

# Controls – Contactors and Contactor Assemblies – for Switching Motors

# 3



	<b>Price groups</b> PG 41B, 41H, 42F
3/2	<b>Introduction</b>
	<b>Power contactors for switching motors</b>
3/6	General data
3/13	SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW
3/37	Accessories for 3RT2 contactors
3/61	Spare parts for 3RT2 contactors
3/62	SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW
3/86	SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW
3/91	Accessories for 3RT1 contactors
3/107	Spare parts for 3RT1 contactors
3/112	3TF6 vacuum contactors, 3-pole, 335 ... 450 kW
3/122	3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW
3/130	3TF2 contactors, 3-pole, 2.2 ... 4 kW
	<b>Coupling contactors</b>
3/140	SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW
	<b>Contactor assemblies</b> <u>3RA23, 3RA13, 3RA24, 3RA14 contactor assemblies</u>
3/145	SIRIUS 3RA23 reversing contactor assemblies
3/153	SIRIUS 3RA13 reversing contactor assemblies
3/159	SIRIUS 3RA24 contactor assemblies for wye-delta starting
3/168	SIRIUS 3RA14 contactor assemblies for wye-delta starting <u>3TD, 3TE contactor assemblies</u>
3/175	3TD6 reversing contactor assemblies, 335 kW
3/176	3TE6 contactor assemblies for wye-delta starting, 630 kW
	<b>Function modules for mounting onto SIRIUS 3RT2 contactors</b>
3/178	Introduction
3/179	SIRIUS function modules
3/183	SIRIUS function modules for IO-Link
3/188	SIRIUS function modules for AS-Interface

More information can be found on the Internet: [see opening information, page 13](#)

Note:

3RT1 contactors in sizes S00/S0 to S12 and 3RA1 contactor assemblies in sizes S00/S0 to S3 can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

## Introduction

## Overview

Size  
Type**S00**  
3RT20 1**S0**  
3RT20 2**3RT20 contactors**

Type	3RT20 15	3RT20 16	3RT20 17	3RT20 18	3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
AC, DC operation	(p. 3/26, 3/28)				(p. 3/31, 3/33)					

**AC-3**

$I_e$ /AC-3/400 V	A	7	9	12	16	9	12	17	25	32	38
400 V	<b>kW</b>	<b>3</b>	<b>4</b>	<b>5.5</b>	<b>7.5</b>	<b>4</b>	<b>5.5</b>	<b>7.5</b>	<b>11</b>	<b>15</b>	<b>18.5</b>
230 V	kW	2.2	3	3	4	3	3	4	5.5	7.5	7.5
500 V	kW	3.5	4.5	5.5	7.5	4.5	7.5	10	11	18.5	18.5
690 V	kW	4	5.5	5.5	7.5	5.5	7.5	11	11	18.5	18.5
1000 V	kW	--	--	--	--	--	--	--	--	--	--

**AC-4** (for  $I_a = 6 \times I_e$ )

400 V	kW	3	4	4	5.5	4	5.5	7.5	7.5	11	11
400 V (200 000 operating cycles)	kW	1.15	2	2	2.5	2	2.6	3.5	4.4	6	6

**AC-1** (40 °C, ≤ 690 V)

$I_e$	3RT20	<b>A</b>	18	22	22	22	40	40	40	40	50	50
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**Accessories for contactors**

<b>Auxiliary switch blocks</b> On front	3RH29 11	(p. 3/50)	3RH29 11	(p. 3/50)
	Lateral	3RH29 11	(p. 3/52)	3RH29 21
<b>Timing relay blocks</b>	3RA28 1.	(p. 3/181)	3RA28 1.	(p. 3/181)
<b>Function modules</b>	3RA27 1.-. AA00	(p. 3/152, 3/167)	3RA27 1.-. AA00	(p. 3/152, 3/167)
<b>Surge suppressors</b>	3RT29 16	(p. 3/56)	3RT29 26	(p. 3/56)

**3RU2 and 3RB3 overload relays (Protection Equipment → Overload Relays)**

<b>3RU21</b> , thermal, CLASS 10	3RU21 16	0.11 ... 16 A (Chap. 7)	3RU21 26	1.8 ... 40 A (Chap. 7)
<b>3RB30/3RB31</b> , solid-state, CLASS 5, 10, 20 and 30	3RB30 16	0.1 ... 16 A (Chap. 7)	3RB30 26	0.1 ... 40 A (Chap. 7)
	3RB31 13		3RB31 23	

**3RV20 motor starter protectors (Protection Equipment → Motor Starter Protectors)**

Type	3RV20 11	0.11 ... 16 A (Chap. 7)	3RV20 21	11 ... 40 A (Chap. 7)
<b>Link modules</b>	3RA29 11	(Chap. 7)	3RA29 21	(Chap. 7)

**3RA23 reversing contactor assemblies**

<b>Complete units</b> Type	3RA23 15	3RA23 16	3RA23 17	3RA23 18	--	3RA23 24	3RA23 25	3RA23 26	3RA23 27	3RA23 28	
	(p. 3/148)					(p. 3/150)					
<b>400 V</b>	<b>kW</b>	<b>3</b>	<b>4</b>	<b>5.5</b>	<b>7.5</b>	<b>5.5</b>	<b>7.5</b>	<b>11</b>	<b>15</b>	<b>18.5</b>	
<b>Assembly kits/wiring modules</b>	3RA29 13-2AA.	(p. 3/151)				--	3RA29 23-2AA.				(p. 3/151)
<b>Function modules</b>	3RA27 1.-. BA00	(p. 3/152)				--	3RA27 1.-. BA0				(p. 3/152)

**3RA24 contactor assemblies for wye-delta starting**

<b>Complete units</b> Type	3RA24 15	3RA24 16	3RA24 17		3RA24 23	3RA24 25	3RA24 26	
	(p. 3/163)				(p. 3/165)			
<b>400 V</b>	<b>kW</b>	<b>5.5</b>	<b>7.5</b>	<b>11</b>	<b>11</b>	<b>15/18.5</b>	<b>22</b>	
<b>Assembly kits/wiring modules</b>	3RA29 13-2BB.	(p. 3/166)			3RA29 23-2BB.			(p. 3/166)
<b>Function modules</b>	3RA27 1.-. CA00	(p. 3/167)			3RA27 1.-. CA00			(p. 3/167)

## Note:

For safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".



Size	<b>S2</b>			<b>S3</b>			<b>S6</b>				
Type	3RT10 3			3RT1. 4			3RT1. 5				
<b>3RT10 contactors</b>											
Type	<b>3RT10 34</b>	<b>3RT10 35</b>	<b>3RT10 36</b>	<b>3RT10 44</b>	<b>3RT10 45</b>	<b>3RT10 46</b>	<b>3RT10 54</b>	<b>3RT10 55</b>	<b>3RT10 56</b>		
AC, DC operation	(p. 3/78, 3/80)			(p. 3/79, 3/81)			(p. 3/82)				
<b>AC-3</b>											
$I_e$ /AC-3/400 V	A	32	40	50	65	80	95	115	150	185	
<b>400 V</b>	<b>kW</b>	<b>15</b>	<b>18.5</b>	<b>22</b>	<b>30</b>	<b>37</b>	<b>45</b>	<b>55</b>	<b>75</b>	<b>90</b>	
230 V	kW	7.5	11	15	18.5	22	22	37	45	55	
500 V	kW	18.5	22	30	37	45	55	75	90	110	
690 V	3RT10/12 kW	18.5	22	22	45	55	55	110	132	160	
1 000 V	3RT10/12 kW	--	--	--	30	37	37	75	90	90	
<b>AC-4 (for <math>I_a = 6 \times I_e</math>)</b>											
<b>400 V</b>	<b>kW</b>	<b>15</b>	<b>18.5</b>	<b>22</b>	<b>30</b>	<b>37</b>	<b>45</b>	<b>55</b>	<b>75</b>	<b>90</b>	
400 V	3RT10/12 kW	8.2	9.5	12.6	15.1	17.9	22	29	38	45	
(200 000 operating cycles)											
<b>AC-1 (40 °C, ≤ 690 V)</b>											
$I_e$	3RT10/12 A	<b>50</b>	<b>60</b>	<b>60</b>	<b>100</b>	<b>120</b>	<b>120</b>	<b>160</b>	<b>185</b>	<b>215</b>	
<b>3RT14 AC-1 contactors</b>											
Type	--	(Chap. 4)			<b>3RT14 46</b>	(Chap. 4)		<b>3RT14 56</b>	(Chap. 4)		
$I_e$ /AC-1/40 °C/≤ 690 V	A	--				<b>140</b>			<b>275</b>		
<b>Accessories for contactors</b>											
<b>Auxiliary switch blocks</b>	On front	<b>3RH19 21</b>	(p. 3/98)								
	Lateral	<b>3RH19 21</b>	(p. 3/100)								
<b>Terminal covers</b>		<b>3RT19 36-4EA2</b>	(p. 3/105)		<b>3RT19 46-4EA1/2</b>	(p. 3/105)		<b>3RT19 56-4EA1/2/3</b>	(p. 3/105)		
<b>Box terminal blocks</b>		--				--			<b>3RT19 55/56-4G</b>	(p. 3/105)	
<b>Surge suppressors</b>		<b>3RT19 26/36</b>	(p. 3/103)						<b>3RT19 56-1C</b>	(RC element) (p. 3/103)	
<b>3RU1 and 3RB2 overload relays (Protection Equipment → Overload Relays)</b>											
<b>3RU11</b> , thermal, CLASS 10		<b>3RU11 36</b>	5.5 ... 50 A (Chap. 7)		<b>3RU11 46</b>	18 ... 100 A (Chap. 7)		--			
<b>3RB20/3RB21</b> , solid-state, CLASS 5, 10, 20 and 30		<b>3RB20 36</b>	6 ... 50 A (Chap. 7)		<b>3RB20 46</b>	12.5 ... 100 A (Chap. 7)		<b>3RB20 56</b>	50 ... 200 A (Chap. 7)		
		<b>3RB21 36</b>			<b>3RB21 46</b>			<b>3RB21 56</b>			
<b>3RB22/3RB23</b> , solid-state, CLASS 5, 10, 20 and 30		<b>3RB2. 83 + 3RB29 06</b>						<b>3RB2. 83 + 3RB29 56</b>			
		10 ... 100 A (Chap. 7)						20 ... 200 A (Chap. 7)			
<b>3RV10 motor starter protectors (Protection Equipment → Motor Starter Protectors)</b>											
Type		<b>3RV10 31</b>	22 ... 50 A (Chap. 7)		<b>3RV10 41</b>	45 ... 100 A (Chap. 7)		--			
<b>Link modules</b>		<b>3RA19 31</b>	(Chap. 7)			<b>3RA19 41</b>	(Chap. 7)				
<b>3RA13 reversing contactor assemblies</b>											
<b>Complete units</b>	Type	<b>3RA13 34</b>	<b>3RA13 35</b>	<b>3RA13 36</b>	<b>3RA13 44</b>	<b>3RA13 45</b>	<b>3RA13 46</b>	--			
		(p. 3/154)			(p. 3/155)						
<b>400 V</b>	<b>kW</b>	<b>15</b>	<b>18.5</b>	<b>22</b>	<b>30</b>	<b>37</b>	<b>45</b>	<b>55</b>	<b>75</b>	<b>90</b>	
<b>Assembly kits/wiring modules</b>		<b>3RA19 33-2A</b>			<b>3RA19 43-2A</b>		<b>3RA19 53-2A</b>		(p. 3/157)		
<b>Mechanical interlocks</b>		<b>3RA19 24-1A/-2B</b>						<b>3RA19 54-2A</b>			
		(p. 3/156)						(p. 3/156)			
<b>3RA14 contactor assemblies for wye-delta starting</b>											
<b>Complete units</b>	Type	<b>3RA14 34</b>	<b>3RA14 35</b>	<b>3RA14 36</b>	<b>3RA14 44</b>	<b>3RA14 45</b>	--				
		(p. 3/171)			(p. 3/172)			(p. 3/173)			
<b>400 V</b>	<b>kW</b>	<b>22/30</b>	<b>37</b>	<b>45</b>	<b>55</b>	<b>75</b>	--				
<b>Assembly kits/wiring modules</b>		<b>3RA19 33-2B/-2C</b>			<b>3RA19 43-2B/-2C</b>		<b>3RA19 53-2B</b>		(p. 3/174)		
		(p. 3/174)			(p. 3/174)		(p. 3/174)		(p. 3/174)		

## Introduction



Size	<b>S10</b>			<b>S12</b>			<b>14</b>	
Type	3RT1. 6			3RT1. 7			3TF6	
<b>3RT10 contactors • 3RT12 and 3TF68/69 vacuum contactors</b>								
Type	<b>3RT10 64</b>	<b>3RT10 65</b>	<b>3RT10 66</b>	<b>3RT10 75</b>	<b>3RT10 76</b>	--		
AC, DC operation	(p. 3/82)			(p. 3/82)				
Type	<b>3RT12 64</b>	<b>3RT12 65</b>	<b>3RT12 66</b>	<b>3RT12 75</b>	<b>3RT12 76</b>	<b>3TF68</b>	<b>3TF69</b>	
	(p. 3/90)			(p. 3/90)		(p. 3/118)		
<b>AC-3</b>								
$I_e$ /AC-3/400 V	A	225	265	300	400	500	630	820
<b>400 V</b>	<b>kW</b>	<b>110</b>	<b>132</b>	<b>160</b>	<b>200</b>	<b>250</b>	<b>335</b>	<b>450</b>
230 V	kW	55	75	90	132	160	200	260
500 V	kW	160	160	200	250	355	434	600
690 V	3RT10/3RT12 kW	200	250	250	400	400/500	600	800
1 000 V	3RT10/3RT12 kW	90/315	132/355	132/400	250/560	250/710	600	800
<b>AC-4 (for <math>I_a = 6 \times I_e</math>)</b>								
<b>400 V</b>	<b>kW</b>	<b>110</b>	<b>132</b>	<b>160</b>	<b>200</b>	<b>250</b>	<b>355</b>	<b>400</b>
400 V	3RT10/3RT12 kW	54/78	66/93	71/112	84/140	98/161	168	191
(200 000 operating cycles)								
<b>AC-1 (40 °C, ≤ 690 V)</b>								
$I_e$	3RT10/3RT12 A	<b>275/330</b>	<b>330</b>	<b>330</b>	<b>430/610</b>	<b>610</b>	<b>700</b>	<b>910</b>
<b>3RT14 AC-1 contactors</b>								
Type	<b>3RT14 66</b>			(Chap. 4)	<b>3RT14 76</b>		(Chap. 4)	--
$I_e$ /AC-1/40 °C/≤ 690 V	A	<b>400</b>			<b>690</b>		--	
<b>Accessories for contactors</b>								
<b>Auxiliary switch blocks</b>	On front	<b>3RH19 21</b>			(p. 3/98)	--		
	Lateral	<b>3RH19 21</b>			(p. 3/100)	<b>3TY7 561</b>		(p. 3/120)
<b>Terminal covers</b>	<b>3RT19 66-4EA1/2/3</b>			(p. 3/105)	<b>3TX7 686/696</b>		(p. 3/120)	
<b>Box terminal blocks</b>	<b>3RT19 66-4G</b>			(p. 3/105)	--			
<b>Surge suppressors</b>	<b>3RT19 56-1C</b>			(RC element)	(p. 3/103)	<b>3TX7 572</b>		(p. 3/120)
<b>3RU1 and 3RB2 overload relays (Protection Equipment → Overload Relays)</b>								
<b>3RU11</b> , thermal, CLASS 10	--			--	--		--	
<b>3RB20/3RB21</b> , solid-state, CLASS 5, 10, 20 and 30	<b>3RB20 66</b>	55 ... 630 A	(Chap. 7)	<b>3RB20 66</b>	160 ... 630 A	(Chap. 7)	<b>3RB20 66</b>	160 ... 630 A
	<b>3RB21 66</b>			<b>3RB21 66</b>			<b>3RB21 66</b>	
<b>3RB22/3RB23</b> , solid-state, CLASS 5, 10, 20 and 30	<b>3RB2. 83 + 3RB29 66</b>			63 ... 630 A	(Chap. 7)			
<b>3RV10 motor starter protectors (Protection Equipment → Motor Starter Protectors)</b>								
Type	--			--	--		--	
<b>Link modules</b>	--			--	--		--	
<b>3RA13 reversing contactor assemblies</b>								
<b>Complete units</b>	Type	--			--		<b>3TD68 04</b>	
							(p. 3/175)	
<b>400 V</b>	<b>kW</b>	<b>110</b>	<b>132</b>	<b>160</b>	<b>200</b>	<b>250</b>	<b>335</b>	
<b>Assembly kits/wiring modules</b>	<b>3RA19 63-2A</b>			(p. 3/157)	<b>3RA19 73-2A</b>		(p. 3/157)	<b>3TX7 680-1A</b>
								(Industry Mall)
<b>Mechanical interlocks</b>	<b>3RA19 54-2A</b>			(p. 3/156)	<b>3TX7 686-1A</b>		(Industry Mall)	
<b>3RA14 contactor assemblies for wye-delta starting</b>								
<b>Complete units</b>	Type	--			--		<b>3TE68 04</b>	
							(p. 3/177)	
<b>400 V</b>	<b>kW</b>	--			--		<b>630</b>	
<b>Assembly kits/wiring modules</b>	<b>3RA19 63-2B</b>			(p. 3/174)	<b>3RA19 73-2B</b>		(p. 3/174)	<b>3TX7 680-1B</b>
								(Industry Mall)

Note:






For safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

## Connection methods

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TF2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

-  Screw terminals
-  Spring-type terminals
-  Flat connectors
-  Solder pin connections
-  Ring terminal lug connections

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

# Power Contactors for Switching Motors

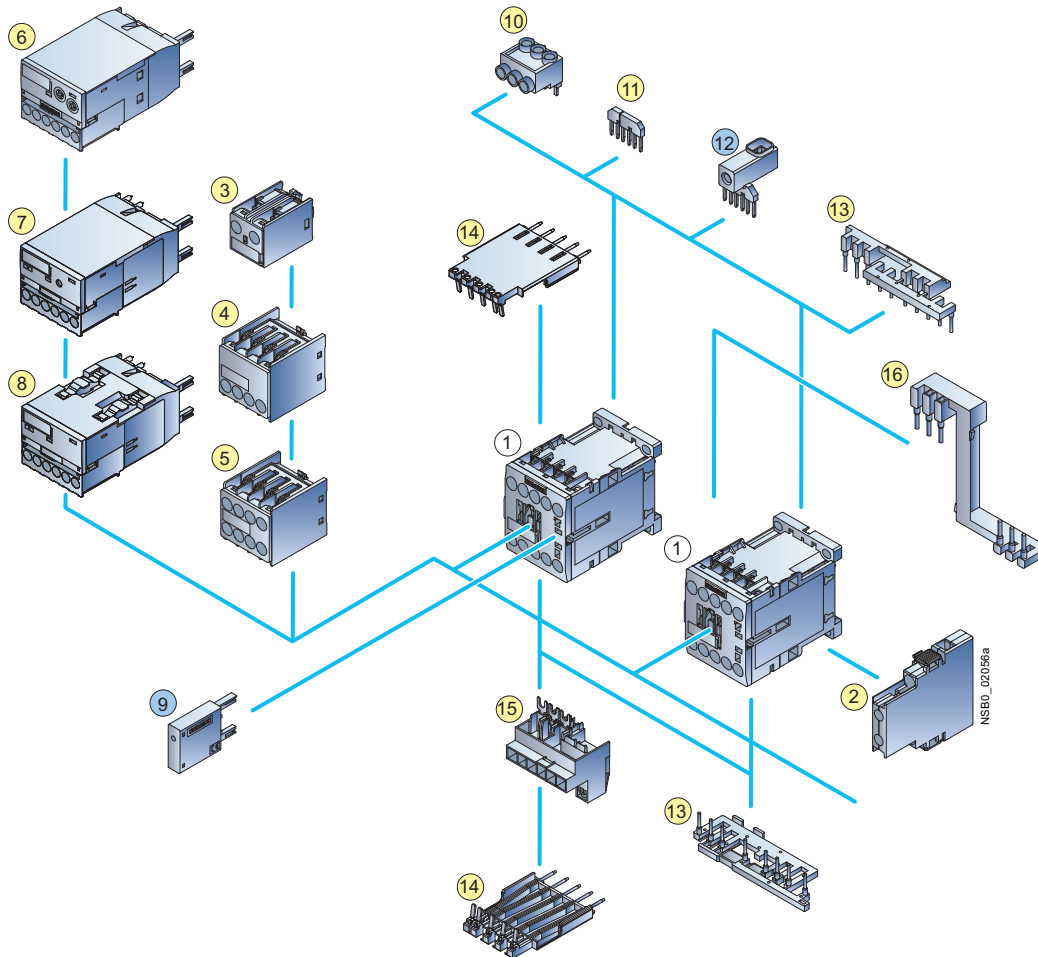
## General data

### Overview

#### The SIRIUS family of controls

The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.

#### 3RT2 contactors and coupling relays Size S00 with mountable accessories



① Contactor size S00

- ② 1-pole auxiliary switch block, laterally mountable
- ③ 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
- ④ 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- ⑤ 4-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- ⑥ 3RA28 function module
- ⑦ 3RA27 function module for AS-Interface, direct starting
- ⑧ 3RA27 function module for IO-Link, direct starting
- ⑨ Surge suppressor with/without LED
- ⑩ Three-phase feeder terminal

- ⑪ Star jumper, 3-pole, without connecting terminal
- ⑫ Link for paralleling, 3-pole, with connecting terminal
- ⑬ Wiring modules, on the top and bottom (reversing duty)
- ⑭ Solder pin adapter
- ⑮ Connection module (adapter and connector) for contactors with screw-type connection
- ⑯ Safety main current connector for two contactors

● For contactors

● For contactors and coupling relays (interface)

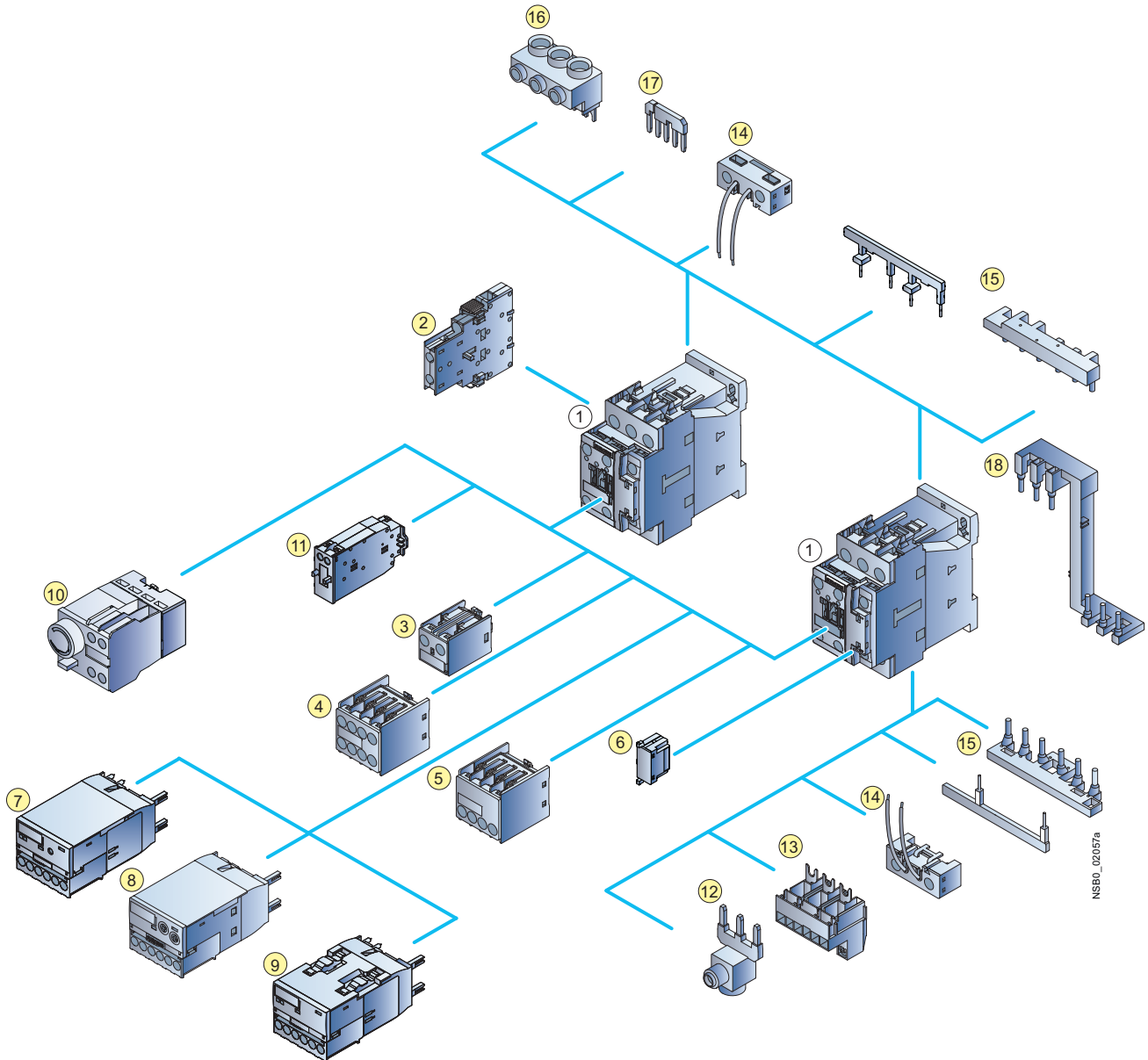
For accessories see pages 3/45 to 3/60.

For contactor assemblies see pages 3/148 to 3/150.

For assembly kit for reversing contactor assemblies (mech. interlocking, wiring modules) see page 3/151.

For mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

For fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "3RA Fuseless Load Feeders".

**3RT2 contactors and coupling relays**  
**Size S0 with mountable accessories**


NSE0\_02/057a

① Contactor size S0

- ② 1-pole auxiliary switch block, laterally mountable
- ③ 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
- ④ 4-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- ⑤ 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
- ⑥ Surge suppressor with/without LED
- ⑦ 3RA27 function module for AS-Interface, direct starting
- ⑧ 3RA28 function module
- ⑨ 3RA27 function module for IO-Link, direct starting
- ⑩ Pneumatic delay block

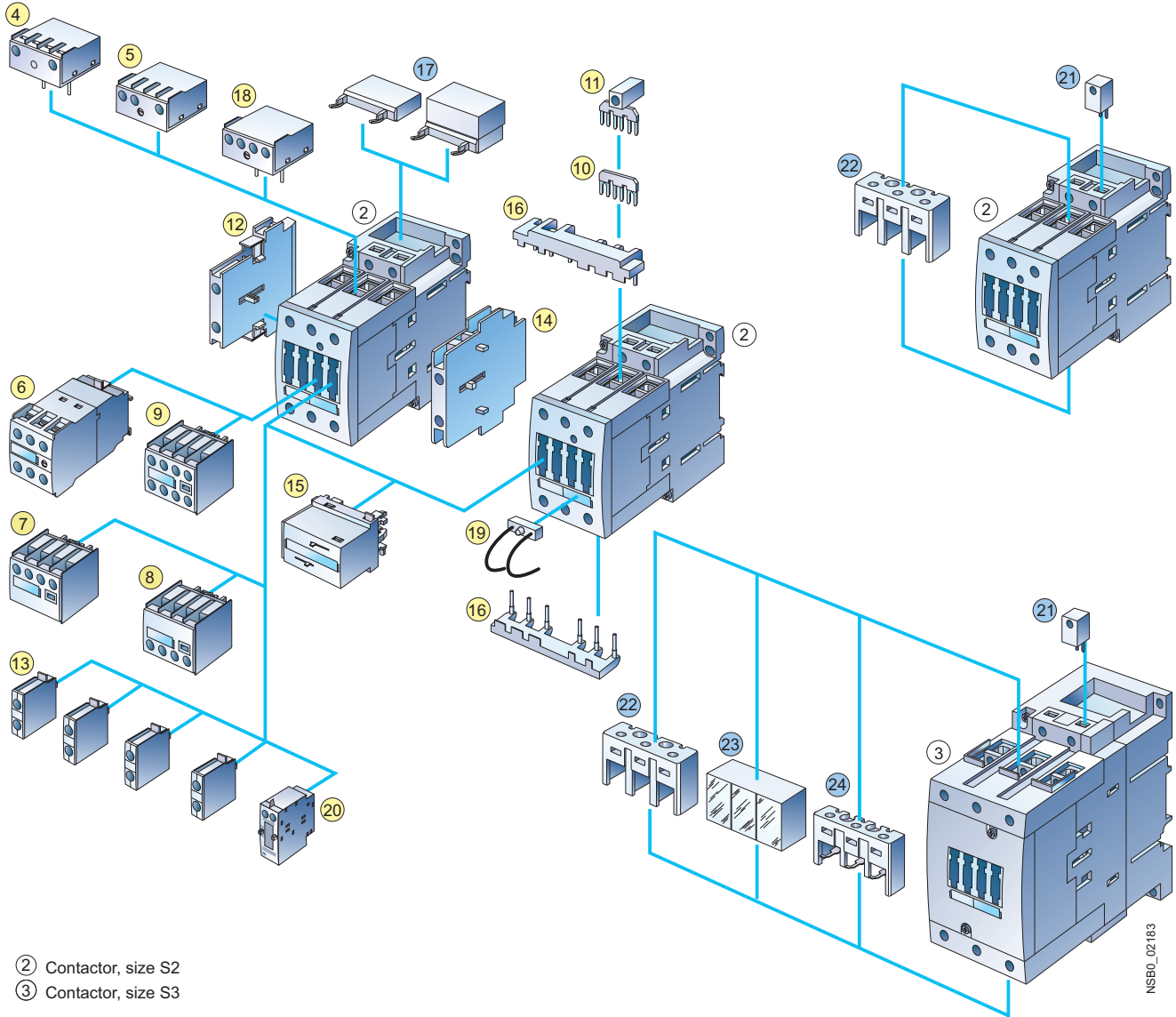
- ⑪ Mechanical latching block
- ⑫ Link for paralleling, 3-pole, with connecting terminal
- ⑬ Connection module (adapter and plug) for contactors with screw-type connection
- ⑭ Coil terminal module, on the top and bottom
- ⑮ Wiring modules, on the top and bottom (reversing duty)
- ⑯ Three-phase feeder terminal
- ⑰ Link for paralleling (star jumper), 3-pole, without connecting terminal
- ⑱ Safety main current connector for two contactors

For accessories see pages 3/45 to 3/60.

# Power Contactors for Switching Motors

## General data

### 3RT1 contactors Sizes S2 and S3 with mountable accessories



NSBD\_02183

- ② Contactor, size S2
- ③ Contactor, size S3

#### For sizes S2 and S3:

- ④ Solid-state time-delay block, ON-delay
- ⑤ Solid-state time-delay block, OFF-delay
- ⑥ Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
- ⑦ 2-pole auxiliary switch block, cable entry from above
- ⑧ 2-pole auxiliary switch block, cable entry from below
- ⑨ 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
- ⑩ Link for paralleling (star jumper), 3-pole, without connecting terminal
- ⑪ Link for paralleling, 3-pole, with connecting terminal
- ⑫ 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005)
- ⑬ Single-pole auxiliary switch block (up to 4 can be snapped on)
- ⑭ Mechanical interlock, laterally mountable
- ⑮ Mechanical interlock, mountable to the front
- ⑯ Wiring connectors on the top and bottom (reversing duty)

- ⑰ Surge suppressor (varistor, RC element, diode assembly), can be mounted on the top or bottom
- ⑱ Mechanical latching interface for mounting directly onto contactor coil
- ⑲ LED module for indicating contactor operation

#### Only for size S2:

- ⑳ Mechanical latching

#### Only for sizes S2 and S3:

- ㉑ Coil repeat terminal for making contactor assemblies
- ㉒ Terminal cover for box terminal

#### Only for size S3:

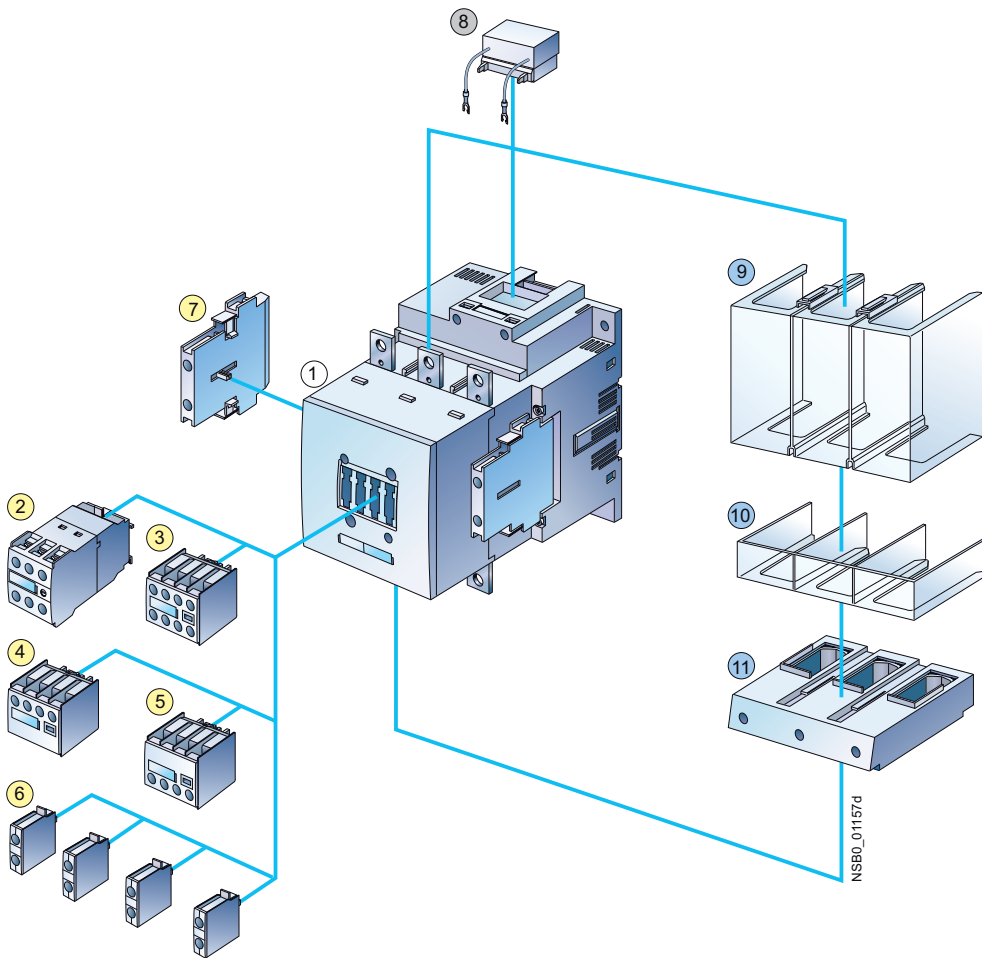
- ㉓ Terminal cover for cable lug and bar connection
- ㉔ Auxiliary conductor terminal, 3-pole

- Accessories identical for sizes S2 and S3
- Accessories differ according to size

For accessories see pages 3/98 to 3/106.



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



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

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

③ 4-pole auxiliary switch block  
(terminal designations according to EN 50012 or EN 50005)

④ 2-pole auxiliary switch block, cable entry from above

⑤ 2-pole auxiliary switch block, cable entry from below

⑥ Single-pole auxiliary switch block (up to 4 can be snapped on)

⑦ 2-pole auxiliary switch block, laterally mountable left or right  
(terminal designations according to EN 50012 or EN 50005)  
(identical for S0 to S12)

⑧ Surge suppressor (RC element) for plugging into top of withdrawable coil

⑨ Terminal cover for cable lug and busbar connection,  
different for sizes S6 and S10/S12

⑩ Terminal cover for box terminal, different for  
sizes S6 and S10/S12

⑪ Box terminal block, different for sizes S6 and S10/S12

● Accessories identical for sizes S0 to S12

● Accessories identical for sizes S6 to S12

● Accessories differ according to size

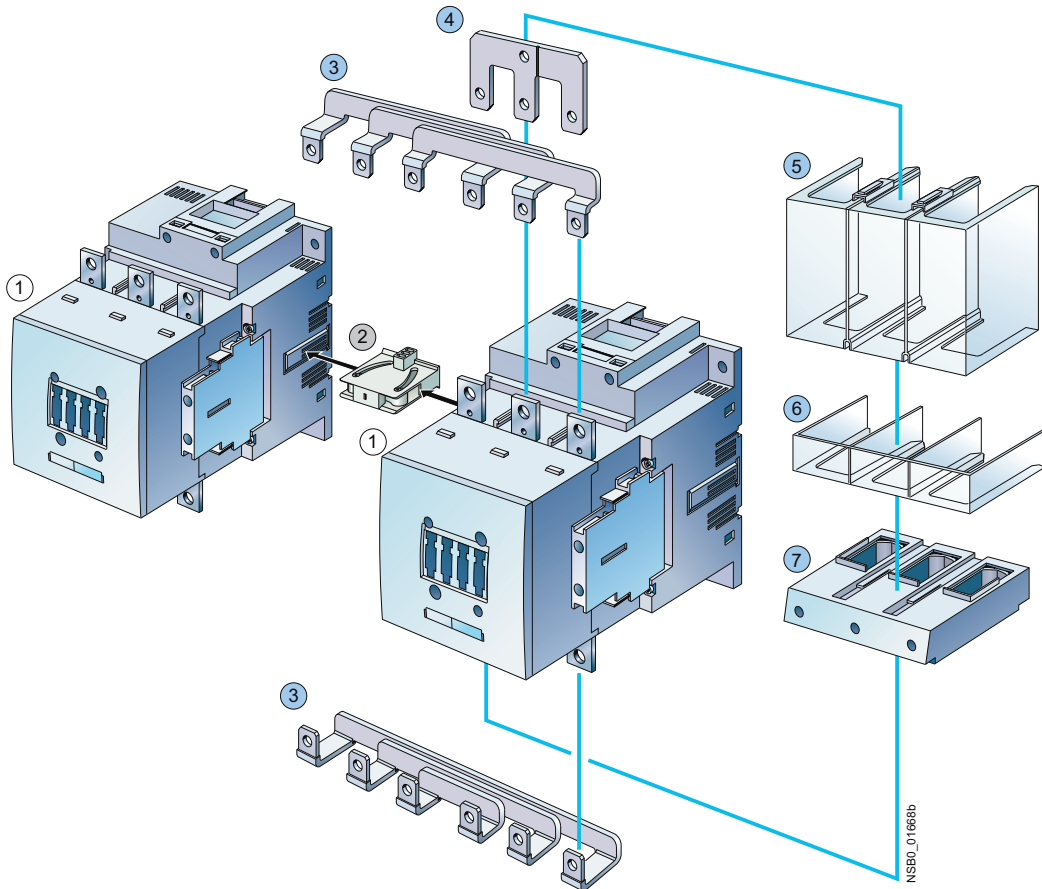
For accessories see pages 3/98 to 3/106.

For mountable overload relays see Chapter 7,  
"Protection Equipment" → "Overload Relays".

# Power Contactors for Switching Motors

## General data

**3RA1 contactor assemblies, 3RT1 contactors**  
**Size S6 with accessories**



① 3RT10 and 3RT14 air-break contactor, size S6

② Mechanical interlock, laterally mountable

③ Wiring modules on the top and bottom 3RA1953-2A

④ Link for paralleling (star jumper), 3-pole, with through-hole, 3RT1956-4BA31

⑤ Terminal cover for cable lug and bar connection different for sizes S6 and S10/S12

⑥ Terminal cover for box terminal different for sizes S6 and S10/S12

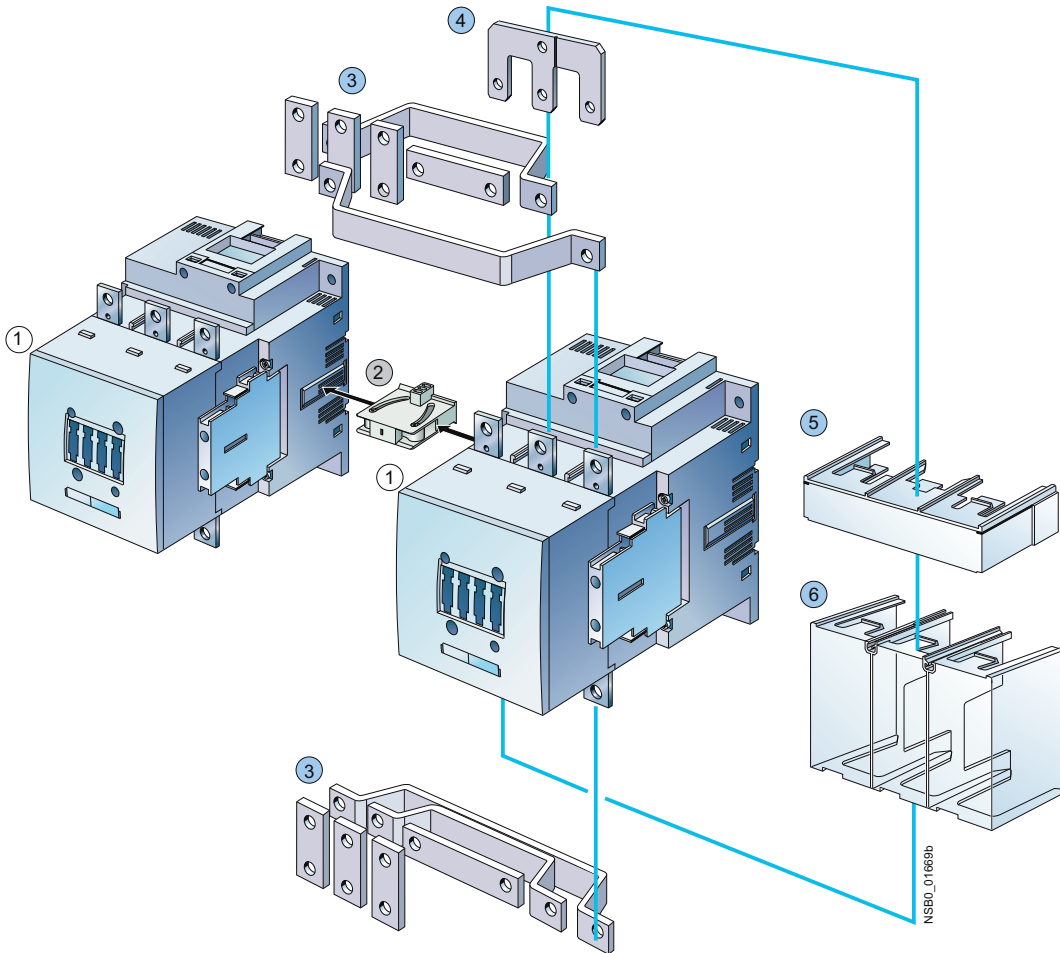
⑦ Box terminal block, different for sizes S6 and S10/S12

● Accessories identical for sizes S6 to S12

● Accessories differ according to size

For accessories see pages 3/156 to 3/158 and 3/98 to 3/106.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

**3RA1 contactor assemblies, 3RT1 contactors**  
**Sizes S6, S10 and S12 with accessories**


① 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12 or 3RT12 vacuum contactor, sizes S10 and S12

② Mechanical interlock, laterally mountable

③ Wiring modules on the top and bottom, 3RA19

④ Link for paralleling (star jumper), 3-pole, with through-hole, 3RT19 56-4BA31

⑤ Terminal cover for box terminal, different for sizes S6 and S10/S12

⑥ Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12

● Accessories identical for sizes S6 to S12

● Accessories different according to size

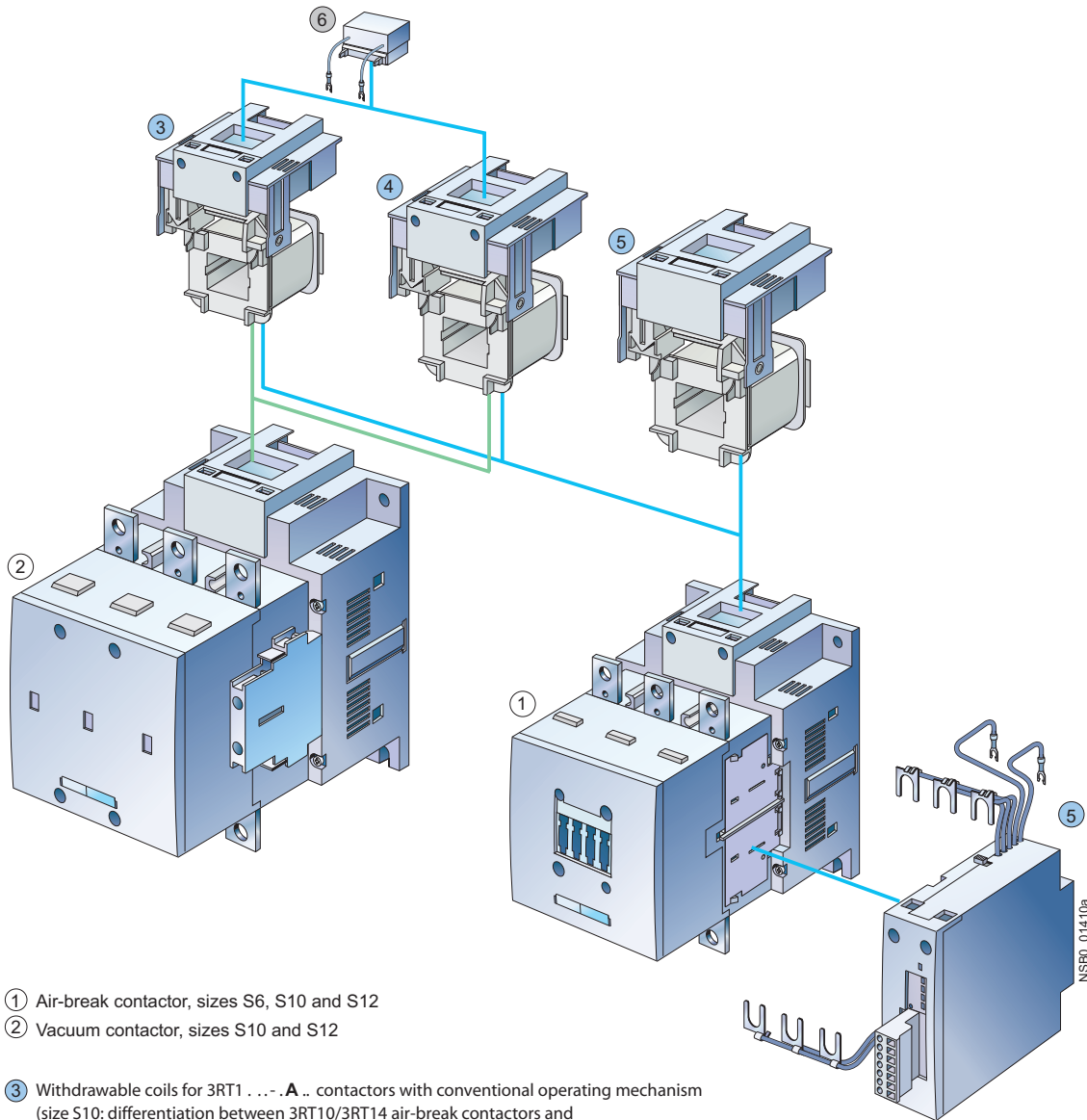
For accessories see pages 3/156 to 3/158 and 3/98 to 3/106.

For mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

# Power Contactors for Switching Motors

## General data

### 3RT1 contactors Sizes S6 to S12 with accessories



- ① Air-break contactor, sizes S6, S10 and S12
- ② Vacuum contactor, sizes S10 and S12

- ③ Withdrawable coils for 3RT1 . . . . **A**.. contactors with conventional operating mechanism  
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)  
(size S12: the same for air-break and vacuum contactors)
- ④ Withdrawable coils for 3RT1 . . . . **N**.. contactors with solid-state operating mechanism.  
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)  
(size S12: the same for air-break and vacuum contactors)
- ⑤ Withdrawable coils and laterally mountable module (plug-on) for 3RT1 . . . . **P**.. and 3RT1 . . . . **Q**.. air-break contactors with solid-state operating mechanism and remaining lifetime indicator
- ⑥ Surge suppressor (RC element), plug-mountable on withdrawable coils
  - 3RT1 . . . . **A**.. with conventional operating mechanism
  - 3RT1 . . . . **N**.. with solid-state operating mechanism

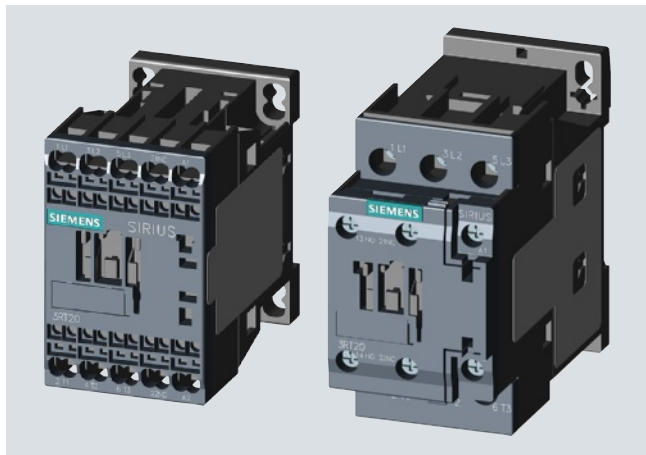
- Identical for sizes S6 to S12
- Different according to size

For surge suppressors [see page 3/103](#),  
withdrawable coils [see pages 3/109 and 3/110](#).

For mountable overload relays [see Chapter 7](#),  
"Protection Equipment" → "Overload Relays".

## Overview

### Sizes S00 and S0, up to 18.5 kW



Contactor size S00 with spring-type terminals and contactor size S0 with screw terminals

Compared to the former 3RT1 series, the 3RT2 series is notable for its higher rating: size S00 with up to 7.5 kW and size S0 with up to 18.5 kW.

#### Standards

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

The 3RT2 contactors are climate-proof and are suitable and tested for use worldwide.

If the devices are used in ambient conditions which deviate from common industrial conditions (IEC 60721-3-3 "Stationary Use, Weather-Protected"), information must be obtained about possible restrictions with regard to the reliability and endurance of the device and possible protective measures. In this case contact our Technical Assistance.

3RT2 contactors are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

#### Auxiliary contact complement

Size S00 contactors have an auxiliary contact integrated in the basic unit. The basic units size S0 contain two integrated auxiliary contacts (1 NO + 1 NC).

All basic units (except coupling contactors) can be extended with auxiliary switch blocks:

- Additional auxiliary switches with a maximum of four auxiliary contacts can be mounted. The combination of a 2-pole auxiliary switch for mounting on the front and an auxiliary switch for mounting on the side is not permitted.
- Of the maximum number of auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted for both sizes.

In addition, complete units with permanently mounted auxiliary switch block (2 NO + 2 NC) are offered for sizes S00 and S0.

#### Contact reliability

If voltages  $\leq 110$  V and currents  $\leq 100$  mA are to be switched, the auxiliary contacts of the 3RT2 contactor or 3RH21 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are suitable for solid-state circuits with currents  $\geq 1$  mA at a voltage  $\geq 17$  V.

#### Connection methods

The 3RT2 contactors are available with screw terminals, spring-type terminals or ring terminal lug connections.

#### Short-circuit protection of the contactors

For more information about short-circuit protection of contactors without overload relay see "Technical specifications" on pages 3/17 and 3/21. For short-circuit protection of the contactors with overload relay see Configuration Manual "Configuring SIRIUS Innovations - Selection data for Fuseless and Fused Load Feeders".

To assemble fuseless motor feeders you must select combinations of motor starter protector and contactor as explained in "3RA2 Load Feeders" (see Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet").

#### Motor protection

3RU21 thermal overload relays or 3RB30 solid-state overload relays can be fitted to the 3RT2 contactors for protection against overload. The overload relays must be ordered separately (see Chapter 7, "Overload Relays").

#### Ratings of induction motors

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

#### Control supply voltage

All contactors are available with AC or DC operation. Available in addition on the contactors size S0 is a UC operating mechanism which can be operated with AC (45 to 70 Hz) as well as with DC.

#### Surge suppression

3RT2 contactors can be retrofitted with RC elements, varistors, suppressor diodes or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

The surge suppressors can be plugged onto the front of size S0 contactors.

#### Note:

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

#### S00 and S0 contactors with communication interface

The S00 and S0 contactors with communication interface are special versions for mounting the SIRIUS function modules for the connection to the control system through IO-Link or AS-Interface (see page 3/183 and 3/188).

When a function module is fitted, no additional auxiliary switches can be mounted. Without a function module they can be used like the standard versions.

For further information on IO-Link and AS-Interface see Chapter 2 "Industrial Communication".

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□
<b>SIRIUS power contactors</b>	<b>3 R T</b>													
<b>2nd generation</b>	<b>2</b>													
<b>Device type (e. g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)</b>	□													
<b>Contactor size (1 = S00, 2 = S0)</b>	□													
<b>Power dependent on size (e. g. 27 = 15 kW)</b>	□													
<b>Connection type (1 = screw, 2 = spring)</b>	□													
<b>Operating range / solenoid coil circuit (e. g. A = AC standard / without)</b>	□													
<b>Rated control supply voltage (e. g. P0 = 230 V, 50 Hz)</b>	□ □													
<b>Auxiliary switches (e. g. S0: 0 = 1 NO + 1 NC integrated)</b>	□													
<b>Special version</b>	□ □ □ □													
<b>Example</b>	<b>3</b>	<b>R</b>	<b>T</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>-</b>	<b>1</b>	<b>A</b>	<b>P</b>	<b>0</b>	<b>0</b>	

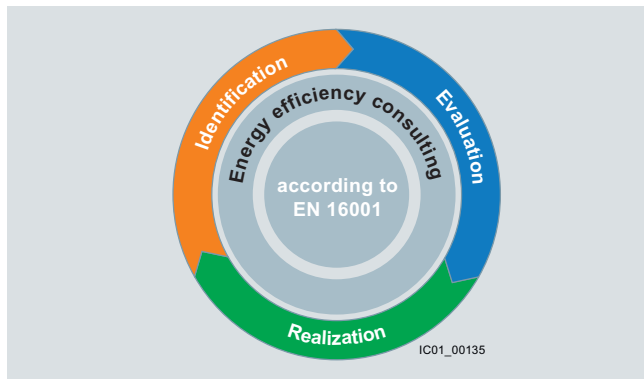
### Note:

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

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

## Benefits

### Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an efficient energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see [www.siemens.com/sirius/energysaving](http://www.siemens.com/sirius/energysaving)).

3RT20 contactors contribute to energy efficiency throughout the plant as follows:

- UC coils with electric control for reduced power consumption when closing and in the closed state
- Smaller power supply units in the control circuit through lower power consumption in the closed state with 24 V DC
- Reduced heating of the control cabinet  
Technology-reduced inherent power loss of the contactors, resulting in lower cooling costs and a more compact design

## Accessories

### Auxiliary switch blocks

Terminal designations according to EN 50012 or EN 50005.

Size S00 contactors have an auxiliary contact (NO or NC) integrated in the basic unit. Size S0 contactors have 2 auxiliary contacts (1 NO and 1 NC) integrated in the basic unit.

The contactors can be expanded with front-mounting 3RH29 11 auxiliary switch blocks to form contactors with up to 5 auxiliary contacts (S00) or up to 6 auxiliary contacts (S0). Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.

Single- or 2-pole auxiliary switch blocks with connection options from above or below enable easy and clearly arranged wiring especially for the installation of feeders. These auxiliary switch blocks are offered only with screw terminals.

All the previously mentioned auxiliary switch versions can be snap-fitted onto the front of the contactor. The auxiliary switch block has a centrally positioned release lever for disassembly.

If the installation space is limited in depth, 2-pole auxiliary switch blocks can be attached laterally on the left or on the right. These auxiliary switch blocks can be used only when no 4-pole auxiliary switch blocks are snapped onto the front.

The solid-state compatible 3RH29 11-.NF. auxiliary switch blocks include 2 enclosed contacts. They are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The front NC auxiliary contacts are not mirror contacts. There are also versions for mounting on the side.

For details of selecting the auxiliary switches see pages 3/44 to 3/49.

## Technical specifications

Contactor	Type	<b>3RT2</b>	
	Size	<b>S00 and S0</b>	
<b>Rated data of the auxiliary contacts</b>			
<b>Acc. to IEC 60947-5-1/EN 60947-5-1</b> The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S0 <sup>1)</sup>			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	
<b>Conventional thermal current <math>I_{th}</math> = Rated operational current <math>I_e/AC-12</math></b>	A	10	
<b>AC load</b>			
<b>Rated operational current <math>I_e/AC-15/AC-14</math></b>			
• For rated operational voltage $U_e$	Up to 125 V	A	6
	220 V	A	6
	230 V	A	6
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V	A	1
	690 V	A	1
<b>DC load</b>			
<b>Rated operational current <math>I_e/DC-12</math></b>			
• For rated operational voltage $U_e$	24 V	A	6
	60 V	A	6
	110 V	A	3
	125 V	A	2
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
<b>Rated operational current <math>I_e/DC-13</math></b>			
• For rated operational voltage $U_e$	24 V	A	6
	60 V	A	2
	110 V	A	1
	125 V	A	0.9
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
<b>Contact reliability at 17 V, 1 mA</b> acc. to IEC 60947-5-4/EN 60947-5-4	Frequency of contact faults $< 10^{-8}$ i. e. $< 1$ fault per 100 million operating cycles		

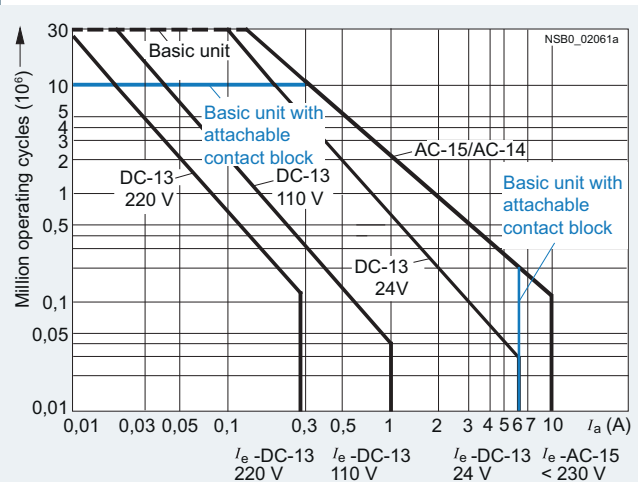
**Endurance of the auxiliary contacts**

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

The contact endurance is mainly dependent on the breaking current.

The characteristic curves apply to:

- Integrated auxiliary contacts on 3RT20
- 3RH29 11, 3RH29 21 auxiliary switch blocks<sup>1)</sup>



<sup>1)</sup>  $I_e = 6$  A for AC-15/AC-14.

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	<b>3RT2</b>
	Size	<b>S00 and S0</b>

### Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The rated operational current  $I_e$  complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200 000 operating cycles.

If a shorter endurance is sufficient, the rated operational current  $I_e/AC-4$  can be increased.

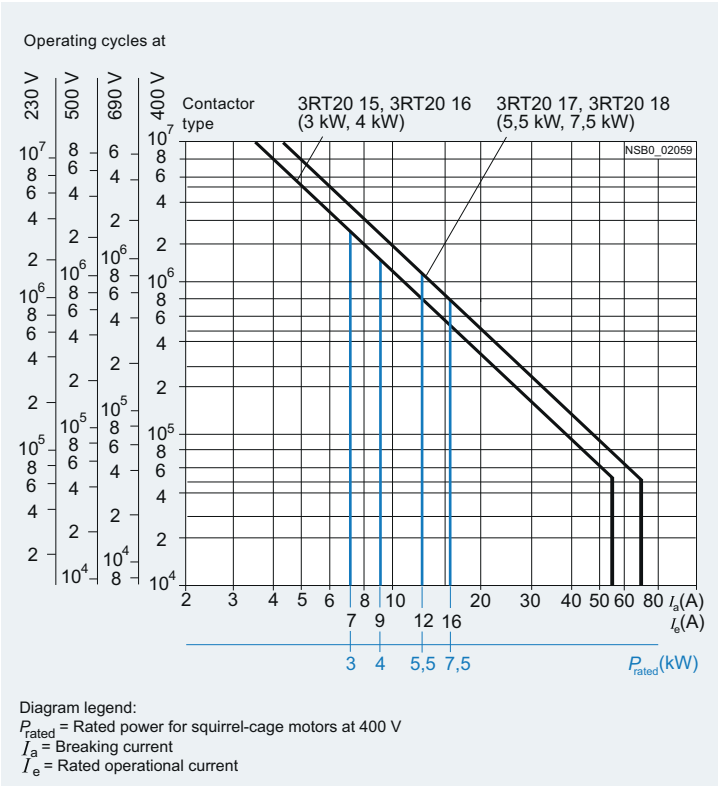
If the contacts are used for **mixed operation**, i. e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

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

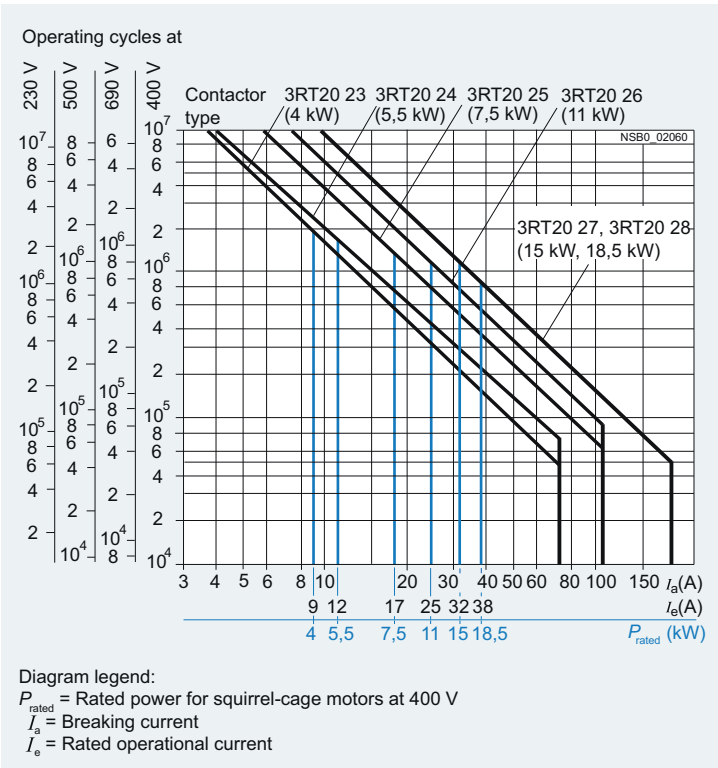
Characters in the equation:

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

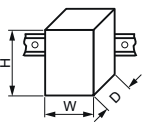
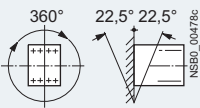

### Size S00



### Size S0





Type		3RT20 15, 3RT20 16	3RT20 17, 3RT20 18
Size		<b>S00</b>	<b>S00</b>
Dimensions (W x H x D) <sup>1)</sup>		45 x 57.5 x 73 / 45 x 70 x 73	
• With mounted auxiliary switch block		45 x 57.5 x 116 / 45 x 70 x 121	
• With mounted function block		45 x 57.5 x 142 / 45 x 70 x 142	
<b>General technical specifications</b>			
<b>Permissible mounting positions</b>			
The contactors are designed for operation on a vertical mounting surface.			
			
Upright mounting position			
			
Special version required			
<b>Mechanical endurance</b>			
• Basic unit	Operating cycles	30 million	
• Basic unit with snap-on auxiliary switch block	Operating cycles	10 million	
• Solid-state compatible auxiliary switch block	Operating cycles	5 million	
<b>Electrical endurance</b>			
2)			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6	
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	400	
<b>Mirror contacts</b>			
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			
• 3RT20 1., 3RT23 1. (removable auxiliary switch block)		Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	
• 3RT20 1., 3RT23 1. (permanently mounted auxiliary switch block)		Yes, acc. to IEC 60947-4-1, Appendix F, and SUVA	
• 3RH29 19-.NF. . solid-state compatible auxiliary switch blocks have no mirror contacts.			
<b>Ambient temperature</b>			
• During operation	°C	-25 ... +60	
• During storage	°C	-55 ... +80	
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C			
IP20, coil assembly IP40			
<b>Touch protection</b> acc. to EN 50274			
Finger-safe			
<b>Shock resistance</b> rectangular pulse			
• AC operation	g/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
• DC operation	g/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
<b>Shock resistance</b> sine pulse			
• AC operation	g/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
• DC operation	g/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
<b>Conductor cross-sections</b>			
3)			
<b>Short-circuit protection for contactors without overload relays</b>			
<b>Main circuit</b>			
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1			
- Type of coordination "1"	A	35	50
- Type of coordination "2"	A	20	25
- Weld-free <sup>4)</sup>	A	10	10
• Miniature circuit breakers (up to 230 V) with C characteristic	A	10	10
Short-circuit current 1 kA, type of coordination "1"			
<b>Auxiliary circuit</b>			
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10	
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	6	
Short-circuit protection for contactors with overload relays		See Configuration Manual "Configuring SIRIUS Innovations"	
Short-circuit protection for fuseless load feeders		See Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders"	

1) Dimensions for devices with screw terminals / spring-type terminals.

2) For endurance of the main contacts see page 3/16.

3) For conductor cross-sections see page 3/20.

4) Test conditions according to IEC 60947-4-1.

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type		3RT20 15, 3RT20 16 S00	3RT20 17, 3RT20 18 S00
<b>Control</b>				
<b>Coil operating range</b>				
• AC operation	50 Hz		0.8 ... 1.1 x $U_s$	
	60 Hz		0.85 ... 1.1 x $U_s$	
• DC operation	Up to 50 °C		0.8 ... 1.1 x $U_s$	
	Up to 60 °C		0.85 ... 1.1 x $U_s$	
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )				
• AC operation, 50/60 Hz, standard version				
- Closing	VA		27/24.3	37/33
- P.f.			0.8/0.75	0.8/0.75
- Closed	VA		4.2/3.3	5.7/4.4
- P.f.			0.25/0.25	0.25/0.25
• AC operation, 50 Hz, for USA/Canada				
- Closing	VA		26.4	36
- P.f. for closing			0.81	0.8
- Closed	VA		4.4	5.9
- P.f. for closed			0.24	0.24
• AC operation, 60 Hz, for USA/Canada				
- Closing	VA		31.7	43
- P.f. for closing			0.81	0.8
- Closed	VA		4.8	6.5
- P.f. for closed			0.25	0.25
• DC operation (closing = closed)	W		4	4
<b>Permissible residual current of the electronics</b> (with 0 signal)				
• AC operation			< 3 mA x (230 V/ $U_s$ ) <sup>1)</sup>	< 4 mA x (230 V/ $U_s$ ) <sup>1)</sup>
• DC operation			< 10 mA x (24 V/ $U_s$ ) <sup>1)</sup>	
<b>Operating times</b> <sup>2)</sup>				
Total break time = Opening delay + Arcing time				
• AC operation for 0.8 ... 1.1 x $U_s$ .	Closing delay	ms	9 ... 35	8 ... 33
	Opening delay	ms	3.5 ... 14	4 ... 15
• DC operation for 0.85 ... 1.1 x $U_s$ .	Closing delay	ms	30 ... 100	30 ... 100
	Opening delay	ms	7 ... 13	7 ... 13
• Arcing time		ms	10 ... 15	10 ... 15
<b>Operating times for 1.0 x <math>U_s</math></b> <sup>2)</sup>				
• AC operation	Closing delay	ms	9.5 ... 24	9 ... 22
	Opening delay	ms	4 ... 14	4.5 ... 15
• DC operation	Closing delay	ms	35 ... 50	35 ... 50
	Opening delay	ms	7 ... 12	7 ... 12

<sup>1)</sup> The 3RT29 16-1GA00 additional load module is recommended for higher residual currents.

<sup>2)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, suppressor diode +1 ms to 5 ms; varistor +2 ms to 5 ms).

Contactor	Type		3RT20 15	3RT20 16	3RT20 17	3RT20 18
	Size		S00	S00	S00	S00
<b>Main circuit</b>						
<b>AC capacity</b>						
<b>Utilization category AC-1</b>						
<b>Switching resistive loads</b>						
• Rated operational current $I_e$	At 40 °C up to 690 V	A	18	22	22	22
	At 60 °C up to 690 V	A	16	20	20	20
• Rated power for AC loads <sup>1)</sup> P.f. = 0.95 (at 60 °C)	230 V	kW	6.3	7.5	7.5	7.5
	400 V	kW	11	13	13	13
	500 V	kW	13.8	17	17	17
	690 V	kW	19	22	22	22
• Minimum conductor cross-section for loads with $I_e$	At 40 °C	mm <sup>2</sup>	2.5	2.5	2.5	2.5
	At 60 °C	mm <sup>2</sup>	2.5	2.5	2.5	2.5
<b>Utilization categories AC-2 and AC-3</b>						
• Rated operational currents $I_e$	Up to 400 V	A	7	9	12	16
	440 V	A	7	9	11	15
	500 V	A	6	7.7	9.2	12.4
	690 V	A	4.9	6.7	6.7	8.8
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	2.2	3	3	4
	400 V	kW	3	4	5.5	7.5
	500 V	kW	3.5	4.5	5.5	7.5
	690 V	kW	4	5.5	5.5	7.5
<b>Thermal load capacity</b>	10 s current <sup>2)</sup>	A	56	72	96	128
<b>Power loss per conducting path</b>	At $I_e$ /AC-3	W	0.42	0.7	1.24	2.2
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)<sup>3)</sup></b>						
• Rated operational current $I_e$	Up to 400 V	A	6.5	8.5	8.5	11.5
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	Up to 400 V	kW	3	4	4	5.5
• The following applies to a contact endurance of about 200000 operating cycles:						
- Rated operational currents $I_e$	Up to 400 V	A	2.6	4.1	4.1	5.5
	690 V	A	1.8	3.3	3.3	4.4
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V	kW	0.67	1.1	1.1	1.5
	400 V	kW	1.15	2	2	2.5
	500 V	kW	1.45	2	2	3
	690 V	kW	1.15	2.5	2.5	3.5
<b>Switching frequency</b>						
<b>Switching frequency z</b> in operating cycles/hour						
• Contactors without overload relay	Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400 V/U)^{1.5} \cdot 1/h$	No-load switching frequency AC	h <sup>-1</sup>	10000		
		No-load switching frequency DC	h <sup>-1</sup>	10000		
		Rated operation AC-1 (AC/DC)	h <sup>-1</sup>	1000		
		AC-2 (AC/DC)	h <sup>-1</sup>	750		
		AC-3 (AC/DC)	h <sup>-1</sup>	750		
		AC-4 (AC/DC)	h <sup>-1</sup>	250		
		• Contactors with overload relays (mean value)		h <sup>-1</sup>	15	




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

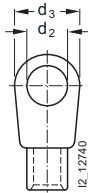
2) According to IEC 60947-4-1.  
Rated values for various start-up conditions  
see Chapter 7, "Protection Equipment" → "Overload Relays".

3) The data only apply to 3RT25 16 and 3RT25 17 (2 NO + 2 NC) up to a  
rated operational voltage of 400 V.

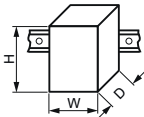
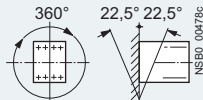

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	3RT20 15	3RT20 16	3RT20 17	3RT20 18
	Size	S00	S00	S00	S00
<b>Conductor cross-sections</b>					
<b>Main conductors and auxiliary conductors<sup>1)</sup></b> (1 or 2 conductors can be connected)		 <b>Screw terminals</b>			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup> according to IEC 60947; max. 2 x (0.5 ... 4)			
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup>			
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>2)</sup> ; 2 x (18 ... 14) <sup>2)</sup> ; 2 x 12			
• Terminal screw		M3 (for standard screwdriver size 2 and Pozidriv 2)			
• Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)			
<b>Main conductors, auxiliary conductors and coil terminals<sup>1)</sup></b> (1 or 2 conductors can be connected)		 <b>Spring-type terminals</b>			
• Operating devices <sup>3)</sup>	mm	3.0 x 0.5; 3.5 x 0.5			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 4)			
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)			
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)			
<b>Auxiliary conductors for front and laterally mounted auxiliary switches<sup>1)</sup></b> (1 or 2 conductors can be connected)					
• Operating devices	mm	3.0 x 0.5; 3.5 x 0.5			
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)			
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5)			
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)			
<b>Main conductors and auxiliary conductors</b>		 <b>Ring terminal lug connections</b>			
• Terminal screw		M3, Pozidriv 2			
• Operating devices	mm	Ø 5 ... 6			
• Tightening torque	Nm	0.8 ... 1.2			
• Usable ring terminal lugs	mm	d <sub>2</sub> = min. 3.2			
- DIN 46234 without insulation sleeve	mm	d <sub>3</sub> = max. 7.5			
- DIN 46225 without insulation sleeve					
- DIN 46237 with insulation sleeve					
- JIS C2805 Type R without insulation sleeve					
- JIS C2805 Type RAV with insulation sleeve					
- JIS C2805 Type RAP with insulation sleeve					



- <sup>1)</sup> Max. external diameter of the cable insulation: 3.6 mm.  
An insulation stop must be used for conductor cross-sections  $\leq 1 \text{ mm}^2$   
(see [Accessories](#), page 3/60).
- <sup>2)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.
- <sup>3)</sup> Tool for opening the spring-type terminals  
see [Accessories](#), page 3/60.

Type		3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
Size		S0	S0	S0	S0	S0	S0
Dimensions (W x H x D) for AC operation <sup>1)</sup>		45 x 85 x 97 / 45 x 101.5 x 97	45 x 85 x 141 / 45 x 101.5 x 144	45 x 85 x 166 / 45 x 101.5 x 166			
• With mounted auxiliary switch block		45 x 85 x 141 / 45 x 101.5 x 144					
• With mounted function block		45 x 85 x 166 / 45 x 101.5 x 166					
Dimensions (W x H x D) for DC operation <sup>1)</sup>		45 x 85 x 107 / 45 x 101.5 x 107	45 x 85 x 151 / 45 x 101.5 x 154	45 x 85 x 176 / 45 x 101.5 x 176			
• With mounted auxiliary switch block		45 x 85 x 107 / 45 x 101.5 x 107	45 x 85 x 151 / 45 x 101.5 x 154	45 x 85 x 176 / 45 x 101.5 x 176			
• With mounted function block		45 x 85 x 176 / 45 x 101.5 x 176					
<b>General data</b>							
<b>Permissible mounting positions</b>							
The contactors are designed for operation on a vertical mounting surface.							
Upright mounting position		 <p>Special version required, also applies to 3RT20 2...K.40. coupling contactors.</p>					
<b>Mechanical endurance</b>							
• Basic unit	Operating cycles	10 million					
• Basic unit with snap-on auxiliary switch block	Operating cycles	10 million					
• Solid-state compatible auxiliary switch block	Operating cycles	5 million					
<b>Electrical endurance</b>		2)					
<b>Rated insulation voltage</b> $U_i$ (pollution degree 3)	V	690					
<b>Rated impulse withstand voltage</b> $U_{imp}$	kV	6					
<b>Protective separation</b> between the coil and the main contacts (acc. to IEC 60947-1, Appendix N)	V	400					
<b>Mirror contacts</b>							
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.							
• 3RT20 2., 3RT23 2. (removable auxiliary switch block)		Yes, acc. to IEC 60947-4-1, Appendix F					
• 3RT20 2., 3RT23 2. (permanently mounted auxiliary switch block)		Yes, acc. to IEC 60947-4-1, Appendix F					
<b>Permissible ambient temperature</b>							
• During operation	°C	-25 ... +60					
• During storage	°C	-55 ... +80					
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20, coil assembly IP20					
<b>Touch protection</b> acc. to EN 50274		Finger-safe					
<b>Shock resistance</b> rectangular pulse							
• AC operation	g/ms	7.5/5 and 4.7/10			8.3/5 and 5.3/10		
• DC operation	g/ms	10/5 and 7.5/10			10/5 and 7.5/10		
<b>Shock resistance</b> sine pulse							
• AC operation	g/ms	11.8/5 and 7.4/10			13.5/5 and 8.3/10		
• DC operation	g/ms	15/5 and >10/10			15/5 and >10/10		
<b>Conductor cross-sections</b>		3)					
<b>Short-circuit protection for contactors without overload relays</b>							
<b>Main circuit</b>							
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1		Short-circuit protection for contactors with overload relays see Configuration Manual "Configuring SIRIUS Innovations". Short-circuit protection for fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters for Operation in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders".					
- Type of coordination "1"	A	63		100	125		
- Type of coordination "2"	A	25		35	50		
- Weld-free <sup>4)</sup>	A	10		16	16		
• Miniature circuit breakers with C characteristic (short-circuit current 3 kA, type of coordination "1")	A	25		32	40		
<b>Auxiliary circuit</b>							
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10					
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	10					

1) Dimensions for devices with screw terminals / spring-type terminals.

