

**Price groups**

PG 41A, 41B, 41H, 41L

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4- and 8-pole5/16 3TH4 contactor relays,
8- and 10-pole

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Contactors for railway applications

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extended operating range

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industrial enclosure5/36 SIRIUS 3RQ3 coupling relays,
narrow design

5/44 LZS coupling relays with plug-in relays

3/147

**3TG10 power relays/
miniature contactors****NEW**

Click on this video symbol
in the catalog PDF for
further product
information.



Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Introduction

Overview

More information

Homepage, see www.siemens.com/sirius

Industry Mall, see www.siemens.com/product?3RH_3TH

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

The advantages at a glance



Size
Type

S00
3RH21

S00
3RH22

3TH42

3TH43

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SIRIUS 3RH2 contactor relays

4-pole • Screw or spring-loaded terminals

3RH21	5/12, 5/13
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8-pole

3RH22	5/12, 5/13
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4-pole, latched

3RH24	5/12, 5/13
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Coupling contactor relays • Coils for control by the PLC

3RH21	5/14, 5/15
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Contactor relays for railway applications • Coils with extended voltage range

3RH21	4/63
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3TH4 contactor relays

8-pole • Screw terminals

3TH42	5/20
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10-pole

3TH43	5/21
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Contactor relays for railway applications • Coils with extended voltage range

3TH42	4/65
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Accessories for SIRIUS 3RH2 contactor relays

Auxiliary switches • On front

3RH29, 3RA281.	from 3/91 onwards, 3/104
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• Lateral

3RH29	3/101
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Function modules (direct-on-line starting, star-delta (wye-delta) starting) • On front

3RA281., 3RA283.	3/109
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Surge suppressors • On front

3RT2916	3/106, 3/107
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Additional load modules • On front

3RT2916	3/123
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Note:

Safety characteristics for contactors, see "Standards and approvals", page 16/7.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Introduction

More information

Homepage, see www.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RQ_3RS_LZ

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

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



Video: Overview about SIRIUS coupling relays

The advantages at a glance



3RQ1



3RQ2



3RQ3



LZS/LZX

Type

Article No.

Page

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

Coupling relays with force-guided contacts

- Widths 17.5 and 22.5 mm
- Safety certification according to functional safety SIL 3 / PL e
- Can be used as output extension for SIRIUS 3SK safety relays via device connectors

3RQ1

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SIRIUS 3RQ2 coupling relays with industrial enclosure

Coupling relays with relay output

- 1, 2 or 3 changeover contacts with wide voltage range
- Also available with hard gold-plated contacts

3RQ2

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SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with relay output (not plug-in)

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

3RQ301
3RQ303

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5/36

Coupling relays with plug-in relays

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

3RQ311

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Coupling relays with semiconductor output (not plug-in)

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

3RQ305, 3RQ306
3RQ307

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5/36

LZS coupling relays with plug-in relays

Coupling relays with plug-in relays with 2, 3 and 4 changeover contacts

- Switching capacity 12 A/10 A/6 A
- Width 27 mm
- Base with or without logical separation

LZS:PT, LZX:PT

5/50 ... 5/52

Coupling relays with plug-in relays with 3 changeover contacts and circular base

- Switching capacity 10 A
- 11-pole circular base
- Width 38 mm

LZS:MT, LZX:MT

5/50

Coupling relays with plug-in relays with 1 or 2 changeover contacts

- Switching capacity 16 A/8 A
- Width 15.5 mm
- Base with or without logical separation

LZS:RT, LZX:RT

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Connection methods

The contactor relays and the relays are available with screw terminals (box terminals) or with spring-loaded terminals.

The 3RQ coupling relays are supplied with screw terminals or spring-loaded (push-in) terminals. The plug-in bases for LZS/LZX coupling relays are also available with plug-in (push-in) terminals.



Screw terminals



Spring-loaded terminals,
spring-loaded terminals (push-in)



Flat connectors



Plug-in terminals (push-in)

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

3RQ coupling relays: Spring-loaded terminals (push-in) with TOP-wiring

Push-in terminals are a form of spring-loaded terminals allowing fast wiring without tools for rigid conductors or conductors equipped with end sleeves.

As with other spring-loaded terminals, a screwdriver (with 3.0 x 0.5 mm blade) is required to disconnect the conductor. The same tool can also be used to wire finely-stranded or stranded conductors with no end finishing.

The advantages of the push-in terminals are found, as with all spring-loaded terminals, in speed of assembly and disassembly and vibration-proof connection. There is no need for the checking and tightening required with screw terminals.

With the TOP wiring method, the wire inlet and terminals can be reached from the front. This helps to speed up the wiring process and eliminate wiring errors.



Video: SIRIUS spring-loaded terminals – Strong, flexible, safe, fast

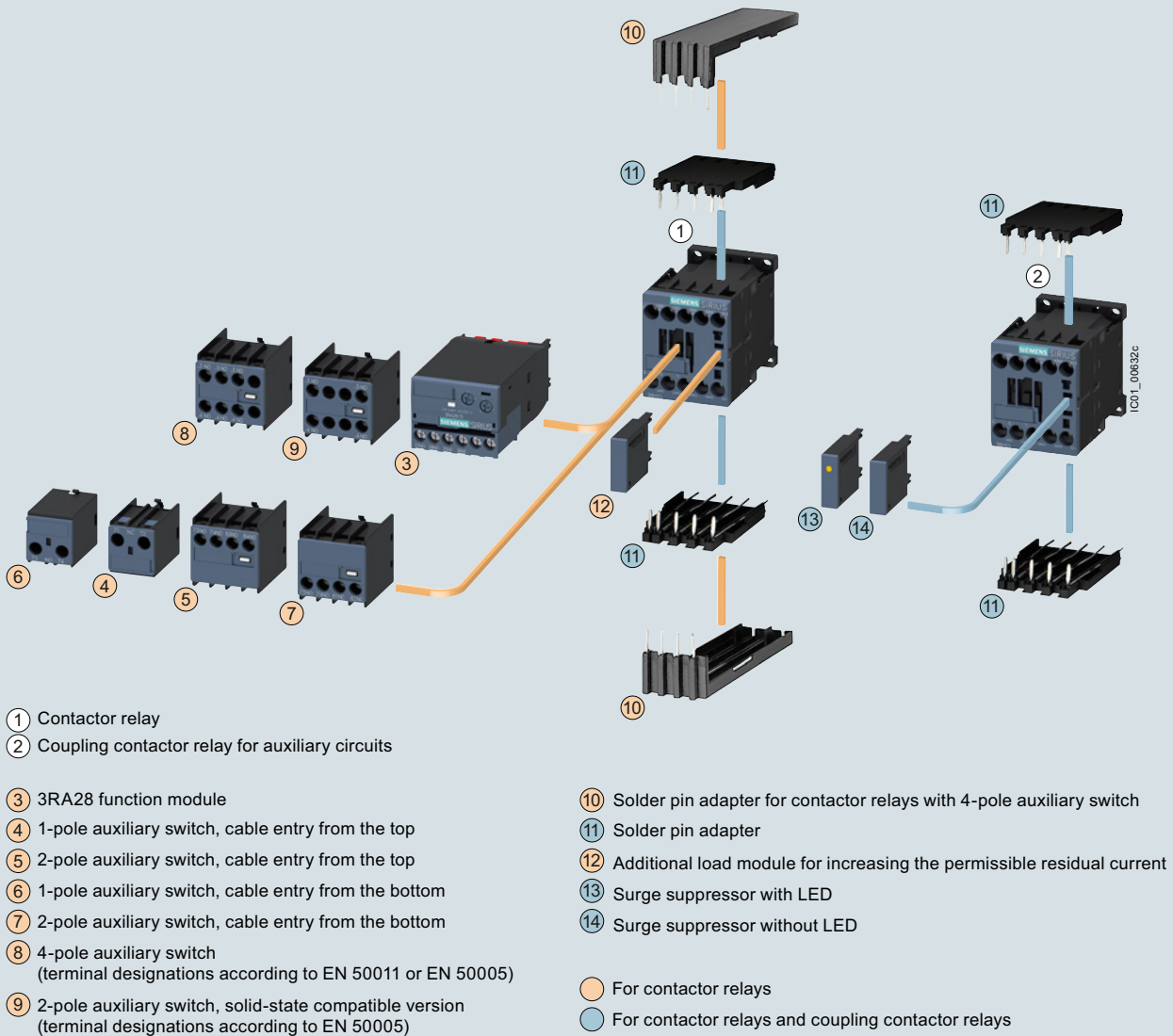
Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Overview

**Contactor relays,
size S00, with accessories**



Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Standards

IEC 60947-1, IEC 60947-4-1, IEC 60947-5-1

The 3RH2 contactor relays are available with screw or spring-loaded terminals. The basic unit contains four contacts with terminal designations according to EN 50011.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to IEC 60529.

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

Contact reliability

High contact stability at low voltages and currents, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) can be plugged onto all 3RH2 contactor relays from the front for damping opening surges in the coil. The plug-in direction is determined by a coding device.

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

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

Note:

The auxiliary contactor's OFF times, the opening delay times of the NO contacts and the closing delay times of the NC contacts increase if the contactor coils are attenuated against voltage peaks. Various accessories are available for the auxiliary contactors (time change for: interference suppression diode 6x to 10x; diode assembly 2x to 6x; suppressor diode +1 to 5 ms; varistor +2 to 5 ms).

For details, see [Equipment Manual](#).

Article No. scheme

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

Note:

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

Accessories

The accessories for the 3RT2 contactors in size S00 can also be used for the 3RH2 contactor relays (see [page 3/79 onwards](#)).

Auxiliary switches

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

The auxiliary switch can easily be snapped onto the front of the contactor relays. The auxiliary switch has a centrally positioned release lever for disassembly.

The conventional front auxiliary contacts fulfill the characteristics of force-guided operation and are therefore suitable for safety applications.

Contactor relays in safety-related applications

Contactor relays are a significant part of safety-related applications. They are generally the actuators that perform the switching operation leading to the safe disconnection of the corresponding application or system.

Contactor relays with force-guided operation according to IEC 60947-5-1 are generally required for use in safety-related applications. Most of our contactors meet this requirement; a corresponding note can be found in the technical product data sheet.

Contactor relays with increased tamper protection

Increased tamper protection is ensured either by using our contactor relay versions with permanently mounted auxiliary switches installed in the factory (e.g. 3RH22 contactor relays), or by using the 3RT2916-4MA10 sealable cover as an accessory (see [page 3/121](#)).

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Technical specifications

More information

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

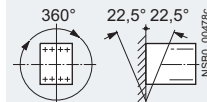
Manuals, see
<https://support.industry.siemens.com/cs/ww/en/ps/16188/man>

Type
 Size

Contactor relays
3RH2
S00

Permissible mounting position

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



Upright mounting position



Special version required

(in the case of coupling contactor relays and contactor relays with extended operating range 3RH2122-2K.40 on request)

Force-guided operation of contacts in contactor relays

3RH2:
Yes, in the basic unit and the auxiliary switch as well as between the basic unit and the mounted auxiliary switch (**removable**) acc. to:
 • ZH1/457
 • IEC 60947-5-1, Annex L

3RH22:
Yes, in the basic unit and the auxiliary switch as well as between the basic unit and the mounted auxiliary switch (**permanently mounted**) acc. to:
 • ZH1/457
 • IEC 60947-5-1, Annex L

Note:

3RH2911-NF. solid-state compatible auxiliary switches have no force-guided contacts.

Explanations:

There is force-guided operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457

Safety Rules for Controls on Power-Operated Metalworking Presses.

