1AA40	1	1 unit
0 ... 60	2 x 8/1 x 16	22.5	3UG5461-1AA41	1	1 unit
	1 x 63	45	3UG5462-1AA41	1	1 unit

Accessories, [see page 10/115](#).

Selection and ordering data

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Terminals for SIRIUS devices in the industrial DIN-rail enclosure				
 3ZY1122-1BA00	Removable terminals, without inscription 2-pole, up to 1 x 4 mm² or 2 x 2.5 mm²	Screw terminals  3ZY1122-1BA00	1	6 units
	 3ZY1122-2BA00	Spring-loaded terminals (push-in)  3ZY1122-2BA00	1	6 units
Accessories for enclosures				
 3ZY1311-0AA00	Push-in lugs for wall mounting (Two lugs are required per device)	3ZY1311-0AA00	1	12 units
 3ZY1440-1AA00	Coding pins For removable terminals of SIRIUS devices in the industrial DIN-rail enclosure; enable the mechanical coding of terminals	3ZY1440-1AA00	1	12 units
 3ZY1450-1AB00	Hinged covers Replacement cover, without terminal labeling, titanium gray 22.5 mm wide	3ZY1450-1AB00	1	5 units
 3ZY1450-1AB00	Sealable covers Replacement cover, without terminal labeling, titanium gray 22.5 mm wide	3ZY1321-2AA00	1	5 units
 3RP1903	Push-in lugs For screw fixing, 2 units are required for each device	3RP1903	1	10 units
Blank labels				
 3RT2900-1SB20	Unit labeling plates ¹⁾ For SIRIUS devices 20 mm x 7 mm, titanium gray	3RT2900-1SB20	100	340 units
Tools for opening spring-loaded terminals				
 3RA2908-1A	Screwdriver For all SIRIUS devices with spring-loaded terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	Spring-loaded terminals (push-in)  3RA2908-1A	1	1 unit

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH, see page 16/18.

Note:

For products for mechanical bearing monitoring, e.g. condition monitoring systems, see www.siemens.com/siplus-cms.

Monitoring Relays For Stand-alone Installation

3UG4 Insulation monitoring

Overview



SIRIUS 3UG458 insulation monitors

More information

Homepage, see www.siemens.com/sirius-monitoring-relays

SiePortal, see www.siemens.com/product?3UG45

TIA Selection Tool Cloud (TST Cloud), see
www.siemens.com/tstcloud/?node=SIRIUSRelais

Conversion tool, see www.siemens.com/conversion-tool

Insulation monitoring relays are used for monitoring the insulation resistance between ungrounded 1- or 3-phase AC supplies and a protective conductor.

Ungrounded, i.e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e.g. emergency lighting systems. IT systems are supplied via an isolating transformer or by power supply sources such as batteries or a generator. While an initial insulation fault between a phase conductor and the ground effectively grounds the conductor, as a result no circuit has been closed, so it is possible to continue work in safety (single-fault safety). However, the fault must be rectified as quickly as possible before a second insulation fault occurs (e.g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used, which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value so that either a controlled shutdown can be performed or the fault can be rectified without interrupting the power supply.

Two device series

- 3UG4581 insulation monitoring relays for ungrounded AC networks
- 3UG4582 and 3UG4583 insulation monitoring relays for ungrounded DC and AC networks

Insulation monitoring for ungrounded AC networks

The 3UG4581 insulation monitoring relays are used to monitor insulation resistance according to IEC 61557-8 in ungrounded AC networks with rated voltages of up to 400 V.

These devices can monitor control circuits (1-phase) and main circuits (3-phase).

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status.

In the case of 3UG4581 a superimposed DC measuring signal is used. The superimposed DC measuring signal and the resulting current are used to determine the value of the insulation resistance of the network which is to be measured.

Insulation monitoring relays for ungrounded DC and AC networks

The 3UG4582 and 3UG4583 insulation monitoring relays are used to monitor insulation resistance in ungrounded IT AC or DC networks according to IEC 61557-8.

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status. With these monitoring relays, which are suitable for both AC and DC networks, a pulsed test signal is fed into the network to be monitored and the insulation resistance is determined.

The pulsed test signal changes its form according to insulation resistance and network loss capacitance. The changed form is used to predict the changed insulation resistance.

If the predicted insulation resistance matches the insulation resistance calculated in the next measurement cycle, and is lower than the threshold value, the output relays are activated or deactivated, depending on the device configuration. This measurement principle is also suitable for identifying symmetrical insulation faults.

3UG4983 voltage reducer module

3UG4983 voltage reducer module

The 3UG4983-AA01 voltage reducer module is available for the 3UG4583 insulation monitoring relay to extend the network voltage range to 690 V AC and 1000 V DC.

Connection methods

With the updated enclosure, future-proof push-in technology is available alongside the tried-and-trusted screw terminals.

Push-in is a form of spring-loaded connection system allowing wiring of terminals without tools. These terminals are self-adjusting, i.e. the regular tightening needed with screw terminals is not necessary.

Monitoring Relays For Stand-alone Installation

3UG4 Insulation monitoring

Article number scheme

Product versions		Article number									
Monitoring relays		3UG4	☐	☐	☐	☐	–	☐	☐	☐	1
Type of setting	e.g. 5 = analogically adjustable		☐								
Functions	e.g. 82 = insulation monitoring			☐	☐						
Connection type	Screw terminals									1	
	Spring-loaded terminals (push-in)									2	
Contacts	e.g. A = 1 CO contact									☐	
Supply voltage	e.g. W3 = 24 ... 240 V									☐	☐
Example		3UG4	5	8	2	–	1	A	W	3	1

Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

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

Benefits

- Devices for AC and DC systems
- All devices have a wide control supply voltage range
- Direct connection to networks with line voltages of up to 690 V AC and 1 000 V DC by means of a voltage reducer module
- For AC supply systems: Frequency range 15 to 400 Hz
- Monitoring of broken conductors
- Monitoring of setting errors
- Safety in use thanks to integrated system test after startup
- Option of resetting and testing (by means of button on the front or using control contact)
- New predictive measurement principle allows very fast response times
- All versions with screw or spring-loaded terminals with push-in functionality

Application

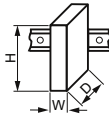
IT networks are used, for example:

- In emergency power supplies
- In safety lighting systems
- In industrial production plants with high availability requirements (chemical industry, automobile manufacture, printing)
- In shipping and railways
- For mobile generators (aircraft)
- For renewable energies, such as wind energy and photovoltaic power plants
- In the mining industry

Monitoring Relays For Stand-alone Installation

3UG4 Insulation monitoring

Technical specifications

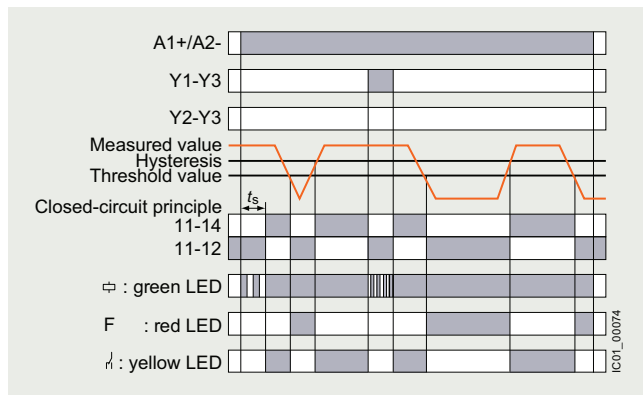
More information						
For equipment manuals, see						
• https://support.industry.siemens.com/cs/ww/en/view/54382552 • https://support.industry.siemens.com/cs/ww/en/view/54382528						
Article number		3UG4581-.AW31		3UG4582-.AW31	3UG4583-.CW31	3UG4983-.AA01
General data						
Dimensions (W x H x D)		mm	22.5 x 78 x 100		45 x 78 x 100	
Degree of protection IP on the front according to IEC 60529		IP20				
Mounting position		Any				
Type of mounting		Snap-on mounting on 35 mm DIN-rail				
Ambient temperature during operation		°C	-25 ... +60			
Fault storage			✓	✓	✓	--
Measuring circuit						
Measurable voltage						
• At DC	V	--	0 ... 300		0 ... 600	
• At AC	V	0 ... 400	0 ... 250		0 ... 400	
Measurable line frequency		Hz	50 ... 60		15 ... 400	
Adjustable response value impedance						
• 1	kΩ	1 ... 100			--	
• 2	kΩ	--			2 ... 200	
System leakage capacitance		μF	10		20	
Control circuit						
Control supply voltage						
• At AC						
- At 50 Hz	V	24 ... 240			--	
- At 60 Hz	V	24 ... 240			--	
• At DC	V	24 ... 240			--	
Operating frequency		Hz	50 ... 60		15 ... 400	
Impulse withstand voltage		V	6 000		4 000	8 000
Number of CO contacts with delayed switching			1		2	0
Thermal current of the non-solid-state contact blocks, maximum		A	4		--	
✓ Available						
-- Not available						
Article number		3UG4581-1AW31 3UG4582-1AW31 3UG4583-1CW31 3UG4983-1AA01		3UG4581-2AW31 3UG4582-2AW31 3UG4583-2CW31 3UG4983-2AA01		
Type of electrical connection		 Screw terminals		 Spring-loaded terminals (push-in)		
Tightening torque		0.6 ... 0.8 Nm		--		
Type of connectable conductor cross-sections						
• Solid		1 x (0.5 ... 4.0 mm ²), 2 x (0.5 ... 2.5 mm ²)		2 x (0.5 ... 1.5 mm ²)		
• Finely stranded						
- Without end sleeves		1 x (0.5 ... 2.5 mm ²), 2 x (0.5 ... 1.5 mm ²)		2 x (0.5 ... 1.5 mm ²)		
- With end sleeves		1 x (0.5 ... 2.5 mm ²), 2 x (0.5 ... 1.5 mm ²)		2 x (0.5 ... 1.5 mm ²)		
• For AWG cables						
- Solid		1 x (20 ... 12), 2 x (20 ... 14)		2 x (20 ... 16)		
- Stranded		1 x (18 ... 14), 2 x (18 ... 16)		2 x (18 ... 16)		

Monitoring Relays For Stand-alone Installation

3UG4 Insulation monitoring

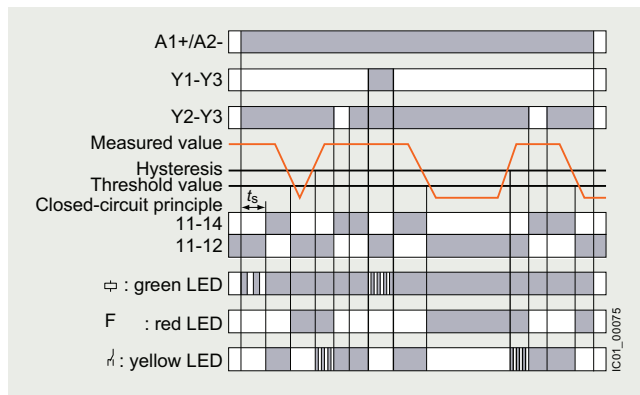
With the closed-circuit principle selected

- Insulation resistance monitoring without fault storage, with automatic RESET

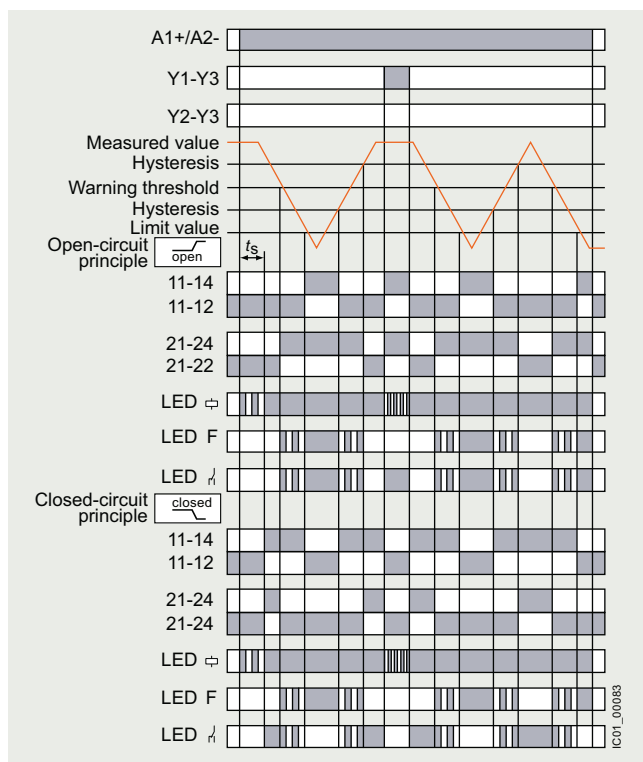


3UG4581, 3UG4582 monitoring relays

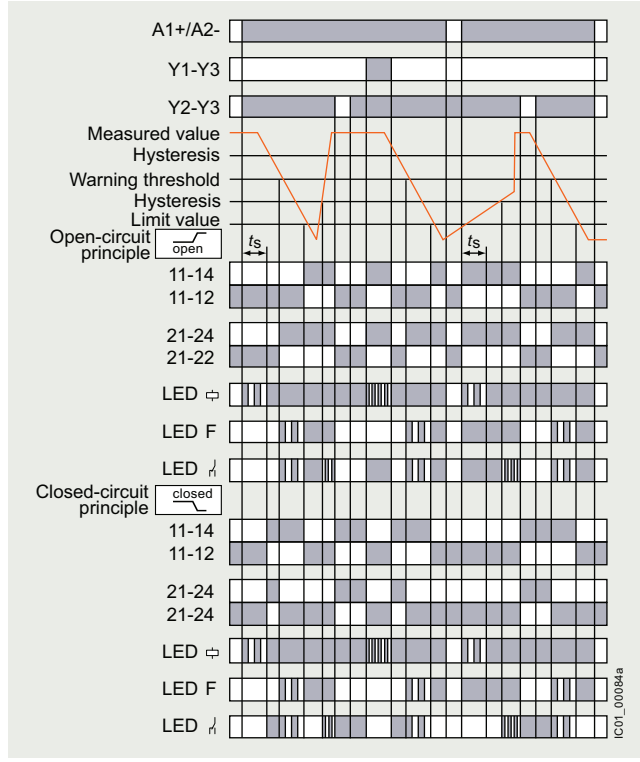
- Insulation resistance monitoring with fault storage and manual RESET



3UG4581, 3UG4582 monitoring relays



3UG4583 monitoring relays



3UG4583 monitoring relays

Monitoring Relays For Stand-alone Installation

3UG4 Insulation monitoring

Selection and ordering data

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



3UG4581-1AW31



3UG4582-1AW31



3UG4583-1CW31



3UG4583-1AA01

Measurable voltage		Type of voltage of the control supply voltage	System leakage capacitance	Number of CO contacts with delayed switching	Adjustable response value impedance		Screw terminals		Spring-loaded terminals (push-in)	
at AC	at DC				1	2				
V	V	AC/DC	F		k	k	Article No.	Price per PU	Article No.	Price per PU
Insulation monitors										
0 ... 400	--	24 ... 240	10	1	1 ... 100	--	3UG4581-1AW31		3UG4581-2AW31	
0 ... 250	0 ... 345	24 ... 240	10	1	1 ... 100	--	3UG4582-1AW31		3UG4582-2AW31	
0 ... 400	0 ... 690	24 ... 240	20	2	1 ... 100	2 ... 200	3UG4583-1CW31		3UG4583-2CW31	
Voltage reducer modules										
For the 3UG4583 insulation monitoring relay for extending the network voltage range to 690 V AC and 1000 V DC										
0 ... 690	0 ... 1 000	--	20	0	--	--	3UG4983-1AA01		3UG4983-2AA01	

Accessories

Use	Version	Spring-loaded terminals (push-in)	PU (UNIT, SET, M)	PS*	PG
		Article No.	Price per PU		

Tools for opening spring-loaded terminals



3RA2908-1A

Screwdrivers
 For auxiliary circuit connections
 For all SIRIUS devices with spring-loaded terminals

Length approx. 200 mm,
 3.0 mm x 0.5 mm,
 titanium gray/black,
 partially insulated

3RA2908-1A

1 1 unit 41B

Monitoring Relays For Stand-alone Installation

Conversion of monitoring relay predecessor 3UG4 to successor 3UG5

Functions	Connection technology	Predecessor 3UG4	Successor 3UG5	Variants: Safety (S), Bluetooth (B)
Phase sequence	Screw-type	3UG4511-1AN20	3UG5511-1AR20	
		3UG4511-1AP20		
		3UG4511-1AQ20		
		3UG4511-1BN20	3UG5511-1BR20	
		3UG4511-1BP20		
		3UG4511-1BQ20		
	Push-in	3UG4511-2AN20	3UG5511-2AR20	
		3UG4511-2AP20		
3UG4511-2AQ20				
3UG4511-2BN20		3UG5511-2BR20		
3UG4511-2BP20				
3UG4511-2BQ20				
Phase sequence, phase failure, Phase asymmetry (fixed)	Screw-type	3UG4512-1AR20	3UG5512-1AR20	3UG5512-1AR21 (S)
		3UG4512-1BR20	3UG5512-1BR20	3UG5512-1BR21 (S)
	Push-in	3UG4512-2AR20	3UG5512-2AR20	3UG5512-2AR21 (S)
		3UG4512-2BR20	3UG5512-2BR20	3UG5512-2BR21 (S)
Phase sequence, phase failure, Phase asymmetry, undervoltage	Screw-type	3UG4513-1BR20 3UG4614-1BR20*	3UG5514-1BR20 (analog)	* Please note: 3UG4614 (digitally adjustable) is replaced by 3UG5514 (analogically adjustable)
	Push-in	3UG4513-2BR20 3UG4614-2BR20*	3UG5514-2BR20 (analog)	
Phase sequence, phase failure, Phase asymmetry, N-conductor monitoring (parameterizable), overvoltage / undervoltage	Screw-type	3UG4615-1CR20 3UG4616-1CR20	3UG5616-1CR20	3UG5716-1CR20 (B)
	Push-in	3UG4615-2CR20 3UG4616-2CR20	3UG5616-2CR20	3UG5716-2CR20 (B)
Rotational direction correction, Phase sequence, phase failure, Phase asymmetry, with / without N- conductor failure, overvoltage / undervoltage	Screw-type	3UG4617-1CR20 3UG4618-1CR20	3UG5618-1CR20	3UG5618-1CR21 (S)
	Push-in	3UG4617-2CR20 3UG4618-2CR20	3UG5618-2CR20	3UG5618-2CR21 (S)
Phase sequence, phase failure, phase asymmetry, with / without N conductor failure, overvoltage / undervoltage, IO-Link	Screw-type	3UG4815-1AA40 3UG4816-1AA40	3UG5816-1AA40	
	Push-in	3UG4815-2AA40 3UG4816-2AA40	3UG5816-2AA40	
Voltage monitoring External power supply with auxiliary voltage Or ** Alternative: Digital combi device External power supply with auxiliary voltage (voltage, current, frequency, cos phi, active current)	Screw-type	3UG4631-1AA30 3UG4632-1AA30 3UG4631-1AW30 3UG4632-1AW30 (all digital)	3UG5532-1AW30 (analog) or 3UG5642-1CW30 (digital)**	3UG5642-1CW31 (S) (digital)** 3UG5742-1CW30 (B) (digital)**
	Push-in	3UG4631-2AA30 3UG4632-2AA30 3UG4631-2AW30 3UG4632-2AW30 (all digital)	3UG5532-2AW30 (analog) or 3UG5642-2CW30 (digital)**	3UG5642-2CW31 (S) (digital)** 3UG5742-2CW30 (B) (digital)**
Current monitoring External power supply with auxiliary voltage Or	Screw-type	3UG4621-1AA30 3UG4622-1AA30 3UG4621-1AW30 3UG4622-1AW30 (all digital)	3UG5522-1AW30 (analog) or 3UG5642-1CW30 (digital)**	3UG5642-1CW31 (S) (digital)** 3UG5742-1CW30 (B) (digital)**