2) For endurance of the main contacts see page 3/16.

3) For conductor cross-sections see page 3/24.

4) Test conditions according to IEC 60947-4-1.

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	3RT20 23 ... 3RT20 25	3RT20 26 ... 3RT20 28	3RT20 2. -NB3	3RT20 2. -NF3..	3RT20 2. -NP3
	Size	S0	S0	S0	S0	S0
<b>Control</b>						
<b>Type of operating mechanism</b>		AC or DC		UC (AC/DC)		
<b>Coil operating range</b>		AC/DC		0.8 ... 1.1 x $U_s$		
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )						
• AC operation, 50 Hz, standard version						
- Closing	VA	65	77	6.5	13.6	16.1
- P.f.		0.82	0.82	0.98	0.98	0.98
- Closed	VA	7.6	9.8	1.26	1.91	3.41
- P.f.		0.25	0.25	0.25	0.25	0.25
• AC operation, 50/60 Hz, standard version						
- Closing	VA	68/67	81/79	6.5/5.7	13.6/13.2	16.1/15.9
- P.f.		0.72/0.74	0.72/0.74	0.98/0.96	0.98/0.99	0.99/0.99
- Closed	VA	7.9/6.5	10.5/8.5	1.26/1.30	1.91/1.90	3.41/3.58
- P.f.		0.25/0.28	0.25/0.28	0.78/0.8	0.61/0.61	0.36/0.45
• AC operation, 50 Hz, for USA/Canada						
- Closing	VA	65	77	--	--	--
- P.f.		0.82	0.82	--	--	--
- Closed	VA	7.6	9.8	--	--	--
- P.f.		0.25	0.28	--	--	--
• AC operation, 60 Hz, for USA/Canada						
- Closing	VA	73	87	--	--	--
- P.f.		0.76	0.76	--	--	--
- Closed	VA	7.2	9.4	--	--	--
- P.f.		0.28	0.28	--	--	--
• DC operation (closing/closed)						
	W	5.9/5.9	5.9/5.9	6.7/0.8	13.2/1.56	15/1.83
<b>Permissible residual current of the electronics</b> (with 0 signal)						
• AC operation						
	mA	< 6 mA x (230 V/ $U_s$ )	< 7 mA x (230 V/ $U_s$ )			
• DC operation						
	mA	< 16 mA x (24 V/ $U_s$ )				
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>1)</sup></b>						
Total break time = Opening delay + Arcing time						
• AC operation						
- Closing delay	ms	9 ... 38	8 ... 40	60 ... 80	50 ... 70	60 ... 80
- Opening delay	ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	35 ... 45
• DC operation						
- Closing delay	ms	50 ... 170	50 ... 170	60 ... 75	50 ... 70	50 ... 75
- Opening delay	ms	15 ... 17.5	15 ... 17.5	30 ... 45	35 ... 45	40 ... 50
• Arcing time						
	ms	10	10	10	10	10
<b>Operating times for 1.0 x <math>U_s</math><sup>1)</sup></b>						
• AC operation						
- Closing delay	ms	10 ... 18	10 ... 17	65 ... 80	50 ... 70	60 ... 80
- Opening delay	ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	30 ... 50
• DC operation						
- Closing delay	ms	55 ... 80	55 ... 80	60 ... 80	56 ... 70	60 ... 80
- Opening delay	ms	16 ... 17	16 ... 17	30 ... 45	35 ... 45	30 ... 50

<sup>1)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).






Contactor	Type Size	3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28	
		S0	S0	S0	S0	S0	S0	
<b>Main circuit</b>								
<b>AC capacity</b>								
<b>Utilization category AC-1, switching resistive loads</b>								
• Rated operational current $I_e$	At 40 °C up to 690 V	A	40			50		
	At 60 °C up to 690 V	A	35			42		
• Rated power for AC loads <sup>1)</sup>	230 V	kW	13.3			16		
P.f. = 0.95 (at 60 °C)	400 V	kW	23			28		
	500 V	kW	29			35		
	690 V	kW	40			48		
• Minimum conductor cross-section for loads with $I_e$	At 40 °C	mm <sup>2</sup>	10			10		
	At 60 °C	mm <sup>2</sup>	10			10		
<b>Utilization categories AC-2 and AC-3</b>								
• Rated operational currents $I_e$	Up to 400 V	A	9	12	17	25	32	38
	440 V	A	9	12	17	22	32	35
	500 V	A	6.8	12.4	17	18	32	32
	690 V	A	6.7	9	13	13	21	21
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 110 V	kW	1.1	1.5	2.2	3	4	4
	230 V	kW	3	3	4	5.5	7.5	7.5
	400 V	kW	4	5.5	7.5	11	15	18.5
	500 V	kW	4	7.5	10	11	18.5	18.5
	660 V / 690 V	kW	5.5	7.5	11	11	18.5	18.5
<b>Thermal load capacity</b>	10 s current <sup>2)</sup>	A	80	110	150	200	260	300
<b>Power loss per conducting path</b>	At $I_e/AC-3$	W	0.4	0.5	0.9	1.6	2.7	3.8
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)</b>								
• Rated operational current $I_e$	Up to 400 V	A	8.5	12.5	15.5	15.5	22	
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	4	5.5	7.5	7.5	11	
• The following applies to a contact endurance of about 200000 operating cycles:								
- Rated operational currents $I_e$	Up to 400 V	A	4.1	5.5	7.7	9	12	
	690 V	A	3.3	5.5	7.7	9	12	
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 110 V	kW	0.5	0.73	1	1.2	1.6	
	230 V	kW	1.1	1.5	2	2.5	3.4	
	400 V	kW	2	2.6	3.5	4.4	6	
	500 V	kW	2	3.3	4.6	5.6	7.5	
	690 V	kW	2.5	4.6	6	7.7	10.3	
<b>Switching frequency</b>								
<b>Switching frequency <math>z</math> in operating cycles/hour</b>								
• Contactors without overload relays	No-load switching frequency AC	h <sup>-1</sup>	5000					
Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$ : $z' = z \cdot (I_e/I') \cdot (400 V/U')^{1.5} \cdot 1/h$	No-load switching frequency DC	h <sup>-1</sup>	1500					
	AC-1 (AC/DC)	h <sup>-1</sup>	1000					
	AC-2 (AC/DC)	h <sup>-1</sup>	1000			750		
	AC-3 (AC/DC)	h <sup>-1</sup>	1000			750		
	AC-4 (AC/DC)	h <sup>-1</sup>	300			250		
• Contactors with overload relays (mean value)		h <sup>-1</sup>	15					

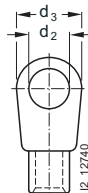
<sup>1)</sup> Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

<sup>2)</sup> According to IEC 60947-4-1.  
Rated values for various start-up conditions  
see Chapter 7, "Protection Equipment" → "Overload Relays".

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type Size	3RT20 23 S0	3RT20 24 S0	3RT20 25 S0	3RT20 26 S0	3RT20 27 S0	3RT20 28 S0
<b>Conductor cross-sections (1 or 2 conductors connectable)</b>							
<b>Main conductors<sup>1)</sup></b>		 <b>Screw terminals</b>					
Conductor cross-section		2 x (1 ... 2.5) <sup>2)</sup> ; 2 x (2.5 ... 10) <sup>2)</sup> according to IEC 60947					
• Solid	mm <sup>2</sup>	2 x (1 ... 2.5) <sup>2)</sup> ; 2 x (2.5 ... 6) <sup>2)</sup> ; 1 x 10					
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (16 ... 12); 2 x (14 ... 8)					
• AWG cables, solid or stranded	AWG	M4 (Pozi driv size 2)					
• Terminal screws	Nm	2 ... 2.5 (18 ... 22 lb.in)					
- Tightening torque							
<b>Auxiliary conductors<sup>1)</sup></b>		 <b>Spring-type terminals</b>					
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup> according to IEC 60947					
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup>					
• solid or stranded AWG (2 x)	AWG	2 x (20 ... 16) <sup>2)</sup> ; 2 x (18 ... 14) <sup>2)</sup> ; 1 x 12					
• Terminal screws	Nm	M3					
- Tightening torque		0.8 ... 1.2 (7 ... 10.3 lb.in)					
<b>Main conductors<sup>1)</sup></b>		 <b>Ring terminal lug connections</b>					
• Operating devices <sup>3)</sup>	mm	3.0 x 0.5; 3.5 x 0.5					
• Solid	mm <sup>2</sup>	2 x (1 ... 10)					
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (1 ... 6)					
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (1 ... 6)					
• AWG cables, solid or stranded	AWG	2 x (18 ... 8)					
<b>Auxiliary conductors<sup>1)</sup></b>		3.0 x 0.5; 3.5 x 0.5					
• Operating devices		2 x (0.5 ... 2.5)					
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5)					
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)					
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (20 ... 14)					
• AWG cables, solid or stranded	AWG						
<b>Main conductors</b>		 <b>Ring terminal lug connections</b>					
• Terminal screw	mm	M4, Pozi driv 2					
• Operating devices	mm	Ø 5 ... 6					
• Tightening torque	Nm	2 ... 2.5					
• Usable ring terminal lugs	mm	d <sub>2</sub> = min. 4.3					
- DIN 46234 without insulation sleeve	mm	d <sub>3</sub> = max. 12.2					
- DIN 46225 without insulation sleeve	mm						
- DIN 46237 with insulation sleeve	mm						
- JIS C2805 Type R without insulation sleeve	mm						
- JIS C2805 Type RAV with insulation sleeve	mm						
- JIS C2805 Type RAP with insulation sleeve	mm						
<b>Auxiliary conductors</b>		 <b>Ring terminal lug connections</b>					
• Terminal screw		M3, Pozi driv 2					
• Operating devices	mm	Ø 5 ... 6					
• Tightening torque	Nm	0.8 ... 1.2					
• Usable ring terminal lugs	mm	d <sub>2</sub> = min. 3.2					
	mm	d <sub>3</sub> = max. 7.5					



<sup>1)</sup> Max. external diameter of the cable insulation: 3.6 mm.  
An insulation stop must be used for conductor cross-sections ≤ 1 mm<sup>2</sup>  
(see [Accessories](#), page 3/60).

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

<sup>3)</sup> Tool for opening the spring-type terminals  
see [Accessories](#), page 3/60.

Contactor	Size	S00 <b>Screw or spring-type terminals</b> Integrated or snap-on auxiliary switch block	S0 <b>Screw or spring-type terminals</b> 1- and 4-pole snap-on auxiliary switch block	<b>Screw or spring-type terminals</b> Laterally mountable auxiliary switch block
<b>Ⓢ and Ⓜ rated data of the auxiliary contacts</b>				
Rated voltage	V AC	600	600	600
Switching capacity		A 600, Q 600	A 600, Q 600	A 300, Q 300
Uninterrupted current	At 240 V AC A	10	10	10



SIRIUS 3RT20 contactors,  
3-pole, 3 ... 18.5 kW

Contactor	Type Size	3RT20 15	3RT20 16	3RT20 17	3RT20 18
		S00	S00	S00	S00
<b>Ⓢ and Ⓣ rated data</b>					
<b>Rated insulation voltage</b>	V AC	600			
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	20			
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)					
• Rated power for induction motors at 60 Hz	At 200 V hp	1.5	2	3	3
	230 V hp	2	3	3	5
	460 V hp	3	5	7.5	10
	575 V hp	5	7.5	10	10
<b>Short-circuit protection<sup>1)</sup></b> (contactor or overload relay)					
• Fuse CLASS J <sup>2)</sup>	A	40	40	40	40
• Circuit breakers with overload protection according to UL 489	A	50	50	50	50
• Combination motor controllers type E according to UL 508		..3)	..3)	..3)	..3)
<b>NEMA/EEMAC ratings</b>					
NEMA/EEMAC size	hp	--			0
• Uninterrupted current					
- Open	A	--			18
- Enclosed	A	--			18
• Rated power for induction motors at 60 Hz	At 200 V hp	--			3
	230 V hp	--			3
	460 V hp	--			5
	575 V hp	--			5
<b>Overload relays</b>					
• Type		3RU21 1 / 3RB30 1			
• Setting range	A	0.11 ... 16 / 0.1 ... 16			

Contactor	Type Size	3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
		S0	S0	S0	S0	S0	S0
<b>Ⓢ and Ⓣ rated data</b>							
<b>Rated insulation voltage</b>	V AC	600				600	
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	35				42	
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)							
• Rated power for induction motors at 60 Hz	At 200 V hp	2	3	3	5	10	10
	230 V hp	3	3	5	7.5	10	10
	460 V hp	5	7.5	10	15	20	25
	575 V hp	7.5	10	15	20	25	25
<b>Short-circuit protection<sup>1)</sup></b> (contactor or overload relay)							
• Fuse CLASS J <sup>2)</sup>	A	125				150	
• Circuit breakers with overload protection according to UL 489	A	70				100	
• Combination motor controllers type E according to UL 508	At 480 V Type	3RV20 2					
	A kA	-- ..3)					
	At 600 V Type	3RV20 2					
	A kA	-- ..3)					
<b>NEMA/EEMAC ratings</b>							
NEMA/EEMAC size	hp	--				1	
• Uninterrupted current							
- Open	A	--				27	
- Enclosed	A	--				27	
• Rated power for induction motors at 60 Hz	At 200 V hp	--				7.5	
	230 V hp	--				7.5	
	460 V hp	--				10	
	575 V hp	--				10	
<b>Overload relays</b>							
• Type		3RU21 2 / 3RB30 2					
• Setting range	A	1.8 ... 40 / 0.1 ... 40					

<sup>1)</sup> For more information about short-circuit values, e. g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports ([www.siemens.com/sirius/manuals](http://www.siemens.com/sirius/manuals)) for the individual devices.

<sup>2)</sup> Values for RK5 fuses on request.

<sup>3)</sup> Values on request.

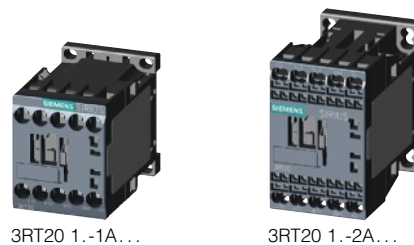
# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### Selection and ordering data

#### AC operation

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



3RT20 1.-1A...

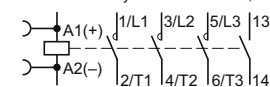
3RT20 1.-2A...

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Ident. No.	Version	$U_s$ at 50/60 Hz		Configurator			Configurator	
Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current $I_e$ up to 690 V	NO NC	V AC		Order No.	Price per PU		Order No.	Price per PU
A	<b>kW</b>	A								

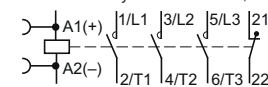
#### For screw fixing and snap-on mounting onto TH 35 standard mounting rail

##### Size S00<sup>1)2)</sup>

• With auxiliary contact 1 NO, Ident. No. **10**



• With auxiliary contact 1 NC, Ident. No. **01**



7	3	18	10	1	--	24 110 230	▶	3RT20 15-1AB01 3RT20 15-1AF01 3RT20 15-1AP01	▶	3RT20 15-2AB01 3RT20 15-2AF01 3RT20 15-2AP01
			<b>01</b>	--	1	24 110 230	▶	3RT20 15-1AB02 3RT20 15-1AF02 3RT20 15-1AP02	▶	3RT20 15-2AB02 3RT20 15-2AF02 3RT20 15-2AP02
9	4	22	10	1	--	24 110 230	▶	3RT20 16-1AB01 3RT20 16-1AF01 3RT20 16-1AP01	▶	3RT20 16-2AB01 3RT20 16-2AF01 3RT20 16-2AP01
			<b>01</b>	--	1	24 110 230	▶	3RT20 16-1AB02 3RT20 16-1AF02 3RT20 16-1AP02	▶	3RT20 16-2AB02 3RT20 16-2AF02 3RT20 16-2AP02
12	5.5	22	10	1	--	24 110 230	▶	3RT20 17-1AB01 3RT20 17-1AF01 3RT20 17-1AP01	▶	3RT20 17-2AB01 3RT20 17-2AF01 3RT20 17-2AP01
			<b>01</b>	--	1	24 110 230	▶	3RT20 17-1AB02 3RT20 17-1AF02 3RT20 17-1AP02	▶	3RT20 17-2AB02 3RT20 17-2AF02 3RT20 17-2AP02
16	7.5	22	10	1	--	24 110 230	▶	3RT20 18-1AB01 3RT20 18-1AF01 3RT20 18-1AP01	▶	3RT20 18-2AB01 3RT20 18-2AF01 3RT20 18-2AP01
			<b>01</b>	--	1	24 110 230	▶	3RT20 18-1AB02 3RT20 18-1AF02 3RT20 18-1AP02	▶	3RT20 18-2AB02 3RT20 18-2AF02 3RT20 18-2AP02

⚙️ For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

1) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

2) For size S00: Coil operating range at 50 Hz: 0.8 ... 1.1 ×  $U_s$ , at 60 Hz: 0.85 ... 1.1 ×  $U_s$ .

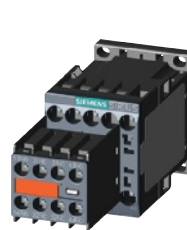
Other voltages according to page 3/36 on request.

For accessories see page 3/45.

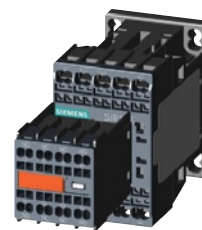
SIRIUS 3RT20 contactors,  
3-pole, 3 ... 18.5 kW

## AC operation

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



3RT20 1.-1AP04-3MA0



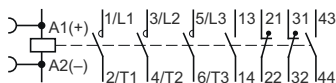
3RT20 1.-2AP04-3MA0

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals	DT	Spring-type terminals	
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Ident. No.	Version	$U_s$ at 50/60 Hz		Configurator		Configurator	
Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current $I_e$ up to 690 V				Order No.	Price per PU	Order No.	Price per PU
A	<b>kW</b>	A	NO NC	V AC					

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

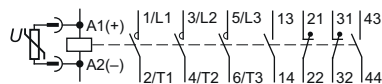
Size S00<sup>1)</sup>

## With permanently mounted auxiliary switch block



7	<b>3</b>	18	<b>22</b>	2	2	230	B	<b>3RT20 15-1AP04-3MA0</b>	B	<b>3RT20 15-2AP04-3MA0</b>
9	<b>4</b>	22	<b>22</b>	2	2	230	B	<b>3RT20 16-1AP04-3MA0</b>	B	<b>3RT20 16-2AP04-3MA0</b>
12	<b>5.5</b>	22	<b>22</b>	2	2	230	B	<b>3RT20 17-1AP04-3MA0</b>	B	<b>3RT20 17-2AP04-3MA0</b>
16	<b>7.5</b>	22	<b>22</b>	2	2	230	▶	<b>3RT20 18-1AP04-3MA0</b>	▶	<b>3RT20 18-2AP04-3MA0</b>

## With permanently mounted auxiliary switch block and varistor plugged onto the front side



7	<b>3</b>	18	<b>22</b>	2	2	230	B	<b>3RT20 15-1CP04-3MA0</b>	B	<b>3RT20 15-2CP04-3MA0</b>
9	<b>4</b>	22	<b>22</b>	2	2	230	B	<b>3RT20 16-1CP04-3MA0</b>	B	<b>3RT20 16-2CP04-3MA0</b>
12	<b>5.5</b>	22	<b>22</b>	2	2	230	B	<b>3RT20 17-1CP04-3MA0</b>	B	<b>3RT20 17-2CP04-3MA0</b>
16	<b>7.5</b>	22	<b>22</b>	2	2	230	B	<b>3RT20 18-1CP04-3MA0</b>	B	<b>3RT20 18-2CP04-3MA0</b>

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> For size S00: Coil operating range  
 at 50 Hz: 0.8 ... 1.1 ×  $U_s$   
 at 60 Hz: 0.85 ... 1.1 ×  $U_s$

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

# Power Contactors for Switching Motors

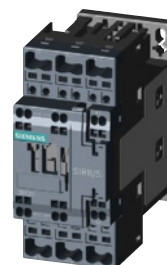
## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### AC operation

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



3RT20 2.-1A.00

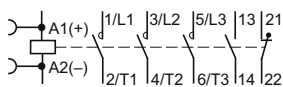


3RT20 2.-2A.00

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals		
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Ident. No.	Version	$U_s$ at 50 Hz		Configurator	Order No.	Price per PU	Configurator	Order No.	Price per PU
Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current $I_e$ up to 690 V	NO NC	V AC							
A	<b>400 V</b>	A									

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

### Size S0<sup>1)</sup>



Order No.	Rating (kW)	Operational current $I_e$ (A)	Ident. No.	Version	Rated control supply voltage $U_s$ (V AC)	DT	Product Code	Terminal Type	Product Code
9	4	40	11	1	24, 110, 230	▶	3RT20 23-1AB00 3RT20 23-1AF00 3RT20 23-1AP00	A	3RT20 23-2AB00 3RT20 23-2AF00 3RT20 23-2AP00
12	5.5	40	11	1	24, 110, 230	▶	3RT20 24-1AB00 3RT20 24-1AF00 3RT20 24-1AP00	A	3RT20 24-2AB00 3RT20 24-2AF00 3RT20 24-2AP00
17	7.5	40	11	1	24, 110, 230	▶	3RT20 25-1AB00 3RT20 25-1AF00 3RT20 25-1AP00	A	3RT20 25-2AB00 3RT20 25-2AF00 3RT20 25-2AP00
25	11	40	11	1	24, 110, 230	▶	3RT20 26-1AB00 3RT20 26-1AF00 3RT20 26-1AP00	A	3RT20 26-2AB00 3RT20 26-2AF00 3RT20 26-2AP00
32	15	50	11	1	24, 110, 230	▶	3RT20 27-1AB00 3RT20 27-1AF00 3RT20 27-1AP00	A	3RT20 27-2AB00 3RT20 27-2AF00 3RT20 27-2AP00
38	18.5	50	11	1	24, 110, 230	▶	3RT20 28-1AB00 3RT20 28-1AF00 3RT20 28-1AP00	A B	3RT20 28-2AB00 3RT20 28-2AF00 3RT20 28-2AP00

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

Other voltages according to page 3/36 on request.

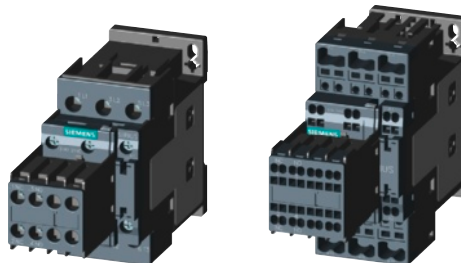
For accessories see page 3/45.  
 For spare parts see page 3/61.

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### AC operation

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



3RT20 2.-1A.04

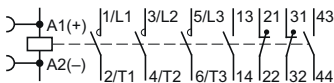
3RT20 2.-2A.04

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals		
AC-2 and AC-3, T <sub>U</sub> : Up to 60 °C	AC-1, T <sub>U</sub> : 40 °C	Ident. No.	Version	U <sub>s</sub> at 50 Hz		Configurator	Order No.	Price per PU	Configurator	Order No.	Price per PU
Operational current I <sub>e</sub> up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current I <sub>e</sub> up to 690 V	NO NC	V AC							
A	<b>400 V</b>	A									
kW											

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

Size S0<sup>1)</sup>

With mounted auxiliary switch block (removable)<sup>2)</sup>



9	4	40	22	2	2	24 230	B ▶	3RT20 23-1AB04 3RT20 23-1AP04	B A	3RT20 23-2AB04 3RT20 23-2AP04
12	5.5	40	22	2	2	24 110 230	B B ▶	3RT20 24-1AB04 3RT20 24-1AF04 3RT20 24-1AP04	B B A	3RT20 24-2AB04 3RT20 24-2AF04 3RT20 24-2AP04
17	7.5	40	22	2	2	24 110 230	B B ▶	3RT20 25-1AB04 3RT20 25-1AF04 3RT20 25-1AP04	B B A	3RT20 25-2AB04 3RT20 25-2AF04 3RT20 25-2AP04
25	11	40	22	2	2	24 110 230	B B ▶	3RT20 26-1AB04 3RT20 26-1AF04 3RT20 26-1AP04	B B A	3RT20 26-2AB04 3RT20 26-2AF04 3RT20 26-2AP04
32	15	50	22	2	2	24 110 230	B B ▶	3RT20 27-1AB04 3RT20 27-1AF04 3RT20 27-1AP04	B B A	3RT20 27-2AB04 3RT20 27-2AF04 3RT20 27-2AP04
38	18.5	50	22	2	2	24 110 230	B B ▶	3RT20 28-1AB04 3RT20 28-1AF04 3RT20 28-1AP04	B B A	3RT20 28-2AB04 3RT20 28-2AF04 3RT20 28-2AP04

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

<sup>2)</sup> Order No. for the auxiliary switch block (removable): 3RH29 11-.HA11

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

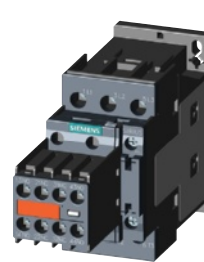
For spare parts see page 3/61.

# Power Contactors for Switching Motors

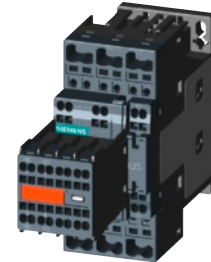
## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### AC operation

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



3RT20 2.-1AL24-3MA0



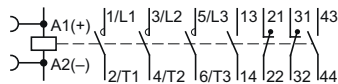
3RT20 2.-2AL24-3MA0

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current $I_e$ up to 690 V		Configurator	Order No.		Configurator	Order No.
		A	<b>kW</b>	A			Price per PU			Price per PU

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

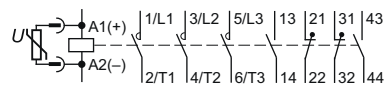
### Size S0

#### With permanently mounted auxiliary switch block<sup>1)</sup>



Order No.	Rated current [A]	Rated power [kW]	Rated voltage [V]	NO	NC	V AC	DT	Order No.	Price per PU	
9	4	40	22	2	2	230	B	3RT20 23-1AL24-3MA0	B	3RT20 23-2AL24-3MA0
12	5.5	40	22	2	2	230	B	3RT20 24-1AL24-3MA0	B	3RT20 24-2AL24-3MA0
17	7.5	40	22	2	2	230	B	3RT20 25-1AL24-3MA0	B	3RT20 25-2AL24-3MA0
25	11	40	22	2	2	230	B	3RT20 26-1AL24-3MA0	B	3RT20 26-2AL24-3MA0
32	15	50	22	2	2	230	B	3RT20 27-1AL24-3MA0	B	3RT20 27-2AL24-3MA0
38	18.5	50	22	2	2	230	B	3RT20 28-1AL24-3MA0	B	3RT20 28-2AL24-3MA0

#### With permanently mounted auxiliary switch block and varistor plugged into the front side



Order No.	Rated current [A]	Rated power [kW]	Rated voltage [V]	NO	NC	V AC	DT	Order No.	Price per PU	
9	4	40	22	2	2	230	B	3RT20 23-1CL24-3MA0	B	3RT20 23-2CL24-3MA0
12	5.5	40	22	2	2	230	B	3RT20 24-1CL24-3MA0	B	3RT20 24-2CL24-3MA0
17	7.5	40	22	2	2	230	B	3RT20 25-1CL24-3MA0	B	3RT20 25-2CL24-3MA0
25	11	40	22	2	2	230	B	3RT20 26-1CL24-3MA0	B	3RT20 26-2CL24-3MA0
32	15	50	22	2	2	230	B	3RT20 27-1CL24-3MA0	B	3RT20 27-2CL24-3MA0
38	18.5	50	22	2	2	230	B	3RT20 28-1CL24-3MA0	B	3RT20 28-2CL24-3MA0

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> No retrofitting of surge suppressors.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

For spare parts see page 3/61.

# Power Contactors for Switching Motors

**SIRIUS 3RT20 contactors,  
3-pole, 3 ... 18.5 kW**

## DC operation - DC solenoid system

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



3RT20 1.-1B...



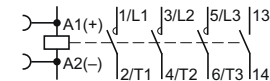
3RT20 1.-2B...

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T <sub>U</sub> : Up to 60 °C	AC-1, T <sub>U</sub> : 40 °C	Ident. No.	Version	U <sub>s</sub>		Configurator			Configurator	
Operational current I <sub>e</sub> up to 400 V	Rating of induction motors at 50 Hz and 400 V					Order No.	Price per PU		Order No.	Price per PU
A	<b>400 V</b> kW	A	NO NC	V DC						

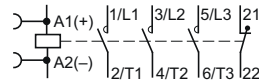
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

### Size S00<sup>1)</sup>

• With auxiliary contact 1 NO, Ident. No. **10**



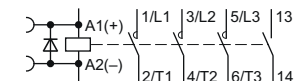
• With auxiliary contact 1 NC, Ident. No. **01**



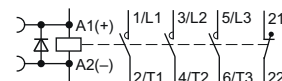
Rated current I <sub>e</sub> [A]	Rated power P <sub>n</sub> [kW]	Rated voltage U <sub>e</sub> [V]	Ident. No.	Version	Order No.	Product Code	Product Code
7	3	18	10	1	24	▶ 3RT20 15-1BB41	▶ 3RT20 15-2BB41
						A	B
9	4	22	10	1	24	▶ 3RT20 16-1BB41	▶ 3RT20 16-2BB41
						B	B
12	5.5	22	10	1	24	▶ 3RT20 17-1BB41	▶ 3RT20 17-2BB41
						B	B
16	7.5	22	10	1	24	▶ 3RT20 18-1BB41	▶ 3RT20 18-2BB41
						B	B
7	3	18	01	--	24	▶ 3RT20 15-1BM41	▶ 3RT20 15-2BM41
						A	B
9	4	22	01	--	24	▶ 3RT20 16-1BM41	▶ 3RT20 16-2BM41
						B	B
12	5.5	22	01	--	24	▶ 3RT20 17-1BM41	▶ 3RT20 17-2BM41
						B	B
16	7.5	22	01	--	24	▶ 3RT20 18-1BM41	▶ 3RT20 18-2BM41
						B	B

### With integrated coil circuit (diode)

• With auxiliary contact 1 NO, Ident. No. **10**



• With auxiliary contact 1 NC, Ident. No. **01**



Rated current I <sub>e</sub> [A]	Rated power P <sub>n</sub> [kW]	Rated voltage U <sub>e</sub> [V]	Ident. No.	Version	Order No.	Product Code	Product Code
7	3	18	10	1	24	▶ 3RT20 15-1FB41	▶ 3RT20 15-2FB41
						A	B
9	4	22	10	1	24	▶ 3RT20 16-1FB41	▶ 3RT20 16-2FB41
						B	B
12	5.5	22	10	1	24	▶ 3RT20 17-1FB41	▶ 3RT20 17-2FB41
						B	B
16	7.5	22	10	1	24	▶ 3RT20 18-1FB41	▶ 3RT20 18-2FB41
						B	B
7	3	18	01	--	24	▶ 3RT20 15-1FB42	▶ 3RT20 15-2FB42
						A	B
9	4	22	01	--	24	▶ 3RT20 16-1FB42	▶ 3RT20 16-2FB42
						B	B
12	5.5	22	01	--	24	▶ 3RT20 17-1FB42	▶ 3RT20 17-2FB42
						B	B
16	7.5	22	01	--	24	▶ 3RT20 18-1FB42	▶ 3RT20 18-2FB42
						B	B

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special contactor versions with ring terminal lug connection.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

# Power Contactors for Switching Motors

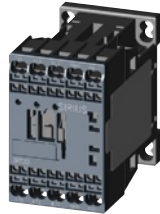
## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### DC operation - DC solenoid system

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



3RT20 1.-1BB4.-0CC0



3RT20 1.-2BB4.-0CC0



3RT20 1.-1BB44-3MA0



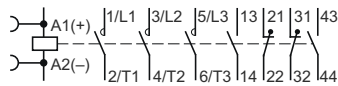
3RT20 1.-2BB44-3MA0

Rated data		Auxiliary contacts	Rated control supply voltage $U_s$	DT	DT
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Ident. No.   Version		<b>Screw terminals</b>	<b>Spring-type terminals</b>
Operational current $I_e$ up to 400 V	Operational current $I_e$ up to 690 V	NO   NC	V DC	<b>Configurator</b>	<b>Configurator</b>
A   kW	A			Order No.   Price per PU	Order No.   Price per PU

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

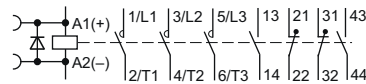
### Size S00

#### With permanently mounted auxiliary switch block



7	9	12	16	3	4	5.5	7.5	18	22	2	2	24		3RT20 15-1BB44-3MA0	B	3RT20 15-2BB44-3MA0
													▶	3RT20 16-1BB44-3MA0	B	3RT20 16-2BB44-3MA0
													B	3RT20 17-1BB44-3MA0	B	3RT20 17-2BB44-3MA0
													B	3RT20 18-1BB44-3MA0	B	3RT20 18-2BB44-3MA0

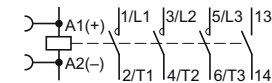
#### With permanently mounted auxiliary switch block and integrated coil circuit (diode)



7	9	12	16	3	4	5.5	7.5	18	22	2	2	24	B	3RT20 15-1FB44-3MA0	B	3RT20 15-2FB44-3MA0
													B	3RT20 16-1FB44-3MA0	B	3RT20 16-2FB44-3MA0
													B	3RT20 17-1FB44-3MA0	B	3RT20 17-2FB44-3MA0
													B	3RT20 18-1FB44-3MA0	B	3RT20 18-2FB44-3MA0

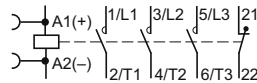
#### Contactors with communication interface

##### • With auxiliary contact 1 NO, Ident. No. 10



7	9	12	16	3	4	5.5	7.5	18	22	10	1	--	24	A	3RT20 15-1BB41-0CC0	A	3RT20 15-2BB41-0CC0
										01	--	1	24	A	3RT20 15-1BB42-0CC0	A	3RT20 15-2BB42-0CC0
										01	1	--	24	A	3RT20 16-1BB41-0CC0	A	3RT20 16-2BB41-0CC0
										01	--	1	24	A	3RT20 16-1BB42-0CC0	A	3RT20 16-2BB42-0CC0
										01	1	--	24	A	3RT20 17-1BB41-0CC0	A	3RT20 17-2BB41-0CC0
										01	--	1	24	A	3RT20 17-1BB42-0CC0	A	3RT20 17-2BB42-0CC0
										10	1	--	24	A	3RT20 18-1BB41-0CC0	A	3RT20 18-2BB41-0CC0
										01	--	1	24	A	3RT20 18-1BB42-0CC0	A	3RT20 18-2BB42-0CC0

##### • With auxiliary contact 1 NC, Ident. No. 01



For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

Other voltages according to page 3/36 on request.

For accessories see page 3/45.



# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### DC operation - DC solenoid system

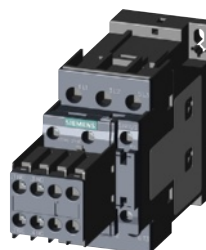
PU (UNIT, SET, M) = 1  
 PS\* = 1 unit  
 PG = 41B



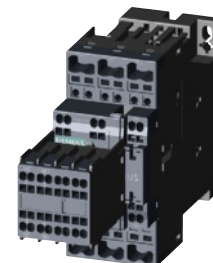
3RT20 2.-1B.40



3RT20 2.-2B.40



3RT20 2.-1B.44

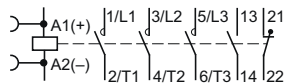


3RT20 2.-2B.44

<b>Rated data</b> AC-2 and AC-3, $T_U$ : Up to 60 °C Operational current $I_e$ up to 400 V <b>A kW</b>		AC-1, $T_U$ : 40 °C Operational current $I_e$ up to 690 V <b>A kW</b>	<b>Auxiliary contacts</b> Ident. No.   Version NO   NC   V DC	<b>Rated control supply voltage</b> $U_s$	DT <b>Screw terminals</b> <b>Configurator</b> Order No.   Price per PU	DT <b>Spring-type terminals</b> <b>Configurator</b> Order No.   Price per PU
--	--	--	---	--	--	--

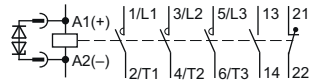
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

#### Size S0<sup>1)</sup>



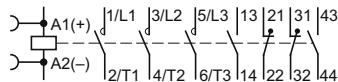
9	4	40	11	1	1	24	▶	3RT20 23-1BB40	▶	3RT20 23-2BB40
12	5.5	40	11	1	1	24 220	▶	3RT20 24-1BB40 3RT20 24-1BM40	▶	3RT20 24-2BB40 3RT20 24-2BM40
17	7.5	40	11	1	1	24 220	▶	3RT20 25-1BB40 3RT20 25-1BM40	▶	3RT20 25-2BB40 3RT20 25-2BM40
25	11	40	11	1	1	24 220	▶	3RT20 26-1BB40 3RT20 26-1BM40	▶	3RT20 26-2BB40 3RT20 26-2BM40
32	15	50	11	1	1	24 220	▶	3RT20 27-1BB40 3RT20 27-1BM40	▶	3RT20 27-2BB40 3RT20 27-2BM40
38	18.5	50	11	1	1	24 220	▶	3RT20 28-1BB40 3RT20 28-1BM40	▶	3RT20 28-2BB40 3RT20 28-2BM40

#### With coil circuit plugged in (diode assembly)



9	4	40	11	1	1	24	▶	3RT20 23-1FB40	▶	3RT20 23-2FB40
12	5.5	40	11	1	1	24	▶	3RT20 24-1FB40	▶	3RT20 24-2FB40
17	7.5	40	11	1	1	24	▶	3RT20 25-1FB40	▶	3RT20 25-2FB40
25	11	40	11	1	1	24	▶	3RT20 26-1FB40	▶	3RT20 26-2FB40
32	15	50	11	1	1	24	▶	3RT20 27-1FB40	▶	3RT20 27-2FB40
38	18.5	50	11	1	1	24	▶	3RT20 28-1FB40	▶	3RT20 28-2FB40

#### With mounted auxiliary switch block (removable)<sup>2)</sup>



9	4	40	22	2	2	24	▶	3RT20 23-1BB44	▶	3RT20 23-2BB44
12	5.5	40	22	2	2	24	▶	3RT20 24-1BB44	▶	3RT20 24-2BB44
17	7.5	40	22	2	2	24	▶	3RT20 25-1BB44	▶	3RT20 25-2BB44
25	11	40	22	2	2	24	▶	3RT20 26-1BB44	▶	3RT20 26-2BB44
32	15	50	22	2	2	24	▶	3RT20 27-1BB44	▶	3RT20 27-2BB44
38	18.5	50	22	2	2	24	▶	3RT20 28-1BB44	▶	3RT20 28-2BB44

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

<sup>2)</sup> Order No. for the auxiliary switch block (removable): 3RH29 11-.HA11

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

# Power Contactors for Switching Motors

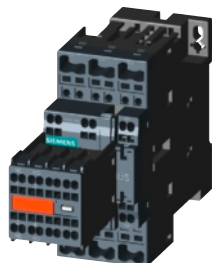
## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### DC operation - DC solenoid system

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



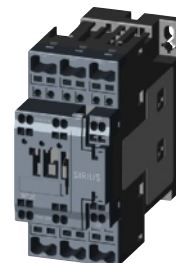
3RT20 2.-1BB44-3MA0



3RT20 2.-2BB44-3MA0



3RT20 2.-1BB40-0CC0



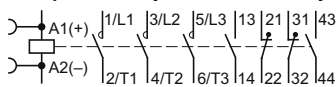
3RT20 2.-2BB40-0CC0

Rated data		Auxiliary contacts	Rated control supply voltage $U_s$	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, $T_{ij}$ : Up to 60 °C	AC-1, $T_{ij}$ : 40 °C	Ident. No.   Version			Configurator		Configurator
Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and up to 400 V	Operational current $I_e$ up to 690 V			Order No.	Price per PU	Order No.
A	<b>kW</b>	A	NO NC	V DC			Price per PU

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

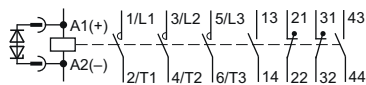
### Size S0

With permanently mounted auxiliary switch block<sup>1)</sup>



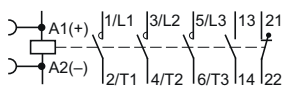
9	4	40	22	2	2	24	B	3RT20 23-1BB44-3MA0	B	3RT20 23-2BB44-3MA0
12	5.5	40	22	2	2	24	B	3RT20 24-1BB44-3MA0	B	3RT20 24-2BB44-3MA0
17	7.5	40	22	2	2	24	B	3RT20 25-1BB44-3MA0	B	3RT20 25-2BB44-3MA0
25	11	40	22	2	2	24	B	3RT20 26-1BB44-3MA0	B	3RT20 26-2BB44-3MA0
32	15	50	22	2	2	24	B	3RT20 27-1BB44-3MA0	B	3RT20 27-2BB44-3MA0
38	18.5	50	22	2	2	24	B	3RT20 28-1BB44-3MA0	B	3RT20 28-2BB44-3MA0

With permanently mounted auxiliary switch block and coil circuit plugged in (diode assembly)



9	4	40	22	2	2	24	B	3RT20 23-1FB44-3MA0	B	3RT20 23-2FB44-3MA0
12	5.5	40	22	2	2	24	B	3RT20 24-1FB44-3MA0	B	3RT20 24-2FB44-3MA0
17	7.5	40	22	2	2	24	B	3RT20 25-1FB44-3MA0	B	3RT20 25-2FB44-3MA0
25	11	40	22	2	2	24	B	3RT20 26-1FB44-3MA0	B	3RT20 26-2FB44-3MA0
32	15	50	22	2	2	24	B	3RT20 27-1FB44-3MA0	B	3RT20 27-2FB44-3MA0
38	18.5	50	22	2	2	24	B	3RT20 28-1FB44-3MA0	B	3RT20 28-2FB44-3MA0

Contactors with communication interface



9	4	40	11	1	1	24	A	3RT20 23-1BB40-0CC0	A	3RT20 23-2BB40-0CC0
12	5.5	40	11	1	1	24	A	3RT20 24-1BB40-0CC0	A	3RT20 24-2BB40-0CC0
17	7.5	40	11	1	1	24	A	3RT20 25-1BB40-0CC0	A	3RT20 25-2BB40-0CC0
25	11	40	11	1	1	24	A	3RT20 26-1BB40-0CC0	A	3RT20 26-2BB40-0CC0
32	15	50	11	1	1	24	A	3RT20 27-1BB40-0CC0	A	3RT20 27-2BB40-0CC0
38	18.5	50	11	1	1	24	A	3RT20 28-1BB40-0CC0	A	3RT20 28-2BB40-0CC0

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> No retrofitting of surge suppressors.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

# Power Contactors for Switching Motors

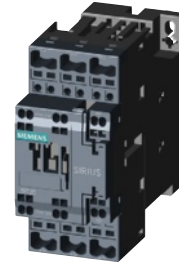
**SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW**

**UC operation - AC or DC operation**  
**Extended operating range of the solenoid coil 0.7 ... 1.3 x U<sub>s</sub>**  
**Integrated coil circuit**

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



3RT20 2.-1N.30



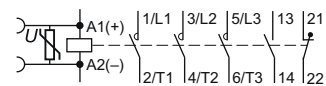
3RT20 2.-2N.30

Rated data		Auxiliary contacts		Rated control supply voltage U <sub>s</sub>	DT	Screw terminals		DT	Spring-type terminals		
AC-2 and AC-3, T <sub>U</sub> : Up to 60 °C	Rating of induction motors at 50 Hz and	AC-1, T <sub>U</sub> : 40 °C	Operational current I <sub>e</sub> up to	Ident. No.	Version	Configurator	Order No.	Price per PU	Configurator	Order No.	Price per PU
Operational current I <sub>e</sub> up to 400 V	<b>400 V</b>	Operational current I <sub>e</sub> up to 690 V	A	NO	NC						
A	<b>kW</b>	A			V AC/DC						

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

Size S0<sup>1)</sup>

With integrated coil circuit (varistor)



12	<b>5.5</b>	40	<b>11</b>	1	1	21 ... 28 95 ... 130 200 ... 280 <sup>1)</sup>	▶	<b>3RT20 24-1NB30</b>	B	<b>3RT20 24-2NB30</b>
							▶	<b>3RT20 24-1NF30</b>	B	<b>3RT20 24-2NF30</b>
							▶	<b>3RT20 24-1NP30</b>		<b>3RT20 24-2NP30</b>
17	<b>7.5</b>	40	<b>11</b>	1	1	21 ... 28 95 ... 130 200 ... 280 <sup>1)</sup>	▶	<b>3RT20 25-1NB30</b>	B	<b>3RT20 25-2NB30</b>
							▶	<b>3RT20 25-1NF30</b>	B	<b>3RT20 25-2NF30</b>
							▶	<b>3RT20 25-1NP30</b>		<b>3RT20 25-2NP30</b>
25	<b>11</b>	40	<b>11</b>	1	1	21 ... 28 95 ... 130 200 ... 280 <sup>1)</sup>	▶	<b>3RT20 26-1NB30</b>		<b>3RT20 26-2NB30</b>
							▶	<b>3RT20 26-1NF30</b>		<b>3RT20 26-2NF30</b>
							▶	<b>3RT20 26-1NP30</b>		<b>3RT20 26-2NP30</b>
32	<b>15</b>	50	<b>11</b>	1	1	21 ... 28 95 ... 130 200 ... 280 <sup>1)</sup>	▶	<b>3RT20 27-1NB30</b>		<b>3RT20 27-2NB30</b>
							▶	<b>3RT20 27-1NF30</b>	B	<b>3RT20 27-2NF30</b>
							▶	<b>3RT20 27-1NP30</b>		<b>3RT20 27-2NP30</b>
38	<b>18.5</b>	50	<b>11</b>	1	1	21 ... 28 95 ... 130 200 ... 280 <sup>1)</sup>	▶	<b>3RT20 28-1NB30</b>	B	<b>3RT20 28-2NB30</b>
							▶	<b>3RT20 28-1NF30</b>	B	<b>3RT20 28-2NF30</b>
							▶	<b>3RT20 28-1NP30</b>		<b>3RT20 28-2NP30</b>

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> At 280 V: upper limit = 1.1 x U<sub>s</sub>

# Power Contactors for Switching Motors

## SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

### Options

**Rated control supply voltages, possible on request  
(the 10th and 11th position of the order number must be changed)**

Rated control supply voltage $U_s$	Contactor type	3RT20 1	3RT20 2	3RT23 1, 3RT25 1	3RT23 2, 3RT25 2
	Size	S00	S0	S00	S0

#### Sizes S00 and S0

#### AC operation<sup>1)</sup>

**Solenoid coils for 50 Hz** (exception: Size S00: 50 and 60 Hz<sup>2)</sup>)

24 V AC	B0	B0	B0	B0
42 V AC	D0	D0	D0	--
48 V AC	H0	H0	H0	--
110 V AC	F0	F0	F0	F0
230 V AC	P0	P0	P0	P0
400 V AC	V0	V0	V0	V0

**Solenoid coils for 50 and 60 Hz<sup>2)</sup>**

24 V AC	B0	C2	B0	C2
42 V AC	D0	D2	D0	D2
48 V AC	H0	H2	H0	H2
110 V AC	F0	G2	F0	G2
220 V AC	N2	N2	N2	N2
230 V AC	P0	L2	P0	L2
240 V AC	P2	P2	P2	P2

**Solenoid coils (for USA and Canada<sup>3)</sup>)**

50 Hz	60 Hz				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6

**Solenoid coils (for Japan)**

50/60 Hz <sup>4)</sup>	60 Hz <sup>5)</sup>				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6

#### DC operation<sup>1)</sup>

12 V DC	A4	--	A4	--
24 V DC	B4	B4	B4	B4
42 V DC	D4	D4	D4	D4
48 V DC	W4	W4	W4	--
60 V DC	E4	E4	--	--
110 V DC	F4	F4	F4	F4
125 V DC	G4	G4	G4	G4
220 V DC	M4	M4	M4	M4
230 V DC	P4	P4	P4	--

#### Examples

<b>AC operation</b>	3RT20 23-1AP00	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT20 23-1AG20	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
<b>DC operation</b>	3RT20 25-2BB40	Contactor with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT20 25-2BG40	Contactor with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage	Contactor type	--	3RT2. 2.-N
$U_{s \min} \dots U_{s \max}$ <sup>6)</sup>	Size	S00	S0

#### Size S0

#### UC operation (AC 50 to 60 Hz and DC)

21 ... 28 V AC/DC	--	B3
95 ... 130 V AC/DC	--	F3
200 ... 280 V AC/DC <sup>7)</sup>	--	P3

<sup>1)</sup> For deviating coil voltages and coil operating ranges of sizes S00 and S0, the 24 V DC SITOP Power supply unit with wide range input (93 to 264 V AC; 30 to 264 V DC) can be used for coil excitation (see Chapter 15, "Products for Specific Requirements" → "Stabilized Power Supplies" → "SITOP 6EP Power Supplies").

<sup>2)</sup> Coil operating range  
at 50 Hz: 0.8 ... 1.1 x  $U_s$   
at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

<sup>3)</sup> Coil operating range  
Size S00: at 50 Hz: 0.85 ... 1.1 x  $U_s$   
at 60 Hz: 0.8 ... 1.1 x  $U_s$   
Size S0: at 50 Hz and 60 Hz: 0.8 ... 1.1 x  $U_s$ .

<sup>4)</sup> Coil operating range  
Size S00: at 50/60 Hz: 0.85 ... 1.1 x  $U_s$   
Size S0: at 50 Hz: 0.8 ... 1.1 x  $U_s$   
at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

<sup>5)</sup> Coil operating range  
at 60 Hz: 0.8 ... 1.1 x  $U_s$ .

<sup>6)</sup> Coil operating range: 0.7 x  $U_{s \min}$  ... 1.3 x  $U_{s \max}$ .

<sup>7)</sup> At 280 V: upper limit = 1.1 x  $U_s$ .

### Overview

#### Auxiliary switches

See also pages 3/14 and 3/44.

#### Positively-driven contacts (contactor relays)

Definition according to IEC 60947-5-1, Appendix L:



Positively-driven contact elements are a combination of "n" NO contact and "m" NC contact which are designed such that they cannot be closed simultaneously.

#### Mirror contacts (power contactors)

Definition according to IEC 60947-4-1, Appendix F:



A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact.

#### Solid-state time-delay auxiliary switches

The 3RA28 solid-state delayed auxiliary switches which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snap-on and locking.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A./A2.

A protection circuit (varistor) is integrated in each module.

A sealable cover is available to protect against careless adjustment of the set times.

#### Note:

Mounting more auxiliary switches to the contactor is not permitted.

#### OFF-delay devices for contactors

##### AC and DC operation

IEC 60947, EN 60947

For screw fixing and snap-on mounting onto TH 35 standard mounting rails. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RA29 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays in the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

#### Operation

In the case of the versions for rated control supply voltages of 110 and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the version for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

#### Additional load module

Size S00 for plugging onto the front of the contactors with and without auxiliary switch block.

The module is used for increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.

#### Surge suppressors

- Without LED (also for spring-type terminals)  
Sizes S00 and S0
- With LED (also for spring-type terminals)  
Sizes S00 and S0

All 3RT2 contactors and 3RH2 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

Varistors, RC elements or diode assemblies can be plugged onto the front of size S0 contactors.

Coupling contactors are supplied either without overvoltage damping or with a suppressor diode, varistor or diode connected as standard, according to the version.

#### Note:

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

#### Coupling links for control by PLC

##### DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC, operating range 17 to 30 V.

Low power consumption of 0.5 W in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

##### Surge suppression

The 3RH29 24-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

##### Mounting

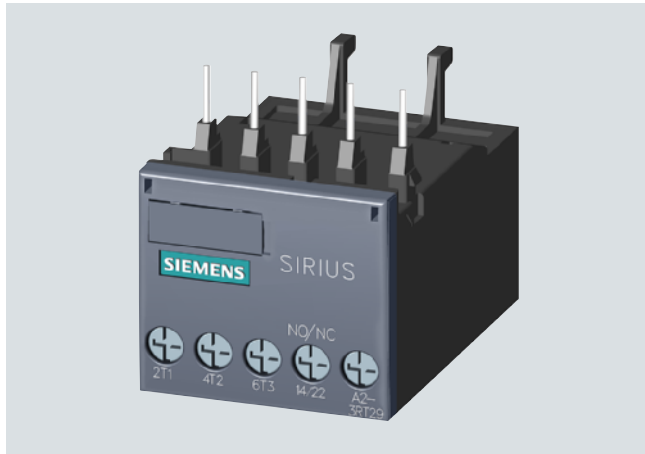
The 3RH29 24-1GP11 coupling link is mounted on the contactor coil size S0 using a coil connection module.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

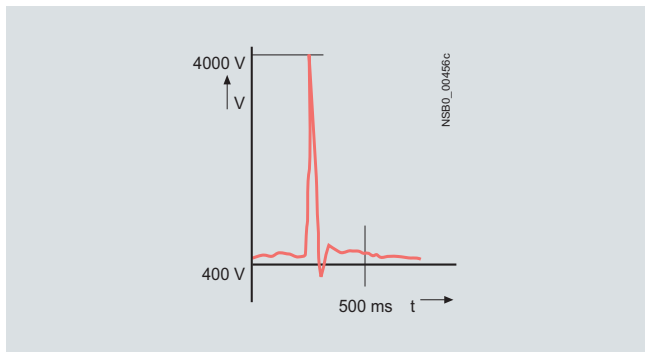
### General data

#### EMC suppression module, three-phase for size S00 contactors



EMC suppression modules

A so-called counter-e.m.f. (electromotive force) is produced when motors or various inductive loads are turned off. Voltage peaks of up to 4000 V may occur as a result, with a frequency spectrum from 1 kHz to 10 MHz and a rate of voltage variation from 0.1 to 20 V/ns.



Voltage curve without suppression

Capacitive input to various analog and digital signals makes it necessary to suppress interference in the load circuit.

#### Reducing contact arcing

The connection between the main current path and the EMC suppression module enables contact arcing, which is responsible for contact erosion and the majority of clicking noises, to be reduced; this in turn is conducive to an electromagnetically compatible design.

#### Higher operational reliability

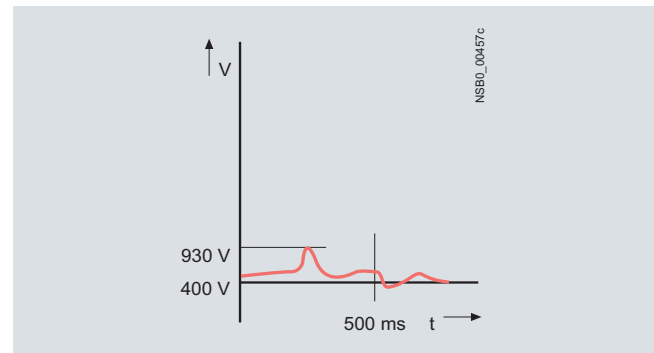
Since the EMC suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system as a whole.

#### Dispensing with fine graduations

There is no need for fine graduations within each performance class, as smaller motors inherently have a higher inductance, so that one solution for all fixed-speed operating mechanisms up to 5.5 kW is adequate.

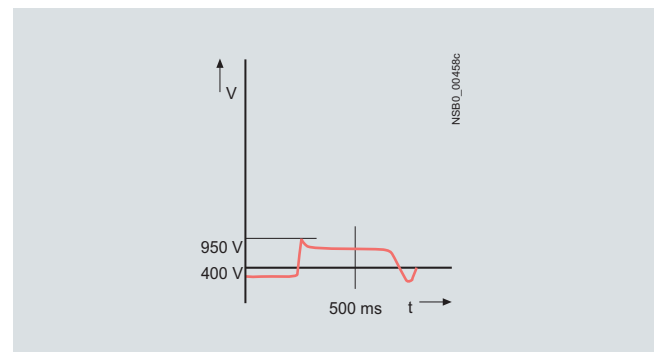
Two electrical versions are available:

- The advantages of the RC circuit lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.



Voltage curve with RC circuit

- The varistor circuit can absorb a high energy level and can also be used for frequencies ranging from 10 to 400 Hz (closed-loop controlled operating mechanisms). There is no limiting below the knee-point voltage, however.



Voltage curve with varistor circuit

#### Sealable covers

When contactors and contactor relays are used in safety-oriented applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

#### Solder pin adapters

The solder pin adapters for the contactors size S00, up to 5.5 kW or 12 A (AC-1/AC-3), are available in two versions:



- Solder pin adapter for contactors with one integrated auxiliary contact
- Solder pin adapter for contactors with mounted 4-pole auxiliary switch block

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data

#### Technical specifications

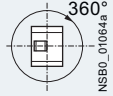
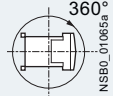
Version	Type Function Dimensions	3RA28 13 With ON-delay	3RA28 14 OFF-delay with auxiliary voltage	3RA28 15 OFF-delay without auxiliary voltage
<b>General data</b>				
<b>Rated insulation voltage <math>U_i</math></b> Pollution degree 3 Overvoltage category III	V AC	300		
<b>Operating range of excitation</b>		0.85 ... 1.1 x $U_s$ , 0.95 ... 1.05 times the rated frequency		
<b>Rated power</b>	W	1		
• Power consumption at 230 V AC, 50 Hz	VA	2		
<b>Rated operational currents <math>I_e</math></b>				
• AC-140	At 24 ... 240 V, 50 Hz A	--		
• AC-15	At 24 ... 240 V, 50 Hz A	3		
• DC-13	At 24 V A At 125 V A At 250 V A	1 0.2 0.1		
<b>Short-circuit protection</b>				
• Fuse links, gG operational class: DIAZED, type 5SB	A	4		
<b>Switching frequency</b> for load				
• With $I_e$ at 230 V AC	h <sup>-1</sup>	2500		
• With 3RT2 contactor at 230 V AC	h <sup>-1</sup>	2500		
<b>Recovery time</b>	ms	150		--
<b>Minimum ON period</b>	ms	--	35	200
<b>Residual current</b> , max.	mA	--		
<b>Voltage drop</b> , max. with conducting output	VA	--		
<b>Short-time loading capacity</b> up to 10 ms	A	--		
<b>Setting accuracy</b> , typ. with reference to upper limit of scale		±15 %		
<b>Repeat accuracy</b> , max.		±1 %		
<b>Mechanical endurance</b>	Operat- ing cycles	10 x 10 <sup>6</sup>		
<b>Permissible ambient temperature</b>				
• During operation	°C	-25 ... +60		
• During storage	°C	-40 ... +80		
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20		
<b>Shock resistance</b> Half-sine acc. to IEC 60068-2-27	g/ms	15/11		
<b>Vibration resistance</b> according to IEC 60068-2-6	Hz/mm	10 ... 55/0.35		
<b>Electromagnetic compatibility (EMC)</b>		IEC 61000-6-2, IEC 61000-6-4, IEC 61812-1, IEC 60947-1		
<b>Overvoltage protection</b>		Varistor integrated		
<b>Permissible mounting positions</b>		Any		
<b>Conductor cross-sections</b>				
<b>Connection type</b>		 <b>Screw terminals</b>		
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)		
• Terminal screws		M3 (for standard screw driver size 2 or Pozidriv 2)		
• Tightening torque	Nm	0.8 ... 1.2		
<b>Connection type</b>		 <b>Spring-type terminals</b>		
• Operating devices	mm	3.0 x 0.5		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• Finely stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)		

1) For dimensions with mounted function module see 3RT20 contactors, pages 3/17 and 3/21.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data

Version	Type Function	3RT29 16-2BE01 OFF-delay devices	3RT29 16-2BK01	3RT29 16-2BL01
<b>General data</b>				
Connectable contactor sizes Caution! Only contactors and contactor relays with DC operation can be connected.				
<ul style="list-style-type: none"> <li>DC supply</li> <li>AC supply</li> </ul>				
Type		S00 ... S3 -- 3RT20 ...-1BB4., 3RH2. ...-1BB40	S00/S0 S00/S0 3RT20 1.-1BF4, 3RT20 2.-1BF4, 3RH2. ...-1BF40	S00/S0 S00/S0 3RT20 1.- 1BM4./1BP4., 3RT20 2.- 1BM4./1BP4., 3RH2. ...-1BM40/1BP40
<b>Permissible mounting positions</b>				
<b>Mechanical endurance</b>		Operating cycles	30 million	
<b>Endurance, electrical approx.</b>		Operating cycles	>1 million	
<b>Switching frequency z</b> max. (at $T_U = 60\text{ °C}$ )		$\text{h}^{-1}$	300	
<b>Permissible ambient temperature <math>T_U</math></b>				
<ul style="list-style-type: none"> <li>During operation <ul style="list-style-type: none"> <li>Side-by-side mounting without distance</li> <li>Side-by-side mounting with 5 mm distance</li> </ul> </li> <li>During storage</li> </ul>		°C	-25 ... +50	
		°C	-25 ... +60	
		°C	-40 ... +80	
<b>Conductor cross-sections</b>			2)	
$U_{sp}$ = Coil voltage $T_{sp}$ = Coil temperature				
<b>Control</b>				
<b>Rated control supply voltage <math>U_s</math></b> Operating range		V	24 (DC) 0.9 ... 1.1 $U_s$	110 (AC/DC) 220/230 (AC/DC)
<b>Rated frequency <math>f</math></b> with AC supply		Hz $\pm 5\%$	--	50/60 50/60
<b>OFF-delay</b> <sup>1)</sup> (minimum times at $U_{sp} = 0.9 \times U_s$ , $T_{sp} = 20\text{ °C}$ )			Note: In practice the mean value is 1.5 times the minimum time.	
• S00		$t_{off} > \text{ms}$	200	100
• S0		$t_{off} > \text{ms}$	100	80
• S00		$t_{on} < \text{ms}$	10	60
• S0		$t_{on} < \text{ms}$	10	80
<b>ON-delay</b> (maximum at $U_{sp} = 0.9 \times U_s$ , $T_{sp} = 20\text{ °C}$ )			Note: The total ON-delay = Contactor make-time + $t_{on}$	
• S00		$t_{on} < \text{ms}$	10	60
• S0		$t_{on} < \text{ms}$	10	80
<b>Installed capacity C</b> 3RT19 16-2B.01		$\mu\text{F}$	2000	68
Capacitor voltage		V	35	180
<b>Power loss <math>P_v</math></b> max. approx.		W	0.4	0.5
<b>Surge suppression</b>			With varistor, integrated	

<sup>1)</sup> Doubling the delay time can be achieved by doubling the capacitance. Commercially available capacitors can be used, which can be connected to terminals C+ and Z-.

<sup>2)</sup> See 3RT20 1 contactors, page 3/17.



# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data


Version	Type Function	<b>3RT29 26-2P</b> <b>Pneumatic delay block<sup>1)</sup></b>
<b>General data</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Mechanical endurance</b>	Operating cycles	5 million
<b>Electrical endurance at <math>I_e</math></b>	Operating cycles	1 million
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-50 ... +80
<b>Rated operational currents <math>I_e</math></b> According to IEC 60947 utilization categories		
• AC-12	A	10
• AC-15/AC-14 at $U_e$	Up to 230/220 V A	6
	400/380 V A	4
	500 V A	2.5
	690/660 V A	1.5
• DC-13 at $U_e$	At 24 V A	4
	48 V A	2
	110 V A	0.7
	220 V A	0.3
	440 V A	0.15
<b>Conductor cross-sections</b>		
• Solid, stranded:	mm <sup>2</sup>	2 x 0.5 ... 1.5 <sup>2)</sup> or 2 x 0.75 ... 2.5 <sup>2)</sup>
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x 0.5 ... 1.5 <sup>2)</sup> or 2 x 0.75 ... 2.5 <sup>2)</sup>
• AWG cables	AWG	2 x 20 ... 16 <sup>2)</sup> or 2 x 18 ... 14 <sup>2)</sup>
• Tightening torque of the terminal screws	Nm	0.8 ... 1.1
<b>Time delay</b>		
• Accuracy		±10 %
<b>Ⓢ and Ⓞ rated data</b>		
• Rated voltage	V AC	600
• Switching capacity		A 600, Q 600
<sup>1)</sup> For size S0. In addition to the pneumatic delay block, no other auxiliary contacts are permitted.		<sup>2)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Version	Type Function	<b>3RT29 26-3A</b> <b>Mechanical latching block for 3RT2. 2. contactors</b>
<b>General data</b>		
<b>Standard, specification</b>		IEC 61812-1
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Mechanical endurance</b>	Operating cycles	3 million
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-50 ... +80
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20
<b>Operating range of the solenoid coil</b> At AC 50/60 Hz and DC		0.85 ... 1.1 x $U_s$
<b>Power consumption of the solenoid coils of the unlocking magnet</b> (for cold coil and 1.0 x $U_s$ ) AC and DC operation	W	Approx. 4
<b>Command duration for de-energizing</b>		
• AC operation	ms	18 ... 31
• DC operation	ms	18 ... 26
<b>Conductor cross-sections</b>		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5); 1 x 4
• AWG cables, solid	AWG	2 x 14; 1 x 12
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5); 1 x 2.5
• AWG cables, finely stranded with end sleeve	AWG	2 x 14; 1 x 12
<b>Tightening torque of the terminal screws</b>	Nm lb.in	0.8 ... 1.1 7 ... 9.5

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data

Version	Type	3RT1900-4RE01 S00, S0 connectors	3RT1916-4RD01 S00 adapters	3RT1926-4RD01 S0 adapters
Connection modules for contactors with screw terminals				
<b>General data</b>				
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (pollution degree 3)	kV	6		
<b>Rated operational voltage <math>U_e</math></b>	V	440		
<b>Rated frequency <math>f</math></b> For AC operation	Hz	50/60		
<b>Rated operational current <math>I_e</math></b> AC-3 at 400 V	A	25	20	25
<b>Mechanical endurance</b>	Operating cycles	10 million		
<b>Electrical endurance at <math>I_e</math></b>	Operating cycles	1 million		
<b>Protective separation according to IEC 60947-1</b> (pollution degree 3)	V	400		
<b>Permissible ambient temperature</b>				
• During operation	°C	-25 ... +60		
• During storage	°C	-50 ... +80		
<b>Degree of protection acc. to IEC 60529</b>		IP20		
<b>Conductor cross-sections</b>				
<b>Connection type</b>		 <b>Screw terminals</b>		
• Solid	mm <sup>2</sup>	1 x (0.5 ... 6)		
• Finely stranded without/with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 6)		
• Stranded	mm <sup>2</sup>	1 x (0.5 ... 6)		
• AWG cables, solid or stranded	AWG	1 x (20 ... 10)		
• Tightening torque	Nm	0.6 ... 0.8		
• Corresponding opening tool		Short-slot screwdriver PZ2		
<b>Ⓢ and Ⓜ rated data</b>				
Rated operational voltage $U_e$	V	480		
Rated insulation voltage $U_i$	V	600		
Uninterrupted current, at 40 °C	A	16/25	16	25
Short-circuit protection <sup>1)</sup>				
• At 600 V	kA	5		
• CLASS RK5 fuse	A	100	60	100
• Circuit breakers with overload protection acc. to UL 489	A	100	60	100
<b>Combination motor controllers type E according to UL 508</b>				
	At 480 V Type	3RV20 2		
	A	22	--	22
	kA	65	--	65
	At 600 V Type	3RV20 2		
	A	22	--	22
	kA	10	--	10

<sup>1)</sup> For more information about short-circuit values, e.g. for protection against short-circuit currents, see the [UL guide \(Order No.: A5E02118883\)](#) or [UL reports \(www.siemens.com/sirius/manuals\)](#) for the individual devices.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data

Version	Type Function	3RH29 24-1GP11 Coupling links for PLC for mounting on contactors acc. to IEC 60947/EN 60947
<b>General data</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	300
<b>Protective separation</b> between coil and contacts acc. to IEC 60947-1, Appendix N	V AC	Up to 300
<b>Degree of protection acc. to IEC 60947-1, Appendix C</b>		
• Connections		IP20
• Enclosure		IP40
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
<b>Conductor cross-section</b>		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5)
Terminal screws		M3
<b>Control side</b>		
<b>Rated control supply voltage <math>U_s</math></b>	V DC	24
<b>Operating range</b>	V DC	17 ... 30
<b>Power consumption at <math>U_s</math></b>	W	0.5
<b>Nominal current input</b>	mA	20
<b>Release voltage</b>	V	≥ 4
<b>Function display</b>		Yellow LED
<b>Protection circuit</b>		Varistor
<b>Load side</b>		
<b>Mechanical endurance</b>	Operating cycles	20 million
<b>Electrical endurance at <math>I_e</math></b>	Operating cycles	0.1 million
<b>Switching frequency</b>	h <sup>-1</sup>	5000 operating cycles
<b>Make-time</b>	ms	Approx. 7
<b>Break-time</b>	ms	Approx. 4
<b>Bounce time</b>	ms	Approx. 2
<b>Contact material</b>		AgSnO
<b>Switching voltage</b>	V AC/DC	24 ... 250
<b>Permissible residual current</b> of the electronics (with 0 signal)	mA	2.5

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### General data

#### Options

##### Auxiliary switch: Terminal designations and identification numbers for auxiliary contacts

###### Terminal designations

The terminal designations are 2-digit, e.g. 13, 14, 21, 22:

- Tens digit: Sequence digit
  - Related terminals have the same sequence digit
- Units digit: Function digit
  - 1-2 for normally closed contacts (NC)
  - 3-4 for normally open contacts (NO)

###### Identification numbers

The identification number indicates the number and type of the auxiliary contacts, e.g. 40, 31, 22, 13:

- 1st digit: number of normally open contacts (NO)
- 2nd digit: number of normally closed contacts (NC)

Examples:

- 31 = 3 NO + 1 NC
- 40 = 4 NO

##### Selection aid for mountable auxiliary switch blocks for power contactors and contactor relays

The auxiliary switch blocks of the 3RH29 series for mounting on the front and side can be used for power contactors as well as for contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables on pages 3/45 to 3/48.

Where the columns and lines intersect (blue and green in the example) you will find the identification number for the combination of basic unit (column) and auxiliary switch block (line).

Additional auxiliary switch blocks		3-pole contactors		
Order No.	Auxiliary contacts	3RT20 1 S00	3RT20 1 S00	3RT20 2 S0
	NO NC	<b>10</b>	<b>01</b>	<b>11</b>
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.