IEC 60947-5-1, Annex L

Standard for low-voltage switchgear and controlgear; Special requirements for mechanically linked contact elements

Contact reliability

Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4

Frequency of contact faults $<10^{-8}$, i.e. <1 fault per 100 million operating cycles

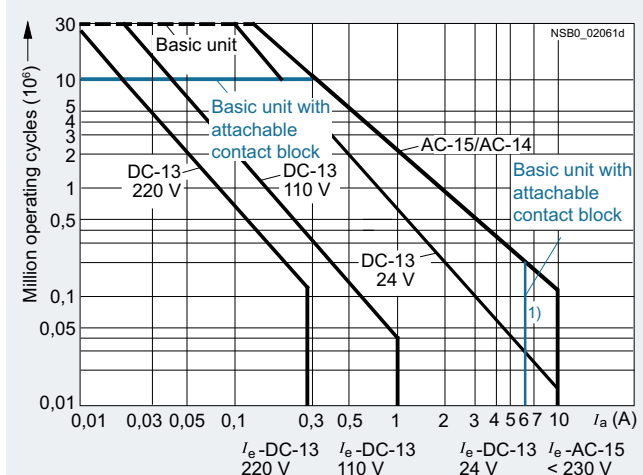
Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor operating mechanisms or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and freewheel diodes.

The characteristic curves apply to

- 3RH21/3RH22 contactor relays¹⁾
- 3RH24 latched contactor relays
- 3RH2911 auxiliary switches¹⁾
- Auxiliary switches for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

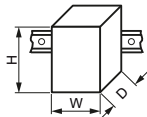


¹⁾ 3RH22, 3RH2911: $I_e = 6$ A for AC-15/AC-14 and DC-13.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Type Size		Contactor relays			
		3RH21 S00	3RH22	3RH24	
General data					
Dimensions (W x H x D)					
- Basic units - Screw terminals - Spring-loaded terminals - Basic unit with mounted auxiliary switch - Screw terminals - Spring-loaded terminals - Basic unit with mounted function module or solid-state time-delay auxiliary switch - Screw terminals - Spring-loaded terminals		mm	45 x 58 x 73	--	90 x 58 x 73
		mm	45 x 70 x 73	--	
		mm	45 x 58 x 117		--
		mm	45 x 70 x 121		--
		mm	45 x 58 x 147	--	
		mm	45 x 70 x 147	--	
		Mechanical service life			
Basic units	Operat- ing cycles	30 million		5 million	
Basic unit with mounted auxiliary switch	Operat- ing cycles	10 million		5 million	
Solid-state-compatible auxiliary switch	Operat- ing cycles	5 million			
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Protective separation between coil and contacts in the basic unit, acc. to IEC 60947-1, Annex N		V	400		
Permissible ambient temperature					
During operation	°C	-25 ... +60			
During storage	°C	-55 ... +80			
Degree of protection IP on the front according to IEC 60529		IP20 (screw terminals and spring-loaded terminals)			
Touch protection on the front according to IEC 60529		Finger-safe for vertical touching from the front (screw and spring-loaded terminals)			
Shock resistance					
- Rectangular pulse - AC operation - DC operation - Sine pulse - AC operation - DC operation	g/ms	7.3/5 and 4.7/10			
	g/ms	10/5 and 5/10			
	g/ms	11.4/5 and 7.3/10			
	g/ms	15/5 and 8/10			
Short-circuit protection					
Short-circuit test - With fuse links of operational class gG: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1 - With miniature circuit breakers with C characteristic with short-circuit current I_k = 400 A acc. to IEC 60947-5-1	A	10			
	A	6			

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

		Contactor relays		
Type		3RH21	3RH22	3RH24
Size		S00		
Conductor cross-sections				
Auxiliary conductors and coil terminals (1 or 2 conductors can be connected)		 Screw terminals		
• Solid or stranded	mm ²	2 x (0.5 ... 1.5) ¹⁾ ; 2 x (0.75 ... 2.5) ¹⁾ , max. 2 x 4		
• Finely stranded with end sleeve	mm ²	2 x (0.5 ... 1.5) ¹⁾ ; 2 x (0.75 ... 2.5) ¹⁾		
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) ¹⁾ ; 2 x (18 ... 14) ¹⁾		
• Terminal screw		M3 (for Pozidriv size 2, Ø 5 ... 6 mm)		
- Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)		
Auxiliary conductors and coil terminals²⁾ (1 or 2 conductors can be connected)		 Spring-loaded terminals		
• Operating devices	mm	3.0 x 0.5; 3.5 x 0.5		
• Solid or stranded	mm ²	2 x (0.5 ... 4)		
• Finely stranded with end sleeve	mm ²	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve	mm ²	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 12)		
Auxiliary conductors for front and laterally mounted auxiliary switches²⁾				
• Operating devices	mm	3.0 x 0.5; 3.5 x 0.5		
• Solid or stranded	mm ²	2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm ²	2 x (0.5 ... 1.5)		
• Finely stranded without end sleeve	mm ²	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)		

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

²⁾ Max. external diameter of the conductor insulation: 3.6 mm.
On spring-loaded terminals with conductor cross-sections ≤ 1 mm² an insulation stop is recommended, [see page 3/124](#).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Type Size		Contactor relays 3RH2 S00
Control		
Solenoid coil operating range		
• AC operation	At 50 Hz At 60 Hz	0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
• DC operation	At +50 °C At +60 °C	0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
Power consumption of the solenoid coil (for cold coil and 1.0 x U_s)		
• AC operation, 50 Hz		
- Closing	VA/p.f.	37/0.8
- Closed	VA/p.f.	5.7/0.25
• AC operation, 60 Hz		
- Closing	VA/p.f.	33/0.75
- Closed	VA/p.f.	4.4/0.25
• DC operation	W	4.0
Closing = Closed		
Permissible residual current of the electronics (with 0 signal)		
• For AC operation ¹⁾		< 4 mA x (230 V/ U_s)
• For DC operation		< 10 mA x (24 V/ U_s)
Operating times within operating range		
Total break time = Opening delay + Arcing time		
• AC operation		
- Closing delay	ms	8 ... 33
- Opening delay	ms	4 ... 15
• DC operation		
- Closing delay	ms	30 ... 100
- Opening delay	ms	38 ... 65
• Arcing time	ms	10 ... 15
3RH24 minimum operating time		
• AC operation		
- Closing	ms	≥ 35
- Opening	ms	≥ 30
• DC operation		
- Closing	ms	≥ 100
- Opening	ms	≥ 30

¹⁾ The 3RT2916-1GA00 additional load module is recommended for higher residual currents, see page 3/123.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

				Coupling contactor relays		
Type				3RH21...HB40	3RH21...JB40	3RH21...KB40
Size				S00		
Control						
Solenoid coil operating range				0.7 ... 1.25 x U_s		
Power consumption of the solenoid coil (for cold coil and 1.0 x U_s) Closing = Closed at $U_s = 24$ V				W	2.8	
Permissible residual current of the electronics with 0 signal				< 10 mA x (24 V/ U_s)		
Overvoltage configuration of the solenoid coil				No overvoltage damping 	Integrated diode 	Integrated suppressor diode 
Operating times within operating range Total break time = Opening delay + Arcing time						
• DC operation				Closing delay	ms	25 ... 130
				Opening delay	ms	7 .. 20
Upright mounting position				On request		
				Coupling contactor relays		
Type				3RH21...MB40-0KT0	3RH21...VB40	3RH21...SB40
Size				S00		
Control						
Solenoid coil operating range				0.85 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil and 1.0 x U_s) Closing = Closed at $U_s = 24$ V				W	1.6	
Permissible residual current of the electronics with 0 signal				< 8 mA x (24 V/ U_s)		
Overvoltage configuration of the solenoid coil				No overvoltage damping 	Integrated diode 	Integrated suppressor diode 
Operating times within operating range Total break time = Opening delay + Arcing time						
• DC operation				Closing delay	ms	25 ... 120
				Opening delay	ms	5 .. 20
Upright mounting position				On request		

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

			Contactor relays	
Type			3RH2	
Size			S00	
Rated data of the auxiliary contacts				
Load rating with AC				
Rated operational currents I_e				
AC-12	A		10	
AC-15/AC-14, at rated operational voltage U_e	Up to 230 V	A	10 ¹⁾	
	400 V	A	3	
	500 V	A	2	
	690 V	A	1	
Load rating with DC				
Rated operational currents I_e				
DC-12, at rated operational voltage U_e				
• 1 conducting path	24 V	A	10	
	60 V	A	6	
	110 V	A	3	
	220 V	A	1	
	440 V	A	0.3	
	600 V	A	0.15	
• 2 conducting paths in series	24 V	A	10	
	60 V	A	10	
	110 V	A	4	
	220 V	A	2	
	440 V	A	1.3	
	600 V	A	0.65	
• 3 conducting paths in series	24 V	A	10	
	60 V	A	10	
	110 V	A	10	
	220 V	A	3.6	
	440 V	A	2.5	
	600 V	A	1.8	
DC-13, at rated operational voltage U_e				
• 1 conducting path	24 V	A	10 ¹⁾	
	60 V	A	2	
	110 V	A	1	
	220 V	A	0.3	
	440 V	A	0.14	
	600 V	A	0.1	
• 2 conducting paths in series	24 V	A	10	
	60 V	A	3.5	
	110 V	A	1.3	
	220 V	A	0.9	
	440 V	A	0.2	
	600 V	A	0.1	
• 3 conducting paths in series	24 V	A	10	
	60 V	A	4.7	
	110 V	A	3	
	220 V	A	1.2	
	440 V	A	0.5	
	600 V	A	0.26	
Switching frequency				
Switching frequency z in operating cycles/hour				
• Rated operation for utilization category	AC-12/DC-12	1/h	1 000	
(Dependence of the switching frequency z' on operational current I' and operational voltage U' : $z' = z \cdot (I_e/I') \cdot (U_e/U')^{1.5} \cdot 1/h$)	AC-15/AC-14	1/h	1 000	
	DC-13	1/h	1 000	
• No-load switching frequency		1/h	10 000	
Ⓢ and Ⓜ rated data				
Basic units and auxiliary switches				
• Rated control supply voltage	V AC		max. 600	
• Rated voltage	V AC		600	
• Switching capacity			A 600, Q 600	
• Uninterrupted current at 240 V AC	A		10	

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

Selection and ordering data

AC operation

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



3RH2122-1A..0



3RH2122-2A..0



3RH2244-1A..0



3RH2244-2A..0



3RH2422-1A..0

Rated operational current I_e /AC-15/AC-14 at 230 V	Contacts		Rated control supply voltage U_s at 50/60 Hz ¹⁾	SD	Screw terminals 		SD	Spring-loaded terminals 	
	Ident. No.	Version			Article No.	Price per PU		Article No.	Price per PU
A		NO NC	V AC	d			d		

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

Size S00

10	40E	4	--	24 110 230	▶	3RH2140-1AB00 3RH2140-1AF00 3RH2140-1AP00	2 2 ▶	3RH2140-2AB00 3RH2140-2AF00 3RH2140-2AP00
	31E	3	1	24 110 230	▶	3RH2131-1AB00 3RH2131-1AF00 3RH2131-1AP00	2 ▶	3RH2131-2AB00 3RH2131-2AF00 3RH2131-2AP00
	22E	2	2	24 110 230	▶	3RH2122-1AB00 3RH2122-1AF00 3RH2122-1AP00	2 ▶	3RH2122-2AB00 3RH2122-2AF00 3RH2122-2AP00
With permanently mounted auxiliary switch								
6	44E	4	4	230	▶	3RH2244-1AP00	2	3RH2244-2AP00
	62E	6	2	230	▶	3RH2262-1AP00	2	3RH2262-2AP00
Latched								
No lateral auxiliary switches can be mounted								
10	40 E	4	--	24 110 230	5 5 5	3RH2440-1AB00 3RH2440-1AF00 3RH2440-1AP00		-- -- --
	31 E	3	1	24 110 230	5 5 5	3RH2431-1AB00 3RH2431-1AF00 3RH2431-1AP00		-- -- --
	22 E	2	2	24 110 230	5 5 5	3RH2422-1AB00 3RH2422-1AF00 3RH2422-1AP00		-- -- --

¹⁾ Coil operating range
 - At 50 Hz: 0.8 to 1.1 x U_s
 - At 60 Hz: 0.85 to 1.1 x U_s

Other voltages according to page 3/77 on request.