Monitoring Relays For Stand-alone Installation

Conversion of monitoring relay predecessor 3UG4 to successor 3UG5

Functions	Connection technology	Predecessor 3UG4	Successor 3UG5	Variants: Safety (S), Bluetooth (B)
Alternative: Digital combi device, External power supply with auxiliary voltage (voltage, current, frequency, cos phi, active current)	Push-in	3UG4621-2AA30 3UG4622-2AA30 3UG4621-2AW30 3UG4622-2AW30 (all digital)	3UG5522-2AW30 (analog) or 3UG5642-2CW30 (digital)	3UG5642-2CW31 (S) (digital)** 3UG5742-2CW30 (B) (digital)**
Voltage monitoring	Screw-type	3UG4633-1AL30 (digital)	3UG5533-1AL30 (analog) or 3UG5643-1CS20 (digital)**	
Self-powered without auxiliary voltage or	Push-in	3UG4633-2AL30 (digital)	3UG5533-2AL30 (analog) or 3UG5643-2CS20 (digital)**	
** Alternative: Digital combi device, Self-powered without auxiliary voltage (voltage, current, frequency, cos phi, active current)				
Cos phi, active current monitoring self-powered without auxiliary voltage	Screw-type	3UG4641-1CS20	3UG5643-1CS20 (digital)**	
Or	Push-in	3UG4641-2CS20	3UG5643-2CS20 (digital)**	
**Alternative: Digital combi device, self-powered without auxiliary voltage (voltage, current, F, cos phi, active current)				
Voltage monitoring, externally supplied with auxiliary voltage, digital / IO-Link	Screw-type	3UG4832-1AA40	3UG5842-1AA40	
	Push-in	3UG4832-2AA40	3UG5842-2AA40	
Current monitoring, externally supplied with auxiliary voltage, digital / IO-Link	Screw-type	3UG4822-1AA40	3UG5842-1AA40	
	Push-in	3UG4822-2AA40	3UG5842-2AA40	
Cos phi, active current monitoring, externally supplied with auxiliary voltage, digital / IO-Link	Screw-type	3UG4841-1CA40	3UG5842-1AA40	
	Push-in	3UG4841-2CA40	3UG5842-2AA40	
Residual current monitoring, externally supplied with auxiliary voltage, digital	Screw-type	3UG4625-1CW30	3UG5625-1CW30	
	Push-in	3UG4625-2CW30	3UG5625-2CW30	
Residual current monitoring, externally supplied with auxiliary voltage, digital / IO-Link	Screw-type	3UG4825-1CA40	3UG5825-1AA40	
	Push-in	3UG4825-2CA40	3UG5825-2AA40	
Fill level monitoring	Screw-type	3UG4501-1AA30 3UG4501-1AW30	3UG5501-1AW30	3UG5501-1AW31(S)
	Push-in	3UG4501-2AA30 3UG4501-2AW30	3UG5501-2AW30	3UG5501-2AW31 (S)
Speed monitoring, digital	Screw-type	3UG4651-1AA30 3UG4651-1AW30	3UG5651-1CW30	3UG5651-1CW31 (S)
	Push-in	3UG4651-2AA30 3UG4651-2AW30	3UG5651-2CW30	3UG5651-2CW31 (S)
Speed monitoring, digital / IO-Link	Screw-type	3UG4851-1AA40	3UG5851-1AA40	
	Push-in	3UG4851-2AA40	3UG5851-2AA40	

Important to know:

- For digital line monitoring relays, 3-phase or 3-phase +N can be parameterized
- The 3UG4 had digital voltage and current monitoring relays, while the 3UG5 offer a choice between analogically adjustable devices and digital combi devices
- Bluetooth variants (line monitoring, combi device) are available for parameterization with the SENTRON Power app
- New, innovative housing for greater efficiency and flexibility:
 - Device replacement without rewiring thanks to removable terminals with screw-type/push-in connection technology
 - End-of-life dismantling for environmentally friendly disposal
 - Hinged lid with labeling
 - Data Matrix / ID link for access to documentation
 - Reinforced rail mounting
- Only one device for all voltage ranges

Overview



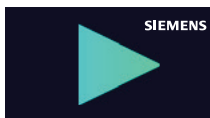
Picture on left: 3RQ1000-1EW00 coupling relay,
1 NO contact + 1 NC contact, screw terminal
Picture on right: 3RQ1000-2LW00 coupling relay,
4 NO contacts + 1 NC contact, spring-loaded terminal (push-in)



3RQ1 coupling relay in the 3SK system

More information

Homepage, see www.siemens.com/sirius-coupling-relays
 SiePortal, see www.siemens.com/product_catalog_siep?3RQ1
 Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/26008/td>
 Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/26008/man>
 TIA Selection Tool Cloud (TST Cloud), see
www.siemens.com/tstcloud/?node=SIRIUSRelais
 SIRIUS 3SK safety relays, see
<https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10143262?tree=CatalogTree>



Video: SIRIUS 3RQ1 coupling relays

The SIRIUS 3RQ1 force-guided coupling relays in a modern titanium gray industrial enclosure are available in widths of 17.5 mm and 22.5 mm, and each with a supply voltage of 24 V DC (120 mm mounting depth) and 24 to 240 V AC/DC (90 mm mounting depth).

They are used for safe coupling up to SIL 3/PL e of control signals to and from a control system or as an output expansion for the SIRIUS 3SK safety relays (see page 11/13 onwards).

Further fields of application are based on the force-guided operation of relays according to IEC 60947-5-1 and EN 61810-3 for reading back relay states, for reliable diagnostics or signaling, or for the use of antivalent signals. Typical fields of application here are railways, signaling technology and elevators.

The series consists of devices with up to five outputs and can be supplied with screw or spring-loaded (push-in) terminals.

International standards and certifications including CE, UL/CSA, EAC and railway approvals ensure international usability and exportability.

Versions with protective coating on the printed circuit board according to IPC-A-610 are available for use in harsh ambient conditions (other device versions are available on request).

An extensive range of accessories is also available, such as device connectors for easy and safe connection of the 3RQ1 devices, replacement terminals, push-in lugs for wall mounting and coding pins, see page 5/27 onwards.

Article number scheme

Product versions		Article number									
Coupling relays with force-guided contacts		3RQ1	☐	0	☐	0	☐	0	☐	0	☐
Version	Performance Level (SIL): c (SIL 2)	0									
	Performance Level (SIL): e (SIL 3)	2									
Connection methods	Screw terminals				1						
	Spring-loaded terminals (push-in)				2						
Outputs	1 NO + 1 NC				E						Width 17.5 mm
	2 NO + 1 NC				G						Width 17.5 mm
	2 NO + 2 NC				H						Width 22.5 mm
	4 NO + 1 NC				L						Width 22.5 mm
Control supply voltage	24 V DC				B						Depth 120 mm
	24 to 240 V AC/DC				W						Depth 90 mm
Versions	With protective coating on printed circuit board								0	A	X
Example		3RQ1	0	0	0	0	1	E	W	0	0

Note:

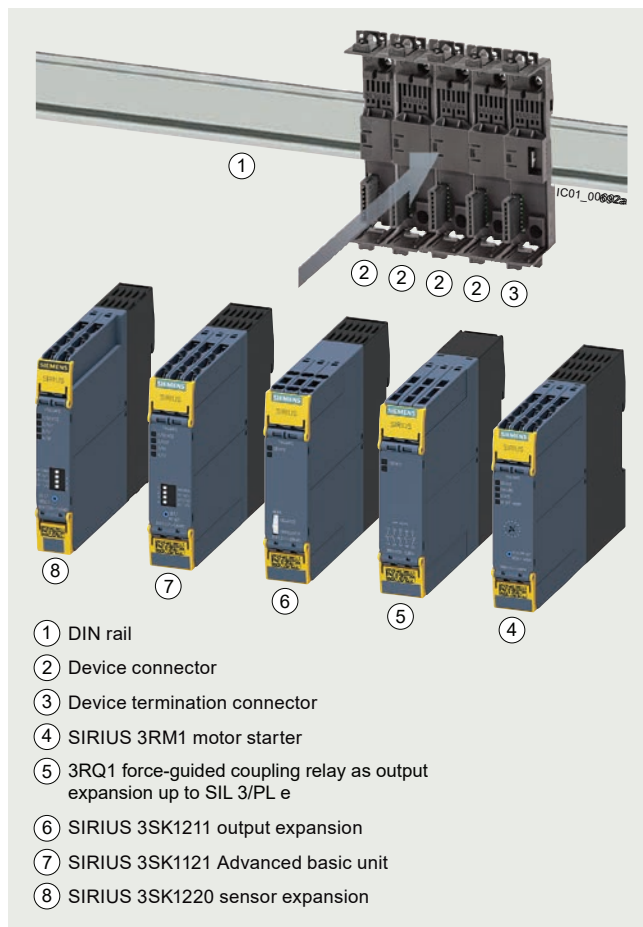
The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

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

Benefits

- Wide-range voltage versions from 24 to 240 V AC/DC available with a mounting depth of 90 mm for all versions
- Permanent wiring by means of removable terminals with screw terminals or spring-loaded terminals (push-in)
- Replacement of individual terminals minimizes wiring effort
- Can be used as output expansion for SIRIUS 3SK safety relays via device connectors
- All versions with real load contacts, also in the NC circuit
- Safety certification according to functional safety SIL 3/PL e
- Device versions with protective coating on printed circuit board
- International standards and certifications including CE, UL/CSA, EAC, railway approvals, and more

Application



- Safe coupling up to SIL 3/PL e of control signals from and to a control system
- Output expansion for 3SK safety relays
- Use of force-guided contacts for reading back relay states
- For reliable diagnostics or signaling or for antivalent switching of loads
- Safe coupling:
 - Electrical separation between the input and output circuit
 - Adjustment of different signal levels
 - Signal amplification
 - Contact multiplication

3RQ1 output expansion (up to SIL 3/PL e) for the 3SK system

The 3RQ1 force-guided coupling relays with a mounting depth of 120 mm can be used as an output expansion up to SIL 3/PL e and can be connected by wiring to all 3SK basic units and by using the 3ZY12 device connector to all 3SK1 and 3SK2 Advanced basic units.

They have a switching capacity of AC-15 5/3 A (like 3SK1211) at a switching voltage of 230 V and are available in widths of 17.5 and 22.5 mm. Furthermore, they have NC contacts with a switching capacity of AC-15 2/1.5 A for direct switching of loads (anti-parallel switching, signaling, etc.).

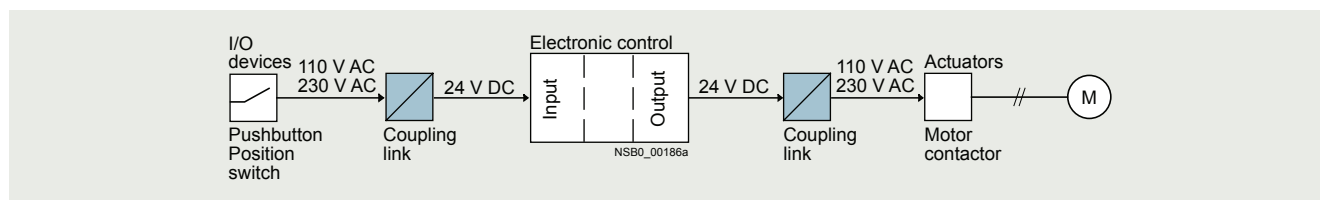
Suitable for use in harsh ambient conditions

Versions with protective coating on the printed circuit board according to IPC-A-610 are available for use in environments that are exposed to dust, condensation, rapid temperature changes and corrosion. These are intended for applications in rail systems, agriculture, mining, woodworking, etc.

Note:

Other device versions with protective coating on the printed circuit board are available on request.

System configuration example with SIRIUS 3SK safety relays



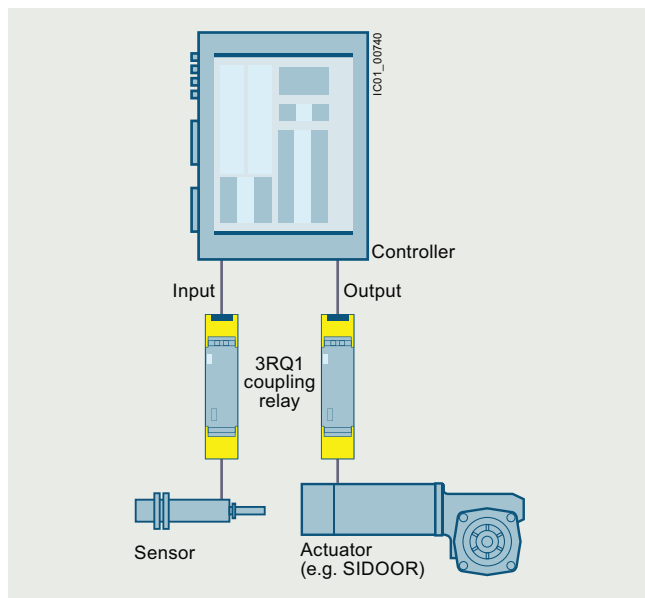
Typical application with a fail-safe control system

Coupling Relays

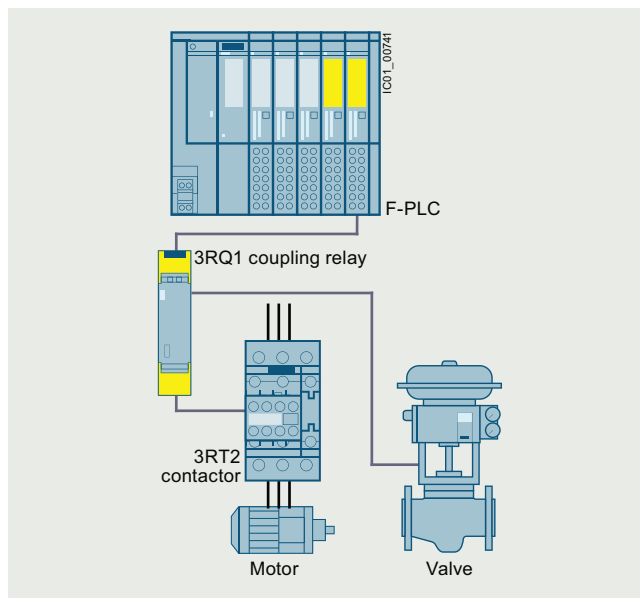
Force-guided Coupling Relays

SIRIUS 3RQ1, fail-safe up to SIL 3/PL e

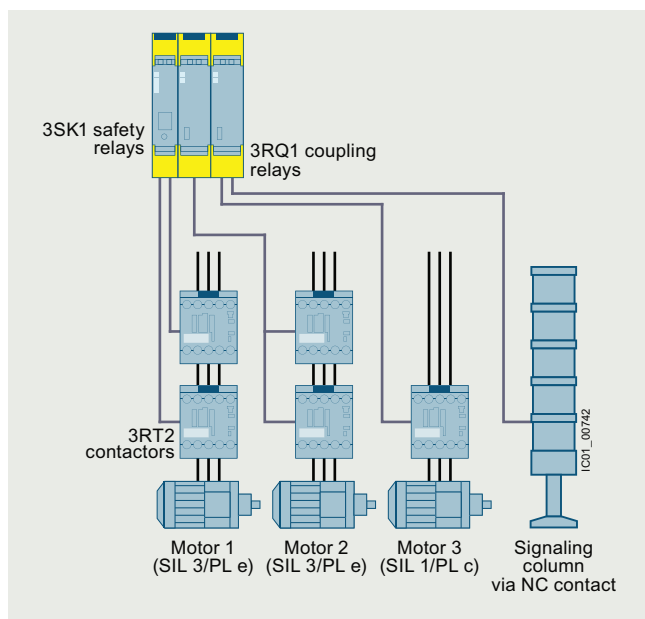
Applications



Application based on force-guided operation

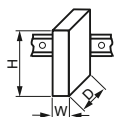


3RQ1 as coupling link for signals, e.g. for a fail-safe control system



3RQ1 as output expansion (SIL 1 to 3) for 3SK with direct control of actuators and signaling elements

Technical specifications

More information							
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/26008/td				Manuals, see https://support.industry.siemens.com/cs/ww/en/ps/26008/man Equipment Manual 3SK 1/3RQ1, see https://support.industry.siemens.com/cs/ww/en/view/67585885			
Article number	3RQ1000- .EB00, .GB00	3RQ1200- .EB00	3RQ1000- .EW00, .GW00	3RQ1200- .EW00	3RQ1000- .HB00, .LB00	.HW00, .LW00	2HW00-0AX0
General data							
Dimensions (W x H x D)	 mm						
	17.5 x 100 x 120		17.5 x 100 x 90		22.5 x 100 x 120	22.5 x 100 x 90	
Safety Integrity Level (SIL) according to IEC 62061	SIL 2	SIL 3	SIL 2	SIL 3	SIL 2		
Performance Level (PL) according to ISO 13849-1	PL c	PL e	PL c	PL e	PL c		
Certificate of suitability							
• UL approval	Yes						
• TÜV approval	Yes						
Insulation voltage for overvoltage category III according to IEC 60664 for pollution degree 3	V 300						
Protective coating on printed circuit board	No; --						Yes, according to IPC-A-610
Ambient temperature							
• During operation	°C -25 ... +60						
• During storage	°C -40 ... +80						
Degree of protection IP	IP20						
Control circuit							
Control supply voltage							
• At AC							
- At 50 Hz	V	--	24 ... 240	--	24 ... 240	24 ... 240	
- At 60 Hz	V	--	24 ... 240	--	24 ... 240	24 ... 240	
• At DC	V	24	24 ... 240	24	24 ... 240	24 ... 240	
Operating range factor of the control supply voltage, rated value at DC	0.8 ... 1.2		0.7 ... 1.1		0.8 ... 1.2	0.7 ... 1.1	
Load circuit							
Thermal current of the non-solid-state contact blocks, maximum	A 5						
Mechanical endurance (operating cycles) typical	10 000 000						
Article number	3RQ1000-1., 3RQ1200-1.				3RQ1000-2., 3RQ1200-2.		
Type of electrical connection	 Screw terminals				 Spring-loaded terminals (push-in)		
Type of connectable conductor cross-sections							
• Solid	1x (0.5 ... 4 mm ²), 2x (0.5 ... 2.5 mm ²)				1x (0.5 ... 4 mm ²)		
• Finely stranded with end sleeve	1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²)				1x (0.5 ... 2.5 mm ²)		
• Solid for AWG cables	1x (20 ... 12), 2x (20 ... 14)				1x (20 ... 12)		
Tightening torque	Nm	0.6 ... 0.8		--			

Selection and ordering data

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

Multi-unit packaging,
 see page 16/7.

Control supply voltage		Number of auxiliary contacts	Depth for use with 3ZY12 device connector	Protective coating on printed circuit board	Screw terminals	Spring-loaded terminals (push-in)
at AC at 50/60 Hz	at DC					
V	V	NO NC	mm		Article No.	Article No.
					Price per PU	Price per PU

Width 17.5 mm



Fail-safe up to SIL 2/PL c

--	24	1	1	120	Yes	No
--	24	2	1	120	Yes	No
24 ... 240	24 ... 240	1	1	90	No	No
24 ... 240	24 ... 240	2	1	90	No	No

3RQ1000-1EB00
 3RQ1000-1GB00
 3RQ1000-1EW00
 3RQ1000-1GW00

3RQ1000-2EB00
 3RQ1000-2GB00
 3RQ1000-2EW00
 3RQ1000-2GW00

Fail-safe up to SIL 3/PL e

--	24	1	0 ¹⁾	120	Yes	No
24 ... 240	24 ... 240	1	1	90	No	No

3RQ1200-1EB00
 3RQ1200-1EW00

3RQ1200-2EB00
 3RQ1200-2EW00

Width 22.5 mm



Fail-safe up to SIL 2/PL c

--	24	2	2	120	Yes	No
--	24	4	1	120	Yes	No
24 ... 240	24 ... 240	2	2	90	No	No
24 ... 240	24 ... 240	2	2	90	No	Yes
24 ... 240	24 ... 240	4	1	90	No	No

3RQ1000-1HB00
 3RQ1000-1LB00
 3RQ1000-1HW00
 --
 3RQ1000-1LW00

3RQ1000-2HB00
 3RQ1000-2LB00
 3RQ1000-2HW00
 3RQ1000-2HW00-0AX0
 3RQ1000-2LW00

¹⁾ NC contact designed to act as feedback contact.

Notes:

All 3RQ1 force-guided coupling relays have Safety certification up to SIL 2/PL c or SIL 3/PL e according to IEC 62061/ISO 13849-1.

To achieve SIL 3/PL e, two 3RQ10 devices can also be wired in series, see [Equipment Manual](#).

In addition, the 3SK1211 devices (output expansions for 3SK) provide force-guided coupling relays with 4 NO contacts and 1 NC contact up to SIL 3/PL e with 24 V AC, 24 V DC, and 110 to 240 V AC/DC.

For applications with high currents up to a switching capacity of 10 A AC-15, the 3SK1213 output expansions are also available with 24 V AC, 24 V DC, and 110 to 240 V AC/DC.