According to EN 50012<sup>1)</sup>

Auxiliary switches without NO contact					
3RH29 11-.HA01	-- 1		<b>11</b>	02	<b>12</b>
3RH29 11-.HA02	-- 2		<b>12</b>	03	<b>13</b>
3RH29 11-.HA03	-- 3		<b>13</b>	04	<b>14</b>
3RH29 11-.FA04	-- 4		<b>14</b>	--	--

Auxiliary switches with 1 NO contact					
3RH29 11-.HA10	1 --		20	11	<b>21</b>
3RH29 11-.HA11	1 1		<b>21</b>	12	<b>22</b>

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

##### Example 1

Basic unit: 3-pole 3RT20 17 motor contactor with 1 NO  
 Required: 1 NO + 4 NC (Ident. No. 14)  
 Result: 3RH29 11-.FA04 auxiliary switch block

##### Example 2

Basic unit: 3-pole 3RT20 23 motor contactor with 1 NO + 1 NC  
 Required: 1 NO + 4 NC (Ident. No. 14)  
 Result: 3RH29 11-.HA03 auxiliary switch block

	Example 1	Example 2
Type	3RT20 motor contactor, S00 with 1 NO	3RT20 motor contactor, S0 with 1 NO + 1 NC
Sequence digit	2. 3. 4. 5.	3. 4. 5. 6.
Type	Auxiliary switch with 4 NC, 3RH29 11-.FA04	Auxiliary switch with 3 NC, 3RH29 11-.HA03
Function digit	.1 .1 .1 .1 .2 .2 .2 .2	.1 .1 .1 .2 .2 .2
Combination	3RT20 motor contactor, S00 with aux. switch block	3RT20 motor contactor, S0 with aux. switch block
Terminal design.	13 21 31 41 51 14 22 32 42 52	13 21 31 41 51 14 22 32 42 52
Result	Ident. No. 14	Ident. No. 14

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

#### Selection and ordering data

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00	S0	S0	S00	S0	S0	S0	S00	3RH21	
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	40E	31E	22E
	NO NC	10	01	11	--	--	11	11			
		2, 3, 4, 5	5, 6, 7, 8	3, 4, 5, 6	1, 2, 3, 4	1, 2, 3, 4	3, 4, 5, 6	3, 4, 5, 6	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8
		<b>According to EN 50012<sup>1)</sup></b>			<b>According to EN 50012<sup>1)</sup></b>				<b>According to EN 50011<sup>1)</sup></b>		

#### Front auxiliary switches

##### Without NO contact

3RH29 11-.HA01	-- 1		11	02	12	01	01	12	12	41X	32X	23X
3RH29 11-.HA02	-- 2		12	03	13	02	02	13	--	42E	33X	24
3RH29 11-.HA03	-- 3		13	04	14	03	--	--	--	43	34	--
3RH29 11-.FA04	-- 4		14	--	--	--	--	--	--	44E	--	--

##### With 1 NO contact

3RH29 11-.HA10	1 --		20	11	21	10	10	21	21	50E	41E	32E
3RH29 11-.HA11	1 1		21	12	22	11	11	22	22	51X	42X	33X
3RH29 11-.HA12	1 2		22	13	23	12	12	23	--	52	43	34
3RH29 11-.HA13	1 3		23	14	24	13	--	24	24	53X	44X	--

##### With 2 NO contacts

3RH29 11-.HA20	2 --		30	21	31	20	20	31	31	60E	51X	42X
3RH29 11-.HA21	2 1		31	22	32	21	21	32	32	61	52	43
3RH29 11-.HA22	2 2		32	23	33	22	22	33	--	62X	53	44X
3RH29 11-.FA22	2 2		32	23	33	22	22	33	--	62X	53	44X

##### With 3 NO contacts

3RH29 11-.HA30	3 --		40	31	41	30	30	41	41	70	61	52
3RH29 11-.HA31	3 1		41	32	42	31	31	42	42	71X	62X	53X

##### With 4 NO contacts

3RH29 11-.FA40	4 --		50	41	51	40	40	51	51	80E	71X	62X
----------------	------	--	----	----	----	----	----	----	----	-----	-----	-----

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

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00		S0	S00		S0	S00		S00	
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO NC	10	01	11	--	--	11	11	40E	31E	22E
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8.	5. 6. 7. 8.	5. 6. 7. 8.
		According to EN 50005			According to EN 50005				According to EN 50005		

#### Front auxiliary switches

##### With make-before-break

<b>3RH29 11-.FB11</b>	-- 1		21	12	22	11	11	22	22	51	42	33
<b>3RH29 11-.FB22</b>	-- 2		32	23	33	22	22	33	--	62	53	44
<b>3RH29 11-.FC22</b>	-- 3		32	23	33	22	22	33	--	62	53	44

##### With complete inscription<sup>1)</sup>

<b>3RH29 11-1AA10</b>	1 --		20	11	21	10	10	21	21	50	41	32
<b>3RH29 11-1BA10</b>	1 --		20	11	21	10	10	21	21	50	41	32
<b>3RH29 11-1AA01</b>	-- 1		11	02	12	01	01	12	12	41	32	23
<b>3RH29 11-1BA01</b>	-- 1		11	02	12	01	01	12	12	41	32	23
<b>3RH29 11-1LA11</b>	1 1		21	12	22	11	11	22	22	51	42	33
<b>3RH29 11-1MA11</b>	1 1		21	12	22	11	11	22	22	51	42	33
<b>3RH29 11-1LA20</b>	2 --		30	21	31	20	20	31	31	60	51	42
<b>3RH29 11-1MA20</b>	2 --		30	21	31	20	20	31	31	60	51	42

<sup>1)</sup> For terminals from the top or bottom; see page 3/51.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00		S0	S00		S0		S00		
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO NC	10	01	11	--	--	11	11	40E	31E	22E
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8.	5. 6. 7. 8.	5. 6. 7. 8.
		According to EN 50005			According to EN 50005				According to EN 50011 <sup>1)</sup>		

#### Front auxiliary switches

With complete inscription (for contactor relays)<sup>2)</sup>

<b>3RH29 11-GA40</b>	4	--		--	--	--	--	--	--	<b>80E</b>	--	--
<b>3RH29 11-GA31</b>	3	1		--	--	--	--	--	--	<b>71E</b>	--	--
<b>3RH29 11-GA22</b>	2	2		--	--	--	--	--	--	<b>62E</b>	--	--
<b>3RH29 11-GA13</b>	1	3		--	--	--	--	--	--	<b>53E</b>	--	--
<b>3RH29 11-GA04</b>	--	4		--	--	--	--	--	--	<b>44E</b>	--	--

Complete inscription, special version

<b>3RH29 11-XA40-0MA0</b>	4	--		50	41	51	40	40	51	51	<b>80E</b>	<b>71X</b>	<b>62X</b>
<b>3RH29 11-XA31-0MA0</b>	3	1		41	32	42	31	31	42	42	<b>71E</b>	<b>62X</b>	53
<b>3RH29 11-XA22-0MA0</b>	2	2		32	23	33	22	22	33	--	<b>62E</b>	53	<b>44X</b>
<b>3RH29 11-XA04-0MA0</b>	--	4		14	--	--	--	--	--	--	<b>44E</b>	--	--

Solid-state compatible

<b>3RH29 11-NF02</b>	--	2		12	03	13	02	02	13	--	42	33	24
<b>3RH29 11-NF11</b>	1	1		21	12	22	11	11	22	22	51	42	33
<b>3RH29 11-NF20</b>	2	--		30	21	31	20	20	31	31	60	51	42

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

<sup>2)</sup> Ordering data see [Accessories for 3RH2 Contactor Relays, Chapter 5](#).



# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00		S0	S00		S0	S00			
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO NC	10	01	11	--	--	11	11	40E	31E	22E
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8.	5. 6. 7. 8.	5. 6. 7. 8.
		<b>According to EN 50012<sup>1)</sup></b>			<b>According to EN 50012<sup>1)</sup></b>				<b>According to EN 50011<sup>1)</sup></b>		

### Lateral auxiliary switches

#### For size S00

	Left	Right										
3RH29 11-.DA02	--	2		12	--	--	02	02	--	--	--	--
3RH29 11-.DA02	--	2		14	--	--	--	--	--	--	--	--
3RH29 11-.DA11	1	1		21	--	--	11	11	--	--	--	--
3RH29 11-.DA11	1	1		32	--	--	22	22	--	--	--	--
3RH29 11-.DA20	2	--		30	--	--	20	20	--	--	--	--
3RH29 11-.DA20	2	--		50	--	--	40	40	--	--	--	--
3RH29 11-.DA20	2	--		41	--	--	31	31	--	--	--	--
3RH29 11-.DA20 + 3RH29 11-.DA11	1	1		32	--	--	22	22	--	--	--	--
3RH29 11-.DA20 + 3RH29 11-.DA02	2	--		32	--	--	22	22	--	--	--	--
3RH29 11-.DA11 + 3RH29 11-.DA02	1	1		23	--	--	13	--	--	--	--	--

#### For size S0, S00

	Left	Right										
3RH29 21-.DA02	--	2		12	03	<b>13</b>	02	02	<b>13</b>	--	--	--
3RH29 21-.DA02	--	2		14	--	--	--	--	--	--	--	--
3RH29 21-.DA11	1	1		21	12	<b>22</b>	11	11	<b>22</b>	<b>22</b>	--	--
3RH29 21-.DA11	1	1		32	23	33	22	22	33	--	--	--
3RH29 21-.DA20	2	--		30	21	<b>31</b>	20	20	<b>31</b>	<b>31</b>	--	--
3RH29 21-.DA20	2	--		50	41	51	40	40	51	51	--	--

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



# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays			
Order No.	Auxiliary contacts	S00		S0	S00		S0	S00		S00		
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21			
	NO NC	10	01	11	--	--	11	11	40E	31E	22E	
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8.	5. 6. 7. 8.	5. 6. 7. 8.	
		According to EN 50012 <sup>1)</sup>			According to EN 50012 <sup>1)</sup>				According to EN 50011 <sup>1)</sup>			

#### Lateral auxiliary switches

For size S0, S00		Left	Right											
3RH29 21-DA20	2 --			41	32	42	31	31	42	42	--	--	--	
+ 3RH29 21-DA11	1 1													
3RH29 21-DA20	2 --			32	23	33	22	22	33	--	--	--	--	
+ 3RH29 21-DA02	-- 2													
3RH29 21-DA11	1 1			23	14	24	13	--	--	--	--	--	--	
+ 3RH29 21-DA02	-- 2													

For contactor relays		Left											
3RH29 21-DA02	-- 2		--	--	--	--	--	--	--	--	<b>42Z</b>	<b>33X</b>	24
3RH29 21-DA11	1 1		--	--	--	--	--	--	--	--	<b>51X</b>	<b>42X</b>	<b>33X</b>
3RH29 21-DA20	2 --		--	--	--	--	--	--	--	--	<b>60Z</b>	<b>51X</b>	<b>42X</b>

#### Solid-state compatible

For size S00		Left	Right											
3RH29 11-2DE11	1 1			21	--	--	11	11	--	--	--	--	--	
3RH29 11-2DE11	1 1			32	--	--	22	22	--	--	--	--	--	

For size S0, S00		Left	Right											
3RH29 21-2DE11	1 1			21	12	22	11	11	22	22	--	--	--	
3RH29 21-2DE11	1 1			32	23	33	22	22	33	--	--	--	--	

For contactor relays		Left											
3RH29 21-DE11	1 1		--	--	--	--	--	--	--	--	<b>51X</b>	<b>42X</b>	<b>33X</b>

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

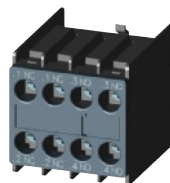


# Power Contactors for Switching Motors

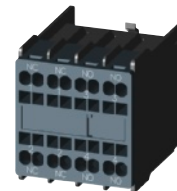
## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

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



3RH29 11-1HA22



3RH29 11-2HA22

For contactors / contactor relays <sup>1)</sup>	Auxiliary contacts Version	DT	Screw terminals		DT	Spring-type terminals	
			Order No.	Price per PU		Order No.	Price per PU
Type	NO NC						

#### Auxiliary switch blocks for snapping onto the front

##### Sizes S00 and S0<sup>2)</sup>

3RT2. 1., 3RT2. 2.	--	1		▶	<b>3RH29 11-1HA01</b>	▶	<b>3RH29 11-2HA01</b>
3RH21 .., 3RH24 ..	--	2		▶	<b>3RH29 11-1HA02</b>	▶	<b>3RH29 11-2HA02</b>
	--	3		B	<b>3RH29 11-1HA03</b>	B	<b>3RH29 11-2HA03</b>
	1	--		B	<b>3RH29 11-1HA10</b>	B	<b>3RH29 11-2HA10</b>
	1	1		▶	<b>3RH29 11-1HA11</b>	▶	<b>3RH29 11-2HA11</b>
	1	2		▶	<b>3RH29 11-1HA12</b>	▶	<b>3RH29 11-2HA12</b>
	1	3		▶	<b>3RH29 11-1HA13</b>	▶	<b>3RH29 11-2HA13</b>
	2	--		▶	<b>3RH29 11-1HA20</b>	▶	<b>3RH29 11-2HA20</b>
	2	1		B	<b>3RH29 11-1HA21</b>	B	<b>3RH29 11-2HA21</b>
	2	2		▶	<b>3RH29 11-1HA22</b>	▶	<b>3RH29 11-2HA22</b>
	3	--		B	<b>3RH29 11-1HA30</b>	B	<b>3RH29 11-2HA30</b>
	3	1		▶	<b>3RH29 11-1HA31</b>	▶	<b>3RH29 11-2HA31</b>

<sup>1)</sup> For detailed information on use see page 3/45.

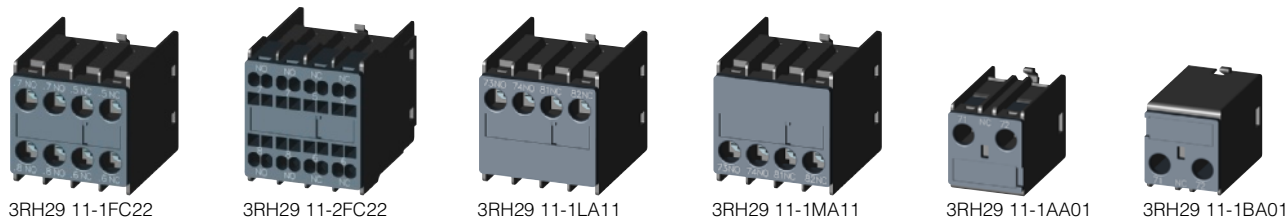
<sup>2)</sup> The 3RH29 auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the "1" must be replaced with "4", e.g. 3RH29 11-1HA22 → 3RH29 11-4HA22.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

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



For contactors / contactor relays <sup>1)</sup>	Connections Position	Auxiliary contacts Version	DT	Screw terminals	DT	Spring-type terminals
Type		 NO NC NO NC		 Order No. Price per PU		 Order No. Price per PU

#### Auxiliary switch blocks for snapping onto the front

##### Sizes S00 and S0

3RT2. 1., 3RT2. 2. 3RH21 ... 3RH24 ..	4	--	--	--		▶ <b>3RH29 11-1FA40</b>	▶ <b>3RH29 11-2FA40</b>
	2	2	--	--		B <b>3RH29 11-1FA22</b>	B <b>3RH29 11-2FA22</b>
	--	4	--	--		B <b>3RH29 11-1FA04</b>	B <b>3RH29 11-2FA04</b>
	--	--	1	1		▶ <b>3RH29 11-1FB11</b>	▶ <b>3RH29 11-2FB11</b>
	1	1	1	1		▶ <b>3RH29 11-1FB22</b>	▶ <b>3RH29 11-2FB22</b>
	--	--	2	2		▶ <b>3RH29 11-1FC22</b>	▶ <b>3RH29 11-2FC22</b>

#### 1- and 2-pole auxiliary switch blocks, cable entry from above or below

3RT2. 1., 3RT2. 2. 3RH21 ... 3RH24 ..	Top	1	--	--	--	▶ <b>3RH29 11-1AA10</b>	--
	Bottom	1	--	--	--	▶ <b>3RH29 11-1BA10</b>	--
	Top	--	1	--	--	▶ <b>3RH29 11-1AA01</b>	--
	Bottom	--	1	--	--	▶ <b>3RH29 11-1BA01</b>	--
	Top	1	1	--	--	▶ <b>3RH29 11-1LA11</b>	--
	Bottom	1	1	--	--	▶ <b>3RH29 11-1MA11</b>	--
	Top	2	--	--	--	▶ <b>3RH29 11-1LA20</b>	--
	Bottom	2	--	--	--	▶ <b>3RH29 11-1MA20</b>	--

<sup>1)</sup> For detailed information on use see pages 3/45 and 3/46.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

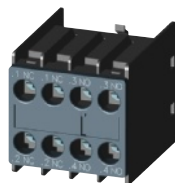
PU (UNIT, SET, M) = 1  
 PS\* = 1 unit  
 PG = 41A



3RH29 11-1DA02



3RH29 11-2DA02



3RH29 11-1XA22-0MA0



3RH29 11-2XA22-0MA0

For contactors / contactor relays	Auxiliary contacts Version	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>
Type	NO NC		Order No.	Price per PU	Order No.
					Price per PU

### Auxiliary switch blocks for snapping onto the front

#### Sizes S00 and S0

3RT2. 1. 1)	4	--		B	<b>3RH29 11-1XA40-0MA0</b>	B	<b>3RH29 11-2XA40-0MA0</b>
3RT2. 2. 1)							
3RH21 ... 1)	3	1		B	<b>3RH29 11-1XA31-0MA0</b>	B	<b>3RH29 11-2XA31-0MA0</b>
3RH24 ... 1)							
	2	2		B	<b>3RH29 11-1XA22-0MA0</b>	B	<b>3RH29 11-2XA22-0MA0</b>
	--	4		B	<b>3RH29 11-1XA04-0MA0</b>	B	<b>3RH29 11-2XA04-0MA0</b>

### Laterally mountable auxiliary switch blocks, mounting on the right and/or on the left

#### Size S00

			Left	Right				
3RT2. 1. 2)	--	2			A	<b>3RH29 11-1DA02</b>	A	<b>3RH29 11-2DA02</b>
	1	1			A	<b>3RH29 11-1DA11</b>	A	<b>3RH29 11-2DA11</b>
	2	--			A	<b>3RH29 11-1DA20</b>	A	<b>3RH29 11-2DA20</b>

#### Size S0

3RT2. 2. 2 <sup>3)</sup>	--	2			A	<b>3RH29 21-1DA02</b>	A	<b>3RH29 21-2DA02</b>
	1	1			A	<b>3RH29 21-1DA11</b>	A	<b>3RH29 21-2DA11</b>
	2	--			A	<b>3RH29 21-1DA20</b>	A	<b>3RH29 21-2DA20</b>

1) For detailed information on use see page 3/47.

2) For detailed information on use see pages 3/48 and 3/49.

3) With 3RT23 2., 3RT25. 2. mountable only on the right.

# Power Contactors for Switching Motors

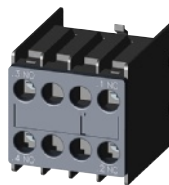
## Accessories for 3RT2 Contactors

### Auxiliary switch blocks

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



3RH29 11-2DE11



3RH29 11-1NF..



3RH29 11-2NF..

For contactors / contactor relays <sup>1)</sup>	Contacts Version   Type NO NC	DT	<b>Screw terminals</b>  Order No.      Price per PU	DT	<b>Spring-type terminals</b>  Order No.      Price per PU
--	--	----	--	----	--

**Solid-state compatible auxiliary switch blocks**

- For operation in dusty atmospheres
- For solid-state circuits with rated operational currents  $I_{th}$ /AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V
- Hard gold-plated contacts
- Mirror contacts acc. to IEC 60947-4-1, Appendix F, for auxiliary switches for snapping onto the front with contactors of size S0 only and for auxiliary switches for mounting on the side

**Auxiliary switch blocks for snapping onto the front<sup>2)</sup>**

Sizes S00 and S0<sup>3)</sup>

3RT2.. 1., 3RT2.. 2. 3RH21	-- 2   1 1  2 --		A	<b>3RH29 11-1NF02</b>  ▶ <b>3RH29 11-1NF11</b>  ▶ <b>3RH29 11-1NF20</b>	A	<b>3RH29 11-2NF02</b>  ▶ <b>3RH29 11-2NF11</b>  ▶ <b>3RH29 11-2NF20</b>
----------------------------------	---------------------------------	--	---	---	---	---

**Laterally mountable auxiliary switch blocks,  
mounting on the right and/or on the left**

<b>Size S00</b>	3RT2.. 1.	1 1	Left      Right 	--	A	<b>3RH29 11-2DE11</b>
<b>Size S0</b>	3RT2.. 2.	1 1	Left      Right 	--	A	<b>3RH29 21-2DE11</b>

<sup>1)</sup> For detailed information on use see pages 3/47 and 3/49.  
<sup>2)</sup> The 3RH29 11-.NF.. auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the "1" must be replaced with "4", e.g.: 3RH29 11-1NF11 → 3RH2911-4NF11  
<sup>3)</sup> NC contacts are mirror contacts when combined with contactors of size S0.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Auxiliary switch blocks, delayed

#### Selection and ordering data

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



3RA28 13-1AW10



3RA28 13-2AW10

For contactors	Rated control supply voltage $U_s$ <sup>1)</sup>	Time setting range $t$	Output / auxiliary contacts	DT	Screw terminals	DT	Spring-type terminals
Type	V	s			Order No.	Price per PU	Order No.

Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5

#### Sizes S00 and S0

The electrical connection between the solid-state time-delay auxiliary switch and the contactor underneath is established automatically when it is snapped on and locked.

#### ON-delay

Varistor integrated

3RT2... 3RH21 <sup>2)</sup> 3RH24	24 ... 240 AC/DC	0.05 ... 100, (1, 10, 100 selectable)	1 CO 1 NO + 1 NC	A A	<b>3RA28 13-1AW10</b> <b>3RA28 13-1FW10</b>	A A	<b>3RA28 13-2AW10</b> <b>3RA28 13-2FW10</b>
<b>OFF-delay with auxiliary voltage</b> Varistor integrated							
3RT2... 3RH21 <sup>2)</sup> 3RH24	24 ... 240 AC/DC	0.05 ... 100, (1, 10, 100 selectable)	1 CO 1 NO + 1 NC	A A	<b>3RA28 14-1AW10</b> <b>3RA28 14-1FW10</b>	A A	<b>3RA28 14-2AW10</b> <b>3RA28 14-2FW10</b>
<b>OFF-delay without auxiliary voltage<sup>3)</sup></b> Varistor integrated							
3RT2... 3RH21 <sup>2)</sup> 3RH24	24 ... 240 AC/DC	0.05 ... 100, (1, 10, 100 selectable)	1 CO 1 NO + 1 NC	A A	<b>3RA28 15-1AW10</b> <b>3RA28 15-1FW10</b>	A A	<b>3RA28 15-2AW10</b> <b>3RA28 15-2FW10</b>

1) AC voltage values apply for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling contactors.

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

For technical specifications see page 3/39.

#### Note:

When using the solid-state time-delay auxiliary switches, no other auxiliary switches are allowed to be connected to the basic units.

#### Technical specifications



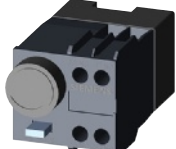
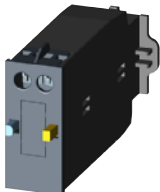
Function	Function charts	
<b>Solid-state time-delay auxiliary switches</b>	<b>With 1 CO contact</b>	<b>With 1 NO contact + 1 NC contact</b>
ON-delay (varistor integrated)	3RA28 13-.AW10 A1/A2  NSBD_02103 15/18  NSBD_02103 15/16  NSBD_02103	3RA28 13-.FW10 A1/A2  NSBD_02104 27/28  NSBD_02104 35/36  NSBD_02104
OFF-delay with auxiliary voltage (varistor integrated)	3RA28 14-.AW10 A3/A2  NSBD_02100 B1/A2  NSBD_02100 15/18  NSBD_02100 15/16  NSBD_02100	3RA28 14-.FW10 A3/A2  NSEL_02073 B1/A2  NSEL_02073 27/28  NSEL_02073 35/36  NSEL_02073
OFF-delay without auxiliary voltage (varistor integrated)	3RA28 15-.AW10 A1/A2  NSBD_02101 15/18  NSBD_02101 15/16  NSBD_02101	3RA28 15-.FW10 A1/A2  NSBD_02102 27/28  NSBD_02102 35/36  NSBD_02102

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Delay and latching blocks

#### Selection and ordering data

For contactors	Rated control supply voltage $U_s$	Time setting range $t$	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG	
Type	V	s		Order No.	Price per PU			
<b>OFF-delay devices</b>								
<b>Sizes S00 and S0</b>								
<b>For contactors with DC operation</b>								
<b>Non-adjustable delay time</b>								
	3RT2. 1, 3RT2. 2, 3RH2. ...-1BF40	110 AC/DC	S00: > 0.1 S0: > 0.08	D	<b>3RT29 16-2BK01</b>	1	1 unit 41B	
	3RT2. 1, 3RT2. 2, 3RH2. ...-1BM40	220/230 AC/DC	S00: > 0.5 S0: > 0.3	D	<b>3RT29 16-2BL01</b>	1	1 unit 41B	
	3RT2. 1, 3RT2. 2, 3RH2. ...-1BB40	24 DC	S00: > 0.2 S0: > 0.1	A	<b>3RT29 16-2BE01</b>	1	1 unit 41B	
	3RT29 16-2B.01							
	<b>Pneumatic delay blocks, terminal designation according to EN 50005</b>							
	<b>Size S0</b>							
<b>For snapping onto the front of contactors<sup>1)2)</sup></b>								
<b>Auxiliary contacts 1 NO and 1 NC</b>								
<b>• With ON-delay</b>								
	3RT2. 2	--	0.1 ... 30 1 ... 60	C	<b>3RT29 26-2PA01</b>	1	1 unit 41B	
				C	<b>3RT29 26-2PA11</b>	1	1 unit 41B	
<b>• OFF-delay</b>								
3RT29 26-2P...	3RT2. 2	--	0.1 ... 30 1 ... 60	C	<b>3RT29 26-2PR01</b>	1	1 unit 41B	
				C	<b>3RT29 26-2PR11</b>	1	1 unit 41B	
<b>Mechanical latching blocks</b>								
<b>Size S0</b>								
<b>For snapping onto the front of contactors</b>								
<b>The contactor remains in the energized state after a voltage failure</b>								
	3RT2. 2	24 AC/DC	--	B	<b>3RT29 26-3AB31</b>	1	1 unit 41B	
		110 AC/DC	--	B	<b>3RT29 26-3AF31</b>	1	1 unit 41B	
		230 AC/DC	--	B	<b>3RT29 26-3AP31</b>	1	1 unit 41B	
3RT29 26-3A.31								

For technical specifications see pages 3/40 and 3/41.

<sup>1)</sup> In addition to these, no other auxiliary contacts are permitted.

<sup>2)</sup> Versions for furnaces according to DIN VDE 0116 on request.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

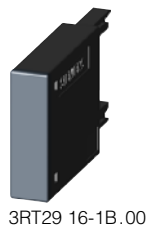
### Surge suppressors

#### Selection and ordering data

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
		AC operation	DC operation						
Type		V AC	V DC						

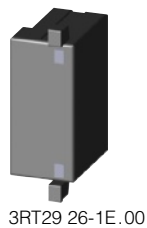
#### Surge suppressors without LED (also for spring-type terminals)

##### Size S00



For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RT2.1, 3RH2.	<b>Varistor</b>	24 ... 48	24 ... 70	▶	<b>3RT29 16-1BB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT29 16-1BC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT29 16-1BD00</b>	1	1 unit	41B	
		240 ... 400	--	▶	<b>3RT29 16-1BE00</b>	1	1 unit	41B	
		400 ... 600	--	A	<b>3RT29 16-1BF00</b>	1	1 unit	41B	
3RT2.1, 3RH2.	<b>RC elements</b>	24 ... 48	24 ... 70	▶	<b>3RT29 16-1CB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT29 16-1CC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT29 16-1CD00</b>	1	1 unit	41B	
		240 ... 400	--	A	<b>3RT29 16-1CE00</b>	1	1 unit	41B	
		400 ... 600	--	A	<b>3RT29 16-1CF00</b>	1	1 unit	41B	
3RT2.1, 3RH2.	<b>Noise suppression diodes</b>	--	12 ... 250	▶	<b>3RT29 16-1DG00</b>	1	1 unit	41B	
3RT2.1, 3RH2.	<b>Diode assemblies</b> (diode and Zener diode) for DC operation	--	12 ... 250	▶	<b>3RT29 16-1EH00</b>	1	1 unit	41B	

##### Size S0



For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)									
3RT2.2	<b>Varistor</b>	24 ... 48	24 ... 70	▶	<b>3RT29 26-1BB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT29 26-1BC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT29 26-1BD00</b>	1	1 unit	41B	
		240 ... 400	--	▶	<b>3RT29 26-1BE00</b>	1	1 unit	41B	
		400 ... 600	--	A	<b>3RT29 26-1BF00</b>	1	1 unit	41B	
3RT2.2	<b>RC elements</b>	24 ... 48	24 ... 70	▶	<b>3RT29 26-1CB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT29 26-1CC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT29 26-1CD00</b>	1	1 unit	41B	
		240 ... 400	--	A	<b>3RT29 26-1CE00</b>	1	1 unit	41B	
		400 ... 600	--	A	<b>3RT29 26-1CF00</b>	1	1 unit	41B	
3RT2.2	<b>Diode assembly</b> for DC operation	--	24	▶	<b>3RT29 26-1ER00</b>	1	1 unit	41B	
		--	30 ... 250	▶	<b>3RT29 26-1ES00</b>	1	1 unit	41B	

<sup>1)</sup> Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

<sup>2)</sup> For packs of 10 or 5 units "-Z" and order code "X90" must be added to the Order No.

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>		Power consumption $P$ of the LED at $U_s$	DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
		AC operation	DC operation							
Type		V AC	V DC	mW						

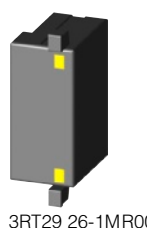
#### Surge suppressors with LED (also for spring-type terminals)

##### Size S00



For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RT2.1, 3RH2.	<b>Varistor</b>	24 ... 48	12 ... 24	10 ... 120	▶	<b>3RT29 16-1JJ00</b>	1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	<b>3RT29 16-1JK00</b>	1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	<b>3RT29 16-1JL00</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	A	<b>3RT29 16-1JP00</b>	1	1 unit	41B
3RT2.1, 3RH2.	<b>Noise suppression diodes</b>	--	24 ... 70	20 ... 470	▶	<b>3RT29 16-1LM00</b>	1	1 unit	41B
		--	50 ... 150	50 ... 700	A	<b>3RT29 16-1LN00</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	<b>3RT29 16-1LP00</b>	1	1 unit	41B

##### Size S0



For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)									
3RT2.2	<b>Varistor</b>	24 ... 48	12 ... 24	10 ... 120	▶	<b>3RT29 26-1JJ00</b>	1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	<b>3RT29 26-1JK00</b>	1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	<b>3RT29 26-1JL00</b>	1	1 unit	41B
3RT2.2	<b>Diode assembly</b>	--	24	20 ... 470	▶	<b>3RT29 26-1MR00</b>	1	1 unit	41B

<sup>1)</sup> Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

<sup>2)</sup> For packs of 10 or 5 units "-Z" and order code "X90" must be added to the Order No.









# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

Other function blocks

## Selection and ordering data

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
<b>EMC suppression modules; 3-phase, up to 7.5 kW</b>							
<b>Size S00 (for contactors with AC or DC operation)<sup>1)</sup></b>							
	3RT20 1	<b>RC elements</b> (3 x 220 Ω/0.22 μF) Up to 400 V Up to 575 V Up to 690 V	▶ A C	<b>Screw terminals</b> 			
				<b>3RT29 16-1PA1</b>	1	1 unit	41B
				<b>3RT29 16-1PA2</b>	1	1 unit	41B
	3RT20 1	<b>Varistor</b> Up to 400 V Up to 575 V Up to 690 V	A A C	<b>3RT29 16-1PB1</b>	1	1 unit	41B
				<b>3RT29 16-1PB2</b>	1	1 unit	41B
				<b>3RT29 16-1PB3</b>	1	1 unit	41B
<b>Additional load modules</b>							
<b>Size S00</b>							
	3RT2. 1, 3RH2.	<b>For plugging onto the front side of the contactors with or without auxiliary switch blocks<sup>2)</sup></b> ▶	▶	<b>3RT29 16-1GA00</b>	1	1 unit	41B
	3RT29 16-1GA00	For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor. Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x U <sub>s</sub>					
<b>LED module for displaying contactor operation</b>							
<b>Size S0</b>							
	3RT2. 2	<b>For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch.</b> ▶	▶	<b>3RT29 26-1QT00</b>	1	5 units	41B
	3RT29 26-1QT00	The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection.					
<b>Coupling links for control by PLC</b>							
<b>Size S0</b>							
	3RT2. 2	<b>For mounting onto the coil terminals of the contactors</b> ▶	▶	<b>3RH29 24-1GP11</b>	1	1 unit	41A
	3RH29 24-1GP11	With LED for indicating switching state. With integrated varistor for damping opening surges. Operating range 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA Rated operational current I <sub>0</sub> : • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A					
<b>Control kit</b>							
<b>Size S00</b>							
	3RT2. 1, 3RH2.	<b>For manual operation of the contactor contacts for start-up and service<sup>3)</sup></b> ▶	▶	<b>3RT29 16-4MC00</b>	1	5 units	41B
	3RT29 16-4MC00						

For technical specifications for coupling links see page 3/43.

1) See also description on page 3/38.

2) For packs of 10 units, the Order No. must be supplemented with "-Z" and the order code "X90".





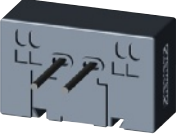


3) See also Chapter 8, "Load Feeders and Motor Starters for Operation in the Control Cabinet" → "ET 200S Motor Starters" → "Accessories", Order No. 3RK1 903-0CA00.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Terminals, covers, adapters, connectors

#### Selection and ordering data

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Sealable covers</b>							
<b>Sizes S00 and S0</b>							
	3RT2 . 1, 3RT2 . 2, 3RH2. 1)	Sealable covers for preventing manual operation	A	<b>3RT29 16-4MA10</b>	1	5 units	41B
3RT29 16-4MA10							
<b>Connection modules for contactors with screw terminals</b>							
<b>Sizes S00 and S0</b>							
	3RT2 . 1, 3RH2.	<b>Adapters for contactors</b> Ambient temperature $T_{u \max} = 60 \text{ °C}$ Size S00, rated operational current $I_e$ at AC-3/400 V: 20 A	C	<b>3RT19 16-4RD01</b>	1	1 unit	41B
3RT19 26-4RD01	3RT2 . 2		C	<b>3RT19 26-4RD01</b>	1	1 unit	41B
	3RT2 . 1, 3RT2 . 2, 3RH2.	<b>Plugs for contactors</b> Size S00, S0	B	<b>3RT19 00-4RE01</b>	1	1 unit	41B
3RT19 00-4RE01							
<b>Coil connection modules</b>							
<b>Size S0</b>							
	3RT2 . 2	Connection from top	A	<b>3RT29 26-4RA11</b>	<b>4.10</b>	1	1 unit 41B
		Connection from below	A	<b>3RT29 26-4RB11</b>	<b>4.10</b>	1	1 unit 41B
		Connection diagonally	A	<b>3RT29 26-4RC11</b>	<b>6.40</b>	1	1 unit 41B
3RT29 26-4RA11							
	3RT2 . 2	Connection from top	▶	<b>3RT29 26-4RA12</b>	<b>4.40</b>	1	1 unit 41B
		Connection from below	A	<b>3RT29 26-4RB12</b>	<b>4.40</b>	1	1 unit 41B
3RT29 26-4RA12							
<b>Covers for contactors with ring terminal lug connection</b>							
<b>Size S00</b>							
	3RT2 . 1, 3RH2	<b>Covers for ring terminal lug connections</b> Single covers	B	<b>3RT29 16-4EA13</b>		1	10 units 41B
3RT29 16-4EA13							
	3RT2 . 2	<b>Covers for ring terminal lug connections</b> Set for one device, comprising 4 single covers	B	<b>3RT29 26-4EB13</b>		1	1 unit 41B
3RT29 26-4EB13							




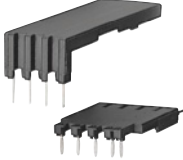



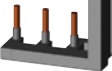
For technical specifications for connection modules see [page 3/42](#).

1) Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors


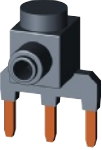
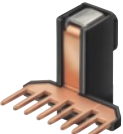


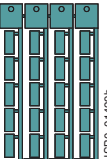
### Terminals, covers, adapters, connectors

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
<b>Screw adapters for fixing the contactors</b>							
<b>Size S0</b>							
	3RT2. 2		Screw adapters for easier screw fixing 2 units required per contactor (1 pack contains 10 sets for 10 contactors)	C	<b>3RT19 26-4P</b>	1 10 units	41B
NSB0_01470 3RT19 26-4P							
<b>Solder pin adapters for contactors up to 5.5 kW / 12 A</b>							
<b>Size S00, up to 5.5 kW</b>							
	3RT2. 1, 3RH21		Assembly kit for soldering contactors onto a printed circuit board. For 1 contactor, 1 set is required.	A	<b>3RT19 16-4KA1</b>	1 4 units	41B
							
3RT19 16-4KA1							
<b>Solder pin adapters for contactors up to 5.5 kW / 12 A with mounted 4-pole auxiliary switch block</b>							
<b>Size S00, up to 5.5 kW</b>							
	3RT2. 1, 3RH21		Assembly kit for soldering contactors with an auxiliary switch block onto a printed circuit board. For 1 contactor, 1 set is required.	B	<b>3RT19 16-4KA2</b>	1 4 units	41B
							
							
3RT19 16-4KA2							
<b>Safety main current connectors for 2 contactors</b>							
<b>Sizes S00 and S0</b>							
	3RT2. 1 3RT2. 2		For series connection of 2 contactors	A	<b>3RA29 16-1A</b>	1 1 unit	41B
							
3RA29 26-1A							
A							
A							
						1 1 unit	41B

# Power Contactors for Switching Motors

## Accessories for 3RT2 Contactors

### Terminals, covers, adapters, connectors

For contactors	Max. conductor cross-sections	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	mm <sup>2</sup>						
<b>Links for paralleling</b>							
<b>Sizes S00 and S0</b>							
<b>3-pole, with connection terminal<sup>1)2)</sup></b>							
	3RT20 1	25, stranded	▶ <b>3RT19 16-4BB31</b>		1	1 unit	41B
	3RT20 2	50, stranded	A <b>3RT29 26-4BB31</b>		1	1 unit	41B
							
	3RT23 1, 3RT25 1	25, stranded	C <b>3RT19 16-4BB41</b>		1	1 unit	41B
1) The links for paralleling can be reduced by one pole. 2) With sizes S00 and S0 the links for paralleling are insulated.							
<b>Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm<sup>2</sup></b>							
<b>Spring-type terminals</b>							
	<b>Insulation stop strip</b> can be inserted in cable entry of the spring-type terminal (2 strips per contactor required)		B <b>3RT29 16-4JA02</b>		1	20 units	41B
	<ul style="list-style-type: none"> <li>For basic devices S00 (3RT20 1. or 3RH2.), removable individually</li> <li>For auxiliary and control current on basic devices size S0 (3RT20 2.) and for mountable 3RH29 auxiliary switches, removable in pairs</li> </ul>		B <b>3RT19 16-4JA02</b>		1	20 units	41B
<b>Tools for opening spring-type terminals</b>							
	<b>Screwdrivers</b> for all SIRIUS devices with spring-type terminals		A <b>3RA29 08-1A</b>		1	1 unit	41B
	Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated						
<b>Blank labels</b>							
	<b>Unit labeling plates<sup>1)</sup></b> for SIRIUS devices		D <b>3RT29 00-1SB20</b>		100	340 units	41B
	<ul style="list-style-type: none"> <li>20 mm x 7 mm, titanium gray</li> <li>20 mm x 7 mm, pastel turquoise</li> </ul>		D <b>3RT19 00-1SB20</b>		100	340 units	41B
<b>System Manuals "Industrial Controls - SIRIUS Innovations"</b>							
	English		C <b>3ZX1012-ORA01-1AC1</b>		1	1 unit	401
	French		C <b>3ZX1012-ORA01-1AD1</b>		1	1 unit	401
	German		C <b>3ZX1012-ORA01-1AB1</b>		1	1 unit	401
	Spanish		C <b>3ZX1012-ORA01-1AE1</b>		1	1 unit	401

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

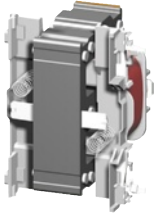
# Power Contactors for Switching Motors

## Spare Parts for 3RT2 Contactors

Solenoid coils

### Selection and ordering data

For screw, spring-type and ring terminal lug connection



3RT29 24-5A.01

For contactors		Rated control supply voltage $U_s$			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type	50 Hz V	50/60 Hz V	60 Hz V						
<b>Solenoid coils · AC operation</b>										
<b>S0</b>	3RT20 23, 3RT20 24, 3RT20 25	24	--	--	B	3RT29 24-5AB01		1	1 unit	41B
		42	--	--	B	3RT29 24-5AD01		1	1 unit	41B
		48	--	--	B	3RT29 24-5AH01		1	1 unit	41B
		110	--	--	B	3RT29 24-5AF01		1	1 unit	41B
		230	--	--	B	3RT29 24-5AP01		1	1 unit	41B
		400	--	--	B	3RT29 24-5AV01		1	1 unit	41B
		--	24	--	B	3RT29 24-5AC21		1	1 unit	41B
		--	42	--	B	3RT29 24-5AD21		1	1 unit	41B
		--	48	--	B	3RT29 24-5AH21		1	1 unit	41B
		--	110	--	B	3RT29 24-5AG21		1	1 unit	41B
		--	220	--	B	3RT29 24-5AN21		1	1 unit	41B
		--	230	--	B	3RT29 24-5AL21		1	1 unit	41B
		110	--	120	B	3RT29 24-5AK61		1	1 unit	41B
		220	--	240	B	3RT29 24-5AP61		1	1 unit	41B
		--	100	110	B	3RT29 24-5AG61		1	1 unit	41B
		--	200	220	B	3RT29 24-5AN61		1	1 unit	41B
	--	400	440	B	3RT29 24-5AR61		1	1 unit	41B	
	<b>S0</b>	3RT20 26, 3RT20 27, 3RT20 28	24	--	--	B	3RT29 26-5AB01		1	1 unit
42			--	--	B	3RT29 26-5AD01		1	1 unit	41B
		48	--	--	B	3RT29 26-5AH01		1	1 unit	41B
		110	--	--	B	3RT29 26-5AF01		1	1 unit	41B
3RT23 25, 3RT23 26, 3RT23 27		230	--	--	B	3RT29 26-5AP01		1	1 unit	41B
		400	--	--	B	3RT29 26-5AV01		1	1 unit	41B
3RT25 26		--	24	--	B	3RT29 26-5AC21		1	1 unit	41B
		--	42	--	B	3RT29 26-5AD21		1	1 unit	41B
		--	48	--	B	3RT29 26-5AH21		1	1 unit	41B
		--	110	--	B	3RT29 26-5AG21		1	1 unit	41B
		--	220	--	B	3RT29 26-5AN21		1	1 unit	41B
		--	230	--	B	3RT29 26-5AL21		1	1 unit	41B
		110	--	120	B	3RT29 26-5AK61		1	1 unit	41B
		220	--	240	B	3RT29 26-5AP61		1	1 unit	41B
		--	100	110	B	3RT29 26-5AG61		1	1 unit	41B
		--	200	220	B	3RT29 26-5AN61		1	1 unit	41B
--		400	440	B	3RT29 26-5AR61		1	1 unit	41B	

# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

### Overview

#### Standards

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

The 3RT1 contactors are climate-proof. They are finger-safe according to EN 50274.

#### Connection methods

The 3RT1 contactors are available with screw terminals (box terminals) or spring-type terminals.

The size S3 contactors have removable box terminals for the main conductor connections. This permits connection of ring terminal lugs or busbars.

#### Contact reliability

If voltages  $\leq 110$  V and currents  $\leq 100$  mA are to be switched, the auxiliary contacts of the 3RT1 contactor or 3RH11 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are particularly suitable for solid-state circuits with currents  $\geq 1$  mA at a voltage  $\geq 17$  V.

#### Short-circuit protection of the contactors

Short-circuit protection of contactors without overload relay see "Technical specifications", pages 3/68 and 3/72. For short-circuit protection of the contactors with overload relay see Configuration Manual "SIRIUS Configuration - Selection data for Fuseless Load Feeders".

To assemble fuseless motor feeders you must select combinations of motor starter protector and contactor as explained in "Fuseless Load Feeders".

#### Motor protection

3RU11 thermal overload relays or 3RB20/3RB21 solid-state overload relays can be fitted to the 3RT1 contactors for protection against overload. The overload relays must be ordered separately.

#### Ratings of induction motors

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

#### Surge suppression

3RT1 contactors can be retrofitted with RC elements, varistors, diodes or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

#### Note:

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

#### Sizes S00 and S0, up to 11 kW

For 3RT1 devices in these sizes see Catalog IC 10 AO · 2012.

#### Sizes S2 and S3, up to 45 kW

##### Auxiliary contact complement

The basic units of sizes S2 and S3 are delivered only with the main contacts and can be extended with auxiliary switch blocks.

For sizes S2 and S3, complete units with mounted auxiliary switch block 2 NO + 2 NC are available (terminal designation according to EN 50012); the auxiliary switch block can be removed (for more information see Accessories on page 3/91).

#### Note:

Auxiliary contact complement according to SUVA: Contactors with permanently mounted auxiliary switch block 2 NO + 2 NC are available for safety applications according to SUVA.

#### Surge suppression

For size S2 and S3 contactors, varistors and RC elements can be snapped on either on the top or directly below the coil terminals. Diode assemblies are available in 2 different versions on account of their polarity. Depending on the application they can be connected either only at the bottom (assembly with motor starter protector) or only at the top (assembly with overload relay).

The plug-in direction of the diodes and diode assemblies is specified by coding.

#### Exceptions:

3RT19 26-1T.00 and 3RT19 36-1T.00,  
in this case the plug-in direction is marked with "+" and "-".

#### Sizes S6 to S12, > 45 to 250 kW

- 3RT10, contactors for switching motors,
- 3RT12, vacuum contactors for switching motors,
- 3RT14, contactors for AC-1 applications (see Chapter 4).

#### Operating mechanism types

Two types of solenoid operation are available:

- Conventional operating mechanism
- Solid-state operating mechanism (with 3 performance levels)

#### Control supply voltage

The contactors have a UC operating mechanism which can be operated with AC (40 to 60 Hz) as well as with DC.

#### Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

#### Auxiliary contact complement

Contactors sizes S6 to S12 are supplied with mounted auxiliary switch blocks.

For detailed information about the fitting of auxiliary switches see "Accessories", page 3/91.

- 3RT10 and 3RT14 contactors:  
Auxiliary contacts mounted laterally and on front
- 3RT12 vacuum contactors:  
Auxiliary contacts mounted laterally

#### Contactors with conventional operating mechanism

##### Version 3RT1...-A:

The solenoid coil is switched directly on and off with the control supply voltage  $U_s$  by way of terminals A1/A2.

##### Multi-voltage range for the control supply voltage $U_s$ :

Only one coil covers several close-lying control supply voltages which are used worldwide, e.g. 110–115–120–127 V AC/DC or 220–230–240 V AC/DC. Allowance is made in addition for an operating range of 0.8 times the lower ( $U_{s\ min}$ ) and 1.1 times the upper ( $U_{s\ max}$ ) rated control supply voltage within which the contactor switches reliably and no thermal overload occurs.

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

### Contactors with solid-state operating mechanism

The solenoid coil is supplied selectively with the power required for reliable switching and holding by upstream control electronics.

- Wide voltage range for the control supply voltage  $U_s$ :  
Compared with the conventional operating mechanism, the solid-state operating mechanism covers an even broader range of control supply voltages used worldwide within one coil version. For example, the coil for 200 to 277 V AC/DC ( $U_{s\ min}$  to  $U_{s\ max}$ ) covers the voltages 200-208-220-230-240-254-277 V used worldwide.
- Extended operating range 0.7 to 1.25  $\times U_s$ :  
The wide range for the rated control supply voltage and the additionally allowed coil operating range of 0.8  $\times U_{s\ min}$  to 1.1  $\times U_{s\ max}$  results in an extended coil operating range of at least 0.7 to 1.25  $\times U_s$ , within which the contactors will operate reliably, for the most common control supply voltages of 24, 110 and 230 V.
- Bridging temporary voltage dips:  
Control voltage failures dipping to 0 V (at A1/A2) are bridged for up to approx. 25 ms to avoid unintentional tripping.
- Defined ON and OFF thresholds:  
For voltages above 0.8  $\times U_{s\ min}$  the electronics will reliably switch the contactor ON, and for voltages below the value 0.5  $\times U_{s\ min}$  it is reliably switched OFF. The hysteresis in the switching thresholds prevents the main contacts from chattering as well as increased wear or welding when operated in weak, unstable networks. This also prevents thermal overloading of the contactor coil if the voltage applied is too low (contactor does not close properly and is continuously operated with overexcitation).
- Low control power consumption when closing and in the closed state.

### Electromagnetic compatibility (EMC)

The contactors with solid-state operating mechanism conform to the requirements for operation in industrial plants:

- Interference immunity
  - Burst (IEC 61000-4-4): 4 kV
  - Surge (IEC 61000-4-5): 4 kV
  - Electrostatic discharge, ESD (IEC 61000-4-2): 8/15 kV
  - Electromagnetic field (IEC 61000-4-3): 10 V/m
- Emitted interference
  - Limit value class A according to EN 55011

### Note:

In connection with converters, the control cables must be routed separately from the load cables to the converter.

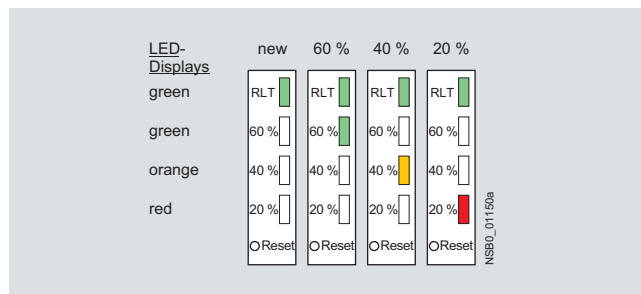
### Indication of remaining lifetime (RLT)

Main contactor contacts are working parts which therefore must be replaced in good time when the end of their service life has been reached. The degree of contact erosion and thus the electrical endurance (= number of operating cycles) depends on the loading, utilization category, operating mode, etc. Up to now, routine checks/visual inspections by the maintenance personnel were needed in order to gain an insight into the state of the main contacts.

The remaining lifetime indication function now takes over this task. It does not count the number of operating cycles – which does not provide information about contact erosion – but instead electronically identifies, evaluates and stores the actual progress of erosion of each one of the three main contacts, and outputs a warning when specified limits are reached. The stored data are not lost even if the control supply voltage for A1/A2 fails. After replacement of the main contacts, measurement the remaining lifetime must be reset using the "RESET" button (hold down RESET button for about 2 seconds using a pen or similar tool).

Advantages:

- Signaling through relay contact or AS-i when remaining lifetime is 20 %, i.e. contact material wear is 80 %.
- Additional visual display of various levels of erosion by means of LEDs on the laterally mounted solid-state module when remaining lifetime is 60 % (green), 40 % (orange) and 20 % (red).

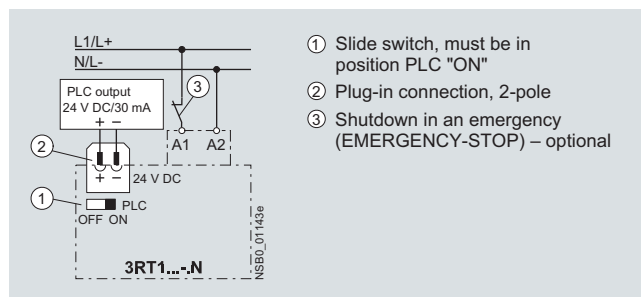


- Early warning to replace contacts
- Optimum utilization of contact material
- Visual inspection of the condition of contacts no longer necessary
- Reduction of ongoing operating costs
- Optimum planning of maintenance measures
- Avoidance of unforeseen plant downtimes

### Version 3RT1...-N: for 24 V DC PLC output

#### 2 control options:

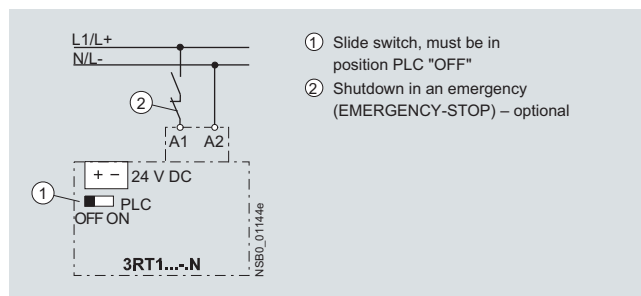
- Control without a coupling link directly through a 24 V DC /  $\geq 30$  mA PLC output (IEC 61131-2). Connection by means of 2-pole plug-in connection. The screwless spring-type connection is part of the scope of supply. The control supply voltage which supplies the solenoid operating mechanism must be connected to A1/A2.



### Note:

Before start-up, the slide switch for PLC operation must be moved to the "PLC ON" position (setting ex works: "PLC OFF").

- Conventional control by applying the control supply voltage at A1/A2 through a switching contact.



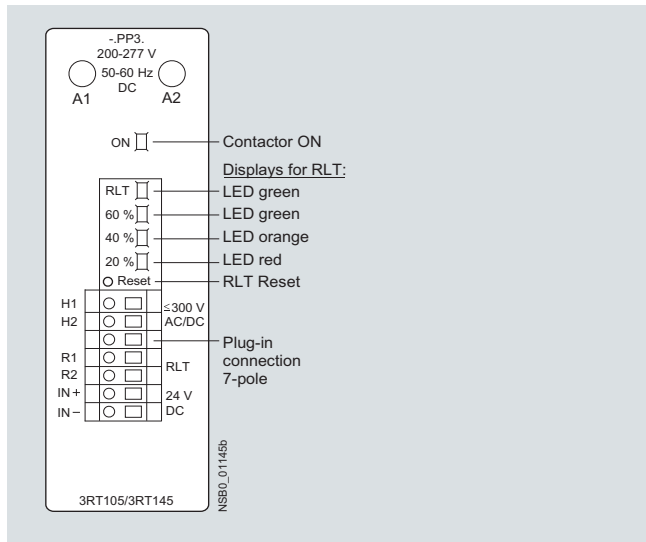
### Note:

The slide switch must be in the "PLC OFF" position (= setting ex works).

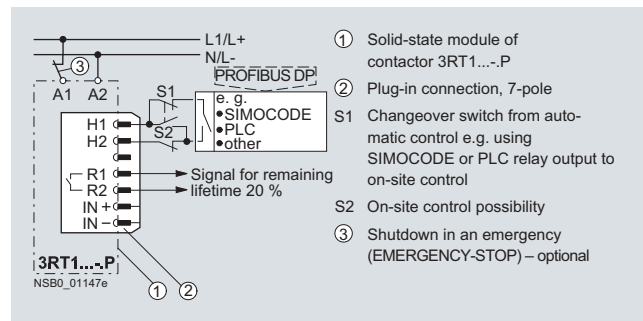
# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Version 3RT1...-P: for 24 V DC PLC output or PLC relay output, with remaining lifetime indicator (RLT)



- Contactor control through relay outputs at connections H1/H2, e.g. by
  - PLC or
  - SIMOCODE



Contact loading:  $U_s$ /approx. 5 mA.

When operated through SIMOCODE, a communication link to PROFIBUS DP is also provided.

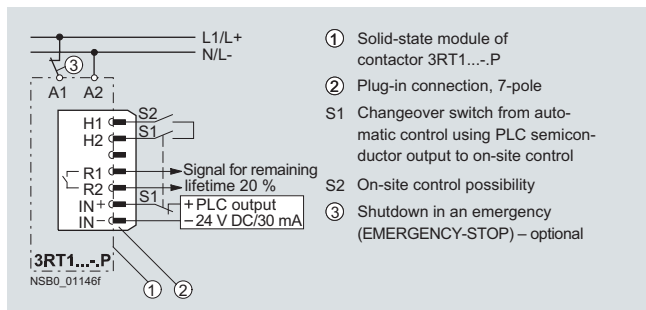
Version 3RT1...-Q: Communication-capable with integrated AS-Interface and remaining lifetime indicator (RLT)

To supply the solenoid and the remaining lifetime indicator with power, the control supply voltage  $U_s$  must be connected to terminals A1/A2 of the laterally mounted solid-state module. The control inputs of the contactor are connected to a 7-pole plug-in connection; the screwless spring-type connection is part of the scope of supply.

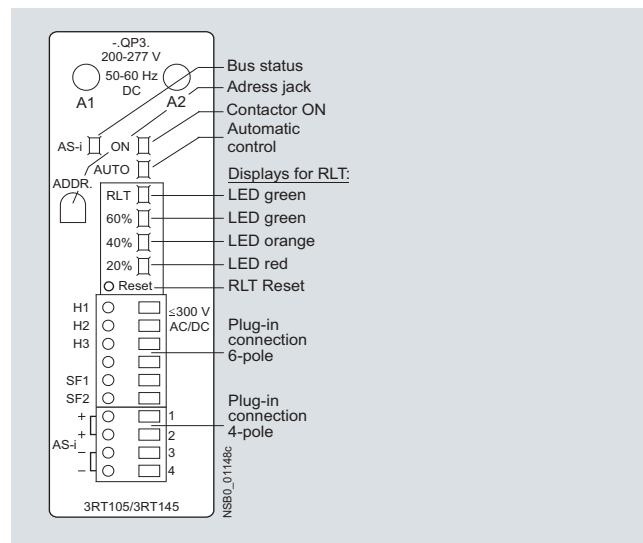
- The "Remaining Lifetime RLT" status signal is available at terminals R1/R2 through a floating relay contact (hard gold-plated, enclosed) and can be input to SIMOCODE, PLC or other devices for processing, for example. Permissible current-carrying capacity of the R1/R2 relay output:
  - $I_e$ /AC-15/24 to 230 V: 3 A
  - $I_e$ /DC-13/24 V: 1 A
- LED displays  
The following states are indicated by means of LEDs on the laterally mounted solid-state module:
  - Contactor ON (energized state): green LED ("ON")
  - Indication of remaining lifetime

### 2 control options:

- Contactor control without a coupling link directly through a 24 V DC  $\geq 30$  mA PLC output (IEC 61131-2) by way of terminals IN+/IN-.



Possibility of switching from automatic control to local control by way of terminals H1/H2, i.e. automatic control through PLC or SIMOCODE/PROFIBUS DP can be deactivated e.g. at start-up or in the event of a fault and the contactor can be controlled manually.



To supply the solenoid and the remaining lifetime indicator with power, the control supply voltage  $U_s$  must be connected to terminals A1/A2 of the laterally mounted solid-state module. The contactor itself is controlled by way of the integrated interface AS-Interface. The inputs and outputs are connected to a 10-pole plug-in connection; the screwless spring-type connections (6-pole for external connection and 4-pole for AS-Interface connection) are part of the scope of supply.

- LED displays:  
The following states are indicated by means of LEDs on the laterally mounted solid-state module:
  - Contactor ON (energized state): green LED ("ON")
  - Automatic/local control: Green LED ("AUTO")
  - Bus status: Green/red dual LED ("AS-i")
  - Indication of remaining lifetime (RLT)
- AS-Interface addressing socket "ADDR":  
The contactor address can be assigned after installation.



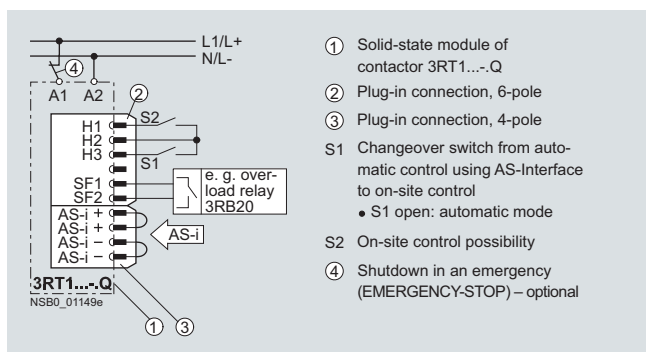
## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

### Control circuit:

- Contactor control through AS-Interface by way of terminals AS-i +/AS-i -. Each of these terminals is jumpered and connected twice to a 4-pole connector which is separate from the other control inputs.

#### Advantages:

- The AS-Interface cable is not interrupted if the connector is pulled out
- The contactor remains functional through the local control inputs and its own 6-pole connector.
- Control signals through AS-i:
  - Contactor ON/OFF
- Status signals through AS-i:
  - Contactor ON/OFF
  - Automatic/local control
  - Indication of remaining lifetime (RLT)
  - Signal through free input, e.g. overload relay tripped.



Possibility of switching from automatic control to local control by means of terminals H1/H2/H3, i.e. automatic control through AS-Interface can be deactivated e.g. during start-up or in the event of a fault and the contactor can be controlled manually.

### Technical specifications

AS-Interface		
I/O configuration (hex)		7
ID code (hex)		F
Power supply (acc. to AS-Interface Specification)	V	26.5 ... 31.6
Power consumption, max.	mA	20
Contact loading at SF1/2	mA	3 ... 6
Watchdog function (disconnects outputs in the event of AS-Interface fault)		Built-in

### Display behavior of the LEDs

State	LEDs
AS-Interface Communication	OK  On
	Fault  On
Station address	0 (zero)  Flashing
	Flashing

### Contactor diagnostics using the user program

#### Inputs

Input signals	Device status
DI 0 "Ready"	0 Device not ready/manual operation 1 Device ready/automatic mode
DI 1 "Running"	0 Contactor off 1 Contactor on
DI 2 "Remaining lifetime"	0 Remaining lifetime RLT > 20 % 1 Remaining lifetime RLT ≤ 20 %
DI 3 "Free input"	0 No input signal at SF1/2 1 Input signal at SF1/2

#### Outputs

Output signals	Device status
DO 0 "Running"	0 Contactor off 1 Contactor on
DO 1	0 -- 1 --
DO 2	0 -- 1 --
DO 3	0 -- 1 --

### Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	
SIRIUS power contactors	3 R T														
1st generation	1														
Device type (e.g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)	□														
Size of the contactor (3 = S2, 4 = S3, 5 = S6, etc.)	□														
Power dependent on size (e.g. 45 = 37 kW)	□														
Connection type (1 = screw, 2 = spring, 3 = spring for aux., controls only)	□														
Operating range / solenoid coil circuit (e.g. A = AC standard / without)	□														
Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)	□ □														
Auxiliary switches (e.g. S3: 0 = without auxiliary switches)	□														
Special version	□ □ □ □														
Example	3 R T 1 0 4 5 - 1 A P 0 0														

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

For your orders, please use the order numbers quoted in the catalog and in the Industry Mall.

# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

### Technical specifications

#### Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current  $I_e$  complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200000 operating cycles.

If a shorter endurance is sufficient, the rated operational current  $I_e$ /AC-4 can be increased.

If the contacts are used for **mixed operation**, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

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

Characters in the equation:

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

#### Size S2

Operating cycles at

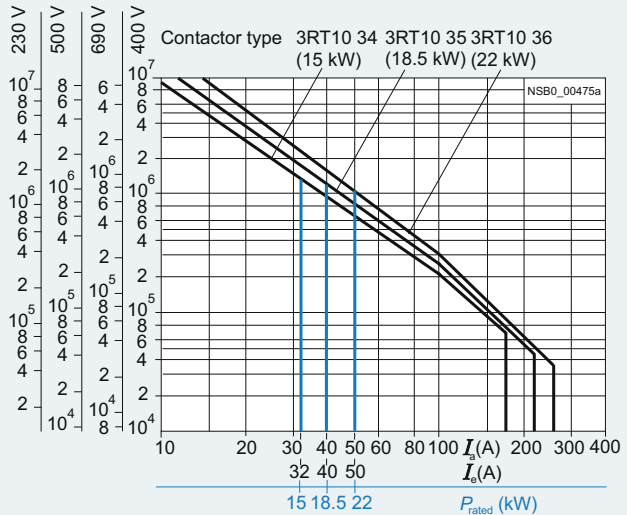


Diagram legend:

- $P_{rated}$  = Rated power for squirrel-cage motors at 400 V
- $I_a$  = Breaking current
- $I_e$  = Rated operational current

#### Size S3

Operating cycles at

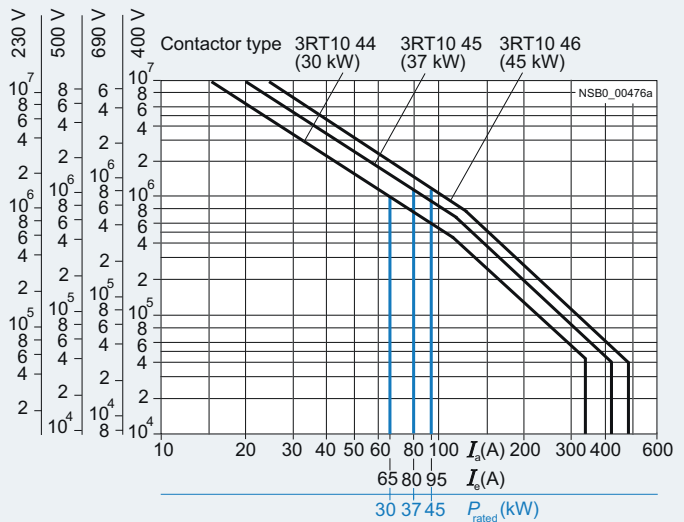


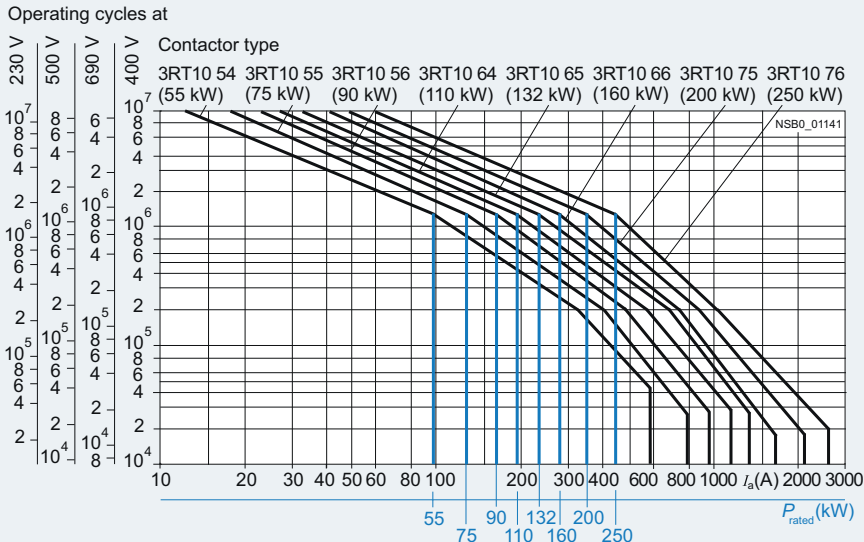
Diagram legend:

- $P_{rated}$  = Rated power for squirrel-cage motors at 400 V
- $I_a$  = Breaking current
- $I_e$  = Rated operational current

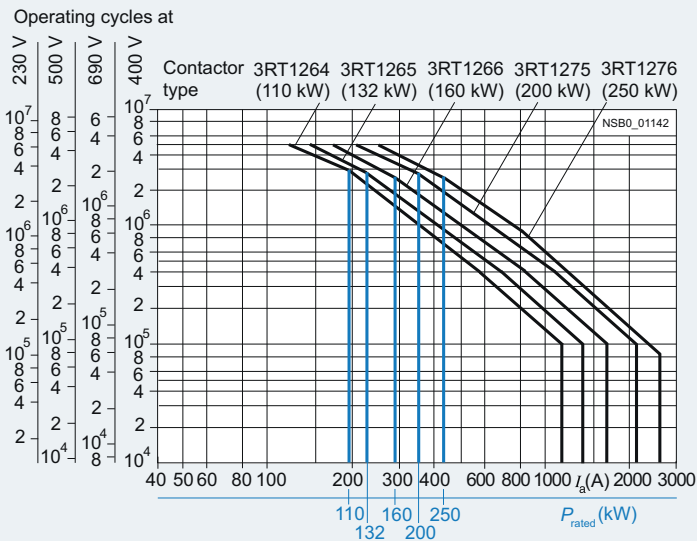
## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

### Contact endurance of the main contacts

#### Sizes S6 to S12



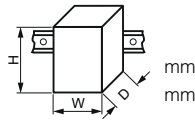
#### 3RT12 vacuum contactors · Sizes S10 and S12



# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

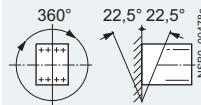
Type		3RT10 34	3RT10 35	3RT10 36	3RT10 44	3RT10 45	3RT10 46
Size		<b>S2</b>			<b>S3</b>		
Dimensions (W x H x D)		55 x 112 x 110			70 x 146 x 134		
• With mounted auxiliary switch block		55 x 112 x 159			70 x 146 x 183		



### General data

#### Permissible mounting positions

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



Upright mounting position



Special version required.

#### Mechanical endurance

• Basic units	Operating cycles	10 million
• Basic units with snap-on auxiliary switch block	Operating cycles	10 million
• Solid-state compatible auxiliary switch blocks	Operating cycles	5 million

#### Electrical endurance

1)

<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	1000
--	---	-----	------

<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6	6
---	----	---	---

<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	400	690
--	---	-----	-----

#### Mirror contacts

A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.

• With removable auxiliary switch block	Yes, acc. to IEC 60947-4-1, Appendix F
• With non-removable auxiliary switch block	Acc. to Swiss regulations (SUVA) on request

#### Permissible ambient temperature

• During operation	°C	-25 ... +60
• During storage	°C	-55 ... +80

<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C	IP20 (terminal compartment IP00), AC coil assembly IP40, DC coil assembly IP30
---	--

**Touch protection** acc. to EN 50274

Finger-safe

#### Shock resistance (AC and DC operation)

• Rectangular pulse	g/ms	10/5 and 5/10	6.8/5 and 4/10
• Sine pulse	g/ms	15/5 and 8/10	10.6/5 and 6.2/10

#### Conductor cross-sections

2)

#### Short-circuit protection for contactors without overload relays

##### Main circuit

Fuse links, gG operational class:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
according to IEC 60947-4-1/EN 60947-4-1

• Type of coordination "1"	A	125	125	160	250	250
• Type of coordination "2"	A	63	63	80	125	160
• Weld-free <sup>3)</sup>	A	16	16	50	63	100

##### Auxiliary circuit

• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10
• Test with miniature circuit breaker up to 230 V with C char.: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	10

Short-circuit protection for contactors with overload relays

See Configuration Manual "SIRIUS Configuration"

Short-circuit protection for fuseless load feeders

See Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet"  
→ "SIRIUS 3RA1 Load Feeders"

1) For contact endurance of the main contacts see page 3/66.

2) For conductor cross-sections see page 3/71.

3) Test conditions according to IEC 60947-4-1.

# Power Contactors for Switching Motors

**SIRIUS 3RT10 contactors,  
3-pole, 15 ... 250 kW**

Contactor	Type Size	3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
<b>Control</b>							
<b>Coil operating range</b>	AC/DC	0.8 ... 1.1 x $U_s$					
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )							
• AC operation, 50 Hz, standard version							
- Closing	VA	104	145		218	270	
- P.f.		0.78	0.79		0.61	0.68	
- Closed	VA	9.7	12.5		21	22	
- P.f.		0.42	0.36		0.26	0.27	
• AC operation, 50/60 Hz, standard version							
- Closing	VA	127/113	170/155		247/211	298/274	
- P.f.		0.73/0.69	0.76/0.72		0.62/0.57	0.7/0.62	
- Closed	VA	11.3/9.5	15/11.8		25/18	27/20	
- P.f.		0.41/0.42	0.35/0.38		0.27/0.3	0.29/0.31	
• AC operation, 50 Hz, for USA/Canada							
- Closing	VA	108	150		218	270	
- P.f.		0.76	0.77		0.61	0.68	
- Closed	VA	9.6	12.5		21	22	
- P.f.		0.42	0.35		0.26	0.27	
• AC operation, 60 Hz, for USA/Canada							
- Closing	VA	120	166		232	300	
- P.f.		0.7	0.71		0.55	0.52	
- Closed	VA	10.1	12.6		20	21	
- P.f.		0.42	0.37		0.28	0.29	
• DC operation							
- Closing = Closed	W	13.3	13.3		15	15	
<b>Permissible residual current of the electronics</b> (with 0 signal)							
• AC operation	mA	< 12 mA x (230 V/ $U_s$ )	< 18 mA x (230 V/ $U_s$ )		< 25 mA x (230 V/ $U_s$ )		
• DC operation	mA	< 38 mA x (24 V/ $U_s$ )	< 38 mA x (24 V/ $U_s$ )		< 43 mA x (24 V/ $U_s$ )		
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>1)</sup></b> (Total break time = Opening delay + Arcing time)							
• AC operation							
- Closing delay	ms	11 ... 30	10 ... 24		16 ... 57	17 ... 90	
- Opening delay	ms	7 ... 10	7 ... 10		10 ... 19	10 ... 25	
• DC operation							
- Closing delay	ms	50 ... 95	60 ... 100		90 ... 230	90 ... 230	
- Opening delay	ms	20 ... 30	20 ... 25		14 ... 20	14 ... 20	
• Arcing time	ms	10	10		10 ... 15	10 ... 15	
<b>Operating times for 1.0 x <math>U_s</math><sup>1)</sup></b>							
• AC operation							
- Closing delay	ms	13 ... 22	12 ... 20		18 ... 34	18 ... 30	
- Opening delay	ms	7 ... 10	7 ... 10		11 ... 18	11 ... 23	
• DC operation							
- Closing delay	ms	60 ... 75	70 ... 85		100 ... 120	100 ... 120	
- Opening delay	ms	20 ... 30	20 ... 25		16 ... 20	16 ... 20	

<sup>1)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).




# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactors	Type Size	3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
<b>Main circuit</b>							
<b>AC capacity</b>							
<b>Utilization category AC-1</b>							
<b>Switching resistive loads</b>							
• Rated operational currents $I_e$							
- at 40 °C up to 690 V	A	50	60	60	100	120	120
- at 40 °C up to 1000 V	A	--	--	--	50	60	70
- at 60 °C up to 690 V	A	45	55	55	90	100	100
- at 60 °C up to 1000 V	A	--	--	--	40	50	60
• Rated power for AC loads <sup>1)</sup> with p.f. = 0.95 (at 60 °C)							
- At 230 V	kW	18	22	22	34	38	38
- At 400 V	kW	31	38	38	59	66	66
- At 500 V	kW	39	46	46	74	82	82
- At 690 V	kW	54	66	66	102	114	114
- At 1000 V	kW	--	--	--	66	82	98
• Minimum conductor cross-section for loads with $I_e$							
- At 40 °C	mm <sup>2</sup>	16	16	16	35	50	50
- At 60 °C	mm <sup>2</sup>	10	16	16	35	35	35
<b>Utilization categories AC-2 and AC-3</b>							
• Rated operational currents $I_e$							
- Up to 500 V	A	32	40	50	65	80	95
- At 690 V	A	20	24	24	47	58	58
- At 1000 V	A	--	--	--	25	30	30
• Rated power for slipping or squirrel-cage motors at 50 and 60 Hz							
- At 230 V	kW	7.5	11	15	18.5	22	22
- At 400 V	kW	15	18.5	22	30	37	45
- At 500 V	kW	18.5	22	30	37	45	55
- At 690 V	kW	18.5	22	22	45	55	55
- At 1000 V	kW	--	--	--	30	37	37
<b>Thermal current-carrying capacity, 10 s current<sup>2)</sup></b>							
	A	320	400	400	600	760	760
<b>Power loss per conducting path at <math>I_e</math>/AC-3</b>							
	W	1.8	2.6	5	4.6	7.7	10.8
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)</b>							
• Rated operational current $I_e$							
- Up to 400 V	A	29	35	41	55	66	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 400 V	kW	15	18.5	22	30	37	45
The following applies to a contact endurance of about 200000 operating cycles:							
• Rated operational currents $I_e$							
- Up to 400 V	A	15.6	18.5	24	28	34	42
- Up to 690 V	A	15.6	18.5	24	28	34	42
- Up to 1000 V	A	--	--	--	20	23	23
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 230 V	kW	4.7	5.4	7.3	8.7	10.4	12
- At 400 V	kW	8.2	9.5	12.6	15.1	17.9	22
- At 500 V	kW	9.8	11.8	15.8	18.4	22.4	27
- At 690 V	kW	13	15.5	21.8	25.4	30.9	38
- At 1000 V	kW	--	--	--	22	30	30
<b>Switching frequency</b>							
<b>Switching frequency z in operating cycles/hour</b>							
Contactors without overload relays							
• No-load switching frequency AC	h <sup>-1</sup>	5000			5000		
• No-load switching frequency DC	h <sup>-1</sup>	1500			1000		
• Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400 V/U)^{1.5} \cdot 1/h$							
- AC-1	h <sup>-1</sup>	1200	1200	1000	1000	900	900
- AC-2	h <sup>-1</sup>	750	600	400	400	400	350
- AC-3	h <sup>-1</sup>	1000	1000	800	1000	1000	850
- AC-4	h <sup>-1</sup>	250	300	300	300	300	250
Contactors with overload relays							
• Mean value	h <sup>-1</sup>	15					

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

<sup>2)</sup> According to IEC 60947-4-1. Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".