Accessories, see page 3/79 onwards.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

DC operation

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



3RH2122-1B..0



3RH2122-2B..0



3RH2244-1B..0



3RH2244-2B..0



3RH2422-1B.40

Rated operational current I_e /AC-15/AC-14 at 230 V	Contacts		Rated control supply voltage U_s	SD	Screw terminals 		SD	Spring-loaded terminals 	
	Ident. No.	Version			Article No.	Price per PU		Article No.	Price per PU
A		 	V DC	d			d		

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

Size S00

10	40E	4	--	24 220	▶ ▶	3RH2140-1BB40 3RH2140-1BM40	▶ 5	3RH2140-2BB40 3RH2140-2BM40
	31E	3	1	24 220	▶ 2	3RH2131-1BB40 3RH2131-1BM40	▶ 5	3RH2131-2BB40 3RH2131-2BM40
	22E	2	2	24 220	▶ ▶	3RH2122-1BB40 3RH2122-1BM40	▶ 5	3RH2122-2BB40 3RH2122-2BM40
With integrated coil circuit (diode integrated at the factory)								
10	40E	4	--	24	▶	3RH2140-1FB40	▶	3RH2140-2FB40
	31E	3	1	24	▶	3RH2131-1FB40	▶	3RH2131-2FB40
	22E	2	2	24	▶	3RH2122-1FB40	▶	3RH2122-2FB40
With permanently mounted auxiliary switch								
6	44E	4	4	24	▶	3RH2244-1BB40	▶	3RH2244-2BB40
	62E	6	2	24	▶	3RH2262-1BB40	▶	3RH2262-2BB40
Latched								
No lateral auxiliary switches can be mounted								
10	40E	4	--	24 110 220	5 5 5	3RH2440-1BB40 3RH2440-1BF40 3RH2440-1BM40		-- -- --
	31E	3	1	24 110 220	5 5 5	3RH2431-1BB40 3RH2431-1BF40 3RH2431-1BM40		-- -- --
	22E	2	2	24 110 220	2 5 5	3RH2422-1BB40 3RH2422-1BF40 3RH2422-1BM40		-- -- --

Other voltages [according to page 3/77](#) on request.

Accessories, [see page 3/79 onwards](#).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

DC operation for direct control by PLC

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

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



3RH21...-1.B40



3RH21...-2.B40

Rated operational current I_e /AC-15/AC-14 at 230 V	Auxiliary contacts		Rated control supply voltage U_s	SD	Screw terminals 		SD	Spring-loaded terminals 	
	Ident. No. acc. to EN 50011	Version			Article No.	Price per PU		Article No.	Price per PU
A				V DC	d		d		
		NO							

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

Size S00

Cannot be expanded with auxiliary switches

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

10	40E	4	--	24	5	3RH2140-1HB40	5	3RH2140-2HB40
	31E	3	1	24	5		5	
	22E	2	2	24	5		5	

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

10	40E	4	--	24	5	3RH2140-1MB40-0KT0	5	3RH2140-2MB40-0KT0
	31E	3	1	24	2		5	
	22E	2	2	24	5		5	

Other voltages [according to page 3/77](#) on request.

Accessories, [see page 3/79 onwards](#).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

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

DC operation for direct control by PLC

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

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



3RH21...-1.B40



3RH21...-2.B40

Rated operational current I_e /AC-15/AC-14 at 230 V	Auxiliary contacts		Rated control supply voltage U_s	SD	Screw terminals 		SD	Spring-loaded terminals 	
	Ident. No. acc. to EN 50011	Version			Article No.	Price per PU		Article No.	Price per PU
		 	V DC	d			d		

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

Size S00

With integrated coil circuit (diode integrated at factory)

Cannot be expanded with auxiliary switches

Operating range **0.7 to 1.25 x U_s**

Power consumption of the solenoid coils **2.8 W** at 24 V

10	40E	4	--	24	2	3RH2140-1JB40	▶	3RH2140-2JB40
	31E	3	1	24	▶	3RH2131-1JB40	▶	3RH2131-2JB40
	22E	2	2	24	▶	3RH2122-1JB40	2	3RH2122-2JB40

Operating range **0.85 to 1.85 x U_s**

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

10	40E	4	--	24	5	3RH2140-1VB40	5	3RH2140-2VB40
	31E	3	1	24	5	3RH2131-1VB40	5	3RH2131-2VB40
	22E	2	2	24	5	3RH2122-1VB40	5	3RH2122-2VB40

With integrated coil circuit (suppressor diode integrated at factory)

Cannot be expanded with auxiliary switches

Operating range **0.7 to 1.25 x U_s**

Power consumption of the solenoid coils **2.8 W** at 24 V

10	40E	4	--	24	5	3RH2140-1KB40	5	3RH2140-2KB40
	31E	3	1	24	▶	3RH2131-1KB40	▶	3RH2131-2KB40
	22E	2	2	24	▶	3RH2122-1KB40	▶	3RH2122-2KB40

Operating range **0.85 to 1.85 x U_s**

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

10	40E	4	--	24	5	3RH2140-1SB40	5	3RH2140-2SB40
	31E	3	1	24	2	3RH2131-1SB40	5	3RH2131-2SB40
	22E	2	2	24	2	3RH2122-1SB40	5	3RH2122-2SB40

Other voltages [according to page 3/77](#) on request.

Accessories, [see page 3/79 onwards](#).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Overview

Standards

IEC 60947-1, IEC 60947-5-1

The 3TH42 and 3TH43 contactor relays are suitable for use in any climate. They are finger-safe according to IEC 60529.

Note:

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

Terminal designations according to EN 50011

In terms of their terminal designations, identification numbers and identification letters, the 3TH42 and 3TH43 contactor relays conform to the standard EN 50011 for "Particular Contactor Relays".

Contact reliability

High contact stability at low voltages and currents as a result of double-break contacts, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

The 3TH42 and 3TH43 contactor relays can be equipped with RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) for damping opening surges. The surge suppressors can be mounted directly on the coil, [see page 5/23](#).

Note:

The auxiliary contactor's OFF times, the opening delay times of the NO contacts and the closing delay times of the NC contacts increase if the contactor coils are attenuated against voltage peaks. Various accessories are available for the auxiliary contactors (time change for: interference suppression diode 6x to 10x; diode assembly 2x to 6x; suppressor diode +1 to 5 ms; varistor +2 to 5 ms).

For details, [see Equipment Manual](#).

Mounting

Note:

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

Technical specifications

More information

Technical specifications, [see https://support.industry.siemens.com/cs/ww/en/ps/16176/td](https://support.industry.siemens.com/cs/ww/en/ps/16176/td)
FAQs, [see https://support.industry.siemens.com/cs/ww/en/ps/16176/faq](https://support.industry.siemens.com/cs/ww/en/ps/16176/faq)

Manuals, [see https://support.industry.siemens.com/cs/ww/en/ps/16176/man](https://support.industry.siemens.com/cs/ww/en/ps/16176/man)

Contactor relays

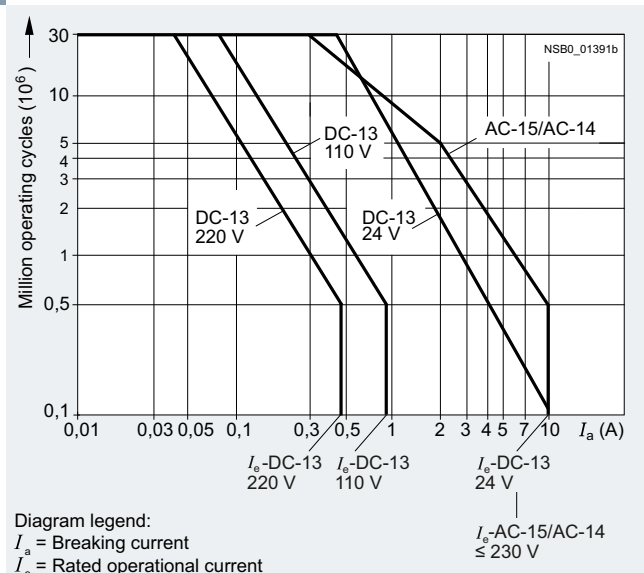
Type **3TH42, 3TH43**

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

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

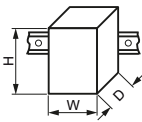
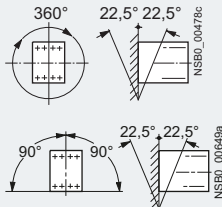
RC elements or freewheel diodes are suitable as protective measures for the circuits.



Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Contactor relays		Type	3TH42	3TH43	
General data					
Dimensions (W x H x D)					
• AC operation			mm	45 x 78 x 97	55 x 78 x 97
• DC operation			mm	45 x 78 x 130	55 x 78 x 130
Permissible mounting position The contactor relays are designed for operation on a vertical mounting surface.					
• AC operation					
• DC operation					
Upright mounting position AC and DC operation			 Special version required		
Mechanical service life	Basic units	Operating cycles	30 million		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp}		kV	8		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Annex N		V	Up to 500		
Permissible ambient temperature					
• During operation		°C	-25 ... +55		
• During storage		°C	-55 ... +80		
Degree of protection IP on the front according to IEC 60529			IP00		
Shock resistance					
• Rectangular pulse					
- AC operation		g/ms	7.7/5 and 4.4/10		
- DC operation		g/ms	9.3/5 and 5.4/10		
• Sine pulse					
- AC operation		g/ms	12/5 and 6.8/10		
- DC operation		g/ms	14.7/5 and 8.5/10		
Short-circuit protection					
Short-circuit test					
• With fuse links of operational class gG With short-circuit current I_k = 1 kA acc. to IEC 60947-5-1					
- LV HRC, type 3NA		A	16		
- DIAZED, type 5SB		A	16		
- NEOZED, type 5SE, quick		A	20		
• With miniature circuit breakers With short-circuit current I_k = 400 A acc. to IEC 60947-5-1					
- C characteristic		A	16		
- B characteristic		A	16		
Ⓢ and Ⓞ rated data					
Basic units					
Rated control supply voltage U_s			Max. 600 V AC, 230 V DC (acc. to UL 240 V DC)		
Rated voltage			600 V AC, 600 V DC		
Switching capacity			A 600, P 600		
Conductor cross-sections					
Auxiliary conductors and coil terminals (1 or 2 conductors can be connected)			 Screw terminals		
• Solid or stranded		mm ²	2 x (0.5 ... 1) ¹⁾ ; 2 x (1 ... 2.5) ¹⁾ ; 1 x 4		
• Finely stranded with end sleeve		mm ²	2 x (0.75 ... 2.5)		
• Terminal screw			M3.5		

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Contactor relays	Type	3TH42, 3TH43
Control		
Solenoid coil operating range		
• AC operation		$0.8 \dots 1.1 \times U_s^{1)}$
• DC operation (except 24 V)		$0.8 \dots 1.1 \times U_s$
- At 24 V DC		$0.8 \dots 1.2 \times U_s$
Power consumption of the solenoid coil (for cold coil and $1.0 \times U_s$)		
• AC operation, 50 Hz, standard version		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 50/60 Hz, standard version		
- Closing, 50 Hz	VA/p.f.	77/0.81
- Closed, 50 Hz	VA/p.f.	11/0.28
- Closing, 60 Hz	VA/p.f.	71/0.75
- Closed, 60 Hz	VA/p.f.	9/0.27
• AC operation, 50 Hz, USA/Canada		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 60 Hz, USA/Canada		
- Closing	VA/p.f.	75/0.76
- Closed	VA/p.f.	9.4/0.29 ... 0.3
• AC operation, 50 Hz, Japan		
- Closing	VA/p.f.	80/0.8
- Closed	VA/p.f.	10.7/0.29
• AC operation, 60 Hz, Japan		
- Closing	VA/p.f.	75 ... 90/0.73
- Closed	VA/p.f.	8.5 ... 10.7/0.29 ... 0.3
• DC operation up to 250 V	W	6.2
Closing = Closed		
Permissible residual current of the electronics (with 0 signal)		
• For AC operation		$\leq 8 \text{ mA} \times (220 \text{ V}/U_s)$
• For DC operation		$\leq 1.25 \text{ mA} \times (220 \text{ V}/U_s)$
Operating times within operating range		
Total break time = Opening delay + Arcing time		
• AC operation		
- Closing delay	ms	8 ... 35
- Opening delay	ms	4 ... 18
• DC operation		
- Closing delay	ms	20 ... 170
- Opening delay	ms	10 ... 25
• Arcing time	ms	10 ... 20