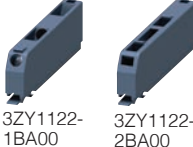
These devices can be used in the same way as the 3RQ1 coupling relays for coupling to and from safe control systems, they feature 4 NO contacts and 1 NC contact, and are available as versions with 24 V AC, 24 V DC, and 110 to 240 V AC/DC (see page 11/28).

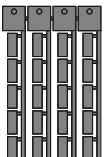
Other device versions with protective coating on the printed circuit board are available on request.

Accessories

More information

Manuals, see
<https://support.industry.siemens.com/cs/ww/en/ps/26008/man>

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Device connectors for the electrical connection of SIRIUS devices in the industrial DIN-rail enclosure					
 3ZY1212-1BA00 3ZY1212-2BA00  3ZY1212-2DA00	Device connectors				
	- Width 17.5 mm (for 3RQ1000-.EB00/-GB00, 3RQ1200-.EB00) - Width 22.5 mm (for 3RQ1000-.HB00/-LB00)				
	3ZY1212-1BA00		1	1 unit	41L
	3ZY1212-2BA00		1	1 unit	41L
	Device termination connectors				
	- Width 17.5 mm (for 3RQ1000-.EB00/-GB00, 3RQ1200-.EB00) - Width 22.5 mm (for 3RQ1000-.HB00/-LB00)				
	Note: Observe positions of the slide switch for width 22.5 mm, see Equipment Manual .				
	3ZY1212-1DA00		1	1 unit	41L
	3ZY1212-2DA00		1	1 unit	41L
	Device daisy chain connector				
	24 V DC, 22.5 mm, for implementation of distances between devices according to the installation guidelines				
	3ZY1212-2AB00		1	1 unit	41L
	Device connector				
	For height adjustment for device arrangements without electrical connection via device connector, with a width of 22.5 mm or greater				
	3ZY1210-2AA00		1	1 unit	41L
Terminals for SIRIUS devices in the industrial DIN-rail enclosure					
 3ZY1122-1BA00 3ZY1122-2BA00	Removable terminals, without labeling				
	2-pole, up to 1 x 4 mm² or 2 x 2.5 mm² 2-pole, up to 1 x 4 mm² or 2 x 1.5 mm² (in shared end sleeve)				
	Screw terminals 				
	3ZY1122-1BA00		1	6 units	41L
	Spring-loaded terminals (push-in) 				
	3ZY1122-2BA00		1	6 units	41L

Version		Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for enclosures						
 3ZY1321-2AA00	Sealing covers • 17.5 mm • 22.5 mm	3ZY1321-1AA00		1	5 units	41L
		3ZY1321-2AA00		1	5 units	41L
 3ZY1311-0AA00	Push-in lugs for wall mounting (two lugs are required per device)	3ZY1311-0AA00		1	10 units	41L
 3ZY1440-1AA00	Coding pins For removable terminals of SIRIUS devices in the industrial DIN-rail enclosure; they enable the mechanical coding of terminals, see Equipment Manual .	3ZY1440-1AA00		1	12 units	41L
 3ZY1450-1BA00 3ZY1450-1BB00	Hinged covers Replacement covers, without terminal labeling, yellow • 17.5 mm wide • 22.5 mm wide	3ZY1450-1BA00		1	5 units	41L
		3ZY1450-1BB00		1	5 units	41L
Blank labels						
 3RT2900-1SB20	Unit labeling plates¹⁾ For SIRIUS devices • 17.5 mm: 10 mm x 7 mm, titanium gray • 22.5 mm: 20 mm x 7 mm, titanium gray	3RT2900-1SB10		100	816 units	41B
		3RT2900-1SB20		100	340 units	41B
Tools for opening spring-loaded terminals						
 3RA2908-1A	Screwdriver For all SIRIUS devices with spring-loaded terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	Spring-loaded terminals (push-in)  3RA2908-1A		1	1 unit	41B

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH ([see page 16/18](#)).

Overview



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

More information

Homepage, see www.usa.siemens.com/relays

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

For the conversion tool, e.g. from 3RS18 to 3RQ2, see www.siemens.com/sirius/conversion-tool

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

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

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

The reduced variety of components simplifies product selection and standardization.

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

Article No. scheme

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

Note:

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

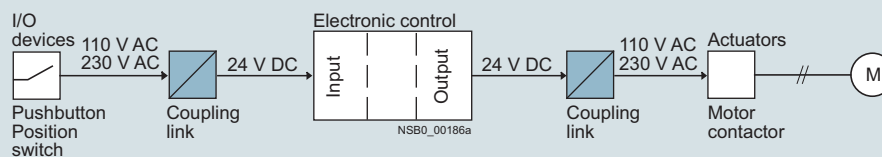
For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

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

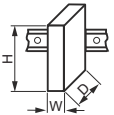
Application

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



Application example motor controller

Technical specifications

More information			
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/25158/td		Operating instructions, see https://support.industry.siemens.com/cs/ww/en/ps/25158/man	
Type		3RQ2000-AW00 3RQ2000-BW00 3RQ2000-CW00	3RQ2000-CW01
General data			
Dimensions (W x H x D)	 mm	22.5 x 100 x 90	
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3	V	300	
Max. permissible voltage for protective separation between control circuit and auxiliary circuit acc. to IEC 60947-1	V	300	
Ambient temperature			
• During operation	°C	-25 ... +60	
• During storage	°C	-40 ... +80	
Degree of protection		IP20	
Control circuit			
Control supply voltage	V	24 ... 240 AC/DC; 50/60 Hz	
Operating range factor of control supply voltage		0.7 ... 1.1	
Load circuit			
Thermal current of the non-solid-state contact blocks, maximum	A	5	
Current carrying capacity of the output relay			
• At AC-15 at 250 V	A	3	
• At DC-13 at 24 V	A	1	
• At DC-13 at 125 V	A	0.2	
• At DC-13 at 250 V	A	0.1	
Mechanical endurance (operating cycles) typical		10 000 000	
Electrical endurance (operating cycles) for AC-15 at 230 V, typical		100 000	
Material of switching contacts		AgSnO2	AgNi + Au
Article number		3RQ2000-1	3RQ2000-2
Type of electrical connection		 Screw terminals	 Spring-type terminals (push-in)
Type of connectable conductor cross-sections			
• Solid	mm ²	1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²)	
• Finely stranded with end sleeve	mm ²	1x (0.5 ... 4 mm ²), 2x (0.5 ... 1.5 mm ²)	
• Solid for AWG cables	AWG	1x (20 ... 12), 2x (20 ... 14)	
Tightening torque	Nm	0.6 ... 0.8	

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 1 UNIT

	Control supply voltage		Number of CO contacts for auxiliary contacts	Material of switching contacts	SD	Screw terminals		SD	Spring-type terminals (push-in)	
	at AC at 50 Hz	At DC				Article No.	Price per PU		Article No.	Price per PU
	V	V	W		d					
Coupling relays in industrial enclosure, 22.5 mm										
	24 ... 240	24 ... 240	1	AgSnO2	2	3RQ2000-1AW00	2		3RQ2000-2AW00	
			2	AgSnO2	2	3RQ2000-1BW00	2		3RQ2000-2BW00	
			3	AgSnO2	2	3RQ2000-1CW00	2		3RQ2000-2CW00	
			3	AgNi + Au	2	3RQ2000-1CW01	2		3RQ2000-2CW01	

Accessories

More information

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

Conversion tool, e.g. from 3RS18 to 3RQ2, see
www.siemens.com/sirius/conversion-tool

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
	d				

Terminals for SIRIUS devices in the industrial standard mounting rail enclosure

	Removable terminals				
	• 2-pole, up to 1 x 4 mm ² or 2 x 2.5 mm ²	2	3ZY1122-1BA00	1	6 units
	• 2-pole, up to 1 x 4 mm ² or 2 x 1.5 mm ²	2	3ZY1122-2BA00	1	6 units

Accessories for enclosures

	Hinged cover replacement cover, without terminal labeling, titanium gray, 22.5 mm wide	2	3ZY1450-1AB00	1	5 units
	Push-in lugs For wall mounting	2	3ZY1311-0AA00	1	10 units
	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable the mechanical coding of terminals	2	3ZY1440-1AA00	1	12 units

Tools for opening spring-type terminals

	Screwdrivers For all SIRIUS devices with spring-type terminals				
	3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	2	3RA2908-1A	1	1 unit

More information

Code conversion table

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

Overview



SIRIUS 3RQ4 coupling relays, narrow design

More information

SiePortal, see www.siemens.com/product_catalog_siep?3RQ4
 TIA Selection Tool Cloud (TST Cloud), see
www.siemens.com/tstcloud/?node=SIRIUSRelais
 Conversion tool, see www.siemens.com/conversion-tool

SIRIUS 3RQ4 coupling relays in narrow design are used for coupling control signals from and to a controller, and they are available in different versions:

- Coupling relays with integrated relay output
- Coupling relays with plug-in relays
- Coupling relays with integrated semiconductor output

Versions with protective coating on the printed circuit board according to IPC-A-610 are available for use in harsh ambient conditions (other device versions are available on request).

Coupling relays with integrated relay output**AC and DC operation**

IEC 60947-5-1

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

Coupling relays with plug-in relays**AC and DC operation**

IEC 60947-1

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

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

Coupling relays with integrated semiconductor output**AC and DC operation**

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

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

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

Article number schemes

Product versions		Article number			
Coupling relays with integrated relay output		3RQ40 □ 8 – □ A □ 0 □			
Design and type of output	Output coupler	1			
	Input coupler	3			
Type of electrical connection	Screw terminals		1		
	Spring-loaded terminals (push-in)		2		
Control supply voltage	24 V AC/DC			B	
	115 V AC/DC			E	
	230 V AC/DC			F	
Material of switching contacts	AgSnO2				0
	AgSnO2 hard gold-plated				1
Example		3RQ40 1 8 – 1 A B 0 1			

Product versions		Article number			
Coupling relays with integrated relay output		3RQ40 1 8 – 2 A □ 0 8 – 0 A □ 0			
Railway version with extended operating range 0.7 ... 1.2 x U_s					
Control supply voltage	24 V DC			M	
	110 V DC			N	
Versions	Standard printed circuit board				A
	With protective coating on printed circuit board				X
Example		3RQ40 1 8 – 2 A M 0 8 – 0 A A 0			

Product versions		Article number			
Coupling relays with plug-in relays		3RQ41 1 8 – □ A □ 0 □			
Design and type of output	Output coupler				
	Without manual-OFF-automatic switch	1			
	With manual-OFF-automatic switch	2			
Type of electrical connection	Screw terminals		1		
	Spring-loaded terminals (push-in)		2		
Control supply voltage	24 V AC/DC			B	
	115 V AC/DC			E	
	230 V AC/DC			F	
	24 V DC			M	
Material of switching contacts	AgSnO2				0
	AgSnO2 hard gold-plated				1
Example		3RQ41 1 8 – 1 A B 0 1			

Product versions				Article number							
Coupling relays with integrated semiconductor output				3RQ40 □ □ – □ S □ □ 0							
		Current-carrying capacity of the semiconductor output						Control supply voltage	Switching voltage of the semiconductor output		
Design and type of output	Output coupler	at DC 0.001 ... 3 A	5 0	□	M 5			11 ... 30 V DC	10 ... 60 V DC		
		at DC 0.001 ... 6 A	5 2	□	M 3			11 ... 30 V DC	10 ... 30 V DC		
		at DC 0.001 ... 3 A	5 2	□	M 4			11 ... 30 V DC	10 ... 60 V DC		
		at AC 0.005 ... 3 A	5 2	□	M 5			11 ... 30 V DC	20 ... 264 V AC		
		at DC 0.001 ... 6 A	5 3	□	G 3			110 ... 230 V AC/DC	10 ... 30 V DC		
		at DC 0.001 ... 6 A	5 5	□	M 3			11 ... 30 V DC	10 ... 30 V DC		
	Input coupler	at DC 0.001 ... 6 A	7 0	□	B 3			11 ... 30 V AC/DC	10 ... 30 V DC		
		7 0	□	G 3			110 ... 230 V AC/DC	10 ... 30 V DC			
Type of electrical connection	Screw terminals			1							
	Spring-loaded terminals (push-in)			2							
Example				3RQ40 7 0 – 1 S B 3 0							

Note:

The article number schemes show an overview of product versions for better understanding of the logic behind the article numbers.

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

Benefits**General**

- All versions with screw terminals or spring-loaded terminals (push-in technology)
- TOP wiring with spring-loaded terminals (push-in) for quick and reliable wiring
- Low space requirements in the control cabinet thanks to a consistent width of 6.2 mm
- Reduced stock-keeping due to fewer variance
- Clearly visible functional state of the coupling relay by green LED
- Integrated reverse polarity protection and EMC suppressor diode
- Standardized accessories across the entire 3RQ4 series
- Universal bridging option using connecting combs for all terminals
- Galvanic isolation plate for isolating different voltages in neighboring devices
- Device versions with protective coating on printed circuit board
- Clip-on labels available as set for individual labeling
- Highest quality (Made in Germany)
- Sustainable product design (Siemens EcoTech label)

Coupling relays with integrated relay output

- Relays fixed in enclosure for increased contact reliability
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents
- ATEX certification
- Safety Ready (B10d values available)

Coupling relays with plug-in relays

- Fast replacement of the relays with existing wiring
- Shorter installation times thanks to certified complete units
- Individual relays available as spare parts
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

Coupling relays with integrated semiconductor output

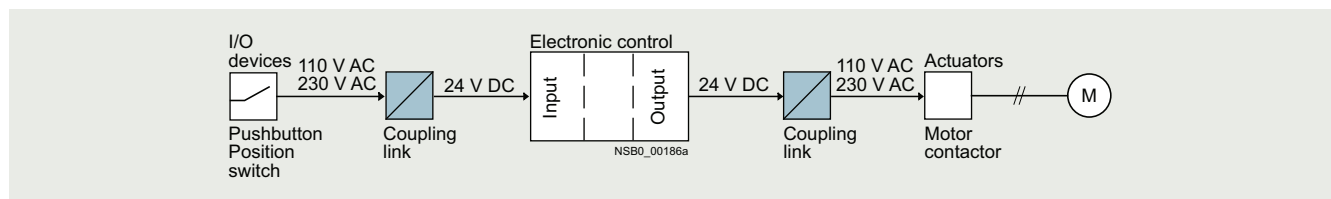
- Long service life since there is no mechanical wear
- High switching frequency thanks to short make-break times
- Vibration-resistant
- No contact bounce
- Extremely high contact reliability
- Noise-free switching
- Low control power required
- Switching of DC and capacitive loads

Note:

With semiconductors, the switching current is not dependent on the inductance of the load, i.e. the switching current for an inductive DC-13 load is the same as that for a DC-12 load. This means that coupling links with a semiconductor output are particularly suitable for inductive loads such as solenoid valves. It is not relevant to specify the number of operating cycles, because this does not affect the endurance of the semiconductor, provided it is not overheated.

Application

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



Application example motor controller

Suitable for use in harsh ambient conditions

Versions with protective coating on the printed circuit board according to IPC-A-610 are available for use in environments that are exposed to dust, condensation, rapid temperature changes and corrosion. These are intended for applications in rail systems, agriculture, mining, woodworking, etc.

Note:

Other device versions with protective coating on the printed circuit board are available on request.

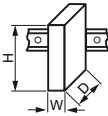
Technical specifications

More information

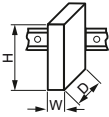
Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/30428/td>

Operating Instructions, see
<https://support.industry.siemens.com/cs/ww/en/ps/30428/man>
 FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/30428/faq>

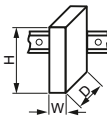
Coupling relays with integrated relay output

Article number		3RQ40.8- .AB00 .AB01 .AE00 .AE01 .AF00 .AF01					3RQ4018- 2AM08- 0AA0	2AM08- 0AX0	2AN08- 0AA0	2AN08- 0AX0	
General technical data											
Width x height x depth		mm	6.2 x 93 x 84.5								
Insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3	V	300									
Maximum permissible voltage for protective separation between control and auxiliary circuit	V	300									
Protective coating on printed circuit board	No; --							Yes, according to IPC-A-610	No; --	Yes, according to IPC-A-610	
Ambient temperature											
• During operation	°C	-25 ... +60					-40 ... +70				
• During storage	°C	-40 ... +85									
• During transport	°C	-40 ... +85									
Protection class IP	IP20										
Design of the fuse link for short-circuit protection of the auxiliary switch required	Fuse gG: 4 A										
Operational current of auxiliary contacts											
• At AC-15											
- At 24 V	A	3									
- At 250 V	A	3									
• At DC-13											
- At 24 V	A	1									
- At 125 V	A	0.2									
- At 250 V	A	0.1									
Contact reliability of auxiliary contacts (one incorrect switching operation of 100 million switching operations)		17 V, 5 mA	5 V, 1 mA	17 V, 5 mA	5 V, 1 mA	17 V, 5 mA	5 V, 1 mA	17 V, 5 mA			
Mechanical service life (operating cycles) typical	10 000 000										
Electrical endurance (operating cycles) at AC-15 at 250 V typical	100 000										
Operating range factor control supply voltage rated value											
• At AC											
- At 50 Hz		0.8 ... 1.25		0.8 ... 1.1			--				
- At 60 Hz		0.8 ... 1.25		0.8 ... 1.1			--				
• At DC		0.85 ... 1.25		0.8 ... 1.1			0.7 ... 1.25				
Consumed active power	W	0.3	0.5		1.3		0.3	0.5			
Thermal current	A	6; --						6; for derating, see characteristics			
B10d value	1 200 000										

Coupling relays with plug-in relays

Article number		3RQ41.8- .AB00, .AB30	.AB01	.AE00	.AE01	.AF00	.AF01	.AM00	.AM01
General technical data									
Width x height x depth	mm	6.2 x 93 x 88.5							
									
Insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3	V	300							
Maximum permissible voltage for protective separation between control and auxiliary circuit	V	300							
Ambient temperature									
• During operation	°C	-25 ... +60							
• During storage	°C	-40 ... +85							
• During transport	°C	-40 ... +85							
Protection class IP		IP20							
Design of the fuse link for short-circuit protection of the auxiliary switch required		Fuse gG: 4 A							
Operational current of auxiliary contacts									
• At AC-15									
- At 24 V	A	3							
- At 250 V	A	3							
• At DC-13									
- At 24 V	A	1							
- At 125 V	A	0.2							
- At 250 V	A	0.1							
Contact reliability of the auxiliary contacts (one incorrect switching operation of 100 million switching operations)		17 V, 5 mA	5 V, 1 mA	17 V, 5 mA	5 V, 1 mA	17 V, 5 mA	5 V, 1 mA	17 V, 5 mA	5 V, 1 mA
Mechanical service life (operating cycles) typical		10 000 000							
Electrical endurance (operating cycles) at AC-15 at 250 V typical		100 000							
Operating range factor control supply voltage rated value									
• At AC									
- At 50 Hz		0.8 ... 1.25		0.8 ... 1.1				--	
- At 60 Hz		0.8 ... 1.25		0.8 ... 1.1				--	
• At DC		0.85 ... 1.25		0.8 ... 1.1				0.8 ... 1.25	
Consumed active power	W	0.3		0.5		1.3		0.3	
Thermal current	A	6							

Coupling relays with integrated semiconductor output

Article number	3RQ4050-.SM50, 3RQ4052-.SM40		3RQ4052-.SM30, 3RQ4055-.SM30, 3RQ4070-.SB30	3RQ4052-.SM50	3RQ4053-.SG30, 3RQ4070-.SG30
General technical data					
Width x height x depth		mm	6.2 x 93 x 84.5		
Insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3	V	100	300		
Ambient temperature					
• During operation	°C	-25 ... +60			
• During storage	°C	-40 ... +85			
• During transport	°C	-40 ... +85			
Protection class IP		IP20			
Switching voltage of the semiconductor output					
• At AC	V	--		20 ... 264	--
• At DC	V	10 ... 60	10 ... 30	--	10 ... 30
Ampacity of the semiconductor output					
• At AC	A	--		0.005 ... 3	--
• At DC	A	0.001 ... 3	0.001 ... 6	--	0.001 ... 6
Operating range factor control supply voltage rated value					
• At AC					
- At 50 Hz		--			0.7 ... 1.1
- At 60 Hz		--			0.7 ... 1.1
• At DC		0.7 ... 1			0.7 ... 1.1
Consumed active power	W	0.2			0.5
Thermal current	A	3	6	2	5