Contactor	Type Size	3RT10 3. S2	3RT10 4. S3	
<b>Conductor cross-sections (1 or 2 conductors connectable)</b>				
<b>Main conductors</b> (1 or 2 conductors can be connected)		⊕ <b>Screw terminals</b>		
<b>Box terminals</b>				
Front clamping point connected				
	• Finely stranded with end sleeve	mm <sup>2</sup>	0.75 ... 25	2.5 ... 35
	• Finely stranded without end sleeve	mm <sup>2</sup>	0.75 ... 25	4 ... 50
	• Stranded	mm <sup>2</sup>	0.75 ... 35	4 ... 70
	• Solid	mm <sup>2</sup>	0.75 ... 16	2.5 ... 16
	• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
Rear clamping point connected				
	• Finely stranded with end sleeve	mm <sup>2</sup>	0.75 ... 25	2.5 ... 50
	• Finely stranded without end sleeve	mm <sup>2</sup>	0.75 ... 25	10 ... 50
	• Stranded	mm <sup>2</sup>	0.75 ... 35	10 ... 70
	• Solid	mm <sup>2</sup>	0.75 ... 16	2.5 ... 16
	• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
Both clamping points connected				
	• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.75 ... 16)	2 x (2.5 ... 35)
	• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.75 ... 16)	2 x (4 ... 35)
	• Stranded	mm <sup>2</sup>	2 x (0.75 ... 25)	2 x (4 ... 50)
	• Solid	mm <sup>2</sup>	2 x (0.75 ... 16)	2 x (2.5 ... 16)
	• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
	• AWG cables, solid or stranded	AWG	2 x (18 ... 2)	2 x (10 ... 1/0)
	• Terminal screw	Nm	M6 (Pozi driv 2)	M8 (hexagon socket , A/F 4)
- Tightening torque	lb.in	3 ... 4.5	4 ... 6	
		27 ... 40	36 ... 53	
<b>Busbar connection (bored copper bars)<sup>1)</sup></b>				
Max. width	mm	--	10	
<b>Cable lug connection (without box terminals)<sup>2)</sup></b> (1 or 2 conductors can be connected)				
• Finely stranded with cable lug	mm <sup>2</sup>	--	10 ... 50 <sup>3)</sup>	
• Stranded with cable lug	mm <sup>2</sup>	--	10 ... 70 <sup>3)</sup>	
• AWG cables, solid or stranded	AWG	--	7 ... 1/0	
<b>Auxiliary conductors</b>				
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>4)</sup> ; 2 x (0.75 ... 2.5) <sup>4)</sup> according to IEC 60947; max. 2 x (0.75 ... 4)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>4)</sup> ; 2 x (0.75 ... 2.5) <sup>4)</sup>		
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>4)</sup> ; 2 x (18 ... 14) <sup>4)</sup> ; 1 x 12		
• Terminal screw	M3	M3		
- Tightening torque	Nm	0.8 ... 1.2		
	lb.in	7 ... 10.3		
<b>Auxiliary conductors<sup>5)</sup></b>		⊖ <b>Spring-type terminals</b>		
• Operating devices <sup>6)</sup>		3.0 x 0.5; 3.5 x 0.5		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 2.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.25 ... 2.5)		
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)		

1) If bars larger than 12 mm x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

2) When connecting conductors which are larger than 25 mm<sup>2</sup>, the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

3) Only with crimped cable lugs according to DIN 46234, max. 20 mm wide.

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

5) Max. external diameter of the cable insulation: 3.6 mm. An "insulation stop" must be used for conductor cross-sections ≤ 1 mm<sup>2</sup>; see "Accessories" on page 3/106.

6) Tool for opening the spring-type terminals see Accessories, page 3/106.

# Power Contactors for Switching Motors

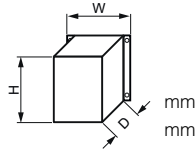
## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type

Size

Dimensions (W x H x D)

- With mounted auxiliary switch block

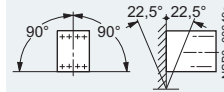


3RT10 54	3RT10 55, 3RT10 56	3RT10 64, 3RT10 65, 3RT10 66	3RT10 75	3RT10 76
<b>S6</b>		<b>S10</b>	<b>S12</b>	
120 x 172 x 170		145 x 210 x 202	160 x 214 x 225	
120 x 172 x 217		145 x 210 x 251	160 x 214 x 271	

### General data

#### Permissible mounting positions

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



#### Mechanical endurance

Operating cycles 10 million

#### Electrical endurance

1)

**Rated insulation voltage  $U_i$**   
(pollution degree 3)

V 1000

**Rated impulse withstand voltage  $U_{imp}$**

kV 8

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

V 690

#### Mirror contacts

Yes, acc. to IEC 60947-4-1, Appendix F

A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.

#### Permissible ambient temperature

- During operation °C -25 ... +60
- During operation, with interface AS-Interface °C -25 ... +55
- During storage °C -55 ... +80

**Degree of protection** acc. to IEC 60947-1, Appendix C

IP00/open, coil assembly IP20

**Touch protection** acc. to EN 50274

Finger-safe with cover

#### Shock resistance

- Rectangular pulse g/ms 8.5/5 and 4.2/10
- Sine pulse g/ms 13.4/5 and 6.5/10

#### Conductor cross-sections

2)

#### Electromagnetic compatibility (EMC)

3)

### Short-circuit protection

#### Main circuit

Fuse links, gG operational class:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
according to IEC 60947-4-1/EN 60947-4-1

• Type of coordination "1"	A	355	355	500	630	630
• Type of coordination "2"	A	315	315	400	500	500
• Weld-free <sup>4)</sup>	A	80	160	250	250	315

#### Auxiliary circuit

- Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current  $I_k = 1$  kA acc. to IEC 60947-5-1
- Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current  $I_k = 400$  A acc. to IEC 60947-5-1

A 10

Short-circuit protection for contactors with overload relays

See Configuration Manual "SIRIUS Configuration"

1) For endurance of the main contacts see page 3/67.

2) For conductor cross-sections see page 3/75.

3) For electromagnetic compatibility (EMC) see page 3/63.

4) Test conditions according to IEC 60947-4-1.



Contactor	Type Size	3RT10 5. S6	3RT10 6. S10	3RT10 7. S12
<b>Control</b>				
<b>Operating range of the solenoid AC/DC (UC)</b>		0.8 x $U_{s \text{ min}}$ ... 1.1 x $U_{s \text{ max}}$		
<b>Power consumption of the solenoid operation</b> (when coil is cold and rated range $U_{s \text{ min}}$ ... $U_{s \text{ max}}$ )				
Conventional operating mechanisms				
• AC operation				
- Closing at $U_{s \text{ min}}$	VA/p.f.	250/0.9	490/0.9	700/0.9
- Closing at $U_{s \text{ max}}$	VA/p.f.	300/0.9	590/0.9	830/0.9
- Closed at $U_{s \text{ min}}$	VA/p.f.	4.8/0.8	5.6/0.9	7.6/0.9
- Closed at $U_{s \text{ max}}$	VA/p.f.	5.8/0.8	6.7/0.9	9.2/0.9
• DC operation				
- Closing at $U_{s \text{ min}}$	W	300	540	770
- Closing at $U_{s \text{ max}}$	W	360	650	920
- Closed at $U_{s \text{ min}}$	W	4.3	6.1	8.5
- Closed at $U_{s \text{ max}}$	W	5.2	7.4	10
Solid-state operating mechanism				
• AC operation				
- Closing at $U_{s \text{ min}}$	VA/p.f.	190/0.8	400/0.8	560/0.8
- Closing at $U_{s \text{ max}}$	VA/p.f.	280/0.8	530/0.8	750/0.8
- Closed at $U_{s \text{ min}}$	VA/p.f.	3.5/0.5	4/0.5	5.4/0.8
- Closed at $U_{s \text{ max}}$	VA/p.f.	4.4/0.4	5/0.4	7/0.8
• DC operation				
- Closing at $U_{s \text{ min}}$	W	250	440	600
- Closing at $U_{s \text{ max}}$	W	320	580	800
- Closed at $U_{s \text{ min}}$	W	2.3	3.2	4
- Closed at $U_{s \text{ max}}$	W	2.8	3.8	5
<b>PLC control input</b> acc. to EN 61131-2		Type 2		
• Rated voltage	V DC	24		
• Operating range	V DC	17 ... 30		
• Power consumption	mA	≤ 30		
<b>Operating times</b> (Total break time = Opening delay + Arcing time)				
Conventional operating mechanisms				
• For 0.8 x $U_{s \text{ min}}$ ... 1.1 x $U_{s \text{ max}}$				
- Closing delay	ms	20 ... 95	30 ... 95	45 ... 100
- Opening delay	ms	40 ... 60	40 ... 80	60 ... 100
• For $U_{s \text{ min}}$ ... $U_{s \text{ max}}$				
- Closing delay	ms	25 ... 50	35 ... 50	50 ... 70
- Opening delay	ms	40 ... 60	50 ... 80	70 ... 100
Solid-state operating mechanism, actuated via A1/A2				
• For 0.8 x $U_{s \text{ min}}$ ... 1.1 x $U_{s \text{ max}}$				
- Closing delay	ms	95 ... 135	105 ... 145	120 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s \text{ min}}$ ... $U_{s \text{ max}}$				
- Closing delay	ms	100 ... 120	110 ... 130	125 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
Solid-state operating mechanism, actuated via PLC input				
• For 0.8 x $U_{s \text{ min}}$ ... 1.1 x $U_{s \text{ max}}$				
- Closing delay	ms	35 ... 75	45 ... 80	60 ... 90
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s \text{ min}}$ ... $U_{s \text{ max}}$				
- Closing delay	ms	40 ... 60	50 ... 65	65 ... 80
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• Arcing time	ms	10 ... 15	10 ... 15	10 ... 15






# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 54 S6	3RT10 55 S6	3RT10 56 S6	3RT10 64 S10	3RT10 65 S10	3RT10 66 S10	3RT10 75 S12	3RT10 76 S12
<b>Main circuit</b>									
<b>AC capacity</b>									
<b>Utilization category AC-1</b>									
<b>Switching resistive loads</b>									
• Rated operational currents $I_e$									
- at 40 °C up to 690 V	A	160	185	215	275	330		430	610
- at 60 °C up to 690 V	A	140	160	185	250	300		400	550
- at 60 °C up to 1000 V	A	80	90	100	100	150		200	200
• Rated power for AC loads <sup>1)</sup> with p.f. = 0.95 (at 60 °C)									
- At 230 V	kW	53	60	70	94	113		151	208
- At 400 V	kW	92	105	121	164	197		263	362
- At 500 V	kW	115	131	152	205	246		329	452
- At 690 V	kW	159	181	210	283	340		454	624
- At 1000 V	kW	131	148	165	164	246		329	329
• Minimum conductor cross-section for loads with $I_e$									
- At 40 °C	mm <sup>2</sup>	70	95	95	150	185		2 x 150	2 x 185
- At 60 °C	mm <sup>2</sup>	50	70	95	120	185		240	2 x 185
<b>Utilization categories AC-2 and AC-3</b>									
• Rated operational currents $I_e$									
- Up to 500 V	A	115	150	185	225	265	300	400	500
- At 690 V	A	115	150	170	225	265	280	400	450
- At 1000 V	A	53	65	65	68	95	95	180	180
• Rated power for slipping or squirrel-cage motors at 50 and 60 Hz									
- At 230 V	kW	37	50	61	73	85	97	132	164
- At 400 V	kW	64	84	104	128	151	171	231	291
- At 500 V	kW	81	105	132	160	189	215	291	363
- At 690 V	kW	113	146	167	223	265	280	400	453
- At 1000 V	kW	75	90	90	90	132	132	250	250
<b>Thermal current-carrying capacity, 10 s current<sup>2)</sup></b>	A	1100	1300	1480	1800	2400	2400	3200	4000
<b>Power loss per main current path at <math>I_e</math>/AC-3/500 V</b>	W	7	9	13	17	18	22	35	55
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)</b>									
• Rated operational current $I_e$									
- Up to 400 V	A	97	132	160	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 400 V	kW	55	75	90	110	132	160	200	250
The following applies to a contact endurance of about 200000 operating cycles:									
• Rated operational currents $I_e$									
- Up to 500 V	A	54	68	81	96	117	125	150	175
- Up to 690 V	A	48	57	65	85	105	115	135	150
- Up to 1000 V	A	34	38	42	42	57	57	80	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 230 V	kW	16	20	25	30	37	40	48	56
- At 400 V	kW	29	38	45	54	66	71	85	98
- At 500 V	kW	37	47	57	67	82	87	105	123
- At 690 V	kW	48	55	65	82	102	112	133	148
- At 1000 V	kW	49	55	60	59	80	80	113	113
<b>Switching frequency</b>									
<b>Switching frequency z in operating cycles/hour</b>									
Contactors without overload relays									
• No-load switching frequency									
	h <sup>-1</sup>	2000							
• Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400 V/U')^{1.5} \cdot 1/h$									
- AC-1	h <sup>-1</sup>	800	800		750	800	750	700	500
- AC-2	h <sup>-1</sup>	400	300		250	300	250	200	170
- AC-3	h <sup>-1</sup>	1000	750		500	700	500	500	420
- AC-4	h <sup>-1</sup>	130	130		130	130	130	130	130
Contactors with overload relays									
• Mean value									
	h <sup>-1</sup>	60							

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

<sup>2)</sup> According to IEC 60947-4-1.  
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".

Contactor	Type Size	3RT10 5. S6	3RT10 6. S10	3RT10 7. S12
<b>Conductor cross-sections</b>				
<b>Main conductors</b> (1 or 2 conductors can be connected)		 <b>Screw terminals</b>		
<b>Box terminals</b>		3RT19 55-4G (55 kW) box terminals	3RT19 56-4G box terminals	3RT19 66-4G box terminals
Front clamping point connected				
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> 10 ... 70 mm <sup>2</sup> 16 ... 70 mm <sup>2</sup> 16 ... 70 mm Min. 3 x 9 x 0,8, max. 6 x 15,5 x 0,8 AWG 6 ... 2/0	10 ... 120 16 ... 120 16 ... 120 16 ... 120 Min. 3 x 9 x 0,8, max. 10 x 15,5 x 0,8 6 ... 250 kcmil	70 ... 240 70 ... 240 95 ... 300 3/0 ... 600 kcmil Min. 6 x 9 x 0,8, max. 20 x 24 x 0,5
Rear clamping point connected				
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> 10 ... 70 mm <sup>2</sup> 16 ... 70 mm <sup>2</sup> 16 ... 70 mm Min. 3 x 9 x 0,8, max. 6 x 15,5 x 0,8 AWG 6 ... 2/0	10 ... 120 16 ... 120 16 ... 120 16 ... 120 Min. 3 x 9 x 0,8, max. 10 x 15,5 x 0,8 6 ... 250 kcmil	120 ... 185 120 ... 185 120 ... 240 250 ... 500 kcmil Min. 6 x 9 x 0,8, max. 20 x 24 x 0,5
Both clamping points connected				
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> <li>- Tightening torque</li> </ul>	mm <sup>2</sup> Max. 1 x 50, 1 x 70 mm <sup>2</sup> Max. 1 x 50, 1 x 70 mm <sup>2</sup> Max. 2 x 70 mm Max. 2 x (6 x 15,5 x 0,8) AWG Max. 2 x 1/0 Nm M10 (hexagon socket, A/F 4) lb.in 10 ... 12 90 ... 110	Max. 1 x 95, 1 x 120 Max. 1 x 95, 1 x 120 Max. 2 x 120 Max. 2 x (10 x 15,5 x 0,8) Max. 2 x 3/0 M10 (hexagon socket, A/F 4) 10 ... 12 90 ... 110	Min. 2 x 50, max. 2 x 185 Min. 2 x 50, max. 2 x 185 Min. 2 x 70, max. 2 x 240 Min. 2 x 2/0, max. 2 x 500 kcmil Max. 2 x (20 x 24 x 0,5) M12 (hexagon socket, A/F 5) 20 ... 22 180 ... 195
<b>Busbar connections</b>				
<ul style="list-style-type: none"> <li>Connecting bar (max. width)</li> </ul>		mm 17		25
<b>Cable lug connection</b> (without box terminals)				
<ul style="list-style-type: none"> <li>Finely stranded with cable lug<sup>1)2)</sup></li> <li>Stranded with cable lug<sup>1)2)</sup></li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> <li>- Tightening torque</li> <li>-</li> </ul>		mm <sup>2</sup> 16 ... 95 mm <sup>2</sup> 25 ... 120 AWG 4 ... 250 kcmil Nm M8 x 25 (A/F 13) lb.in 10 ... 14 89 ... 124		50 ... 240 70 ... 240 2/0 ... 500 kcmil M10 x 30 (A/F 17) 14 ... 24 124 ... 210
<b>Auxiliary conductors</b>				
<ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> <li>- Tightening torque</li> <li>-</li> </ul>		mm <sup>2</sup> 2 x (0,5 ... 1,5) <sup>3)</sup> ; 2 x (0,75 ... 2,5) <sup>3)</sup> according to IEC 60947; max. 2 x (0,75 ... 4) mm <sup>2</sup> 2 x (0,5 ... 1,5) <sup>3)</sup> ; 2 x (0,75 ... 2,5) <sup>3)</sup> AWG 2 x (18 ... 14) Nm M3 (PZ 2) lb.in 0,8 ... 1,2 7 ... 10,3		
<b>Auxiliary conductors<sup>4)</sup></b>			 <b>Spring-type terminals</b>	
<ul style="list-style-type: none"> <li>Operating devices<sup>5)</sup></li> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>AWG cables, solid or stranded</li> </ul>		mm <sup>2</sup> 2 x (0,25 ... 2,5) mm <sup>2</sup> 2 x (0,25 ... 1,5) mm <sup>2</sup> 2 x (0,25 ... 2,5) AWG 2 x (24 ... 14)	3,0 x 0,5; 3,5 x 0,5	

1) 3RT10 5.: When connecting cable lugs to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections of 95 mm<sup>2</sup> and more to ensure phase spacing.

2) 3RT10 6. and 3RT10 7.: When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm<sup>2</sup> and more as well as DIN 46235 for conductor cross-sections of 185 mm<sup>2</sup> and more to keep the phase clearance.

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

4) Max. external diameter of the cable insulation: 3,6 mm.  
An "insulation stop" must be used for conductor cross-sections ≤ 1 mm<sup>2</sup>; see "Accessories" on page 3/106.

5) Tool for opening the spring-type terminals see Accessories, page 3/106.

# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
<b>Ⓢ and Ⓤ rated data</b>							
<b>Rated insulation voltage</b>	V AC	600			600		
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	45	55	50	90	105	105
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓤ approved values)							
• Rated power for induction motors at 60 Hz							
- At 200 V	hp	10	10	15	20	25	30
- At 230 V	hp	10	15	15	25	30	30
- At 460 V	hp	25	30	40	50	60	75
- At 575 V	hp	30	40	50	60	75	100
<b>Short-circuit protection<sup>1)</sup></b>							
• At 600 V (contactor or overload relay)	kA	5	5	5	10	10	10
• CLASS RK5 fuse	A	125	150	200	250	300	350
• Circuit breakers with overload protection acc. to UL 489	A	125	150	200	250	300	400
• Combination motor controllers type E according to UL 508							
- At 480 V	Type	3RV10 3			3RV10 4		
	A	32	40	50	63	75	100
	kA	65	65	65	65	65	65
- At 600 V	Type	3RV10 4			3RV10 4		
	A	32	40	50	63	75	75
	kA	25	25	25	30	30	30
<b>NEMA/EEMAC ratings</b>							
NEMA/EEMAC size	hp	--		2	--		3
• Uninterrupted current							
- Open	A	--		45	--		90
- Enclosed	A	--		45	--		90
• Rated power for induction motors at 60 Hz							
- At 200 V	hp	--		10	--		25
- At 230 V	hp	--		15	--		30
- At 460 V	hp	--		25	--		50
- At 575 V	hp	--		25	--		50
<b>Overload relays</b>							
	Type	3RU11 3			3RU11 4		
• Setting range	A	5.5 ... 50			18 ... 100		

<sup>1)</sup> For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports ([www.siemens.com/sirius/manuals](http://www.siemens.com/sirius/manuals)) for the individual devices.

Contactor	Size	<b>S2 to S12</b> <b>Screw terminals and spring-type terminals</b> Snap-on auxiliary switch block (1- and 4-pole)	<b>S2 to S12</b> <b>Screw terminals and spring-type terminals</b> Laterally mountable auxiliary switch block
<b>Ⓢ and Ⓤ rated data of the auxiliary contacts</b>			
Rated voltage	V AC	600	600
Switching capacity		A 600, Q 600	A 300, Q 300
• Uninterrupted current at 240 V AC	A	10	10

# Power Contactors for Switching Motors

## SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 54 S6	3RT10 55 S6	3RT10 56 S6	3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
<b>Ⓢ and Ⓣ rated data</b>							
<b>Rated insulation voltage</b>	V AC	600			600		
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	140	195	195	250	330	330
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)							
• Rated power for induction motors at 60 Hz							
- At 200 V	hp	40	50	60	60	75	100
- At 230 V	hp	50	60	75	75	100	125
- At 460 V	hp	100	125	150	150	200	250
- At 575 V	hp	125	150	200	200	250	300
<b>Short-circuit protection<sup>1)</sup></b>							
• At 600 V	kA	10	10	10	10	18	18
• CLASS RK5/L fuse	A	450	500	500	700	800	800
• Circuit breakers with overload protection acc. to UL 489	A	350	450	500	500	700	800
<b>NEMA/EEMAC ratings</b>							
NEMA/EEMAC size	hp	--	4	--	--	--	5
• Uninterrupted current							
- Open	A	--	150	--	--	--	300
- Enclosed	A	--	135	--	--	--	270
• Rated power for induction motors at 60 Hz							
- At 200 V	hp	--	40	--	--	--	75
- At 230 V	hp	--	50	--	--	--	100
- At 460 V	hp	--	100	--	--	--	200
- At 575 V	hp	--	100	--	--	--	200
<b>Overload relays</b>	Type	3RB20 56			3RB20 66		

Contactor	Type Size	3RT10 75 S12	3RT10 76 S12
<b>Ⓢ and Ⓣ rated data</b>			
<b>Rated insulation voltage</b>	V AC	600	
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	400	540
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)			
• Rated power for induction motors at 60 Hz			
- At 200 V	hp	125	150
- At 230 V	hp	150	200
- At 460 V	hp	300	400
- At 575 V	hp	400	500
<b>Short-circuit protection<sup>1)</sup></b>			
• At 600 V	kA	18	30
• CLASS RK5/L fuse	A	1000	1200
• Circuit breakers with overload protection acc. to UL 489	A	900	900
<b>NEMA/EEMAC ratings</b>			
NEMA/EEMAC size	hp	--	6
• Uninterrupted current			
- Open	A	--	600
- Enclosed	A	--	540
• Rated power for induction motors at 60 Hz			
- At 200 V	hp	--	150
- At 230 V	hp	--	200
- At 460 V	hp	--	400
- At 575 V	hp	--	400
<b>Overload relays</b>	Type	3RB20 66	

<sup>1)</sup> For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports ([www.siemens.com/sirius/manuals](http://www.siemens.com/sirius/manuals)) for the individual devices.

# Power Contactors for Switching Motors

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### Selection and ordering data

#### AC operation

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



3RT10 3.-1A.00



3RT10 3.-3A.00

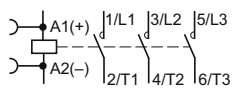


3RT10 3.-1A.04

Rated data		Auxiliary contacts		Rated control supply voltage $U_s$ at 50 Hz	DT	Screw terminals		DT	Spring-type terminals for coil terminals	
AC-2 and AC-3, $T_{ij}$ : Up to 60 °C	AC-1, $T_{ij}$ : 40 °C	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
Operational current $I_e$ up to 500 V	Rating of induction motors at 50 Hz and 400 V	Operational current $I_e$ up to 690 V	NO NC	V AC						
A	<b>kW</b>	A								

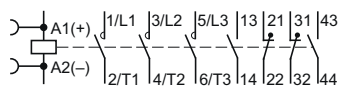
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

#### Size S2



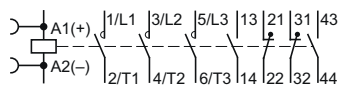
32	15	50	--	--	--	24 110 230	▶ 3RT10 34-1AB00 ▶ 3RT10 34-1AF00 ▶ 3RT10 34-1AP00	B B ▶	3RT10 34-3AB00 3RT10 34-3AF00 3RT10 34-3AP00
40	18.5	60	--	--	--	24 110 230	▶ 3RT10 35-1AB00 ▶ 3RT10 35-1AF00 ▶ 3RT10 35-1AP00	B B ▶	3RT10 35-3AB00 3RT10 35-3AF00 3RT10 35-3AP00
50	22	60	--	--	--	24 110 230	▶ 3RT10 36-1AB00 ▶ 3RT10 36-1AF00 ▶ 3RT10 36-1AP00	B B ▶	3RT10 36-3AB00 3RT10 36-3AF00 3RT10 36-3AP00

#### With mounted auxiliary switch block (removable)<sup>1)</sup>



32	15	50	22	2	2	24 110 230	▶ 3RT10 34-1AB04 ▶ 3RT10 34-1AF04 ▶ 3RT10 34-1AP04	-- -- --	
40	18.5	60	22	2	2	24 110 230	▶ 3RT10 35-1AB04 ▶ 3RT10 35-1AF04 ▶ 3RT10 35-1AP04	-- -- --	
50	22	60	22	2	2	24 110 230	▶ 3RT10 36-1AB04 ▶ 3RT10 36-1AF04 ▶ 3RT10 36-1AP04	-- -- --	

#### With permanently mounted auxiliary switch block for safety applications according to SUVA



32	15	50	22	2	2	230	B 3RT10 34-1AP04-3MA0	--	
40	18.5	60	22	2	2	230	B 3RT10 35-1AP04-3MA0	--	
50	22	60	22	2	2	230	B 3RT10 36-1AP04-3MA0	--	

Other voltages according to page 3/85 on request.  
 For accessories see page 3/98.  
 For spare parts see page 3/107.

For multi-unit packing and reusable packaging see "Appendix" → "Ordering Notes".

<sup>1)</sup> Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### AC operation

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



3RT10 4.-1A.00



3RT10 4.-3A.00

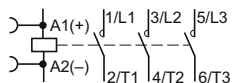


3RT10 4.-1A.04

Rated data		Auxiliary contacts		Rated control supply voltage $U_s$ at 50 Hz	DT	Screw terminals	DT	Spring-type terminals for coil terminals	
AC-2 and AC-3, $T_u$ : Up to 60 °C	AC-1, $T_u$ : 40 °C	Ident. No.	Version			Order No.	Price per PU	Order No.	Price per PU
Operational current $I_e$ up to 500 V	Rating of induction motors at 50 Hz and up to 400 V								
A	kW	A	NO NC	V AC					

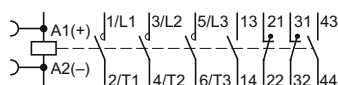
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail

### Size S3



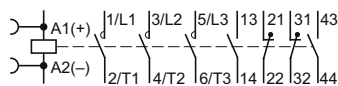
65	30	100	--	--	--	24 110 230	▶ 3RT10 44-1AB00 ▶ 3RT10 44-1AF00 ▶ 3RT10 44-1AP00	B B ▶	3RT10 44-3AB00 3RT10 44-3AF00 3RT10 44-3AP00
80	37	120	--	--	--	24 110 230	▶ 3RT10 45-1AB00 ▶ 3RT10 45-1AF00 ▶ 3RT10 45-1AP00	B B ▶	3RT10 45-3AB00 3RT10 45-3AF00 3RT10 45-3AP00
95	45	120	--	--	--	24 110 230	▶ 3RT10 46-1AB00 ▶ 3RT10 46-1AF00 ▶ 3RT10 46-1AP00	B B ▶	3RT10 46-3AB00 3RT10 46-3AF00 3RT10 46-3AP00

### With mounted auxiliary switch block (removable)<sup>1)</sup>



65	30	100	22	2	2	24 110 230	▶ 3RT10 44-1AB04 ▶ 3RT10 44-1AF04 ▶ 3RT10 44-1AP04	-- -- --	
80	37	120	22	2	2	24 110 230	▶ 3RT10 45-1AB04 ▶ 3RT10 45-1AF04 ▶ 3RT10 45-1AP04	B B ▶	-- -- --
95	45	120	22	2	2	24 110 230	▶ 3RT10 46-1AB04 ▶ 3RT10 46-1AF04 ▶ 3RT10 46-1AP04	B B ▶	-- -- --

### With permanently mounted auxiliary switch block for safety applications according to SUVA



65	30	100	22	2	2	230	▶ 3RT10 44-1AP04-3MA0	--	
80	37	120	22	2	2	230	B ▶ 3RT10 45-1AP04-3MA0	--	
95	45	120	22	2	2	230	▶ 3RT10 46-1AP04-3MA0	--	

Other voltages according to page 3/85 on request.  
 For accessories see page 3/98.  
 For spare parts see page 3/108.

<sup>1)</sup> Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

# Power Contactors for Switching Motors

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### DC operation - DC solenoid system

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



3RT10 3.-1B.40



3RT10 3.-3B.40

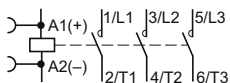


3RT10 3.-1B.44

Rated data		Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals		DT	Spring-type terminals for coil terminals	
AC-2 and AC-3, $T_u$ : Up to 60 °C	AC-1, $T_u$ : 40 °C	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
Operational current $I_e$ up to 500 V	Rating of induction motors at 50 Hz and <b>400 V</b>	Operational current $I_e$ up to 690 V		V DC						
A	<b>kW</b>	A	NO NC							

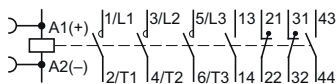
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

### Size S2



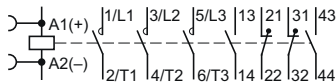
32	15	50	--	--	--	24 220	▶ <b>3RT10 34-1BB40</b> ▶ <b>3RT10 34-1BM40</b>	▶ <b>3RT10 34-3BB40</b> ▶ <b>3RT10 34-3BM40</b>
40	18.5	60	--	--	--	24 220	▶ <b>3RT10 35-1BB40</b> ▶ <b>3RT10 35-1BM40</b>	▶ <b>3RT10 35-3BB40</b> ▶ <b>3RT10 35-3BM40</b>
50	22	60	--	--	--	24 220	▶ <b>3RT10 36-1BB40</b> ▶ <b>3RT10 36-1BM40</b>	▶ <b>3RT10 36-3BB40</b> ▶ <b>3RT10 36-3BM40</b>

### With mounted auxiliary switch block (removable)<sup>1)</sup>



32	15	50	22	2	2	24 220	▶ <b>3RT10 34-1BB44</b> ▶ <b>3RT10 34-1BM44</b>	--
40	18.5	60	22	2	2	24 220	▶ <b>3RT10 35-1BB44</b> ▶ <b>3RT10 35-1BM44</b>	--
50	22	60	22	2	2	24 220	▶ <b>3RT10 36-1BB44</b> ▶ <b>3RT10 36-1BM44</b>	--

### With permanently mounted auxiliary switch block for safety applications according to SUVA



32	15	50	22	2	2	24	B	<b>3RT10 34-1BB44-3MA0</b>	--
40	18.5	60	22	2	2	24	B	<b>3RT10 35-1BB44-3MA0</b>	--
50	22	60	22	2	2	24	B	<b>3RT10 36-1BB44-3MA0</b>	--

Other voltages according to page 3/85 on request.

For accessories see page 3/98.

For spare parts see page 3/108.

For multi-unit packing and reusable packaging see "Appendix" → "Ordering Notes".

<sup>1)</sup> Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).



## 3RT10 contactors, 3-pole, 15 ... 250 kW

### DC operation - DC solenoid system

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



3RT10 4.-1B.40



3RT10 4.-3B.40



3RT10 4.-1B.44

Rated data		Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals	DT	Spring-type terminals for coil terminals	
AC-2 and AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40 °C	Ident. No.	Version			Order No.	Price per PU	Order No.	Price per PU
Operational current $I_e$ up to 500 V	Rating of induction motors at 50 Hz and 400 V								
A	kW	A	NO NC	V DC					

For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail

#### Size S3

Order No.	PU	Rating of induction motors at 50 Hz and 400 V (kW)	Operational current $I_e$ (A)	Rated control supply voltage $U_s$ (V DC)	DT	Order No.	Price per PU	Order No.	Price per PU
65	30	100	24	220	B	3RT10 44-1BB40 3RT10 44-1BM40		3RT10 44-3BB40 3RT10 44-3BM40	
80	37	120	24	220	B	3RT10 45-1BB40 3RT10 45-1BM40		3RT10 45-3BB40 3RT10 45-3BM40	
95	45	120	24	220	B	3RT10 46-1BB40 3RT10 46-1BM40		3RT10 46-3BB40 3RT10 46-3BM40	

#### With mounted auxiliary switch block (removable)<sup>1)</sup>

Order No.	PU	Rating of induction motors at 50 Hz and 400 V (kW)	Operational current $I_e$ (A)	Rated control supply voltage $U_s$ (V DC)	DT	Order No.	Price per PU	Order No.	Price per PU
65	30	100	22	24	220	B	3RT10 44-1BB44 3RT10 44-1BM44	--	--
80	37	120	22	24	220	B	3RT10 45-1BB44 3RT10 45-1BM44	--	--
95	45	120	22	24	220	B	3RT10 46-1BB44 3RT10 46-1BM44	--	--

#### With permanently mounted auxiliary switch block for safety applications according to SUVA

Order No.	PU	Rating of induction motors at 50 Hz and 400 V (kW)	Operational current $I_e$ (A)	Rated control supply voltage $U_s$ (V DC)	DT	Order No.	Price per PU	Order No.	Price per PU
65	30	100	22	24		B	3RT10 44-1BB44-3MA0	--	--
80	37	120	22	24		B	3RT10 45-1BB44-3MA0	--	--
95	45	120	22	24		B	3RT10 46-1BB44-3MA0	--	--

Other voltages according to page 3/85 on request.  
 For accessories see page 3/98.  
 For spare parts see page 3/108.

<sup>1)</sup> Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

# Power Contactors for Switching Motors

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals<sup>1)</sup>



3RT1. 5.



3RT1. 6.



3RT1. 7.

Size	Rated data				Auxiliary contacts, lateral	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
	AC-2 and AC-3, $T_U$ : Up to 60 °C				AC-1, $T_U$ : 40 °C									
	Operational current $I_e$ up to 500 V	Ratings of induction motors at 50 Hz and			Operational current $I_e$ up to 690 V	Version								
	A	230 V	400 V	500 V	690 V	NO NC V AC/DC								
<b>Conventional operating mechanisms</b>														
										Screw terminals				
<b>S6</b>	115	37	<b>55</b>	75	110	160	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 54-1AF36</b> <b>3RT10 54-1AP36</b>	1 1	1 unit 1 unit	41B 41B
	150	45	<b>75</b>	90	132	185	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 55-6AF36</b> <b>3RT10 55-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	185	55	<b>90</b>	110	160	215	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 56-6AF36</b> <b>3RT10 56-6AP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S10</b>	225	55	<b>110</b>	160	200	275	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 64-6AF36</b> <b>3RT10 64-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	265	75	<b>132</b>	160	250	330	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 65-6AF36</b> <b>3RT10 65-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	300	90	<b>160</b>	200	250	330	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 66-6AF36</b> <b>3RT10 66-6AP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S12</b>	400	132	<b>200</b>	250	400	430	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 75-6AF36</b> <b>3RT10 75-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	500	160	<b>250</b>	355	400	610	2	2	110 ... 127 220 ... 240	▶	<b>3RT10 76-6AF36</b> <b>3RT10 76-6AP36</b>	1 1	1 unit 1 unit	41B 41B
										Spring-type terminals for coil and auxiliary switch terminals				
<b>S6</b>	115	37	<b>55</b>	75	110	160	2	2	110 ... 127 220 ... 240	B	<b>3RT10 54-3AF36</b> <b>3RT10 54-3AP36</b>	1 1	1 unit 1 unit	41B 41B
	150	45	<b>75</b>	90	132	185	2	2	110 ... 127 220 ... 240	B	<b>3RT10 55-2AF36</b> <b>3RT10 55-2AP36</b>	1 1	1 unit 1 unit	41B 41B
	185	55	<b>90</b>	110	160	215	2	2	110 ... 127 220 ... 240	B	<b>3RT10 56-2AF36</b> <b>3RT10 56-2AP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S10</b>	225	55	<b>110</b>	160	200	275	2	2	110 ... 127 220 ... 240	B	<b>3RT10 64-2AF36</b> <b>3RT10 64-2AP36</b>	1 1	1 unit 1 unit	41B 41B
	265	75	<b>132</b>	160	250	330	2	2	110 ... 127 220 ... 240	B	<b>3RT10 65-2AF36</b> <b>3RT10 65-2AP36</b>	1 1	1 unit 1 unit	41B 41B
	300	90	<b>160</b>	200	250	330	2	2	110 ... 127 220 ... 240	B	<b>3RT10 66-2AF36</b> <b>3RT10 66-2AP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S12</b>	400	132	<b>200</b>	250	400	430	2	2	110 ... 127 220 ... 240	B	<b>3RT10 75-2AF36</b> <b>3RT10 75-2AP36</b>	1 1	1 unit 1 unit	41B 41B
	500	160	<b>250</b>	355	400	610	2	2	110 ... 127 220 ... 240	B	<b>3RT10 76-2AF36</b> <b>3RT10 76-2AP36</b>	1 1	1 unit 1 unit	41B 41B

Other voltages according to page 3/85 on request.

For accessories see page 3/98.

For spare parts see page 3/109.

<sup>1)</sup> Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price. In the 8th position of the Order No. the "1" must be replaced with "6" for screw terminals, e.g. 3RT10 54-6A.36; for spring-type terminals the "3" must be replaced by "2", e.g. 3RT10 54-2A.36.

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals<sup>1)</sup>



3RT1. 5.



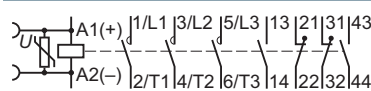
3RT1. 6.



3RT1. 7.

Size	Rated data AC-2 and AC-3, T <sub>v</sub> : Up to 60 °C	Operational current I <sub>e</sub> up to 500 V	Ratings of induction motors at 50 Hz and	AC-1, T <sub>v</sub> : 40 °C	Operational current I <sub>e</sub> up to 690 V	Auxiliary contacts, lateral	Rated control supply voltage U <sub>s</sub>	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		230 V	400 V	500 V	690 V	Version							
		A	kW	kW	kW	NO NC	V AC/DC						

### Solid-state operating mechanisms - for 24 V DC PLC output



S6	115	37	55	75	110	160	2	2	96 ... 127 200 ... 277	A	Screw terminals		1	1 unit	41B
											3RT10 54-1NF36	3RT10 54-1NP36			
	150	45	75	90	132	185	2	2	96 ... 127 200 ... 277	A	3RT10 55-6NF36 3RT10 55-6NP36		1	1 unit	41B
	185	55	90	110	160	215	2	2	96 ... 127 200 ... 277	A	3RT10 56-6NF36 3RT10 56-6NP36		1	1 unit	41B
S10	225	55	110	160	200	275	2	2	96 ... 127 200 ... 277	A	3RT10 64-6NF36 3RT10 64-6NP36		1	1 unit	41B
	265	75	132	160	250	330	2	2	96 ... 127 200 ... 277	A	3RT10 65-6NF36 3RT10 65-6NP36		1	1 unit	41B
	300	90	160	200	250	330	2	2	96 ... 127 200 ... 277	B	3RT10 66-6NF36 3RT10 66-6NP36		1	1 unit	41B
S12	400	132	200	250	400	430	2	2	96 ... 127 200 ... 277	A	3RT10 75-6NF36 3RT10 75-6NP36		1	1 unit	41B
	500	160	250	355	400	610	2	2	96 ... 127 200 ... 277	A	3RT10 76-6NF36 3RT10 76-6NP36		1	1 unit	41B
											Spring-type terminals for coil and auxiliary switch terminals		1	1 unit	41B
S6	115	37	55	75	110	160	2	2	96 ... 127 200 ... 277	B	3RT10 54-3NF36 3RT10 54-3NP36		1	1 unit	41B
	150	45	75	90	132	185	2	2	96 ... 127 200 ... 277	B	3RT10 55-2NF36 3RT10 55-2NP36		1	1 unit	41B
	185	55	90	110	160	215	2	2	96 ... 127 200 ... 277	B	3RT10 56-2NF36 3RT10 56-2NP36		1	1 unit	41B
S10	225	55	110	160	200	275	2	2	96 ... 127 200 ... 277	B	3RT10 64-2NF36 3RT10 64-2NP36		1	1 unit	41B
	265	75	132	160	250	330	2	2	96 ... 127 200 ... 277	B	3RT10 65-2NF36 3RT10 65-2NP36		1	1 unit	41B
	300	90	160	200	250	330	2	2	96 ... 127 200 ... 277	B	3RT10 66-2NF36 3RT10 66-2NP36		1	1 unit	41B
S12	400	132	200	250	400	430	2	2	96 ... 127 200 ... 277	B	3RT10 75-2NF36 3RT10 75-2NP36		1	1 unit	41B
	500	160	250	355	400	610	2	2	96 ... 127 200 ... 277	B	3RT10 76-2NF36 3RT10 76-2NP36		1	1 unit	41B

Other voltages according to page 3/85 on request.

For accessories see page 3/98.

For spare parts see page 3/110.

<sup>1)</sup> Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price. In the 8th position of the Order No. the "1" must be replaced with "6" for screw terminals, e.g. 3RT10 54-6A.36; for spring-type terminals the "3" must be replaced by "2", e.g. 3RT10 54-2A.36.

# Power Contactors for Switching Motors

## 3RT10 contactors, 3-pole, 15 ... 250 kW

### AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals<sup>1)</sup>
- Indication of remaining lifetime (RLT)



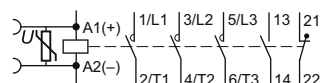
3RT10 56-6P..



3RT10 56-6Q..

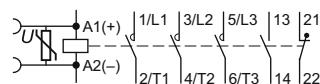
Size	Rated data					AC-1, T <sub>U</sub> : 40 °C	Auxiliary contacts, lateral		Rated control supply voltage U <sub>s</sub>	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
	AC-2 and AC-3, T <sub>U</sub> : Up to 60 °C	Ratings of induction motors at 50 Hz and				Operational current I <sub>e</sub> up to	Version								
	Operational current I <sub>e</sub> up to	230 V	400 V	500 V	690 V	690 V	NO	NC	V AC/DC				Order No.	Price per PU	
	A	kW	kW	kW	kW	A									

### Solid-state operating mechanisms · with 24 V DC PLC relay output · with RLT



<b>S6</b>	115	37	55	75	110	160	1	1	96 ... 127 200 ... 277	B	<b>3RT10 54-1PF35</b>		1	1 unit	41B
										B	<b>3RT10 54-1PP35</b>		1	1 unit	41B
	150	45	75	90	132	185	1	1	96 ... 127 200 ... 277	B	<b>3RT10 55-6PF35</b> <b>3RT10 55-6PP35</b>		1	1 unit	41B
<b>S10</b>	185	55	90	110	160	215	1	1	96 ... 127 200 ... 277	B	<b>3RT10 56-6PF35</b> <b>3RT10 56-6PP35</b>		1	1 unit	41B
	225	55	110	160	200	275	1	1	96 ... 127 200 ... 277	B	<b>3RT10 64-6PF35</b> <b>3RT10 64-6PP35</b>		1	1 unit	41B
	265	75	132	160	250	330	1	1	96 ... 127 200 ... 277	B	<b>3RT10 65-6PF35</b> <b>3RT10 65-6PP35</b>		1	1 unit	41B
<b>S12</b>	300	90	160	200	250	330	1	1	96 ... 127 200 ... 277	B	<b>3RT10 66-6PF35</b> <b>3RT10 66-6PP35</b>		1	1 unit	41B
	400	132	200	250	400	430	1	1	96 ... 127 200 ... 277	B	<b>3RT10 75-6PF35</b> <b>3RT10 75-6PP35</b>		1	1 unit	41B
	500	160	250	355	400	610	1	1	96 ... 127 200 ... 277	B	<b>3RT10 76-6PF35</b> <b>3RT10 76-6PP35</b>		1	1 unit	41B

### Solid-state operating mechanisms · with AS-Interface · with RLT



<b>S6</b>	115	37	55	75	110	160	1	1	96 ... 127 200 ... 277	B	<b>3RT10 54-1QF35</b>		1	1 unit	41B
										B	<b>3RT10 54-1QP35</b>		1	1 unit	41B
	150	45	75	90	132	185	1	1	96 ... 127 200 ... 277	B	<b>3RT10 55-6QF35</b> <b>3RT10 55-6QP35</b>		1	1 unit	41B
<b>S10</b>	185	55	90	110	160	215	1	1	96 ... 127 200 ... 277	B	<b>3RT10 56-6QF35</b> <b>3RT10 56-6QP35</b>		1	1 unit	41B
	225	55	110	160	200	275	1	1	96 ... 127 200 ... 277	B	<b>3RT10 64-6QF35</b> <b>3RT10 64-6QP35</b>		1	1 unit	41B
	265	75	132	160	250	330	1	1	96 ... 127 00 ... 277	B	<b>3RT10 65-6QF35</b> <b>3RT10 65-6QP35</b>		1	1 unit	41B
<b>S12</b>	300	90	160	200	250	330	1	1	96 ... 127 200 ... 277	B	<b>3RT10 66-6QF35</b> <b>3RT10 66-6QP35</b>		1	1 unit	41B
	400	132	200	250	400	430	1	1	96 ... 127 200 ... 277	B	<b>3RT10 75-6QF35</b> <b>3RT10 75-6QP35</b>		1	1 unit	41B
	500	160	250	355	400	610	1	1	96 ... 127 200 ... 277	B	<b>3RT10 76-6QF35</b> <b>3RT10 76-6QP35</b>		1	1 unit	41B

Other voltages according to page 3/85 on request.  
For accessories see page 3/98.  
For spare parts see page 3/110.

<sup>1)</sup> Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price. In the 8th position of the Order No. the "1" must be replaced with "6", e.g. 3RT10 54-6...35.

## Options

Rated control supply voltages, possible on request (the 10th and 11th position of the order number must be changed)

Rated control supply voltage $U_s$	Contactor type	3RT10 3, 3RT10 4	3RT14 4	3RT13 3, 3RT13 4, 3RT15 3	3RT16 17, 3RT16 27, 3RT16 47
	Size	S2, S3	S3	S2, S3	S00, S0, S3

## Sizes S2 and S3

## AC operation

Solenoid coils for 50 Hz<sup>1)</sup>

24 V AC	B0	B0	B0	B0
42 V AC	D0	D0	--	--
48 V AC	H0	H0	--	--
110 V AC	F0	F0	F0	F0
230 V AC	P0	P0	P0	P0
240 V AC	U0	U0	U0	U0
400 V AC	V0	V0	V0	V0

Solenoid coils for 50 and 60 Hz<sup>1)</sup>

24 V AC	C2	C2	C2	C2
42 V AC	D2	D2	D2	--
48 V AC	H2	H2	H2	--
110 V AC	G2	G2	G2	G2
220 V AC	N2	N2	N2	N2
230 V AC	L2	L2	L2	L2
240 V AC	P2	P2	P2	P2

Solenoid coils (for USA and Canada<sup>2)</sup>)

50 Hz	60 Hz				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6

## Solenoid coils (for Japan)

50/60 Hz <sup>3)</sup>	60 Hz <sup>4)</sup>				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6

## DC operation

12 V DC	--	--	--	--
24 V DC	B4	B4	B4	--
42 V DC	D4	D4	D4	--
48 V DC	W4	W4	--	--
60 V DC	E4	E4	--	--
110 V DC	F4	F4	F4	--
125 V DC	G4	G4	G4	--
220 V DC	M4	M4	M4	--
230 V DC	P4	P4	--	--

## Examples

<b>AC operating mechanism</b>	3RT10 34-1AP00	Contactors with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT10 34-1AG20	Contactors with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
<b>DC operating mechanism</b>	3RT10 34-3BB40	Contactors with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT10 34-3BG40	Contactors with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage $U_s$	Contactor type	3RT1. 5.-.A 3RT1. 6.-.A 3RT1. 7.-.A	Rated control supply voltage $U_s$	Contactor type	3RT1. 5.-.N 3RT1. 6.-.N 3RT1. 7.-.N	3RT1. 5.-.P/Q 3RT1. 6.-.P/Q 3RT1. 7.-.P/Q
$U_{s \min} \dots U_{s \max}^{5)}$	Size	S6, S10, S12	$U_{s \min} \dots U_{s \max}^{5)}$	Size	S6, S10, S12	S6, S10, S12

## Sizes S6 to S12

## UC operation (AC 50 to 60 Hz and DC)

## Conventional operating mechanisms

23 ... 26 V AC/DC	B3
42 ... 48 V AC/DC	D3
110 ... 127 V AC/DC	F3
200 ... 220 V AC/DC	M3
220 ... 240 V AC/DC	P3
240 ... 277 V AC/DC	U3
380 ... 420 V AC/DC	V3
440 ... 480 V AC/DC	R3
500 ... 550 V AC/DC	S3
575 ... 600 V AC/DC	T3

## Solid-state operating mechanism

21 ... 27.3 V AC/DC	B3	--
96 ... 127 V AC/DC	F3	F3
200 ... 277 V AC/DC	P3	P3

<sup>1)</sup> Coil operating range:  
at 50 Hz: 0.8 to 1.1 ×  $U_s$   
at 60 Hz: 0.85 to 1.1 ×  $U_s$ .

<sup>2)</sup> Coil operating range (sizes S2 and S3):  
at 50 Hz and 60 Hz: 0.8 to 1.1 ×  $U_s$ .

<sup>3)</sup> Coil operating range (sizes S2 and S3):  
at 50 Hz: 0.8 to 1.1 ×  $U_s$   
at 60 Hz: 0.85 to 1.1 ×  $U_s$ .

<sup>4)</sup> Coil operating range:  
at 60 Hz: 0.8 to 1.1 ×  $U_s$ .

<sup>5)</sup> Operating range:  
0.8 ×  $U_{s \min}$  to 1.1 ×  $U_{s \max}$ .

# Power Contactors for Switching Motors

## SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

### Overview

#### UC operation

The contactors can be operated with AC (50 to 60 Hz) as well as with DC.

Two types of solenoid operation are available:

- Conventional operating mechanism, version 3RT12...A
- Solid-state operating mechanism, version 3RT12...N

#### Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

#### Vacuum interrupters

In contrast with the 3RT10 contactors – the main contacts operate in air under atmospheric conditions – the contact gaps of the

3RT12 vacuum contactors are contained in hermetically enclosed vacuum interrupters. Neither arcs nor arcing gases are produced. The particular benefit of 3RT12 vacuum contactors, however, is that their electrical endurance is at least twice as long as that of 3RT10 contactors. They are therefore particularly well suited to frequent switching in jogging/mixed operation, e.g. in crane control systems.

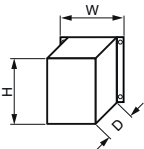
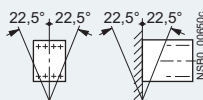
#### Note:

Vacuum contactors are basically unsuitable for switching DC voltage.

#### Auxiliary contact complement

The contactors can be fitted with up to 8 lateral auxiliary contacts (identical auxiliary switch blocks from S2 to S12). Of these, no more than 4 are permitted to be NC contacts.

### Technical specifications

Type		3RT12 64	3RT12 65	3RT12 66	3RT12 75	3RT12 76
Size		S10			S12	
Dimensions (W x H x D)		mm				
		145 x 210 x 206			160 x 214 x 225	
<b>General data</b>						
<b>Permissible mounting positions</b>						
The contactors are designed for operation on a vertical mounting surface.						
<b>Mechanical endurance</b>	Operating cycles	10 million				
<b>Electrical endurance</b>		1)				
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	1000				
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	8				
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	690				
<b>Mirror contacts</b>		Yes, acc. to IEC 60947-4-1, Appendix F				
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.						
<b>Permissible ambient temperature</b>						
• During operation	°C	-25 ... +60/+55 with AS-Interface				
• During storage	°C	-55 ... +80				
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00/open, coil assembly IP20				
<b>Touch protection</b> acc. to EN 50274		Finger-safe with cover				
<b>Shock resistance</b>						
• Rectangular pulse	g/ms	8.5/5 and 4.2/10				
• Sine pulse	g/ms	13.4/5 and 6.5/10				
<b>Conductor cross-sections</b>		2)				
<b>Electromagnetic compatibility (EMC)</b>		3)				
<b>Short-circuit protection</b>						
<b>Main circuit</b>						
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination *1	A	500			800	
• Type of coordination *2	A	500			800	
• Weld-free <sup>1)</sup>	A	400			500	
<b>Auxiliary circuit</b>						
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10				
• Test with miniature circuit breaker up to 230 V with C char.: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1						

1) For endurance of the main contacts see page 3/67.

2) For conductor cross-sections see page 3/89.

3) For electromagnetic compatibility (EMC) see page 3/63.

4) Test conditions according to IEC 60947-4-1.

Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
<b>Control</b>						
<b>Operating range of the solenoid AC/DC (UC)</b>		0.8 x $U_{s \min}$ ... 1.1 x $U_{s \max}$				
<b>Power consumption of the solenoid</b> (when coil is cold and rated range $U_{s \min}$ ... $U_{s \max}$ )						
Conventional operating mechanisms						
• AC operation						
- Closing at $U_{s \min}$	VA/p.f.	530/0.9			700/0.9	
- Closing at $U_{s \max}$	VA/p.f.	630/0.9			830/0.9	
- Closed at $U_{s \min}$	VA/p.f.	6.1/0.9			7.6/0.9	
- Closed at $U_{s \max}$	VA/p.f.	7.4/0.9			9.2/0.9	
• DC operation						
- Closing at $U_{s \min}$	W	580			770	
- Closing at $U_{s \max}$	W	700			920	
- Closed at $U_{s \min}$	W	6.8			8.5	
- Closed at $U_{s \max}$	W	8.2			10	
Solid-state operating mechanism						
• AC operation						
- Closing at $U_{s \min}$	VA/p.f.	420/0.8			560/0.8	
- Closing at $U_{s \max}$	VA/p.f.	570/0.8			750/0.8	
- Closed at $U_{s \min}$	VA/p.f.	4.3/0.8			5.4/0.8	
- Closed at $U_{s \max}$	VA/p.f.	5.6/0.8			7/0.8	
• DC operation						
- Closing at $U_{s \min}$	W	460			600	
- Closing at $U_{s \max}$	W	630			800	
- Closed at $U_{s \min}$	W	3.4			4	
- Closed at $U_{s \max}$	W	4.2			5	
<b>PLC control input acc. to EN 61131-2</b>		Type 2				
• Rated voltage	V DC	24				
• Operating range	V DC	17 ... 30				
• Power consumption	mA	≤ 30				
<b>Operating times</b> (Total break time = Opening delay + Arcing time)						
Conventional operating mechanisms						
• For 0.8 x $U_{s \min}$ ... 1.1 x $U_{s \max}$						
- Closing delay	ms	30 ... 95			45 ... 100	
- Opening delay	ms	40 ... 80			60 ... 100	
• For $U_{s \min}$ ... $U_{s \max}$						
- Closing delay	ms	35 ... 50			50 ... 70	
- Opening delay	ms	50 ... 80			70 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via A1/A2						
• For 0.8 x $U_{s \min}$ ... 1.1 x $U_{s \max}$						
- Closing delay	ms	105 ... 145			120 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s \min}$ ... $U_{s \max}$						
- Closing delay	ms	110 ... 130			125 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via PLC input						
• For 0.8 x $U_{s \min}$ ... 1.1 x $U_{s \max}$						
- Closing delay	ms	45 ... 80			60 ... 90	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s \min}$ ... $U_{s \max}$						
- Closing delay	ms	50 ... 65			65 ... 80	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	

# Power Contactors for Switching Motors

## SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW




Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
<b>Main circuit</b>						
<b>AC capacity</b>						
<b>Utilization category AC-1</b>						
<b>Switching resistive loads</b>						
• Rated operational currents $I_e$						
- At 40 °C up to 1000 V	A	330			610	
- At 60 °C up to 1000 V	A	300			550	
• Rated power for AC loads <sup>1)</sup> with p.f. = 0.95 (at 60 °C)						
- At 230 V	kW	113			208	
- At 400 V	kW	197			362	
- At 500 V	kW	246			452	
- At 690 V	kW	340			624	
- At 1000 V	kW	492			905	
• Minimum conductor cross-section for loads with $I_e$						
- At 40 °C	mm <sup>2</sup>	185			2 x 185	
- At 60 °C	mm <sup>2</sup>	185			2 x 185	
<b>Utilization categories AC-2 and AC-3</b>						
• Rated operational currents $I_e$						
- Up to 1000 V	A	225	265	300	400	500
• Rated power for slipping or squirrel-cage motors at 50 and 60 Hz						
- At 230 V	kW	73	85	97	132	164
- At 400 V	kW	128	151	171	231	291
- At 500 V	kW	160	189	215	291	363
- At 690 V	kW	223	265	288	400	507
- At 1000 V	kW	320	378	428	578	728
<b>Thermal load capacity</b>	A	1800	2120	2400	3200	4000
<b>Power loss per conducting path at <math>I_e/AC-3</math></b>	W	9	12	14	21	32
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)</b>						
• Rated operational current $I_e$						
- Up to 690 V	A	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 400 V	kW	110	132	160	200	250
The following applies to a contact endurance of about 200000 operating cycles:						
• Rated operational currents $I_e$						
- Up to 690 V	A	97	115	140	175	215
- Up to 1000 V	A	68	81	98	123	151
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 230 V	kW	30	37	45	56	70
- At 400 V	kW	55	65	79	98	122
- At 500 V	kW	68	81	98	124	153
- At 690 V	kW	94	112	138	172	212
- At 1000 V	kW	95	114	140	183	217
<b>Switching frequency</b>						
<b>Switching frequency z in operating cycles/hour</b>						
Contactors without overload relays						
• No-load switching frequency	h <sup>-1</sup>	2000				
• Dependence of the switching frequency z' on the operational current $I'$ and operational voltage U: $z' = z \cdot (I_e/I') \cdot (400 V/U)^{1.5} \cdot 1/h$						
- AC-1	h <sup>-1</sup>	800	750		700	
- AC-2	h <sup>-1</sup>	300	250		250	
- AC-3	h <sup>-1</sup>	750	750		750	
- AC-4	h <sup>-1</sup>	250	250		250	
Contactors with overload relays						
• Mean value	h <sup>-1</sup>	60				

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

<sup>2)</sup> According to IEC 60947-4-1.  
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".



SIRIUS 3RT12 vacuum contactors,  
3-pole, 110 ... 250 kW

Contactor	Type Size	3RT12 6. S10	3RT12 7. S12
<b>Conductor cross-sections</b>			
<b>Main conductors:</b>		⊕ Screw terminals	
<b>Box terminals</b>		3RT19 66-4G box terminals	
Front clamping point connected			
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>AWG cables, solid or stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG mm	70 ...240 70 ...240 95 ...300 3/0 ...600 kcmil Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5
Rear clamping point connected			
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>AWG cables, solid or stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG mm	120 ...185 120 ...185 120 ...240 250 ... 500 kcmil Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5
Both clamping points connected			
	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Stranded</li> <li>AWG cables, solid or stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>Terminal screws</li> <li>- Tightening torque</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG mm Nm	Min. 2 x 50, max. 2 x 185 Min. 2 x 50, max. 2 x 185 Min. 2 x 70, max. 2 x 240 Min. 2 x 1/0, max. 2 x 500 kcmil Max. 2 x (20 x 24 x 0.5) M12 (hexagon socket, A/F 5) 20 ... 22 (180 ... 195 lb.in)
<b>Busbar connections</b>			
<ul style="list-style-type: none"> <li>Connecting bars (max. width)</li> </ul>		mm	25
<b>Cable lug connection (without box terminals)</b>			
<ul style="list-style-type: none"> <li>Finely stranded with cable lug<sup>1)</sup></li> <li>Stranded with cable lug<sup>1)</sup></li> <li>AWG cables, solid or stranded</li> <li>Terminal screws</li> <li>- Tightening torque</li> </ul>		mm <sup>2</sup> mm <sup>2</sup> AWG Nm	50 ...240 70 ...240 2/0 ...500 kcmil M12 (hexagon socket, A/F 5) 14 ... 24 (124 ... 210 lb.in)
<ul style="list-style-type: none"> <li>Terminal screws</li> <li>- Tightening torque</li> </ul>		Nm	M10 x 30 (hexagon socket, A/F 17) 14 ... 24 (124 ... 240 lb.in)
<b>Auxiliary conductors:</b>			
<ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>AWG cables, solid or stranded</li> <li>Terminal screws</li> <li>- Tightening torque</li> </ul>		mm <sup>2</sup> mm <sup>2</sup> AWG Nm	2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup> according to IEC 60947; max. 2 x (0.75 ... 4) 2 x (0.5 ... 1.5) <sup>2)</sup> ; 2 x (0.75 ... 2.5) <sup>2)</sup> 2 x (18 ... 14) M3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)

<sup>1)</sup> When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm<sup>2</sup> and more as well as DIN 46235 for conductor cross-sections of 185 mm<sup>2</sup> and more to keep the phase clearance.

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

Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
<b>Ⓢ and Ⓣ rated data</b>						
<b>Rated insulation voltage</b>	V AC	600			600	
<b>Uninterrupted current</b> , at 40 °C, open and enclosed	A	330			540	
<b>Maximum horsepower ratings (Ⓢ and Ⓣ approved values)</b>						
• Rated power for induction motors at 60 Hz						
- At 200 V	hp	60	75	100	125	150
- At 230 V	hp	75	100	125	150	200
- At 460 V	hp	150	200	250	300	400
- At 575 V	hp	200	250	300	400	500
<b>Short-circuit protection<sup>1)</sup></b>						
• CLASS L fuse	kA	10	18	18	18	30
• Circuit breakers acc. to UL 489	A	700	800	800	1200	1200
	A	500	700	900	1000	1200
<b>NEMA/EEMAC ratings</b>						
• NEMA/EEMAC size	hp	--	--	5	--	6
• Uninterrupted current						
- Open	A	--	--	300	--	600
- Enclosed	A	--	--	270	--	540
• Rated power for induction motors at 60 Hz						
- At 200 V	hp	--	--	75	--	150
- At 230 V	hp	--	--	100	--	200
- At 460 V	hp	--	--	200	--	400
- At 575 V	hp	--	--	200	--	400
<b>Overload relays</b>	Type	3RB20 66			3RB20 66	

<sup>1)</sup> For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for

German) or UL reports ([www.siemens.com/sirius/manuals](http://www.siemens.com/sirius/manuals)) for the individual devices.

# Power Contactors for Switching Motors

## SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

### Selection and ordering data

#### UC operation (50 Hz to 60 Hz, DC)

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



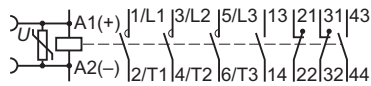
3RT12 6.



3RT12 7.

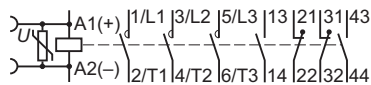
Size	Rated data					AC-1, $T_U: 40^\circ\text{C}$	Auxiliary contacts, lateral		Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	AC-2 and AC-3, $T_U: \text{Up to } 60^\circ\text{C}$													
	Operational current $I_e$ up to	Ratings of induction motors at 50 Hz and				Operational current $I_e$ up to					Order No.	Price per PU		
	1000 V	230 V	<b>400 V</b>	500 V	690 V	1000 V								
	A	kW	<b>kW</b>	kW	kW	A	NO	NC	V AC/DC					

#### Conventional operating mechanisms



<b>S10</b>	225	55	<b>110</b>	160	200	330	2	2	110 ... 127 220 ... 240	A A	<b>3RT12 64-6AF36</b> <b>3RT12 64-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	265	75	<b>132</b>	160	250	330	2	2	110 ... 127 220 ... 240	A A	<b>3RT12 65-6AF36</b> <b>3RT12 65-6AP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S12</b>	400	132	<b>200</b>	250	400	610	2	2	110 ... 127 220 ... 240	A A	<b>3RT12 75-6AF36</b> <b>3RT12 75-6AP36</b>	1 1	1 unit 1 unit	41B 41B
	500	160	<b>250</b>	355	500	610	2	2	110 ... 127 220 ... 240	A A	<b>3RT12 76-6AF36</b> <b>3RT12 76-6AP36</b>	1 1	1 unit 1 unit	41B 41B

#### Solid-state operating mechanisms · for 24 V DC PLC output



<b>S10</b>	225	55	<b>110</b>	160	200	330	2	2	96 ... 127 200 ... 277	B B	<b>3RT12 64-6NF36</b> <b>3RT12 64-6NP36</b>	1 1	1 unit 1 unit	41B 41B
	265	75	<b>132</b>	160	250	330	2	2	96 ... 127 200 ... 277	B B	<b>3RT12 65-6NF36</b> <b>3RT12 65-6NP36</b>	1 1	1 unit 1 unit	41B 41B
<b>S12</b>	400	132	<b>200</b>	250	400	610	2	2	96 ... 127 200 ... 277	B B	<b>3RT12 75-6NF36</b> <b>3RT12 75-6NP36</b>	1 1	1 unit 1 unit	41B 41B
	500	160	<b>250</b>	355	500	610	2	2	96 ... 127 200 ... 277	B B	<b>3RT12 76-6NF36</b> <b>3RT12 76-6NP36</b>	1 1	1 unit 1 unit	41B 41B

Other voltages [according to page 3/85](#) on request.  
 For more 3TF68/69 vacuum contactors (335 kW and 450 kW) [see page 3/118](#).  
 For accessories [see page 3/100](#).

### Overview

#### Snap-on auxiliary switch blocks

Various auxiliary switch blocks can be added to the 3RT1 basic units depending on the application:

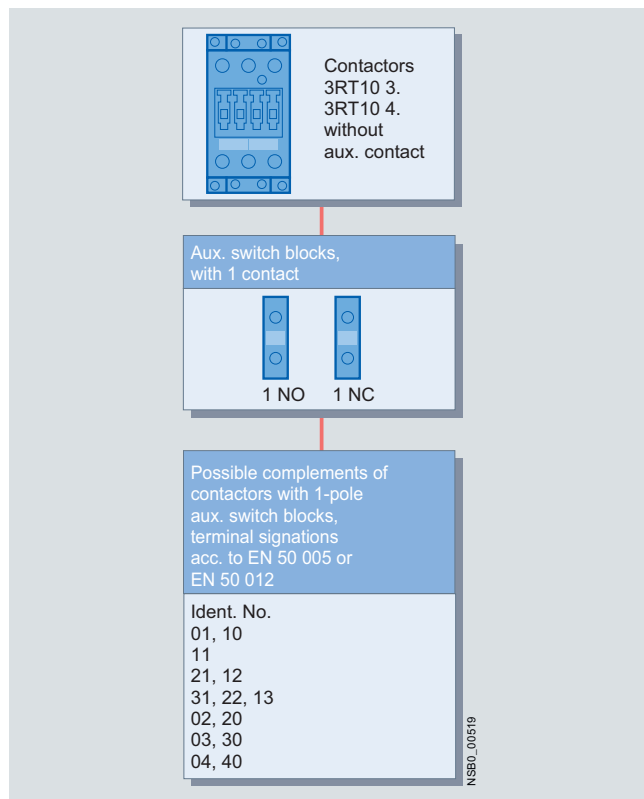
#### Sizes S2 to S12

Terminal designations according to EN 50005 or EN 50012

One 4-pole or up to four single-pole auxiliary switch blocks (screw or spring-type connections) can be snapped on. When the contactors are switched on, the NC contacts are opened first and then the NO contacts are closed.

Also available are 2-pole auxiliary switch blocks (screw terminals) for cable entry from above or below in the design of a quad block (feeder auxiliary switch).

If the installation space is limited in depth, 2-pole auxiliary switch blocks (screw or spring-type connections) can be laterally mounted (on the left or on the right).

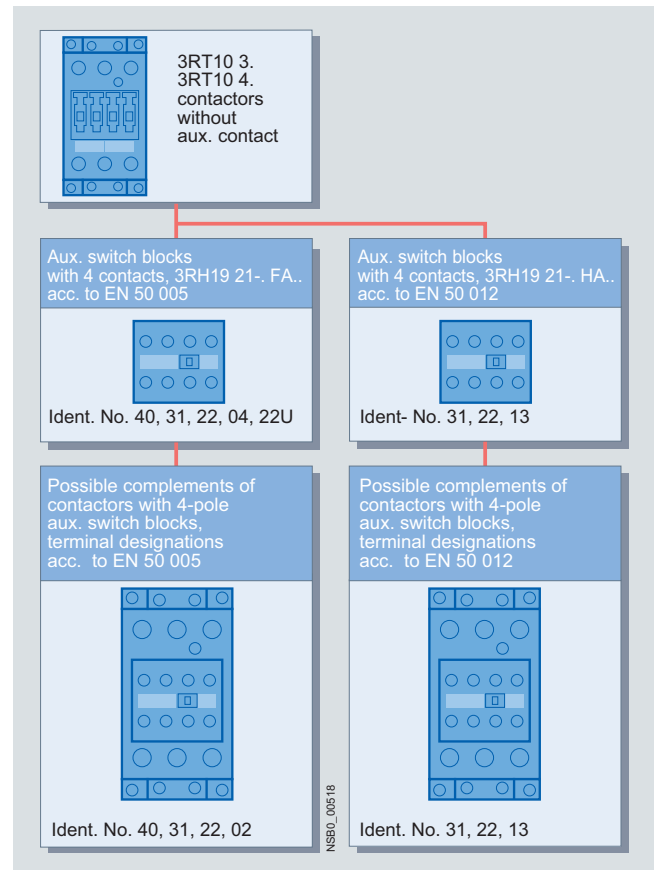


1-pole auxiliary switch blocks for 3RT1 contactors

The terminal designations of the single-pole auxiliary switch blocks are comprised of sequence digit (location identifiers) on the basic unit and of function numbers on the auxiliary switch blocks.

The terminal designations of the individual auxiliary switch blocks correspond to EN 50005 or EN 50012, those of the complete contactors with auxiliary switch block 2 NO + 2 NC correspond to EN 50012.

The auxiliary switch blocks attached to the front can be disassembled with the help of a centrally arranged release lever; the laterally mountable auxiliary switch blocks are easy to remove by pressing on the checkered surfaces.



4-pole auxiliary switch blocks for 3RT1 contactors

The laterally mountable auxiliary switch blocks according to EN 50012 can be used only when no 4-pole auxiliary switch blocks are snapped onto the front. If single-pole auxiliary switch blocks are used in addition, the location identifiers on the contactor must be noted.

Two enclosed and two standard contacts are available with the 3RH19 21-.FE22 solid-state compatible auxiliary switch block, which can be attached to the front. The 3RH19 21-2DE11 laterally mountable, solid-state compatible auxiliary switch block contains 2 enclosed contacts (1 NO + 1 NC). The enclosed contacts are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The NC auxiliary contacts are mirror contacts.

#### Size S2

A maximum of 4 auxiliary contacts can be attached; the auxiliary switch blocks used can be of any version. For reasons of symmetry, when two 2-pole laterally mountable auxiliary switch blocks are used, one block must be attached on the right and one on the left.

More auxiliary contacts are permissible with size S2 under certain conditions (request is required).

#### Sizes S3 to S12

A maximum of 8 auxiliary contacts can be attached; please note the following:

- Of these 8 auxiliary contacts, there must be no more than 4 NC contacts
- Ensure the symmetry of laterally mounted auxiliary switch blocks

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### General data

#### Solid-state time-delay auxiliary switch blocks

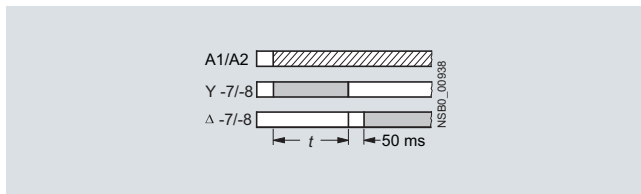
The solid-state, time-delay auxiliary switch block is fitted onto the front side of the contactor.

The timer module, which is available in the "ON-DELAY" and "OFF-DELAY" versions, allows time-delayed functions up to 100 s (3 delay ranges).

It contains a relay with one NO contact and one NC contact; depending on the version, the relay is switched either after an ON-delay or after an OFF-delay.

The timer module with "WYE-DELTA FUNCTION" is equipped with one delayed and one instantaneous NO contact, with a dead time of 50 ms between the two. The delay time of the NO contact can be adjusted between 1.5 s and 30 s.

#### Wye-delta function



The contactor on which the solid-state time-delay auxiliary switch block is mounted operates without a delay.

#### Sizes S2 to S12

The timer module is supplied with power through two terminals (A1/A2); the time delay of the auxiliary switch block can be activated either by a parallel link to any contactor coil or by any power source.

The OFF-delay version operates without an auxiliary voltage; the minimum ON period is 200 ms.

A single-pole auxiliary switch block can be snapped onto the front of the contactor in addition to the timer module.

The timer module has no integrated components for overvoltage damping.

#### Solid-state timing relay blocks with semiconductor output

The timer module in the "ON-DELAY" and "OFF-DELAY with auxiliary voltage" versions allows time-delayed functions up to 100 s (3 delay ranges). Contactors fitted with a timing relay block close or open after a delay according to the set time.

The ON-delay version of the timing relay is connected in series with the contactor coil; terminal A1 of this coil must not be connected.

With the OFF-delay version of the timing relay, the contactor coil is contacted directly through the relay; terminals A1 and A2 of the contactor coil must not be connected.

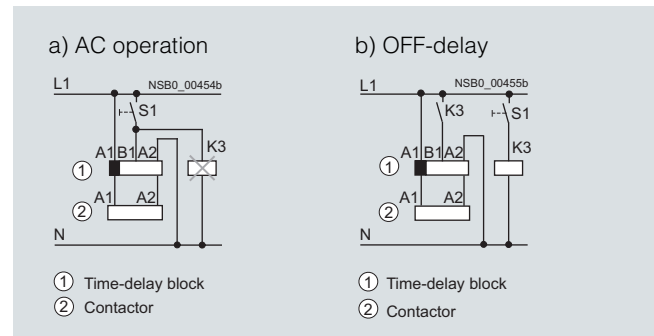
The timing relays are suitable for both AC and DC operation.

#### Sizes S2 and S3

The timing relay block for size S0 to S3 contactors is plugged into coil terminals A1 and A2 on top of each contactor; the timing relay is connected both electrically and mechanically by means of pins.

A varistor is integrated in the timer module in order to damp opening surges in the contactor coil.

#### Configuration



The activation of loads parallel to the start input is not permissible with AC operation (see (a) in the circuit diagram).

The 3RT19 26-2D... OFF-delay timing relay blocks have a zero potential start input B1. This means that if there is a parallel load on terminal B1, activation can be simulated with AC voltage. In this case, the additional load (e.g. contactor K3) must be wired (see (b) in the drawing).

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### General data

#### **OFF-delay device for size S00 and S0 contactors**

##### AC and DC operation

IEC 60947, EN 60947

For screw fixing and snap-on mounting onto TH 35 standard mounting rail. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RT19 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays of the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

##### Operation

In the case of the versions for rated control supply voltages of 110 V and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the version for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

#### **Surge suppressors**

- Without LED (also for spring-type terminals)  
Sizes S2, S3, S6 to S12

All 3RT1 contactors and 3RH1 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

With the size S2 and S3 contactors, varistors, RC elements and diode assemblies can be plugged on directly at the coil terminals, either on the top or underneath.

The plug-in direction of the diodes and diode assemblies is determined by a coding device.

Coupling contactors are supplied either without overvoltage damping or with a varistor or diode connected as standard, according to the version.

##### Note:

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

#### **Coupling links for mounting on contactors of sizes S2 and S3**

##### DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC, operating range 17 to 30 V.

Low power consumption in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

##### Surge suppression

The 3RH19 24-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

##### Mounting

The 3RH19 24-1GP11 coupling link is mounted directly on the contactor coil.