¹⁾ Coils for USA, Canada and Japan: 0.85 to $1.1 \times U_s$ at 60 Hz.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Contactor relays	Type	3TH42, 3TH43
Rated data of the auxiliary contacts		
Load rating with AC		
Rated operational currents I_e		
• AC-12	A	16
• AC-15/AC-14, at rated operational voltage U_e	230 V A	10
	400 V A	6
	500 V A	4
	690 V A	2
Rated power of three-phase motors		
Acc. to utilization categories AC-2 and AC-3, 50 Hz	230/220 V kW	2.4
	400/380 V kW	4
	500 V kW	4
	690/660 V kW	4
Load rating with DC		
Rated operational currents I_e		
• DC-12, at rated operational voltage U_e		
- 1 conducting path	Up to 48 V A	10
	110 V A	2.1
	220 V A	0.8
	440 V A	0.6
- 2 conducting paths in series	Up to 48 V A	10
	110 V A	10
	220 V A	1.6
	440 V A	0.8
- 3 conducting paths in series	Up to 48 V A	10
	110 V A	10
	220 V A	10
	440 V A	1.3
• DC-13, at rated operational voltage U_e		
- 1 conducting path	Up to 24 V A	10
	48 V A	5
	110 V A	1
	220 V A	0.45
	440 V A	0.25
	600 V A	0.2
- 2 conducting paths in series	Up to 24 V A	10
	48 V A	10
	110 V A	2.5
	220 V A	0.75
	440 V A	0.5
	600 V A	0.4
- 3 conducting paths in series	Up to 24 V A	10
	48 V A	10
	110 V A	10
	220 V A	2
	440 V A	0.9
	600 V A	0.8
Switching frequency		
Switching frequency z in operating cycles/hour		
• Rated operation for utilization category	AC-12/DC-12 1/h	1 000
(Dependence of the switching frequency z' on	AC-2 1/h	500
operational current I' and operational voltage U' :	AC-3 1/h	1 000
$z' = z \cdot (I_e/I') \cdot (U_e/U')^{1.5} \cdot 1/h$)	AC-15/AC-14 1/h	3 600
	DC-13 1/h	3 600
• No-load switching frequency	1/h	10 000

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Selection and ordering data

8-pole contactor relays

AC operation  or DC operation 

3TH4280-0AP0



3TH4244-0BB4

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

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

AC operation, rated control supply voltage $U_s = 50 \text{ Hz } 230/220 \text{ V AC}^{1)}$

8	10	6	4	2	80E	8	--	--	--	X	3TH4280-0AP0	1	1 unit	41A
					71E	7	1	--	--	X	3TH4271-0AP0	1	1 unit	41A
					62E	6	2	--	--	X	3TH4262-0AP0	1	1 unit	41A
					53E	5	3	--	--	X	3TH4253-0AP0	1	1 unit	41A
					44E	4	4	--	--	X	3TH4244-0AP0	1	1 unit	41A
					44E, U	3	3	1	1	X	3TH4293-0AP0	1	1 unit	41A

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

8	10	6	4	2	80E	8	--	--	--	X	3TH4280-0BB4	1	1 unit	41A
					71E	7	1	--	--	X	3TH4271-0BB4	1	1 unit	41A
					62E	6	2	--	--	X	3TH4262-0BB4	1	1 unit	41A
					53E	5	3	--	--	X	3TH4253-0BB4	1	1 unit	41A
					44E	4	4	--	--	X	3TH4244-0BB4	1	1 unit	41A
					44E, U	3	3	1	1	X	3TH4293-0BB4	1	1 unit	41A

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

Other voltages according to page 5/22 on request.

For accessories, see page 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7403-0A..
- DC operation: 3TY4803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole

Options

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

Delivery time on request

Rated control supply voltage U_s		Contactor type	3TH42/3TH43
AC operation		Control supply voltage at	
Solenoid coils for 50 and 60 Hz AC			
50 Hz	60 Hz		
24 V AC	29 V AC	B0	
36 V AC	42 V AC	G0	
42 V AC	50 V AC	D0	
48 V AC	58 V AC	H0	
60 V AC	72 V AC	E0	
110 V AC	132 V AC	F0	
125/127 V AC	150/152 V AC	L0	
230/220 V AC	276 V AC	P0 ¹⁾	
240 V AC	288 V AC	U0	
400/380 V AC	480/460 V AC	V0 ¹⁾	
415 V AC	500 V AC	R0	
500 V AC	600 V AC	S0	
50/60 Hz			
24 V AC		C2	
42 V AC		D2	
110 V AC		G2	
115 V AC		J2	
120 V AC		K2	
220 V AC		N2	
230 V AC		L2	
240 V AC		P2	
440 V AC		R2	
For Japan			
50 Hz	60 Hz		
100 V AC	100 ... 110 V AC	G6 ²⁾	
200 V AC	200 ... 220 V AC	N6 ²⁾	
For USA and Canada			
50 Hz	60 Hz		
110 V AC	120 V AC	K6 ²⁾	
220 V AC	240 V AC	P6 ²⁾	

¹⁾ Operating range at 220 V or 380 V: 0.85 to 1.1 x U_s .

²⁾ Operating range at 60 Hz: 0.85 to 1.1 x U_s .

Rated control supply voltage U_s		Contactor type	3TH42/3TH43
DC operation			
12 V DC		A4	
24 V DC		B4	
30 V DC		C4	
36 V DC		V4	
42 V DC		D4	
48 V DC		W4	
60 V DC		E4	
110 V DC		F4	
125 V DC		G4	
220 V DC		M4	
230 V DC		P4	
240 V DC		Q4	

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Contactor relays

3TH4 contactor relays, 8- and 10-pole > Accessories for 3TH4 contactor relays

Selection and ordering data

Version	Rated control supply voltage U_s		SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	AC	DC						
	V	V	d					
Surge suppressors for 3TH4 contactor relays								
 3TX7402-3.	Interference suppression diodes With line spacer, for mounting onto the coil terminal	--	24 ... 250	2	3TX7402-3A	1	1 unit	41B
	Diode assemblies (diode and Zener diode) With line spacer, DC operation, for mounting onto the coil terminal	--	24 ... 250	2	3TX7402-3D	1	1 unit	41B
	Varistors¹⁾ With line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	2	3TX7402-3G	1	1 unit	41B
		48 ... 127	70 ... 150	2	3TX7402-3H	1	1 unit	41B
		127 ... 240	150 ... 250	2	3TX7402-3J	1	1 unit	41B
		240 ... 400	--	20	3TX7402-3K	1	1 unit	41B
		400 ... 600	--	20	3TX7402-3L	1	1 unit	41B
	RC elements With line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	2	3TX7402-3R	1	1 unit	41B
		48 ... 127	70 ... 150	2	3TX7402-3S	1	1 unit	41B
		127 ... 240	150 ... 250	2	3TX7402-3T	1	1 unit	41B
		240 ... 400	--	5	3TX7402-3U	1	1 unit	41B
		400 ... 600	--	X	3TX7402-3V	1	1 unit	41B
	Covers for switch position indicator	--	--	X	3TX4210-0P	1	1 unit	41B

¹⁾ Includes the peak value of the alternating voltage on the DC side.

For contactors	Version	Rated control supply voltage U_s 50/60 Hz AC	Time setting range (minimum times)	SD	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	
Type		V	s	d	Article No.	Price per PU			
ON-delay devices									
 3TX4180-0A	3TH42, 3TH43	NTC thermistors Time tolerance +100%, -50%	220 ... 230	0.1	5	3TX4180-0A	1	1 unit	41B

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

NEW

Overview



Figure on left: 3RQ1000-1EW00 coupling relay,
1 NO contact + 1 NC contact, screw terminal
Figure 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/relays

Industry Mall, see www.siemens.com/product?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>



Video: SIRIUS 3RQ1 coupling relays

The force-guided SIRIUS 3RQ1 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.

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.

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 5/30 onwards](#).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

NEW SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

Article No. scheme

Product versions		Article number					
Coupling relays with force-guided contacts		3RQ1	□	0	0	–	□ □ □ 0 0
Version	Performance level (SIL level): c (SIL 2)	0					
	Performance level (SIL level): 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
Rated control supply voltage	24 V DC			B			Depth 120 mm
	24 to 240 V AC/DC			W			Depth 90 mm
Example		3RQ1	0	0	0	–	1 E W 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.

Benefits

- Wide-range voltage versions from 24 to 240 V AC/DC available with a mounting depth of 90 mm for all variants
- Permanent wiring thanks to removable terminals in screw or spring-loaded technology (push-in)
- Replacement of individual terminals minimizes wiring effort
- Can be used as output extension 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
- International standards and certifications including CE, UL/CSA, EAC, railway approvals, and more

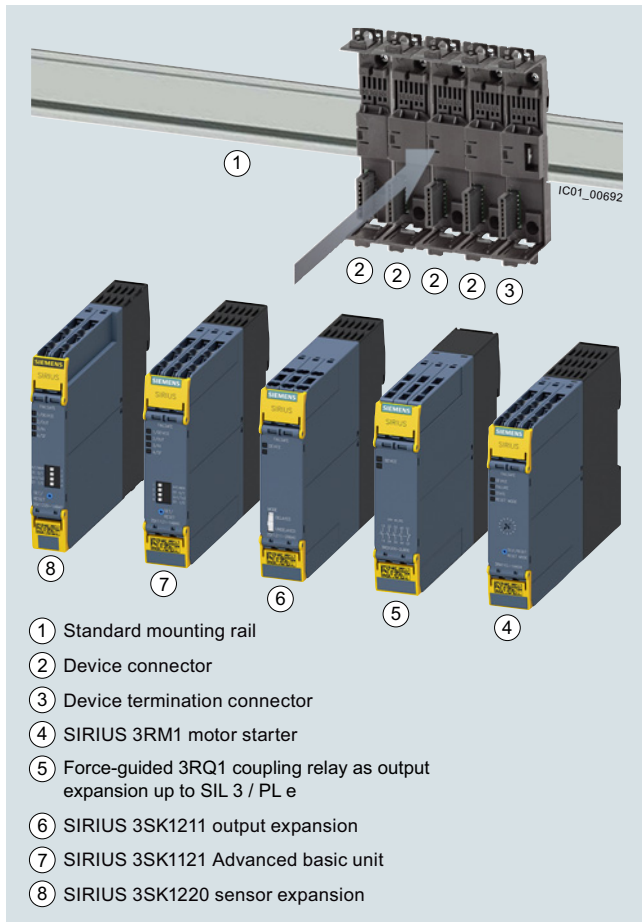
Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

NEW

Application



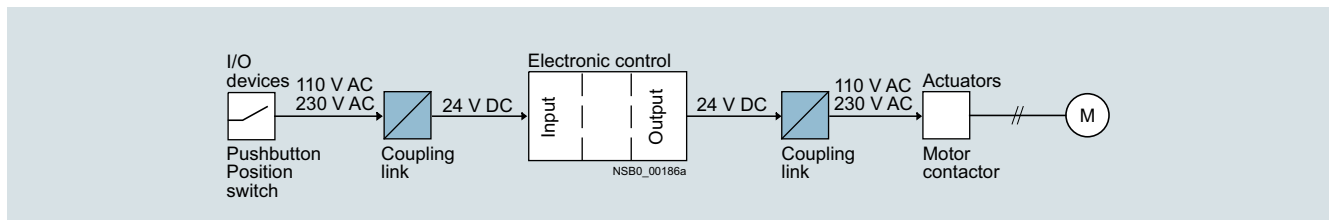
- Safe coupling up to SIL 3 / PL e of control signals from and to a control system
- Output expansion for 3SK safety relays
- Use of force-guided contacts for reading back relay states
- For reliable diagnostics or signaling or for antivalent switching of loads
- Safe coupling:
 - Electrical separation 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 force-guided 3RQ1 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 mm 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.).