Coupling relays

Article number	3RQ4...-1....	3RQ4...-2....
Type of electrical connection for auxiliary and control circuits	 Screw terminals	 Spring-loaded terminals (push-in)
Type of connectable conductor cross-sections		
• Solid	1 x (0.25 ... 2.5 mm ²)	
• Finely stranded		
- Without core end processing	--	1 x (0.25 ... 2.5 mm ²)
- With core end processing	1 x (0.25 ... 2.5 mm ²), 2 x (0.25 ... 1.5 mm ²)	1 x (0.25 ... 1.5 mm ²)
• For AWG cables		
- Solid	1 x (20 ... 14), 2 x (20 ... 16)	1 x (20 ... 14)
- Stranded	--	1 x (20 ... 14)

Selection and ordering data

PU (UNIT, SET, M) = 1
 PS* = 10 units
 PG = 41H



3RQ4018-1AB01



3RQ4118-2AB01

Type of voltage	Control supply voltage		Number of CO contacts for auxiliary contacts	Material of switching contacts	Operating mode selectable through switch position	Protective coating on printed-circuit board	Screw terminals		Spring-loaded terminals (push-in)	
	at AC	at DC					Article No.	Price per PU	Article No.	Price per PU
	at 50 Hz	at 60 Hz								
	V	V	V							

Coupling relays with integrated relay output

Output coupling links

AC/DC	24	24	24	1	AgSnO ₂	--	No	3RQ4018-1AB00	3RQ4018-2AB00
					AgSnO ₂	--	No	3RQ4018-1AB01	3RQ4018-2AB01
					hard gold-plated				
DC	115	115	115	1	AgSnO ₂	--	No	3RQ4018-1AE00	3RQ4018-2AE00
					AgSnO ₂	--	No	3RQ4018-1AF00	3RQ4018-2AF00
					hard gold-plated				
	230	230	230	1	AgSnO ₂	--	No	--	3RQ4018-2AM08-0AA0
					AgSnO ₂	--	Yes	--	3RQ4018-2AM08-0AX0
					hard gold-plated				
DC	110	110	110	1	AgSnO ₂	--	No	--	3RQ4018-2AN08-0AA0
					AgSnO ₂	--	Yes	--	3RQ4018-2AN08-0AX0
					hard gold-plated				

Input coupling links

AC/DC	24	24	24	1	AgSnO ₂	--	No	3RQ4038-1AB00	3RQ4038-2AB00
					AgSnO ₂	--	No	3RQ4038-1AB01	3RQ4038-2AB01
					hard gold-plated				
DC	115	115	115	1	AgSnO ₂	--	No	3RQ4038-1AE00	3RQ4038-2AE00
					AgSnO ₂	--	No	3RQ4038-1AE01	3RQ4038-2AE01
					hard gold-plated				
	230	230	230	1	AgSnO ₂	--	No	3RQ4038-1AF00	3RQ4038-2AF00
					AgSnO ₂	--	No	3RQ4038-1AF01	3RQ4038-2AF01
					hard gold-plated				

Coupling relays with plug-in relays

Output coupling links

AC/DC	24	24	24	1	AgSnO ₂	--	No	3RQ4118-1AB00	3RQ4118-2AB00
					AgSnO ₂	--	No	3RQ4118-1AB01	3RQ4118-2AB01
					hard gold-plated				
DC	115	115	115	1	AgSnO ₂	Manual/Off/Auto	No	3RQ4128-1AB30	3RQ4128-2AB30
					AgSnO ₂	--	No	3RQ4118-1AE00	3RQ4118-2AE00
					hard gold-plated			3RQ4118-1AE01	3RQ4118-2AE01
	230	230	230	1	AgSnO ₂	--	No	3RQ4118-1AF00	3RQ4118-2AF00
					AgSnO ₂	--	No	3RQ4118-1AF01	3RQ4118-2AF01
					hard gold-plated				
DC	24	24	24	1	AgSnO ₂	--	No	3RQ4118-1AM00	3RQ4118-2AM00
					AgSnO ₂	--	No	3RQ4118-1AM01	3RQ4118-2AM01
					hard gold-plated				

PU (UNIT, SET, M) = 1
 PS* = 10 units
 PG = 41H



3RQ4050-1SM50



3RQ4050-2SM50

Type of voltage	Control supply voltage			Ampacity of the semiconductor output		Screw terminals		Spring-loaded terminals (push-in)	
	at AC at 50 Hz	at 60 Hz	at DC	at AC	at DC	Article No.	Price per PU	Article No.	Price per PU

Coupling relays with integrated semiconductor output**Output coupling links**

DC	--	--	11 ... 30 V	--	1 mA ... 3 A	3RQ4050-1SM50	3RQ4050-2SM50
					1 mA ... 6 A	3RQ4052-1SM30	3RQ4052-2SM30
					1 mA ... 3 A	3RQ4052-1SM40	3RQ4052-2SM40
					5 mA ... 3 A	3RQ4052-1SM50	3RQ4052-2SM50
					--	3RQ4055-1SM30	3RQ4055-2SM30
AC/DC	110 ... 230 V	110 ... 230 V	110 ... 230 V	--	1 mA ... 6 A	3RQ4053-1SG30	3RQ4053-2SG30

Input coupling links

DC	--	--	11 ... 30 V	--	1 mA ... 6 A	3RQ4070-1SB30	3RQ4070-2SB30
AC/DC	110 ... 230 V	110 ... 230 V	110 ... 230 V	--	1 mA ... 6 A	3RQ4070-1SG30	3RQ4070-2SG30

Accessories

Application area	Design of the product	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Galvanic isolation plates					
 3RQ4900-0A	For electrical separation of different potentials when devices of different types are installed side by side	--		1 10 units	
Connecting combs					
 3RQ4901-0B	To connect equal potentials	Current-carrying capacity for infeed max. 10 A			
		• 2-pole	3RQ4901-0A	1 10 units	
		• 4-pole	3RQ4901-0B	1 10 units	
		• 8-pole	3RQ4901-0C	1 10 units	
		• 16-pole	3RQ4901-0D	1 10 units	
Clip-on labels¹⁾					
 3RQ4902-0A	For terminal and device labeling	White			
		• 5 x 5 mm	3RQ4902-0A	1 2 000 units	
		• 6 x 12 mm	3RQ4902-0B	1 1 200 units	
Tools for opening spring-loaded terminals					
 3RA2908-1A	Screwdriver	For all SIRIUS devices with spring-loaded terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	Spring-loaded terminals (push-in)  3RA2908-1A	1 1 unit	

¹⁾ PC labeling system for individual inscription of unit labeling plates available from:
Conta-Clip Verbindungstechnik GmbH
(see page 16/18).

Coupling relays with plug-in relays		Material of switching contacts	Number of CO contacts for auxiliary contacts	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
Type	Control supply voltage V						
Replacement relays for 3RQ41.8 coupling relays with plug-in relays							
 3RQ4914-7BQ00	3RQ4118-.AM00 24 DC	AgSnO2	1	3RQ4914-7BM00		1 15 units	
	3RQ4118-.AM01	AgSnO2 hard gold-plated		3RQ4914-7BM02		1 15 units	
	3RQ4118-.AB00 24 AC/DC	AgSnO2	1	3RQ4914-7BM00		1 15 units	
	3RQ4118-.AB01	AgSnO2 hard gold-plated		3RQ4914-7BM02		1 20 units	
 3RQ4914-7BP02	3RQ4128-.AB30	AgSnO2		3RQ4914-7BQ00			
	3RQ4118-.AE00 115 AC/DC	AgSnO2	1	3RQ4914-7BP00		1 15 units	
	3RQ4118-.AF00 230 AC/DC						
	3RQ4118-.AE01 115 AC/DC	AgSnO2 hard gold-plated	1	3RQ4914-7BP02		1 20 units	
	3RQ4118-.AF01 230 AC/DC						

Conversion of coupling relay predecessor 3RQ3 to successor 3RQ4

Predecessor	Successor	Predecessor	Successor
Coupling relay with integrated relay output		Coupling relay with semiconductor output	
3RQ3018-□ AB00	3RQ4018-□ AB00	3RQ3050-□ SM50	3RQ4050-□ SM50
3RQ3018-□ AE00	3RQ4018-□ AE00	3RQ3052-□ SM30	3RQ4052-□ SM30
3RQ3018-□ AF00	3RQ4018-□ AF00	3RQ3052-□ SM40	3RQ4052-□ SM40
3RQ3038-□ AB00	3RQ4038-□ AB00	3RQ3052-□ SM50	3RQ4052-□ SM50
3RQ3038-□ AE00	3RQ4038-□ AE00	3RQ3053-□ SG30	3RQ4053-□ SG30
3RQ3038-□ AF00	3RQ4038-□ AF00	3RQ3055-□ SM30	3RQ4055-□ SM30
1 screw-type connection	1	3RQ3065-□ SM30	3RQ4128-□ AB30*
2 spring-type connection (push-in)	2	3RQ3070-□ SB30	3RQ4070-□ SB30
		3RQ3070-□ SG30	3RQ4070-□ SG30
		1 screw-type connection	1
		2 spring-type connection (push-in)	2
Coupling relay with integrated relay output, hard gold-plated		Coupling relay with plug-in relay	
3RQ3018-□ AB01	3RQ4018-□ AB01	3RQ3118- □ AB00	3RQ4118- □ AB00
3RQ3038-□ AB01	3RQ4038-□ AB01	3RQ3118- □ AE00	3RQ4118- □ AE00
3RQ3038-□ AE01	3RQ4038-□ AE01	3RQ3118- □ AF00	3RQ4118- □ AF00
3RQ3038-□ AF01	3RQ4038-□ AF01	3RQ3118- □ AM00	3RQ4118- □ AM00
1 screw-type connection	1	1 Screw-type connection	1
2 spring-type connection (push-in)	2	2 spring-type connection (push-in)	2
Coupling relay with integrated relay output for railway standards		Coupling relay with plug-in relay and hard gold-plated	
3RQ3018-2AM08-0AA0	3RQ4018-2AM08-0AA0	3RQ3118- □ AB01	3RQ4118- □ AB01
3RQ3018-2AM08-0AX0	3RQ4018-2AM08-0AX0	3RQ3118- □ AE01	3RQ4118- □ AE01
3RQ3018-2AN08-0AA0	3RQ4018-2AN08-0AA0	3RQ3118- □ AF01	3RQ4118- □ AF01
3RQ3018-2AN08-0AX0	3RQ4018-2AN08-0AX0	3RQ3118- □ AM01	3RQ4118- □ AM01
		1 screw-type connection	1
		2 spring-type connection (push-in)	2
Replacement modules for the coupling relays with plug-in relay		Connecting combs	
3TX7014-7BQ00 (DC 12 V, AD/DC 24 V)	3RQ4914-7BQ00*	3RQ3901-0A (2-pole)	3RQ4901-0A
3TX7014-7BM00 (DC 24 V)	3RQ4914-7BM00	3RQ3901-0B (4-pole)	3RQ4901-0B
3TX7014-7BM02 (DC 24 V), hard gold-plated	3RQ4914-7BM02	3RQ3901-0C (8-pole)	3RQ4901-0C
3TX7014-7BP00 (DC 60 V, AC/DC 115/230 V)	3RQ4914-7BP00	3RQ3901-0D (16-pole)	3RQ4901-0D
3TX7014-7BP02 (DC 60 V, AC/DC 115/230), hard gold-plated	3RQ4914-7BP02	Clip-on signs white	
		3RQ3902-0A (5 x 5 mm)	3RQ4902-0A
		3RQ3902-0B (6 x 12 mm)	3RQ4902-0B
		Potential isolation plate	
		3RQ3900-0A	3RQ4900-0A

* Plug-in relay with manual-0-automatic switch for switching between manual and automatic mode commissioning (without PLC)

Overview



SIRIUS 3RS70 signal converters

More information

Homepage, see www.usa.siemens.com/relaysIndustry Mall, see www.siemens.com/product?3RS70For the conversion tool, e.g. from 3RS17 to 3RS70, see www.siemens.com/sirius/conversion-tool

Signal converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. Electrical separation is then needed as a result of the different power supplies. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic disturbance and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS70 signal 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

- IEC 61000-6-4 (generic standard for emitted interference)
- IEC 61000-6-2 (generic standard for interference immunity)

The analog signals comply with

- IEC 60381-1/2

Article No. scheme

Product versions		Article number					
Signal converters		3RS70					
Product function/type of input signal	Single-range converters, active	0 0					3-way separation, input 0 ... 10 V
		0 2					3-way separation, input 0 ... 20 mA,
		0 3					3-way separation, input 4 ... 20 mA,
	Switchable multi-range converters, active	0 5					3-way separation, 3 standard signals can be switched 0 ... 10 V, 0/4 ... 20 mA
	Switchable universal converters, active	0 6					3-way separation, 16 signals can be switched
	Single-range converters, passive	2 0					2-way separation, 4 ... 20 mA
	Switchable multi-range converters, active	2 5					3-way separation, with manual/automatic switch and setting potentiometer
Connection type	Screw terminals					1	
	Spring-type terminals (push-in)					2	
Type of output signal	0 ... 10 V					A	
	0 ... 20 mA					C	
	4 ... 20 mA					D	
	Loop power isolator 4 ... 20 mA					E	
	3 standard signals can be switched					F	
	4 frequencies can be switched					K	
Supply voltage	24 V AC/DC					E	
	None					T	
	24 ... 240 V AC/DC					W	
Example		3RS70	0 0	-	1 A E 0 0		

Note:

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

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

Relays

Coupling Relays and Signal Converters/Interface Converters

SIRIUS 3RS70 signal converters

Benefits

- Narrow width
- Easy-to-set universal converters
- Converters with frequency output
- All ranges are fully calibrated
- Universal family of devices – the perfect solution for every application
- Integrated manual/automatic switch with a setpoint generator
- Outputs are short-circuit-proof
- Up to 30 V – protected against damage caused by wiring errors

Application

Signal converters are used in analog signal processing for

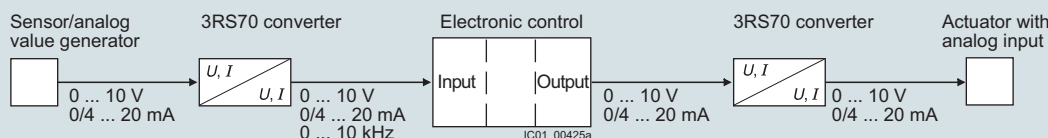
- Electrical separation
- Conversion of normalized and non-normalized signals
- Amplification and impedance adaptation
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs

3RS7025 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 3RS7025 devices feature an adjustable potentiometer for manual setpoint selection and a manual/automatic switch.

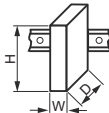
The potentiometer for the 3RS7025 devices is used to simulate analog output signals when the changeover switch is set to "Manual" and the control supply voltage is applied, without the need for an analog input signal. The scale ranges from 0 ... 100%.

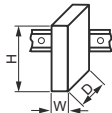
Example: When it is set for an output of 4 ... 20 mA, the left stop on the potentiometer represents an output current of 4 mA and the right stop represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer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

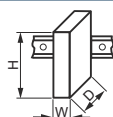


Application example of analog signal processing

Technical specifications

More information						
Technical specifications, see https://support.industry.siemens.com/cs/ww/en/ps/16691/td Operating instructions, see https://support.industry.siemens.com/cs/ww/en/view/109475738			Circuit diagrams, see https://support.industry.siemens.com/cs/ww/en/view/109475738			
Article number		3RS7000-.AE00	3RS7002-.AE00, 3RS7003-.AE00	3RS7000-.CE00, 3RS7000-.DE00	3RS7002-.CE00, 3RS7002-.DE00, 3RS7003-.CE00, 3RS7003-.DE00	3RS7020-.ET00
Product designation Product version		Single-range converters, active				Single-range converters, passive
General data:						
Width x height x depth		 mm	6.2 × 93 × 72.5			6.2 × 93 × 71
Ambient temperature		°C	-25 ... +60			
• During operation		°C	-40 ... +80			
• During storage						
Relative humidity during operation		%	10 ... 95			
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value		V	50			
Active power input		W	0.29			--
Degree of protection		IP20				
Input:						
Input voltage						
• Max.		V	30			
Input impedance						
• Of current input, maximum		Ω	--	100	--	100
• Of voltage input, minimum		kΩ	330	--	330	--
Output:						
Load						
• Maximum at current output		Ω	--	500		1 000
• Minimum at voltage output		kΩ	2	--		--
Relative measuring accuracy		%	0.1			
Short-circuit-proof			Yes			No

Article number		3RS7005-.FE00	3RS7005-.KE00	3RS7005-.FW00	3RS7005-.KW00	3RS7025-.FE00	3RS7025-.FW00
Product designation Product version		Switchable multi-range converters, active				Switchable multi-range converters, active, with manual/automatic switch and setting potentiometer	
General data:							
Width x height x depth			mm	6.2 × 93 × 72.5	17.5 × 93 × 72.5		17.5 × 93 × 75
Ambient temperature		°C	-25 ... +60				
• During operation		°C	-40 ... +80				
• During storage							
Relative humidity during operation		%	10 ... 95				
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value		V	50	300		50	300
Active power input		W	0.29	0.5	0.34	0.5	
Degree of protection			IP20				
Input:							
Input voltage							
• Max.		V	30				
Input impedance							
• Of current input, maximum		Ω	100				
• Of voltage input, minimum		kΩ	330				
Output:							
Load							
• Maximum at current output		Ω	500	--	500	--	500
• Minimum at voltage output		kΩ	2	--	2	--	2
Relative measuring accuracy		%	0.1				
Short-circuit-proof			Yes				

Article number		3RS7006-.FE00		3RS7006-.FW00	
Product designation		Switchable universal converters,			
Product version		active			
General data:					
Width x height x depth			mm	17.5 × 93 × 72.5	
Ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Relative humidity during operation		%	10 ... 95		
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value		V	50	300	
Active power input		W	0.5		
Degree of protection		IP20			
Input:					
Input voltage					
• Max.		V	30		
Input impedance					
• Of current input, maximum		Ω	100		
• Of voltage input, minimum		kΩ	330		
Output:					
Load					
• Maximum at current output		Ω	500		
• Minimum at voltage output		kΩ	2		
Relative measuring accuracy		%	0.1		
Short-circuit-proof		Yes			

Article number	3RS70..-1....	3RS70..-2....
Type of electrical connection	 Screw terminals	 Spring-type terminals (push-in)
Type of connectable conductor cross-sections		
• Solid	1x (0.25 ... 2.5 mm²)	1x (0.25 ... 2.5 mm²)
• Finely stranded	--	1x (0.25 ... 2.5 mm²)
- Without end sleeves	1x (0.25 ... 1.5 mm²)	1x (0.25 ... 1.5 mm²)
- With end sleeves	1x (20 ... 14)	1x (20 ... 14)
• Solid for AWG cables		

Selection and ordering data

Signal type At the input	At the output	Supply voltage	Width mm	SD d	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
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Single-range converters

Passive**Type of electrical isolation, 2-way**

4 ... 20 mA	4 ... 20 mA	--	6.2	2	3RS7020-□ET00		1	1 unit
-------------	-------------	----	-----	---	---------------	--	---	--------

Single-range converters

Active**Type of electrical isolation, 3-way**

0 ... 10 V	0 ... 10 V	24 V AC/DC	6.2	2	3RS7000-□AE00		1	1 unit
0 ... 20 mA	0 ... 10 V	24 V AC/DC	6.2	2	3RS7002-□AE00		1	1 unit
4 ... 20 mA	0 ... 10 V	24 V AC/DC	6.2	2	3RS7003-□AE00		1	1 unit
0 ... 10 V	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7000-□CE00		1	1 unit
0 ... 20 mA	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7002-□CE00		1	1 unit
4 ... 20 mA	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7003-□CE00		1	1 unit
0 ... 10 V	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7000-□DE00		1	1 unit
0 ... 20 mA	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7002-□DE00		1	1 unit
4 ... 20 mA	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7003-□DE00		1	1 unit

3RS7000-1AE00

3RS7000-2AE00

Multi-range converters

Active, switchable**Type of electrical isolation, 3-way**

0 ... 10 V,	0 ... 10 V,	24 V AC/DC	6.2	2	3RS7005-□FE00		1	1 unit
0 ... 20 mA,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7005-□FW00		1	1 unit
4 ... 20 mA	4 ... 20 mA							
	0 ... 50 Hz	24 V AC/DC	6.2	2	3RS7005-□KE00		1	1 unit
	0 ... 100 Hz	24 ... 240 V AC/DC	17.5	2	3RS7005-□KW00		1	1 unit
	0 ... 1 kHz							
	0 ... 10 kHz							

3RS7005-1FW00

Multi-range converters

Active, with manual/automatic switch and setting potentiometer**Type of electrical isolation, 3-way**

0 ... 10 V,	0 ... 10 V,	24 V AC/DC	17.5	2	3RS7025-□FE00		1	1 unit
0 ... 20 mA,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7025-□FW00		1	1 unit
4 ... 20 mA	4 ... 20 mA							

Universal converters

Active, switchable**Type of electrical isolation, 3-way**

0 ... 60 mV,	0 ... 10 V,	24 V AC/DC	17.5	2	3RS7006-□FE00		1	1 unit
0 ... 100 mV,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7006-□FW00		1	1 unit
0 ... 300 mV,	4 ... 20 mA							
0 ... 500 mV,								
0 ... 1 V,								
0 ... 2 V,								
0 ... 5 V,								
0 ... 10 V,								
0 ... 20 V,								
2 ... 10 V,								
0 ... 5 mA,								
0 ... 10 mA,								
0 ... 20 mA,								
4 ... 20 mA,								
-5 ... +5 mA,								
-20 ... +20 mA								

3RS7006-1FE00

Type of electrical connection

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

1
2

Accessories

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
d					
Galvanic isolation plates					
 3RQ3900-0A	Galvanic isolation plates For electrical separation of different potentials when devices of different types are installed side by side				
	2	3RQ3900-0A		1	10 units
Connecting combs					
 3RQ3901-0B	Connecting combs For linking the same potentials, current carrying capacity for infeed max. 6 A				
	2	3RQ3901-0A		1	10 units
	2	3RQ3901-0B		1	10 units
	2	3RQ3901-0C		1	10 units
	2	3RQ3901-0D		1	10 units
Clip-on labels					
	Clip-on labels For terminal marking and equipment labeling, white				
	2	3RQ3902-0A		100	2 000 units
Tools for opening spring-type terminals					
 3RA2908-1A	Spring-type terminals (push-in) 				
	2	3RA2908-1A		1	1 unit

Overview**Version**

The 3TG10 contactors with 4 main contacts are available with screw-type terminals or with 6.3 mm to 0.8 mm tab connectors. The designs with screw-type terminals are suitable for use in any climate and safe from touch to DIN VDE 0106 Part 100.