#### **Sealable covers for sizes S2 to S12**

When contactors and contactor relays are used in safety-oriented applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### General data

#### Technical specifications




Contactor	Type	3RT19 26-2C Solid-state timing relay blocks with semiconductor output	3RT19 26-2D	3RT19 26-2E Solid-state time-delay auxiliary switch blocks	3RT19 26-2F	3RT19 26-2G
<b>General data</b>						
<b>Rated insulation voltage <math>U_i</math></b>	V AC	250				
Pollution degree 3 Overvoltage category III acc. to EN 60664-1						
<b>Permissible ambient temperature</b>						
• During operation	°C	-25 ... +60				
• During storage	°C	-40 ... +80				
<b>Degree of protection</b> acc. to EN 60947-1, Appendix C						
• Cover		IP40				
• Terminals		IP20				
<b>Shock resistance</b>	g/ms	15/11				
Half-sine acc. to IEC 60068-2-27						
<b>Vibration resistance</b>	Hz/mm	10 ... 55/0.35				
according to IEC 60068-2-6						
<b>EMC tests</b>	Basic specification	IEC 61000-6-4				
<b>Conductor connections</b>						
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5), 2 x (0.75 ... 4)				
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)				
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)				
• Terminal screws		M3				
• Tightening torque	Nm lb.in	0.8 ... 1.2 7 ... 10.3				
<b>Permissible mounting positions</b>		Any				
<b>Control</b>						
<b>Operating range of excitation</b>		0.8 ... 1.1 x $U_s$ , 0.95 ... 1.05 times the rated frequency		0.85 ... 1.1 x $U_s$ , 0.95 ... 1.05 times the rated frequency		
<b>Rated power</b>	W	1		2		
• Power consumption at 230 V AC, 50 Hz	VA	1		4		
<b>Overvoltage protection</b>		Varistor integrated in timing relay				--
<b>Recovery time</b>	ms	50		150		
<b>Minimum ON period</b>	ms	35		200 (with OFF-delay)		
<b>Setting accuracy</b>	Typ. %	±15				
With reference to upper limit of scale						
<b>Repeat accuracy</b>	Max. %	±1				
<b>Load side</b>						
<b>Rated operational currents <math>I_e</math></b>						
• AC-140, DC-13	A	0.3 for 3RT19 16		--		
	A	0.3 for 3RT19 26		--		
• AC-15, 230 V, 50 Hz	A	--		3		
• DC-13, 24 V	A	--		1		
• DC-13, 110 V	A	--		0.2		
• DC-13, 230 V	A	--		0.1		
<b>Short-time loading capacity</b>	Up to 10 ms	A		10		
<b>DIAZED protection</b> gG operational class	A	--		4		
<b>Residual current</b>	Max. mA	5		--		
<b>Voltage drop</b>	Max. VA	3.5		--		
With conducting output						
<b>Mechanical endurance</b>	Operating cycles	100 x 10 <sup>6</sup>		10 x 10 <sup>6</sup>		
<b>Switching frequency</b> for load						
• With $I_e$ at 230 V AC	h <sup>-1</sup>	2500		2500		
• With 3RT20 16 contactor at 230 V AC	h <sup>-1</sup>	2500		5000		

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

General data

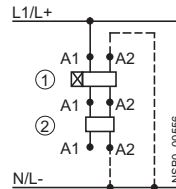
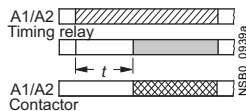
Function	Function chart
----------	----------------

 Timing relay energized  
 Contact closed  
 Contact open

Solid-state timing relay blocks	1 NO contact (semiconductor output)
---------------------------------	-------------------------------------

ON-delay, two-wire design (varistor integrated)

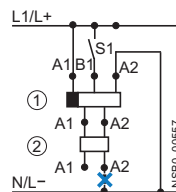
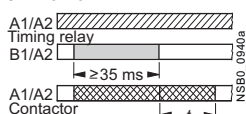
3RT19 26-2C



A2 can be connected to N(L-) using either the contactor or the timing relay.  
 --- To be connected optionally  
 ① Timing relay block  
 ② Contactor

OFF-delay with auxiliary voltage (varistor integrated)

3RT19 26-2D

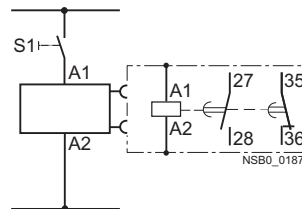
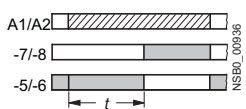


A2 must only be connected to N(L-) from the timing relay.  
 ✗ Do not connect  
 ① Timing relay block  
 ② Contactor

Solid-state time-delay auxiliary switch blocks	1 NO + 1 NC
--	-------------

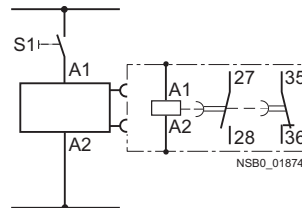
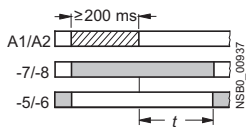
ON-delay

3RT19 26-2E



OFF-delay without auxiliary voltage

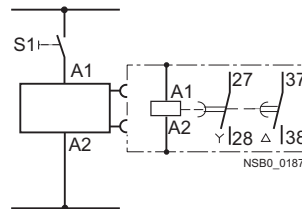
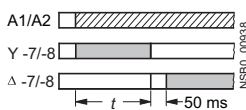
3RT19 26-2F



Solid-state time-delay auxiliary switch blocks	2 NO
--	------

Wye-delta function: 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)

3RT19 26-2G



# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### General data

Contactor	Type	<b>3RH19 24, 3TX7 090</b> <b>Coupling links for mounting on contactors</b> <b>acc. to IEC 60947/EN 60947</b>
<b>General data</b>		
<b>Rated insulation voltage</b> $U_i$ (pollution degree 3)	V	300
<b>Protective separation</b> between coil and contacts acc. to IEC 60947-1, Appendix N	V AC	Up to 300
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
<b>Degree of protection acc. to IEC 60947-1, Appendix C</b>		
• Connections		IP20
• Enclosure		IP40
<b>Circuit diagram</b>	<p>① Coupling link ② Contactor</p>	
<b>Conductor cross-sections</b>		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5)
Terminal screws		M3
<b>Control side</b>		
<b>Rated control supply voltage</b> $U_s$	V DC	24
<b>Operating range</b>	V DC	17 ... 30
<b>Power consumption at</b> $U_s$	W	0.5
<b>Nominal current input</b>	mA	20
<b>Release voltage</b>	V	≥ 4
<b>Function display</b>		Yellow LED
<b>Protection circuit</b>		Varistor
<b>Load side</b>		
<b>Mechanical endurance</b>	Operating cycles	20 x 10 <sup>6</sup>
<b>Electrical endurance at</b> $I_e$	Operating cycles	1 x 10 <sup>5</sup>
<b>Switching frequency</b>	Operating cycles h <sup>-1</sup>	5000
<b>Make-time</b>	ms	Approx. 7
<b>Break-time</b>	ms	Approx. 4
<b>Bounce time</b>	ms	Approx. 2
<b>Contact material</b>		AgSnO
<b>Switching voltage</b>	AC/DC V	24 ... 250
<b>Permissible residual current</b> of the electronics (with 0 signal)	mA	2.5



# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### General data

Contactor	Type	3RT19 26-3A Mechanical latching blocks
<b>General data</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-50 ... +80
<b>Degree of protection</b> acc. to EN 60947-1, Appendix C		IP20
<b>Mechanical endurance</b>		
• With 3RT1. 2	Operating cycles	$3 \times 10^6$
• With 3RT1. 3	Operating cycles	50000
<b>Conductor cross-sections</b>		
• Solid	mm <sup>2</sup> AWG	2 x (0.5 ... 2.5); 1 x 4 2 x 14; 1 x 12
• Finely stranded with end sleeve	mm <sup>2</sup> AWG	2 x (0.5 ... 2.5); 1 x 2.5 2 x 14; 1 x 12
<b>Tightening torque of the terminal screws</b>		
	Nm lb.in	0.8 ... 1.1 7 ... 9.5
<b>Control</b>		
<b>Operating range of the solenoid coil</b> At AC 50/60 Hz and DC		0.85 ... 1.1 x $U_s$
<b>Power consumption of the solenoid coils of the unlocking magnet</b> (for cold coil and 1.0 x $U_s$ ) AC and DC operation		W
		Approx. 4
<b>Command duration for de-energizing</b>		
• AC operation	ms	18 ... 31
• DC operation	ms	18 ... 26

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

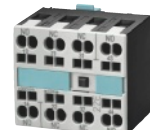
### Auxiliary switches

#### Selection and ordering data

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



3RH19 21-1HA...  
3RH19 21-1FA...



3RH19 21-2HA...  
3RH19 21-2FA...

For contactors: Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals	
Ident. No.	Version		Order No.	Price per PU	Order No.	Price per PU
Type	NO NC NO NC					

#### Auxiliary switch blocks for snapping onto the front according to EN 50012

##### Sizes S2 and S3<sup>1)</sup>

##### 4-pole auxiliary switch blocks

3RT1. 3, 3RT1. 4	<b>31</b>	3	1	--	--		▶	<b>3RH19 21-1HA31</b>	▶	<b>3RH19 21-2HA31</b>
	<b>22</b>	2	2	--	--		▶	<b>3RH19 21-1HA22</b>	▶	<b>3RH19 21-2HA22</b>
	<b>13</b>	1	3	--	--		▶	<b>3RH19 21-1HA13</b>	▶	<b>3RH19 21-2HA13</b>

##### Sizes S2 to S12<sup>2)</sup>

##### 4-pole auxiliary switch blocks

3RT1. 3 ... 3RT1. 7	<b>22</b>	2	2	--	--		B	<b>3RH19 21-1XA22-0MA0</b>	D	<b>3RH19 21-2XA22-0MA0</b>
------------------------	-----------	---	---	----	----	--	---	----------------------------	---	----------------------------

#### Auxiliary switch blocks for snapping onto the front according to EN 50005

##### Sizes S2 and S3<sup>1)</sup>

##### 4-pole auxiliary switch blocks

3RT1. 3, 3RT1. 4	<b>40</b>	4	--	--	--		▶	<b>3RH19 21-1FA40</b>	▶	<b>3RH19 21-2FA40</b>
	<b>31</b>	3	1	--	--		▶	<b>3RH19 21-1FA31</b>	▶	<b>3RH19 21-2FA31</b>
	<b>22</b>	2	2	--	--		▶	<b>3RH19 21-1FA22</b>	▶	<b>3RH19 21-2FA22</b>
	<b>04</b>	--	4	--	--		▶	<b>3RH19 21-1FA04</b>	A	<b>3RH19 21-2FA04</b>
	<b>22 U</b>	--	--	2	2		▶	<b>3RH19 21-1FC22</b>	A	<b>3RH19 21-2FC22</b>

For multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

1) Exception: 3RT16.

2) Exception: 3RT12, 3RT16.

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Auxiliary switches

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



3RH19 21-1LA..



3RH19 21-1MA..



3RH19 21-1C..



3RH19 21-2C..

For contactors:		Auxiliary contacts		DT	Screw terminals		DT	Spring-type terminals	
Ident. No.	Version			Order No.	Price per PU	Order No.	Price per PU		

Auxiliary switch blocks for snapping onto the front according to EN 50005

**Sizes S2 and S3<sup>1)</sup>**

2-pole auxiliary switch blocks with cable entry on one side  
 • Cable entry from above

3RT1. 3, 3RT1. 4	11	1	1	--	--		▶	3RH19 21-1LA11	--
	20	2	--	--	--		▶	3RH19 21-1LA20	--
	02	--	2	--	--		▶	3RH19 21-1LA02	--

• Cable entry from below

3RT1. 3, 3RT1. 4	11	1	1	--	--		▶	3RH19 21-1MA11	--
	20	2	--	--	--		▶	3RH19 21-1MA20	--
	02	--	2	--	--		▶	3RH19 21-1MA02	--

**Sizes S2 to S12<sup>2)</sup>**

1-pole auxiliary switch blocks according to EN 50005 and EN 50012

3RT1. 3 ... 3RT1. 7	10	1	--	--	--		▶	3RH19 21-1CA10	▶	3RH19 21-2CA10
	01	--	1	--	--		▶	3RH19 21-1CA01	▶	3RH19 21-2CA01
	10	--	--	1	--		▶	3RH19 21-1CD10	--	--
	01	--	--	--	1		▶	3RH19 21-1CD01	--	--

<sup>1)</sup> Exception: 3RT16.

<sup>2)</sup> Exception: 3RT12, 3RT16

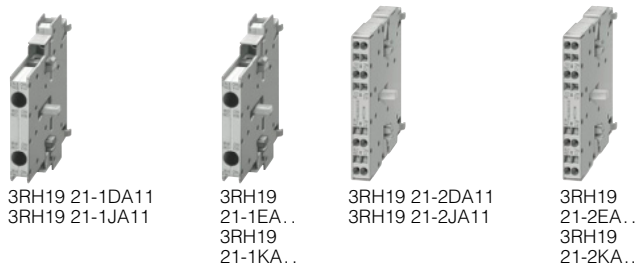


# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Auxiliary switches

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



For contactors	Auxiliary contacts	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>	
	Version		Order No.	Price per PU	Order No.	Price per PU
Type	NO     NC					

#### Laterally mountable auxiliary switch blocks according to EN 50012

3RT1	Left	Right	Order No.	Order No.
<b>Sizes S2 and S3</b>				
	<b>First laterally mountable auxiliary switch block (right or left), 2-pole</b>			
3RT1. 3, 3RT1. 4	1    1 		▶ <b>3RH19 21-1DA11</b>	▶ <b>3RH19 21-2DA11</b>

3RT1	Left	Right	Order No.	Order No.
<b>Sizes S3 to S12</b>				
	<b>Second laterally mountable auxiliary switch block (right or left), 2-pole</b>			
3RT1. 4 ... 3RT1. 7	1    1 		▶ <b>3RH19 21-1JA11</b>	▶ <b>3RH19 21-2JA11</b>

#### Laterally mountable auxiliary switch blocks according to EN 50005

3RT1	Left	Right	Order No.	Order No.
<b>Sizes S2 to S12</b>				
	<b>First laterally mountable auxiliary switch block (right or left), 2-pole</b>			
3RT1. 3 ... 3RT1. 7	2    -- 		▶ <b>3RH19 21-1EA20</b>	▶ <b>3RH19 21-2EA20</b>
	1    1 		▶ <b>3RH19 21-1EA11</b>	--
	--    2 		▶ <b>3RH19 21-1EA02</b>	▶ <b>3RH19 21-2EA02</b>

3RT1	Left	Right	Order No.	Order No.
<b>Sizes S3 to S12</b>				
	<b>Second laterally mountable auxiliary switch block (right or left), 2-pole</b>			
3RT1. 4 ... 3RT1. 7	2    -- 		▶ <b>3RH19 21-1KA20</b>	D <b>3RH19 21-2KA20</b>
	1    1 		▶ <b>3RH19 21-1KA11</b>	--
	--    2 		▶ <b>3RH19 21-1KA02</b>	D <b>3RH19 21-2KA02</b>

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Auxiliary switches

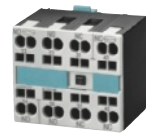
PU (UNIT, SET, M) = 1  
 PS\* = 1 unit  
 PG = 41B



3RH19 21-2DE11,  
3RH19 21-2JE11



3RH19 21-1FE22



3RH19 21-2JE22

For contactors	Contacts	DT	Screw terminals	DT	Spring-type terminals	
	Version		Order No.	Price per PU	Order No.	Price per PU
Type	NO NO <sup>1)</sup> NC <sup>1)</sup> NC					

#### Solid-state compatible auxiliary switch blocks

- For operation in dusty atmospheres
- For solid-state circuits with rated operational currents  $I_g$ /AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V
- Hard gold-plated contacts
- Mirror contacts acc. to IEC 60947-4-1, Appendix F

#### Auxiliary switch blocks for snapping onto the front according to EN 50005

##### Sizes S2 and S3

3RT1. 3 ...  
3RT1. 7

1 1 1 1



▶	<b>3RH19 21-1FE22</b>	B	<b>3RH19 21-2FE22</b>
---	-----------------------	---	-----------------------

#### Laterally mountable auxiliary switch blocks according to EN 50012

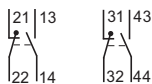
##### Sizes S2 to S12

Left Right

##### First laterally mountable auxiliary switch block (right or left), 2-pole

3RT1. 3 ...  
3RT1. 7

1 -- -- 1



--	▶	<b>3RH19 21-2DE11</b>
----	---	-----------------------

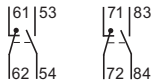
##### Sizes S3 to S12

Left Right

##### Second laterally mountable auxiliary switch block (right or left), 2-pole

3RT1. 4 ...  
3RT1. 7

1 -- -- 1



--	▶	<b>3RH19 21-2JE11</b>
----	---	-----------------------





<sup>1)</sup> 1 NO + 1 NC standard auxiliary switches:  
[See descriptions on page 3/91.](#)

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Solid-state time-delay auxiliary switch blocks and timing relay blocks

#### Selection and ordering data

For contactors	Auxiliary contacts	Rated control supply voltage $U_s$ <sup>1)</sup>	Time setting range $t$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG	
Type	V	s			Order No.	Price per PU				
<b>Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5</b>										
<b>Sizes S2 to S12</b>										
<b>With ON-delay<sup>2)</sup></b>										
 3RT19 26-2....	3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0,05 ... 1	D	<b>3RT19 26-2EJ11</b>	1	1 unit	41H	
				0,5 ... 10	▶	<b>3RT19 26-2EJ21</b>	1	1 unit	41H	
				5 ... 100	A	<b>3RT19 26-2EJ31</b>	1	1 unit	41H	
		100 ... 127 AC		0,05 ... 1	C	<b>3RT19 26-2EC11</b>	1	1 unit	41H	
				0,5 ... 10	▶	<b>3RT19 26-2EC21</b>	1	1 unit	41H	
				5 ... 100	D	<b>3RT19 26-2EC31</b>	1	1 unit	41H	
		200 ... 240 AC		0,05 ... 1	D	<b>3RT19 26-2ED11</b>	1	1 unit	41H	
				0,5 ... 10	▶	<b>3RT19 26-2ED21</b>	1	1 unit	41H	
				5 ... 100	B	<b>3RT19 26-2ED31</b>	1	1 unit	41H	
	<b>OFF-delay without auxiliary voltage<sup>2)3)</sup></b>									
	3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0,05 ... 1	▶	<b>3RT19 26-2FJ11</b>	1	1 unit	41H	
				0,5 ... 10	▶	<b>3RT19 26-2FJ21</b>	1	1 unit	41H	
5 ... 100				▶	<b>3RT19 26-2FJ31</b>	1	1 unit	41H		
100 ... 127 AC/DC			0,05 ... 1	D	<b>3RT19 26-2FK11</b>	1	1 unit	41H		
			0,5 ... 10	▶	<b>3RT19 26-2FK21</b>	1	1 unit	41H		
			5 ... 100	C	<b>3RT19 26-2FK31</b>	1	1 unit	41H		
200 ... 240 AC/DC			0,05 ... 1	D	<b>3RT19 26-2FL11</b>	1	1 unit	41H		
			0,5 ... 10	A	<b>3RT19 26-2FL21</b>	1	1 unit	41H		
			5 ... 100	A	<b>3RT19 26-2FL31</b>	1	1 unit	41H		
<b>Wye-delta function (varistor integrated)<sup>2)</sup></b>										
3RT10, 3RT13, 3RT14, 3RT15	1 NO delayed + 1 NO instantaneous, dead time 50 ms	24 AC/DC	1,5 ... 30	▶	<b>3RT19 26-2GJ51</b>	1	1 unit	41H		
			100 ... 127 AC	▶	<b>3RT19 26-2GC51</b>	1	1 unit	41H		
			200 ... 240 AC	▶	<b>3RT19 26-2GD51</b>	1	1 unit	41H		
<b>Solid-state timing relay blocks with semiconductor output</b>										
<b>Sizes S2 and S3</b>										
<b>For mounting onto top-lying coil terminals, only for devices with screw terminals</b>										
<b>• ON-delay (varistor integrated)</b>										
 3RT19 26-2C...	3RT10 3, 3RT10 4, 3RT13 <sup>4)</sup> , 3RT15	--	24 ... 66 AC/DC	0,05 ... 1	D	<b>3RT19 26-2CG11</b>	1	1 unit	41H	
				0,5 ... 10	B	<b>3RT19 26-2CG21</b>	1	1 unit	41H	
				5 ... 100	D	<b>3RT19 26-2CG31</b>	1	1 unit	41H	
		90 ... 240 AC/DC		0,05 ... 1	▶	<b>3RT19 26-2CH11</b>	1	1 unit	41H	
				0,5 ... 10	▶	<b>3RT19 26-2CH21</b>	1	1 unit	41H	
				5 ... 100	▶	<b>3RT19 26-2CH31</b>	1	1 unit	41H	
<b>• OFF-delay with auxiliary voltage (varistor integrated)</b>										
 3RT19 26-2D...	3RT10 3, 3RT10 4, 3RT13 <sup>4)</sup> , 3RT15	--	24 ... 66 AC/DC	0,05 ... 1	D	<b>3RT19 26-2DG11</b>	1	1 unit	41H	
				0,5 ... 10	D	<b>3RT19 26-2DG21</b>	1	1 unit	41H	
				5 ... 100	D	<b>3RT19 26-2DG31</b>	1	1 unit	41H	
		90 ... 240 AC/DC		0,05 ... 1	D	<b>3RT19 26-2DH11</b>	1	1 unit	41H	
				0,5 ... 10	D	<b>3RT19 26-2DH21</b>	1	1 unit	41H	
				5 ... 100	C	<b>3RT19 26-2DH31</b>	1	1 unit	41H	
<b>OFF-delay devices</b>										
<b>Sizes S2 and S3</b>										
 3RT19 16-2BE01	3RT10 3, 3RT10 4	24 DC	S2: 90 fixed S3: 70 fixed	▶	<b>3RT19 16-2BE01</b>	1	1 unit	41H		
		Only for contactors with DC operation								

For technical specifications, operating travel diagrams and circuit diagrams see pages 3/94 and 3/95.

<sup>1)</sup> The AC voltages are valid for 50 and 60 Hz.

<sup>2)</sup> Terminals A1 and A2 for the control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting cables.

<sup>3)</sup> Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact change-over to the correct setting.

<sup>4)</sup> In addition to these, no other auxiliary contacts are permitted.

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Surge suppressors






#### Selection and ordering data

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
		AC operation	DC operation						
Type		V AC	V DC						

#### Surge suppressors without LED




##### Sizes S2 and S3 (also for spring-type terminals)

For fitting onto the coil terminals at top or bottom

 3RT19 26-1B.00	<b>Varistor</b> 	24 ... 48	24 ... 70	▶	<b>3RT19 26-1BB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT19 26-1BC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT19 26-1BD00</b>	1	1 unit	41B	
		240 ... 400	--	▶	<b>3RT19 26-1BE00</b>	1	1 unit	41B	
		400 ... 600	--	▶	<b>3RT19 26-1BF00</b>	1	1 unit	41B	
 3RT19 36-1C.00	<b>RC elements</b> 	24 ... 48	24 ... 70	▶	<b>3RT19 36-1CB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT19 36-1CC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT19 36-1CD00</b>	1	1 unit	41B	
		240 ... 400	--	▶	<b>3RT19 36-1CE00</b>	1	1 unit	41B	
		400 ... 600	--	▶	<b>3RT19 36-1CF00</b>	1	1 unit	41B	
3RT1. 3, 3RT1. 4  <b>Diode assembly for DC operation</b> 	• Connectable at the top (e.g. for contactor with overload relay)	--	24	▶	<b>3RT19 36-1ER00</b>	1	1 unit	41B	
		--	30 ... 250	▶	<b>3RT19 36-1ES00</b>	1	1 unit	41B	
		• Connectable at the bottom (e.g. for fuseless load feeders)	--	24	▶	<b>3RT19 36-1TR00</b>	1	1 unit	41B
			--	30 ... 250	▶	<b>3RT19 36-1TS00</b>	1	1 unit	41B

##### Sizes S6 to S12

For connecting to withdrawable coil for contactors with  
 • conventional operating mechanism 3RT1. ...-A...  
 • solid-state operating mechanism 3RT1. ...-N...

 3RT19 56-1C.00	<b>RC elements</b> 	24 ... 48	24 ... 70	▶	<b>3RT19 56-1CB00</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	▶	<b>3RT19 56-1CC00</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	▶	<b>3RT19 56-1CD00</b>	1	1 unit	41B	
		240 ... 400	--	▶	<b>3RT19 56-1CE00</b>	1	1 unit	41B	
		400 ... 600	--	▶	<b>3RT19 56-1CF00</b>	1	1 unit	41B	
3RT1. 5, 3RT1. 6, 3RT1. 7  <b>RC elements</b> 	• Connectable at the top (e.g. for contactor with overload relay)	--	24	▶	<b>3RT19 56-1EB00</b>	1	1 unit	41B	
		--	30 ... 250	▶	<b>3RT19 56-1ES00</b>	1	1 unit	41B	
		• Connectable at the bottom (e.g. for fuseless load feeders)	--	24	▶	<b>3RT19 56-1TB00</b>	1	1 unit	41B
			--	30 ... 250	▶	<b>3RT19 56-1TS00</b>	1	1 unit	41B

<sup>1)</sup> Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

<sup>2)</sup> For packs of 10 or 5 units "-Z" and order code "X90" must be added to the Order No.

<sup>3)</sup> For 3RT1. 3 with AC operation mountable only at the top.

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							

#### Main current path surge suppression modules for 3RT12 vacuum contactors

##### Size S10 and S12

3RT12	For damping overvoltages and protecting motor windings against multiple re-ignition when switching off induction motors. For connection on the contactor feeder side (2-T1/4-T2/6-T3). For separate installation. Rated operational voltage $U_e = 690$ V AC Rated operational voltage $U_e = 1000$ V AC	C	<b>3RT19 66-1PV3</b>	1	1 unit	41B
		C	<b>3RT19 66-1PV4</b>	1	1 unit	41B

# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Miscellaneous accessories

#### Selection and ordering data

For contactors	Rated control supply voltage $U_g$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Type	V		Order No.		Price per PU		

#### Mechanical latching blocks

##### Size S2



3RT19 26-3A.31

For mounting on 1 contactor<sup>1)</sup>

The contactor remains in the energized state even after a voltage failure

3RT1 . 3	24 AC/DC	A	<b>3RT19 26-3AB31</b>		1	1 unit	41B
	110 AC/DC	B	<b>3RT19 26-3AF31</b>		1	1 unit	41B
	230 AC/DC	B	<b>3RT19 26-3AP31</b>		1	1 unit	41B

<sup>1)</sup> Two front-mounted auxiliary switch blocks can be mounted in addition.

For contactors	Version	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Type	V		Order No.		Price per PU		

#### Coupling links for control by PLC

##### Sizes S2 and S3



3RH19 24-1GP11

For mounting onto the coil terminals of the contactors  
With LED for indicating switching state

3RT1 . 3, 3RT1 . 4	Operating range 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA  Rated operational current $I_e$ : • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A  With integrated varistor for damping opening surges.	▶	<b>3RH19 24-1GP11</b>		1	1 unit	41B
-----------------------	--	---	-----------------------	--	---	--------	-----

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							

#### LED modules for displaying contactor operation

##### Sizes S2 to S12<sup>1)</sup> (also for spring-type terminals)

3RT19 26-1QT00  
mounted to contactor

3RT1 . 3, 3RT1 . 4	For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch.  The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED.  Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection. (1 pack = 5 units)	B	<b>3RT19 26-1QT00</b>		1	5 units	41B
-----------------------	---	---	-----------------------	--	---	---------	-----

#### Auxiliary terminals, 3-pole

##### Size S3



3RT19 46-4F

3RT10 4.	For connection of auxiliary and control cables (0.5 to 2.5 mm <sup>2</sup> ) to the main conductor connections (for one connection side)	B	<b>3RT19 46-4F</b>		1	1 unit	41B
----------	--	---	--------------------	--	---	--------	-----

For technical specifications for latching blocks see page 3/97.

For technical specifications and circuit diagram for coupling links see page 3/96.





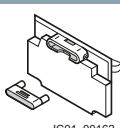
<sup>1)</sup> For sizes S6 to S12 the connecting leads have to be extended.



# Power Contactors for Switching Motors

## Accessories for 3RT1 Contactors

### Miscellaneous accessories

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
Size	Type								
<b>Box terminal blocks</b>									
	<b>S6</b>	<b>For round and ribbon cables<sup>1)</sup></b>							
		3RT1. 5 (3RB20 5)	Up to 70 mm <sup>2</sup> <sup>2)</sup> Up to 120 mm <sup>2</sup>	▶	<b>3RT19 55-4G</b>	1	1 unit	41B	
			Auxiliary conductor connection for box terminals	B	<b>3RT19 56-4G</b>	1	1 unit	41B	
	<b>S10, S12</b>	3RT1. 6, 3RT1. 7 (3RB20 6, 3RB21 6)	Up to 240 mm <sup>2</sup> With auxiliary conductor connection	▶	<b>3RT19 66-4G</b>	1	1 unit	41B	
<b>Covers</b>									
	<b>S2</b>	<b>Terminal covers for box terminals</b> (additional touch protection) To be fitted at the box terminals (2 units required per contactor)							
		3RT10 3	--	▶	<b>3RT19 36-4EA2</b>	1	1 unit	41B	
		3RT13 3, 3RT15 3	For 4-pole contactors	B	<b>3RT19 36-4EA4</b>	1	1 unit	41B	
		<b>S3</b>	3RT10 4, 3RT14 4	--	▶	<b>3RT19 46-4EA2</b>	1	1 unit	41B
			3RT13 4	For 4-pole contactors	B	<b>3RT19 46-4EA4</b>	1	1 unit	41B
	<b>S6<sup>3)</sup></b>	3RT1. 5	Length: 25 mm	▶	<b>3RT19 56-4EA2</b>	1	1 unit	41B	
	<b>S10, S12<sup>3)</sup></b>	3RT1. 6, 3RT1. 7	Length: 30 mm	▶	<b>3RT19 66-4EA2</b>	1	1 unit	41B	
	<b>S3</b>	<b>Terminal covers for cable lugs and busbar connection<sup>3)</sup></b> For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per contactor)							
		3RT10 4, 3RT14 4	--	▶	<b>3RT19 46-4EA1</b>	1	1 unit	41B	
		<b>S6</b>	3RT1. 5	Length: 100 mm	▶	<b>3RT19 56-4EA1</b>	1	1 unit	41B
	<b>S10/S12</b>	3RT1. 6, 3RT1. 7	Length: 120 mm	▶	<b>3RT19 66-4EA1</b>	1	1 unit	41B	
	<b>S6</b>	3RT1. 5	M8	B	<b>3TX6 526-3B</b>	1	1 unit	41B	
		<b>S10, S12</b>	3RT1. 6, 3RT1. 7	M10	B	<b>3TX6 546-3B</b>	1	1 unit	41B
	<b>S6</b>	3RT1. 5	Length: 27 mm	▶	<b>3RT19 56-4EA3</b>	1	1 unit	41B	
	<b>S10/S12<sup>4)</sup></b>	3RT1. 6, 3RT1. 7	Length: 42 mm	▶	<b>3RT19 66-4EA3</b>	1	1 unit	41B	
	<b>S6</b>	3RT1. 5	Length: 38 mm	▶	<b>3RT19 56-4EA4</b>	1	1 unit	41B	
<b>Sealable covers</b>									
	<b>S2 ... S12</b>	3RT1. 3 ... 3RT1. 7 <sup>5)</sup>	1 unit required per contactor	C	<b>3RT19 26-4MA10</b>	1	5 units	41B	

<sup>1)</sup> For connectable cross-sections of the contactors see [Technical Specifications, pages 3/71 and 3/75](#).

<sup>2)</sup> As standard for 3RT10 54-1 contactor (55 kW).

<sup>3)</sup> Also fits on contactors S6 to S12 with box terminals.


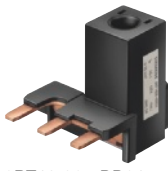

<sup>4)</sup> The 3RT19 66-4EA3 cover is required in addition for use in contactor assemblies (reversing/wye-delta).

<sup>5)</sup> Exception: contactors and contactor relays with auxiliary switch block mounted onto the front.

# Power Contactors for Switching Motors




## Accessories for 3RT1 Contactors

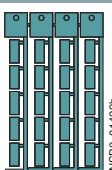
### Miscellaneous accessories

For contactors		Max. conductor cross-sections		DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
Size	Type	mm <sup>2</sup>			Order No.	Price per PU		
<b>Links for paralleling</b>								
	<b>S2</b>	<b>3-pole, with connection terminal<sup>1)2)</sup></b>		▶	<b>3RT19 36-4BB31</b>		1	1 unit 41B
3RT19 36-4BB31		3RT10 3	95					
	<b>S3</b>	<b>3-pole, with through hole (star jumpers)<sup>1)2)</sup></b>		▶	<b>3RT19 46-4BB31</b>		1	1 unit 41B
3RT19 56-4BA31	<b>S6</b>	3RT10 4,	185	▶	<b>3RT19 56-4BA31</b>		1	1 unit 41B
	<b>S10/S12</b>	3RT14 4	--	▶	<b>3RT19 66-4BA31</b>		1	1 unit 41B
		3RT1. 5	--	▶				
		3RT1. 6,	--	▶				
		3RT1. 7	--					

<sup>1)</sup> The links for paralleling can be reduced by one pole.

<sup>2)</sup> Size S2: The links for paralleling are insulated.  
 Size S3: A cover plate is included for touch protection.  
 (Can only be used when the box terminal is removed.)  
 Sizes S6 to S12: The 3RT19 56-4EA1 (for S6) or 3RT19 66-4EA1  
 (for S10 and S12) cover can be used for touch protection.

Version	DT	Spring-type terminals 	PU (UNIT, SET, M)	PS*	PG
		Order No.	Price per PU		
<b>Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm<sup>2</sup></b>					
	B	<b>3RT19 16-4JA02</b>		1	20 units 41B
3RT19 16-4JA02					
<b>Tools for opening spring-type terminal points</b>					
	A	<b>3RA29 08-1A</b>		1	1 unit 41B
3RA29 08-1A					

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Blank labels</b>						
	C	<b>3RT19 00-1SB10</b>		100	816 units	41B
	D	<b>3RT19 00-1SB20</b>		100	340 units	41B
	C	<b>3RT19 00-1SB60</b>		100	3060 units	41B
	C	<b>3RT19 00-1SD60</b>		100	3060 units	41B

#### Computer labeling system

For individual inscription of unit labeling plates available from:  
 Murrplastik Systemtechnik GmbH  
 (see Chapter 16, "Appendix" → "External Partners")

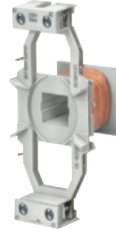
# Power Contactors for Switching Motors

## Spare Parts for 3RT1 Contactors

Solenoid coils

### Selection and ordering data

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



3RT19 34-5A.01

For contactors		Rated control supply voltage $U_s$			DT	Screw terminals	DT	Spring-type terminals	
Size	Type	50 Hz V	50/60 Hz V	60 Hz V		Order No.	Price per PU	Order No.	Price per PU
<b>Solenoid coils · AC operation</b>									
<b>S2</b>	3RT10 34	24	--	--	B	<b>3RT19 34-5AB01</b>		B	<b>3RT19 34-5AB02</b>
		42	--	--	B	<b>3RT19 34-5AD01</b>		B	<b>3RT19 34-5AD02</b>
		48	--	--	B	<b>3RT19 34-5AH01</b>		B	<b>3RT19 34-5AH02</b>
		110	--	--	B	<b>3RT19 34-5AF01</b>		B	<b>3RT19 34-5AF02</b>
		230	--	--	B	<b>3RT19 34-5AP01</b>		B	<b>3RT19 34-5AP02</b>
		400	--	--	C	<b>3RT19 34-5AV01</b>		B	<b>3RT19 34-5AV02</b>
		--	24	--	B	<b>3RT19 34-5AC21</b>		B	<b>3RT19 34-5AC22</b>
		--	42	--	B	<b>3RT19 34-5AD21</b>		B	<b>3RT19 34-5AD22</b>
		--	48	--	B	<b>3RT19 34-5AH21</b>		B	<b>3RT19 34-5AH22</b>
		--	110	--	C	<b>3RT19 34-5AG21</b>		B	<b>3RT19 34-5AG22</b>
	--	220	--	C	<b>3RT19 34-5AN21</b>		B	<b>3RT19 34-5AN22</b>	
	--	230	--	C	<b>3RT19 34-5AL21</b>		B	<b>3RT19 34-5AL22</b>	
	--	110	--	B	<b>3RT19 34-5AK61</b>		B	<b>3RT19 34-5AK62</b>	
	--	220	--	B	<b>3RT19 34-5AP61</b>		B	<b>3RT19 34-5AP62</b>	
	--	100	110	B	<b>3RT19 34-5AG61</b>		B	<b>3RT19 34-5AG62</b>	
	--	200	220	B	<b>3RT19 34-5AN61</b>		B	<b>3RT19 34-5AN62</b>	
	--	400	440	B	<b>3RT19 34-5AR61</b>		B	<b>3RT19 34-5AR62</b>	
	3RT10 35, 3RT10 36, 3RT13 3., 3RT15 3.	24	--	--	B	<b>3RT19 35-5AB01</b>		B	<b>3RT19 35-5AB02</b>
		42	--	--	B	<b>3RT19 35-5AD01</b>		B	<b>3RT19 35-5AD02</b>
		48	--	--	B	<b>3RT19 35-5AH01</b>		B	<b>3RT19 35-5AH02</b>
110		--	--	▶	<b>3RT19 35-5AF01</b>		B	<b>3RT19 35-5AF02</b>	
230		--	--	▶	<b>3RT19 35-5AP01</b>		B	<b>3RT19 35-5AP02</b>	
400		--	--	C	<b>3RT19 35-5AV01</b>		B	<b>3RT19 35-5AV02</b>	
--		24	--	B	<b>3RT19 35-5AC21</b>		B	<b>3RT19 35-5AC22</b>	
--		42	--	B	<b>3RT19 35-5AD21</b>		B	<b>3RT19 35-5AD22</b>	
--		48	--	B	<b>3RT19 35-5AH21</b>		B	<b>3RT19 35-5AH22</b>	
--		110	--	B	<b>3RT19 35-5AG21</b>		B	<b>3RT19 35-5AG22</b>	
--		220	--	B	<b>3RT19 35-5AN21</b>		B	<b>3RT19 35-5AN22</b>	
--		230	--	B	<b>3RT19 35-5AL21</b>		B	<b>3RT19 35-5AL22</b>	
110		--	120	B	<b>3RT19 35-5AK61</b>		B	<b>3RT19 35-5AK62</b>	
220		--	240	B	<b>3RT19 35-5AP61</b>		B	<b>3RT19 35-5AP62</b>	
--		100	110	B	<b>3RT19 35-5AG61</b>		B	<b>3RT19 35-5AG62</b>	
--		200	220	B	<b>3RT19 35-5AN61</b>		B	<b>3RT19 35-5AN62</b>	
--		400	440	C	<b>3RT19 35-5AR61</b>		B	<b>3RT19 35-5AR62</b>	

# Power Contactors for Switching Motors

## Spare Parts for 3RT1 Contactors

### Solenoid coils

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



3RT19 44-5A.01



3RT19 45-5A.01



3RT19 45-5A.02



3RT19 44-5B.42

For contactors		Rated control supply voltage $U_s$				DT	Screw terminals	⊕	DT	Spring-type terminals	⊕
Size	Type	AC			DC	Order No.	Price per PU	Order No.	Price per PU		
		50 Hz V	50/60 Hz V	60 Hz V							
<b>Solenoid coils · AC operation</b>											
<b>S3</b>	3RT10 44	24	--	--	--	B	<b>3RT19 44-5AB01</b>	B	<b>3RT19 44-5AB02</b>		
		42	--	--	--	B	<b>3RT19 44-5AD01</b>	B	<b>3RT19 44-5AD02</b>		
		48	--	--	--	B	<b>3RT19 44-5AH01</b>	B	<b>3RT19 44-5AH02</b>		
		110	--	--	--	B	<b>3RT19 44-5AF01</b>	B	<b>3RT19 44-5AF02</b>		
		230	--	--	--	B	<b>3RT19 44-5AP01</b>	B	<b>3RT19 44-5AP02</b>		
		400	--	--	--	B	<b>3RT19 44-5AV01</b>	B	<b>3RT19 44-5AV02</b>		
		--	24	--	--	B	<b>3RT19 44-5AC21</b>	B	<b>3RT19 44-5AC22</b>		
		--	42	--	--	B	<b>3RT19 44-5AD21</b>	B	<b>3RT19 44-5AD22</b>		
		--	48	--	--	B	<b>3RT19 44-5AH21</b>	B	<b>3RT19 44-5AH22</b>		
		--	110	--	--	B	<b>3RT19 44-5AG21</b>	B	<b>3RT19 44-5AG22</b>		
		--	220	--	--	B	<b>3RT19 44-5AN21</b>	B	<b>3RT19 44-5AN22</b>		
		--	230	--	--	B	<b>3RT19 44-5AL21</b>	B	<b>3RT19 44-5AL22</b>		
	110	--	120	--	B	<b>3RT19 44-5AK61</b>	B	<b>3RT19 44-5AK62</b>			
	220	--	240	--	B	<b>3RT19 44-5AP61</b>	B	<b>3RT19 44-5AP62</b>			
	--	100	110	--	B	<b>3RT19 44-5AG61</b>	B	<b>3RT19 44-5AG62</b>			
	--	200	220	--	B	<b>3RT19 44-5AN61</b>	B	<b>3RT19 44-5AN62</b>			
	--	400	440	--	B	<b>3RT19 44-5AR61</b>	B	<b>3RT19 44-5AR62</b>			
	3RT10 45,	24	--	--	--	B	<b>3RT19 45-5AB01</b>	B	<b>3RT19 45-5AB02</b>		
	3RT10 46,	42	--	--	--	B	<b>3RT19 45-5AD01</b>	B	<b>3RT19 45-5AD02</b>		
	3RT13 4.,	48	--	--	--	B	<b>3RT19 45-5AH01</b>	B	<b>3RT19 45-5AH02</b>		
	3RT14 46,	110	--	--	--	B	<b>3RT19 45-5AF01</b>	B	<b>3RT19 45-5AF02</b>		
	3RT15 4.,	230	--	--	--	▶ B	<b>3RT19 45-5AP01</b>	B	<b>3RT19 45-5AP02</b>		
		400	--	--	--	C	<b>3RT19 45-5AV01</b>	B	<b>3RT19 45-5AV02</b>		
--	24	--	--	--	B	<b>3RT19 45-5AC21</b>	B	<b>3RT19 45-5AC22</b>			
--	42	--	--	--	B	<b>3RT19 45-5AD21</b>	B	<b>3RT19 45-5AD22</b>			
--	48	--	--	--	B	<b>3RT19 45-5AH21</b>	B	<b>3RT19 45-5AH22</b>			
--	110	--	--	--	B	<b>3RT19 45-5AG21</b>	B	<b>3RT19 45-5AG22</b>			
--	220	--	--	--	B	<b>3RT19 45-5AN21</b>	B	<b>3RT19 45-5AN22</b>			
--	230	--	--	--	B	<b>3RT19 45-5AL21</b>	B	<b>3RT19 45-5AL22</b>			
110	--	120	--	--	B	<b>3RT19 45-5AK61</b>	B	<b>3RT19 45-5AK62</b>			
220	--	240	--	--	B	<b>3RT19 45-5AP61</b>	B	<b>3RT19 45-5AP62</b>			
--	100	110	--	--	B	<b>3RT19 45-5AG61</b>	B	<b>3RT19 45-5AG62</b>			
--	200	220	--	--	C	<b>3RT19 45-5AN61</b>	B	<b>3RT19 45-5AN62</b>			
--	400	440	--	--	B	<b>3RT19 45-5AR61</b>	B	<b>3RT19 45-5AR62</b>			
<b>Solenoid coils · DC operation</b>											
<b>S2</b>	3RT10 3.,	--	--	--	24	B	<b>3RT19 34-5BB41</b>	B	<b>3RT19 34-5BB42</b>		
	3RT13 3.,	--	--	--	42	B	<b>3RT19 34-5BD41</b>	C	<b>3RT19 34-5BD42</b>		
	3RT15 3.,	--	--	--	48	B	<b>3RT19 34-5BW41</b>	B	<b>3RT19 34-5BW42</b>		
	--	--	--	--	60	B	<b>3RT19 34-5BE41</b>	B	<b>3RT19 34-5BE42</b>		
	--	--	--	--	110	B	<b>3RT19 34-5BF41</b>	B	<b>3RT19 34-5BF42</b>		
	--	--	--	--	125	B	<b>3RT19 34-5BG41</b>	C	<b>3RT19 34-5BG42</b>		
	--	--	--	--	220	B	<b>3RT19 34-5BM41</b>	B	<b>3RT19 34-5BM42</b>		
	--	--	--	--	230	B	<b>3RT19 34-5BP41</b>	B	<b>3RT19 34-5BP42</b>		
	<b>S3</b>	3RT10 4.,	--	--	--	24	B	<b>3RT19 44-5BB41</b>	B	<b>3RT19 44-5BB42</b>	
		3RT13 4.,	--	--	--	42	C	<b>3RT19 44-5BD41</b>	B	<b>3RT19 44-5BD42</b>	
3RT14 4.,		--	--	--	48	B	<b>3RT19 44-5BW41</b>	B	<b>3RT19 44-5BW42</b>		
3RT15 4.,		--	--	--	60	B	<b>3RT19 44-5BE41</b>	B	<b>3RT19 44-5BE42</b>		
--		--	--	--	110	B	<b>3RT19 44-5BF41</b>	B	<b>3RT19 44-5BF42</b>		
--		--	--	--	125	B	<b>3RT19 44-5BG41</b>	B	<b>3RT19 44-5BG42</b>		
--		--	--	--	220	B	<b>3RT19 44-5BM41</b>	B	<b>3RT19 44-5BM42</b>		
--		--	--	--	230	B	<b>3RT19 44-5BP41</b>	B	<b>3RT19 44-5BP42</b>		

# Power Contactors for Switching Motors



## Spare Parts for 3RT1 Contactors

Solenoid coils

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



3RT19 55-5A...

For contactors		Rated control supply voltage $U_s \text{ min} \dots U_s \text{ max}$	DT	Screw terminals		DT	Spring-type terminals	
Size	Type	V AC/DC		Order No.	Price per PU		Order No.	Price per PU
<b>Withdrawable coils</b>								
<b>Conventional operating mechanisms</b>								
<b>S6</b>	3RT10 5, 3RT14 5	23 ... 26	B	<b>3RT19 55-5AB31</b>	B	<b>3RT19 55-5AB32</b>		
		42 ... 48	B	<b>3RT19 55-5AD31</b>	B	<b>3RT19 55-5AD32</b>		
	110 ... 127	B	<b>3RT19 55-5AF31</b>	B	<b>3RT19 55-5AF32</b>			
	200 ... 220	B	<b>3RT19 55-5AM31</b>	B	<b>3RT19 55-5AM32</b>			
	220 ... 240	B	<b>3RT19 55-5AP31</b>	B	<b>3RT19 55-5AP32</b>			
	240 ... 277	B	<b>3RT19 55-5AU31</b>	B	<b>3RT19 55-5AU32</b>			
	380 ... 420	B	<b>3RT19 55-5AV31</b>	B	<b>3RT19 55-5AV32</b>			
	440 ... 480	B	<b>3RT19 55-5AR31</b>	B	<b>3RT19 55-5AR32</b>			
	500 ... 550	B	<b>3RT19 55-5AS31</b>	B	<b>3RT19 55-5AS32</b>			
	575 ... 600	B	<b>3RT19 55-5AT31</b>	B	<b>3RT19 55-5AT32</b>			
<b>S10</b>	3RT10 6, 3RT14 6	23 ... 26	B	<b>3RT19 65-5AB31</b>	B	<b>3RT19 65-5AB32</b>		
		42 ... 48	B	<b>3RT19 65-5AD31</b>	B	<b>3RT19 65-5AD32</b>		
	110 ... 127	B	<b>3RT19 65-5AF31</b>	B	<b>3RT19 65-5AF32</b>			
	200 ... 220	C	<b>3RT19 65-5AM31</b>	B	<b>3RT19 65-5AM32</b>			
	220 ... 240	B	<b>3RT19 65-5AP31</b>	B	<b>3RT19 65-5AP32</b>			
	240 ... 277	B	<b>3RT19 65-5AU31</b>	B	<b>3RT19 65-5AU32</b>			
	380 ... 420	B	<b>3RT19 65-5AV31</b>	B	<b>3RT19 65-5AV32</b>			
	440 ... 480	B	<b>3RT19 65-5AR31</b>	B	<b>3RT19 65-5AR32</b>			
	500 ... 550	C	<b>3RT19 65-5AS31</b>	B	<b>3RT19 65-5AS32</b>			
	575 ... 600	C	<b>3RT19 65-5AT31</b>	B	<b>3RT19 65-5AT32</b>			
<b>S10</b>	3RT12 6 vacuum contactors	23 ... 26	B	<b>3RT19 66-5AB31</b>		--		
		42 ... 48	B	<b>3RT19 66-5AD31</b>		--		
	110 ... 127	A	<b>3RT19 66-5AF31</b>		--			
	200 ... 220	C	<b>3RT19 66-5AM31</b>		--			
	220 ... 240	A	<b>3RT19 66-5AP31</b>		--			
	240 ... 277	C	<b>3RT19 66-5AU31</b>		--			
	380 ... 420	B	<b>3RT19 66-5AV31</b>		--			
	440 ... 480	C	<b>3RT19 66-5AR31</b>		--			
	500 ... 550	C	<b>3RT19 66-5AS31</b>		--			
	575 ... 600	C	<b>3RT19 66-5AT31</b>		--			
<b>S12</b>	3RT10 7, 3RT14 7, 3RT12 7 vacuum contactors	23 ... 26	B	<b>3RT19 75-5AB31</b>	B	<b>3RT19 75-5AB32</b>		
		42 ... 48	B	<b>3RT19 75-5AD31</b>	B	<b>3RT19 75-5AD32</b>		
	110 ... 127	B	<b>3RT19 75-5AF31</b>	B	<b>3RT19 75-5AF32</b>			
	200 ... 220	C	<b>3RT19 75-5AM31</b>	B	<b>3RT19 75-5AM32</b>			
	220 ... 240	B	<b>3RT19 75-5AP31</b>	B	<b>3RT19 75-5AP32</b>			
	240 ... 277	B	<b>3RT19 75-5AU31</b>	B	<b>3RT19 75-5AU32</b>			
	380 ... 420	B	<b>3RT19 75-5AV31</b>	B	<b>3RT19 75-5AV32</b>			
	440 ... 480	B	<b>3RT19 75-5AR31</b>	B	<b>3RT19 75-5AR32</b>			
	500 ... 550	C	<b>3RT19 75-5AS31</b>	B	<b>3RT19 75-5AS32</b>			
	575 ... 600	C	<b>3RT19 75-5AT31</b>	B	<b>3RT19 75-5AT32</b>			

# Power Contactors for Switching Motors

## Spare Parts for 3RT1 Contactors

### Solenoid coils

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



3RT19 55-5N...

For contactors			Rated control supply voltage $U_s$	DT	Screw terminals	DT	Spring-type terminals		
Size	Type	V AC/DC			Order No.	Price per PU	Order No.	Price per PU	
<b>Withdrawable coils</b>									
<b>Solid-state operating mechanism</b>									
<b>For 24 V DC PLC output</b>									
<b>S6</b>	3RT10 5,	21 ... 27.3	C	<b>3RT19 55-5NB31</b>			B	<b>3RT19 55-5NB32</b>	
	3RT14 5	96 ... 127	B				<b>3RT19 55-5NF31</b>	B	<b>3RT19 55-5NF32</b>
		200 ... 277	B				<b>3RT19 55-5NP31</b>	B	<b>3RT19 55-5NP32</b>
<b>S10</b>	3RT10 6,	21 ... 27.3	B	<b>3RT19 65-5NB31</b>			B	<b>3RT19 65-5NB32</b>	
	3RT14 6	96 ... 127	B				<b>3RT19 65-5NF31</b>	B	<b>3RT19 65-5NF32</b>
		200 ... 277	B				<b>3RT19 65-5NP31</b>	B	<b>3RT19 65-5NP32</b>
<b>S12</b>	3RT12 6	21 ... 27.3	B	<b>3RT19 66-5NB31</b>				--	
	vacuum	96 ... 127	C				<b>3RT19 66-5NF31</b>		--
	contactors	200 ... 277	C				<b>3RT19 66-5NP31</b>		--
<b>S12</b>	3RT10 7,	21 ... 27.3	B	<b>3RT19 75-5NB31</b>			B	<b>3RT19 75-5NB32</b>	
	3RT14 7,	96 ... 127	B				<b>3RT19 75-5NF31</b>	B	<b>3RT19 75-5NF32</b>
	3RT12 7	200 ... 277	B				<b>3RT19 75-5NP31</b>	B	<b>3RT19 75-5NP32</b>
	vacuum								
	contactors								
<b>For 24 V DC PLC output/PLC relay output, with remaining lifetime indicator (RLT)</b> (withdrawable coil with laterally mounted solid-state module)									
<b>S6</b>	3RT10 5,	96 ... 127	B	<b>3RT19 55-5PF31</b>				--	
	3RT14 5	200 ... 277	B				<b>3RT19 55-5PP31</b>		--
<b>S10</b>	3RT10 6,	96 ... 127	B	<b>3RT19 65-5PF31</b>				--	
	3RT14 6	200 ... 277	B				<b>3RT19 65-5PP31</b>		--
<b>S12</b>	3RT10 7,	96 ... 127	B	<b>3RT19 75-5PF31</b>				--	
	3RT14 7	200 ... 277	B				<b>3RT19 75-5PP31</b>		--
<b>With AS-Interface interface and remaining lifetime indicator (RLT)</b> (withdrawable coil with laterally mounted solid-state module)									
<b>S6</b>	3RT10 5,	96 ... 127	B	<b>3RT19 55-5QF31</b>				--	
	3RT14 5	200 ... 277	B				<b>3RT19 55-5QP31</b>		--
<b>S10</b>	3RT10 6,	96 ... 127	B	<b>3RT19 65-5QF31</b>				--	
	3RT14 6	200 ... 277	B				<b>3RT19 65-5QP31</b>		--
<b>S12</b>	3RT10 7,	96 ... 127	B	<b>3RT19 75-5QF31</b>				--	
	3RT14 7	200 ... 277	B				<b>3RT19 75-5QP31</b>		--

# Power Contactors for Switching Motors

## Spare Parts for 3RT1 Contactors

### Contacts and arc chutes

#### Selection and ordering data

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type						
<b>Contacts with fixing parts</b>							
<b>For contactors with 3 main contacts</b>							
<b>S2</b>	3RT10 34	Main contacts (3 NO contacts) for utilization category AC-3 (1 set = 3 movable and 6 fixed switching elements with fixing parts)	▶	<b>3RT19 34-6A</b>	1	1 unit	41B
	3RT10 35		▶	<b>3RT19 35-6A</b>	1	1 unit	41B
	3RT10 36		▶	<b>3RT19 36-6A</b>	1	1 unit	41B
<b>S3</b>	3RT10 44		▶	<b>3RT19 44-6A</b>	1	1 unit	41B
	3RT10 45		▶	<b>3RT19 45-6A</b>	1	1 unit	41B
	3RT10 46		▶	<b>3RT19 46-6A</b>	1	1 unit	41B
<b>S6</b>	3RT10 54		▶	<b>3RT19 54-6A</b>	1	1 unit	41B
	3RT10 55		▶	<b>3RT19 55-6A</b>	1	1 unit	41B
	3RT10 56		▶	<b>3RT19 56-6A</b>	1	1 unit	41B
<b>S10</b>	3RT10 64		▶	<b>3RT19 64-6A</b>	1	1 unit	41B
	3RT10 65		▶	<b>3RT19 65-6A</b>	1	1 unit	41B
	3RT10 66		▶	<b>3RT19 66-6A</b>	1	1 unit	41B
<b>S12</b>	3RT10 75		▶	<b>3RT19 75-6A</b>	1	1 unit	41B
	3RT10 76		A	<b>3RT19 76-6A</b>	1	1 unit	41B
<b>S3</b>	3RT14 46	Main contacts (3 NO contacts) for utilization category AC-1	B	<b>3RT19 46-6D</b>	1	1 unit	41B
<b>S6</b>	3RT14 56	(1 set = 3 movable and 6 fixed switching elements with fixing parts)	B	<b>3RT19 56-6D</b>	1	1 unit	41B
<b>S10</b>	3RT14 66		B	<b>3RT19 66-6D</b>	1	1 unit	41B
<b>S12</b>	3RT14 76		A	<b>3RT19 76-6D</b>	1	1 unit	41B
<b>For 3RT12 vacuum contactors</b>							
<b>S10</b>	3RT12 64	3 vacuum interrupters with fixing parts	B	<b>3RT19 64-6V</b>	1	1 unit	41B
	3RT12 65		B	<b>3RT19 65-6V</b>	1	1 unit	41B
	3RT12 66		B	<b>3RT19 66-6V</b>	1	1 unit	41B
<b>S12</b>	3RT12 75		B	<b>3RT19 75-6V</b>	1	1 unit	41B
	3RT12 76		B	<b>3RT19 76-6V</b>	1	1 unit	41B
<b>For contactors with 4 main contacts</b>							
<b>S2</b>	3RT13 36	Main contacts (4 NO contacts) for utilization category AC-1	C	<b>3RT19 36-6E</b>	1	1 unit	41B
<b>S3</b>	3RT13 44	(1 set = 4 movable and 8 fixed switching elements with fixing parts)	C	<b>3RT19 44-6E</b>	1	1 unit	41B
	3RT13 46		B	<b>3RT19 46-6E</b>	1	1 unit	41B
<b>Arc chutes</b>							
<b>S2</b>	3RT10 3.	Arc chutes, 3-pole	C	<b>3RT19 36-7A</b>	1	1 unit	41B
<b>S3</b>	3RT10 4.,		B	<b>3RT19 46-7A</b>	1	1 unit	41B
	3RT14 46						
<b>S6</b>	3RT10 54		B	<b>3RT19 54-7A</b>	1	1 unit	41B
	3RT10 55		B	<b>3RT19 55-7A</b>	1	1 unit	41B
	3RT10 56		B	<b>3RT19 56-7A</b>	1	1 unit	41B
<b>S10</b>	3RT10 64		B	<b>3RT19 64-7A</b>	1	1 unit	41B
	3RT10 65		B	<b>3RT19 65-7A</b>	1	1 unit	41B
	3RT10 66		B	<b>3RT19 66-7A</b>	1	1 unit	41B
<b>S12</b>	3RT10 75		B	<b>3RT19 75-7A</b>	1	1 unit	41B
	3RT10 76		B	<b>3RT19 76-7A</b>	1	1 unit	41B
<b>S6</b>	3RT14 56		B	<b>3RT19 56-7B</b>	1	1 unit	41B
<b>S10</b>	3RT14 66		B	<b>3RT19 66-7B</b>	1	1 unit	41B
<b>S12</b>	3RT14 76		B	<b>3RT19 76-7B</b>	1	1 unit	41B

# Power Contactors for Switching Motors

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

### Overview

#### Standards

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

The 3TF68/69 contactors are climate-proof.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see [Accessories and Spare Parts on page 3/120](#)).

#### Main contacts

##### Contact erosion indication with 3TF68/69 vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base. If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, then the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters simultaneously.

#### Auxiliary contacts

##### Contact reliability

These auxiliary contacts are particularly suitable for solid-state circuits with currents  $\geq 1$  mA at a voltage  $\geq 17$  V.

#### Electromagnetic compatibility

The 3TF68/69...**C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high interference immunity (for EMC values see [page 3/115](#)). The solenoid coil is connected to varistors for protection against overvoltages.

The 3TF68/69...**Q** contactors for AC operation are designed for operation in systems with AC control supply voltage which is subject to strong interference. The solenoid systems of these contactors are configured in the DC economy circuit with rectification. The rectifier bridge is connected to varistors for protection against overvoltages.

#### Protection of the main current paths

An integrated RC varistor connection for the main current paths dampens the switching overvoltage rises to safe values. This prevents multiple restricting. It can therefore be assumed that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

#### Note:

During operation in installations in which the emitted interference limits cannot be observed, e.g. when used for output contactors in converters, 3TF68/69...**Q** contactors without a main current path circuit are recommended.

### Technical specifications

Contactors	Type	3TF68 and 3TF69
<b>Rated data of the auxiliary contacts</b>		Acc. to IEC 60947-5-1
<b>Rated insulation voltage</b> $U_i$ (pollution degree 3)	V	690
<b>Conventional thermal current</b> $I_{th}$ = <b>Rated operational current</b> $I_e/AC-12$	A	10
<b>AC load</b>		
<b>Rated operational current</b> $I_e/AC-15/AC-14$		
• For rated operational voltage $U_e$		
- At 24 V	A	10
- At 110 V	A	10
- At 125 V	A	10
- At 220 V	A	6
- At 230 V	A	5.6
- At 380 V	A	4
- At 400 V	A	3.6
- At 500 V	A	2.5
- At 660 V	A	2.5
- At 690 V	A	2.3
<b>DC load</b>		
<b>Rated operational current</b> $I_e/DC-12$		
• For rated operational voltage $U_e$		
- At 24 V	A	10
- At 60 V	A	10
- At 110 V	A	3.2
- At 125 V	A	2.5
- At 220 V	A	0.9
- At 440 V	A	0.33
- At 600 V	A	0.22
<b>Rated operational current</b> $I_e/DC-13$		
• For rated operational voltage $U_e$		
- At 24 V	A	10
- At 60 V	A	5
- At 110 V	A	1.14
- At 125 V	A	0.98
- At 220 V	A	0.48
- At 440 V	A	0.13
- At 600 V	A	0.07
<b>Ⓢ and Ⓣ rated data of the auxiliary contacts</b>		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600



## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

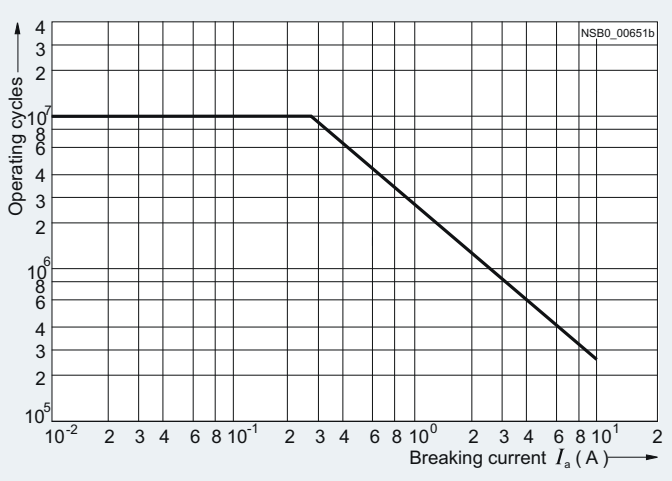
Contactors

3TF68 and 3TF69

### Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly 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.

The characteristic curves apply to 230 V AC.



### Contact erosion indication with vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base.

If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters.

3TF68 and 3TF69

### Contact endurance of the main contacts

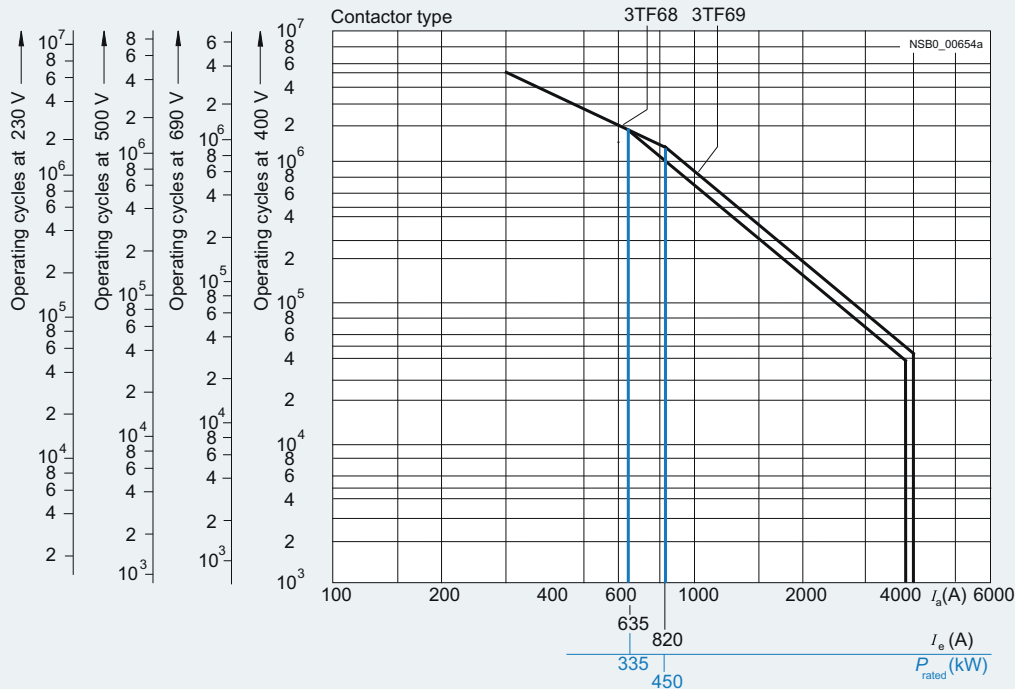
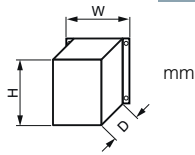


Diagram legend:  
 $P_{rated}$  = Rated power for squirrel-cage motors at 400 V  
 $I_a$  = Breaking current  
 $I_e$  = Rated operational current

# Power Contactors for Switching Motors

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Type  
Size  
Dimensions (W x H x D)



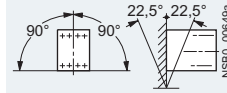
**3TF68**  
**14**  
230 x 276 x 237

**3TF69**  
**14**  
230 x 295 x 237

### General data

#### Permissible mounting position, installation instructions<sup>1) 2)</sup>

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



#### Mechanical endurance

Operating cycles 5 million

#### Electrical endurance

Operating cycles<sup>3)</sup>

#### Rated insulation voltage $U_i$ (pollution degree 3)

kV 1

#### Rated impulse withstand voltage $U_{imp}$

kV 8

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

kV 1

#### Mirror contacts

A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.

One NC contact each must be connected in series for the right and left auxiliary switch block respectively.

Yes, acc. to IEC 60947-4-1, Appendix F

#### Permissible ambient temperature

- During operation
- During storage

°C -25 ... +55  
°C -55 ... +80

#### Degree of protection acc. to IEC 60947-1, Appendix C

IP00/open, coil assembly IP40

#### Touch protection acc. to EN 50274

Finger-safe with cover

#### Shock resistance

- Rectangular pulse
  - AC operation
  - DC operation
- Sine pulse
  - AC operation
  - DC operation

	g/ms	8, 1/5 and 4.7/10	9.5/5 and 5.7/10
- AC operation	g/ms	9/5 and 5.7/10	8.6/5 and 5.1/10
- AC operation	g/ms	12.8/5 and 7.4/10	13.5/5 and 7.8/10
- DC operation	g/ms	14.4/5 and 9.1/10	13.5/5 and 7.8/10

#### Conductor cross-sections

See "Conductor Cross-Sections"

#### Electromagnetic compatibility (EMC)

See "Electromagnetic Compatibility (EMC)"

### Short-circuit protection

#### Main circuit

Fuse links, gG operational class:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
according to IEC 60947-4-1/EN 60947-4-1

- Type of coordination "1"
- Type of coordination "2"
- Weld-free<sup>4)</sup>

	A	1000	1250
Type of coordination "1"	A	500	630
Type of coordination "2"	A	400	500

#### Auxiliary circuit

- Short-circuit test with fuse links of gG operational class:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
with  $I_k = 1$  kA acc. to IEC 60947-5-1
- Test with miniature circuit breaker up to 230 V with C characteristic:  
Short-circuit current  $I_k = 400$  A acc. to IEC 60947-5-1

	A	10
Short-circuit test with fuse links	A	10
Test with miniature circuit breaker	A	10

- 1) To easily replace the laterally mounted auxiliary switches it is recommended to maintain a minimum distance of 30 mm between the contactors.
- 2) If mounted at a 90° angle (conducting paths are horizontally above each other), the switching frequency is reduced by 80% compared with the normal values.
- 3) See "Endurance of the auxiliary contacts", page 3/113.
- 4) Test conditions according to IEC 60947-4-1.

Contactor	Type	3TF68	3TF69
	Size	14	14
<b>Control</b>			
<b>Coil operating range</b>		0.8 x $U_s$ min ... 1.1 x $U_s$ max	
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )			
• AC operation, $U_s$ max	- Closing - Closed	VA/p.f. VA/p.f.	1850/1 49/0.15
			950/0.98 30.6/0.31
• AC operation, $U_s$ min	- Closing - Closed	VA/p.f. VA/p.f.	1200/1 13.5/0.47
			600/0.98 12.9/0.43
• DC economy circuit <sup>1)</sup>	- Closing at 24 V - Closed	W W	1010 28
			960 20.6
<u>For contactors of type 3TF68/69...-Q:</u>			
• AC operation, $U_s$ min <sup>2)</sup>	- Closing - Closed	VA/p.f. VA/p.f.	1000/0.99 11/1
			1150/0.99 11/1
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math></b> (Total break time = Opening delay + Arcing time)		(Values apply to cold and warm coil)	
• AC operation	- Closing delay - Opening delay	ms ms	70 ... 120 (22 ... 65) <sup>3)</sup> 70 ... 100
			80 ... 120 70 ... 80
• DC economy circuit	- Closing delay - Opening delay	ms ms	76 ... 110 50
			86 ... 280 19 ... 25
• Arcing time		ms	10 ... 15
			10
<u>For contactors of type 3TF68/69...-Q:</u>			
• AC operation	- Closing delay - Opening delay	ms ms	35 ... 90 65 ... 90
			45 ... 160 30 ... 80
<b>Operating times for 1.0 x <math>U_s</math></b> (Total break time = Opening delay + Arcing time)			
• AC operation	- Closing delay - Opening delay	ms ms	80 ... 100 (30 ... 45) <sup>3)</sup> 70 ... 100
			85 ... 100 70
• DC economy circuit	- Closing delay - Opening delay	ms ms	80 ... 90 50
			90 ... 125 19 ... 25
<b>Minimum command duration</b> for closing	Standard Reduced make-time	ms ms	120 90
			120 --
<b>Minimum interval time</b> between two ON commands		ms	100
			300

<sup>1)</sup> At 24 V DC; for further voltages, deviations of up to ±10 % are possible.

<sup>2)</sup> Including reversing contactor.

<sup>3)</sup> Values in brackets apply to contactors with reduced operating times.

Contactor	Type	3TF6. 44- .CF7	3TF6. 44- .CM7	3TF6. 44- .CP7	3TF6. 44- .CQ7	3TF6. 44- .CS7
<b>Electromagnetic compatibility</b>						
<b>Rated control supply voltage <math>U_s</math></b>	V AC	110 ... 132	200 ... 240	230 ... 277	380 ... 460	500 ... 600
<b>Overvoltage type</b> acc. to IEC 60801		Burst/Surge				
<b>Degree of severity</b> acc. to IEC 60801						
• Burst		3	4	4	4	4
• Surge		4	4	4	4	4
<b>Overvoltage resistance</b>						
• Burst	kV	2	4	4	4	4
• Surge	kV	6	5	5	6	6


# Power Contactors for Switching Motors

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type		3TF68	3TF69
	Size		14	14
<b>Main circuit</b>				
<b>AC capacity</b>				
<b>Utilization category AC-1</b>				
<b>Switching resistive loads</b>				
• Rated operational currents $I_e$	At 40 °C up to 690 V	A	700	910
	At 55 °C up to 690 V	A	630	850
	At 55 °C up to 1000 V	A	450	800
• Rated power for AC loads with p.f. = 0.95 at 55°C	230 V	kW	240	323
	400 V	kW	415	558
	500 V	kW	545	735
	690 V	kW	720	970
	1000 V	kW	780	1385
• Minimum conductor cross-sections for loads with $I_e$	At 40°C	mm <sup>2</sup>	2 x 240	$I_e \geq 800$ A: 2 x 60 x 5 (copper busbars)
	At 55°C	mm <sup>2</sup>	2 x 185	$I_e < 800$ A: 2 x 240
<b>Utilization categories AC-2 and AC-3</b>				
• Rated operational currents $I_e$	Up to 690 V	A	630	820
	1000 V	A	435	580
• Rated power for slipping or squirrel-cage motors at 50 Hz and 60 Hz	At 230 V	kW	200	260
	400 V	kW	347	450
	500 V	kW	434	600
	690 V	kW	600	800
	1000 V	kW	600	800
<b>Utilization category AC-4 (for <math>I_a = 6 \times I_e</math>)</b>				
• Rated operational current $I_e$	Up to 690 V	A	610	690
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	355	400
The following applies to a contact endurance of about 200000 operating cycles:				
• Rated operational currents $I_e$	Up to 690 V	A	300	360
	1000 V	A	210	250
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V	kW	97	110
	400 V	kW	168	191
	500 V <sup>1)</sup>	kW	210	250
	690 V <sup>1)</sup>	kW	278	335
	1000 V <sup>1)</sup>	A	290	350
<b>Switching frequency</b>				
<b>Switching frequency z</b> in operating cycles/hour				
• Contactors without overload relays	No-load switching frequency AC	1/h	2000	1000
	No-load switching frequency DC	1/h	1000	1000
	AC-1	1/h	700	700
	AC-2	1/h	200	200
	AC-3	1/h	500	500
	AC-4	1/h	150	150
• Contactors with overload relays (mean value)		1/h	15	15

<sup>1)</sup> Max. permissible rated operational current  $I_e/AC-4 = I_e/AC-3$  up to 500 V, for reduced contact endurance and reduced switching frequency.

3TF6 vacuum contactors,  
3-pole, 335 ... 450 kW

Contactor	Type	3TF68	3TF69
	Size	14	14
<b>Conductor cross-sections</b>			
<b>Main conductors:</b>		 <b>Screw terminals</b>	
<ul style="list-style-type: none"> <li>Busbar connections               <ul style="list-style-type: none"> <li>Finely stranded with cable lug</li> <li>Stranded with cable lug</li> <li>Solid or stranded</li> <li>Connecting bar (max. width)</li> </ul> </li> <li>Terminal screw               <ul style="list-style-type: none"> <li>Tightening torque</li> </ul> </li> <li>With box terminal<sup>1)</sup> <ul style="list-style-type: none"> <li>Connectable copper bars</li> <li>Width</li> <li>Max. thickness</li> <li>Terminal screw</li> <li>Tightening torque</li> </ul> </li> </ul>	mm <sup>2</sup> mm <sup>2</sup> AWG mm  Nm  mm mm Nm lb.in	50 ... 240 70 ... 240 2/0 ... 500 MCM 50  M10 x 30 14 ... 24 (124 ... 210 lb.in)  15 ... 25 1 x 26 or 2 x 11 A/F 6 (hexagon socket) 25 ... 40 221 ... 354	50 ... 240 50 ... 240 2/0 ... 500 MCM 60 (U <sub>e</sub> ≤ 690 V) 50 (U <sub>e</sub> > 690 V)  M12 x 40 20 ... 35 (177 ... 310 lb.in)  15 ... 38 1 x 46 or 2 x 18 A/F 8 (hexagon socket) 35 ... 50 266 ... 443
<b>Auxiliary conductors:</b>			
<ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>Pin-end connector acc. to DIN 46231</li> <li>Solid or stranded</li> <li>Tightening torque</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> AWG Nm lb.in	2 x (0.5 ... 1) <sup>2</sup> /2 x (1 ... 2.5) <sup>2</sup> 2 x (0.5 ... 1) <sup>2</sup> /2 x (0.75 ... 2.5) <sup>2</sup> 2 x (1 ... 1.5) 2 x (18 ... 12) 0.8 ... 1.4 7 ... 12	

<sup>1)</sup> See "Accessories and Spare Parts", page 3/120.