System configuration example with SIRIUS 3SK safety relays



Typical application with a fail-safe control system

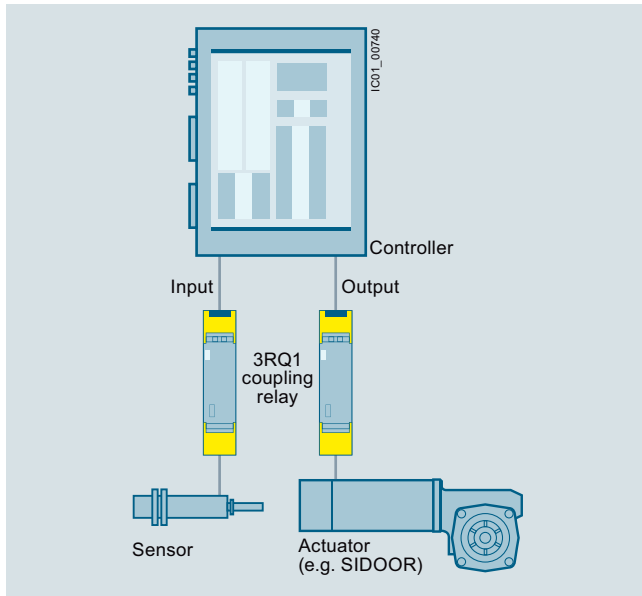
Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

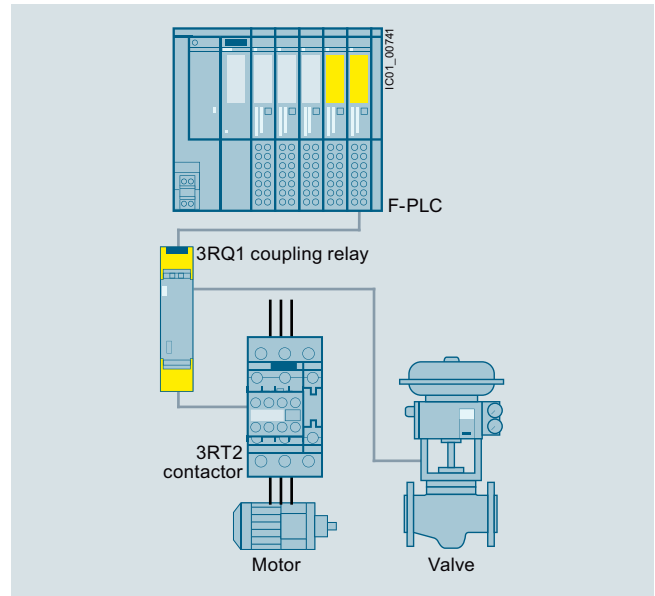
NEW

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

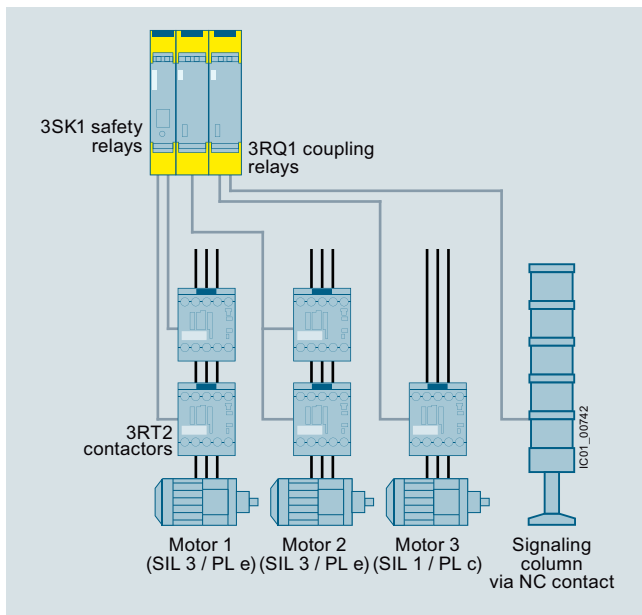
Applications



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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

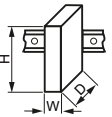
SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e
NEW

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 3SK1/3RQ1, see
<https://support.industry.siemens.com/cs/ww/en/view/67585885>

Article number	3RQ1000-EB00, 3RQ1000-GB00	3RQ1200-EB00	3RQ1000-EW00, 3RQ1000-GW00	3RQ1200-EW00	3RQ1000-HB00, 3RQ1000-LB00	3RQ1000-HW00, 3RQ1000-LW00
General data						
Dimensions (W x H x D)	 mm		17.5 x 100 x 120		17.5 x 100 x 90	
Safety integrity level (SIL) according to IEC 62061	2	3	2	3	2	
Performance level (PL) according to ISO 13849-1	c	e	c	e	c	
Certificate of suitability	- UL approval - TÜV approval					
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3	V	300				
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	
- At 60 Hz	V	--	24 ... 240	--	24 ... 240	
• At DC	V	24	24 ... 240	24	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 service life (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 ... 4.0 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	

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

NEW SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

Selection and ordering data

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

Control supply voltage		Number of auxiliary contacts	Depth	Suitable for use with 3ZY12 device connector	SD	Screw terminals		SD	Spring-loaded terminals (push-in)	
At AC at 50/60 Hz	At DC									
V	V	NO NC	mm		d	Article No.	Price per PU		Article No.	Price per PU
Width 17.5 mm										
Fail-safe up to SIL 2 / PL c										
--	24	1 1	120	✓	2	3RQ1000-1EB00	2		3RQ1000-2EB00	
--	24	2 1	120	✓	2	3RQ1000-1GB00	2		3RQ1000-2GB00	
24 ... 240	24 ... 240	1 1	90	--	2	3RQ1000-1EW00	2		3RQ1000-2EW00	
24 ... 240	24 ... 240	2 1	90	--	2	3RQ1000-1GW00	2		3RQ1000-2GW00	
Fail-safe up to SIL 3 / PL e										
--	24	1 -- ¹⁾	120	✓	2	3RQ1200-1EB00	2		3RQ1200-2EB00	
24 ... 240	24 ... 240	1 1	90	--	2	3RQ1200-1EW00	2		3RQ1200-2EW00	
Width 22.5 mm										
Fail-safe up to SIL 2 / PL c										
--	24	2 2	120	✓	2	3RQ1000-1HB00	2		3RQ1000-2HB00	
--	24	4 1	120	✓	2	3RQ1000-1LB00	2		3RQ1000-2LB00	
24 ... 240	24 ... 240	2 2	90	--	2	3RQ1000-1HW00	2		3RQ1000-2HW00	
24 ... 240	24 ... 240	4 1	90	--	2	3RQ1000-1LW00	2		3RQ1000-2LW00	



3RQ1000-1EW00 3RQ1000-2EW00



3RQ1000-1LW00 3RQ1000-2LW00

✓ Yes

-- No

¹⁾ NC contact designed to act as feedback contact.

Note:

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

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 variants with 24 V AC, 24 V DC and 110 to 240 V AC/DC ([see page 11/27](#)).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

Accessories

More information

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

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

Device connectors for the electrical connection of SIRIUS devices in the industrial standard mounting rail enclosure

 3ZY1212-1BA00 3ZY1212-2BA00	Device connectors					
	- Width 17.5 mm (for 3RQ1000-.EB00/-GB00, 3RQ1200-.EB00) - Width 22.5 mm (for 3RQ1000-.HB00/-LB00)	2	3ZY1212-1BA00	1	1 unit	41L
		2	3ZY1212-2BA00	1	1 unit	41L
 3ZY1212-1DA00 3ZY1212-2DA00	Device termination connectors					
	- Width 17.5 mm (for 3RQ1000-.EB00/-GB00, 3RQ1200-.EB00) - Width 22.5 mm (for 3RQ1000-.HB00/-LB00)	NEW 2	3ZY1212-1DA00	1	1 unit	41L
	Note: Observe positions of the slide switch for width 22.5 mm, see Equipment Manual .	2	3ZY1212-2DA00	1	1 unit	41L
	Device daisy chain connectors					
	24 V DC, 22.5 mm, for implementation of distances between devices according to the installation guidelines	2	3ZY1212-2AB00	1	1 unit	41L
	Device connectors					
	For height adjustment for device arrangements without electrical connection via device connector, with a width of 22.5 mm or greater	2	3ZY1210-2AA00	1	1 unit	41L

Terminals for SIRIUS devices in the industrial standard mounting rail enclosure

 3ZY1122-1BA00 3ZY1122-2BA00	Removable terminals					
	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)	2	3ZY1122-1BA00	1	6 units	41L
		2	3ZY1122-2BA00	1	6 units	41L

Screw terminals



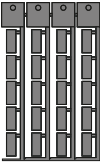
Spring-loaded terminals (push-in)



Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ1 force-guided coupling relays, fail-safe up to SIL 3 / PL e

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
d						
Accessories for enclosures						
 3ZY1321-2AA00	Sealing covers • 17.5 mm • 22.5 mm	2	3ZY1321-1AA00	1	5 units	41L
		2	3ZY1321-2AA00	1	5 units	41L
 3ZY1311-0AA00	Push-in lugs For wall mounting	2	3ZY1311-0AA00	1	10 units	41L
 3ZY1440-1AA00	Coding pins For removable terminals of SIRIUS devices in the industrial standard mounting rail enclosure; they enable the mechanical coding of terminals, see Equipment Manual .	2	3ZY1440-1AA00	1	12 units	41L
 3ZY1450-1BA00 3ZY1450-1BB00	Hinged cover Replacement cover, without terminal labeling, yellow • 17.5 mm wide • 22.5 mm wide	2	3ZY1450-1BA00	1	5 units	41L
		2	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 • 20 mm x 7 mm, titanium gray	20	3RT2900-1SB10	100	816 units	41B
		20	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	2	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 16/16.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

Overview



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

More information

Homepage, see www.siemens.com/relays

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

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

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

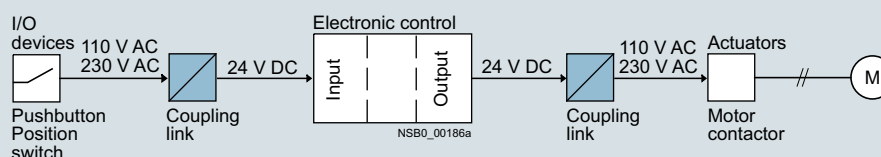
For your orders, please use the article numbers quoted in the selection and ordering data.