The 3TG10 contactors have a compact design. Their overall width is 36 mm.

Application

They are suitable for use in household appliances as well as for distribution boards in offices and residential buildings, owing to their hum-free construction. They can further be used in all areas where there is only a limited amount of space available, e.g. in air conditioners, heating systems, pumps and fans - basically in all simple electrical controls.

AC and DC operation

EN 60 947-4-1
(VDE 0660 Part 102).

Surge suppression

The 3TG10 contactors are fitted with an integrated protective circuit for damping opening surges.

Overload and short-circuit protection

The 3UA7 overload relay can be used for overload protection (see NS E catalogue, available in German). This applies both for contactor mounting and for mounting as a single unit.

The data for short-circuit protection of the contactors without using an overload relay are provided in the technical data.

Selection and ordering data

Ratings Utilization category			Main contacts	Rated control supply voltage U_s	Order No.	List Price \$	Weight approx.	Pack
AC-1 maximum resistive load	Horsepower ratings of three-phase loads at 50 Hz 400 V	AC-3 maximum inductive current	Design 					
A	kW	A	NO NC					
							kg	Units

**With screw connections, 4-pin
for screwing and snapping onto 35 mm standard mounting rail · hum-free****• AC operation**

	3TG10 ...0	20	5	8.4	4	–	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 10-0AL2 3TG10 10-0AG2 3TG10 10-0AC2	0.15	10
					3	1	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 01-0AL2 3TG10 01-0AG2 3TG10 01-0AC2	0.15	10

• DC operation

	20	5	8.4	4	–	DC 24 V	3TG10 10-0BB4 3TG10 01-0BB4	0.15	10
				3	1	DC 24 V			

**With tab connectors 6.3 x 0.8 mm, 4-pin
for screwing and snapping onto 35 mm standard mounting rail · hum-free****• AC operation**

	3TG10 ...-1	16	5	8.4	4	–	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 10-1AL2 3TG10 10-1AG2 3TG10 10-1AC2	0.14	10
					3	1	230 V, 45–450 Hz 110 V, 45–450 Hz 24 V, 45–450 Hz	3TG10 01-1AL2 3TG10 01-1AG2 3TG10 01-1AC2	0.14	10

• DC operation

	16	5	8.4	4	–	DC 24 V	3TG10 10-1BB4 3TG10 01-1BB4	0.14	10
				3	1	DC 24 V			

1) The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated.

Technical data

General data

Mechanical endurance	operating cycles		3 mill.
Electrical endurance at I_e	operating cycles	AC-1 AC-3	0.1 million 0.4 million
Rated insulation voltage U_i (pollution degree 3)		V	400
Rated impulse withstand voltage U_{imp}		kV	4
Safe isolation acc. to DIN VDE 0106 Part 101 and A1 (draft 2/89) between coil and contacts		V	up to 300
Permissible ambient temperature	in operation ¹⁾ when stored	°C °C	-25 ... +55 -50 ... +80
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)			IP 00, coil system IP 20
Power consumption of the coils (with coil in cold state and $1.0 \times U_s$)			
	AC operation 45 – 450 Hz	VA	4.4
	p.f.		0.9 (hum-free)
	DC operation	W	4
Coil voltage tolerance			0.85 to $1.1 \times U_s$
Operating times (break-time = opening time + arcing time)			AC operation DC operation
	Closing	closing time opening time	NO ms NC ms
	Opening	opening time closing time	NO ms NC ms
	Arcing time		ms
Shock resistance			
rectangular pulse	AC and DC operation	g/ms	5.1/5 and 3.5/10
sine pulse	AC and DC operation	g/ms	7.9/5 and 5.2/10
Operating frequency z in operating cycles per hour			
Rated operation	No-load op. frequency	1/h	10000
	for AC-1	1/h	1000
	for AC-2	1/h	500
	for AC-3	1/h	1000

Short-circuit protection

Fuse links			
Utilisation category gL/gG	NH DIAZED NEOZED	Type 3NA Type 5SB Type 5SE	
acc. to IEC 60 947-4-1 (DIN VDE 0660 Part 102)	Type of coordination "1" Type of coordination "2"	A A	25 10
Miniature circuit-breaker	C-characteristic	A	10

Load ratings with AC

AC-1 utilisation category, switching resistive load			
Rated operational current I_e at 55 °C to 400 V ¹⁾			
with screw connection	A	20	
with tab connector	A	16	
Ratings U_e of three-phase loads p.f. = 1	V	400	230/220
with screw connection	kW	13	7.5
with tab connector	kW	10	6.0
Minimum conductor cross-section with $I_{e \text{ load}}$	mm ²	2.5	

1) If the three main conducting paths are loaded with 20 A and $I > 10$ A for the fourth conducting

path; the permissible ambient temperature is 40 °C.

Technical data

Load ratings with AC

AC-2 and AC-3 utilisation categories

Rated operational currents I_e up to 400 V

A

8.4

Ratings of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz and at 400 V

kW

4

AC-5a utilisation category (permissible supply impedance: $\geq 0.5 \Omega$)

Switching gas discharge lamps

per main conducting path at 50 Hz 230 V

Uncorrected

Lead-lag

Rating per lamp

W

18

36

58

18

36

58

Rated operational current per lamp

A

0.37

0.43

0.67

2 x 0.11

2 x 0.21

2 x 0.32

Number of lamps

unit

43

37

24

2 x 81

2 x 42

2 x 28

Switching gas discharge lamps with correction, electronic ballast

per main conducting path at 50 Hz 230 V

Parallel correction

Electr. ballast, 1 lamp

Electr. ballast, 2 lamps

Rating per lamp

W

18

36

58

18

36

58

Capacitor

 μF

4.5

4.5

7

6.8

6.8

10

10

10

22

Rated operational current per lamp

A

0.11

0.21

0.32

0.10

0.18

0.27

0.18

0.35

0.52

Number of lamps

unit

15

15

10

39

39

26

2 x 26

2 x 26

2 x 1

AC-5b utilisation category, switching incandescent lamps

per main conducting path at 50 Hz 230 V

kW

1.6

Load ratings with DC

DC-1 utilisation category, switching resistive load ($\frac{L}{R} \leq 1 \text{ ms}$)Rated operational current I_e

Conducting paths connected in series

1

2

3

4

up to 24 V

A

16

16

18

20

60 V

A

6

16

18

20

110 V

A

2

6

16

20

220 V/240 V

A

0.8

1.6

6

20

DC-3 and DC-5 utilisation categories, shunt and series motors

 $(\frac{L}{R} \leq 15 \text{ ms})$ Rated operational current I_e

Conducting paths connected in series

1

2

3

4

up to 24 V

A

10

16

16

18

60 V

A

0.5

5

16

16

110 V

A

0.15

0.35

10

10

220 V/240 V

A

–

–

1.75

2

Conductor cross-sections for designs

with screw connections

Screw connection

Finely stranded with end sleeve (DIN 46 228, style A/D/C)

mm²

M3

Solid

mm²

2 x (0.75 to 2.5)

mm²

2 x (1 to 2.5)

1 x 4

with tab connectors

Finely stranded

6.3 to 1

mm²

0.5 to 1

When using push-on contact acc. to DIN 46 245/46 247

6.3 to 2.5

mm²

1 to 2.5

Ⓢ and Ⓢ ratings (screw connection)

Rated insulation voltage

AC

V

600

Conventional thermal current

Free air and enclosed

A

20

Maximum horsepower ratings

(Ⓢ and Ⓢ-approved values)

Ratings of three-phase motors

at 60 Hz

at 115 V

hp

1/2

200 V

hp

1

230 V

hp

1 1/2

460 V/575 V

hp

–

600 V

hp

–

3-phase

–

3

3

5

5

Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

3TG10 power relays

Accessories

For contactor	Design	Order No.	List Price \$	Weight approx.	Pack
Type	Max. rated operational currents $I_n/AC-1$ (at 55 °C) of contactors A	PG 101		kg	Units
	Max. conductor cross-sections mm ²				

Links for paralleling (star jumpers)

• 3-pole without terminal ¹⁾²⁾

3TG10	16 Star jumpers can be reduced by one pole	—	3RT1 916-4BA31	0.004	1
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• 3-pole with terminal ¹⁾³⁾

3TG10	40	25	3RT1 916-4BB31	0.013	1
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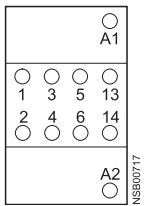
• 4-pole with terminal ¹⁾⁴⁾

3TG10	50	25	3RT1 916-4BB41	0.02	1
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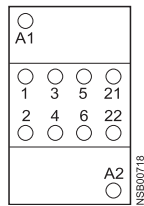
Circuit diagrams

Position of terminals

3TG10 10
1 NO

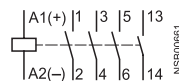


3TG10 01
1 NC

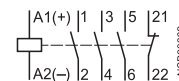


Internal circuit diagram

3TG10 10
1 NO
Ident. 10E



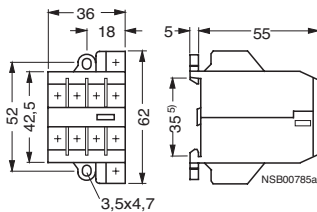
3TG10 01
1 NC
01E



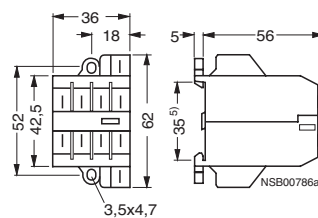
Dimension drawings

AC and DC operation

3TG10 ...-0..
with screw connections

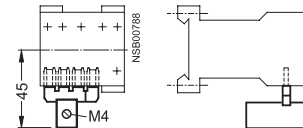


3TG10 ...-1..
with tab connectors



Accessories for 3TG10

3RT19 16-4BB41 links for paralleling, 4-pole, with terminal



The links for paralleling can be reduced by one pole.

1) The links for paralleling can be reduced by one pole. The rated operational currents are valid for each pole. The links for paralleling are insulated.

2) Replacement type for 3TX44 90-2C.

3) Replacement type for 3TX44 90-2A.

4) Replacement type for 3TX44 90-2B.

5) Can be snapped onto 35 mm standard mounting rails.

Coupling Relays and Interfaces

3TX71 and LZS plug-in relays

Selection and ordering data

Siemens offers two lines of plug-in style relays to meet your industrial needs – **3TX71** and **LZS**.



3TX71 relays are available as open power, enclosed power and plug-in style relays. The plug-in family includes basic, premium and bifurcated styles, screw terminals only, and must be ordered as individual components; the selection guide shows which base and accessories belong with which relay. Basic style relays are the most economical and are equipped with a mechanical flag indicator only. Premium style relays offer LED and mechanical flag indication, push-to-test and a latching function for testing without power to the coil. Premium Bifurcated style relays are ideal for low minimum holding current requirements on the contacts (3mA vs. 100mA).



LZS plug-in relays can be ordered as complete units or as individual components and are available with screw or push-in terminals. Complete unit order numbers include the relay, base, LED (with surge suppression in 24VDC version) and retainer/ejector clip and are available with changeover contacts (1CO to 4CO) and coil voltages from 12VDC to 230VAC. PT & MT versions have a push-to-test and a latching function for testing without power to the coil. RT versions are miniature, only 15mm wide and feature 1CO or 2CO contacts. MT versions are 11-pin octal base relays, with 3CO contacts with or without LED and components must be ordered individually.

Square Base (Narrow)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
SPDT	15	12VDC	3TX7110-5BB03C	3TX7110-5JB03	4E7	1L7	B
		24 VDC	3TX7110-5BC03C	3TX7110-5JC03	4E7	1L7	B
		24 VAC	3TX7110-5BC13C	3TX7110-5JC13	4E7	1L7	B
		120 VAC	3TX7110-5BF13C	3TX7110-5JF13	4E7	1L7	B
		240 VAC	—	3TX7110-5JG13	4E7	1L7	B



Square Base (Standard)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
DPDT	12	24 VDC	3TX7111-3DC03C	3TX7111-3LC03	4E5 ¹⁾	1L11	B
		24 VAC	3TX7111-3DC13C	3TX7111-3LC13	4E5 ¹⁾	1L11	B
		120 VAC	3TX7111-3DF13C	3TX7111-3LF13	4E5 ¹⁾	1L11	B
DPDT	15	12 VDC	3TX7114-5DB03C	—	4E6	1L11	B
		24VDC	3TX7114-5DC03C	3TX7114-5LC03	4E6	1L11	B
		24VAC	3TX7114-5DC13C	3TX7114-5LC13	4E6	1L11	B
		120 VAC	3TX7114-5DF13C	3TX7114-5LF13	4E6	1L11	B
		240 VAC	—	3TX7114-5LH13	4E6	1L11	B
DPDT	10	12 VDC	3TX7115-5DB03C	—	4E4	1L12	A
		24VDC	3TX7115-5DC03C	—	4E4	1L12	A
		24VAC	3TX7115-5DC13C	3TX7115-5LC13	4E4	1L12	A
		120 VAC	3TX7115-5DF13C	3TX7115-5LF13	4E4	1L12	A



Note: See page 11/140 for socket accessories.

¹⁾ Derate Relay Thermal Current Rating to 300V, 10A when using 3TX7144-4E5 socket connection type. If you wish to use the relay at its full 300V, 12A thermal rating, the connection must be hard wired to the Relay Terminals with properly rated Quick Connects or Solder Connections.

See 3TX7111 DPDT illustration on page 11/147.

Option	Basic	Premium
Mechanical Flag	✓	✓
Push To Test		✓
Lock Down Door		✓
LED		✓

Coupling Relays and Interfaces

3TX71 plug-in relays

Selection and ordering data



Square Base (Standard)

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Premium Bifurcated	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
3PDT	15	24VDC	3TX7116-5FC03C	3TX7116-5NC03	—	4E8	1L9	A
		24VAC	3TX7116-5FC13C	3TX7116-5NC13	—	4E8	1L9	A
		120 VAC	3TX7116-5FF13C	3TX7116-5NF13	—	4E8	1L9	A
3PDT	10	24VDC	3TX7115-5FC03C	3TX7115-5NC03	—	4E4	1L12	A
		120 VAC	3TX7115-5FF13C	3TX7115-5NF13	—	4E4	1L12	A
4PDT	6A for Basic and Premium and 3A for Bifurcated	24VDC	3TX7111-3HC03C	3TX7111-3PC03	—	4E5	1L11	B
		24VAC	3TX7111-3HC13C	3TX7111-3PC13	3TX7111-5PC13B	4E5	1L11	B
		120 VAC	3TX7111-3HF13C	3TX7111-3PF13	3TX7111-5PF13B	4E5	1L11	B
		240 VAC	—	—	—	4E5	1L11	B
4PDT	15	24VDC	3TX7117-5HC03C	3TX7117-5PC03	—	4E9	1L10	A
		24VAC	3TX7117-5HC13C	—	—	4E9	1L10	A
		120 VAC	3TX7117-5HF13C	3TX7117-5PF13	—	4E9	1L10	A

Option	Basic	Premium	Premium Bifurcated
Mechanical Flag	✓	✓	✓
Push To Test	✓	✓	✓
Lock Down Door		✓	✓
LED		✓	✓

Note: See page 11/140 for socket accessories.

Coupling Relays and Interfaces

3TX71 plug-in relays

Selection and ordering data



Standard Octal Base

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Premium Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
DPDT	10	12 VDC	3TX7112-1DB03C	3TX7112-1LB03	4E2	1L14	A
		24VDC	3TX7112-1DC03C	3TX7112-1LC03	4E2	1L14	A
		24VAC	3TX7112-1DC13C	3TX7112-1LC13	4E2	1L14	A
		120 VAC	3TX7112-1DF13C	3TX7112-1LF13	4E2	1L14	A
		240 VAC	3TX7112-1DG13C	3TX7112-1LG13	4E2	1L14	A
3PDT	10	24VDC	3TX7112-1FC03C	3TX7112-1NC03	4E3	1L14	A
		24VAC	3TX7112-1FC13C	3TX7112-1NC13	4E3	1L14	A
		120 VAC	3TX7112-1FF13C	3TX7112-1NF13	4E3	1L14	A
		240 VAC	—	3TX7112-1NG13	4E3	1L14	A



Hermetically Sealed

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Uses Socket 3TX7144-	Uses Clip 3TX7144-	Socket Access Set
3PDT	12	24 VDC	3TX7127-7HC00	4E3	1L12	A
4PDT	3	24VDC	3TX7127-3HC00	4E5	1L11	B
		24VAC	3TX7127-3HC10	4E5	1L11	B
		120 VAC	3TX7127-3HF10	4E5	1L11	B
4PDT	5	12 VDC	3TX7127-3HB03	4E5	1L11	B
		24VDC	3TX7127-3HC03	4E5	1L11	B
		120 VAC	3TX7127-3HF13	4E5	1L11	B

Socket Accessories

Access. Series	MOV	MOV	R/C	R/C	Diode
	24VAC/DC	120VAC/DC	6-24VAC/DC	110-240VAC/DC	6-250VDC
A	3TX7144-H1	3TX7144-H20	3TX7144-H4	3TX7144-H5	3TX7144-H6
B	3TX7144-H9	3TX7144-H17	—	—	3TX7144-H12

Note: See socket accessories above.

Coupling Relays and Interfaces

3TX71 plug-in relays

Selection and ordering data

Open Power Relays

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay	Metal Cover 7144-
SPST NO-DM	40	24VAC	3TX7130-0AC13	1M0
SPST NO-DM		120 VAC	3TX7130-0AF13	1M0
SPST NO-DM		240 VAC	3TX7130-0AH13	1M0
SPST NC-DB	40	120 VAC	3TX7130-0QF13	1M0
SPDT		24 VAC	3TX7130-0BC13	1M0
SPDT		120 VAC	3TX7130-0BF13	1M0
SPDT		240 VAC	3TX7130-0BH13	1M0
SPDT		277 VAC	3TX7130-0BS13	1M0
DPDT	40	24 VAC	3TX7130-0DC13	1M0
		120 VAC	3TX7130-0DF13	1M0
		240 VAC	3TX7130-0DH13	1M0
		277 VAC	3TX7130-0DS13	1M0
		12 VDC	3TX7130-0DB03	1M0
		24 VDC	3TX7130-0DC03	1M0
		48 VDC	3TX7130-0DD03	1M0
DPST NO	40	110 VDC	3TX7130-0DF03	1M0
		24 VAC	3TX7130-0CC13	1M0
		120 VAC	3TX7130-0CF13	1M0
		240 VAC	3TX7130-0CH13	1M0
		12 VDC	3TX7130-0CB03	1M0
DPDT (Mag Blowout)	40	24 VDC	3TX7130-0CC03	1M0
		48 VDC	3TX7130-0CD03	1M0
		120 VAC	3TX7130-0RF13	1M0
		12 VDC	3TX7130-0RB03	1M0
		24 VDC	3TX7130-0RC03	1M0
		48 VDC	3TX7130-0RD03	1M0
		110 VDC	3TX7130-0RF03	1M0



Enclosed Power Relays

Contacts	Contact Rating (A)	Coil Voltage	Basic Relay
DPST-NO	30	24VAC	3TX7131-4CC13
		120 VAC	3TX7131-4CF13
		230 VAC	3TX7131-4CH13
DPDT	30 NO/ 3 NC	24 VDC	3TX7131-4DC03
		24VAC	3TX7131-4DC13
		120 VAC	3TX7131-4DF13
		230 VAC	3TX7131-4DH13



Note: See page 11/140 for socket accessories.