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

Contactor	Type	3TF68	3TF69
	Size	14	14
<b>Ⓢ and Ⓣ rated data</b>			
<b>Rated insulation voltage</b>	V AC	600	600
<b>Uninterrupted current</b>	A	630	820
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)			
<ul style="list-style-type: none"> <li>Rated power for induction motors at 60 Hz               <ul style="list-style-type: none"> <li>At 200 V</li> <li>At 230 V</li> <li>At 460 V</li> <li>At 575 V</li> </ul> </li> </ul>	hp hp hp hp	231 266 530 664	290 350 700 860
<b>NEMA/EEMAC ratings</b>			
SIZE	hp	6	7
<ul style="list-style-type: none"> <li>Uninterrupted current               <ul style="list-style-type: none"> <li>Open</li> <li>Enclosed</li> </ul> </li> <li>Rated power for induction motors at 60 Hz               <ul style="list-style-type: none"> <li>At 200 V</li> <li>At 230 V</li> <li>At 460 V</li> <li>At 575 V</li> </ul> </li> </ul>	A A  hp hp hp hp	600 540  150 200 400 400	820 810  -- 300 600 600
<b>Overload relays</b>	Type	3RB12 .	
<ul style="list-style-type: none"> <li>Setting range</li> </ul>	A	200 ... 820	

Short-circuit protection with overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

# Power Contactors for Switching Motors

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

### Selection and ordering data

#### Contactors for AC control supply voltage subject to strong interference

- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals
- Electronically controlled solenoid operating mechanism with high EMC<sup>1)</sup>
- With overvoltage protection of the coil (varistor)

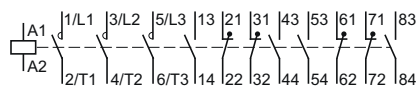


3TF68/69

Rated data AC-2 and AC-3 (up to 55 °C)						AC-1	Auxiliary contacts	Rated control supply voltage $U_s$	DT	<b>Screw terminals</b>	⊕	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to 690 V	Ratings of induction motors at 50 Hz					Operational current $I_e$ (at 40 °C)	Version			Order No.	Price per PU			
	230 V	<b>400 V</b>	500 V	690 V	1000 V		NO NC V							
A	kW	<b>kW</b>	kW	kW	kW	A								

#### AC operation 50/60 Hz<sup>1)</sup>

##### Size 14



630	200	<b>335</b>	434	600	--	700	4	4	110 ... 132 AC 200 ... 240 AC	A	<b>3TF68 44-0CF7</b> <b>3TF68 44-0CM7</b>	1	1 unit	41B
630	200	<b>335</b>	434	600	600	700	4	4	110 ... 132 AC 200 ... 240 AC	C	<b>3TF68 44-8CF7</b> <b>3TF68 44-8CM7</b>	1	1 unit	41B
820	260	<b>450</b>	600	800	--	910	4	4	110 ... 132 AC 200 ... 240 AC	A	<b>3TF69 44-0CF7</b> <b>3TF69 44-0CM7</b>	1	1 unit	41B
820	260	<b>450</b>	600	800	800	910	4	4	110 ... 132 AC 200 ... 240 AC	C	<b>3TF69 44-8CF7</b> <b>3TF69 44-8CM7</b>	1	1 unit	41B

<sup>1)</sup> For electromagnetic compatibility (EMC) see page 3/115.  
3TF68/69 vacuum contactors are supplied with integrated overvoltage damping for the main current paths. The surge suppression circuit is not required for operation in circuits with DC choppers, frequency converters or speed-variable operating mechanisms, for example.  
The circuit could be damaged by the voltage peaks and harmonics and cause phase-to-phase short circuits. For this reason, the contactors can also be supplied without integrated overvoltage damping. Without additional price.  
The order number must include "-Z" and the order code "A02".

#### Footnotes for page 3/119:

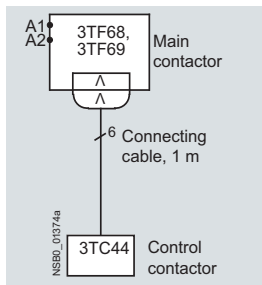
- Same as footnote 1) above.
- On these versions, a magnetic system is used in the DC economy circuit. A varistor can be retrofitted. A 3TC44 17-4A. reversing contactor with pre-assembled connecting cable (approx. 1 m) is included in the scope of supply of the vacuum contactor.
- On this version, a magnetic system with rectifier is used in the DC economy circuit. Varistor integrated. A 3TC44 17-4A. reversing contactor with pre-assembled connecting cable (approx. 1 m) is included in the scope of supply of the vacuum contactor.

For other voltages see page 3/119.  
For accessories see page 3/120, for spare parts see page 3/121.

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

### Contactors for DC operation and for AC operation which is subject to very strong interference

- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals
- DC solenoid system with 3TC44 reversing contactor for series resistor



3TF6. 33-.Q.7

Rated data		AC-1		Auxiliary contacts	Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to 690 V	Ratings of induction motors at 50 Hz and	Operational current $I_e$ (at 40 °C)	Version				Order No.	Price per PU		
A	kW	A	NO NC	V						
	230 V	400 V	500 V	690 V	1000 V					

### DC operation - DC economy circuit<sup>1)2)</sup>

#### Size 14

A	kW	kW	kW	kW	kW	A	NO	NC	V	DT	Order No.	Price per PU	PU	PS*	PG
630	200	335	434	600	--	700	3	3	24 DC	C	3TF68 33-1DB4		1	1 unit	41B
					600	700	3	3	24 DC	C	3TF68 33-8DB4		1	1 unit	41B
820	260	450	600	800	--	910	3	3	24 DC	C	3TF69 33-1DB4		1	1 unit	41B
					800	910	3	3	24 DC	C	3TF69 33-8DB4		1	1 unit	41B

### AC operation 50/60 Hz with DC economy circuit<sup>1)3)</sup>. For AC operation which is subject to strong interference

#### Size 14

A	kW	kW	kW	kW	kW	A	NO	NC	V	DT	Order No.	Price per PU	PU	PS*	PG
630	200	335	434	600	--	700	3	3	110 ... 120 AC	C	3TF68 33-1QG7		1	1 unit	41B
									220 ... 240 AC	A	3TF68 33-1QL7		1	1 unit	41B
									380 ... 420 AC	C	3TF68 33-1QV7		1	1 unit	41B
					600	700	3	3	220 ... 240 AC	C	3TF68 33-8QL7		1	1 unit	41B
820	260	450	600	800	--	910	3	3	110 ... 120 AC	C	3TF69 33-1QG7		1	1 unit	41B
									220 ... 240 AC	A	3TF69 33-1QL7		1	1 unit	41B
									380 ... 420 AC	C	3TF69 33-1QV7		1	1 unit	41B
					800	910	3	3	110 ... 120 AC	C	3TF69 33-8QG7		1	1 unit	41B
									220 ... 240 AC	C	3TF69 33-8QL7		1	1 unit	41B

For footnotes see page 3/118.

For accessories see page 3/120, for spare parts see page 3/121.

### Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage $U_s$	Contactor type	3TF68 44-.C., 3TF69 44-.C..
	Size	14

#### AC operation

##### Solenoid coils for 50/60 Hz

110 ... 132 V AC	F7
200 ... 240 V AC	M7
230 ... 277 V AC	P7
380 ... 460 V AC	Q7
500 ... 600 V AC	S7

Rated control supply voltage $U_s$	Contactor type	3TF68 33-.D., 3TF69 33-.D..
	Size	14

#### DC operation

##### Solenoid coils for DC economy circuit

24 V DC	B4
110 V DC	F4
125 V DC	G4
220 V DC	M4
230 V DC	P4

# Power Contactors for Switching Motors

## 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

### Accessories

Version	Rated control supply voltage $U_s$		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V AC	V DC						

#### Surge suppressors<sup>1)</sup> · Varistors



3TX7 572-3.

#### Varistors<sup>2)</sup>

For DC economy circuit; for lateral snapping onto auxiliary switches

--	24 ... 48	C	<b>3TX7 572-3G</b>	1	1 unit	41B
--	48 ... 127	C	<b>3TX7 572-3H</b>	1	1 unit	41B
--	127 ... 240	C	<b>3TX7 572-3J</b>	1	1 unit	41B

<sup>1)</sup> The surge suppressor (varistor) is included in the scope of supply of the 3TF68 and 3TF69 contactors with AC operation.

<sup>2)</sup> Includes the peak value of the alternating voltage on the DC side.

Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG

#### Solid-state compatible auxiliary switch blocks with screw terminals



5TY7 561-1.

For operation in dusty atmospheres and in solid-state circuits with rated operational currents

$I_e$  AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V

For lateral mounting onto the contactors

With 1 changeover contact.  
2nd auxiliary switch block, left or right (replacement for 3TY6 561-1U, 3TY6 561-1V)

Mounting on the left      Mounting on the right



►	<b>3TY7 561-1UA00</b>	1	1 unit	41B
---	-----------------------	---	--------	-----

#### Coupling links for control by PLC

For lateral snapping onto the auxiliary switch, with surge suppression.

Operating range: 17 V to 30 V DC.  
Power consumption: 0.5 W at 24 V DC.  
Fitted with varistor.<sup>1)</sup>

►	<b>3TX7 090-0D</b>	1	1 unit	41H
---	--------------------	---	--------	-----

#### Terminal covers



3TX7 6.6-0A

For protection against inadvertent contact with exposed busbar connections

Can be screwed onto free screw end on middle connecting bar.

2 units required per contactor.  
(1 set = 2 units)

B	<b>3TX7 686-0A</b>	1	1 unit	41B
B	<b>3TX7 696-0A</b>	1	1 unit	41B

#### Links for paralleling (star jumpers), 3-pole

**Link for paralleling** without connection terminals<sup>2)</sup>

C	<b>3TX7 680-0D</b>	1	1 unit	41B
---	--------------------	---	--------	-----

#### Cover plates for links for paralleling

A cover plate must be used in order to protect against inadvertent contact with exposed busbar connections (EN 50274).

C	<b>3TX7 680-0E</b>	1	1 unit	41B
---	--------------------	---	--------	-----

#### Box terminals for laminated copper bars

**Without auxiliary conductor connection** (1 set = 3 units)

With single covers for protection against inadvertent contact (EN 50274)

D	<b>3TX7 570-1E</b>	1	1 unit	41B
---	--------------------	---	--------	-----

**With auxiliary conductor connection** (1 set = 3 units)

Conductor cross-sections for auxiliary conductors:

- Solid 2 x (0.75 ... 2.5) mm<sup>2</sup>
- Finely stranded with end sleeve 2 x (0.5 ... 2.5) mm<sup>2</sup>
- Solid or stranded 2 x (18 ... 12) AWG
- Tightening torque 0.8 ... 1.4 Nm (7 ... 12 lb.in)

D	<b>3TX7 690-1F</b>	1	1 unit	41B
---	--------------------	---	--------	-----

<sup>1)</sup> For technical specifications for coupling links see "Accessories for 3RT10 Contactors", page 3/96.

<sup>2)</sup> The link for paralleling can be reduced by one pole.



## Spare parts

Version	Auxiliary contacts	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Version	Connections		Order No.	Price per PU			



## Auxiliary switch blocks



3TY7 561-1.A00

For lateral mounting		Left	Right				
1st auxiliary switch block (replacement for 3TY7 561-1A/-1B)	1 1 --			▶	<b>3TY7 561-1AA00</b>	1	1 unit 41B
1st auxiliary switch block	1 -- 1			▶	<b>3TY7 561-1EA00</b>	1	1 unit 41B
2nd auxiliary switch block (replacement for 3TY7 561-1K/-1L)	1 1 --			C	<b>3TY7 561-1KA00</b>	1	1 unit 41B
For reconnection of the coil with DC economy circuit		-- -- 1		▶	<b>3TY7 681-1G</b>	1	1 unit 41B

Version	For type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	----------	----	-----------	--------------	-------------------	-----	----

## Solenoid coils



3TY7 6.3-0...

<b>AC operation<sup>1)</sup></b> The solenoid coils are fitted as standard with varistors against overvoltage; the coil is supplied with switch-on electronics.	3TF68 3TF69		<b>3TY7 683-0C..</b> <b>3TY7 693-0C..</b>				
<b>DC operation<sup>1)</sup> - DC economy circuit</b> The solenoid coils for size 14 are supplied without reversing contactor.	3TF68 3TF69		<b>3TY7 683-0D..</b> <b>3TY7 693-0D..</b>				

## Vacuum interrupters

Set with 3 vacuum interrupters with components	3TF68	B	<b>3TY7 680-0B</b>		1	1 unit 41B
In order to ensure reliable operation of the contactors, only <b>original replacement interrupters</b> should be used.	3TF69	C	<b>3TY7 690-0B</b>		1	1 unit 41B

<sup>1)</sup> Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Order No. **must be supplemented according to page 3/119**.

Version	Rated control supply voltage $U_s$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
	V AC		Order No.	Price per PU			

## 3TC44 reversing contactors

Complete with series resistor, 1 m connecting cable and plug-in connector	110 ... 120 220 ... 240 380 ... 420	D D D	<b>3TY7 684-0QG7</b> <b>3TY7 684-0QL7</b> <b>3TY7 684-0QV7</b>		1 1 1	1 unit 41B 1 unit 41B 1 unit 41B
---	---	-------------	--	--	-------------	--

## Solenoid coils for main contactor, with rectifier bridge

For 3TF68 ...Q	110 ... 120 220 ... 240 380 ... 420	D D D	<b>3TY7 683-0QG7</b> <b>3TY7 683-0QL7</b> <b>3TY7 683-0QV7</b>		1 1 1	1 unit 41B 1 unit 41B 1 unit 41B
For 3TF69 ...Q	110 ... 120 220 ... 240 380 ... 420	D D D	<b>3TY7 693-0QG7</b> <b>3TY7 693-0QL7</b> <b>3TY7 693-0QV7</b>		1 1 1	1 unit 41B 1 unit 41B 1 unit 41B

# Power Contactors for Switching Motors

## 3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

### Overview

#### Standards

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

The 3TB5 contactors are suitable for use in any climate.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see [Accessories and Spare Parts](#) on page 3/128).

### Technical specifications

Contactor	Type Size	3TB50 6	3TB52 ... 3TB56 8 ... 12
<b>Rated data of the auxiliary contacts</b>		according to IEC 60947-5-1	
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	
<b>Conventional thermal current</b> $I_{th}$ = Rated operational current $I_e$ /AC-12	A	10	
<b>AC load</b>			
<b>Rated operational current <math>I_e</math>/AC-15/AC-14</b>			
• For rated operational voltage $U_e$			
- At 24 V	A	10	
- At 110 V	A	10	
- At 125 V	A	10	
- At 220 V	A	6	
- At 230 V	A	5.6	
- At 380 V	A	4	
- At 400 V	A	3.6	
- At 500 V	A	2.5	
- At 660 V	A	2.5	
- At 690 V	A	--	
<b>DC load</b>			
<b>Rated operational current <math>I_e</math>/DC-12</b>			
• For rated operational voltage $U_e$			
- At 24 V	A	10	10
- At 60 V	A	10	10
- At 110 V	A	3.2	8
- At 125 V	A	2.5	6
- At 220 V	A	0.9	2
- At 440 V	A	0.33	0.6
- At 600 V	A	0.22	0.4
<b>Rated operational current <math>I_e</math>/DC-13</b>			
• For rated operational voltage $U_e$			
- At 24 V	A	10 (10)	10 (10)
- At 60 V	A	5 (7)	5 (4)
- At 110 V	A	1.14 (3.2)	2.4 (1.8)
- At 125 V	A	0.98 (2.5)	2.1 (1.6)
- At 220 V	A	0.48 (0.9)	1.1 (0.9)
- At 440 V	A	0.13 (0.33)	0.32 (0.27)
- At 600 V	A	0.075 (0.22)	0.21 (0.18)
<b>Ⓢ and Ⓞ rated data of the auxiliary contacts</b>			
Rated voltage, max.	V AC	600	
Switching capacity		A 600, P 600	

1) Values in brackets apply to auxiliary contacts with delayed NC contact.

Contactor

3TB5

### Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current  $I_e$  complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current  $I_e/AC-4$  can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

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

Characters in the equation:

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

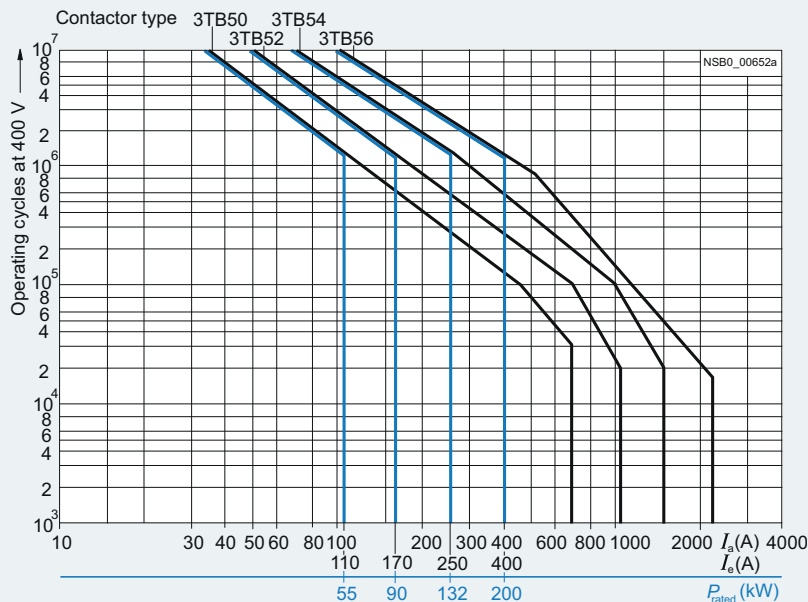
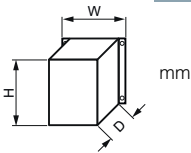
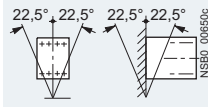


Diagram legend:  
 P<sub>rated</sub> = Rated power for squirrel-cage motors at 400 V  
 I<sub>a</sub> = Breaking current  
 I<sub>e</sub> = Rated operational current



# Power Contactors for Switching Motors

## 3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Type		<b>3TB50</b>	<b>3TB52</b>	<b>3TB54</b>	<b>3TB56</b>
Size		<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>
Dimensions (W x H x D)		120 x 150 x 198	135 x 180 x 217	145 x 252 x 264	160 x 252 x 282
<b>General data</b>					
<b>Permissible mounting position</b> <b>Installation instructions</b> <sup>1)</sup>					
The contactors are designed for operation on a vertical mounting surface.					
<b>Mechanical endurance</b>	Operating cycles	10 million			
<b>Electrical endurance</b>		2)			
<b>Rated insulation voltage <math>U_i</math></b>	V	1000			
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	690			
<b>Mirror contacts</b>		Yes, acc. to IEC 60947-4-1, Appendix F			
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.					
<b>Permissible ambient temperature</b>					
• During operation	°C	-25 ... +55			
• During storage	°C	-50 ... +80			
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00 (open), coil assembly IP40			
<b>Touch protection</b> acc. to EN 50274		Finger-safe with cover			
<b>Shock resistance</b> (rectangular pulse)	g/ms	5/10	5.9/10	5.9/10	5.9/10
<b>Short-circuit protection</b>					
<b>Main circuit</b>					
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB					
• Type of coordination "1"	A	250	315	400	630
• Type of coordination "2"	A	224	250	315	500
<b>Auxiliary circuit</b> , short-circuit current $I_k \leq 1$ kA					
• Short-circuit test with fuse links of gG operational class: LV HRC, type 3NA; DIAZED, type 5SB with $I_k = 1$ kA acc. to IEC 60947-5-1	A	16			
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	10			
<b>Control</b>					
<b>Coil operating range</b>		0.8 ... 1.1 x $U_s$			
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )					
• Closing = Closed	W	25	30	60	86
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math></b> Total break time = Opening delay + Arcing time					
(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)					
• Closing delay	ms	105 ... 360	115 ... 400	105 ... 400	110 ... 400
• Opening delay <sup>3)</sup>	ms	18 ... 30	22 ... 35	24 ... 55	40 ... 110
• Arcing time	ms	10 ... 15	10 ... 15	10 ... 15	10 ... 15
<b>Operating times for 1.0 x <math>U_s</math></b>					
• Closing delay	ms	120 ... 230	130 ... 250	115 ... 250	120 ... 250
• Opening delay <sup>3)</sup>	ms	20 ... 26	24 ... 32	35 ... 50	60 ... 95

1) For reversing duty, deviations from the vertical axis are not permitted.

2) See "Endurance of the main contacts", page 3/123.

3) The opening delay times can increase if the contactor coils are damped against voltage peaks.

3TB5 contactors with DC solenoid system,  
3-pole, 55 ... 200 kW

Contactor	Type	3TB50	3TB52	3TB54	3TB56
	Size	6	8	10	12
<b>Main circuit</b>					
<b>AC capacity</b>					
<b>Utilization category AC-1, switching resistive loads</b>					
• Rated operational current $I_e$					
- At 40 °C up to 690 V	A	170	230	325	425
- At 55 °C up to 690 V	A	160	200	300	400
• Rated power for AC loads <sup>1)</sup> with p.f.= 0.95 (at 55 °C)					
- At 230 V	kW	61	76	114	152
- At 400 V	kW	105	132	195	262
- At 500 V	kW	138	173	260	345
- At 690 V	kW	183	228	340	455
• Minimum conductor cross-sections for loads with $I_e$	mm <sup>2</sup>	70	95	185	240
<b>Utilization categories AC-2 and AC-3</b>					
<b>Utilization category AC-4</b> (for $I_a = 6 \times I_e$ )					
The following applies to a contact endurance of about 200000 operating cycles:					
• Rated operational current $I_e$	A	52	72	103	120
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz					
- At 230 V	kW	15.6	21	31	37.5
- At 400 V	kW	27	37	55	65
- At 500 V	kW	35	48	72	85.5
- At 690 V	kW	45	64	92	106
• Max. rated operational current $I_e$ /AC-4					
- At 400 V	A	110	170	250	400
<b>Switching frequency</b>					
<b>Switching frequency z</b> in operating cycles/hour					
• Contactors without overload relays					
- AC-1	h <sup>-1</sup>	1000			
- AC-2	h <sup>-1</sup>	500			
- AC-3	h <sup>-1</sup>	500			
- AC-4	h <sup>-1</sup>	250			
• Contactors with overload relays (mean value)	h <sup>-1</sup>	15			

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

<sup>2)</sup> See "Selection and Ordering Data", page 3/127.

# Power Contactors for Switching Motors

## 3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	Type Size	3TB50 6	3TB52 8	3TB54 10	3TB56 12
<b>Conductor cross-sections</b>					
<b>Main conductors:</b>		<b>Screw terminals</b>			
• Finely stranded with cable lug	mm <sup>2</sup>	16 ... 70	35 ... 95	50 ... 240	50 ... 240
• Stranded with cable lug	mm <sup>2</sup>	25 ... 70	50 ... 120	70 ... 240	70 ... 240
• Busbars	mm	15 x 3	20 x 3	25 x 5	2 x (25 x 3)
• Terminal screw		M6	M8	M10	M10
<b>Auxiliary conductors:</b>					
• Solid	mm <sup>2</sup>	1 ... 2.5			
• Finely stranded with end sleeve	mm <sup>2</sup>	0.75 ... 1.5			
• Pin-end connector (DIN 46231)	mm <sup>2</sup>	2 x 1 ... 2.5			
<b>Protective conductors:</b>					
• Stranded with cable lug	mm <sup>2</sup>	--	25 ... 70	35 ... 70	50 ... 120
<b>Ⓢ and Ⓞ rated data</b>					
<b>Ⓢ rated data</b>					
• Uninterrupted current					
- Open	A	150	170	240	300
- Enclosed	A	135	153	215	270
• Rated power for induction motors at 60 Hz (enclosed)					
- 115 V	hp	25	30	40	50
- 230 V	hp	50	60	75	100
- 460 V	hp	100	120	150	200
- 575 V	hp	125	160	200	250
• Overload relays					
- Setting range	Type	3RB20 56	3RB20 56	3RB20 66	3RB20 66
	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
<b>Ⓞ rated data</b>					
• Uninterrupted current					
- Open	A	150	150	240	390
- In enclosure	A	135	135	215	350
• Rated power for induction motors at 60 Hz					
- 115 V	hp	25	25	30	--
- 230 V	hp	50	50	75	125
- 460 V	hp	100	100	150	250
- 575 V	hp	125	125	200	300 <sup>1)</sup>
• Overload relays					
- Setting range	Type	3RB20 56	3RB20 56	3RB20 66	3RB20 66
	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
<b>Short-circuit protection devices</b>					
• CLASS RK5 fuses	A	400	400	450	600
• Circuit breakers acc. to UL 489	A	175	175	250	600

<sup>1)</sup> At 575/600 V AC max.  
rated motor current 325 A and  
motor starting current 3250 A.

3TB5 contactors with DC solenoid system,  
3-pole, 55 ... 200 kW

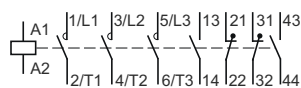
## Selection and ordering data

**Main conductors: Busbar connections****Auxiliary and control conductors: Screw terminals**

3TB50

Size	Rated data					AC-1	Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	AC-2 and AC-3 (up to 55 °C)		Ratings of induction motors at 50 Hz and up to				Version	NO						
Operational current $I_e$ up to	230 V	400 V	500 V	690 V	Operational current $I_e$ (at 40 °C)	V DC			Order No.	Price per PU				
6	110	37	<b>55</b>	75	90	170	2	2	24	A	<b>3TB50 17-0BB4</b>	1	1 unit	41B
8	170	55	<b>90</b>	110	132	230	2	2	24	A	<b>3TB52 17-0BB4</b>	1	1 unit	41B
10	250	75	<b>132</b>	160	200	325	2	2	24	C	<b>3TB54 17-0BB4</b>	1	1 unit	41B
12	400	115	<b>200</b>	255	355	425	2	2	24	C	<b>3TB56 17-0BB4</b>	1	1 unit	41B

## DC operation · DC solenoid system



For accessories see page 3/128.

For spare parts see page 3/129.

## Options





**Rated control supply voltages****(the 10th and 11th position of the order number must be changed)**

Rated control supply voltage $U_s$	Contactor type	
	3TB50, 3TB52, 3TB54	3TB56
	Size 6, 8, 10	12
<b>DC operation</b>		
24 V DC	B4	B4
110 V DC	F4	--
220 V DC	M4	M4

# Power Contactors for Switching Motors



## 3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

### Accessories

For contactors		Version	Rated control supply voltage $U_s$		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
Size	Type		V AC	V DC							
<b>Surge suppressors · Varistors</b>											
 3TX7 462-3.	6	3TB50	<b>Varistors<sup>1)</sup></b> for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	D	<b>3TX7 462-3G</b>		1	1 unit	41B
				48 ... 127	70 ... 150	C	<b>3TX7 462-3H</b>		1	1 unit	41B
				127 ... 240	150 ... 250	B	<b>3TX7 462-3J</b>		1	1 unit	41B
				240 ... 400	--	A	<b>3TX7 462-3K</b>		1	1 unit	41B
				400 ... 600	--	C	<b>3TX7 462-3L</b>		1	1 unit	41B
 3TX7 522-3.	8 ... 12	3TB52 ... 3TB56	<b>Varistors<sup>1)</sup></b> for separate screw fixing or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	<b>3TX7 522-3G</b>		1	1 unit	41B
				--	70 ... 150	B	<b>3TX7 522-3H</b>		1	1 unit	41B
				--	150 ... 250	B	<b>3TX7 522-3J</b>		1	1 unit	41B
<b>Surge suppressors · RC elements</b>											
 3TX7 522-3.	6	3TB50	<b>RC elements</b> For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	<b>3TX7 522-3R</b>		1	1 unit	41B
				48 ... 127	--	B	<b>3TX7 522-3S</b>		1	1 unit	41B
				127 ... 240	--	B	<b>3TX7 522-3T</b>		1	1 unit	41B
				240 ... 400	--	B	<b>3TX7 522-3U</b>		1	1 unit	41B
				400 ... 600	--	B	<b>3TX7 522-3V</b>		1	1 unit	41B
<b>Surge suppressors · Diodes</b>											
 3TX7 462-3.	6 ... 12	3TB50 ... 3TB56	<b>Diode assemblies<sup>2)</sup></b> (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	D	<b>3TX7 462-3D</b>		1	1 unit	41B

<sup>1)</sup> Includes the peak value of the alternating voltage on the DC side.

<sup>2)</sup> Not for DC economy circuit.

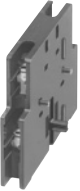






For contactors		Version			DT	<b>Screw terminals</b>		PU (UNIT, SET, M)	PS*	PG	
Size	Type					Order No.	Price per PU				
<b>Terminal covers</b>											
 3TX6 506-3B	6	3TB50	For protection against inadvertent contact with exposed busbar connections		M6	B	<b>3TX6 506-3B</b>		1	1 unit	41B
	8	3TB52			M8	B	<b>3TX6 526-3B</b>		1	1 unit	41B
	10 and 12	3TB54, 3TB56	Can be screwed on free screw end. Covers one busbar connection (1 set = 6 units).		M10	B	<b>3TX6 546-3B</b>		1	1 unit	41B



# Power Contactors for Switching Motors

**3TB5 contactors with DC solenoid system,  
3-pole, 55 ... 200 kW**


## Spare parts

For contactors		Auxiliary contacts			DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG		
Size	Type	Version	Connections			Order No.	Price per PU				
			NO	NC	NC						
<b>Auxiliary switch blocks</b>											
<b>For lateral mounting</b>					Left	Right					
	<b>6</b>	3TB50	(replacement for 3TY6 501-1A/-1B)								
			1	1	--			▶ <b>3TY6 501-1AA00</b>	1	1 unit	41B
				1	--	1		▶ <b>3TY6 501-1E</b>	1	1 unit	41B
	<b>8 ... 12</b>	3TB52 ... 3TB56	1	1	--			▶ <b>3TY6 561-1A</b>	1	1 unit	41B
								▶ <b>3TY6 561-1B</b>	1	1 unit	41B
								▶ <b>3TY6 561-1E</b>	1	1 unit	41B


For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type						

## Contacts with fixing parts


In order to ensure reliable operation of the contactors, only **original replacement contacts** should be used.

	<b>6</b>	3TB50	(1 set = 3 moving and 6 fixed switching elements)	B	<b>3TY6 500-0A</b>	1	1 unit	41B
	<b>8</b>	3TB52		B	<b>3TY6 520-0A</b>	1	1 unit	41B
	<b>10</b>	3TB54		B	<b>3TY6 540-0A</b>	1	1 unit	41B
	<b>12</b>	3TB56		B	<b>3TY6 560-0A</b>	1	1 unit	41B

## Arc chutes

	<b>6</b>	3TB50	1 arc chute, 3-pole	▶	<b>3TY6 502-0A</b>	1	1 unit	41B
	<b>8</b>	3TB52		▶	<b>3TY6 522-0A</b>	1	1 unit	41B
	<b>10</b>	3TB54		▶	<b>3TY6 542-0A</b>	1	1 unit	41B
	<b>12</b>	3TB56		▶	<b>3TY6 562-0A</b>	1	1 unit	41B

## Solenoid coils

DC operation <sup>1)</sup>								
	<b>6</b>	3TB50			<b>3TY6 503-0B..</b>			
	<b>8</b>	3TB52			<b>3TY6 523-0B..</b>			
	<b>10</b>	3TB54			<b>3TY6 543-0B..</b>			
	<b>12</b>	3TB56			<b>3TY6 563-0B..</b>			

<sup>1)</sup> Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Order No. **must be supplemented according to page 3/127.**

# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

### Overview

#### Standards

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

The contactors are suitable for use in any climate.

The contactors with screw terminals are finger-safe according to EN 50274.

#### Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

### Technical specifications

Contactor Type **3TF2**

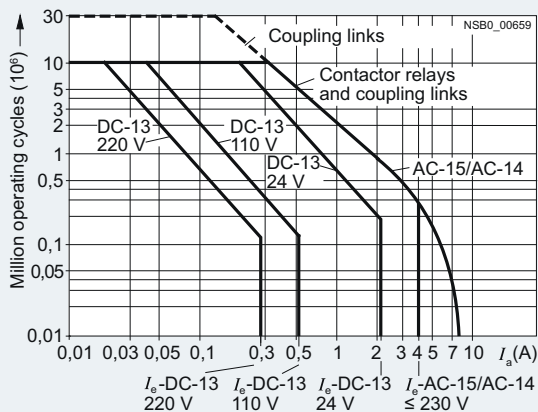
#### Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly 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.

Diagram legend:

$I_a$  = Breaking current

$I_e$  = Rated operational current



#### Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current  $I_e$  complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200000 operating cycles. If a shorter endurance is sufficient, the rated operational current  $I_e/AC-4$  can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

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

Characters in the equation:

X = Contact endurance for mixed operation in operating cycles

A = Contact endurance for normal operation ( $I_a = I_e$ ) in operating cycles

B = Contact endurance for inching ( $I_a = \text{multiple of } I_e$ ) in operating cycles

C = Inching operations as a percentage of total switching operations

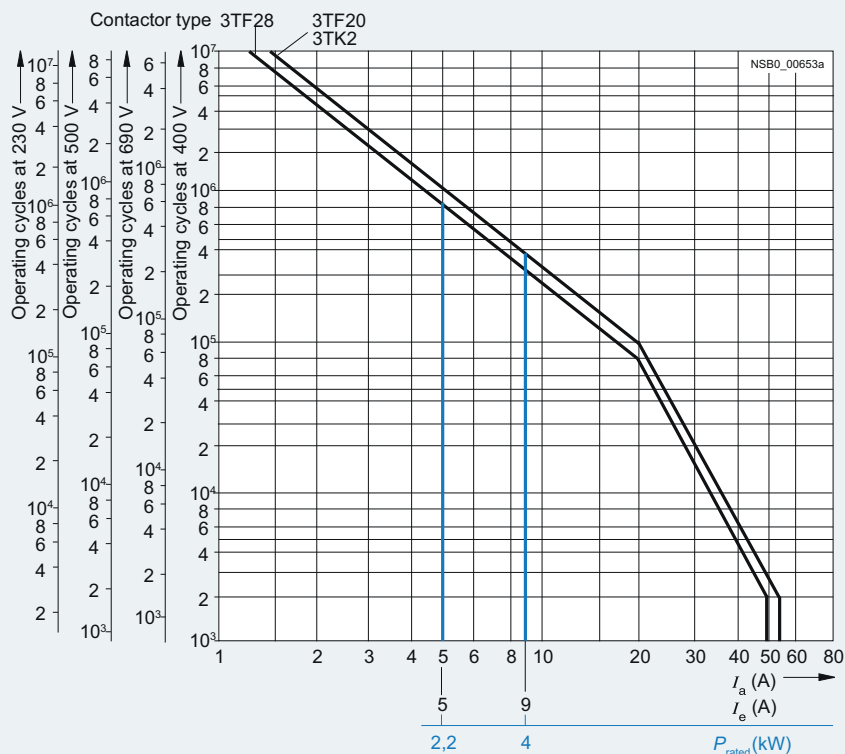
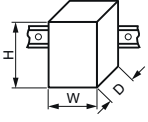


Diagram legend:

$P_{rated}$  = Rated power for squirrel-cage motors at 400 V

$I_a$  = Breaking current

$I_e$  = Rated operational current

Type		3TF20, 3TF28	3TF22, 3TF29
Size		<b>00</b>	<b>00</b>
Dimensions (W x H x D)			
• With mounted auxiliary switch block	mm	45 x 48 x 63	--
• With 3TX4 490 surge suppressor	mm	45 x 48 x 91	45 x 48 x 91
	mm	45 x 48 x 88	45 x 48 x 116
<b>General data</b>			
<b>Permissible mounting positions</b>		Any	
<b>Mechanical endurance</b>			
• AC operation	Operating cycles	10 million	
• DC operation		30 million	
Auxiliary switch blocks		10 million	
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)			
• Screw terminals	V	690	690 <sup>1)</sup>
• Flat connectors 6.3 mm x 0.8 mm	V	500	--
• Solder pin connections	V	500	--
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (pollution degree 3)			
• Screw terminals	kV	6	6
• Flat connectors 6.3 mm x 0.8 mm	kV	6	--
• Solder pin connections	kV	6	--
<b>Protective separation</b> between coil and main contacts (according to IEC 60947-1, Appendix N)	V	Up to 300	
<b>Mirror contacts</b>			
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.		Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	Yes, acc. to IEC 60947-4-1, Appendix F, and SUVA
<b>Permissible ambient temperature<sup>2)</sup></b>			
• During operation	°C	-25 ... +55	
• During storage	°C	-55 ... +80	
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00 open IP20 for screw terminals IP40 coil assembly	
<b>Touch protection</b> acc. to EN 50274		Finger-safe for screw terminals	
<b>Shock resistance</b>			
• Without 3TX44 auxiliary switch block			
- Rectangular pulse	AC operation <i>g/ms</i>	8.3/5 and 5.2/10	--
	DC operation <i>g/ms</i>	11.3/5 and 9.2/10	--
- Sine pulse	AC operation <i>g/ms</i>	13/5 and 8/10	--
	DC operation <i>g/ms</i>	17.4/5 and 12.9/10	--
• With 3TX44 auxiliary switch block			
- Rectangular pulse	AC operation <i>g/ms</i>	5/5 and 3.6/10	5/5 and 3.6/10
	DC operation <i>g/ms</i>	9/5 and 6.9/10	9/5 and 7.3/10
- Sine pulse	AC operation <i>g/ms</i>	7.8/5 and 5.6/10	7.8/5 and 5.6/10
	DC operation <i>g/ms</i>	13.9/5 and 10.1/10	14/5 and 11/10
<b>Conductor cross-sections</b>		3)	
<b>Short-circuit protection for contactors without overload relays</b>			
<b>Main circuit<sup>4)</sup></b>			
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1			
- Type of coordination "1"	A	25	
- Type of coordination "2" <sup>5)</sup>	A	10	
- Weld-free	A	10	
• Miniature circuit breaker with C characteristic	A	10	
<b>Auxiliary circuit</b>			
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with $I_k = 1$ kA acc. to IEC 60947-5-1	A	6	

1) Auxiliary contacts 500 V

2) Applies to 50/60 Hz coil:  
At 50 Hz,  $1.1 \times U_s$ , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

3) See "Conductor Cross-Sections".

4) According to excerpt from IEC 60947-4-1

Type of coordination "1":  
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay are to be replaced if necessary.  
Type of coordination "2":  
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.5) A short-circuit current of  $I_q \leq 6$  kA applies to type of coordination "2".

# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type	3TF2	
	Size	00	
<b>Control</b>			
<b>Coil operating range<sup>1)</sup></b>		0.8 ... 1.1 x $U_s$	
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )			
<b>Standard version:</b>			
• AC operation, 50 Hz	Closing	VA	15
	P.f.		0.41
	Closed	VA	6.8
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.36
	Closed	VA	6.1
• AC operation, 50/60 Hz <sup>1)</sup>	Closing	VA	16.5/13.2
	P.f.		0.43/0.38
	Closed	VA	8.0/5.4
• AC operation, 50/60 Hz <sup>1)</sup>	P.f.		0.48/0.42
	Closing	VA	14.6
	P.f.		0.38
• AC operation, 60 Hz	Closing	VA	6.5
	P.f.		0.40
	Closing	VA	14.4
• AC operation, 60 Hz	P.f.		0.30
	Closing	VA	6.0
	P.f.		0.44
• DC operation	Closing = Closed	W	3
<b>Permissible residual current of the electronic circuit<sup>2)</sup></b> (with 0 signal)			
	• AC operation	mA	$\leq 3 \times (230 V/U_s)$
	• DC operation	mA	$\leq 1 \times (230 V/U_s)$
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>3)</sup></b>			
Total break time = Opening delay + Arcing time			
Values apply with coil in cold state and at operating temperature for operating range			
• AC operation	Closing delay	ms	5 ... 19
	Opening delay	ms	2 ... 22
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	16 ... 65
	Opening delay	ms	2 ... 5
• Arcing time		ms	10 ... 15
<b>Operating times for 1.0 x <math>U_s</math><sup>3)</sup></b>			
• AC operation	Closing delay	ms	5 ... 18
	Opening delay	ms	3 ... 21
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	19 ... 31
	Opening delay	ms	3 ... 4
• Arcing time		ms	10 ... 15

1) Applies to 50/60 Hz coil:  
At 50 Hz, 1.1 x  $U_s$ , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.




2) The 3TX4 490-1J additional load module is recommended for higher residual currents (see "Accessories").

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

Contactor	Type	3TF28, 3TF29	3TF20 ...-0..., 3TF22 ...-0...	3TF20 ...-3..., 3TF20 ...-6..., 3TF20 ...-7...
	Size	00	00	00
<b>Main circuit</b>				
<b>AC capacity</b>				
<b>Utilization category AC-1</b>				
<b>Switching resistive loads</b>				
• Rated operational current $I_e$ (at 40 °C)	Up to 400/380 V A	18	18	18
	690/660 V A	18	18	--
• Rated operational current $I_e$ (at 55 °C)	400/380 V A	16	16	16
	690/660 V A	16	16	--
• Rated power of AC loads P.f. = 1	At 230/220 V kW	6.0	6.0	6.0
	400/380 V kW	10	10	10
	500 V kW	13	13	13
	690/660 V kW	17	17	--
• Minimum conductor cross-section for loads with $I_e$	mm <sup>2</sup>	2.5	2.5	2.5
<b>Utilization categories AC-2 and AC-3</b>				
• Rated operational current $I_e$	Up to 220 V A	5.1	9.0	9.0
	230 V A	5.1	9.0	9.0
	380 V A	5.1	9.0	9.0
	400 V A	5.1	8.4	8.4
	500 V A	4.8	6.5	6.5
	660 V A	4.8	5.2	--
	690 V A	4.8	5.2	--
• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz and	At 110 V kW	0.7	1.2	1.2
	115 V kW	0.7	1.2	1.2
	120 V kW	0.7	1.3	1.3
	127 V kW	0.8	1.4	1.4
	200 V kW	1.2	2.2	2.2
	220 V kW	1.3	2.4	2.4
	230 V kW	1.4	2.5	2.5
	240 V kW	1.5	2.6	2.6
	380 V kW	2.2	4.0	4.0
	400 V kW	2.2	4.0	4.0
	415 V kW	2.5	4.0	4.0
	440 V kW	2.5	4.0	4.0
	460 V kW	2.7	4.0	4.0
	500 V kW	2.9	4.0	4.0
	575 V kW	3.2	4.0	--
	660 V kW	3.8	4.0	--
	690 V kW	4.0	4.0	--
<b>Utilization category AC-4</b>				
(contact endurance approx. 200000 operating cycles at $I_a = 6 \times I_e$ )				
• Rated operational current $I_e$	Up to 400 V A	1.9	2.6	2.6
	690 V A	1.4	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz and	At 110 V kW	0.23	0.32	0.32
	115 V kW	0.24	0.33	0.33
	120 V kW	0.26	0.35	0.35
• Max. permissible rated operational current $I_e/AC-4 \cong I_e/AC-3$ up to 500 V, for reduced contact endurance and reduced switching frequency	127 V kW	0.27	0.37	0.37
	200 V kW	0.42	0.58	0.58
	220 V kW	0.47	0.64	0.64
	230 V kW	0.49	0.67	0.67
	240 V kW	0.51	0.70	0.70
	380 V kW	0.81	1.10	1.10
	400 V kW	0.85	1.15	1.15
	415 V kW	0.93	1.20	1.20
	440 V kW	1.0	1.27	1.27
	460 V kW	1.0	1.33	1.33
	500 V kW	1.1	1.45	1.45
	575 V kW	1.0	1.30	--
	660 V kW	0.86	1.10	--
	690 V kW	0.89	1.15	--

# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type	3TF28, 3TF29	3TF20 ...-0..., 3TF22 ...-0...	3TF20 ...-3..., 3TF20 ...-6..., 3TF20 ...-7...
	Size	00	00	00
<b>Main circuit</b>				
<b>Thermal load capacity</b>	10 s current	A	70	
<b>Power loss per conducting path</b>	At $I_g/AC-3$	W	0.3	
<b>Switching frequency</b>				
<b>Switching frequency z</b> in operating cycles/hour				
• Contactors without overload relays	No-load switching frequency	h <sup>-1</sup>	10000	
Dependence of the switching frequency z' on the operational current I' and operational voltage U: $z' = z \times (I_g/I') \times (400 V/U')^{1.5} 1/h$	AC-1	h <sup>-1</sup>	1000	
	AC-2	h <sup>-1</sup>	500	
	AC-3	h <sup>-1</sup>	1000	
• Contactors with overload relays (mean value)		h <sup>-1</sup>	15	
<b>Conductor cross-sections</b>				
<b>Main and auxiliary conductors</b>				
<ul style="list-style-type: none"> <li>• Solid</li> <li>• Finely stranded with end sleeve</li> <li>• Pin-end connector (DIN 46231)</li> <li>• Terminal screw</li> <li>• Prescribed tightening torque for terminal screws</li> </ul>	mm <sup>2</sup>	 <b>Screw terminals</b>		
		2 x (0.5 ... 2.5), 1 x 4		
		2 x (20 ... 14) AWG, 1 x 12 AWG		
		mm <sup>2</sup>	2 x (0.5 ... 1.5), 1 x 2.5	
	mm <sup>2</sup>	1 x 1 ... 2.5		
	Nm	0.8 ... 1.3		
	lb.in	7 ... 11		
<ul style="list-style-type: none"> <li>• When using a plug-in sleeve 6.3 – 1</li> <li>• Finely stranded with 6.3 – 2.5</li> </ul>	mm <sup>2</sup>	 <b>Flat connectors</b>		
	mm <sup>2</sup>	0.5 ... 1		
	mm <sup>2</sup>	1 ... 2.5		
<ul style="list-style-type: none"> <li>• Solder pin cross-section</li> <li>• Solder pin cross-section, plug-in base</li> </ul>	mm <sup>2</sup>	 <b>Solder pin connections</b> (only for printed circuit boards)		
	mm <sup>2</sup>	0.8 x 1.2		
	mm <sup>2</sup>	0.32 x 1.0		

# Power Contactors for Switching Motors

**3TF2 contactors,  
3-pole, 2.2 ... 4 kW**

Contactor	Type	3TF20 ..-0...	3TF20 ..-3..., 3TF20 ..-6..., 3TF20 ..-7...
	Size	00	00
<b>☞ and ☞ rated data of the 3TF20 contactors</b>			
<b>Rated insulation voltage <math>U_i</math></b>	V AC	600	300
<b>Uninterrupted current</b>	Open and enclosed A	16	16 (10 for solder pin connection)
<b>Maximum horsepower ratings</b> (☞ and ☞ approved values)			
• Rated power for induction motors at 60 Hz			
- Single-phase	At 115 V hp	0.5	--
	200 V hp	1	1
	230 V hp	1.5	1
	460/575 V hp	--	--
- 3-phase	At 115 V hp	--	--
	200 V hp	3	3 (1 for 3TF20 ..-6)
	230 V hp	3	3 (1 for 3TF20 ..-6)
	460/575 V hp	5	--
<b>Overload relays</b>			
• Type			
		3UA7	
• Setting range			
	A	8 ... 10	
<hr/>			
Contactor	Type	3TF2	
	Size	00	
<b>Rated data of the auxiliary contacts according to IEC 60947-1</b>			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	
<b>Conventional thermal current <math>I_{th}</math> = Rated operational current <math>I_e/AC-12</math></b>	A	10	
<b>AC load</b>			
<b>Rated operational current <math>I_e/AC-15/AC-14</math></b>			
• For rated operational voltage $U_e$			
	24 V A	4	
	110 V A	4	
	125 V A	4	
	220 V A	4	
	230 V A	4	
	380 V A	3	
	400 V A	3	
	500 V A	2	
	660 V A	1	
	690 V A	1	
<b>DC load</b>			
<b>Rated operational current <math>I_e/DC-12</math></b>			
• For rated operational voltage $U_e$			
	24 V A	4	
	48 V A	2.2	
	110 V A	1.1	
	125 V A	1.1	
	220 V A	0.5	
	440 V A	--	
	600 V A	--	
<b>Rated operational current <math>I_e/DC-13</math></b>			
• For rated operational voltage $U_e$			
	24 V A	2.1	
	48 V A	1.1	
	110 V A	0.52	
	125 V A	0.52	
	220 V A	0.27	
	440 V A	--	
	600 V A	--	
<b>☞, ☞ and ☞ rated data of the auxiliary contacts</b>			
<b>Rated voltage, max.</b>	V AC	600	
Auxiliary switch blocks, max.	V AC	300	
<b>Switching capacity</b>		A 600, Q 300	
Uninterrupted current at 240 V AC	A	10	

# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

### Selection and ordering data

Size 00

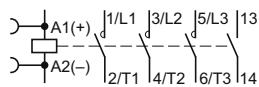
AC-1: operational current  $I_e = 16 A$  (at 55 °C)

Screw terminals

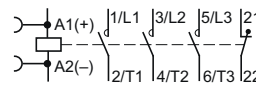
Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ At 400/ 380 V	Ratings of induction motors at 50 Hz and				Ident. No.	Version	Order No.	Price per PU			
	230/ 220 V	400/ 380 V	500 V	690/ 660 V							
A	kW	kW	kW	kW							

#### Contactors with screw terminals for screw fixing and snap-on mounting onto TH 35 standard mounting rail

Ident. No. 10



Ident. No. 01



3TF20 ...-0...  
3TF28 ...-0...

#### AC operation

5	1.3	2.2	2.9	3.8	10	1	--	B	3TF28 10-0AP0	1	1 unit	41B
					01	--	1	C	3TF28 01-0AP0	1	1 unit	41B
9	2.4	4	4	4	10	1	--	A	3TF20 10-0AP0	1	1 unit	41B
					01	--	1	A	3TF20 01-0AP0	1	1 unit	41B

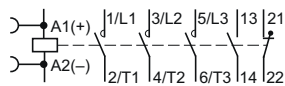
#### DC operation - DC solenoid system

5	1.3	2.2	2.9	3.8	10	1	--	C	3TF28 10-0BB4	1	1 unit	41B
					01	--	1	C	3TF28 01-0BB4	1	1 unit	41B
9	2.4	4	4	4	10	1	--	A	3TF20 10-0BB4	1	1 unit	41B
					01	--	1	A	3TF20 01-0BB4	1	1 unit	41B

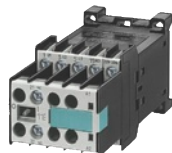
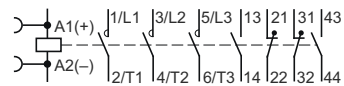
#### With permanently mounted auxiliary switch blocks

Terminal designations of the auxiliary contacts according to EN 50012

Ident. No. 11



Ident. No. 22



3TF22 ...-0...  
3TF29 ...-0...

#### AC operation

5	1.3	2.2	2.9	3.8	11	1	1	C	3TF29 11-0AP0	1	1 unit	41B
					22	2	2	C	3TF29 22-0AP0	1	1 unit	41B
9	2.4	4	4	4	11	1	1	C	3TF22 11-0AP0	1	1 unit	41B
					22	2	2	C	3TF22 22-0AP0	1	1 unit	41B

#### DC operation - DC solenoid system

5	1.3	2.2	2.9	3.8	11	1	1	C	3TF29 11-0BB4	1	1 unit	41B
					22	2	2	C	3TF29 22-0BB4	1	1 unit	41B
9	2.4	4	4	4	11	1	1	C	3TF22 11-0BB4	1	1 unit	41B
					22	2	2	C	3TF22 22-0BB4	1	1 unit	41B

For accessories see pages 3/138, 3/139.



# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ At 400/ 380 V	Ratings of induction motors at 50 Hz and				Ident. No.	Version						
	230/ 220 V	400/ 380 V	500 V	690/ 660 V								
A	kW	<b>kW</b>	kW	kW		NO	NC					
Ident. No. <b>10</b>						Ident. No. <b>01</b>						

### Contactors with 6.3 mm x 0.8 mm flat connectors - for screw fixing and snap-on mounting onto TH 35 standard mounting rail

AC operation										Flat connectors			
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-3AP0</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-3AP0</b>	1	1 unit	41B
DC operation · DC solenoid system													
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-3BB4</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-3BB4</b>	1	1 unit	41B

3TF20...-3...

### Contactors with 6.3 mm x 0.8 mm flat connectors - for screw fixing (diagonal)

AC operation													
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-7AP0</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-7AP0</b>	1	1 unit	41B
DC operation · DC solenoid system													
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-7BB4</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-7BB4</b>	1	1 unit	41B

3TF20...-7...

### Contactors with solder pin connections for printed circuit boards - for screw fixing (diagonal)

AC operation										Solder pin connections			
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-6AP0</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-6AP0</b>	1	1 unit	41B
DC operation · DC solenoid system													
	9	2.4	4	4	--	10	1	--	C	<b>3TF20 10-6BB4</b>	1	1 unit	41B
						<b>01</b>	--	1	C	<b>3TF20 01-6BB4</b>	1	1 unit	41B

3TF20...-6...

For accessories see pages 3/138, 3/139.

### Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage $U_s$	Contactor type 3TF20, 3TF28	Size 00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	60 Hz	
24 V AC	29 V AC	B0
110 V AC	132 V AC	F0
230/220 V AC	276 V AC	P0 <sup>1)</sup>
AC operation		
Solenoid coils for AC 50/60 Hz		
230 V AC		L2
DC operation		
24 V DC		B4

Rated control supply voltage $U_s$	Contactor type 3TF22, 3TF29	Size 00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	60 Hz	
230/220 V AC	276 V AC	P0 <sup>1)</sup>
DC operation		
24 V DC		B4

<sup>1)</sup> Operating range at 220 V:  
0.85 to 1.15 ×  $U_s$ ; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

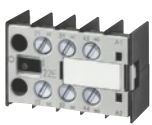
# Power Contactors for Switching Motors

## 3TF2 contactors, 3-pole, 2.2 ... 4 kW

### Accessories

Rated operational current $I_e$ /AC-15/AC-14 at			Auxiliary contacts				DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
230/ 220 V	400/ 380 V	500 V	Ident. No.	Version	Connections		Order No.	Price per PU				
A	A	A										

#### Snap-on auxiliary switch blocks



3TX4 4...-A

For expansion to 2, 4 or 5 auxiliary contacts according to EN 50012  
Only for 3TF2. Ident. No. 10 (with auxiliary contact 1 NO)

4	3	2	11	--	1	--	--	▶	3TX4 401-1A	1	1 unit	41B
			22	1	2	--	--	▶	3TX4 412-1A	1	1 unit	41A
			23	1	3	--	--	▶	3TX4 413-1A	1	1 unit	41A
			32	2	2	--	--	▶	3TX4 422-1A	1	1 unit	41A

For expansion to 3 or 5 auxiliary contacts according to EN 50005

4	3	2	20	2	--	--	--	▶	3TX4 420-2A	1	1 unit	41A
			11	1	1	--	--	▶	3TX4 411-2A	1	1 unit	41A
			02	--	2	--	--	▶	3TX4 402-2A	1	1 unit	41A
			11; U	--	--	1	1	▶	3TX4 411-2G	1	1 unit	41A
4	3	2	40	4	--	--	--	▶	3TX4 440-2A	1	1 unit	41A
			31	3	1	--	--	▶	3TX4 431-2A	1	1 unit	41A
			22	2	2	--	--	▶	3TX4 422-2A	1	1 unit	41A
			22; 2 U	--	--	2	2	▶	3TX4 422-2G	1	1 unit	41A

For contactors	Rated control supply voltage $U_s$	Time setting range (minimum times)	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Type				Order No.				



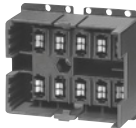
#### OFF-delay devices



3TX4 490-1H

For DC-operated contactors for bridging short-time power failures up to 0.8 s

3TF2. ...-0BB4	24 V DC	0.25 s or 0.5 s	A	▶	3TX4 490-1H	1	1 unit	41B
----------------	---------	-----------------	---	---	-------------	---	--------	-----

For contactors	Rated control supply voltage $U_s$		Power consumption of LED at $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	V AC	V DC	mW						
<b>Surge suppressors for plugging onto contactors with and without auxiliary switch blocks</b>									
<b>Version without LED</b>									
<b>RC elements</b>									
 3TX4 490-3A	3TF2...-0...	24 ... 48	24 ... 70	--	B	<b>3TX4 490-3R</b>	1	1 unit	41B
	3TF2...-1...	48 ... 127	70 ... 150	--	B	<b>3TX4 490-3S</b>	1	1 unit	41B
		127 ... 240	150 ... 250	--	B	<b>3TX4 490-3T</b>	1	1 unit	41B
		240 ... 400	--	--	B	<b>3TX4 490-3U</b>	1	1 unit	41B
		400 ... 600	--	--	B	<b>3TX4 490-3V</b>	1	1 unit	41B
<b>Varistors</b>									
	3TF2...-0...	≤ 48	24 ... 70	--	B	<b>3TX4 490-3G</b>	1	1 unit	41B
	3TF2...-1...	48 ... 127	70 ... 150	--	B	<b>3TX4 490-3H</b>	1	1 unit	41B
		127 ... 240	150 ... 250	--	B	<b>3TX4 490-3J</b>	1	1 unit	41B
		240 ... 400	--	--	B	<b>3TX4 490-3K</b>	1	10 units	41B
		400 ... 600	--	--	B	<b>3TX4 490-3L</b>	1	10 units	41B
<b>Noise suppression diodes</b>									
	3TF2...-0...	--	12 ... 250	--	B	<b>3TX4 490-3A</b>	1	1 unit	41B
	3TF2...-1...	--	--	--					
<b>Diode assemblies (diode and Zener diode) For DC operation and short break times</b>									
	3TF2...-0...	--	24 ... 250	--	B	<b>3TX4 490-3B</b>	1	1 unit	41B
	3TF2...-1...	--	--	--					
<b>Version with LED</b>									
<b>Varistors</b>									
 3TX4 490-4G	3TF2...-0...	24 ... 48	12 ... 24	10 ... 120	B	<b>3TX4 490-4G</b>	1	1 unit	41B
	3TF2...-1...	48 ... 127	24 ... 70	20 ... 470	B	<b>3TX4 490-4H</b>	1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	B	<b>3TX4 490-4J</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	B	<b>3TX4 490-4K</b>	1	1 unit	41B
<b>Noise suppression diodes</b>									
	3TF2...-0...	--	24 ... 70	20 ... 470	B	<b>3TX4 490-4A</b>	1	1 unit	41B
	3TF2...-1...	--	70 ... 150	50 ... 700	B	<b>3TX4 490-4B</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	B	<b>3TX4 490-4C</b>	1	1 unit	41B
<b>Additional load modules for plugging onto contactors with and without auxiliary switch blocks<sup>1)</sup></b>									
For increasing the permissible residual current and for limiting the residual voltage									
	3TF2...-0A...	230/220, 50 Hz	--	--	B	<b>3TX4 490-1J</b>	1	1 unit	41B
	3TF2...-1A...	230, 60 Hz	--	--					
		230, 50/60 Hz	--	--					
		Operating range $0.8 \dots 1.1 \times U_s$							
<b>Plug-in bases with solder pin connections for printed circuit boards, width 45 mm</b>									
Rated insulation voltage $U_i$ : 400 V (for pollution degree 3); rated impulse withstand voltage $U_{imp}$ : 6 kV; rated operational current $I_e$ : 6 A; Ⓢ and Ⓜ rated data: max. 300 V, 6 A									
 3TX4 491-2A	3TF20...-3...	For contactors with 6.3 mm x 0.8 mm flat connectors			A	<b>3TX4 491-2A</b>	1	5 units	41A
	3TF20...-7...								
<b>Release tools</b>									
	3TF2...-7...	For releasing contactors from 3TX4 491-2A plug-in bases			D	<b>3TX4 491-2K</b>	1	1 unit	41B

1) Dimensions as for 3TX4 490-3 surge suppressor.

# Coupling Contactors

## SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

### Overview

#### DC operation

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

The 3RT20 coupling contactors for switching motors are tailored to the special requirements of working with electronic controls.





The 3RT20 1 coupling contactors cannot be extended with auxiliary switch blocks.




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

Depending on the version, the solenoid coils are supplied either without overvoltage damping (3RT20 1.-1HB4. and 3RT20 1.-.MB4.-0KT0) or with a diode, suppressor diode or varistor connected as standard.

### Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT20 contactors for switching motors (see pages 3/17 and 3/21).

Contactor	Type		3RT20 1.-.HB4. S00	3RT20 1.-.JB4. S00	3RT20 1.-.KB4. S00	3RT20 2.-.KB4. S0	
<b>General data</b>							
<b>Mechanical endurance</b>	Operating cycles		30 million			10 million	
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V		400				
<b>Control</b>							
<b>Coil operating range</b>			0.7 ... 1.25 x $U_s$				
<b>Power consumption of the solenoid coil</b> (for cold coil) Closing = Closed	At $U_s$ 17 V W		1.6			2.3	
	24 V W		2.8			4.5	
	30 V W		4.4			7	
<b>Permissible residual current</b> of the electronics (with 0 signal)			< 6 mA x (24 V/ $U_s$ )			< 10 mA x (24 V/ $U_s$ )	
<b>Overvoltage configuration of the solenoid coil</b>			No overvoltage damping 	With diode 	With suppressor diode 	With varistor 	
<b>Operating times</b>							
• Closing	- At 17 V	ON-delay NO	ms	40 ... 130			70 ... 270
		OFF-delay NC	ms	30 ... 80			60 ... 250
	- At 24 V	ON-delay NO	ms	35 ... 60			65 ... 90
		OFF-delay NC	ms	25 ... 40			55 ... 80
	- At 30 V	ON-delay NO	ms	25 ... 50			52 ... 65
		OFF-delay NC	ms	15 ... 30			43 ... 57
• Closing at 17 ... 30 V	OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20	19 ... 21	
	ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30	25 ... 31	

Contactor	Type		3RT20 1.-1MB4.-0KT0 S00	3RT20 1.-1VB4. S00	3RT20 1.-1SB4. S00	
<b>General data</b>						
<b>Mechanical endurance</b>	Operating cycles		30 million			
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V		400			
<b>Control</b>						
<b>Coil operating range</b>			0.85 ... 1.85 x $U_s$			
<b>Power consumption of the solenoid coil</b> (for cold coil) Closing = Closed	At $U_s$ 24 V W		1.6			
<b>Permissible residual current, upright mounting position</b>			On request			
<b>Overvoltage configuration of the solenoid coil</b>			No overvoltage damping 	With diode 	With suppressor diode 	

SIRIUS 3RT20 coupling contactors (interface),  
3-pole, 3 ... 15 kW

Contactor	Type	3RT20 1.-1MB4.-0KT0	3RT20 1.-1VB4.	3RT20 1.-1SB4.
	Size	S00	S00	S00
<b>Control</b>				
<b>Operating times</b>				
• Closing				
- At 20.5 V	ON-delay NO	ms	30 ... 120	
	OFF-delay NC	ms	20 ... 110	
- At 24 V	ON-delay NO	ms	25 ... 90	
	OFF-delay NC	ms	15 ... 80	
- At 44 V	ON-delay NO	ms	15 ... 60	
	OFF-delay NC	ms	10 ... 50	
• Opening				
	OFF-delay NO	ms		5 ... 20
	ON-delay NC	ms	20 ... 80 30 ... 90	10 ... 30

## Selection and ordering data

## DC operation

## Low power consumption

## Extended operating range of the solenoid coil

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



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data	Auxiliary contacts	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3 T <sub>u</sub> : Up to 60 °C					
Operational current I <sub>e</sub> up to	Rating of induction motors at 50 Hz and	Ident. No.	Configurator	Price per PU	Configurator
400 V	400 V		Order No.		Order No.
A	kW	NO NC			Price per PU

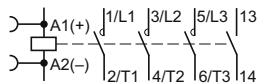
## For screw fixing and snap-on mounting onto TH 35 standard mounting rail

## Size S00

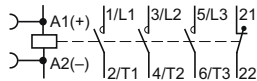
## Diode, varistor or RC element, attachable

(no auxiliary switch blocks can be mounted)

- 1 NO, Ident. No. 10



- 1 NC, Ident. No. 01



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25** ×  $U_s$   
 Power consumption of the solenoid coils **2.8 W** at 24 V

7	3	10	1	--	B	3RT20 15-1HB41	B	3RT20 15-2HB41
		01	--	1	B	3RT20 15-1HB42	B	3RT20 15-2HB42
9	4	10	1	--	B	3RT20 16-1HB41	B	3RT20 16-2HB41
		01	--	1	B	3RT20 16-1HB42	B	3RT20 16-2HB42
12	5.5	10	1	--	B	3RT20 17-1HB41	B	3RT20 17-2HB41
		01	--	1	B	3RT20 17-1HB42	B	3RT20 17-2HB42

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85** ×  $U_s$   
 Power consumption of the solenoid coils **1.6 W** at 24 V

7	3	10	1	--	B	3RT20 15-1MB41-0KT0	B	3RT20 15-2MB41-0KT0
		01	--	1	B	3RT20 15-1MB42-0KT0	B	3RT20 15-2MB42-0KT0
9	4	10	1	--	B	3RT20 16-1MB41-0KT0	B	3RT20 16-2MB41-0KT0
		01	--	1	B	3RT20 16-1MB42-0KT0	B	3RT20 16-2MB42-0KT0
12	5.5	10	1	--	B	3RT20 17-1MB41-0KT0	B	3RT20 17-2MB41-0KT0
		01	--	1	B	3RT20 17-1MB42-0KT0	B	3RT20 17-2MB42-0KT0

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

For surge suppressors see page 3/56.

# Coupling Contactors

## SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

**DC operation**

**Low power consumption**

**Extended operating range of the solenoid coil**

**Integrated coil circuit**

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



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data AC-2 and AC-3 $T_U$ : Up to 60 °C  Operational current $I_e$ up to  400 V A	Ratings of induction motors at 50 Hz and  <b>400 V</b> <b>kW</b>	Auxiliary contacts		DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>	
		Ident. No.	Version		<b>Configurator</b>		<b>Configurator</b>	
					Order No.	Price per PU	Order No.	Price per PU

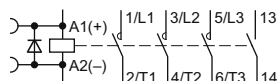
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

**Size S00**

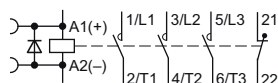
**With integrated coil circuit (diode)**

(no auxiliary switch blocks can be mounted)

- 1 NO, Ident. No. **10**



- 1 NC, Ident. No. **01**



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25** x  $U_s$   
 Power consumption of the solenoid coils **2.8 W** at 24 V

7	<b>3</b>	<b>10</b>	1	--	B	<b>3RT20 15-1JB41</b>	B	<b>3RT20 15-2JB41</b>
		<b>01</b>	--	1	B	<b>3RT20 15-1JB42</b>	B	<b>3RT20 15-2JB42</b>
9	<b>4</b>	<b>10</b>	1	--	▶	<b>3RT20 16-1JB41</b>	B	<b>3RT20 16-2JB41</b>
		<b>01</b>	--	1	▶	<b>3RT20 16-1JB42</b>	B	<b>3RT20 16-2JB42</b>
12	<b>5.5</b>	<b>10</b>	1	--	B	<b>3RT20 17-1JB41</b>	B	<b>3RT20 17-2JB41</b>
		<b>01</b>	--	1	B	<b>3RT20 17-1JB42</b>	B	<b>3RT20 17-2JB42</b>

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85** x  $U_s$   
 Power consumption of the solenoid coils **1.6 W** at 24 V

7	<b>3</b>	<b>10</b>	1	--	B	<b>3RT20 15-1VB41</b>	B	<b>3RT20 15-2VB41</b>
		<b>01</b>	--	1	B	<b>3RT20 15-1VB42</b>	B	<b>3RT20 15-2VB42</b>
9	<b>4</b>	<b>10</b>	1	--	B	<b>3RT20 16-1VB41</b>	B	<b>3RT20 16-2VB41</b>
		<b>01</b>	--	1	B	<b>3RT20 16-1VB42</b>	B	<b>3RT20 16-2VB42</b>
12	<b>5.5</b>	<b>10</b>	1	--	B	<b>3RT20 17-1VB41</b>	B	<b>3RT20 17-2VB41</b>
		<b>01</b>	--	1	B	<b>3RT20 17-1VB42</b>	B	<b>3RT20 17-2VB42</b>

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

# Coupling Contactors

## SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

**DC operation**  
**Low power consumption**  
**Extended operating range of the solenoid coil**  
**Integrated coil circuit**

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



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data AC-2 and AC-3 $T_U$ : Up to 60 °C  Operational current $I_e$ up to  400 V A	Ratings of induction motors at 50 Hz and  <b>400 V</b> kW	Auxiliary contacts		DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>	
		Ident. No.	Version		<b>Configurator</b>		<b>Configurator</b>	
			 NO	 NC	Order No.	Price per PU	Order No.	Price per PU

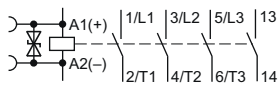
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

### Size S00

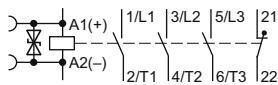
#### With integrated coil circuit (suppressor diode)

(no auxiliary switch blocks can be mounted)

- 1 NO, Ident. No. **10**



- 1 NC, Ident. No. **01**



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25** x  $U_s$   
 Power consumption of the solenoid coils **2.8 W** at 24 V

7	<b>3</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 15-1KB41</b> <b>3RT20 15-1KB42</b>	B ▶	<b>3RT20 15-2KB41</b> <b>3RT20 15-2KB42</b>
9	<b>4</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 16-1KB41</b> <b>3RT20 16-1KB42</b>	B ▶	<b>3RT20 16-2KB41</b> <b>3RT20 16-2KB42</b>
12	<b>5.5</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 17-1KB41</b> <b>3RT20 17-1KB42</b>	▶ ▶	<b>3RT20 17-2KB41</b> <b>3RT20 17-2KB42</b>

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85** x  $U_s$   
 Power consumption of the solenoid coils **1.6 W** at 24 V

7	<b>3</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 15-1SB41</b> <b>3RT20 15-1SB42</b>	B B	<b>3RT20 15-2SB41</b> <b>3RT20 15-2SB42</b>
9	<b>4</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 16-1SB41</b> <b>3RT20 16-1SB42</b>	B B	<b>3RT20 16-2SB41</b> <b>3RT20 16-2SB42</b>
12	<b>5.5</b>	<b>10</b> <b>01</b>	1 --	-- 1	B B	<b>3RT20 17-1SB41</b> <b>3RT20 17-1SB42</b>	B B	<b>3RT20 17-2SB41</b> <b>3RT20 17-2SB42</b>

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

# Coupling Contactors

## SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

**DC operation**

**Low power consumption**

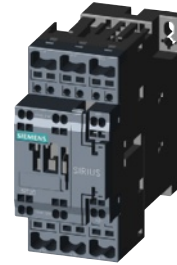
**Extended operating range of the solenoid coil**

**Integrated coil circuit**

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



3RT20 2.-1KB40



3RT20 2.-2KB40

Rated data AC-2 and AC-3 $T_U$ : Up to 60 °C  Operational current $I_e$ up to  400 V A	Ratings of induction motors at 50 Hz and <b>400 V</b> kW	Auxiliary contacts		DT	<b>Screw terminals</b>		DT	<b>Spring-type terminals</b>	
		Ident. No.	Version		<b>Configurator</b>		<b>Configurator</b>		
			NO NC		Order No.	Price per PU	Order No.	Price per PU	

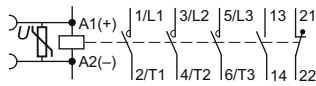
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

**Size S0**

**With integrated coil circuit (varistor)**

(no auxiliary switch blocks can be mounted)

1 NO + 1 NC, Ident. No. 11



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25 x  $U_s$**   
 Power consumption of the solenoid coils **4.5 W** at 24 V

12	<b>5.5</b>	<b>11</b>	1	1	▶	<b>3RT20 24-1KB40</b>	B	<b>3RT20 24-2KB40</b>
17	<b>7.5</b>	<b>11</b>	1	1	▶	<b>3RT20 25-1KB40</b>	B	<b>3RT20 25-2KB40</b>
25	<b>11</b>	<b>11</b>	1	1	▶	<b>3RT20 26-1KB40</b>	B	<b>3RT20 26-2KB40</b>
32	<b>15</b>	<b>11</b>	1	1	▶	<b>3RT20 27-1KB40</b>	B	<b>3RT20 27-2KB40</b>

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

For accessories see page 3/53.



# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA23 reversing contactor assemblies

#### Overview

The 3RA23 contactor assemblies for reversing can be ordered as follows:

#### Size S00 and S0

- Fully wired and tested, with mechanical and electrical interlock
- For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages  $\geq 500$  V; a dead interval of 30 ms is recommended for use with voltages  $\geq 400$  V. These dead times do not apply to assemblies with DC operation.
- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection [see Chapter 7 "Protection Equipment" → "Overload Relays"](#).

#### Screw terminals

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.		
Rating kW	Operational current $I_e$ A		Contactor	Assembly kit	Fully wired and tested contactor assemblies
3	7	S00	3RT20 15-1...2	3RA29 13-2AA1	3RA23 15-8XB30-1...
4	9		3RT20 16-1...2		3RA23 16-8XB30-1...
5.5	12		3RT20 17-1...2		3RA23 17-8XB30-1...
7.5	16		3RT20 18-1...2		3RA23 18-8XB30-1...
5.5	12	S0	3RT20 24-1...0	3RA29 23-2AA1	3RA23 24-8XB30-1...
7.5	16		3RT20 25-1...0		3RA23 25-8XB30-1...
11	25		3RT20 26-1...0		3RA23 26-8XB30-1...
15	32		3RT20 27-1...0		3RA23 27-8XB30-1...
18.5	38		3RT20 28-1...0		3RA23 28-8XB30-1...

#### Spring-type terminals

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.		
Rating kW	Operational current $I_e$ A		Contactor	Assembly kit	Fully wired and tested contactor assemblies
3	7	S00	3RT20 15-2...2	3RA29 13-2AA2 <sup>1)</sup>	3RA23 15-8XB30-2...
4	9		3RT20 16-2...2		3RA23 16-8XB30-2...
5.5	12		3RT20 17-2...2		3RA23 17-8XB30-2...
7.5	16		3RT20 18-2...2		3RA23 18-8XB30-2...
5.5	12	S0	3RT20 24-2...0	3RA29 23-2AA2 <sup>2)</sup>	3RA23 24-8XB30-2...
7.5	16		3RT20 25-2...0		3RA23 25-8XB30-2...
11	25		3RT20 26-2...0		3RA23 26-8XB30-2...
15	32		3RT20 27-2...0		3RA23 27-8XB30-2...
18.5	38		3RT20 28-2...0		3RA23 28-8XB30-2...