Benefits

- Permanent wiring thanks to removable terminals in screw or spring-loaded 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, railway approvals, and more

Application

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



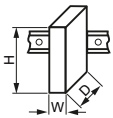
Application example motor controller

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

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	°C	-40 ... +60
• During operation	°C	-40 ... +80
• During storage		
Degree of protection IP		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 service life (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-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
		--

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

Selection and ordering data

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

	Control supply voltage		Number of CO contacts for auxiliary contacts	Material of switching contacts	SD	Screw terminals		SD	Spring-loaded terminals (push-in)	
	At AC At 50 Hz	At DC								
	V	V	W		d	Article No.	Price per PU		Article No.	Price per PU
Coupling relays with industrial enclosure, 22.5 mm										
	24 ... 240	24 ... 240	1	AgSnO ₂	2	3RQ2000-1AW00	2		3RQ2000-2AW00	
			2	AgSnO ₂	2	3RQ2000-1BW00	2		3RQ2000-2BW00	
			3	AgSnO ₂	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, see www.siemens.com/conversion-tool

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

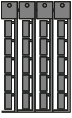
Terminals for SIRIUS devices in the industrial standard mounting rail enclosure

	Removable terminals	SD	Screw terminals			PU (UNIT, SET, M)	PS*	PG
	• 2-pole, up to 1 x 4 mm ² or 2 x 2.5 mm ²	2	3ZY1122-1BA00		1	6 units		41L
	• 2-pole, up to 1 x 4 mm ² or 2 x 1.5 mm ² (in shared end sleeve)	2	3ZY1122-2BA00		1	6 units		41L

Accessories for enclosures

	Hinged cover Replacement cover, without terminal labeling, titanium gray, 22.5 mm wide	2	3ZY1450-1AB00		1	5 units		41L
	Push-in lugs For wall mounting	2	3ZY1311-0AA00		1	10 units		41L
	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		41L

Blank labels

	Unit labeling plates For SIRIUS devices 20 mm x 7 mm, titanium gray ¹⁾	20	3RT2900-1SB20		100	340 units		41B
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Tools for opening spring-loaded terminals

	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	2	3RA2908-1A		1	1 unit		41B
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Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ2 coupling relays with industrial enclosure

More information

Code conversion table

SIRIUS 3RS18 coupling relays				Comparison type SIRIUS 3RQ2 coupling relays			
Screw terminals	Spring-loaded terminals	Version	Contacts	Screw terminals	Spring-loaded 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	2 CO contacts	3RQ2000-1BW00	3RQ2000-2BW00	24 ... 240 V AC/DC	2 CO contacts
3RS1800-1BW00	3RS1800-2BW00	24 ... 240 V AC/DC					
3RS1800-1BQ00	3RS1800-2BQ00	24 V AC/DC; 110 ... 120 V AC	3 CO contacts	3RQ2000-1CW00	3RQ2000-2CW00	24 ... 240 V AC/DC	3 CO contacts
3RS1800-1BP00	3RS1800-2BP00	24 V AC/DC; 220 ... 240 V AC					
3RS1800-1HW00	3RS1800-2HW00	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
3RS1800-1HQ00	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					
3RS1800-1HQ01	3RS1800-2HQ01	24 V AC/DC; 110 ... 120 V AC					
3RS1800-1HP01	3RS1800-2HP01	24 V AC/DC; 220 ... 240 V AC					

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Overview



SIRIUS 3RQ3 coupling relays

More information

Homepage, see www.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RQ3

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

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

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

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

Coupling relays with relay output (not plug-in)

AC and DC operation

IEC 60947-5-1

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

Coupling relays with plug-in relays

AC and DC operation

IEC 60947-1

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

Coupling relays with semiconductor output (not plug-in)

AC and DC operation

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

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

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

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Article No. scheme

Product versions		Article number				
Coupling relays with relay output (not plug-in)		3RQ30 □ 8 – □ A □ 0 □				
Design and type of output	Output coupler, without manual/automatic switch	1				
	Input coupler	3				
Type of electrical connection	Screw terminals		1			
	Spring-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	e.g.					
	0 = AgSnO ₂					□
	1 = AgSnO ₂ hard gold-plated					□
Example		3RQ30 1 8 – 1 A B 0 1				

Product versions		Article number									
Coupling relays with relay output (not plug-in)		3RQ30 1 8 – 2 A □ 0 8 – 0 A A 0									
Railway version with extended operating range 0.7 ... 1.2 x U _s											
Control supply voltage	24 V DC					M					
	110 V DC					N					
Example		3RQ30 1 8 – 2 A M 0 8 – 0 A A 0									

Product versions		Article number				
Coupling relays with plug-in relays		3RQ31 1 8 – □ A □ 0 □				
Type of electrical connection	Screw terminals		1			
	Spring-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	AgSnO ₂					0
	AgSnO ₂ hard gold-plated					1
Example		3RQ31 1 8 – 1 A B 0 1				

Product versions		Article number				
Coupling relays with semiconductor output (not plug-in)		3RQ30 □ □ – □ S □ □ 0				
	Current carrying capacity of the semiconductor output				Control supply voltage	Switching voltage of the semiconductor output
Output coupler						
• Without manual/automatic switch	1 mA ... 0.5 A	5 0	□	M 5	11 ... 30 V DC	10 ... 60 V DC
	5 mA ... 2 A	5 2	□	M 3	11 ... 30 V DC	10 ... 30 V DC
	1 mA ... 2 A	5 2	□	M 4	11 ... 30 V DC	10 ... 60 V DC
	5 mA ... 2 A	5 2	□	M 5	11 ... 30 V DC	20 ... 264 V AC
	1 mA ... 3 A	5 3	□	G 3	110 ... 230 V AC/DC	10 ... 30 V DC
	5 mA ... 5 A	5 5	□	M 3	11 ... 30 V DC	10 ... 30 V DC
	5 mA ... 5 A	6 5	□	M 3	11 ... 30 V DC	10 ... 30 V DC
• With manual/automatic switch	5 mA ... 5 A					
	5 mA ... 5 A					
Input coupler	10 mA ... 0.5 A	7 0	□	B 3	11 ... 30 V AC/DC	10 ... 30 V DC
	10 mA ... 0.5 A	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		3RQ30 7 0 – 1 S B 3 0				

Note:

This 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.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

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 stockkeeping due to fewer variants
- Clearly visible functional state of the coupling relay by green LED
- Integrated reverse polarity protection and EMC suppressor diode
- Standardized accessories across the entire 3RQ3 series
- Universal bridging option using connecting combs for all terminals
- Galvanic isolation plate for isolating different voltages for neighboring units
- Clip-on labels available as set for individual labeling

Coupling relays with relay output (not plug-in)

- Relays fixed in enclosure for increased contact reliability
- Device variants with hard gold-plated contacts, hence high contact reliability at low currents

Coupling relays with plug-in relays

- Fast replacement of the relays with existing wiring
- 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 semiconductor output (not plug-in)

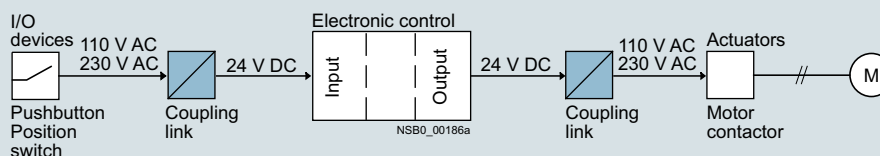
- Long service life since there is no mechanical wear
- High switching frequency thanks to short make-break times
- Vibration-resistant
- No contact bounce
- Extremely high contact reliability
- Noise-free switching
- Low control power required
- Switching of DC and capacitive loads

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

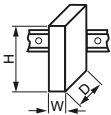
Technical specifications

More information

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

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

Coupling relays with relay output (not plug-in)

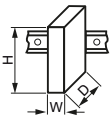
Article number		3RQ30.8- .AB00	3RQ30.8- .AB01	3RQ30.8- .AE00	3RQ30.8- .AE01	3RQ30.8- .AF00	3RQ30.8- .AF01	3RQ3018- 2AM08-0AA0	3RQ3018- 2AN08-0AA0
General technical specifications									
Width x height x depth	 mm	6.2 x 93 x 72.5							
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3	V	300							
Max. permissible voltage for protective separation between control circuit and auxiliary circuit	V	300							
Ambient temperature									
• During operation	°C	-25 ... +60						-40 ... +70	
• During storage	°C	-40 ... +85							
Degree of protection IP		IP20							
Version of the fuse link required for short-circuit protection of the auxiliary switch		Fuse gG: 4 A							
Operational current of the auxiliary contacts									
• At AC-15									
- At 24 V	A	3							
- At 250 V	A	3							
• At DC-13									
- At 24 V	A	1							
- At 125 V	A	0.2							
- At 250 V	A	0.1							
Contact reliability of the auxiliary contacts (one contact failure per 100 million)		17 V, 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) for AC-15 at 250 V typical		100 000							
Operating range factor of the control supply voltage, rated value									
• At AC									
- At 50 Hz		0.8 ... 1.25				0.8 ... 1.1		--	
- At 60 Hz		0.8 ... 1.25				0.8 ... 1.1		--	
• At DC		0.8 ... 1.25				0.8 ... 1.1		0.7 ... 1.25	
Active power input	W	0.3		0.5		1		0.3	0.6
Thermal current	A	6							
• Note		--						Derating, see characteristic curves	

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with plug-in relays

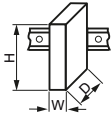
Article number		3RQ3118- .AB00	3RQ3118- .AB01	3RQ3118- .AE00	3RQ3118- .AE01	3RQ3118- .AF00	3RQ3118- .AF01	3RQ3118- .AM00	3RQ3118- .AM01
General technical specifications									
Width x height x depth	mm	6.2 x 93 x 76							
									
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3	V	300							
Max. permissible voltage for protective separation between control circuit and auxiliary circuit	V	300							
Ambient temperature									
• During operation	°C	-25 ... +60							
• During storage	°C	-40 ... +85							
Degree of protection IP		IP20							
Version of the fuse link required for short-circuit protection of the auxiliary switch		Fuse gG: 4 A							
Operational current of the auxiliary contacts									
• At AC-15									
- At 24 V	A	3							
- At 250 V	A	3							
• At DC-13									
- At 24 V	A	1							
- At 125 V	A	0.2							
- At 250 V	A	0.1							
Contact reliability of the auxiliary contacts (one contact failure per 100 million)		17 V, 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) for AC-15 at 250 V typical		100 000							
Operating range factor of the control supply voltage, rated value									
• At AC									
- At 50 Hz		0.8 ... 1.25		0.8 ... 1.1				--	
- At 60 Hz		0.8 ... 1.25		0.8 ... 1.1				--	
• At DC		0.8 ... 1.25		0.8 ... 1.1				0.8 ... 1.25	
Active power input	W	0.3		0.5		1		0.3	
Thermal current	A	6							

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Coupling relays with semiconductor output (not plug-in)

Article number		3RQ3050- .SM50	3RQ3052- .SM30	3RQ3052- .SM40	3RQ3052- .SM50	3RQ3053- .SG30	3RQ3055- .SM30	3RQ3065- .SM30	3RQ3070- .SB30	3RQ3070- .SG30
General technical specifications										
Width x height x depth		mm	6.2 x 93 x 72.5					6.2 x 93 x 75	6.2 x 93 x 72.5	
Insulation voltage for overvoltage category III acc. to IEC 60664 for pollution degree 3	V	50			300		50		--	
Ambient temperature										
• During operation	°C	-25 ... +60								
• During storage	°C	-40 ... +85								
Degree of protection IP		IP20								
Switching voltage of the semiconductor output										
• At AC	V	--				20 ... 264	--			
• At DC	V	10 ... 60	10 ... 30	10 ... 60	--	10 ... 30				
Current carrying capacity of the semiconductor output										
• At AC		--				5 mA ... 2 A	--			
• At DC		1 mA ... 0.5 A	5 mA ... 2 A	1 mA ... 2 A	--	1 mA ... 3 A	5 mA ... 5 A	10 mA ... 0.5 A		
Operating range factor of the control supply voltage, rated value										
• At AC										
- At 50 Hz		--				0.7 ... 1.1	--	1 ... 1	0.7 ... 1.1	
- At 60 Hz		--				0.7 ... 1.1	--	1 ... 1	0.7 ... 1.1	
• At DC		1 ... 1					0.7 ... 1.1	1 ... 1	0.7 ... 1.1	
Active power input	W	0.3			0.25	0.3		0.5		
Thermal current	A	0.5	2				3	5	0.5	

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

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Selection and ordering data

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

Coupling relays with relay output (not plug-in)