General specifications

Contact Characteristics		Units	3TX7110	3TX7111		
Number and Type of Contacts			SPDT	DPDT	4PDT	4PDT
Contact Material			Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy
Thermal (Carrying) Current		A	15	12	6	3 (Bifurcated)
Maximum Switching Voltage		V	300	300	300	300
Switching Current at Voltage		Resistive	15A @240V	—	6A @240V	3A @240V
		Resistive	15A @120V	12A @120V	6A @120V	3A @120V
		Resistive	15A @ 28	12A @ 28	6A @ 28	3A @ 30
		HP	1/2 @ 120VAC	1/3 @ 120VAC	1/3 @ 120VAC	1/16 @ 120VAC
		HP	1 @ 240VAC	—	1 @ 240VAC	—
		Pilot Duty	B300	B300	B300	—
Minimum Switching Requirement		mA	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	3 @ 17VDC (.4W)
Coil Characteristics						
Voltage Range	AC	V	24, 120, 240	6...240	24, 120	24, 120, 240
	DC	V	12, 24	6...125	24	N/A
Operating Range	AC	%	85 to 110	85 to 110	85 to 110	85 to 110
	DC	%	80 to 110	80 to 110	80 to 110	80 to 110
Average Consumption	AC	VA	0.9	1.2	1.2	1.2
	DC	W	0.7	0.9	0.9	0.9
Drop-out Voltage Threshold	AC	%	15	15	15	15
	DC	%	10	10	10	10
Performance Characteristics						
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000	200,000	200,000	200,000
Mechanical Life	Unpowered		10,000,000	10,000,000	10,000,000	10,000,000
Operating Time (response time)		ms	20	20	20	20
Dielectric Strength	Between Coil and Contact	V(rms)	2500	2500	2500	2500
	Between Poles	V(rms)	1500	1500	1500	1500
	Between Contacts	V(rms)	1500	1500	1500	1500
Environment						
Product Certifications	Standard Version		UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS
Ambient Air Temperature around the Device	Storage	°C	-40...+85	-40...+85	-40...+85	-40...+85
	Operational	°C	-40...+55	-40...+55	-40...+55	-40...+55
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10	10	10	10
Degree of Protection			IP40	IP40	IP40	IP40
Weight		grams	29	36	36	36

Contact Characteristics		Units	3TX7112		3TX7114	3TX7115		3TX7116	3TX7117
Number and Type of Contacts			DPDT	3PDT	DPDT	DPDT	3PDT	3PDT	4PDT
Contact Material			Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy	Silver Alloy
Thermal (Carrying) Current		A	10	10	15	10	15	15	15
Maximum Switching Voltage		V	300	300	300	300	300	300	300
Switching Current at Voltage		Resistive	10A @240V	10A @240V	12A @277V	10A @277V	10A @277V	12A @277V	12A @277V
		Resistive	10A @120V	10A @120V	15A @120V	10A @120V	10A @120V	15A @120V	15A @120V
		Resistive	10A @ 28	10A @ 28	12A @ 28	10A @ 28	10A @ 28	12A @ 28	12A @ 28
		HP	1/3 @ 120VAC	1/3 @ 120VAC	1/2 @ 120VAC	1/3 @ 120VAC	1/3 @ 120VAC	1/2 @ 120VAC	1/2 @ 120VAC
		HP	1/2 @ 240VAC	1/2 @ 240VAC	1 @ 240VAC	1/2 @ 240VAC	1/2 @ 240VAC	3/4 @ 240VAC	3/4 @ 240VAC
		Pilot Duty	B300	B300	B300	B300	B300	B300	B300
Minimum Switching Requirement		mA	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)	100 @ 5VDC (.5W)
Coil Characteristics									
Voltage Range	AC	V	24, 120, 240	24, 120, 240	24, 120, 240	24, 120	24, 120	24, 120	24, 120
	DC	V	12, 24	24	12, 24	12, 24	12, 24	24	24
Operating Range	AC	%	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110	85 to 110
	DC	%	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110	80 to 110
Average Consumption	AC	VA	1.2	1.2	1.2	1.2	1.2	1.5	1.5
	DC	W	0.9	0.9	0.9	0.9	0.9	1.4	1.5
Drop-out Voltage Threshold	AC	%	15	15	15	15	15	15	15
	DC	%	10	10	10	10	10	10	10
Performance Characteristics									
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	200,000	200,000	100,000	100,000	100,000	200,000	200,000
Mechanical Life	Unpowered		10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Operating Time (response time)		ms	20	20	20	20	20	20	20
Dielectric Strength	Between Coil and Contact	V(rms)	2500	2500	2500	2500	2500	2500	2500
	Between Poles	V(rms)	1500	1500	1500	1500	1500	2500	2500
	Between Contacts	V(rms)	1500	1500	1500	1500	1500	1500	2500
Environment									
Product Certifications	Standard Version		UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS	UL,RoHS
Ambient Air Temperature around the Device	Storage	°C	-40...+85	-40...+85	-40...+85	-40...+85	-40...+85	-40...+85	-40...+85
	Operational	°C	-40...+55	-40...+55	-40...+55	-40...+55	-40...+55	-40...+55	-40...+55
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10	10	10	10	10	10	10
Degree of Protection			IP40	IP40	IP40	IP40	IP40	IP40	IP40
Weight		grams	89	89	36	88	88	60	60

General specifications

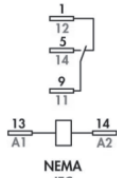
Contact Characteristics			Units			3TX7127	3TX7130
Number and Type of Contacts						3PDT	4PDT
Contact Material						Silver Alloy	Silver Alloy
Thermal (Carrying) Current			A			12	3
Maximum Switching Voltage			V			300	300
Switching Current at Voltage			Resistive			12A @240V	3A @240V
			Resistive			12A @120V	3A @120V
			Resistive			12A @ 28	3A @ 30
			HP			1/3 @ 120VAC	1/16 @ 120VAC
			HP			1/2 @ 240VAC	1/10 @ 240VAC
			Pilot Duty			B300	—
Minimum Switching Requirement			mA			100 @ 5VDC (.5W)	10 @ 5VDC (.5W)
Coil Characteristics							
Voltage Range	AC	V	N/A			24, 120	120
	DC	V	24			12, 24	12, 24
Operating Range	AC	%	85 to 110			85 to 110	85 to 110
	DC	%	80 to 110			80 to 110	80 to 110
Average Consumption	AC	VA	1.2			1.2	1.2
	DC	W	0.9			0.9	0.9
Drop-out Voltage Threshold	AC	%	15			15	15
	DC	%	10			10	10
Performance Characteristics							
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000			100,000	100,000
Mechanical Life	Unpowered		10,000,000			10,000,000	1,000,000
Operating Time (response time)		ms	20			20	30
Dielectric Strength	Between Coil and Contact	V(rms)	1,500			1240	1240
	Between Poles	V(rms)	1,500			1240	1240
	Between Contacts	V(rms)	1500			500	500
Environment							
Product Certifications	Standard Version		UL, RoHS			UL, RoHS	UL, RoHS
Ambient Air Temperature around the Device	Storage	°C	-40...+85			-40...+85	-40...+85
	Operational	°C	-40...+55			-40...+70	-40...+70
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz			3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10			10	—
Degree of Protection			IP67			IP67	Open
Weight		grams	130			45	227 to 312

Contact Characteristics			Units			3TX7131	3TX7132
Number and Type of Contacts						DPST-NO	DPDT
Contact Material						Silver Alloy	Silver Alloy
Thermal (Carrying) Current			A			30	30 DPDT-NO
Maximum Switching Voltage			V			600	300
Switching Current at Voltage			Resistive			20A @300V	3A @277V
			Resistive			—	—
			Resistive			20A @ 28	20A @ 28
			HP			1/3 @ 120VAC	1 @ 120VAC
			HP			1/2 @ 600VAC	3 @ 240VAC
			Pilot Duty			—	—
Minimum Switching Requirement			mA			500 @ 12VAC/DC	500 @ 12VAC/DC
Coil Characteristics							
Voltage Range	AC	V	24, 120, 240			24, 120, 240	24, 120, 240
	DC	V	24			24	24
Operating Range	AC	%	85 to 120			85 to 120	85 to 120
	DC	%	75 to 120			75 to 120	75 to 120
Average Consumption	AC	VA	4			4	4
	DC	W	1.7			1.7	1.7
Drop-out Voltage Threshold	AC	%	10			10	10
	DC	%	10			10	10
Performance Characteristics							
Electrical Life (UL508)	Operations @ Rated Current	(Resistive)	100,000			100,000	100,000
Mechanical Life	Unpowered		5,000,000			5,000,000	5,000,000
Operating Time (response time)		ms	15			15	15
Dielectric Strength	Between Coil and Contact	V(rms)	4000			4000	4000
	Between Poles	V(rms)	2000			2000	2000
	Between Contacts	V(rms)	1500			1500	1500
Environment							
Product Certifications	Standard Version		UL			UL	UL
Ambient Air Temperature around the Device	Storage	°C	-40...+85			-40...+85	-40...+85
	Operational	°C	-40...+55			-40...+55	-40...+55
Vibration Resistance	Operational	g-n	3, 10 - 55 Hz			3, 10 - 55 Hz	3, 10 - 55 Hz
Shock Resistance		g-n	10			10	10
Degree of Protection			—			—	—
Weight		grams	86			86	86

Circuit diagrams

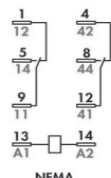
3TX7110

SPDT



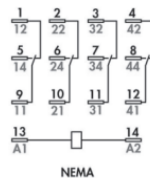
3TX7111

DPDT



3TX7111

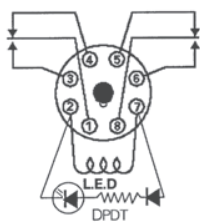
4PDT



3TX7112

DPDT

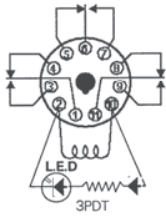
AC COIL CIRCUIT



3TX7112

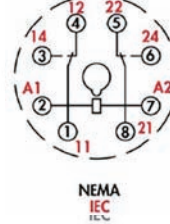
3PDT

AC COIL CIRCUIT



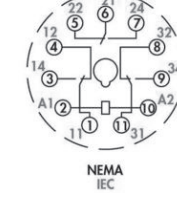
3TX7112-1L, -1D

DPDT

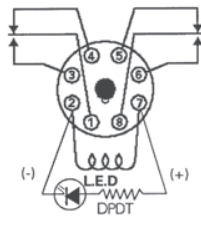


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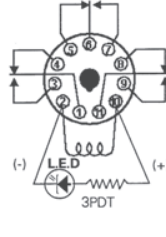
3PDT



DC COIL CIRCUIT

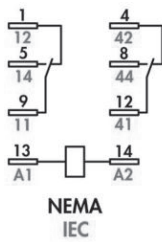


DC COIL CIRCUIT



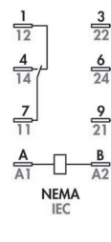
3TX7114

DPDT



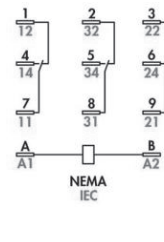
3TX7115

DPDT



3TX7115

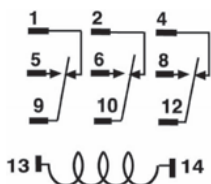
3PDT



Circuit diagrams

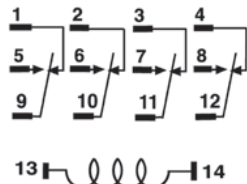
3TX7116

3PDT



3TX7117

4PDT

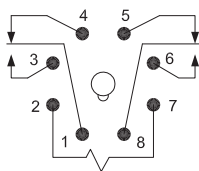


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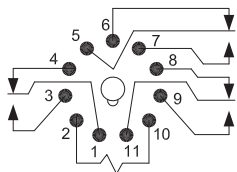
4PDT



3TX7127 (DPDT)



3TX7127 (3PDT)



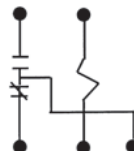
3TX7130

SPST-NO



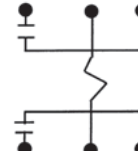
3TX7130

SPDT



3TX7130

DPST-NO



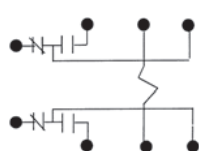
3TX7130

SPST-NC

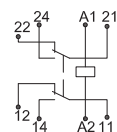


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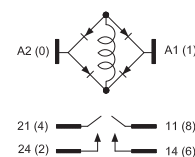
DPDT



3TX7130 (DPDT)

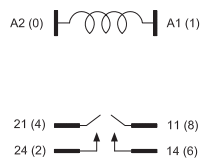


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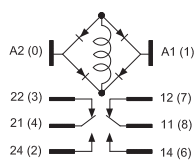


Circuit diagrams

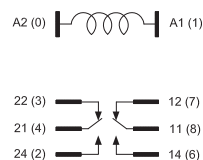
3TX7131 (DPST-NO) (DC)



3TX7131 (DPDT) (AC)



3TX7131 (DPDT) (DC)



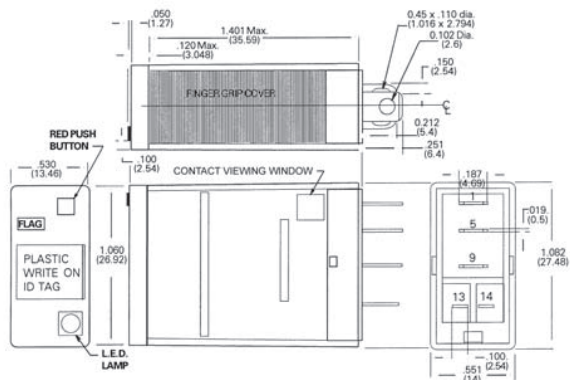
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

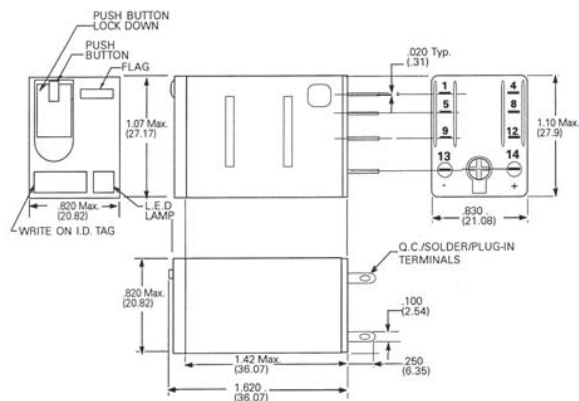
3TX71 plug-in relays

Dimension drawings

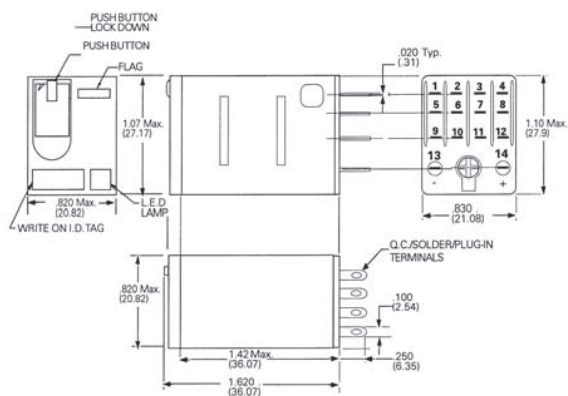
3TX7110 SPDT



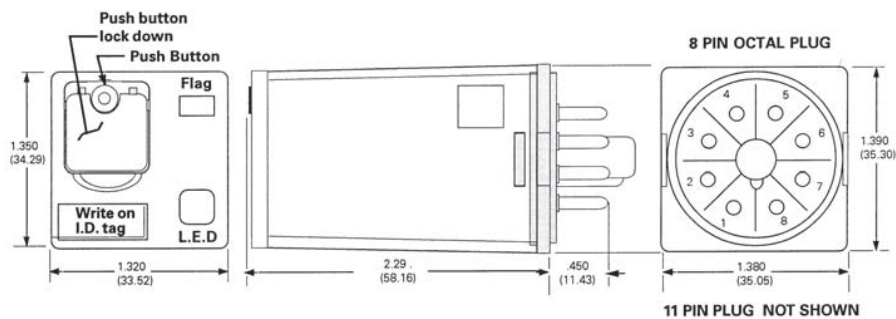
3TX7111 DPDT



3TX7111 4PDT

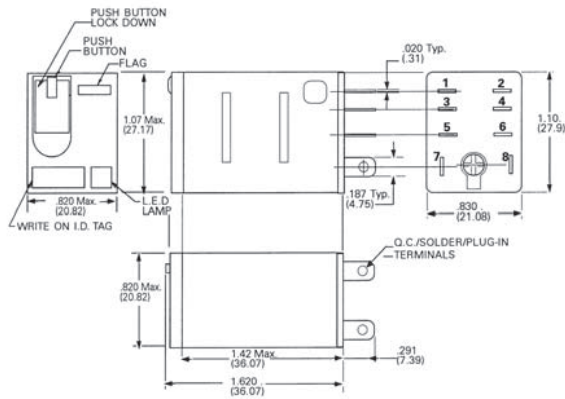


3TX7112 DPDT

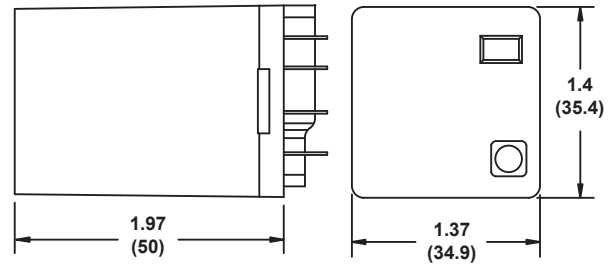


Dimension drawings

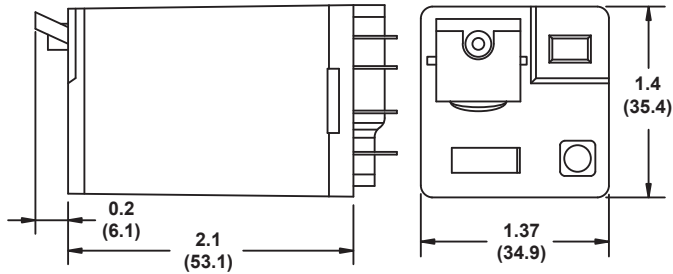
3TX7114 DPDT



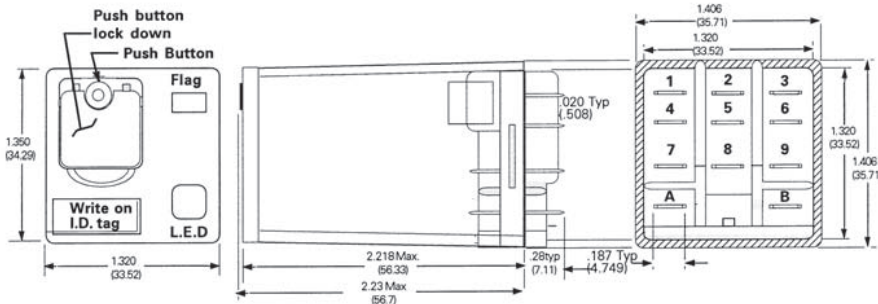
3TX7115 (DPDT) (clear cover)