<sup>1)</sup> The assembly kit contains: mechanical interlock; connecting clips for 2 contactors; wiring modules on the top and bottom (main, control and auxiliary circuits).

<sup>2)</sup> The assembly kit contains: mechanical interlock; connecting clips for 2 contactors; wiring modules on the top and bottom (main circuits).

#### Reversing contactor assemblies with communication interface

The reversing contactor assemblies with communication interface are essential for mounting the function modules for connection to the control system via the communication system.

For further information on IO-Link and AS-Interface [see Chapter 2, "Industrial Communication"](#).

#### Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays and – for momentary-contact operation – auxiliary switch blocks for latching (required only for S00; with S0 the NO contacts integrated in the basic device can be used) must be ordered separately.

The 3RA23 contactor assemblies have screw or spring-type terminals (main and control circuits) and are suitable for screwing or snapping onto TH 35 standard mounting rails.

#### Complete reversing contactor assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 61140.

The contactor assemblies size S00 and S0 each consist of 2 contactors with the same power, with one NC contact (S00) or one NO contact and one NC contact (S0) in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU2 or 3RB3 overload relays for direct mounting or stand-alone installation or thermistor motor protection releases must be ordered separately.

#### Operating times

The operating times of the 3RT20 individual contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked by way of their auxiliary switches (NC contact interlock) and the mechanical interlock. For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages  $\geq 500$  V; a dead interval of 30 ms is recommended for use with voltages  $\geq 400$  V. These dead times do not apply to assemblies with DC operation.

The operating times of the individual contactors are not affected by the mechanical interlock.

# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA23 reversing contactor assemblies

#### Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th				
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□				
<b>SIRIUS contactor assemblies</b>	<b>3 R A</b>																	
<b>2nd generation</b>	<b>2</b>																	
<b>Device type (e.g. 3 = reversing contactor assembly)</b>	<b>3</b>																	
<b>Contactor size (1 = S00, 2 = S0)</b>	□																	
<b>Power dependent on size (e.g. 27 = 15 kW)</b>	□																	
<b>Type of overload relay (8X = without)</b>	□ □																	
<b>Assembly (B = ready-assembled, E = ready-assembled with communication)</b>	□																	
<b>Interlock (3 = mechanical and electrical)</b>	□																	
<b>Free auxiliary switches (e.g. S00: 0 = none, S0: 0 = 2 NO total)</b>	□																	
<b>Connection type (1 = screw, 2 = spring)</b>	□																	
<b>Operating range / solenoid coil circuit (e.g. A = AC standard / without)</b>	□																	
<b>Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)</b>	□ □																	
<b>Example</b>	<b>3</b>	<b>R</b>	<b>A</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>-</b>	<b>8</b>	<b>X</b>	<b>B</b>	<b>3</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>A</b>	<b>L</b>	<b>2</b>

#### Note:

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

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

#### Benefits

Using wiring kits for reversing starters has the following advantages:

- Notable reduction of wiring in the control circuit
- Integrated mechanical interlocking
- Prevention of wiring errors in the main circuit

Connecting combs for screw terminals also result in:

- Prevention of wiring errors in the control circuit
- Reduction of testing costs
- Ready-jumpered actuation of the auxiliary switches and the frame (A2)
- Integrated electrical interlocking

#### Accessories

##### Selecting the auxiliary switches

The following points should be noted:

##### Size S00

- For maintained-contact operation:  
Use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation:  
Use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

##### Size S0

- For maintained-contact operation:  
The contactors have two integrated auxiliary contacts (1 NO + 1 NC); the NC contact can be used for electrical interlocking.
- For momentary-contact operation:  
Electrical interlock as for maintained-contact operation; the NO contact in the basic device can be used for the latching.

##### Surge suppression

##### Sizes S00 and S0

All contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or be plugged into the front of the contactors (S0).

# Contactor Assemblies

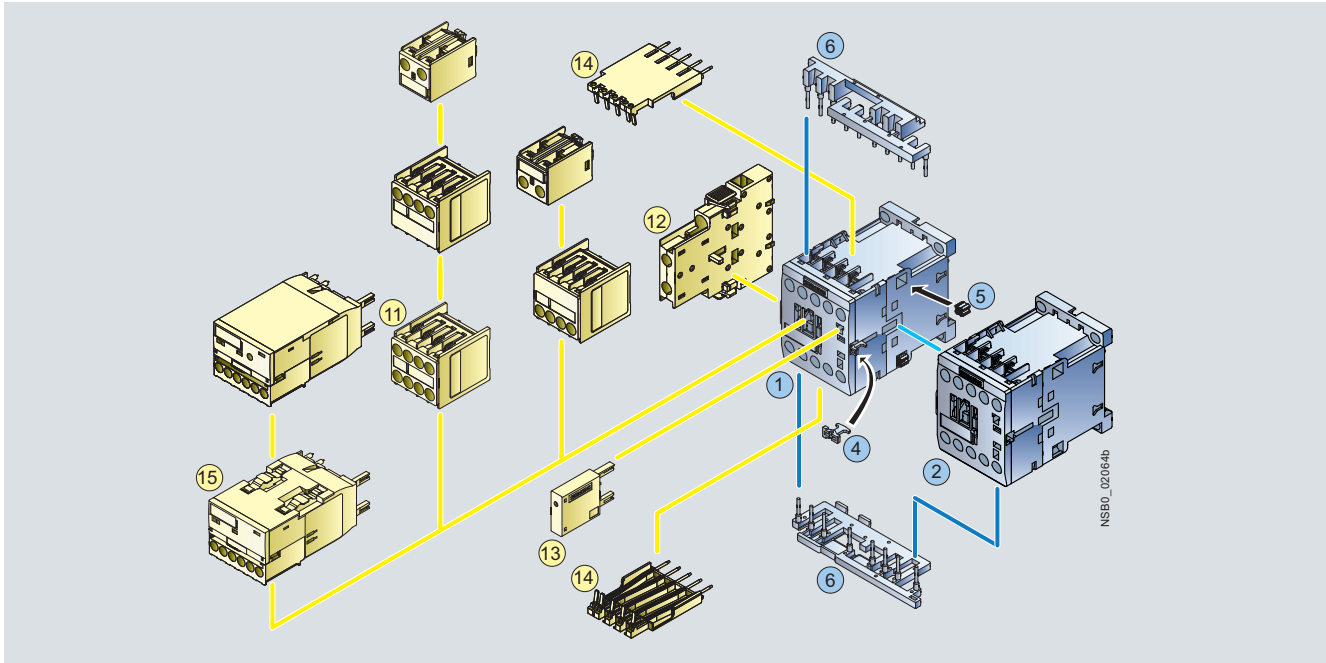
## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA23 reversing contactor assemblies

#### Selection and ordering data

**Fully wired and tested contactor assemblies · Size S00 · up to 7.5 kW**

The figure shows the version with screw terminals



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
① Auxiliary switch block, front <sup>1)</sup>	3RH29 11-1...	3/50
② Auxiliary switch block, lateral	3RH29 21-1DA..	3/52
③ Surge suppressors	3RT29 16-1...	3/56
④ Solder pin adapters	3RT19 16-4KA1	3/59
⑤ Function module for connection to the control system	3RT27 1.-1BA00	3/152

#### Complete contactor assemblies

Individual parts	Order No.		Page
	Q11	Q12	
①② Contactor, 3 kW	3RT20 15	3RT20 15	3/26, 3/31
①② Contactor, 4 kW	3RT20 16	3RT20 16	3/26, 3/31
①② Contactor, 5.5 kW	3RT20 17	3RT20 17	3/26, 3/31
①② Contactor, 7.5 kW	3RT20 18	3RT20 18	3/26, 3/31
④⑤⑥ Assembly kit comprising:	3RA29 13-2AA1		3/151
④ Mechanical interlocks			
⑤ 2 connecting clips for 2 contactors			
⑥ Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included <sup>2)</sup> , interruptible (NC contact interlock)			

<sup>1)</sup> Auxiliary switch block according to EN 50005 must be used.

<sup>2)</sup> 3RT20 1. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation. For circuit diagrams see [operating instructions](#).

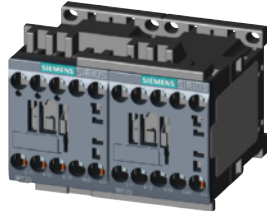
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

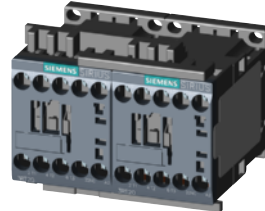
### SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies<sup>2)</sup> · Size S00 · up to 7.5 kW

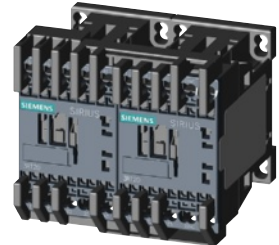
PU (UNIT, SET, M) = 1  
 PS\* = 1 unit  
 PG = 41B



3RA23 1.-8XE30-1BB4



3RA23 1.-8XB30-1A.0



3RA23 1.-8XB30-2A.0

Rated data AC-2 and AC-3						Rated control supply voltage $U_s$ <sup>1)</sup>	DT	Screw terminals	DT	Spring-type terminals
Operational current $I_e$ up to	Rating of induction motors at 50 Hz and						Order No.	Price per PU	Order No.	Price per PU
400 V	230 V	400 V	500 V	690 V						
A	kW	kW	kW	kW	V					
<b>AC operation, 50/60 Hz</b>										
7	2.2	<b>3</b>	3.5	4	24 AC 110 AC 230 AC	B B A	<b>3RA23 15-8XB30-1AB0</b> <b>3RA23 15-8XB30-1AF0</b> <b>3RA23 15-8XB30-1AP0</b>	B B A	<b>3RA23 15-8XB30-2AB0</b> <b>3RA23 15-8XB30-2AF0</b> <b>3RA23 15-8XB30-2AP0</b>	
9	3	<b>4</b>	4.5	5.5	24 AC 110 AC 230 AC	B B A	<b>3RA23 16-8XB30-1AB0</b> <b>3RA23 16-8XB30-1AF0</b> <b>3RA23 16-8XB30-1AP0</b>	B B A	<b>3RA23 16-8XB30-2AB0</b> <b>3RA23 16-8XB30-2AF0</b> <b>3RA23 16-8XB30-2AP0</b>	
12	3	<b>5.5</b>	5.5	5.5	24 AC 110 AC 230 AC	B B A	<b>3RA23 17-8XB30-1AB0</b> <b>3RA23 17-8XB30-1AF0</b> <b>3RA23 17-8XB30-1AP0</b>	B B A	<b>3RA23 17-8XB30-2AB0</b> <b>3RA23 17-8XB30-2AF0</b> <b>3RA23 17-8XB30-2AP0</b>	
16	4	<b>7.5</b>	7.5	7.5	24 AC 110 AC 230 AC	B B A	<b>3RA23 18-8XB30-1AB0</b> <b>3RA23 18-8XB30-1AF0</b> <b>3RA23 18-8XB30-1AP0</b>	B B A	<b>3RA23 18-8XB30-2AB0</b> <b>3RA23 18-8XB30-2AF0</b> <b>3RA23 18-8XB30-2AP0</b>	
<b>DC operation</b>										
7	2.2	<b>3</b>	3.5	4	24 DC	A	<b>3RA23 15-8XB30-1BB4</b>	A	<b>3RA23 15-8XB30-2BB4</b>	
9	3	<b>4</b>	4.5	5.5	24 DC	A	<b>3RA23 16-8XB30-1BB4</b>	A	<b>3RA23 16-8XB30-2BB4</b>	
12	3	<b>5.5</b>	5.5	5.5	24 DC	A	<b>3RA23 17-8XB30-1BB4</b>	A	<b>3RA23 17-8XB30-2BB4</b>	
16	4	<b>7.5</b>	7.5	7.5	24 DC	A	<b>3RA23 18-8XB30-1BB4</b>	A	<b>3RA23 18-8XB30-2BB4</b>	
<b>With communication interface</b>										
7	2.2	<b>3</b>	3.5	4	24 DC	A	<b>3RA23 15-8XE30-1BB4</b>	B	<b>3RA23 15-8XE30-2BB4</b>	
9	3	<b>4</b>	4.5	5.5	24 DC	A	<b>3RA23 16-8XE30-1BB4</b>	B	<b>3RA23 16-8XE30-2BB4</b>	
12	3	<b>5.5</b>	5.5	5.5	24 DC	A	<b>3RA23 17-8XE30-1BB4</b>	A	<b>3RA23 17-8XE30-2BB4</b>	
16	4	<b>7.5</b>	7.5	7.5	24 DC	A	<b>3RA23 18-8XE30-1BB4</b>	A	<b>3RA23 18-8XE30-2BB4</b>	

<sup>1)</sup> Coil operating range  
 at 50 Hz: 0.8 ... 1.1 ×  $U_s$ ;  
 at 60 Hz: 0.85 ... 1.1 ×  $U_s$ .

<sup>2)</sup> The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts. When used with a communication interface and function module, the auxiliary contacts are unassigned.

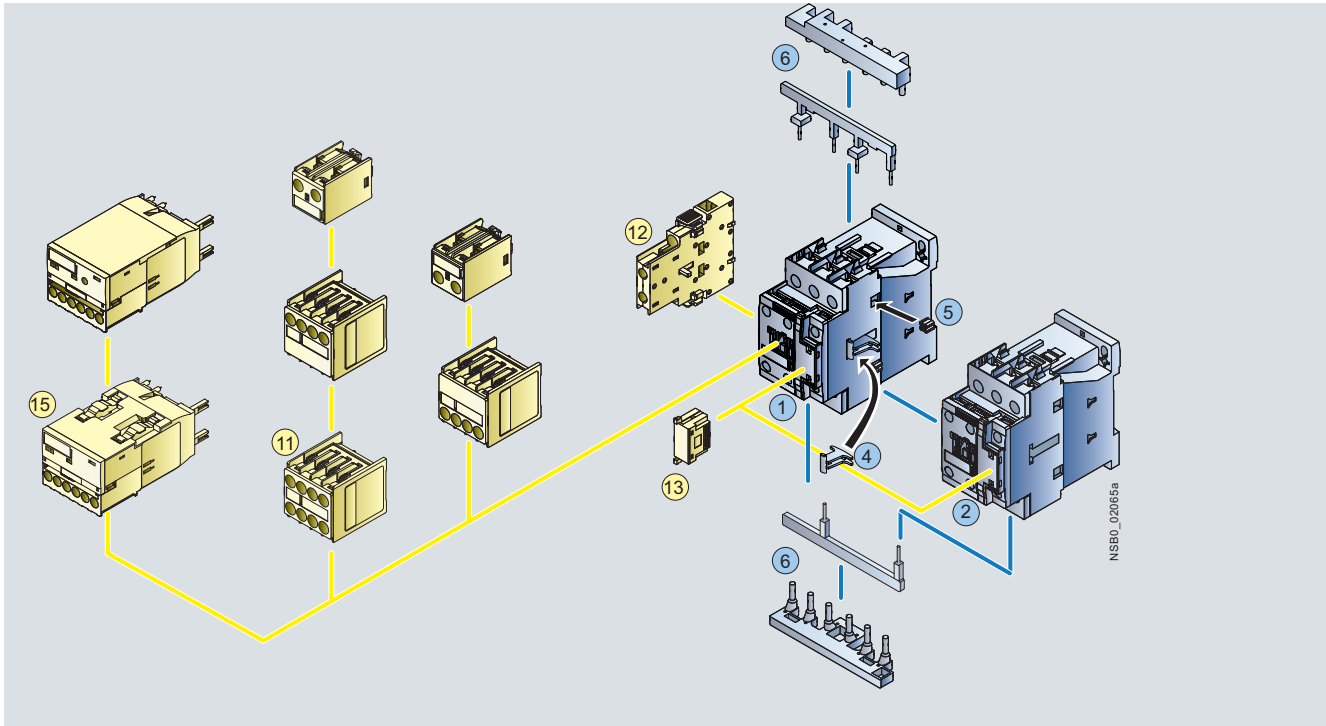
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

The figure shows the version with screw terminals



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
① Auxiliary switch block, front	3RH29 21-1...	3/50
② Auxiliary switch block, lateral	3RH29 21-1DA...	3/52
③ Surge suppressors	3RT29 26-1...	3/56
⑤ Function module for connection to the control system	3RT27 1.-1BA00	3/152

#### Complete contactor assemblies

Individual parts	Order No.		Page
	Q11	Q12	
①② Contactor, 5.5 kW	3RT20 24	3RT20 24	3/28, 3/33
①② Contactor, 7.5 kW	3RT20 25	3RT20 25	3/28, 3/33
①② Contactor, 11 kW	3RT20 26	3RT20 26	3/28, 3/33
①② Contactor, 15 kW	3RT20 27	3RT20 27	3/28, 3/33
①② Contactor, 18.5 kW	3RT20 28	3RT20 28	3/28, 3/33
④⑤⑥ Assembly kit comprising:	3RA29 23-2AA1		3/151
④ Mechanical interlocks			
⑤ 2 connecting clips for 2 contactors			
⑥ Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)			

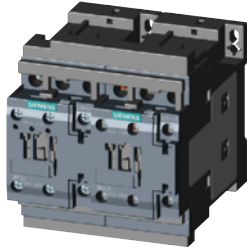
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

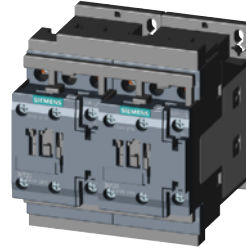
### SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

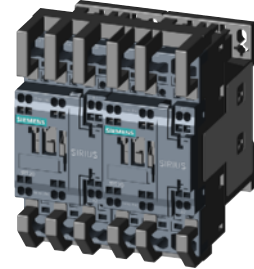
PU (UNIT, SET, M) = 1  
 PS\* = 1 unit  
 PG = 41B





3RA23 24-8XE30-1BB4



3RA23 2.-8XB30-1A.2



3RA23 2.-8XB30-2A.2

Rated data AC-2 and AC-3						DT	Screw terminals 		DT	Spring-type terminals 	
Operational current $I_e$ up to 400 V	Rating of induction motors at 50 Hz and				Rated control supply voltage $U_s$ <sup>1)</sup>		Order No.	Price per PU		Order No.	Price per PU
	A	230 V	400 V	500 V	690 V	V					
<b>AC operation, 50/60 Hz</b>											
12	3	<b>5.5</b>	7.5	7.5	24 AC 110 AC 230 AC	B B B	<b>3RA23 24-8XB30-1AC2</b> <b>3RA23 24-8XB30-1AG2</b> <b>3RA23 24-8XB30-1AL2</b>	B B B	<b>3RA23 24-8XB30-2AC2</b> <b>3RA23 24-8XB30-2AG2</b> <b>3RA23 24-8XB30-2AL2</b>		
17	4	<b>7.5</b>	10	11	24 AC 110 AC 230 AC	B B B	<b>3RA23 25-8XB30-1AC2</b> <b>3RA23 25-8XB30-1AG2</b> <b>3RA23 25-8XB30-1AL2</b>	B B B	<b>3RA23 25-8XB30-2AC2</b> <b>3RA23 25-8XB30-2AG2</b> <b>3RA23 25-8XB30-2AL2</b>		
25	5.5	<b>11</b>	11	11	24 AC 110 AC 230 AC	B B B	<b>3RA23 26-8XB30-1AC2</b> <b>3RA23 26-8XB30-1AG2</b> <b>3RA23 26-8XB30-1AL2</b>	B B B	<b>3RA23 26-8XB30-2AC2</b> <b>3RA23 26-8XB30-2AG2</b> <b>3RA23 26-8XB30-2AL2</b>		
32	7.5	<b>15</b>	18.5	18.5	24 AC 110 AC 230 AC	B B B	<b>3RA23 27-8XB30-1AC2</b> <b>3RA23 27-8XB30-1AG2</b> <b>3RA23 27-8XB30-1AL2</b>	B B B	<b>3RA23 27-8XB30-2AC2</b> <b>3RA23 27-8XB30-2AG2</b> <b>3RA23 27-8XB30-2AL2</b>		
38	7.5	<b>18.5</b>	18.5	18.5	24 AC 110 AC 230 AC	B B B	<b>3RA23 28-8XB30-1AC2</b> <b>3RA23 28-8XB30-1AG2</b> <b>3RA23 28-8XB30-1AL2</b>	B B B	<b>3RA23 28-8XB30-2AC2</b> <b>3RA23 28-8XB30-2AG2</b> <b>3RA23 28-8XB30-2AL2</b>		
<b>DC operation</b>											
12	3	<b>5.5</b>	7.5	7.5	24 DC	A	<b>3RA23 24-8XB30-1BB4</b>	A	<b>3RA23 24-8XB30-2BB4</b>		
17	4	<b>7.5</b>	10	11	24 DC	A	<b>3RA23 25-8XB30-1BB4</b>	A	<b>3RA23 25-8XB30-2BB4</b>		
25	5.5	<b>11</b>	11	11	24 DC	A	<b>3RA23 26-8XB30-1BB4</b>	A	<b>3RA23 26-8XB30-2BB4</b>		
32	7.5	<b>15</b>	18.5	18.5	24 DC	A	<b>3RA23 27-8XB30-1BB4</b>	A	<b>3RA23 27-8XB30-2BB4</b>		
38	7.5	<b>18.5</b>	18.5	18.5	24 DC	A	<b>3RA23 28-8XB30-1BB4</b>	A	<b>3RA23 28-8XB30-2BB4</b>		
<b>With communication interface</b>											
12	3	<b>5.5</b>	7.5	7.5	24 DC	A	<b>3RA23 24-8XE30-1BB4</b>	A	<b>3RA23 24-8XE30-2BB4</b>		
17	4	<b>7.5</b>	10	11	24 DC	A	<b>3RA23 25-8XE30-1BB4</b>	A	<b>3RA23 25-8XE30-2BB4</b>		
25	5.5	<b>11</b>	11	11	24 DC	A	<b>3RA23 26-8XE30-1BB4</b>	A	<b>3RA23 26-8XE30-2BB4</b>		
32	7.5	<b>15</b>	18.5	18.5	24 DC	A	<b>3RA23 27-8XE30-1BB4</b>	A	<b>3RA23 27-8XE30-2BB4</b>		
38	7.5	<b>18.5</b>	18.5	18.5	24 DC	A	<b>3RA23 28-8XE30-1BB4</b>	A	<b>3RA23 28-8XE30-2BB4</b>		

<sup>1)</sup> Coil operating range  
 at 50 Hz:  $0.8 \dots 1.1 \times U_s$ ; at 60 Hz:  $0.85 \dots 1.1 \times U_s$ .

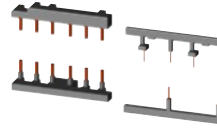
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

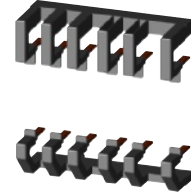
### SIRIUS 3RA23 reversing contactor assemblies

#### Components for customer assembly

PU (UNIT, SET, M) = 1  
 PS\* = 1 unit (unless otherwise specified)  
 PG = 41B



3RA29 23-2AA1



3RA29 23-2AA2

For contactors	Size	Version	DT	Screw terminals	DT	Spring-type terminals	
Type				Order No.	Price per PU	Order No.	Price per PU
<b>Assembly kits for making 3-pole contactor assemblies</b>							
3RT20 1	<b>S00-S00</b>	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom • For main, auxiliary and control circuits	▶	<b>3RA29 13-2AA1</b>	▶	<b>3RA29 13-2AA2</b>	
3RT20 2	<b>S0-S0</b>	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom • For main, auxiliary and control circuits • Only for main circuit <sup>1)</sup>	▶	<b>3RA29 23-2AA1</b> --	▶	-- <b>3RA29 23-2AA2</b>	
3RT20 2	<b>S0-S0</b>	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom, 3-phase feeder terminals • For main, auxiliary and control circuits	B	<b>3RA29 24-2BB1</b>		--	
<b>Wiring modules (single)</b>							
3RT20 1	<b>S00-S00</b>	Top (in-phase)	PS = 5 units	B	<b>3RA29 13-3DA1</b>	B	<b>3RA29 13-3DA2</b>
		Bottom (with phase reversal)	PS = 5 units	B	<b>3RA29 13-3EA1</b>	B	<b>3RA29 13-3EA2</b>
3RT20 2	<b>S0-S0</b>	Top (in-phase)	PS = 5 units	B	<b>3RA29 23-3DA1</b>	B	<b>3RA29 23-3DA2</b>
		Bottom (with phase reversal)	PS = 5 units	B	<b>3RA29 23-3EA1</b>	B	<b>3RA29 23-3EA2</b>
<b>Mechanical connectors</b>							
3RT20 1, 3RT23 1	<b>S00-S00</b>	For lateral interlock, without contactor clearance For 3- and 4-pole contactors	PS = 10 units	B	<b>3RA29 12-2H</b>	B	<b>3RA29 12-2H</b>
3RT20 2, 3RT23 2	<b>S0-S0</b>	For 3- and 4-pole contactors	PS = 10 units	B	<b>3RA29 22-2H</b>	B	<b>3RA29 22-2H</b>

<sup>1)</sup> Version in size S0 with spring-type terminals:  
 Only the wiring modules for the main circuit are included.  
 No connectors are included for the auxiliary and control circuit.

# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA23 reversing contactor assemblies

#### Components for customer assembly

PU (UNIT, SET, M) = 1  
 PS\* = 1 unit (unless otherwise specified)  
 PG = 41B



3RA27 11-1BA00



3RA27 11-2BA00

For contactors	Size	Version	DT	Screw terminals	DT	Spring-type terminals	
Type				Order No.	Price per PU	Order No.	Price per PU
<b>Function modules for connection to the control system</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>IO-Link connection</b> , comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	A	<b>3RA27 11-1BA00</b>	A	<b>3RA27 11-2BA00</b>	
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>AS-Interface connection</b> , comprising one basic and one coupling module	A	<b>3RA27 12-1BA00</b>	A	<b>3RA27 12-2BA00</b>	
<b>Accessories for 3RA27 function modules</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>Module connector set</b> , comprising: • 2 module connectors, 14-pole, short + 2 interface covers	A	<b>3RA27 11-0EE01</b>	A	<b>3RA27 11-0EE01</b>	
<b>Module connectors</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	14-pole, 8 cm • For size jump S00-S0 + 1 space	A	<b>3RA27 11-0EE02</b>	A	<b>3RA27 11-0EE02</b>	
3RT20 1, 3RT20 2	<b>S00, S0</b>	14-pole, 21 cm • For various space combinations	A	<b>3RA27 11-0EE03</b>	A	<b>3RA27 11-0EE03</b>	
3RT20 1, 3RT20 2	<b>S00, S0</b>	10-pole, 8 cm • For separate auxiliary voltage supply within an IO-Link group	A	<b>3RA27 11-0EE04</b>	A	<b>3RA27 11-0EE04</b>	
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>Sealable covers</b>	PS = 5 units A	<b>3RA29 10-0</b>	A	<b>3RA29 10-0</b>	

Operator panels for IO-Link [see page 3/187](#).



# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

#### Overview

The 3RA13 reversing contactor assemblies can be ordered as follows:

#### Sizes S2 and S3

- Fully wired and tested, with mechanical and electrical interlock
- For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages  $\geq 500$  V; a dead interval of 30 ms is recommended for use with voltages  $\geq 400$  V. These dead times do not apply to assemblies with DC operation.

#### Sizes S2 to S12

- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection [see Chapter 7 "Protection Equipment" → "Overload Relays"](#).

The 3RA13 contactor assemblies have screw terminals and are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

#### Complete units

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

The contactor assemblies consist of 2 contactors with the same power, with one NC contact in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU11 or 3RB2. overload relays for direct mounting or stand-alone installation or thermistor motor protection releases must be ordered separately.

#### Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays, the mechanical interlock (as of size S2) and – for momentary-contact operation – auxiliary switch blocks for latching must be ordered separately.

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.				Assembly kit	Fully wired and tested contactor assemblies
Rating kW	Operational current $I_e$ A		Contactor	Mechanical interlock <sup>1)</sup>	Mechanical interlock <sup>2)</sup>	Mechanical interlock <sup>3)</sup>		
15	32	S2	3RT10 34	3RA19 24-1A	3RA19 24-2B	--	3RA19 33-2A <sup>4)</sup>	3RA13 34-8XB30-1...
18.5	40		3RT10 35					3RA13 35-8XB30-1...
22	50		3RT10 36					3RA13 36-8XB30-1...
30	65	S3	3RT10 44	3RA19 24-1A	3RA19 24-2B	--	3RA19 43-2A <sup>4)</sup>	3RA13 44-8XB30-1...
37	80		3RT10 45					3RA13 45-8XB30-1...
45	95		3RT10 46					3RA13 46-8XB30-1...
55	115	S6	3RT10 54	--	--	3RA19 54-2A	3RA19 53-2M <sup>5)</sup>	--
75	150		3RT10 55					
90	185		3RT10 56					
110	225	S10	3RT10 64	--	--	3RA19 54-2A	3RA19 63-2A <sup>5)</sup>	--
132	265		3RT10 65					
160	300		3RT10 66					
200	400	S12	3RT10 75	--	--	3RA19 54-2A	3RA19 73-2A <sup>5)</sup>	--
250	500		3RT10 76					

<sup>1)</sup> Can be mounted onto the front.

<sup>2)</sup> Laterally mountable with one auxiliary contact.

<sup>3)</sup> Laterally mountable without auxiliary contact.

<sup>4)</sup> Assembly kit contains: 2 connecting clips for contactors; wiring modules on the top and bottom.

<sup>5)</sup> Assembly kit contains: wiring module on the top and bottom.

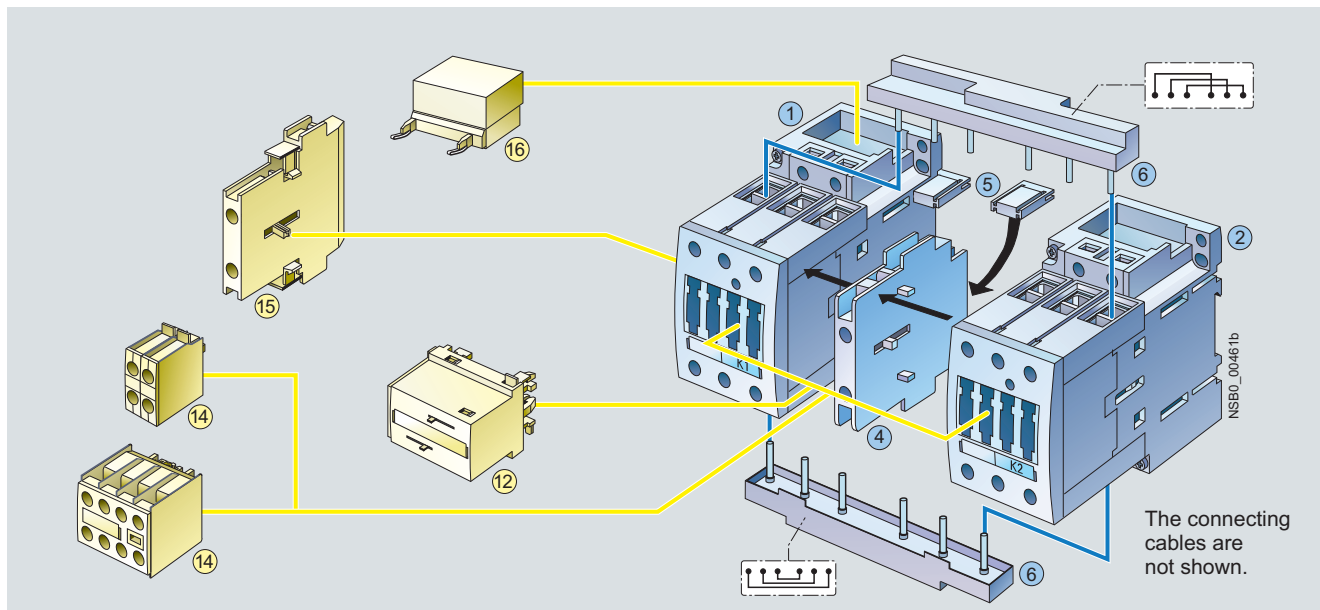
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

#### Selection and ordering data

Fully wired and tested contactor assemblies · Size S2 · up to 22 kW



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
12 Mechanical interlock, front	3RA19 24-1A	3/156
14 Auxiliary switch block, front	3RH19 21-1CA...	3/98
15 Auxiliary switch block, lateral	3RH19 21-1EA...	3/100
16 Surge suppressors	3RT19 26-1... 3RT19 36-1...	3/103

#### Complete contactor assemblies

Individual parts	Order No. Q1	Q2	Page
1 2 Contactor, 15 kW	3RT10 34	3RT10 34	3/78
1 2 Contactor, 18.5 kW	3RT10 35	3RT10 35	3/78
1 2 Contactor, 22 kW	3RT10 36	3RT10 36	3/78
4 Mechanical interlock, lateral	3RA19 24-2B		3/156
5 6 Assembly kit	3RA19 33-2A		3/157

The assembly kit contains:

- 5 2 connecting clips for 2 contactors with 10 mm distance
- 6 Wiring modules on the top and bottom for connecting the main current paths



3RA13 3.-8XB30-1...

Rated data AC-2 and AC-3		Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to	Rating of induction motors at 50 Hz and up to							
500 V	230 V	400 V	500 V	690 V	Order No.	Price per PU		
A	kW	kW	kW	kW				
<b>AC operation, 50/60 Hz</b>								
32	7.5	<b>15</b>	18.5	18.5	24 AC	A	<b>3RA13 34-8XB30-1AC2</b>	1 1 unit 41B
					110 AC	A	<b>3RA13 34-8XB30-1AG2</b>	1 1 unit 41B
					230 AC	A	<b>3RA13 34-8XB30-1AL2</b>	1 1 unit 41B
40	11	<b>18.5</b>	22	22	24 AC	A	<b>3RA13 35-8XB30-1AC2</b>	1 1 unit 41B
					110 AC	A	<b>3RA13 35-8XB30-1AG2</b>	1 1 unit 41B
					230 AC	A	<b>3RA13 35-8XB30-1AL2</b>	1 1 unit 41B
50	15	<b>22</b>	30	22	24 AC	B	<b>3RA13 36-8XB30-1AC2</b>	1 1 unit 41B
					110 AC	B	<b>3RA13 36-8XB30-1AG2</b>	1 1 unit 41B
					230 AC	A	<b>3RA13 36-8XB30-1AL2</b>	1 1 unit 41B
<b>DC operation</b>								
32	7.5	<b>15</b>	18.5	18.5	24 DC	A	<b>3RA13 34-8XB30-1BB4</b>	1 1 unit 41B
40	11	<b>18.5</b>	22	22	24 DC	A	<b>3RA13 35-8XB30-1BB4</b>	1 1 unit 41B
50	15	<b>22</b>	30	22	24 DC	A	<b>3RA13 36-8XB30-1BB4</b>	1 1 unit 41B

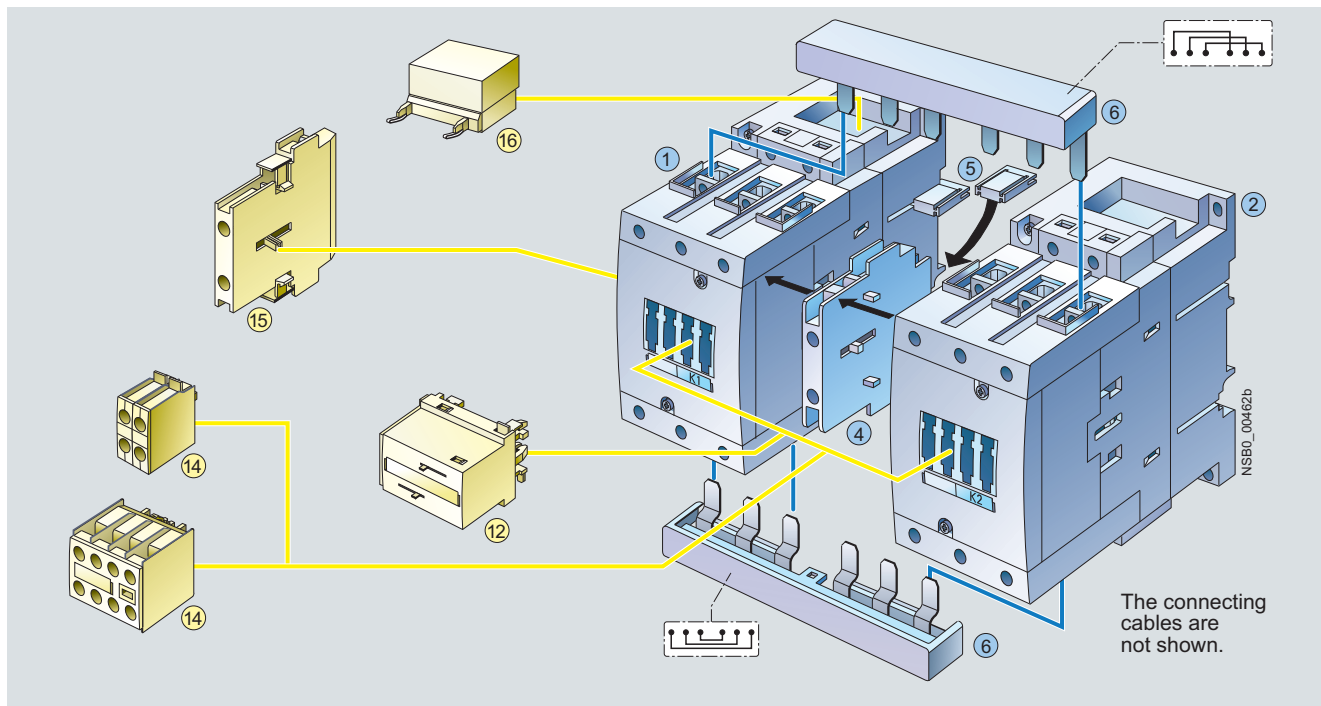
<sup>1)</sup> Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

Fully wired and tested contactor assemblies - Size S3 - up to 45 kW



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
12 Mechanical interlock, front	3RA19 24-1A	3/156
14 Auxiliary switch block, front	3RH19 21-1CA..	3/98
15 Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16 Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103

#### Complete contactor assemblies

Individual parts	Order No. Q1	Q2	Page
1 2 Contactor, 30 kW	3RT10 44	3RT10 44	3/79
1 2 Contactor, 37 kW	3RT10 45	3RT10 45	3/79
1 2 Contactor, 45 kW	3RT10 46	3RT10 46	3/79
4 Mechanical interlock, lateral	3RA19 24-2B		3/156
5 6 Assembly kit	3RA19 43-2A		3/157

The assembly kit contains:

- 5 2 connecting clips for 2 contactors with 10 mm distance
- 6 Wiring modules on the top and bottom for connecting the main current paths

Rated data AC-2 and AC-3		Operational current $I_e$ up to				Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
500 V	230 V	400 V	500 V	690 V									
A	kW	kW	kW	kW	V	V		Order No.	Price per PU				
<b>AC operation at 50/60 Hz</b>													
65	18.5	30	37	45	24 AC	B	3RA13 44-8XB30-1AC2			1	1 unit	41B	
					110 AC	B	3RA13 44-8XB30-1AG2			1	1 unit	41B	
					230 AC	B	3RA13 44-8XB30-1AL2			1	1 unit	41B	
80	22	37	45	55	24 AC	B	3RA13 45-8XB30-1AC2			1	1 unit	41B	
					110 AC	B	3RA13 45-8XB30-1AG2			1	1 unit	41B	
					230 AC	B	3RA13 45-8XB30-1AL2			1	1 unit	41B	
95	22	45	55	55	24 AC	B	3RA13 46-8XB30-1AC2			1	1 unit	41B	
					110 AC	B	3RA13 46-8XB30-1AG2			1	1 unit	41B	
					230 AC	B	3RA13 46-8XB30-1AL2			1	1 unit	41B	
<b>DC operation</b>													
65	18.5	30	37	45	24 DC	B	3RA13 44-8XB30-1BB4			1	1 unit	41B	
80	22	37	45	55	24 DC	B	3RA13 45-8XB30-1BB4			1	1 unit	41B	
95	22	45	55	55	24 DC	B	3RA13 46-8XB30-1BB4			1	1 unit	41B	



3RA13 4.-8XB30-1...





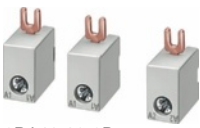
<sup>1)</sup> Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

#### Components for customer assembly

For contactors	Size	Version	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Mechanical interlocks</b>							
 <p>3RA19 24-1A mounted onto 2 contactors</p>	3RT10 3	<b>S2</b>	<b>Laterally mountable<sup>1)</sup></b> Each with one auxiliary contact (1 NC contact) per contactor (can only be used to connect contactors which are not more than 1 size larger or smaller). The mounting depth of the smaller contactor has to be adapted.)	▶	<b>3RA19 24-2B</b>	1	1 unit 41B
	3RT10 4	<b>S3</b>					
	3RT13 3						
3RT13 4							
3RT15 3							
 <p>3RA19 24-1A</p>	3RT10 3	<b>S2</b>	<b>Can be mounted onto the front<sup>2)</sup></b> Onto contactor sizes S2 and S3 (for contactors of the same size)  Note: Sizes S2 and S3: Use 3RA19 32-2C mechanical connectors.	▶	<b>3RA19 24-1A</b>	1	1 unit 41B
	3RT10 4	<b>S3</b>					
 <p>3RA19 54-2A</p>	3RT1. 5	<b>S6</b>	<b>Laterally mountable,</b> without auxiliary contacts Contactor sizes S6, S10 and S12 can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm.	▶	<b>3RA19 54-2A</b>	1	1 unit 41B
	3RT1. 6	<b>S10</b>					
	3RT1. 7	<b>S12</b>					
 <p>3RA19 54-2C</p>	3RT10 4.-A with	<b>S3</b>	<b>Adapters, laterally mountable;</b> for mechanical interlocking of contactor S3 (only for AC operation) with contactor S6 using 3RA19 54-2A locking device (must be ordered separately) incl. connecting clips	A	<b>3RA19 54-2C</b>	1	1 unit 41B
	3RT10 5	<b>S6</b>					
<b>Coil repeat terminals</b>							
 <p>3RA19 23-3B</p>	3RT10 3	<b>S2, S3</b>	For the coil terminals A1 and A2 for reversing starters (contactor sizes S2 and S3). 2 x A1 and 1 x A2 required per assembly (one set contains 10 x A1 and 5 x A2)	B	<b>3RA19 23-3B</b>	1	1 unit 41B
	3RT10 4						
<b>Base plates</b>							
	3RT10 5	<b>S6</b>	For customer assembly of reversing contactor assemblies	B	<b>3RA19 52-2A</b>	1	1 unit 41B
	3RT1. 6	<b>S10</b>		B	<b>3RA19 62-2A</b>	1	1 unit 41B
	3RT1. 7	<b>S12</b>		B	<b>3RA19 72-2A</b>	1	1 unit 41B

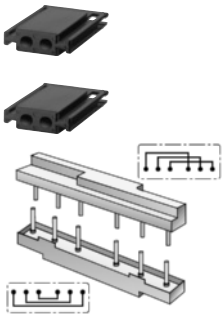
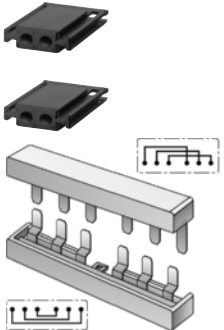
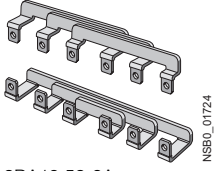
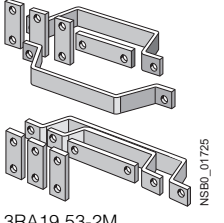
<sup>1)</sup> Can also be used for 4-pole contactors with sizes S2 and S3.

<sup>2)</sup> Can also be used for size S0 4-pole contactors.

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

For contactors	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Assembly kits for making 3-pole contactor assemblies</b>								
 3RA19 33-2A	3RT10 3	<b>S2</b>	The assembly kit contains: 2 connecting clips for 2 contactors; wiring modules on the top and bottom	▶	<b>3RA19 33-2A</b>		1	1 unit 41B
	 3RA19 43-2A	3RT10 4	<b>S3</b>	The assembly kit contains: 2 connecting clips for 2 contactors; wiring modules on the top and bottom	▶	<b>3RA19 43-2A</b>		1
 3RA19 53-2A		3RT10 5	<b>S6</b>	The assembly kit contains: Wiring modules on the top and bottom (for connection with box terminal)	A	<b>3RA19 53-2A</b>		1
	 3RA19 53-2M	3RT10 5	<b>S6</b>	The assembly kit contains: Wiring modules on the top and bottom (for connection without box terminal)	A	<b>3RA19 53-2M</b>		1
3RT1. 6		<b>S10</b>	A		<b>3RA19 63-2A</b>		1	1 unit 41B
3RT1. 7		<b>S12</b>	A		<b>3RA19 73-2A</b>		1	1 unit 41B

# Contactors Assemblies

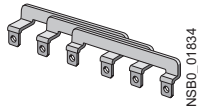
## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA13 reversing contactor assemblies

For contactors	Size	Contactors clearance	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	mm								

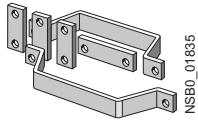
#### Wiring modules, single

3RT10 3	<b>S2-S2</b>	10	Top (in-phase)	▶	<b>3RA19 33-3D</b>		1	1 unit	41B
			Bottom (with phase reversal)	▶	<b>3RA19 33-3E</b>				
3RT10 4	<b>S3-S3</b>	10	Top (in-phase)	▶	<b>3RA19 43-3D</b>		1	1 unit	41B
			Bottom (with phase reversal)	▶	<b>3RA19 43-3E</b>				
3RT10 5	<b>S6-S6</b>	10	Top (in-phase, for connection with box terminal)	A	<b>3RA19 53-3D</b>		1	1 unit	41B
			Top (with phase reversal, for connection without box terminal)	A	<b>3RA19 53-3P</b>				



NSBD\_01834

3RA19 53-3D



NSBD\_01835

3RA19 53-3P

For contactors	Size	Contactors clearance	Interlocking	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	mm									

#### Mechanical connectors

3RT1. 3 3RT1. 4	<b>S2-S2</b> <b>S3-S3</b>	0	On front	For 3-pole contactors	▶	<b>3RA19 32-2C</b>		1	10 units	41B			
					1 pack = 10 units for 10 assemblies								
3RT1. 3 3RT1. 4 3RT1. 5	<b>S2-S2</b> <b>S3-S3</b> <b>S6-S6</b>	10	Lateral	For 3-pole contactors	▶	<b>3RA19 32-2D</b>		1	10 units	41B			
					1 pack = 10 units for 10 assemblies								
					1 pack = 10 units for 10 assemblies								
3RT1. 3	<b>S2-S2</b>	10	Lateral	For 4-pole contactors	A	<b>3RA19 32-2G</b>		1	10 units	41B			
3RT1. 4	<b>S3-S3</b>	10	Lateral	For 4-pole contactors	B	<b>3RA19 42-2G</b>		1	10 units	41B			



3RA19 32-2C



3RA19 32-2D



3RA19 32-2G



3RA19 42-2G

- 1) This pack contains 10 additional interlocks.
- 2) The connector function can be fulfilled with the wiring modules for size S0, a contactor clearance of 10 mm and a lateral interlock.

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA24 contactor assemblies  
for wye-delta starting**

### Overview

These 3RA24 contactor assemblies for wye-delta starting are designed for standard applications.

#### Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting<sup>1)</sup> or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA24 contactor assemblies for wye-delta starting can be ordered as follows:

#### Sizes S00 and S0

- Fully wired and tested, with electrical and mechanical interlock.
- As individual parts for customer assembly

A dead interval of 50 ms on reversing is already integrated in the function module for wye-delta starting.

#### Screw terminals

Rated data at 50 Hz 400 V AC			Size	Order No.		Complete combinations
Rating kW	Operational current $I_e$ A	Motor current A		Line/delta contactor	Star contactor	
5.5	12	9.5 ... 13.8	S00-S00-S00	3RT20 15-1...	3RT20 15-1...	3RA24 15-8XF31-1...
7.5	16	12.1 ... 17		3RT20 17-1...	3RT20 15-1...	3RA24 16-8XF31-1...
11	25	19 ... 25		3RT20 18-1...	3RT20 16-1...	3RA24 17-8XF31-1...
11	25	19 ... 25	S0-S0-S0	3RT20 24-1...0	3RT20 24-1...0	3RA24 23-8XF32-1...
15	32	24.1 ... 34		3RT20 26-1...0	3RT20 24-1...0	3RA24 25-8XF32-1...
18.5	40	34.5 ... 40		3RT20 26-1...0	3RT20 24-1...0	3RA24 25-8XF32-1...
22	50	31 ... 43		3RT20 27-1...0	3RT20 26-1...0	3RA24 26-8XF32-1...

#### Spring-type terminals

Rated data at 50 Hz 400 V AC			Size	Order No.		Complete combinations
Rating kW	Operational current $I_e$ A	Motor current A		Line/delta contactor	Star contactor	
5.5	12	9.5 ... 13.8	S00-S00-S00	3RT20 15-2...	3RT20 15-2...	3RA24 15-8XF31-2...
7.5	16	12.1 ... 17		3RT20 17-2...	3RT20 15-2...	3RA24 16-8XF31-2...
11	25	19 ... 25		3RT20 18-2...	3RT20 16-2...	3RA24 17-8XF31-2...
11	25	19 ... 25	S0-S0-S0	3RT20 24-2...0	3RT20 24-2...0	3RA24 23-8XF32-2...
15	32	24.1 ... 34		3RT20 26-2...0	3RT20 24-2...0	3RA24 25-8XF32-2...
18.5	40	34.5 ... 40		3RT20 26-2...0	3RT20 24-2...0	3RA24 25-8XF32-2...
22	50	31 ... 43		3RT20 27-2...0	3RT20 26-2...0	3RA24 26-8XF32-2...

#### Note:

The selection of contactor types refers to fused design.

#### Motor protection

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

#### Surge suppression

##### Sizes S00 and S0

Surge suppression (varistor) is included in the function modules for wye-delta starting.

#### Function modules for wye-delta starting

The 3RA28 16-0EW20 wye-delta function module (see page 3/167) replaces the complete wiring in the control circuit and can be used in the voltage range from 24 to 240 V AC/DC.

There is also a range of accessories (lateral auxiliary switch blocks, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB3 Solid-State Overload Relays".

The 3RA24 contactor assemblies have screw or spring-type terminals and are suitable for screwing or snapping onto TH 35 standard mounting rails.

With the fully wired and tested 3RA24 contactor assemblies, the auxiliary contacts included in the basic devices are unassigned.

<sup>1)</sup> For effective support from Technical Assistance you must provide the following details:

- Rated motor voltage
- Rated motor current
- Service factor, operating values
- Motor starting current factor
- Starting time
- Ambient temperature

# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA24 contactor assemblies for wye-delta starting

#### Components for customer assembly

Assembly kits with wiring modules and mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, function modules for wye-delta starting or wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals and base plates – must be ordered separately.

The wiring kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta

#### Screw terminals

Rating kW	Accessories for customer assembly		Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
	Function modules for wye-delta starting	Assembly kit B, for single infeed	Setting range	Order No.	Setting range	Order No.
5.5	3RA28 16-0EW20	3RA29 13-2BB1 <sup>1)</sup>	5.5 ... 8	3RU21 16-1HB0	4 ... 16	3RB30 16-1TB0
7.5			7 ... 10	3RU21 16-1JB0		
11			11 ... 16	3RU21 16-4AB0		
11	3RA28 16-0EW20	3RA29 23-2BB2 <sup>2)</sup>	11 ... 16	3RU21 26-4AB0	6 ... 25	3RB30 26-1QB0
15			14 ... 20	3RU21 26-4BB0		
18.5			20 ... 25	3RU21 26-4DB0		
22			20 ... 25	3RU21 26-4DB0		

#### Spring-type terminals

Rating kW	Accessories for customer assembly		Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
	Function modules for wye-delta starting	Assembly kit B, for single infeed	Setting range	Order No.	Setting range	Order No.
5.5	3RA28 16-0EW20	3RA29 13-2BB2 <sup>1)</sup>	5.5 ... 8	3RU21 16-1HC0	4 ... 16	3RB30 16-1TE0
7.5			7 ... 10	3RU21 16-1JC0		
11			11 ... 16	3RU21 16-4AC0		
11	3RA28 16-0EW20	3RA29 23-2BB2 <sup>2)</sup>	11 ... 16	3RU21 26-4AC0	6 ... 25	3RB30 26-1QE0
15			14 ... 20	3RU21 26-4BC0		
18.5			20 ... 25	3RU21 26-4DC0		
22			20 ... 25	3RU21 26-4DC0		

<sup>1)</sup> The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper and auxiliary circuit wiring.

<sup>2)</sup> The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper.

#### Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<b>SIRIUS contactor assemblies</b>	<b>3 R A</b>																	
<b>2nd generation</b>	<b>2</b>																	
<b>Device type (e.g. 4 = contactor assembly for wye-delta starting)</b>	<b>4</b>																	
<b>Contactor size (1 = S00, 2 = S0)</b>	<input type="checkbox"/>																	
<b>Power dependent on size (e.g. 25 = 15 kW)</b>	<input type="checkbox"/>																	
<b>Type of overload relay (8X = without)</b>	<input type="checkbox"/> <input type="checkbox"/>																	
<b>Assembly (B = ready-assembled, E, H = ready-assembled with communication)</b>	<input type="checkbox"/>																	
<b>Interlock (3 = mechanical and electrical)</b>	<input type="checkbox"/>																	
<b>Free auxiliary switches (e.g. S00: 1 = 3 NO total, S0: 2 = 3 NO + 3 NC in total)</b>	<input type="checkbox"/>																	
<b>Connection type (1 = screw, 2 = spring)</b>	<input type="checkbox"/>																	
<b>Operating range / solenoid coil circuit (e.g. A = AC standard / without)</b>	<input type="checkbox"/>																	
<b>Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)</b>	<input type="checkbox"/> <input type="checkbox"/>																	
<b>Example</b>	<b>3</b>	<b>R</b>	<b>A</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>5</b>	<b>-</b>	<b>8</b>	<b>X</b>	<b>F</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>1</b>	<b>A</b>	<b>L</b>	<b>2</b>

#### Note:

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

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

contactors (top) and between the delta and star contactors (bottom).

#### Control circuit

#### Features:

- Time setting range 0.5 to 60 s (3 selectable settings)
- Wide voltage range 24 to 240 V AC/DC
- Dead interval of 50 ms, non-adjustable.



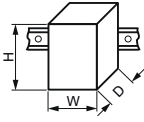
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA24 contactor assemblies  
for wye-delta starting**

### Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT2 contactors and 3RU2 overload relays

Type		3RA24 15	3RA24 16	3RA24 17	3RA24 23	3RA24 25	3RA24 26	
Sizes <b>S..S..S..</b>		<b>00-00-00</b>	<b>00-00-00</b>	<b>00-00-00</b>	<b>0-0-0</b>	<b>0-0-0</b>	<b>0-0-0</b>	
Dimensions (W x H x D) with function module								
• AC operation	mm	135 x 68 x 145 / 135 x 84 x 145			135 x 101 x 171 / 135 x 114 x 171			
• DC operation	mm	135 x 68 x 145 / 135 x 84 x 145			135 x 101 x 181 / 135 x 114 x 181			
<b>General data</b>								
<b>Individual contactors</b>								
• Q11 line contactor	Type	3RT20 15	3RT20 17	3RT20 18	3RT20 24	3RT20 26	3RT20 27	
• Q13 delta contactor	Type	3RT20 15	3RT20 17	3RT20 18	3RT20 24	3RT20 26	3RT20 27	
• Q12 star contactor	Type	3RT20 15	3RT20 15	3RT20 16	3RT20 24	3RT20 24	3RT20 26	
<b>Mechanical endurance</b>		Operating cycles	3 million					
<b>Unassigned auxiliary contacts of the individual contactors</b>			2)					
<b>Short-circuit protection</b>								
<b>Main circuit without overload relays<sup>3)</sup></b>								
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed								
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1								
• Type of coordination "1"	A	35	35	63	63	100	125	
• Type of coordination "2"	A	20	20	25	25	35	63	
<b>Control circuit</b>								
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with $I_k = 1 \text{ kA}$ acc. to IEC 60947-5-1	A	10						
	A	6 <sup>4)</sup> , if the auxiliary contact of the overload relay is connected in the contactor coil circuit						
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400 \text{ A}$ acc. to IEC 60947-5-1	A	10						
	A	6 <sup>4)</sup> , if the auxiliary contact of the overload relay is connected in the contactor coil circuit						
<b>Main circuit</b>								
<b>Current-carrying capacity with reversing time up to 10 s</b>								
• Rated operational current $I_e$	At 400 V	A	12	17	25	25	40	55
	500 V	A	8.7	11.3	20.8	20.8	31.2	50
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	12	16.6
	400 V	kW	5.8	8.2	12.5	12.5	21	30.1
	500 V	kW	5.3	6.9	13	13	20.5	34.2
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• <b>Switching frequency</b> with overload relay		h <sup>-1</sup>	15	15	15	15	15	15
<b>Current-carrying capacity with reversing time up to 15 s</b>								
• Rated operational current $I_e$	At 400 V	A	12	17	25	25	31	44
	500 V	A	8.7	11.3	20.8	20.8	31	44
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	9.4	13.8
	400 V	kW	5.8	8.2	12.5	12.5	16.3	24
	500 V	kW	5.3	6.9	13	13	20.4	30
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• <b>Switching frequency</b> with overload relay		h <sup>-1</sup>	15	15	15	15	15	15
<b>Current-carrying capacity with reversing time up to 20 s</b>								
• Rated operational current $I_e$	At 400 V	A	12	17	25	25	28	39
	500 V	A	8.7	11.3	20.8	20.8	28	39
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	8.5	12.2
	400 V	kW	5.8	8.2	12.5	12.5	14.7	21.3
	500 V	kW	5.3	6.9	13	13	18.4	26.7
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• <b>Switching frequency</b> with overload relay		h <sup>-1</sup>	15	15	15	15	15	15

1) Dimensions for devices with screw terminals / spring-type terminals.

2) For circuit diagrams of the control circuit see [operating instructions](#).

3) Short-circuit protection with overload relays see [Configuration Manual "Configuring SIRIUS Innovations - Selection data for Fuseless and Fused Load Feeders"](#).

4) Up to  $I_k < 0.5 \text{ kA}$ ;  $\leq 260 \text{ V}$ .

# Contactors Assemblies

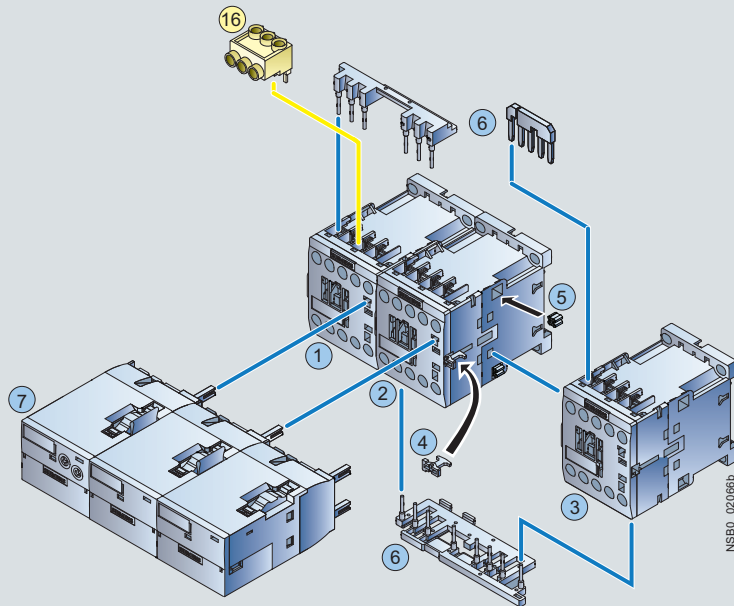
## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA24 contactor assemblies for wye-delta starting

#### Selection and ordering data

**Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW**

The figure shows the version with screw terminals



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
⑩ Three-phase feeder terminal <sup>2)</sup>	3RA29 13-3K	3/167

#### Complete contactor assemblies

Individual parts	Order No.			Page
	Q11 <sup>1)</sup>	Q13	Q12	
①②③ Contactor, 5.5 kW	3RT20 15	3RT20 15	3RT20 15	3/26, 3/31
①②③ Contactor, 7.5 kW	3RT20 17	3RT20 17	3RT20 15	3/26, 3/31
①②③ Contactor, 11 kW	3RT20 18	3RT20 18	3RT20 16	3/26, 3/31
④⑤⑥ Assembly kit comprising	3RA29 13-2BB1			3/167
④ Mechanical interlock				
⑤ 4 connecting clips				
⑥ Wiring modules on the top and bottom for connecting the main current paths				
⑦ Function modules for wye-delta starting	3RA28 16-0EW20			3/167

<sup>1)</sup> The version with 1 NO is required for momentary-contact operation. For circuit diagrams see "Operating Instructions".

<sup>2)</sup> Part ⑩ can only be mounted with contactors with screw terminal.

#### Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

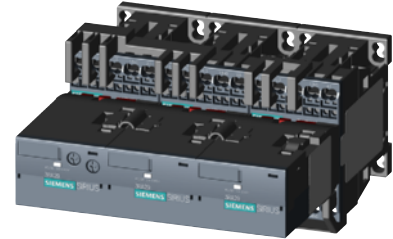
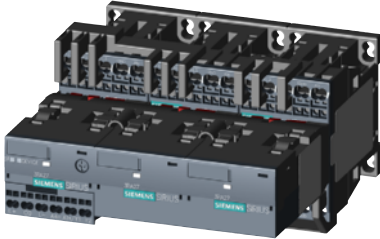
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA24 contactor assemblies  
for wye-delta starting**

**Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW**

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



3RA24 1.-8XE31-2BB4

3RA24 1.-8XF31-1A.0

3RA24 1.-8XF31-2A.0

Rated data AC-3						DT	Screw terminals		DT	Spring-type terminals	
Operational current $I_e$ up to		Rating of induction motors at 50 Hz and			Rated control supply voltage $U_s$ <sup>1)</sup>		Order No.	Price per PU		Order No.	Price per PU
400 V	230 V	400 V	500 V	690 V	V						
A	kW	kW	kW	kW							
<b>AC operation, 50/60 Hz</b>											
12	3.3	<b>5.5</b>	7.2	9.2	24 AC	A	<b>3RA24 15-8XF31-1AB0</b>	A	<b>3RA24 15-8XF31-2AB0</b>		
					110 AC	A	<b>3RA24 15-8XF31-1AF0</b>	A	<b>3RA24 15-8XF31-2AF0</b>		
					230 AC	A	<b>3RA24 15-8XF31-1AP0</b>	A	<b>3RA24 15-8XF31-2AP0</b>		
16	4.7	<b>7.5</b>	10.3	9.2	24 AC	A	<b>3RA24 16-8XF31-1AB0</b>	A	<b>3RA24 16-8XF31-2AB0</b>		
					110 AC	A	<b>3RA24 16-8XF31-1AF0</b>	A	<b>3RA24 16-8XF31-2AF0</b>		
					230 AC	A	<b>3RA24 16-8XF31-1AP0</b>	A	<b>3RA24 16-8XF31-2AP0</b>		
25	5.5	<b>11</b>	11	11	24 AC	A	<b>3RA24 17-8XF31-1AB0</b>	A	<b>3RA24 17-8XF31-2AB0</b>		
					110 AC	A	<b>3RA24 17-8XF31-1AF0</b>	A	<b>3RA24 17-8XF31-2AF0</b>		
					230 AC	A	<b>3RA24 17-8XF31-1AP0</b>	A	<b>3RA24 17-8XF31-2AP0</b>		
<b>DC operation</b>											
12	3.3	<b>5.5</b>	7.2	9.2	24 DC	A	<b>3RA24 15-8XF31-1BB4</b>	A	<b>3RA24 15-8XF31-2BB4</b>		
16	4.7	<b>7.5</b>	10.3	9.2	24 DC	A	<b>3RA24 16-8XF31-1BB4</b>	A	<b>3RA24 16-8XF31-2BB4</b>		
25	5.5	<b>11</b>	11	11	24 DC	A	<b>3RA24 17-8XF31-1BB4</b>	A	<b>3RA24 17-8XF31-2BB4</b>		
<b>For IO-Link connection</b>											
12	3.3	<b>5.5</b>	7.2	9.2	24 DC	A	<b>3RA24 15-8XE31-1BB4</b>	A	<b>3RA24 15-8XE31-2BB4</b>		
16	4.7	<b>7.5</b>	10.3	9.2	24 DC	A	<b>3RA24 16-8XE31-1BB4</b>	A	<b>3RA24 16-8XE31-2BB4</b>		
25	5.5	<b>11</b>	11	11	24 DC	A	<b>3RA24 17-8XE31-1BB4</b>	A	<b>3RA24 17-8XE31-2BB4</b>		
<b>For AS-Interface connection</b>											
12	3.3	<b>5.5</b>	7.2	9.2	24 DC	A	<b>3RA24 15-8XH31-1BB4</b>	A	<b>3RA24 15-8XH31-2BB4</b>		
16	4.7	<b>7.5</b>	10.3	9.2	24 DC	A	<b>3RA24 16-8XH31-1BB4</b>	A	<b>3RA24 16-8XH31-2BB4</b>		
25	5.5	<b>11</b>	11	11	24 DC	A	<b>3RA24 17-8XH31-1BB4</b>	A	<b>3RA24 17-8XH31-2BB4</b>		

<sup>1)</sup> Coil operating range  
at 50 Hz: 0.8 ... 1.1 ×  $U_s$ ; at 60 Hz: 0.85 ... 1.1 ×  $U_s$ .

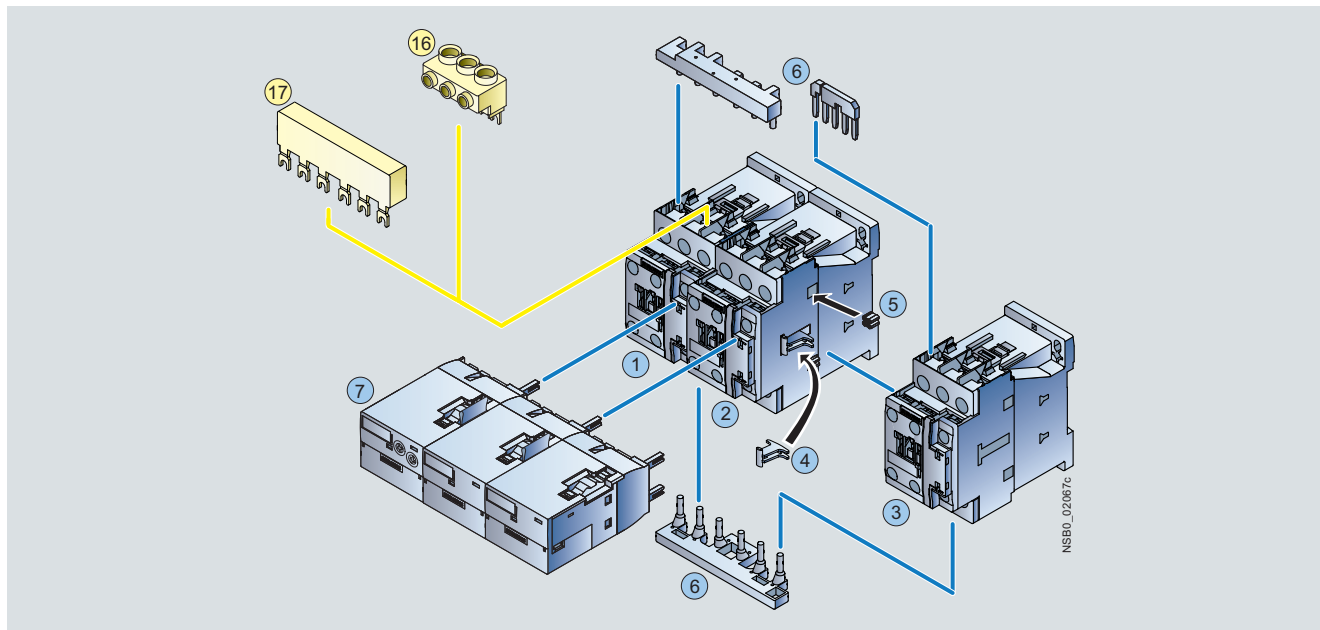
# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA24 contactor assemblies for wye-delta starting

**Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW**

The figure shows the version with screw terminals



#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
⑩ Three-phase feeder terminal <sup>1)</sup>	3RV29 25-5AB	3/166
⑪ Three-phase busbar <sup>1)</sup>	3RV19 15-1AB	3/166

#### Complete contactor assemblies

Individual parts	Order No.			Page
	Q11	Q13	Q12	
①②③ Contactor, 11 kW	3RT20 24	3RT20 24	3RT20 24	3/28, 3/33
①②③ Contactor, 15/18.5 kW	3RT20 26	3RT20 26	3RT20 24	3/28, 3/33
①②③ Contactor, 22 kW	3RT20 27	3RT20 27	3RT20 26	3/28, 3/33
④⑤⑥ Assembly kit	3RA29 23-2BB1			3/166

The assembly kit contains:

- ④ Mechanical interlock
- ⑤ Connecting clips
- ⑥ Wiring modules on the top and bottom for connecting the main current paths

⑦ Function modules	3RA28 16-0EW20	3/167
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<sup>1)</sup> The parts ⑩ and ⑪ can only be mounted with contactors with screw terminal.

#### Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

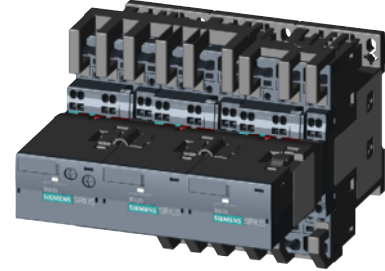
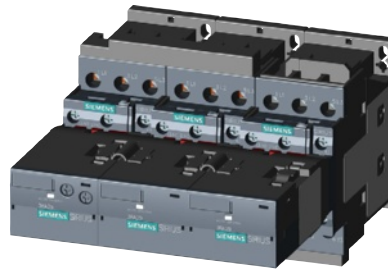
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA24 contactor assemblies  
for wye-delta starting**

**Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW**

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



3RA24 2.-8XE32-1BB4

3RA24 2.-8XF32-1A.2

3RA24 2.-8XF32-2A.2

Rated data AC-3						Rated control supply voltage $U_s$ <sup>1)</sup>	DT	Screw terminals		DT	Spring-type terminals	
Operational current $I_e$ up to	Rating of induction motors at 50 Hz and				Order No.			Price per PU	Order No.		Price per PU	
400 V	230 V	400 V	500 V	690 V	V							
A	kW	kW	kW	kW								
<b>AC operation, 50/60 Hz</b>												
25	7.1	<b>11</b>	15.6	19	24 AC 110 AC 230 AC	A A B	<b>3RA24 23-8XF32-1AC2</b> <b>3RA24 23-8XF32-1AG2</b> <b>3RA24 23-8XF32-1AL2</b>	A A B	<b>3RA24 23-8XF32-2AC2</b> <b>3RA24 23-8XF32-2AG2</b> <b>3RA24 23-8XF32-2AL2</b>			
32 / 40	11.4	<b>15 / 18.5</b>	19	19	24 AC 110 AC 230 AC	A A B	<b>3RA24 25-8XF32-1AC2</b> <b>3RA24 25-8XF32-1AG2</b> <b>3RA24 25-8XF32-1AL2</b>	A A B	<b>3RA24 25-8XF32-2AC2</b> <b>3RA24 25-8XF32-2AG2</b> <b>3RA24 25-8XF32-2AL2</b>			
50	--	<b>22</b>	19	19	24 AC 110 AC 230 AC	A A B	<b>3RA24 26-8XF32-1AC2</b> <b>3RA24 26-8XF32-1AG2</b> <b>3RA24 26-8XF32-1AL2</b>	A A B	<b>3RA24 26-8XF32-2AC2</b> <b>3RA24 26-8XF32-2AG2</b> <b>3RA24 26-8XF32-2AL2</b>			
<b>DC operation</b>												
25	7.1	<b>11</b>	15.6	19	24 DC	A	<b>3RA24 23-8XF32-1BB4</b>	A	<b>3RA24 23-8XF32-2BB4</b>			
32 / 40	11.4	<b>15 / 18.5</b>	19	19	24 DC	A	<b>3RA24 25-8XF32-1BB4</b>	A	<b>3RA24 25-8XF32-2BB4</b>			
50	--	<b>22</b>	19	19	24 DC	A	<b>3RA24 26-8XF32-1BB4</b>	A	<b>3RA24 26-8XF32-2BB4</b>			
<b>For IO-Link connection</b>												
25	7.1	<b>11</b>	15.6	19	24 DC	A	<b>3RA24 23-8XE32-1BB4</b>	A	<b>3RA24 23-8XE32-2BB4</b>			
32 / 40	11.4	<b>15 / 18.5</b>	19	19	24 DC	A	<b>3RA24 25-8XE32-1BB4</b>	A	<b>3RA24 25-8XE32-2BB4</b>			
50	--	<b>22</b>	19	19	24 DC	A	<b>3RA24 26-8XE32-1BB4</b>	A	<b>3RA24 26-8XE32-2BB4</b>			
<b>For AS-Interface connection</b>												
25	7.1	<b>11</b>	15.6	19	24 DC	A	<b>3RA24 23-8XH32-1BB4</b>	A	<b>3RA24 23-8XH32-2BB4</b>			
32 / 40	11.4	<b>15 / 18.5</b>	19	19	24 DC	A	<b>3RA24 25-8XH32-1BB4</b>	A	<b>3RA24 25-8XH32-2BB4</b>			
50	--	<b>22</b>	19	19	24 DC	A	<b>3RA24 26-8XH32-1BB4</b>	A	<b>3RA24 26-8XH32-2BB4</b>			

<sup>1)</sup> Coil operating range at 50 Hz:  
0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

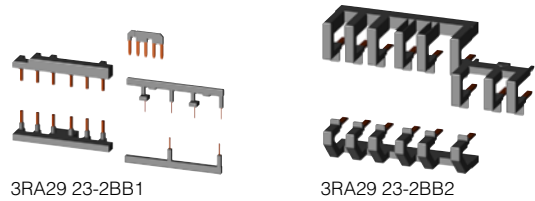
# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA24 contactor assemblies for wye-delta starting

#### Components for customer assembly

PU (UNIT, SET, M) = 1  
 PS\* = 1 unit (unless otherwise specified)  
 PG = 41B



3RA29 23-2BB1

3RA29 23-2BB2

For contactors	Size	Version	DT	Screw terminals	DT	Spring-type terminals	
Type				Order No.	Price per PU	Order No.	Price per PU

#### Assembly kits<sup>1)</sup> for making 3-pole contactor assemblies

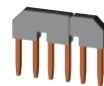
3RT20 1	<b>S00</b>	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom • For main, auxiliary and control circuits	▶	<b>3RA29 13-2BB1</b>	▶	<b>3RA29 13-2BB2</b>
3RT20 2	<b>S0</b>	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom • For main, auxiliary and control circuits • Only for main circuit <sup>2)</sup>	▶	<b>3RA29 23-2BB1</b> --	▶	-- <b>3RA29 23-2BB2</b>



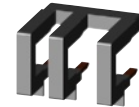
3RV29 25-5AB



3RV19 15-1AB



3RT19 16-4BA31



3RT29 16-4BA32

#### Three-phase feeder terminal

3RT20 1	<b>S00</b>	Feeder terminal blocks for the line contactor for large conductor cross-sections • Conductor cross-section 6 mm <sup>2</sup>	PS = 10 units	A	<b>3RA29 13-3K</b>	--
3RT20 2	<b>S0</b>	• Conductor cross-section 16 mm <sup>2</sup>	▶	<b>3RV29 25-5AB</b>	--	

#### Three-phase busbars

3RT20 2	<b>S0</b>	Bridging phase-by-phase of all input terminals of the line contactor (Q11) and the delta contactor (Q13)	▶	<b>3RV19 15-1AB</b>	--	
---------	-----------	--	---	---------------------	----	--

#### Links for paralleling, 3-pole (star jumpers)

3RT20 1	<b>S00</b>	Without connection terminal (the links for paralleling can be reduced by one pole)	▶	<b>3RT19 16-4BA31</b>	A	<b>3RT29 16-4BA32</b>
3RT20 2	<b>S0</b>		▶	<b>3RT19 26-4BA31</b>	A	<b>3RT29 26-4BA32</b>

<sup>1)</sup> When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

<sup>2)</sup> Version in size S0 with spring-type terminals:  
Only the wiring modules for the main circuit are included.  
No connectors are included for the auxiliary and control circuit.