Output coupling links

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

Input coupling links

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

Coupling relays with plug-in relays

Output coupling links

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

Type of electrical connection

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

1
2

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

Coupling relays with semiconductor output (not plug-in)

Output coupling links

 3RQ3050-2SM50	DC	--	--	11 ... 30 V	--	1 mA ... 0.5 A	--	2	3RQ3050-□SM50	1	5 units	41H
						5 mA ... 2 A	--	►	3RQ3052-□SM30	1	5 units	41H
						1 mA ... 2 A	--	►	3RQ3052-□SM40	1	5 units	41H
						5 mA ... 2 A	--	2	3RQ3052-□SM50	1	5 units	41H
						5 mA ... 5 A	--	►	3RQ3055-□SM30	1	5 units	41H
								2	3RQ3065-□SM30	1	5 units	41H
	AC/DC	110 ... 230 V	110 ... 230 V	110 ... 230 V	--	1 mA ... 3 A	--	2	3RQ3053-□SG30	1	5 units	41H

Input coupling links

	AC/DC	11 ... 30 V	11 ... 30 V	11 ... 30 V	--	10 mA ... 0.5 A	--	2	3RQ3070-□SB30	1	5 units	41H
		110 ... 230 V	110 ... 230 V	110 ... 230 V	--	10 mA ... 0.5 A	--	2	3RQ3070-□SG30	1	5 units	41H

Type of electrical connection

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

1
2

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

SIRIUS 3RQ3 coupling relays, narrow design

Accessories

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
d						
Galvanic isolation plates						
 3RQ3900-0A	For electrical separation of different potentials when devices of different types are installed side by side	2	3RQ3900-0A	1	10 units	41H
Connecting combs						
 3RQ3901-0B	For linking the same potentials, current carrying capacity for infeed max. 6 A • 2-pole • 4-pole • 8-pole • 16-pole	▶ 2 ▶ 2 ▶ 2 ▶ 2	3RQ3901-0A 3RQ3901-0B 3RQ3901-0C 3RQ3901-0D	1 1 1 1	10 units 10 units 10 units 10 units	41H 41H 41H 41H
Clip-on labels¹⁾						
 3RQ3902-0A	For terminal and equipment labeling, white • 5 x 5 mm • 6 x 12 mm	2 2	3RQ3902-0A 3RQ3902-0B	100 100	2000 units 1200 units	41H 41H
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	2	Spring-loaded terminals (push-in)  3RA2908-1A	1	1 unit	41B

¹⁾ PC labeling system for individual inscription of unit labeling plates available from Conta-Clip Verbindungstechnik GmbH (see page 16/16).

Coupling relays with plug-in relays	Control supply voltage	Material of switching contacts	Number of CO contacts for auxiliary contacts	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	V			d					
Replacement modules for 3RQ3118 coupling relays with plug-in relays									
3RQ3118-AM00	24 DC	AgSnO2	1	2	3TX7014-7BM00		1	15 units	41H
3RQ3118-AM01		AgSnO2 hard gold-plated		2	3TX7014-7BM02		1	15 units	41H
3RQ3118-AB00	24 AC/DC	AgSnO2	1	2	3TX7014-7BM00		1	15 units	41H
3RQ3118-AB01		AgSnO2 hard gold-plated		2	3TX7014-7BM02		1	15 units	41H
3RQ3118-AE00	115 AC/DC	AgSnO2	1	2	3TX7014-7BP00		1	20 units	41H
3RQ3118-AF00	230 AC/DC	AgSnO2							
3RQ3118-AE01	115 AC/DC	AgSnO2 hard gold-plated	1	2	3TX7014-7BP02		1	20 units	41H
3RQ3118-AF01	230 AC/DC	AgSnO2 hard gold-plated							

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Overview

More information

Homepage, see www.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RQ_3RS_LZ

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

LZS coupling relays with plug-in relays can be ordered as complete units or as individual 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/MT 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 (freewheel diode connected in parallel with A1/A2). The positive control supply voltage must be connected to coil terminal A1.

Mounting

The relays are plugged into the base and this is snapped onto a TH 35 standard mounting rail according to IEC 60715.

A fixing bracket can be ordered for the MT series that additionally fixes the relay into a plug-in base (under conditions of increased mechanical stress). For the RT and PT series, a combined fixing and ejection bracket is available which can be used to disassemble the relay where access is difficult, for example, when relays are mounted side-by-side.

They can be mounted as required.

Logical separation

The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for coil. Logical separation is not necessarily protective separation.

Protective separation

For 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).

Notes on the previous LZX series

The lower-cost complete units of the LZS series are fully compatible with the corresponding complete units of the previous LZX series.

The LZX plug-in relays are available unchanged and are used accordingly in both the LZS and the LZX series.

Note:

Due to differences in geometry, the LED modules, plug-in bases, fixing brackets and labels can be combined and/or used only in the respective series, LZS or LZX.

The LZS series offers not only service-proven screw connections but also versions with plug-in terminals (push-in).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

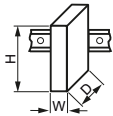
LZX coupling relays with plug-in relays

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 relay, 8-pole, (12.7 mm) 1 CO / 2 CO				LZX:PT industrial relay, 8-, 11- and 14-pole, (22.5 mm) 2 CO / 3 CO / 4 CO			
General data									
Dimensions (W x H x D)									
• LZX:RT.A4 / LZX:PT.A5		mm	15.5 x 78 x 71				28 x 74 x 72		
• LZX:RT.B4 / LZX:PT.B5		mm	15.5 x 77 x 71				28 x 77 x 79		
• LZX:RT.D4 / LZX:PT.D5		mm	15.5 x 98 x 71				28 x 98 x 79		
Rated control supply voltage U_s¹⁾	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 Acc. to IEC 60664-1		III							
Protective separation Between coil and contacts Acc. to IEC 60947-1, Annex N		Up to 250 V (with plug-in base LZX:RT78726) No (for complete units with standard base)				No			
Degree of protection									
• Relays		IP67				IP50			
• Bases		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		 Plug-in 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.									

¹⁾ AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Relay type		LZX:RT print relay, 8-pole, (12.7 mm) 1 CO / 2 CO				LZX:PT industrial relay, 8-, 11- and 14-pole, (22.5 mm) 2 CO / 3 CO / 4 CO				
Rated control supply voltage U_s 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_s										
• 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
Protection circuit			Freewheel diode for complete unit	--			Freewheel diode in LED module	--		
Load side										
Switching voltage										
AC/DC	V	24 ... 250								
Rated currents ²⁾										
• Conventional thermal current I_{th}										
- 1 CO contact	A	16				--				
- 2 CO contacts	A	8				12				
- 3 CO contacts	A	--				10				
- 4 CO contacts	A	--				6				
• Rated operational current I_{θ} /AC-15 acc. to utilization categories (IEC 60947-5-1)										
- 1 CO contact	A	6		3		4		2		
- 2 CO contacts	A	3				4		2		
- 3 CO contacts	A	--				4		2		
- 4 CO contacts	A	--				4		2		
• Rated operational current I_{θ} DC-13 with suppressor diode acc. to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V				PT2, PT3, PT5: 4 at 24 V, 0.5 at 230 V				
Short-circuit protection										
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1										
• DIAZED, type 5SB	A	10				6				
Min. contact load (reliability: 1 ppm)		Standard 17 V, 10 mA; hard gold-plated 17 V/0.1 mA				Standard 17 V, 10 mA; hard gold-plated 20 V/1 mA				
Mechanical service life										
• 1 CO contact	Operating 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	Operating 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	Operating cycles	--					30 x 10 ⁶	20 x 10 ⁶		
• 4 CO contacts	Operating cycles	--					30 x 10 ⁶	20 x 10 ⁶		
Electrical endurance (resistive load at 250 V AC)										
• 1 CO contact	Operating cycles	1 x 10 ⁵	7 x 10 ⁴				--			
• 2 CO contacts	Operating cycles	1 x 10 ⁵	8 x 10 ⁴				180 x 10 ³			
• 3 CO contacts	Operating cycles	--					180 x 10 ³			
• 4 CO contacts	Operating cycles	--					250 x 10 ³			

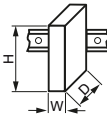
¹⁾ AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

²⁾ Capacitive loads can result in micro-welding on the contacts.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Relay type		LZS industrial relay: MT, 11-pole (35.5 mm) 3 CO contacts			
General data					
Dimensions (W x H x D)	 mm	36 x 69 x 36			
Rated control supply voltage $U_s^{1)}$	V	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (Pollution degree 3)	V	250			
Overvoltage category Acc. to IEC 60664-1		III			
Protective separation Between coil and contacts Acc. to IEC 60947-1, Annex N		No			
Degree of protection of relays/bases		IP50 IP20			
Permissible ambient temperature					
• During operation	°C	-40 ... +60	-45 ... +50		
• During storage	°C	-45 ... +80			
Conductor cross-sections					
Connection type		 Screw terminals			
• Solid	mm ²	2 x 2.5			
• Finely stranded with or without end sleeve	mm ²	2 x 1.5			
• Corresponding opening tool		Screwdriver, size 1 or Pozidriv 1			
Control side					
Operating range	V	18 ... 38	19.2 ... 38	92 ... 137	184 ... 264
Power consumption					
• AC	VA	--	2.3		
• DC	W	1.2	--		
Release voltage	V	2.4	9.6	46	92
Protection circuit		--			
Load side					
Switching voltage					
• AC/DC	V	24 ... 250			
Rated currents ²⁾					
• Conventional thermal current I_{th}	A	10			
• Rated operational current I_e /DC-13 acc. to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V			
• Rated operational current I_e /AC-15 acc. to utilization categories (IEC 60947-5-1)	A	5 at 24 V and 230 V			
Short-circuit protection					
Short-circuit test with fuse links of operational class gG with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1					
• DIAZED, type 5SB	A	10			
Min. contact load (reliability: 1 ppm)		12 V DC/10 mA			
Mechanical service life	Operat- ing cycles	20 x 10 ⁶			
Electrical endurance (resistive load at 250 V AC)	Operat- ing cycles	3 x 10 ⁵			

¹⁾ AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10%; the power loss will decrease slightly.