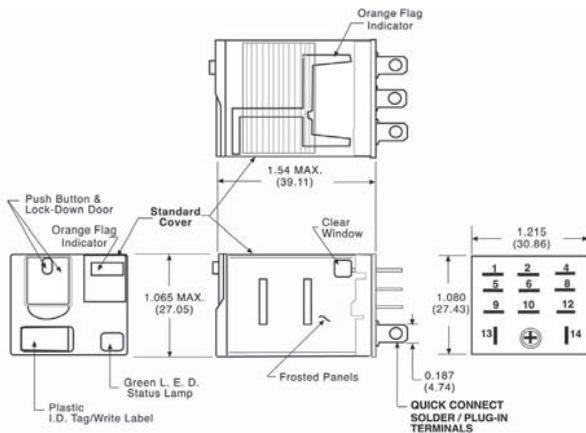
3TX7115 (DPDT) (full feature)



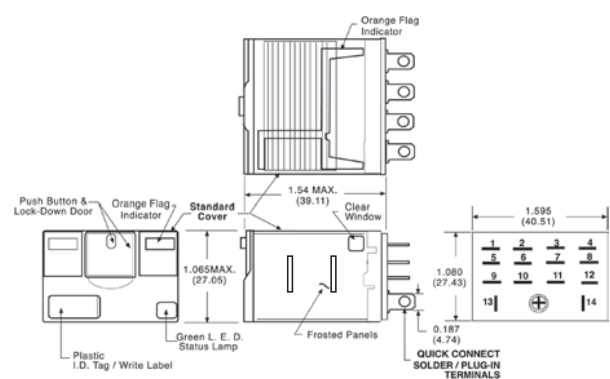
3TX7115 3PDT



3TX7116 3PDT



3TX7117 4PDT



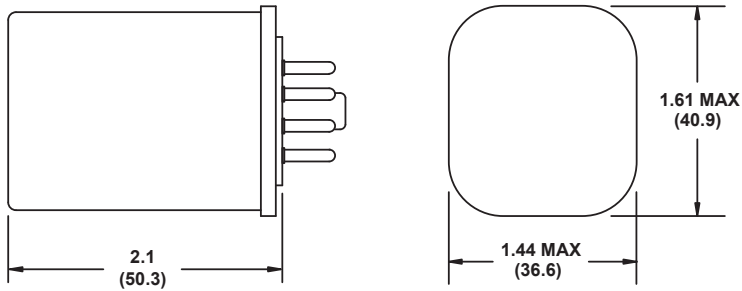
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

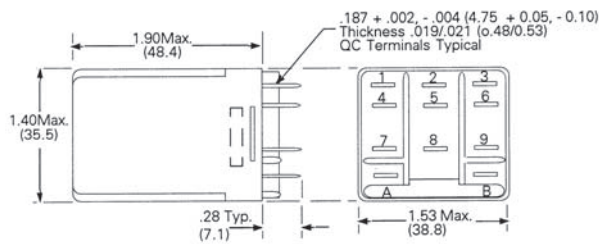
3TX71 plug-in relays

Dimension drawings

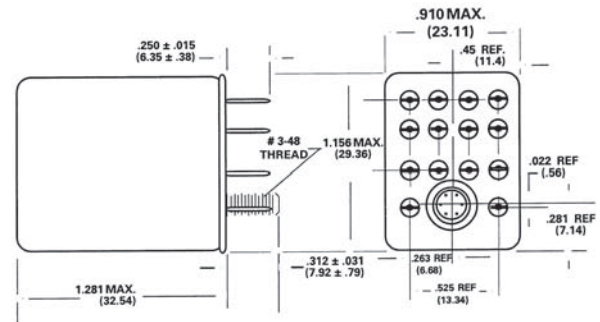
3TX7127 (DPDT)



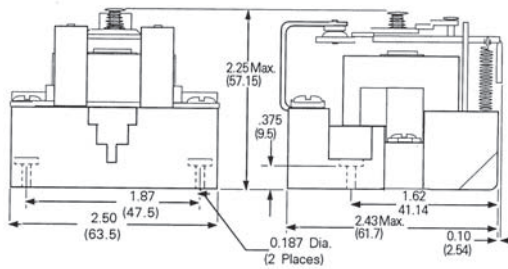
3TX7127 3PDT



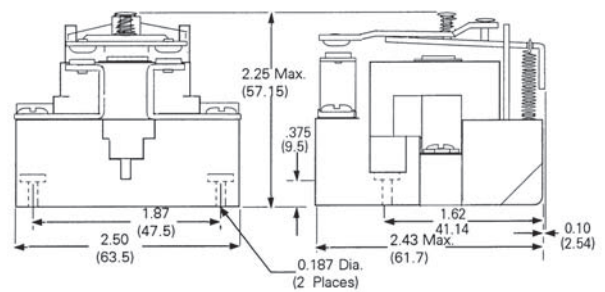
3TX7127 4PDT



3TX7130 SPST NC



3TX7130 SPST NO



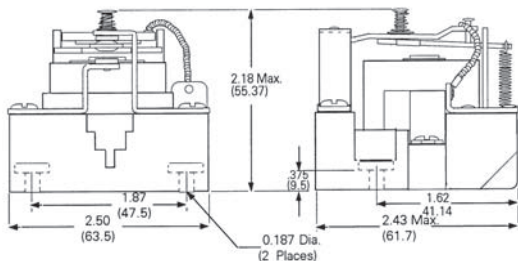
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

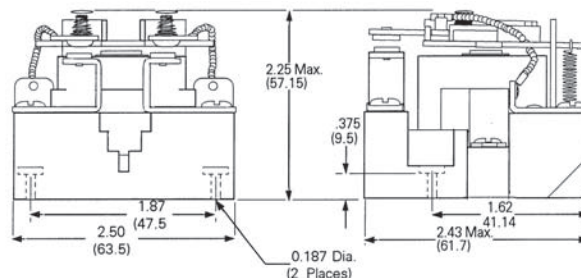
3TX71 plug-in relays

Dimension drawings

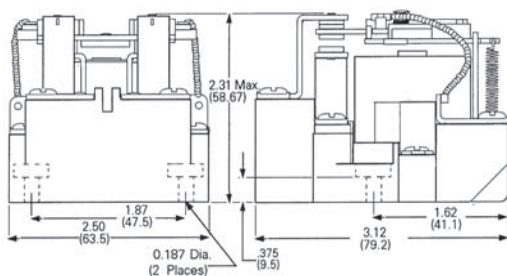
3TX7130 SPDT



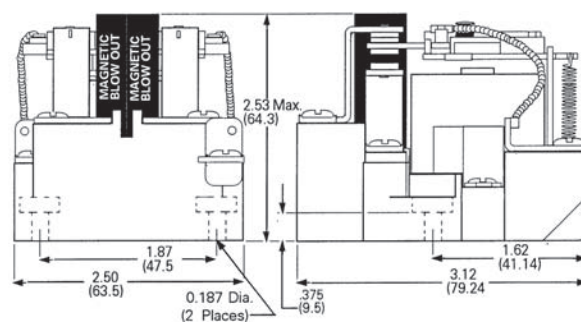
3TX7130 DPST NO



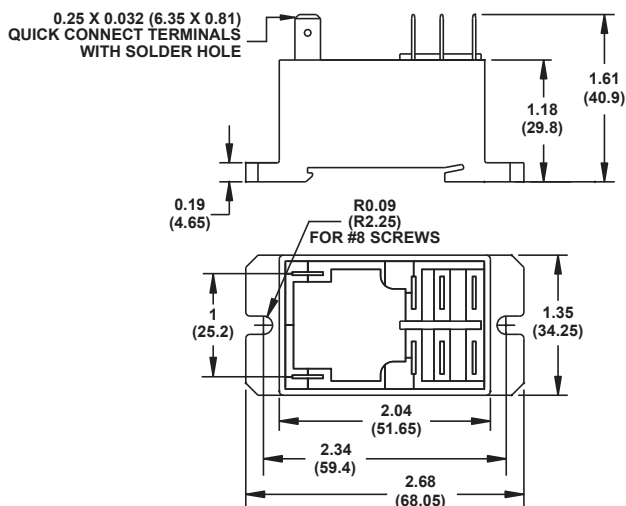
3TX7130 DPDT



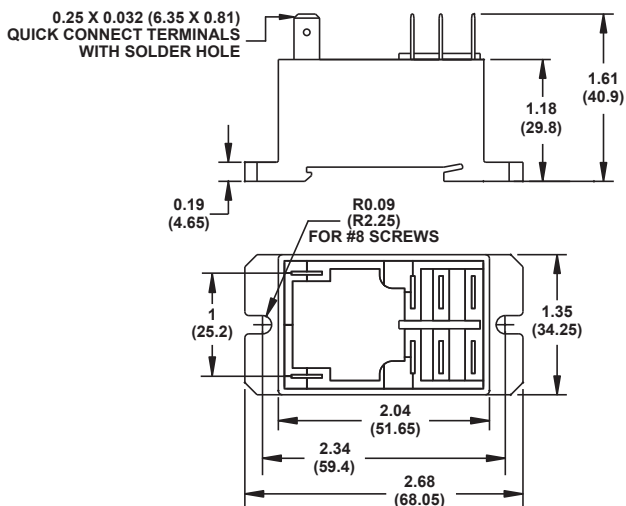
3TX7130 DPDT with magnetic blowout



3TX7131 (DPST-NO)



3TX7131 (DPDT)



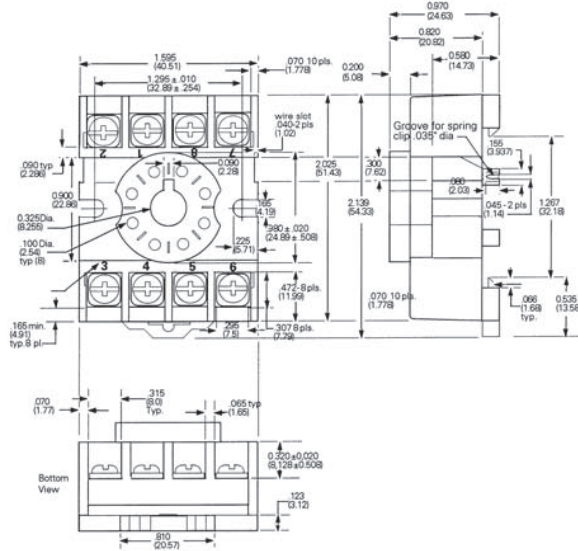
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

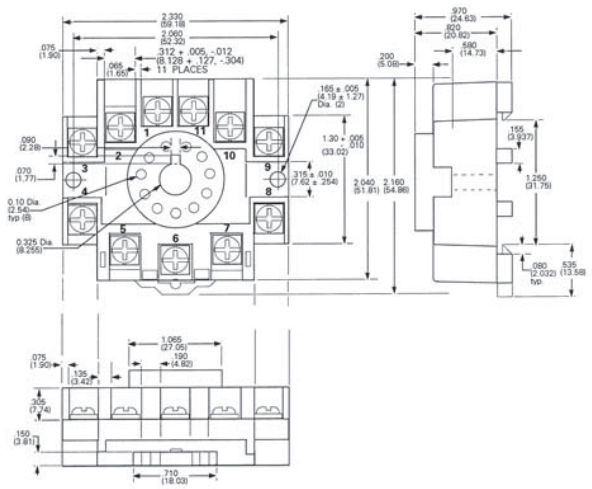
3TX71 plug-in relays

Dimension drawings

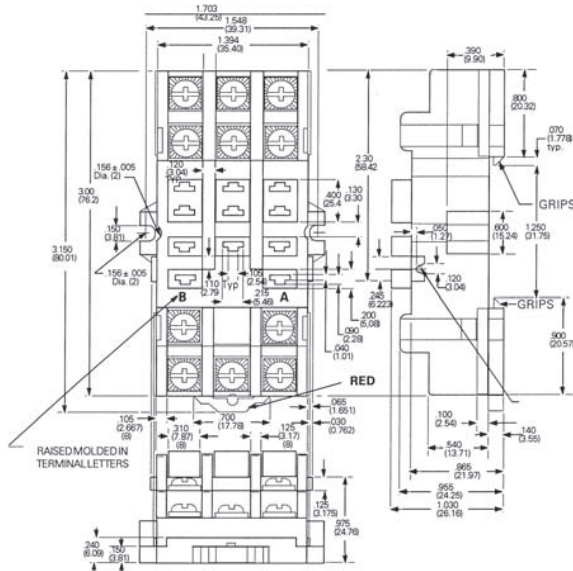
3TX7144-1E2



3TX7144-1E3



3TX7144-1E4



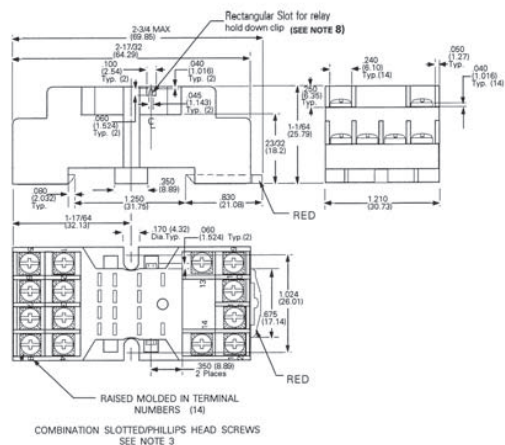
Function Relays, Interfaces and Converters

Coupling Relays and Interfaces

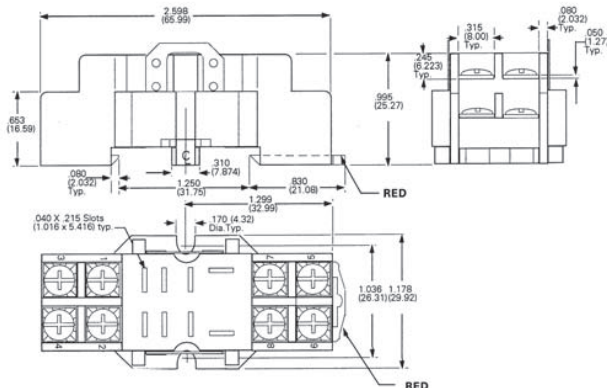
3TX71 plug-in relays

Dimension drawings

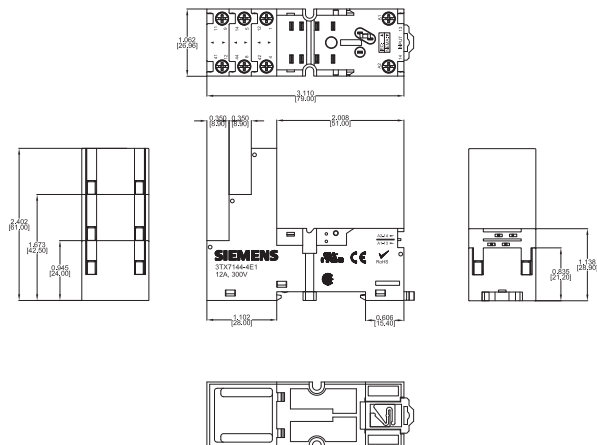
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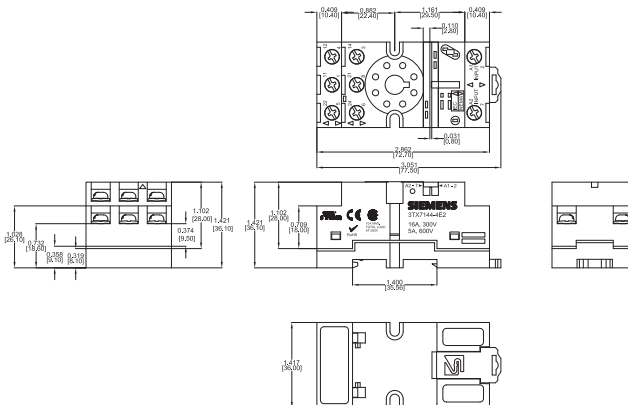
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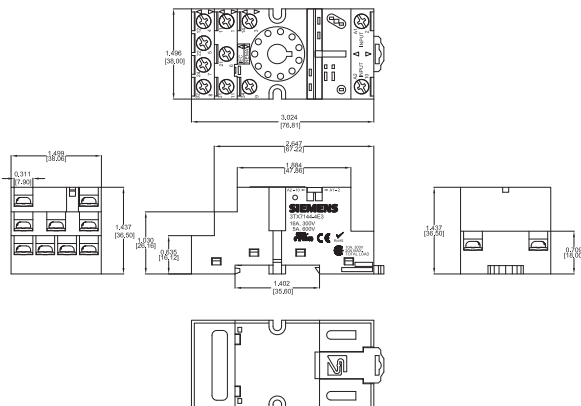
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3TX7144-4E2

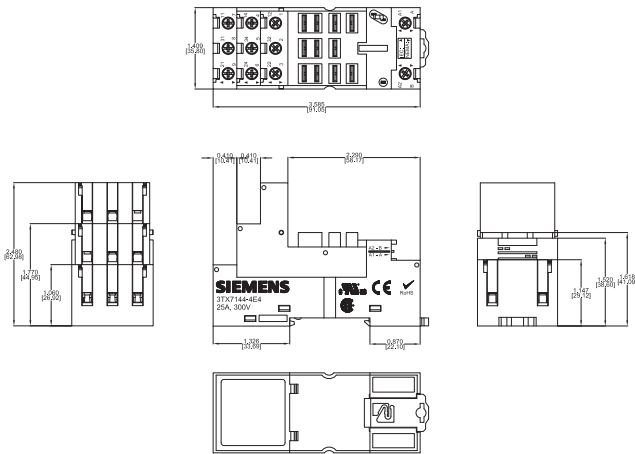


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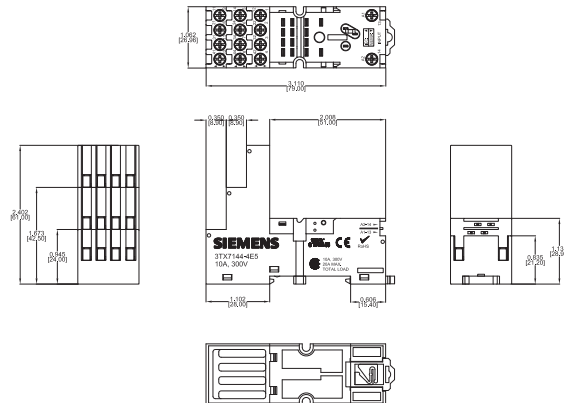


Dimension drawings

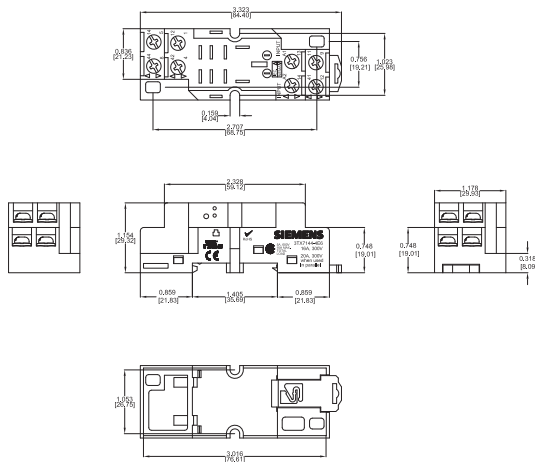
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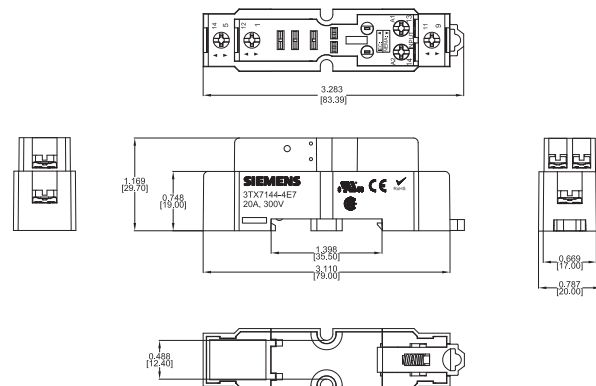
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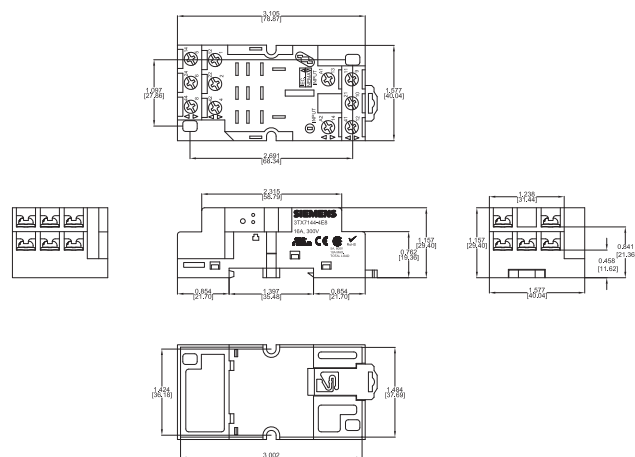
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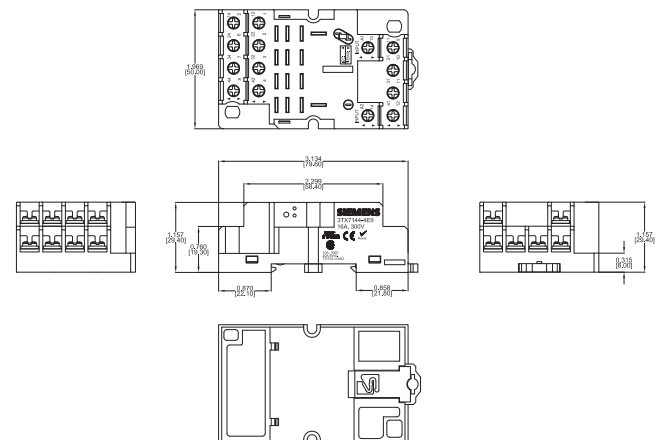
3TX7144-4E7



3TX7144-4E8



3TX7144-4E9



Overview

More information

Homepage, see www.siemens.com/sirius-coupling-relays
 SiePortal, see www.siemens.com/product_catalog_siep?3RQ_3RS_LZ
 TIA Selection Tool Cloud (TST Cloud), see
www.siemens.com/tstcloud/?node=SIRIUSRelais

LZS coupling relays with plug-in relays can be ordered as complete units or as single modules for customer assembly.

Function

The coupling relays with semiconductor output have low power consumption and are therefore particularly well-suited to solid-state systems. In the versions equipped with LEDs, these indicate the switching state. The LZS:PT coupling relays have a test button. This can be used to force the relays into the switching state and to lock it without electrical control. This is indicated by a raised petrol-colored lever.

Control with solid-state output

In the case of solid-state outputs (e.g. proximity switch) with overload and short-circuit protection, you must make allowance during configuration for the temporarily flowing capacitor charging currents! This is possible, for example, by using a suitable LZS coupling relay with plug-in relay.

Surge suppression

The 24 V DC relays LZX:RT and LZX:PT with LEDs can be supplied with, all others without integral surge suppression (freewheeling diode connected in parallel with A1/A2). The positive control supply voltage must be connected to coil terminal A1.

Mounting

The relays are plugged into the base and this is snapped onto a TH 35 DIN rail according to IEC 60715.

For the RT and PT series, a combined fixing/ejection bracket is available which can be used to disassemble the relay where access is difficult, for example, in side-by-side design.

They can be mounted as required.

Logical separation

The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for coil. Logical separation is not necessarily protective separation.

Protective separation

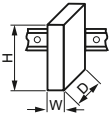
For protective separation, transfer of the voltage of one circuit to another circuit is prevented to a suitable degree of safety (requirements and tests are described in IEC 60947-1 in Annex N).

Technical specifications

More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16204/td>

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/16204/man>

Relay type		LZX:RT print relays, 8-pole, (12.7 mm) 1 CO/2 CO				LZX:PT industrial relays, 8-, 11- and 14-pole, (22.5 mm) 2 CO/3 CO/4 CO			
General data									
Dimensions (W x H x D)									
• LZS:RT.A4/LZS:PT.A5 • LZS:RT.B4/LZS:PT.B5 • LZS:RT.D4/LZS:PT.D5		mm	15.5 x 78 x 71				28 x 74 x 72		
		mm	15.5 x 77 x 71				28 x 77 x 79		
		mm	15.5 x 98 x 71				28 x 98 x 79		
Rated control supply voltage $U_c^{1)}$	V	24 DC	24 AC	115 AC	230 AC	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (pollution degree 3)	V	250							
Overvoltage category according to IEC 60664-1		III							
Protective separation between coil and contacts according to IEC 60947-1, Annex N		Up to 250 V (with plug-in socket LZS:RT78726) No (for complete units with standard socket)					No		
Degree of protection									
• Relays • Bases		IP67					IP50		
		IP20							
Permissible ambient temperature									
• During operation	°C	-40 ... +70							
• During storage	°C	-40 ... +80							
Conductor cross-sections									
Connection type		 Screw terminals							
• Solid	mm ²	2 x 2.5							
• Finely stranded with end sleeve	mm ²	2 x 1.5							
• Corresponding opening tool		Screwdriver, size 3.0 ... 3.5 mm x 0.5 mm (3RA2908-1A)							
Connection type		 Spring-loaded terminals (push-in)							
• Solid	mm ²	1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5							
• Finely stranded without end sleeve	mm ²	1 x (0.75 ... 1.5), 2 x (0.75 ... 1.0), 2 x 1.5							
• Finely stranded with end sleeve	mm ²	1 x (0.75 ... 1.0), 2 x 0.75, 1 x 1.5							

¹⁾ AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

Coupling Relays

LZS coupling relays with plug-in relays

Relay type		LZX:RT print relays, 8-pole, (12.7 mm) 1 CO/2 CO				LZX:PT industrial relays, 8-, 11- and 14-pole, (22.5 mm) 2 CO/3 CO/4 CO				
Rated control supply voltage U_c ¹⁾	V	24 DC	24 AC	115 AC	230 AC	24 DC	24 AC	115 AC	230 AC	
Control side										
Operating range factor		0.9 ... 1.4		0.9 ... 1.1		0.9 ... 1.4		0.9 ... 1.1		
Power consumption at U_c										
• AC	VA	--	0.75			--	1			
• DC	W	0.4	--			0.75	--			
Release voltage		V	2.4	3.6	17.3	34.5	2.4	7.2	34.5	69
Protective circuit			Freewheel- ing diode for com- plete unit	--		Freewheel- ing diode in LED module		--		
Load side										
Switching voltage AC/DC		V	24 ... 250							
Rated currents ²⁾										
• Conventional thermal current I_{th} - 1 CO contact - 2 CO contacts - 3 CO contacts - 4 CO contacts	A	16				--				
	A	8				12				
	A	--				10				
	A	--				6				
• Rated operational current I_o AC-15 according to utilization categories (IEC 60947-5-1) - 1 CO contact - 2 CO contacts - 3 CO contacts - 4 CO contacts	A	6	3			4	2			
	A	3				4	2			
	A	--				4	2			
	A	--				4	2			
• Rated operational current I_o DC-13 with suppressor diode according to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V				PT2, PT3, PT5: 4 at 24 V, 0.5 at 230 V				
Short-circuit protection										
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA according to IEC 60947-5-1										
• DIAZED, type 5SB	A	10				6				
Minimum contact load (reliability: 1 ppm)		Standard 17 V, 10 mA; hard gold-plated 17 V/0.1 mA				Standard 17 V, 10 mA; hard gold-plated 20 V/1 mA				
Mechanical endurance										
• 1 CO contact	Operat- ing cycles	30 x 10 ⁶	10 x 10 ⁶	1 x 10 ⁵	7 x 10 ⁴	30 x 10 ⁶	20 x 10 ⁶			
• 2 CO contacts	Operat- ing cycles	30 x 10 ⁶	5 x 10 ⁶	1 x 10 ⁵	8 x 10 ⁴	30 x 10 ⁶	20 x 10 ⁶			
• 3 CO contacts	Operat- ing cycles	--				30 x 10 ⁶	20 x 10 ⁶			
• 4 CO contacts	Operat- ing cycles	--				30 x 10 ⁶	20 x 10 ⁶			
Electrical endurance (resistive load at 250 V AC)										
• 1 CO contact	Operat- ing cycles	1 x 10 ⁵	7 x 10 ⁴			--				
• 2 CO contacts	Operat- ing cycles	1 x 10 ⁵	8 x 10 ⁴			180 x 10 ³				
• 3 CO contacts	Operat- ing cycles	--				180 x 10 ³				
• 4 CO contacts	Operat- ing cycles	--				250 x 10 ³				

1) AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

2) Capacitive loads can result in micro-welding on the contacts.

Selection and ordering data

Version	Rated control supply voltage U_c at 50/60 Hz AC	Contacts, number of CO contacts	Width mm	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
V			mm				
Complete units, 11- and 14-pole, PT series							
 LZS:PT3A5L24, LZS:PT3A5L24A	Complete units with plug-in socket			Screw terminals 			
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay • Standard plug-in socket with screw terminals • Fixing/ejection bracket • Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	3 CO contacts	24 DC	3	28	LZS:PT3A5L24	1	5 units
		24 AC			LZS:PT3A5R24	1	5 units
		115 AC			LZS:PT3A5S15	1	5 units
		230 AC			LZS:PT3A5T30	1	5 units
	4 CO contacts	24 DC	4	28	LZS:PT5A5L24	1	5 units
		24 AC			LZS:PT5A5R24	1	5 units
		115 AC			LZS:PT5A5S15	1	5 units
		230 AC			LZS:PT5A5T30	1	5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	3 CO contacts	24 DC	3	28	LZS:PT3A5L24A	1	5 units
	4 CO contacts	24 DC	4	28	LZS:PT5A5L24A	1	5 units
 LZS:PT5B5L24, LZS:PT5B5L24A	Complete units with plug-in socket with logical separation						
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay • Plug-in socket with logical separation and screw terminals • Fixing/ejection bracket • Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	4 CO contacts	24 DC	4	28	LZS:PT5B5L24	1	5 units
		24 AC			LZS:PT5B5R24	1	5 units
		115 AC			LZS:PT5B5S15	1	5 units
		230 AC			LZS:PT5B5T30	1	5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	4 CO contacts	24 DC	4	28	LZS:PT5B5L24A	1	5 units
Complete units, 8- and 14-pole, PT series							
 LZS:PT2D5L24, LZS:PT2D5L24A	Complete units with plug-in socket with logical separation			Spring-loaded terminals (push-in) 			
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay • Plug-in socket with logical separation and spring-loaded terminals (push-in) • Fixing/ejection bracket • Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	2 CO contacts	24 DC	2	28	LZS:PT2D5L24	1	5 units
		230 AC			LZS:PT2D5T30	1	5 units
	4 CO contacts	24 DC	4	28	LZS:PT5D5L24	1	5 units
		24 AC			LZS:PT5D5R24	1	5 units
		115 AC			LZS:PT5D5S15	1	5 units
		230 AC			LZS:PT5D5T30	1	5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	2 CO contacts	24 DC	2	28	LZS:PT2D5L24A	1	5 units
	4 CO contacts	24 DC	4	28	LZS:PT5D5L24A	1	5 units

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

Version	Rated control supply voltage U_c at AC 50/60 Hz	Contacts, number of CO contacts	Width	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
	V		mm				

Single modules for customer assembly, PT series

Industrial relays, 8-, 11-, and 14-pole

Mini industrial relays

- With test bracket and mechanical switch position indicator, without LED¹⁾



LZX:PT270024

24 DC	2	22.5	LZX:PT270024	1	1 unit
	3		LZX:PT370024	1	1 unit
	4		LZX:PT570024	1	1 unit
24 AC	2	22.5	LZX:PT270524	1	1 unit
	3		LZX:PT370524	1	1 unit
	4		LZX:PT570524	1	1 unit
115 AC	2	22.5	LZX:PT270615	1	1 unit
	3		LZX:PT370615	1	1 unit
	4		LZX:PT570615	1	1 unit
230 AC	2	22.5	LZX:PT270730	1	1 unit
	3		LZX:PT370730	1	1 unit
	4		LZX:PT570730	1	1 unit
• With hard gold-plating					
24 DC 230 AC	4	22.5	LZX:PT580024	1	1 unit
			LZX:PT580730	1	1 unit
• Without test bracket					
24 DC 230 AC	4	22.5	LZX:PT520024	1	1 unit
			LZX:PT520730	1	1 unit

Plug-in sockets for PT relays

Standard plug-in sockets

For mounting on TH 35 DIN rail



LZS:PT78720

--	2	28	Screw terminals 	1	1 unit
	3			1	1 unit
	4			1	1 unit

Plug-in sockets with logical separation

For mounting on TH 35 DIN rail



LZS:PT78742

--	2	28	LZS:PT78722	1	1 unit
	4			1	1 unit

Plug-in sockets with logical separation

For mounting on TH 35 DIN rail



LZS:PT7874P

--	2	28	Spring-loaded terminals (push-in) 	1	1 unit
	4			1	1 unit

¹⁾ The test bracket is designed to be non-latching. If the test bracket is pressed further until 90° has been reached, two small lugs break off and the test bracket can be latched in position.

Version	Rated control supply voltage U_c at AC 50/60 Hz	Width	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
	V	mm				

Single modules for customer assembly, PT series (continued)

More single modules**LED modules**

• Red

- With freewheeling diode	24 DC	11.4
- Without freewheeling diode	24 AC/DC	
	110 ... 230 AC	

LZS:PTML0024
LZS:PTML0524
LZS:PTML0730

1 1 unit
1 1 unit
1 1 unit

• Green

- With freewheeling diode	24 DC	11.4
- Without freewheeling diode	24 AC/DC	
	110 ... 230 AC	

LZS:PTMG0024
LZS:PTMG0524
LZS:PTMG0730

1 1 unit
1 1 unit
1 1 unit

Fixing/ejection brackets for PT base with logical separation

Screw terminals and spring-loaded terminals	--	27
---	----	----

LZS:PT17021

100 10 units

Fixing/ejection brackets for standard plug-in socket without logical separation

Screw terminals	--	27
-----------------	----	----

LZS:PT17024

100 10 units

Labeling plates for PT relays

	--	26.5
--	----	------

LZS:PT17040

100 10 units

RC elements

	24 ... 48 AC	11.4
	110 ... 230 AC	

LZS:PTMU0524
LZS:PTMU0730

1 1 unit
1 1 unit

Freewheeling diode with connection to A1

	6 ... 230 DC	11.4
--	--------------	------

LZS:PTMT00A0

1 1 unit

Connecting combs for PT screw base

6-pole, 10 A current-carrying capacity, natural-colored	--	103.6
---	----	-------

LZS:PT170R6

1 10 units

Connecting brackets for PT push-in base

2-pole, 10 A current-carrying capacity, natural-colored	--	28
---	----	----

LZS:PT170P1

1 10 units



LZS:PTML0024



LZS:PT17021



LZS:PT17024



LZS:PT17040



LZS:PTMU0730



LZS:PT170R6



LZS:PT170P1

Note:

SITOP DC power supplies such as 6EP1331-5BA00 or 6EP1331-5BA10 can be used for unavailable coil voltages; see page 15/1 or Catalog KT 10.1.

Version	Rated control supply voltage U_c at AC 50/60 Hz	Contacts, number of CO contacts	Width	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
	V		mm				
Complete units, 8-pole, 5 mm pinning, RT series							
	Complete units with standard plug-in socket			Screw terminals 			
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay						
	• Standard plug-in socket with screw terminals						
	• Fixing/ejection bracket						
	• Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	LZS:RT3A4L24 LZS:RT3A4R24 LZS:RT3A4S15 LZS:RT3A4T30	1 1 1 1	5 units 5 units 5 units 5 units
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	LZS:RT4A4L24 LZS:RT4A4R24 LZS:RT4A4S15 LZS:RT4A4T30	1 1 1 1	5 units 5 units 5 units 5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	1 CO contact	24 DC	1	15.5	LZS:RT3A4L24A	1	5 units
	2 CO contacts	24 DC	2	15.5	LZS:RT4A4L24A	1	5 units
	Complete units with plug-in socket with logical separation						
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay						
	• Plug-in socket with logical separation and screw terminals						
	• Fixing/ejection bracket						
	• Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	LZS:RT3B4L24 LZS:RT3B4R24 LZS:RT3B4S15 LZS:RT3B4T30	1 1 1 1	5 units 5 units 5 units 5 units
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	LZS:RT4B4L24 LZS:RT4B4R24 LZS:RT4B4S15 LZS:RT4B4T30	1 1 1 1	5 units 5 units 5 units 5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	1 CO contact	24 DC	1	15.5	LZS:RT3B4L24A	1	5 units
	2 CO contacts	24 DC	2	15.5	LZS:RT4B4L24A	1	5 units
	Complete units with plug-in socket with logical separation			Spring-loaded terminals (push-in) 			
	For snap-on mounting on TH 35 DIN rail						
	Comprising:						
	• Coupling relay with plug-in relay						
	• Plug-in socket with logical separation and spring-loaded terminals (push-in)						
	• Fixing/ejection bracket						
	• Labeling plate						
	<u>LED modules, red</u>						
	(24 V DC version: LED module with freewheeling diode)						
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	LZS:RT3D4L24 LZS:RT3D4R24 LZS:RT3D4S15 LZS:RT3D4T30	1 1 1 1	5 units 5 units 5 units 5 units
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	LZS:RT4D4L24 LZS:RT4D4R24 LZS:RT4D4S15 LZS:RT4D4T30	1 1 1 1	5 units 5 units 5 units 5 units
	<u>LED modules, green, with freewheeling diode</u> NEW						
	1 CO contact	24 DC	1	15.5	LZS:RT3D4L24A	1	5 units
	2 CO contacts	24 DC	2	15.5	LZS:RT4D4L24A	1	5 units

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

Version	Rated control supply voltage U_c at AC 50/60 Hz	Contacts, number of CO contacts	Width mm	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
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Single modules for customer assembly, RT series

Print relays, 8-pole, 5 mm pinning**Print relays**

With hard gold-plating

- Version with 1 CO contact

24 DC 1 12.7
230 AC

LZX:RT315024
LZX:RT315730

1 1 unit
1 1 unit

Print relays

- Version with 1 CO contact

24 DC 1 12.7
24 AC
115 AC
230 AC

LZX:RT314024
LZX:RT314524
LZX:RT314615
LZX:RT314730

1 1 unit
1 1 unit
1 1 unit
1 1 unit

- Version with 2 CO contacts

12 DC 2 12.7
24 DC
24 AC
115 AC
230 AC

LZX:RT424012
LZX:RT424024
LZX:RT424524
LZX:RT424615
LZX:RT424730

1 1 unit
1 1 unit
1 1 unit
1 1 unit
1 1 unit

Plug-in sockets for RT relays**Standard plug-in socket**

For mounting on TH 35 DIN rail

-- -- 15.5

Screw terminals

LZS:RT78725

1 1 unit

Plug-in socket with logical separation

For mounting on TH 35 DIN rail

-- -- 15.5

LZS:RT78726

1 1 unit

Plug-in socket with logical separation

For mounting on TH 35 DIN rail

-- -- 15.5

Spring-loaded terminals (push-in)

LZS:RT7872P

1 1 unit



LZX:RT31....,
LZX:RT424...



LZS:RT78725



LZS:RT78726



LZS:RT7872P

Version	Rated control supply voltage U_c at AC 50/60 Hz	Contacts, number of CO contacts	Width	Article No.	Price per PU	PU (UNIT, SET, M)	PS*
	V		mm				

Single modules for customer assembly, RT series (continued)

More single modules

LED modules

• Red

- With freewheeling diode	24 DC	--	11.4
- Without freewheeling diode	24 AC/DC 110 ... 230 AC	--	

LZS:PTML0024

1 1 unit

LZS:PTML0524

1 1 unit

LZS:PTML0730

1 1 unit

• Green

- With freewheeling diode	24 DC	--	11.4
- Without freewheeling diode	24 AC/DC 110 ... 230 AC	--	

LZS:PTMG0024

1 1 unit

LZS:PTMG0524

1 1 unit

LZS:PTMG0730

1 1 unit

Fixing/ejection brackets for RT base

--	--	15.5
----	----	------

LZS:RT17016

100 10 units

Labeling plates for RT relays

--	--	15
----	----	----

LZS:RT17040

100 10 units

RC elements

24 ... 48 AC	--	11.4
110 ... 230 AC	--	

LZS:PTMU0524

1 1 unit

LZS:PTMU0730

1 1 unit

Freewheeling diode with connection to A1

6 ... 230 DC	--	11.4
--------------	----	------

LZS:PTMT00A0

1 1 unit

Connecting combs for RT screw base

8-pole, 10 A current-carrying capacity, natural-colored	--	118.8
---	----	-------

LZS:RT170R8

1 10 units

Connecting brackets for RT push-in base

2-pole, 10 A current-carrying capacity, natural-colored	--	15.5
---	----	------

LZS:RT170P1

100 10 units



LZS:PTML0024



LZS:RT17016



LZS:RT17040



LZS:PTMU0730



LZS:RT170R8



LZS:RT170P1

Note:

SITOP DC power supplies such as 6EP1331-5BA00 or 6EP1331-5BA10 can be used for unavailable coil voltages; see page 15/1 or Catalog KT 10.1.