²⁾ Capacitive loads can result in micro-welding on the contacts.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Selection and ordering data

Version	Rated control supply voltage U_s (at AC: 50/60 Hz)	Contacts, number of CO contacts	Width mm	SD d	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units, 11- and 14-pole, PT series									
 LZS:PT3A5L24	Complete units with plug-in base				Screw terminals 				
	For snap-on mounting onto TH 35 standard mounting rail								
	Consisting of:								
	• Coupling relays with plug-in relays								
	• Standard plug-in base with screw terminals								
	• LED module (24 V DC version: LED module with freewheel diode)								
	• Fixing/ejection brackets								
	• Labels								
	3 CO contacts	24 DC 24 AC 115 AC 230 AC	3	28	2 2 2 2	LZS:PT3A5L24 LZS:PT3A5R24 LZS:PT3A5S15 LZS:PT3A5T30	1 1 1 1	5 units 5 units 5 units 5 units	41H 41H 41H 41H
	4 CO contacts	24 DC 24 AC 115 AC 230 AC	4	28	2 2 2 2	LZS:PT5A5L24 LZS:PT5A5R24 LZS:PT5A5S15 LZS:PT5A5T30	1 1 1 1	5 units 5 units 5 units 5 units	41H 41H 41H 41H
 LZS:PT5D5L24	Complete units with plug-in base				Plug-in terminals (push-in) 				
	With logical separation								
	For snap-on mounting onto TH 35 standard mounting rail								
	Consisting of:								
	• Coupling relays with plug-in relays								
	• Plug-in base with logical separation and plug-in terminals (push-in)								
	• LED module (24 V DC version: LED module with freewheel diode)								
	• Fixing/ejection brackets								
	• Labels								
	2 CO contacts	24 DC 230 AC	2	28	2 2	LZS:PT2D5L24 LZS:PT2D5T30	1 1	5 units 5 units	41H 41H
	4 CO contacts	24 DC 24 AC 115 AC 230 AC	4	28	2 2 2 2	LZS:PT5D5L24 LZS:PT5D5R24 LZS:PT5D5S15 LZS:PT5D5T30	1 1 1 1	5 units 5 units 5 units 5 units	41H 41H 41H 41H
Complete units, 8- and 14-pole, PT series									

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).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Version	Rated control supply voltage U_s at 50/60 Hz AC	Contacts, number of CO contacts	Width	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm	d					

Individual modules for customer assembly, PT series

Industrial relays, 8-, 11-, and 14-pole

Mini industrial relays

- With test bracket and mechanical switch position indicator, without LED¹⁾



LZX:PT370024

24 DC	2	22.5	▶	LZX:PT270024	1	1 unit	41H
	3		▶	LZX:PT370024	1	1 unit	41H
	4		▶	LZX:PT570024	1	1 unit	41H
24 AC	2	22.5	▶	LZX:PT270524	1	1 unit	41H
	3		▶	LZX:PT370524	1	1 unit	41H
	4		▶	LZX:PT570524	1	1 unit	41H
115 AC	2	22.5	2	LZX:PT270615	1	1 unit	41H
	3		2	LZX:PT370615	1	1 unit	41H
	4		▶	LZX:PT570615	1	1 unit	41H
230 AC	2	22.5	▶	LZX:PT270730	1	1 unit	41H
	3		▶	LZX:PT370730	1	1 unit	41H
	4		▶	LZX:PT570730	1	1 unit	41H

- With hard gold-plating

24 DC	4	22.5	▶	LZX:PT580024	1	1 unit	41H
230 AC			▶	LZX:PT580730	1	1 unit	41H

- Without test bracket

24 DC	4	22.5	▶	LZX:PT520024	1	1 unit	41H
230 AC			2	LZX:PT520730	1	1 unit	41H

Plug-in bases for PT relays

Standard plug-in bases

For mounting onto TH 35 standard mounting rail



LZS:PT78740

--	2	28	▶	LZS:PT78720	1	1 unit	41H
	3		▶	LZS:PT78730	1	1 unit	41H
	4		▶	LZS:PT78740	1	1 unit	41H

Screw terminals



Plug-in bases with logical separation

For mounting onto TH 35 standard mounting rail



LZS:PT78722

--	2	28	▶	LZS:PT78722	1	1 unit	41H
	4		▶	LZS:PT78742	1	1 unit	41H

Plug-in bases with logical separation

For mounting onto TH 35 standard mounting rail



LZS:PT7874P

--	2	28	▶	LZS:PT7872P	1	1 unit	41H
	4		▶	LZS:PT7874P	1	1 unit	41H

Plug-in terminals (push-in)



¹⁾ The test bracket is designed to be non-latching. If the test bracket is pressed further until 90° has been reached, two small lugs break off and the test bracket can be latched in position.

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

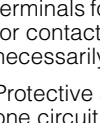
Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Version	Rated control supply voltage U_s at 50/60 Hz AC	Contacts, number of CO contacts	Width	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
V			mm	d						
Individual modules for customer assembly, PT series										
More individual modules										
LED modules										
 LZS:PTML0024	• Red		12.5	▶	LZS:PTML0024 LZS:PTML0524 LZS:PTML0730		1 1 1	1 unit 1 unit 1 unit	41H 41H 41H	
	- With freewheel diode	24 DC								--
	- Without freewheel diode	24 AC/DC								--
		110 ... 230 AC								--
 LZS:PTMG0024	• Green		12.5	▶	LZS:PTMG0024 LZS:PTMG0524 LZS:PTMG0730		1 1 1	1 unit 1 unit 1 unit	41H 41H 41H	
	- With freewheel diode	24 DC								--
	- Without freewheel diode	24 AC/DC								--
		110 ... 230 AC								--
Fixing/ejection brackets for PT base with logical separation										
 LZS:PT17021	Screw terminals and plug-in terminals (push-in)	--	--	26	▶	LZS:PT17021	100	10 units	41H	
Fixing/ejection brackets for standard plug-in base without logical separation										
 LZS:PT17024	Screw terminals	--	--	26	▶	LZS:PT17024	100	10 units	41H	
Labels										
 LZS:PT17040	--	--	--	26	▶	LZS:PT17040	100	10 units	41H	
RC elements										
 LZS:PTMU0524	6 ... 60 AC		--	26	▶	LZS:PTMU0524	1	1 unit	41H	
	110 ... 230 AC		--	26	▶	LZS:PTMU0730	1	1 unit	41H	
Freewheel diodes with connection to A1										
 LZS:PTMT00A0	6 ... 230 DC		--	26	▶	LZS:PTMT00A0	1	1 unit	41H	
Connecting combs for PT screw base										
 LZS:PTMU0730	6-pole, 10 A current carrying capacity, natural-colored		--	5	▶	LZS:PT170R6	1	10 units	41H	
			--	5	▶	LZS:PT170P1	1	10 units	41H	
Connecting brackets for PT push-in base										
 LZS:PT170P1	2-pole, 10 A current carrying capacity, natural-colored		--	5	▶	LZS:PT170P1	1	10 units	41H	
			--	5	▶	LZS:PT170P1	1	10 units	41H	

Individual modules for customer assembly, MT series

Industrial relays, 11-pole									
Industrial relays with test bracket									
 LZX:MT326024	Without LED	24 DC	3	35.5	2	LZX:MT321024	1	1 unit	41H
	With LED				▶	LZX:MT323024	1	1 unit	41H
	Without LED	24 AC	3	35.5	2	LZX:MT326024	1	1 unit	41H
	With LED				15	LZX:MT328024	1	1 unit	41H
	Without LED	115 AC	3	35.5	15	LZX:MT326115	1	1 unit	41H
	With LED				15	LZX:MT328115	1	1 unit	41H
 LZX:MT326230	Without LED	230 AC	3	35.5	2	LZX:MT326230	1	1 unit	41H
	With LED				2	LZX:MT328230	1	1 unit	41H
Plug-in bases									
For mounting onto TH 35 standard mounting rail					Screw terminals 				
 LZX:MT78750	--	--	38	▶	LZX:MT78750		1	1 unit	41H
	Fixing brackets				LZX:MT28800				
 LZX:MT28800	--	--	38	▶	LZX:MT28800		1	1 unit	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

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.

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Version	Rated control supply voltage U_s at 50/60 Hz AC	Contacts, number of CO contacts	Width	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm	d					
Complete units, 8-pole, 5 mm pinning, RT series									
 LZS:RT4A4T30	Complete units with standard plug-in base				Screw terminals 				
	For snap-on mounting onto TH 35 standard mounting rail								
	Consisting of:								
	• Coupling relays with plug-in relays								
	• Standard plug-in base with screw terminals								
	• LED module (24 V DC version: LED module with freewheel diode)								
	• Fixing/ejection brackets								
	• Labels								
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	2	LZS:RT3A4L24 LZS:RT3A4R24 LZS:RT3A4S15 LZS:RT3A4T30	1	5 units	41H
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	2 2 2 2	LZS:RT4A4L24 LZS:RT4A4R24 LZS:RT4A4S15 LZS:RT4A4T30	1	5 units	41H
 LZS:RT4B4T30	Complete units with plug-in base With logical separation								
	For snap-on mounting onto TH 35 standard mounting rail								
	Consisting of:								
	• Coupling relays with plug-in relays								
	• Plug-in base with logical separation and screw terminals								
	• LED module (24 V DC version: LED module with freewheel diode)								
	• Fixing/ejection brackets								
	• Labels								
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	2	LZS:RT3B4L24 LZS:RT3B4R24 LZS:RT3B4S15 LZS:RT3B4T30	1	5 units	41H
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	2 2 2 2	LZS:RT4B4L24 LZS:RT4B4R24 LZS:RT4B4S15 LZS:RT4B4T30	1	5 units	41H
 LZS:RT3D4L24	Complete units with plug-in base With logical separation				Plug-in terminals (push-in) 				
	For snap-on mounting onto TH 35 standard mounting rail								
	Consisting of:								
	• Coupling relays with plug-in relays								
	• Plug-in base with logical separation and plug-in terminals (push-in)								
	• LED module (24 V DC version: LED module with freewheel diode)								
	• Fixing/ejection brackets								
	• Labels								
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	2	LZS:RT3D4L24 LZS:RT3D4R24 LZS:RT3D4S15 LZS:RT3D4T30	1	5 units	41H
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	2 2 2 2	LZS:RT4D4L24 LZS:RT4D4R24 LZS:RT4D4S15 LZS:RT4D4T30	1	5 units	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

Switching devices – Contactors and contactor assemblies – Contactor relays and relays

Coupling relays

LZS coupling relays with plug-in relays

Version	Rated control supply voltage U_s at 50/60 Hz AC	Contacts, number of CO contacts	Width	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm	d					
Individual 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	▶ 15	LZX:RT315024		1	1 unit	41H
LZX:RT314024	230 AC				LZX:RT315730		1	1 unit	41H
	Print relays Version with 1 CO contact								
	24 DC	1	12.7	▶ 15	LZX:RT314024		1	1 unit	41H
	24 AC				LZX:RT314524		1	1 unit	41H
	115 AC				LZX:RT314615		1	1 unit	41H
	230 AC			▶	LZX:RT314730		1	1 unit	41H
LZX:RT78725	Version with 2 CO contacts								
	12 DC	2	12.7	▶ 2	LZX:RT424012		1	1 unit	41H
	24 DC			▶	LZX:RT424024		1	1 unit	41H
	24 AC			▶	LZX:RT424524		1	1 unit	41H
	115 AC			▶	LZX:RT424615		1	1 unit	41H
	230 AC			▶	LZX:RT424730		1	1 unit	41H
	Standard plug-in bases For mounting onto TH 35 standard mounting rail				Screw terminals 				
	--	--	15.5	▶	LZS:RT78725		1	1 unit	41H
	Plug-in bases with logical separation For mounting onto TH 35 standard mounting rail								
	--	--	15.5	▶	LZS:RT78726		1	1 unit	41H
	Plug-in bases with logical separation For mounting onto TH 35 standard mounting rail				Plug-in terminals (push-in) 				
	--	--	15.5	▶	LZS:RT7872P		1	1 unit	41H
	LED modules								
	• Red								
	With freewheel diode	24 DC	--	▶ 15.5	LZS:PTML0024		1	1 unit	41H
LZS:RT7872P	Without freewheel diode	24 AC/DC	--	▶	LZS:PTML0524		1	1 unit	41H
		110 ... 230 AC	--	▶	LZS:PTML0730		1	1 unit	41H
	• Green								
	With freewheel diode	24 DC	--	▶ 15.5	LZS:PTMG0024		1	1 unit	41H
	Without freewheel diode	24 AC/DC	--	▶	LZS:PTMG0524		1	1 unit	41H
		110 ... 230 AC	--	▶	LZS:PTMG0730		1	1 unit	41H
	Fixing/ejection brackets For RT base								
	--	--	15.5	▶	LZS:RT17016		100	10 units	41H
	Labels								
	--	--	15.5	▶	LZS:RT17040		100	10 units	41H
	RC elements								
	6 ... 60 AC	--	15.5	▶	LZS:PTMU0524		1	1 unit	41H
	110 ... 230 AC			▶	LZS:PTMU0730		1	1 unit	41H
	Freewheel diodes with connection to A1								
	6 ... 230 DC	--	15.5	▶	LZS:PTMT00A0		1	1 unit	41H
	Connecting combs for RT screw base								
	8-pole, 10 A current carrying capacity, natural-colored	--	--	▶	LZS:RT170R8		1	10 units	41H
	Connecting brackets for push-in base								
	2-pole, 10 A current carrying capacity, natural-colored	--	--	5	LZS:RT170P1		100	10 units	41H
									

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.