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA24 contactor assemblies  
for wye-delta starting**

### Components for customer assembly

PU (UNIT, SET, M) = 1  
PS\* = 1 unit (unless otherwise specified)  
PG = 41B




3RA28 16-0EW20



3RA27 12-1CA00



3RA27 11-2CA00

For con- tactors	Size	Version	DT	Order No.	Price per PU	Order No.	Price per PU
<b>Function modules for wye-delta starting</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	Comprising one basic module and two coupling modules Rated control supply voltage 24 ... 240 V AC/DC Time setting range 0.5 ... 60 s (10, 30, 60 s selectable)	A	<b>3RA28 16-0EW20</b>		A	<b>3RA28 16-0EW20</b>
<b>Accessories for 3RA28 function modules</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>Sealable covers</b>	PS = 5 units	A	<b>3RA29 10-0</b>	A	<b>3RA29 10-0</b>
<b>Function modules for wye-delta starting for connection to the control system</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>IO-Link connection,</b> comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	A	<b>3RA27 11-1CA00</b>	 DT	A	<b>3RA27 11-2CA00</b>
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>AS-Interface connection,</b> comprising one basic module and two coupling modules	A	<b>3RA27 12-1CA00</b>		A	<b>3RA27 12-2CA00</b>
<b>Accessories for 3RA27 function modules</b>							
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>Module connectors</b> <b>Module connector set,</b> comprising: • 2 module connectors, 14-pole, short + 2 interface covers	A	<b>3RA27 11-0EE01</b>		A	<b>3RA27 11-0EE01</b>
3RT20 1, 3RT20 2	<b>S00, S0</b>	14-pole, 8 cm long • For size jump S00-S0 + 1 space	A	<b>3RA27 11-0EE02</b>		A	<b>3RA27 11-0EE02</b>
3RT20 1, 3RT20 2	<b>S00, S0</b>	14-pole, 21 cm long • For various space combinations	A	<b>3RA27 11-0EE03</b>		A	<b>3RA27 11-0EE03</b>
3RT20 1, 3RT20 2	<b>S00, S0</b>	10-pole, 8 cm long • For separate auxiliary voltage supply within an IO-Link group	A	<b>3RA27 11-0EE04</b>		A	<b>3RA27 11-0EE04</b>
3RT20 1, 3RT20 2	<b>S00, S0</b>	<b>Sealable covers</b>	PS = 5 units	A	<b>3RA29 10-0</b>	A	<b>3RA29 10-0</b>

Operator panels for IO-Link [see page 3/187](#).

#### Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA14 contactor assemblies for wye-delta starting

#### Overview

These 3RA14 contactor assemblies for wye-delta starting are designed for standard applications.

#### Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting<sup>1)</sup> or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA14 contactor assemblies for wye-delta starting can be ordered as follows:

#### Sizes S2 and S3

- Fully wired and tested, with electrical interlock, reversing time up to 10 s.

#### Sizes S2 to S12

- As individual parts for customer assembly

A dead interval of 50 ms on reversing is already integrated in the time relay function.

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see [Chapter 7 "Protection Equipment"](#) → ["Overload Relays"](#) → ["SIRIUS 3RB2 Solid-State Overload Relays"](#).

The 3RA14 contactor assemblies have screw terminals and are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Fully wired and tested 3RA14 contactor assemblies have one unassigned NO contact which is mounted onto the front of the K3 delta contactor.

With the preassembled contactor assembly sizes S2 and S3, 11 to 75 kW, a timing relay is laterally mounted.

- <sup>1)</sup> For effective support from Technical Assistance you must provide the following details:
- Rated motor voltage
  - Rated motor current
  - Service factor, operating values
  - Motor starting current factor
  - Starting time
  - Ambient temperature.

Rated data at 50 Hz 400 V AC			Size			Order No. complete
Rating P kW	Operational current $I_e$ A	Motor current A		Line/delta contactor	Star contactor	
22	50	31 ... 43	<b>S2-S2-S0</b>	3RT10 34	3RT10 26	<b>3RA14 34-8XC21-1...</b>
30	50	48.3 ... 65		3RT10 34		--
37	80	62.1 ... 77.8	<b>S2-S2-S2</b>		3RT10 34	<b>3RA14 35-8XC21-1...</b>
45	86	69 ... 86		3RT10 36		<b>3RA14 36-8XC21-1...</b>
55	115	77.6 ... 108.6	<b>S3-S3-S2</b>	3RT10 44	3RT10 35	<b>3RA14 44-8XC21-1...</b>
75	150	120.7 ... 150		3RT10 45	3RT10 36	<b>3RA14 45-8XC21-1...</b>
90	160	86 ... 160	<b>S6-S6-S3</b>	3RT10 54	3RT10 44	--
110	195	86 ... 195				
132	230	86 ... 230		3RT10 55	3RT10 45	
160	280	86 ... 280		3RT10 56	3RT10 46	
200	350	95 ... 350	<b>S10-S10-S6</b>	3RT10 64	3RT10 54	--
250	430	95 ... 430		3RT10 65	3RT10 55	
315	540	277 ... 540	<b>S12-S12-S10</b>	3RT10 75	3RT10 64	--
355	610	277 ... 610				
400	690	277 ... 690			3RT10 65	
500	850	277 ... 850		3RT10 76	3RT10 66	



# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA14 contactor assemblies  
for wye-delta starting**

### Components for customer assembly

Assembly kits with wiring modules and, if necessary, mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals, mechanical interlocks and base plates – must be ordered separately.

In the case of sizes S2 to S12 only the bottom main conducting path connection between the delta and star contactors is included in the wiring module, owing to the larger conductor cross-section at the infeed.

### Motor protection

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

#### Note:

The selection of contactor types refers to fused design.

P kW	Accessories for customer assembly					Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
	Timing relays	Assembly kit A, for double infeed	Assembly kit B, for single infeed	Star jumper	Base plates	Setting range A	Order No.	Setting range A	Order No.
22 30	3RP15 74-1N.30	3RA19 33-2C <sup>1)</sup>	3RV19 35-1A	3RT19 26-4BA31	3RA19 32-2E	18 ... 25 28 ... 40	3RU11 36-4DB0 3RU11 36-4FB0	12.5 ... 50	3RB20 36-1UB0
37 45	3RP15 74-1N.30	3RA19 33-2B <sup>1)</sup>	3RV19 35-1A	3RT19 36-4BA31	3RA19 32-2F	36 ... 45 40 ... 50	3RU11 36-4GB0 3RU11 36-4HB0	12.5 ... 50	3RB20 36-1UB0
55 75	3RP15 74-1N.30	3RA19 43-2C <sup>1)</sup>	--	3RT19 36-4BA31	3RA19 42-2E	45 ... 63 70 ... 90	3RU11 46-4JB0 3RU11 46-4LB0	25 ... 100	3RB20 46-1EB0
90 110 132 160	3RP15 74-1N.30	--	3RA19 53-3D <sup>2)</sup>	3RT19 46-4BA31	3RA19 52-2E	--	--	50 ... 200	3RB20 56-1FC2
200 250	3RP15 74-1N.30	--	--	3RT19 56-4BA31	3RA19 62-2E	--	--	55 ... 250 160 ... 630	3RB20 66-1GC2 3RB20 66-1MC2
315 355 400 500	3RP15 74-1N.30	--	--	3RT19 66-4BA31	3RA19 72-2E	--	--	160 ... 630	3RB20 66-1MC2

<sup>1)</sup> Assembly kit contains wiring module on the bottom (connection between delta and star contactor) and star jumper.

<sup>2)</sup> Wiring module on top from reversing contactor assembly (note conductor cross-sections).

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA14 contactor assemblies for wye-delta starting

#### Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT1 contactors and 3RU1 overload relays

Type		3RA14 35	3RA14 36	3RA14 44	3RA14 45
Size		<b>S2-S2-S2</b>	<b>S2-S2-S2</b>	<b>S3-S3-S2</b>	<b>S3-S3-S2</b>
Dimensions (W x H x D) with base plate		mm			
• DC operation		198 x 140 x 184		218 x 180 x 207	
• AC operation		mm	198 x 140 x 169	218 x 180 x 194	
<b>General data</b>					
<b>Individual contactors</b>					
• Q1 line contactor	Type	3RT10 35	3RT10 36	3RT10 44	3RT10 45
• Q3 delta contactor	Type	3RT10 35	3RT10 36	3RT10 44	3RT10 45
• Q2 star contactor	Type	3RT10 34	3RT10 34	3RT10 35	3RT10 36
<b>Mechanical endurance</b>		Operating cycles	3 million		
<b>Unassigned auxiliary contacts of the individual contactors</b>			1)		
<b>Short-circuit protection</b>					
<b>Main circuit without overload relays<sup>2)</sup></b>					
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed					
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1					
• Type of coordination "1"	A	125	160	250	250
• Type of coordination "2"	A	63	80	125	160
<b>Control circuit</b>					
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with $I_k = 1$ kA acc. to IEC 60947-5-1	A A	10 6 <sup>3)</sup>	if the auxiliary contact of the overload relay is connected in the contactor coil circuit		
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A A	10 6 <sup>3)</sup>	if the auxiliary contact of the overload relay is connected in the contactor coil circuit		
<b>Main circuit</b>					
<b>Current-carrying capacity with reversing time up to 10 s</b>					
• Rated operational current $I_e$	At 400 V A	80	86	115	150
	500 V A	69.3	86	112.6	138.6
	690 V A	69.3	69.3	98.7	138.6
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V kW	25.5	27.8	37	49
	400 V kW	44	48	65	85
	500 V kW	48	60	80	98
	690 V kW	66	67	97	136
	1000 V kW	--	--	--	--
• <b>Switching frequency</b> with overload relay	$h^{-1}$	15	15	15	15
<b>Current-carrying capacity with reversing time up to 15 s</b>					
• Rated operational current $I_e$	At 400 V A	57	67	97	106
	500 V A	57	67	97	106
	690 V A	57	67	97	106
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V kW	18.2	21.6	32	35
	400 V kW	31.6	38	55	60
	500 V kW	40	47	69	75
	690 V kW	55	65	95	104
	1000 V kW	--	--	--	--
• <b>Switching frequency</b> with overload relay	$h^{-1}$	15	15	15	15
<b>Current-carrying capacity with reversing time up to 20 s</b>					
• Rated operational current $I_e$	At 400 V A	51	57	85	92
	500 V A	51	57	85	92
	690 V A	51	57	85	92
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V kW	16.3	18.4	28	30
	400 V kW	28	32	48	52
	500 V kW	35	40	60	65
	690 V kW	49	55	83	90
	1000 V kW	--	--	--	--
• <b>Switching frequency</b> with overload relay	$h^{-1}$	15	15	15	15

1) For circuit diagrams of the control circuit see [operating constructions](#).

2) Short-circuit protection with overload relays see [Configuration Manual "SIRIUS Configuration - Selection data for Fuseless Load Feeders"](#).

3) Up to  $I_k < 0.5$  kA;  $\leq 260$  V.

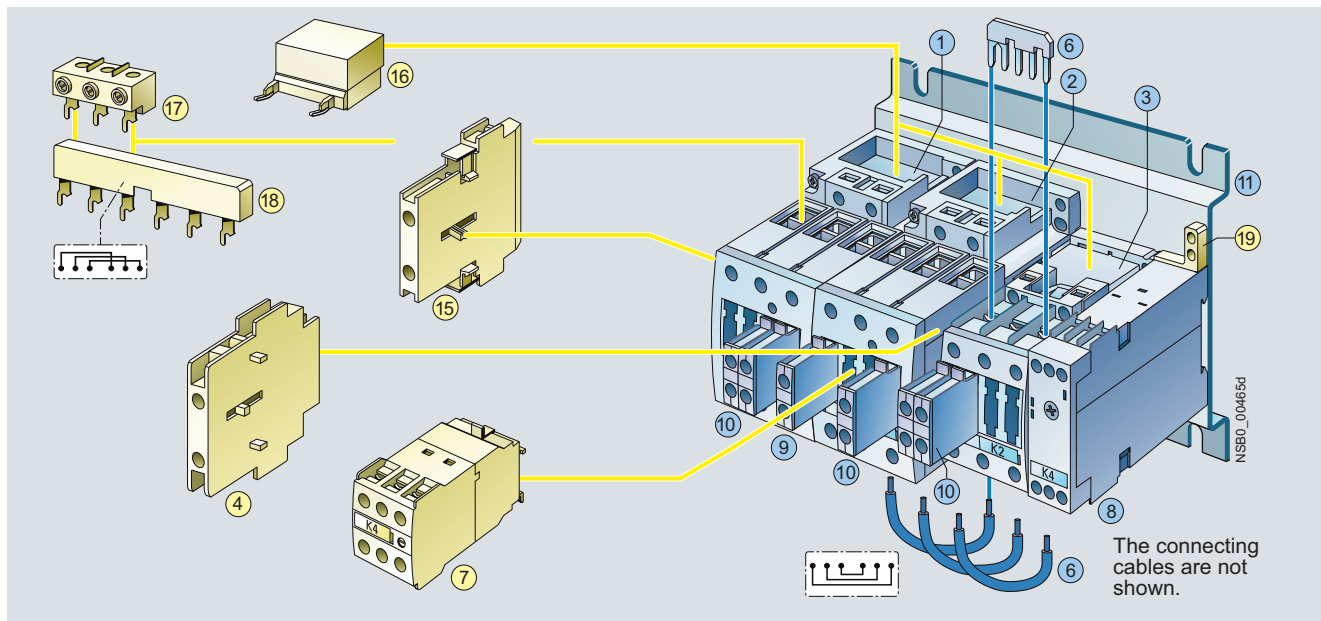
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA14 contactor assemblies for wye-delta starting**

### Selection and ordering data

Fully wired and tested contactor assemblies · Size S2-S2-S0 · up to 30 kW



3

#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
4 Mechanical interlock, lateral Depth compensation required K3: 1.5 mm; K2: 0 mm <sup>1)</sup>	3RA19 24-2B	3/156
7 Solid-state time-delay auxiliary switch block, front <sup>2)</sup>	3RT19 26-2G...	3/102
15 Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16 Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103, 3/103
17 Three-phase feeder terminals	3RV19 35-5A	3/174
18 Three-phase busbars	3RV19 35-1A	3/174
19 Push-in lug for timing relay screw mounting	3RP19 03	3)

1) Use the 3RA19 32-2B base plate for this design.  
2) Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

#### Complete contactor assemblies

Individual parts	Order No.	Page		
	Q1	Q3	Q2	
1 2 3 Contactor, 22/30 kW	3RT10 34	3RT10 34	3RT10 26	3/78
8 Timing relay, lateral	3RP15 74-1N.30			3)
9 Auxiliary switch block with 1 unassigned NO contact	3RH19 21-1CA10			3/98
10 Auxiliary switch block for local control	3RH19 21-1CA01			3/98
- 2 units	3RH19 21-1CA10			
- 3 units				3/98
11 Base plate	3RA19 32-2E			3/174
6 Assembly kit	3RA19 33-2C			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.  
3) See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".

Rated data AC-3		Ratings of induction motors at 50 Hz and		Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to	400 V	230 V	400 V	500 V	690 V		⊕			
A	kW	kW	kW	kW	V		Order No.	Price per PU		
<b>AC operation, 50/60 Hz</b>										
50 / 65	19.6	<b>22 / 30</b>	35	34	24 AC	B	<b>3RA14 34-8XC21-1AC2</b>	1	1 unit	41B
					110 AC	B	<b>3RA14 34-8XC21-1AG2</b>	1	1 unit	41B
					230 AC	▶	<b>3RA14 34-8XC21-1AL2</b>	1	1 unit	41B
<b>DC operation</b>										
50 / 65	19.6	<b>22 / 30</b>	35	34	24 DC	▶	<b>3RA14 34-8XC21-1BB4</b>	1	1 unit	41B

3RA14 34-8XC21-1...

1) Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

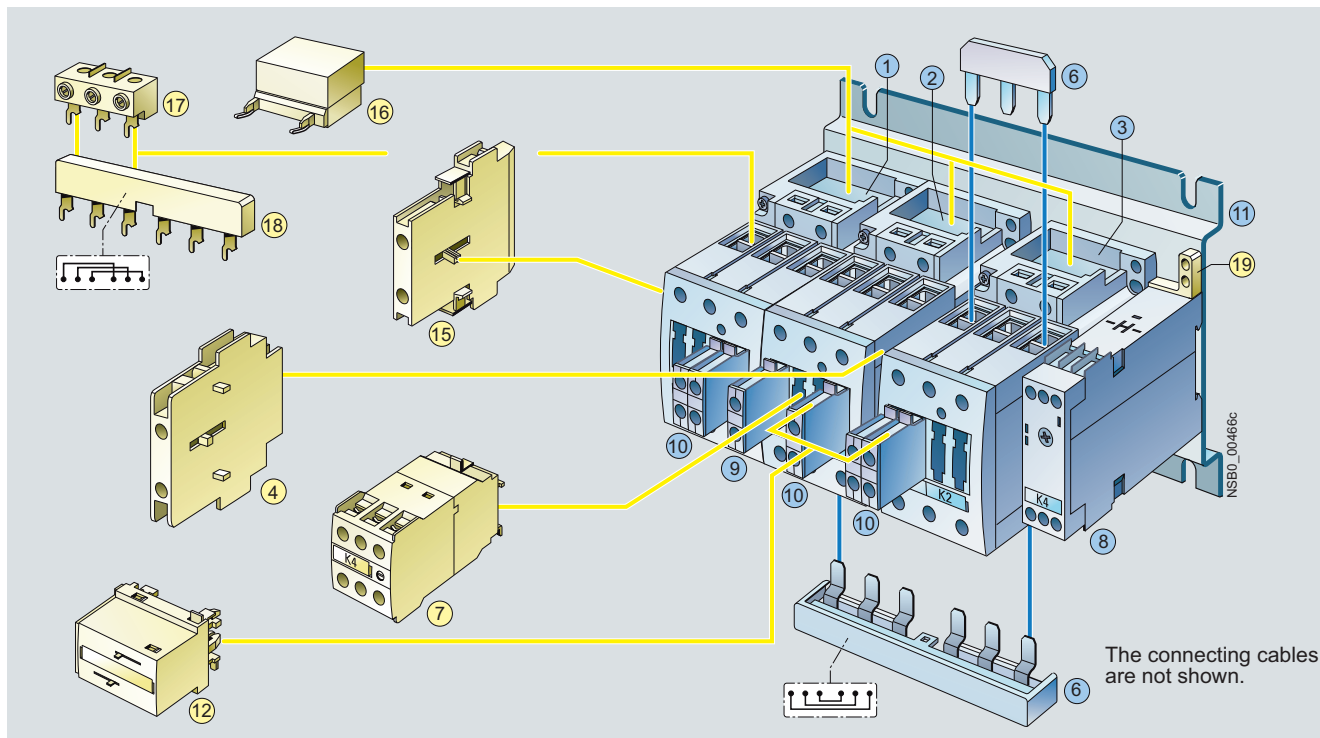
# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA14 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S2-S2-S2 · up to 45 kW

3



The connecting cables are not shown.

#### Mountable accessories (optional)

To be ordered separately	Order No.	Page
4 Mechanical interlock, lateral	3RA19 24-2B	3/156
7 Solid-state time-delay auxiliary switch block, front <sup>1)</sup>	3RT19 26-2G...	3/102
12 Mechanical interlock, front	3RA19 24-1A	3/156
15 Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16 Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103, 3/103
17 Three-phase feeder terminal	3RV19 35-5A	3/174
18 Three-phase busbars	3RV19 35-1A	3/174
19 Push-in lug for timing relay screw mounting	3RP19 03	2)

#### Complete contactor assemblies

Individual parts	Order No. Q1	Q3	Q2	Page
1 2 3 Contactor, 37 kW	3RT10 35	3RT10 35	3RT10 34	3/78
1 2 3 Contactor, 45 kW	3RT10 36	3RT10 36	3RT10 34	3/78
8 Timing relay, lateral	3RP15 74-1N.30			2)
9 Auxiliary switch block with 1 unassigned NO contact				
10 Auxiliary switch block for local control	3RH19 21-1CA10			3/98
- 2 units	3RH19 21-1CA01			
- 3 units	3RH19 21-1CA10			3/98
11 Base plate	3RA19 32-2F			3/174
6 Assembly kit	3RA19 33-2B			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

<sup>1)</sup> Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

<sup>2)</sup> See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA14 3.-8XC21-1...

Rated data AC-3		Ratings of induction motors at 50 Hz and				Rated control supply voltage $U_s$ <sup>1)</sup>	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to		230 V	400 V	500 V	690 V			Order No.	Price per PU			
A	kW	kW	kW	kW	V							
<b>AC operation, 50/60 Hz</b>												
80	25	<b>37</b>	51	63	24 AC	B	<b>3RA14 35-8XC21-1AC2</b>		1	1 unit	41B	
					110 AC	B	<b>3RA14 35-8XC21-1AG2</b>		1	1 unit	41B	
					230 AC	▶	<b>3RA14 35-8XC21-1AL2</b>		1	1 unit	41B	
86	27	<b>45</b>	55	63	24 AC	B	<b>3RA14 36-8XC21-1AC2</b>		1	1 unit	41B	
					110 AC	B	<b>3RA14 36-8XC21-1AG2</b>		1	1 unit	41B	
					230 AC	▶	<b>3RA14 36-8XC21-1AL2</b>		1	1 unit	41B	
<b>DC operation</b>												
80	25	<b>37</b>	51	63	24 DC	B	<b>3RA14 35-8XC21-1BB4</b>		1	1 unit	41B	
86	27	<b>45</b>	55	63	24 DC	B	<b>3RA14 36-8XC21-1BB4</b>		1	1 unit	41B	

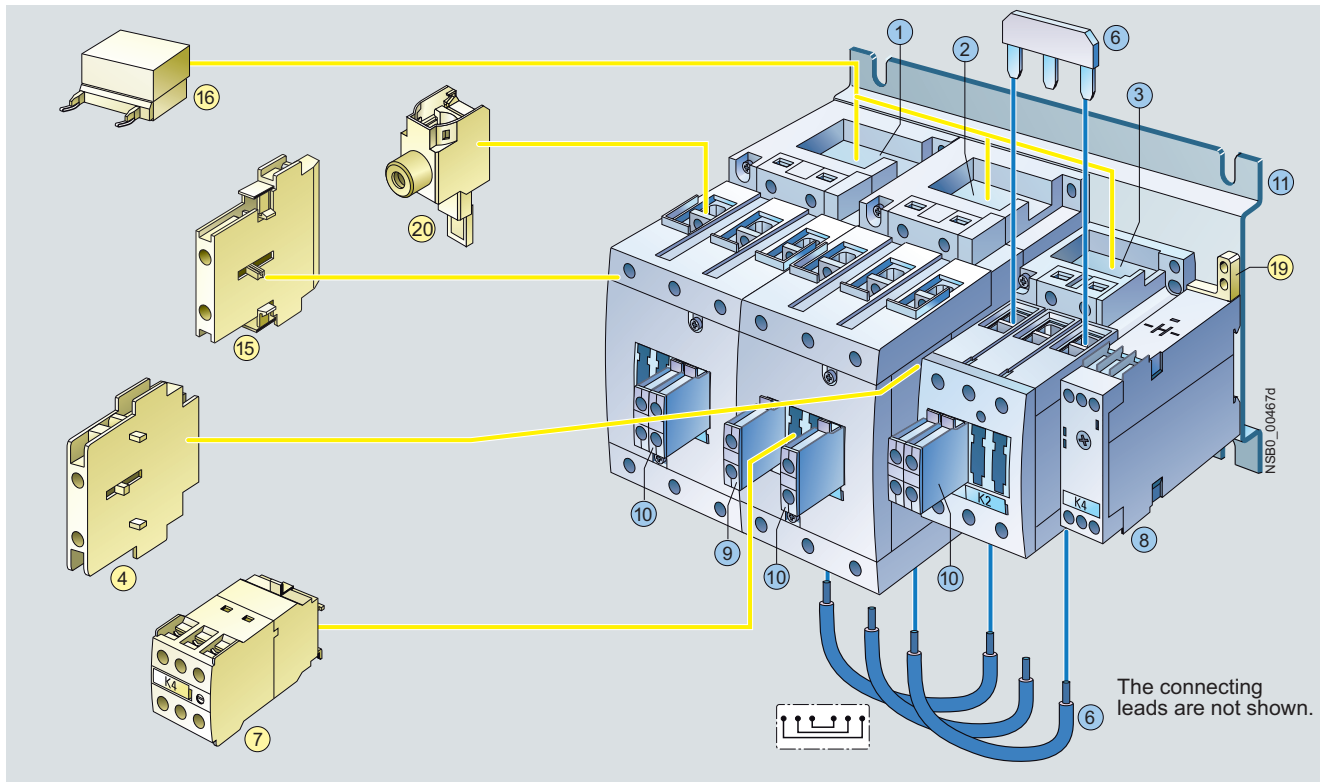
<sup>1)</sup> Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

# Contactor Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

**SIRIUS 3RA14 contactor assemblies for wye-delta starting**

Fully wired and tested contactor assemblies · Size S3-S3-S2 · up to 75 kW



**Mountable accessories (optional)**

To be ordered separately	Order No.	Page
4 Mechanical interlock, lateral, depth compensation required K3: 0 mm; K2: 27.5 mm <sup>1)</sup>	3RA19 24-2B	3/156
7 Solid-state time-delay auxiliary switch block, front <sup>2)</sup>	3RT19 26-2G...	3/102
15 Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16 Surge suppressors	3RT19 .6-1....	3/103
19 Push-in lug for timing relay screw mounting	3RP19 03	3/174
20 Single-phase feeder terminals	3RA19 43-3L	

**Complete contactor assemblies**

Individual parts	Order No. Q1	Q3	Q2	Page
1 2 3 Contactor, 55 kW	3RT10 44	3RT10 44	3RT10 35	3/78
1 2 3 Contactor, 75 kW	3RT10 45	3RT10 45	3RT10 36	3/78
8 Timing relay, lateral	3RP15 74-1N.30			3)
9 Auxiliary switch block with 1 unassigned NO contact				
10 Auxiliary switch block for local control	3RH19 21-1CA10			3/98
- 2 units	3RH19 21-1CA01			
- 3 units	3RH19 21-1CA10			3/98
11 Base plate	3RA19 42-2E			3/174
6 Assembly kit	3RA19 43-2C			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

- 1) Use the 3RA19 42-2B base plate for this design.
- 2) Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

- 3) See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA14 4...8XC21-1...

Rated data AC-3		Ratings of induction motors at 50 Hz and				Rated control supply voltage $U_s$ <sup>1)</sup>	DT	Screw terminals	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to	400 V	230 V	400 V	500 V	690 V							
A	kW	kW	kW	kW	kW	V						
<b>AC operation, 50/60 Hz</b>												
115	37	<b>55</b>	81	93	24 AC	B	<b>3RA14 44-8XC21-1AC2</b>		1	1 unit	41B	
					110 AC	B	<b>3RA14 44-8XC21-1AG2</b>		1	1 unit	41B	
					230 AC	▶	<b>3RA14 44-8XC21-1AL2</b>		1	1 unit	41B	
150	47	<b>75</b>	103	110	24 AC	B	<b>3RA14 45-8XC21-1AC2</b>		1	1 unit	41B	
					110 AC	B	<b>3RA14 45-8XC21-1AG2</b>		1	1 unit	41B	
					230 AC	▶	<b>3RA14 45-8XC21-1AL2</b>		1	1 unit	41B	
<b>DC operation</b>												
115	37	<b>55</b>	81	93	24 DC	B	<b>3RA14 44-8XC21-1BB4</b>		1	1 unit	41B	
150	47	<b>75</b>	103	110	24 DC	B	<b>3RA14 45-8XC21-1BB4</b>		1	1 unit	41B	

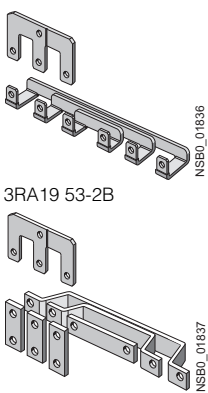
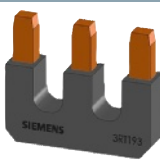
1) Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ ; at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

# Contactors Assemblies

## 3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

### SIRIUS 3RA14 contactor assemblies for wye-delta starting

#### Components for customer assembly

Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Assembly kits</b>								
 <p>The assembly kit contains: star jumper, wiring module on the bottom</p> <p>(Wiring module on the top is not included in the scope of supply. A double infeed between the line contactor and the delta contactor is recommended.)</p> <p>3RA19 53-2B</p> <p>3RA19 53-2N, 3RA19 63-2B, 3RA19 73-2B</p>	<b>S2-S2-S0</b>	▶	<b>3RA19 33-2C</b>		1	1 unit	41B	
	<b>S2-S2-S2</b>	▶	<b>3RA19 33-2B</b>		1	1 unit	41B	
	<b>S3-S3-S2</b>	▶	<b>3RA19 43-2C</b>		1	1 unit	41B	
	<b>S3-S3-S3</b>	▶	<b>3RA19 43-2B</b>		1	1 unit	41B	
	<b>S6-S6-S6</b>	A	<b>3RA19 53-2B</b>		1	1 unit	41B	
	<b>S6-S6-S6</b>	A	<b>3RA19 53-2N</b>		1	1 unit	41B	
	<b>S10-S10-S10</b>	A	<b>3RA19 63-2B</b>		1	1 unit	41B	
	<b>S12-S12-S12</b>	B	<b>3RA19 73-2B</b>		1	1 unit	41B	
	<b>Single-phase feeder terminals</b>							
	Conductor cross-section: 95 mm <sup>2</sup>	<b>S3</b>	A	<b>3RA19 43-3L</b>		1	1 unit	41B
<b>Three-phase feeder terminal</b>								
Feeder terminal blocks for the line contactor for large conductor cross-sections Conductor cross-section: 50 mm <sup>2</sup>	<b>S2</b>	▶	<b>3RV19 35-5A</b>		1	1 unit	41E	
<b>Three-phase busbars</b>								
Bridging phase-by-phase of all input terminals of the line contactor (Q1) and the delta contactor (Q3)	<b>S2</b>	▶	<b>3RV19 35-1A</b>		1	1 unit	41E	
<b>Links for paralleling, 3-pole (star jumpers)</b>								
 <p>Without connection terminal (the links for paralleling can be reduced by one pole)</p> <p>3RT19 36-4BA31</p>	<b>S2</b>	▶	<b>3RT19 36-4BA31</b>		1	1 unit	41B	
	<b>S3</b>	▶	<b>3RT19 46-4BA31</b>		1	1 unit	41B	
	<b>S6<sup>1)</sup></b>	▶	<b>3RT19 56-4BA31</b>		1	1 unit	41B	
	<b>S10, S12<sup>1)</sup></b>	▶	<b>3RT19 66-4BA31</b>		1	1 unit	41B	
<b>Base plates</b>								
For customer assembly of contactor assemblies for wye-delta starting with a <b>laterally mounted</b> timing relay								
Side-by-side mounting	<b>S2, S2, S0</b>	B	<b>3RA19 32-2E</b>		1	1 unit	41B	
10 mm distance between Q3 and Q2	<b>S2, S2, S2</b>	B	<b>3RA19 32-2F</b>		1	1 unit	41B	
Side-by-side mounting	<b>S3, S3, S2</b>	B	<b>3RA19 42-2E</b>		1	1 unit	41B	
10 mm distance between Q1, Q3 and Q2	<b>S6, S6, S3</b>	B	<b>3RA19 52-2E</b>		1	1 unit	41B	
	<b>S6, S6, S6</b>	B	<b>3RA19 52-2F</b>		1	1 unit	41B	
	<b>S10, S10, S6</b>	B	<b>3RA19 62-2E</b>		1	1 unit	41B	
	<b>S10, S10, S10</b>	B	<b>3RA19 62-2F</b>		1	1 unit	41B	
For customer assembly of contactor assemblies for wye-delta starting with a <b>front-mounted</b> timing relay	<b>S12, S12, S10</b>	B	<b>3RA19 72-2E</b>		1	1 unit	41B	
	<b>S12, S12, S12</b>	B	<b>3RA19 72-2F</b>		1	1 unit	41B	
	10 mm distance between Q1, Q3 and Q2	<b>S2, S2, S0</b>	B	<b>3RA19 32-2B</b>		1	1 unit	41B
	<b>S2, S2, S2</b>	B	<b>3RA19 32-2B</b>		1	1 unit	41B	
	<b>S3, S3, S2</b>	B	<b>3RA19 42-2B</b>		1	1 unit	41B	

<sup>1)</sup> The 3RT19 56-4EA1 (S6) or 3RT19 66-4EA1 (S10, S12) cover can be used for touch protection.

# Contactor Assemblies

## 3TD, 3TE Contactor Assemblies

### 3TD6 reversing contactor assemblies, 335 kW

#### Overview

The contactor assemblies are suitable for use in any climate and the contactors are mechanically interlocked. They are finger-safe according to EN 50274.

Complete units and components for customer assembly are available. For motor protection, either overload relays for stand-alone installation or thermistor motor protection releases must be ordered separately.

#### Complete units

3TD68 contactor assemblies each consist of two mechanically interlocked 3TF68 contactors. Electrical interlocking is wired.

The main and control circuits are wired according to the circuit diagrams.

An internal circuit diagram, a type designation and an unit labeling plate are provided on a common cover.

#### Auxiliary contacts

The contactor assemblies each have 2 NO + 2 NC contacts per contactor. 1 NO + 1 NC contacts with momentary-contact operation and 2 NO + 1 NC contacts with continuous operation are unassigned.

#### Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type		<b>3TD68</b>
Size		<b>14</b>
Dimensions (W x H x D) with base plate	mm	520 x 310 x 278

<b>General data</b>			
<b>Permissible mounting position Installation instructions<sup>1)</sup></b>			
The contactors are designed for operation on a vertical mounting surface.			
<b>Mechanical endurance</b>		Operating cycles	
		5 million	
<b>Ⓢ and Ⓣ rated data</b>			
<b>Rated insulation voltage</b>		V AC	
		600	
<b>Uninterrupted current enclosed</b>		A	
		550	
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓣ approved values)			
• Rated power for induction motors at 60 Hz	At 200 V	hp	200
	230 V	hp	229
	460 V	hp	464
	575 V	hp	582
<b>NEMA/EEMAC ratings</b>			NEMA/EEMAC SIZE
			6
• Uninterrupted current		A	600
	- Open	A	540
• Rated power for induction motors at 60 Hz	At 200 V	hp	150
	230 V	hp	200
	460 V	hp	400
	575 V	hp	400
<b>Overload relays</b>		Type	3RB20 66
• Setting range		A	160 ... 630

<sup>1)</sup> If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

#### Selection and ordering data

Size	Rated data AC-3				Auxiliary contacts per direction of rotation		Rated control supply voltage $U_s$	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current $I_e$ up to	Ratings of induction motors at 50 Hz and			Version				Order No.	Price per PU			
	690 V	230 V	<b>400 V</b>	500 V	690 V	NO	NC	V AC					
A		kW	<b>kW</b>	kW	kW								

#### Complete units

##### AC operation, 50/60 Hz

<b>14</b>	630	200	<b>335</b>	434	600	4	4	110 ... 132	C	<b>3TD68 04-2CF7</b>	1	1 unit	41B
								200 ... 240	C	<b>3TD68 04-2CM7</b>	1	1 unit	41B

For motor protection, overload relays must be ordered separately; see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

# Contactors Assemblies

## 3TD, 3TE Contactor Assemblies

### 3TE6 contactor assemblies for wye-delta starting, 630 kW

#### Overview

The contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

3TE contactor assemblies are available as complete units and components for customer assembly.

The complete unit combinations are optionally supplied without a main conducting path connection between the line contactor and the delta contactor.

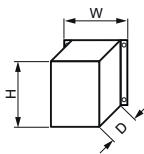
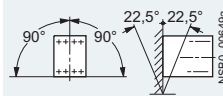
#### Motor protection

3TE68 contactor assemblies are supplied without overload protection. Overload relays or thermistor motor protection releases must be ordered separately.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

#### Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type		<b>3TE68</b>	
Size		<b>14</b>	
Dimensions (W x H x D) with base plate	mm	665 x 325 x 278	
			
<b>General data</b>			
<b>Permissible mounting position Installation instructions<sup>1)</sup></b>			
The contactors are designed for operation on a vertical mounting surface.			
<b>Individual contactors</b>			
<ul style="list-style-type: none"> <li>• K1 line contactor</li> <li>• K3 delta contactor</li> <li>• K2 star contactor</li> </ul>	Type	3TF68	
	Type	3TF68	
	Type	3RT10 75	
<b>Mechanical endurance</b>	Operating cycles	3 million	
<b>Unassigned auxiliary contacts of the individual contactors</b>		2)	
<b>Main circuit</b>			
<b>Current-carrying capacity with reversing time up to 10 s</b>			
• Rated operational current $I_e$	Up to 690 V	A	1090
• Rated power for induction motors at 50 Hz	At 230 V	kW	355
	400 V	kW	612
	500 V	kW	800
	690 V	kW	1046
• Switching frequency with overload relay		h <sup>-1</sup>	3
<b>Current-carrying capacity with reversing time up to 15 s</b>			
• Rated operational current $I_e$	Up to 500 V	A	923
	690 V	A	883
• Rated power for induction motors at 50 Hz	At 230 V	kW	295
	400 V	kW	515
	500 V	kW	677
	690 V	kW	885
• Switching frequency with overload relay		h <sup>-1</sup>	2
<b>Current-carrying capacity with reversing time up to 20 s</b>			
• Rated operational current $I_e$	Up to 500 V	A	800
	690 V	A	765
• Rated power for induction motors at 50 Hz	At 230 V	kW	244
	400 V	kW	444
	500 V	kW	590
	690 V	kW	770
• Switching frequency with overload relay		h <sup>-1</sup>	2

<sup>1)</sup> If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

<sup>2)</sup> See circuit diagrams of the control circuits (see operating instructions).



# Contactor Assemblies

## 3TD, 3TE Contactor Assemblies


**3TE6 contactor assemblies  
for wye-delta starting, 630 kW**

Contactor	Type	3TE68
<b>Short-circuit protection</b>		
<b>Main circuit</b>		
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE		
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1		
• Type of coordination "1"	A	1000
• Type of coordination "2"	A	500 <sup>1)</sup>
<b>Auxiliary circuit</b>		
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with $I_k = 1$ kA acc. to IEC 60947-5-1	A	10
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1		
<b>Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA and 690 V</b>		
<b>Rated motor current</b>	A	277 ... 1090
<b>Overload relays</b>	Type	3RB20 66
<b>Setting range</b> (The overload relays must be set to 0.58 times the rated motor current.)	A	160 ... 630
<b>Permissible back-up fuses for starters,</b> comprising contactor assemblies and overload relays. Single or double infeed <sup>1)</sup>		
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE - Type of coordination "1"	A	1000
- Type of coordination "2"	A	500
• Fuse links, aM operational class: LV HRC, type 3ND - Type of coordination "2"	A	630
• Fuse links, Siemens Canada, HRC fuses, Type II	A	1000
• Fuse links, UL-listed fuses, CLASS L	A	1200
• Fuse links, British Standard Fuses, BS88 - Type of coordination "1"	A	1000
- Type of coordination "2"	A	500

<sup>1)</sup> The maximum rated motor current must not be exceeded.

Use double infeed for higher rated motor currents; [see the circuit diagrams in the operating instructions.](#)

### Selection and ordering data

Size	Rated data AC-3	Rated control supply voltage $U_s$	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
	Operational current $I_e$ up to 690 V	Rating of induction motors at 50 Hz and 230 V <b>400 V</b> 500 V    690 V		Order No.	Price per PU		
A		kW <b>kW</b> kW    kW    V AC					

### Complete units, reversing time up to 10 s

#### AC operation, 50/60 Hz

Without main conducting path connection between line and delta contactor

<b>14</b>	1090	315	<b>630</b>	800	1000	110	C	<b>3TE68 04-5CF0</b>	1	1 unit	41B
						230/220 <sup>1)</sup>	D	<b>3TE68 04-5CP0</b>	1	1 unit	41B

<sup>1)</sup> Operating range at 220 V:  
0.85 ... 1.15 ×  $U_s$ ;  
lower operating range limit according to IEC 60947.

For motor protection, overload relays for stand-alone installation must be ordered separately; [see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".](#)




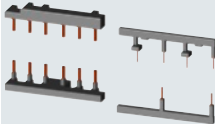








# Function Modules

## Introduction

### Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components.

They include the key control functions required for the particular feeder, e.g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

Version	SIRIUS 3RA28 function modules	SIRIUS 3RA27 function modules for IO-Link <sup>1)</sup>	SIRIUS 3RA27 function modules for AS-Interface <sup>1)</sup>
For direct-on-line starting	Timing relays: ON-delay or OFF-delay with semiconductor output With screw or spring-type terminals 	With screw or spring-type terminals 	With screw or spring-type terminals 
For reversing starting	Wiring modules for sizes S00 and S0 With screw or spring-type terminals (with screw terminals for main and control circuit) 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules <sup>1)</sup> 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules <sup>1)</sup> 
For wye-delta starting	1 function module for size S00 and S0, screw or spring-type connection of the contactors, plus the respective wiring modules <sup>2)</sup> 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules <sup>2)</sup> 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules <sup>2)</sup> 
Accessories	Sealable covers 	Operator panel for autonomous controlling of up to 4 feeders Module connector for the grouping of starters Connection cable between the operator panel and the feeder group Sealable covers 	AS-Interface addressing units Sealable covers 

<sup>1)</sup> Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 3/32 and 3/34).

<sup>2)</sup> The modules for the control current wiring, which are included in the wiring kit, are not required.

#### Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

**Overview**

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the feeder. The function modules and wiring kits thus help to reduce the wiring work within the feeder practically to zero.

**SIRIUS function modules for direct-on-line starting**

All solid-state timing relays which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two contact legs to actuate the contactor underneath by means of a semiconductor after the set time  $t$  has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

**SIRIUS function modules for reversing starting**

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 18.5 kW.

For detailed description see page 3/145.

**SIRIUS function modules for wye-delta starting**

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable star time  $t$  from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the two sizes S00 and S0. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

**Application**

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay version of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The function modules for wye-delta starting are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

**Benefits**

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- Reduction of control current wiring
- Prevention of wiring errors
- Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

Advantages of using wiring kits for the assembly of reversing starters see page 3/146.

The use of function modules for wye-delta starting results in the following advantages:



- Operation solely through the line contactor A1/A2 – no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated – no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions – one module kit for screw and spring-type connection and for the two sizes S00 and S0
- Mechanical interlocking (with wiring kit for the main circuit)

# Function Modules

## SIRIUS 3RA28 Function Modules for 3RT2 Contactors and 3RH21 Contactor Relays

### Introduction

#### Technical specifications

Type	3RA28 11		3RA28 12		3RA28 16	
Function	ON-delay		OFF-delay with auxiliary voltage		Wye-delta function	
Dimensions	See 3RT20 contactors, pages 3/17 and 3/21.					
<b>General data</b>						
<b>Rated insulation voltage <math>U_i</math></b>	V AC	300				
Pollution degree 3 Overvoltage category III						
<b>Operating range of excitation</b>	0.85 ... 1.1 x $U_s$ , 0.95 ... 1.05 times the rated frequency					
<b>Overvoltage protection</b>	Varistor integrated					
<b>Rated power</b>	W	1				1
• Power consumption at 230 V AC, 50 Hz	VA	1				2
<b>Rated operational currents <math>I_e</math></b>						
• AC-140	At 24 ... 240 V, 50 Hz	A	0.4			--
• DC-13	At 24 ... 240 V	A	0.4			--
• AC-15	At 24 ... 240 V, 50 Hz	A	--			3
• DC-13	- At 24 V	A	--			1
	- At 125 V	A	--			0.2
	- At 250 V	A	--			0.1
<b>DIAZED protection</b>	gG operational class	A	--			4
<b>Switching frequency for load</b>						
• With $I_e$ at 230 V AC		h <sup>-1</sup>	2500			--
• With 3RT2 contactor at 230 V AC		h <sup>-1</sup>	2500			--
<b>Recovery time</b>		ms	50			150
<b>Minimum ON period</b>		ms	--			35
<b>Residual current</b>	Max.	mA	5			--
<b>Voltage drop</b>	Max.	VA	3.5			--
With conducting output						
<b>Short-time loading capacity</b>	Up to 10 ms	A	10			--
<b>Setting accuracy</b>	Typ.	±15 %				
With reference to upper limit of scale						
<b>Repeat accuracy</b>	Max.	±1 %				
<b>Mechanical endurance</b>	Operat- ing cy- cles	100 x 10 <sup>6</sup>				10 x 10 <sup>6</sup>
<b>Permissible ambient temperature</b>						
• During operation	°C	-25 ... +60				
• During storage	°C	-40 ... +80				
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C	IP20					
<b>Shock resistance</b>	g/ms	15/11				
Half-sine acc. to IEC 60068-2-27						
<b>Vibration resistance</b>	Hz/mm	10 ... 55/0.35				
according to IEC 60068-2-6						
<b>Electromagnetic compatibility (EMC)</b>	IEC 61812-1, IEC 61000-6-2, IEC 61000-6-4				IEC 60947-4-1	
<b>Permissible mounting positions</b>	Any					
<b>Conductor cross-sections</b>						
<b>Connection type</b>						
 <b>Screw terminals</b>						
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)				--
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)				--
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)				--
• Terminal screws		M3 (for standard screw driver size 2 or Pozidriv 2)				--
• Tightening torque	Nm	0.8 ... 1.2				--
 <b>Spring-type terminals</b>						
• Operating devices	mm	3.0 x 0.5				--
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)				--
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)				--
• Finely stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)				--
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)				--

## SIRIUS 3RA28 Function Modules for 3RT2 Contactors and 3RH21 Contactor Relays

**For direct-on-line starting**

### Selection and ordering data

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



3RA28 11-1CW10



3RA28 11-2CW10

For contactors	Rated control supply voltage $U_s^{1)}$	Time setting range $t$	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>
Type	V	s		Order No.		Order No.
				Price per PU		Price per PU
<b>Solid-state timing relays with semiconductor output, for snapping onto the front</b>						
The electrical connection between the timing relay and the contactor underneath is established automatically when it is snapped on and locked.						
<b>ON-delay</b> Two-wire design, varistor integrated						
3RT20 1., 3RT20 2., 3RH21 <sup>2)</sup> 3RH24	24 ... 240 AC/DC	0.05 ... 100 (1, 10, 100, selectable)	A	<b>3RA28 11-1CW10</b>	A	<b>3RA28 11-2CW10</b>
<b>OFF-delay with auxiliary voltage</b> Varistor integrated						
3RT20 1., 3RT20 2., 3RH21 <sup>2)</sup> 3RH24	24 ... 240 AC/DC	0.05 ... 100 (1, 10, 100, selectable)	A	<b>3RA28 12-1DW10</b>	A	<b>3RA28 12-2DW10</b>
<b>Accessories</b>						
<b>Sealable covers</b> for 3RA27, 3RA28, 3RA29			A	<b>3RA29 10-0</b>	A	<b>3RA29 10-0</b>

1) AC voltage values apply for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling contactors.

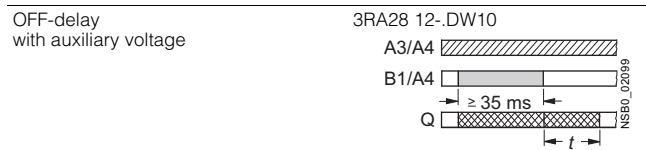
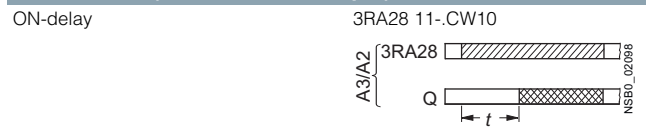
Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
----------	-----------------

- Timing relay energized
- Contact closed
- Contact open

### 1 NO contact (semiconductor output)



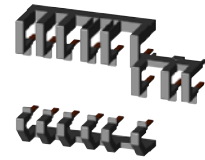
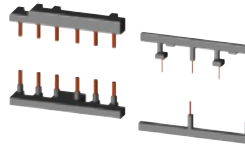
# Function Modules

## SIRIUS 3RA28 Function Modules for 3RT2 Contactors and 3RH21 Contactor Relays

For reversing starting / for wye-delta starting

### Selection and ordering data

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



3RA28 16-0EW20

3RA29 23-2AA1

3RA29 23-2BB2

For contactors	Rated control supply voltage $U_s^{1)}$	Time setting range $t$	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>	
Type	V	s		Order No.	Price per PU	Order No.	Price per PU

#### Assembly kits for reversing starting

##### Assembly kits for making 3-pole contactor assemblies

The assembly kit contains:  
 mechanical interlock;  
 2 connecting clips for 2 contactors,  
 wiring modules on the top and bottom

3RT20 1.	• For size S00	▶	<b>3RA29 13-2AA1</b>	▶	<b>3RA29 13-2AA2</b>
3RT20 2.	• For size S0	▶	<b>3RA29 23-2AA1</b>	▶	<b>3RA29 23-2AA2</b>

#### Assembly kits for wye-delta starting

##### Assembly kits for making 3-pole contactor assemblies

The assembly kit contains:  
 Mechanical interlock,  
 4 connecting clips for 3 contactors;  
 star jumper,  
 wiring modules on the top and bottom

3RT20 1.	• For size S00	▶	<b>3RA29 13-2BB1</b>	▶	<b>3RA29 13-2BB2</b>
3RT20 2.	• For size S0 (only main current for version with spring-type terminals)	▶	<b>3RA29 23-2BB1</b>	▶	<b>3RA29 23-2BB2</b>

#### Function modules for wye-delta starting

The electrical connection between the function module and the contactor assembly is established automatically by snapping on and plugging in the connecting cables.

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

3RT20 1. 3RT20 2. <sup>2)</sup>	24 ... 240 AC/DC	0.5 ... 60 (10, 30, 60 selectable)	A	<b>3RA28 16-0EW20</b>	A	<b>3RA28 16-0EW20</b>
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##### Individual modules

	24 ... 240 AC/DC	Basic modules for wye-delta starting	A	<b>3RA29 12-0</b>	A	<b>3RA29 12-0</b>
	--	Coupling modules for wye-delta starting	A	<b>3RA29 11-0</b>	A	<b>3RA29 11-0</b>

#### Accessories

**Sealable covers**  
 for 3RA27, 3RA28, 3RA29

			A	<b>3RA29 10-0</b>	A	<b>3RA29 10-0</b>
--	--	--	---	-------------------	---	-------------------

<sup>1)</sup> AC voltage values apply for 50 Hz and 60 Hz.

<sup>2)</sup> Cannot be fitted onto coupling contactors.

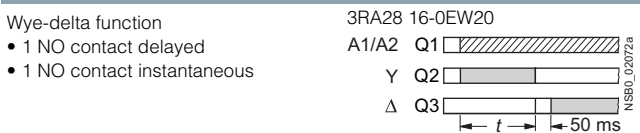
#### Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
----------	-----------------

- Timing relay energized
- Contact closed
- Contact open

#### 2 NO contacts (interconnected internally)



## SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

## Introduction

## Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

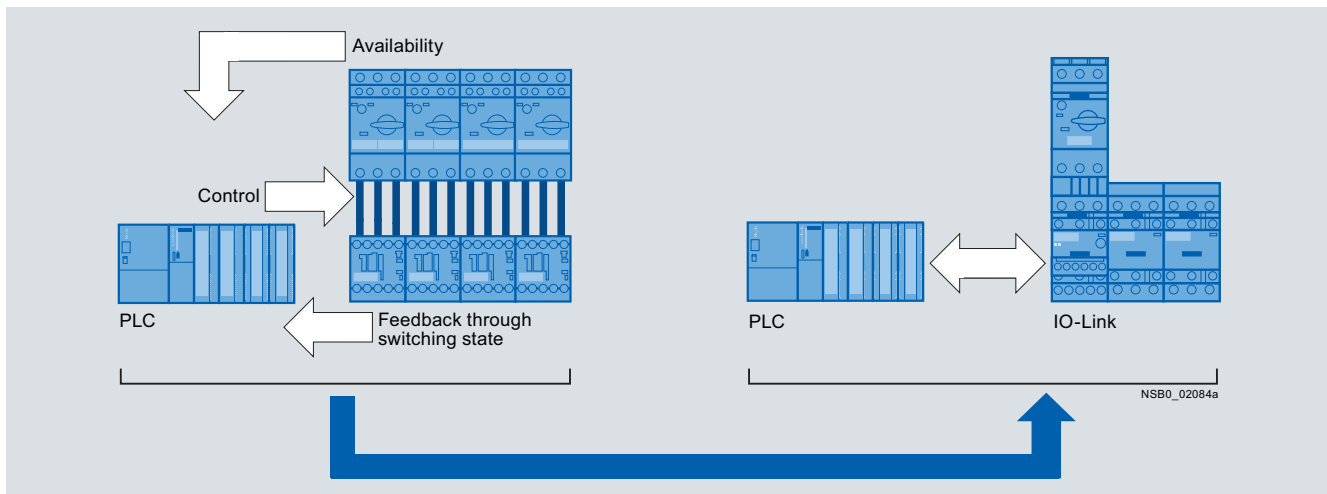
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

The starters are connected to the higher-level control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

Through this type of connection to the control system, a maximum of wiring is saved.

The following essential signals are transmitted:

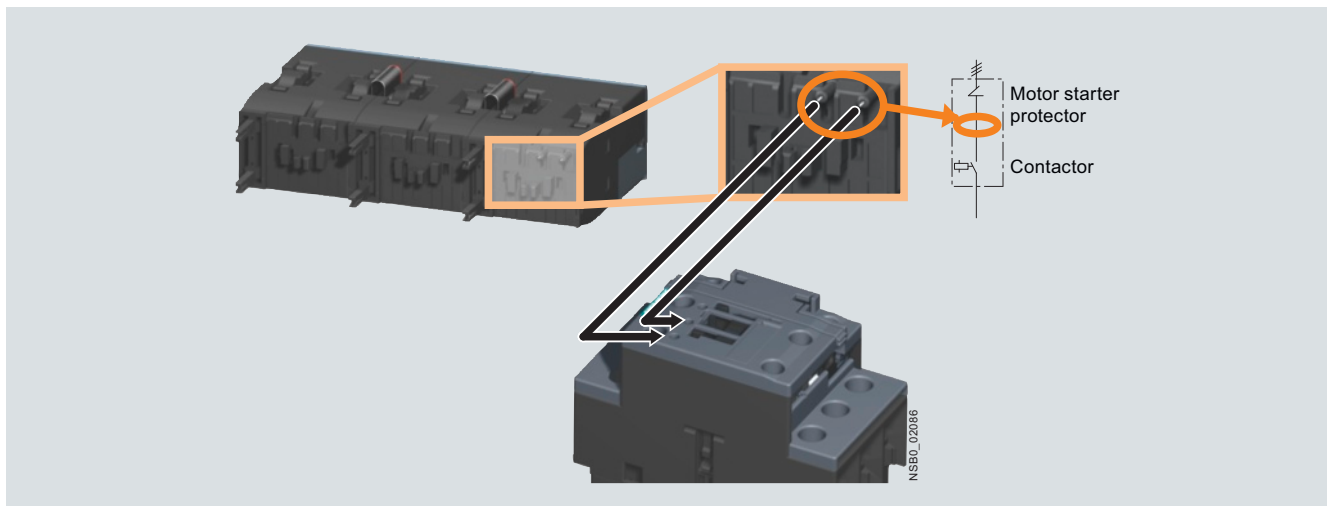
- Availability of the feeder in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link

The inquiry from the motor starter protector does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with communication interface (see pages 3/32 and 3/34).



Availability signal through voltage pick-off

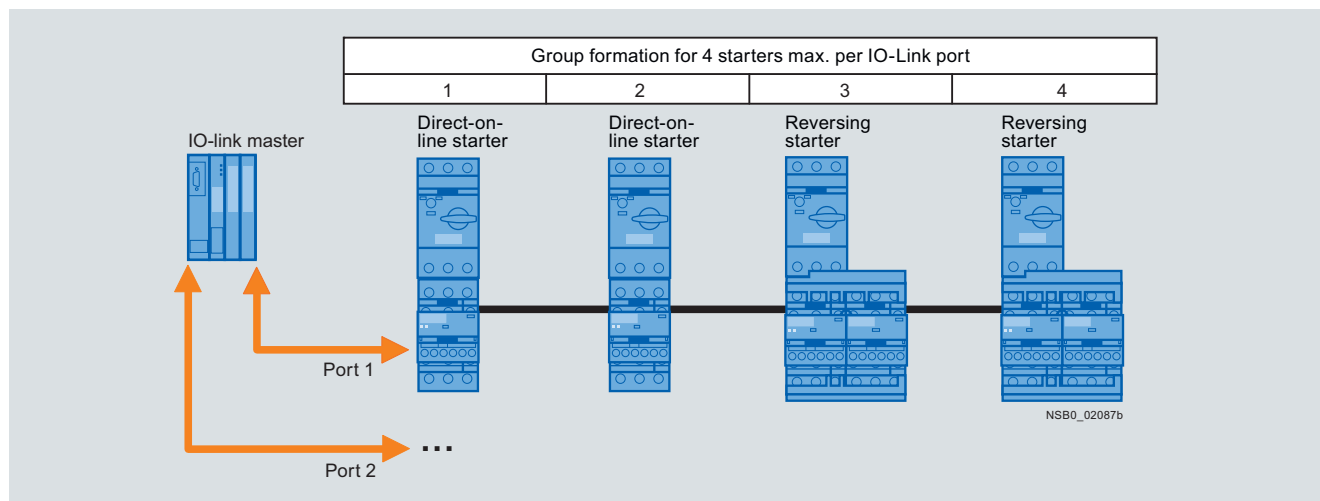
# Function Modules

## SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

### Introduction

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET200 S. In this case, all the signals of the individual controls are made available directly in the process image of the input through only 3 individual wires per

starter group. If the potential at the master of the ET200 S is the same as that of the controls, a further reduction in wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.



Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using a handheld device. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning.

### Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor feeders in one control cabinet. Using IO-Link, the connection of these feeders to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET200 S is far smaller.

### Benefits



- Reduction of the control current wiring to no more than three cables for four feeders
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

For further information on the IO-Link bus systems see [Chapter 2, "Industrial Communication"](#).



## SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

## Technical specifications

Type	<b>3RA27 11</b>		
Dimensions	See 3RT20 contactors, pages 3/17 and 3/21.		
<b>General data</b>			
<b>Suitable for IO-Link masters acc. to specification</b>	1.0		
<b>Permissible ambient temperature</b>			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2	°C	-40 ... +80
<b>Degree of protection</b>			
IP20			
<b>Operational voltage <math>U_{Hi}</math></b>	V DC	24 ± 20 %	
<b>Power consumption, max. at <math>U_{Hi}</math></b>	A	2	
<b>Max. length of the cables for the input Y1–Y2</b>	According to EN 50295	m	30
<b>EMC interference immunity</b>			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	2/1
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
<b>Conductor cross-sections</b>			
<b>Connection type</b>			
 <b>Screw terminals</b>			
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• AWG cables	AWG	2 x (20 ... 14)	
• Terminal screws		M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)	
• Tightening torque of the terminal screws	Nm	0.8 ... 1.2	
<b>Connection type</b>			
 <b>Spring-type terminals</b>			
• Operating devices	mm	3.0 x 0.5	
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• Finely stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• AWG cables	AWG	2 x (24 ... 16)	






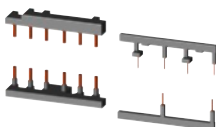
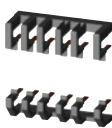

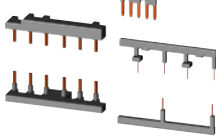
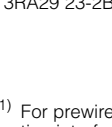
# Function Modules

## SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting /  
for wye-delta starting

### Selection and ordering data

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

Version	DT	Screw terminals 	DT	Spring-type terminals 	
		Order No.	Price per PU	Order No.	Price per PU
<b>Function modules for direct-on-line starting</b>					
 3RA27 11-1AA00   3RA27 11-2AA00	<b>IO-Link connection</b> Includes one module connector for assembling an IO-Link group	A	<b>3RA27 11-1AA00</b>	A	<b>3RA27 11-2AA00</b>
<b>Function modules for reversing starting<sup>1)</sup></b>					
 3RA27 11-1BA00	<b>IO-Link connection,</b> comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	A	<b>3RA27 11-1BA00</b>	A	<b>3RA27 11-2BA00</b>
 3RA29 23-2AA1	<b>Assembly kits for making 3-pole contactor assemblies<sup>3)</sup></b> The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom		<b>3RA29 13-2AA1</b>		<b>3RA29 13-2AA2</b>
 3RA29 23-2AA2	<ul style="list-style-type: none"> <li>• For size S00</li> <li>• For size S0</li> <li>- For main, auxiliary and control current</li> <li>- Only for main current<sup>4)</sup></li> </ul>		<b>3RA29 23-2AA1</b>		--
					<b>3RA29 23-2AA2</b>
<b>Function modules for wye-delta starting<sup>2)</sup></b>					
 3RA27 11-1CA00	<b>IO-Link connection,</b> comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	A	<b>3RA27 11-1CA00</b>	A	<b>3RA27 11-2CA00</b>
 3RA29 23-2BB1	<b>Assembly kits for making 3-pole contactor assemblies<sup>3)</sup></b> The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom		<b>3RA29 13-2BB1</b>		<b>3RA29 13-2BB2</b>
 3RA29 23-2BB2	<ul style="list-style-type: none"> <li>• For size S00</li> <li>• For size S0</li> <li>- For main, auxiliary and control current</li> <li>- Only for main current<sup>4)</sup></li> </ul>		<b>3RA29 23-2BB1</b>		--
					<b>3RA29 23-2BB2</b>

<sup>1)</sup> For prewired contactor assemblies for reversing starting with communication interface see pages 3/148 and 3/150. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

<sup>2)</sup> For complete contactor assemblies for wye-delta starting including function modules see pages 3/163 and 3/165.

<sup>3)</sup> When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

<sup>4)</sup> Version in size S0 with spring-type terminals:  
Only the wiring modules for the main circuit are included.  
No connectors are included for the auxiliary and control circuit.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

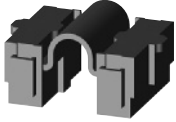



For matching IO-Link masters see Chapter 2, "Industrial Communication".

#### Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

## SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting /  
for wye-delta starting

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Accessories</b>						
 3RA27 11-0EE01		<b>Module connector set</b> , comprising: • 2 module connectors, 14-pole, short • 2 interface covers	A	<b>3RA27 11-0EE01</b>	1	1 unit 41B
		<b>Module connector</b> , 14-pole, 8 cm For size jump S00-S0 + 1 space	A	<b>3RA27 11-0EE02</b>	1	1 unit 41B
 3RA27 11-0EE02		<b>Module connector</b> , 14-pole, 21 cm For various space combinations	A	<b>3RA27 11-0EE03</b>	1	1 unit 41B
		<b>Module connector</b> , 10-pole, 8 cm For separate auxiliary voltage supply within an IO-Link group	A	<b>3RA27 11-0EE04</b>	1	1 unit 41B
 3RA29 10-0		<b>Sealable covers</b> for 3RA27, 3RA28, 3RA29	A	<b>3RA29 10-0</b>	1	5 units 41B
		<b>Manual</b> Function modules for IO-Link	C	<b>3ZX1 012-0RA27-1AB1</b>	1	1 unit 401
<b>Operator panels<sup>1)</sup></b>						
 3RA69 35-0A		<b>Operator panel (set)</b> , comprising: • 1 x operator panel • 1 x enabling module • 1 x interface cover • 1 x fixing terminal	A	<b>3RA69 35-0A</b>	1	1 unit 42F
		<b>Connection cable</b> , length 2 m, 10- to 14-pole For connecting the operator panel to the communication module	A	<b>3RA27 11-0EE11</b>	1	1 unit 41B
		Enabling modules (replacement)	A	<b>3RA69 36-0A</b>	1	1 unit 42F
		Interface covers (replacement)	A	<b>3RA69 36-0B</b>	1	5 units 42F

1) Suitable only for communication through IO-Link.

# Function Modules

## SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

### Introduction

#### Overview

The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

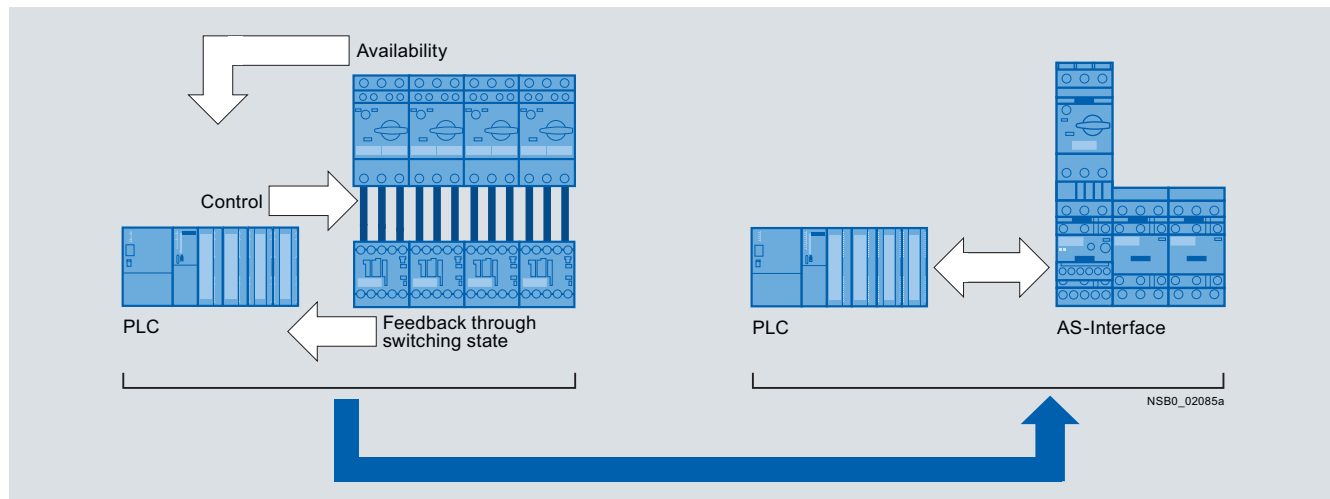
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be connected to one master and the address is entered in normal manner with an addressing unit.

Through this type of connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

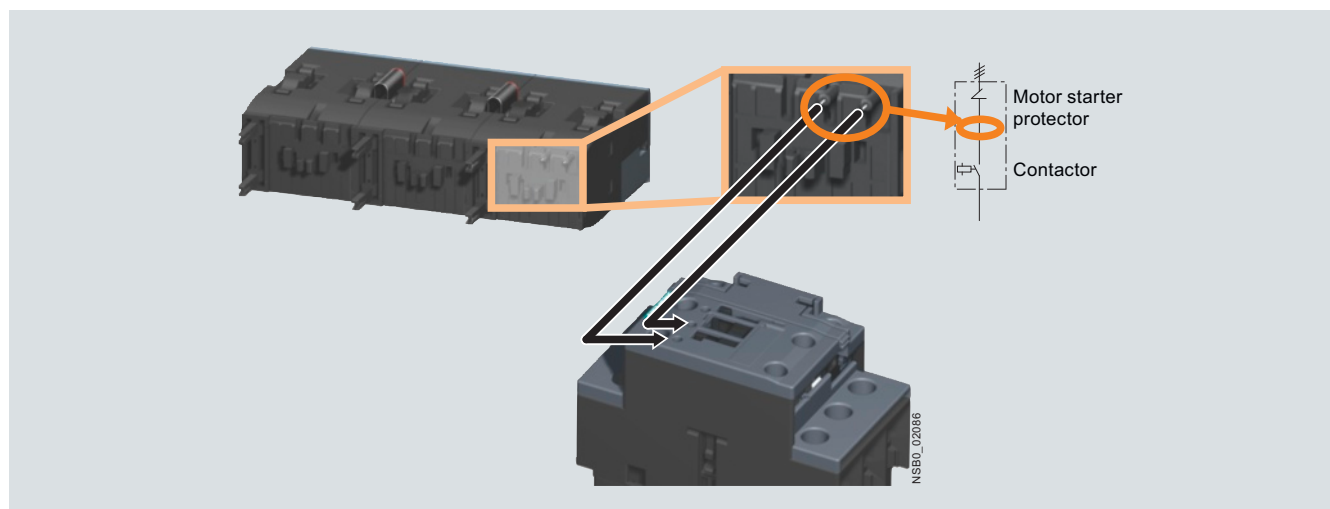
- Availability of the feeder in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through AS-Interface

The inquiry from the motor starter protector does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

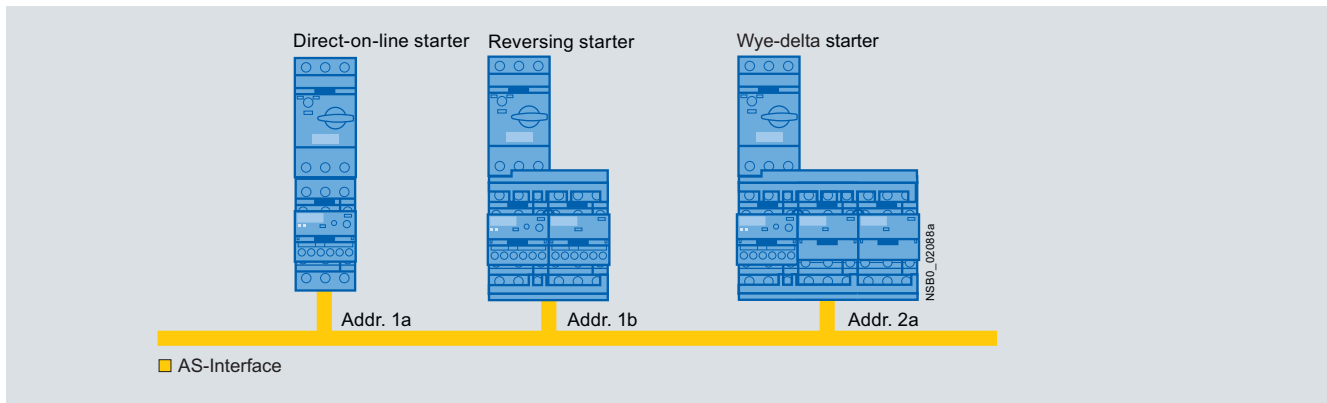
This requires special versions of the contactors with communication interface (see pages 3/32 and 3/34).



Availability signal through voltage pick-off

## SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

## Introduction



## Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example

to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

## Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the PLC is far smaller.

## Benefits



- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

# Function Modules

## SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

### Introduction

#### Technical specifications




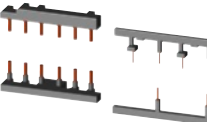
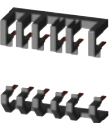
Type	<b>3RA27 12</b>		
Dimensions	See 3RT20 contactors, pages 3/17 and 3/21.		
<b>General data</b>			
<b>Slave type</b>	A/B slave		
<b>Suitable for AS-i masters acc. to Spec.</b>	2.1 or higher		
AS-i Slave Profile IO.ID.ID2	7.A.E		
ID1 Code (factory setting)	7		
<b>Permissible ambient temperature</b>			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2		-40 ... +80
<b>Degree of protection</b>			
IP20			
Operational voltage			
• AS-Interface	V		26.5 ... 31.6
• AUX PWR 24 V DC	V		24 ± 20 %
Power consumption, max.			
• AS-Interface	mA		30
• AUX PWR			
- Maximum pick-up/hold current	Size S00	mA	200
	Size S0	mA	300
<b>Max. length of the cables for the input Y1–Y2</b>	According to EN 50295	m	30
<b>EMC interference immunity</b>			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	1/2
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
<b>Conductor cross-sections</b>			
Connection type		 <b>Screw terminals</b>	
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• AWG cables	AWG	2 x (20 ... 14)	
• Terminal screws		M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)	
• Tightening torque of the terminal screws	Nm	0.8 ... 1.2	
Connection type		 <b>Spring-type terminals</b>	
• Operating devices	mm	3.0 x 0.5	
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• Finely stranded	mm <sup>2</sup>	2 x (0.25 ... 1.5)	
• AWG cables	AWG	2 x (24 ... 16)	

## SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting /  
for wye-delta starting

## Selection and ordering data

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

Version	DT	Screw terminals	DT	Spring-type terminals	
Order No.		Price per PU	Order No.	Price per PU	
<b>Function modules for direct-on-line starting</b>					
 3RA27 12-1AA00	AS-Interface connection	A	3RA27 12-1AA00	A	3RA27 12-2AA00
 3RA27 12-2AA00					
<b>Function modules for reversing starting<sup>1)</sup></b>					
 3RA27 12-1BA00	AS-Interface connection, comprising one basic and one coupling module	A	3RA27 12-1BA00	A	3RA27 12-2BA00
 3RA29 23-2AA1	<b>Assembly kits for making 3-pole contactor assemblies</b> The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom				
 3RA29 23-2AA2	<ul style="list-style-type: none"> <li>• For size S00</li> <li>• For size S0               <ul style="list-style-type: none"> <li>- For main, auxiliary and control current</li> <li>- Only for main current</li> </ul> </li> </ul>		▶ 3RA29 13-2AA1	▶ 3RA29 13-2AA2	
			▶ 3RA29 23-2AA1	▶ -- 3RA29 23-2AA2	

<sup>1)</sup> For prewired contactor assemblies for reversing starting with communication interface see pages 3/148 and 3/150. When using the contactor assemblies, the assembly kit for the wiring is already integrated.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:



When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

# Function Modules

## SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

**For direct-on-line starting / for reversing starting / for wye-delta starting**

3

Version	DT	Screw terminals 	DT	Spring-type terminals 	
		Order No.	Price per PU	Order No.	Price per PU

**Function modules for wye-delta starting<sup>1)</sup>**



3RA27 12-1CA00

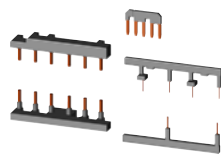


3RA27 12-2CA00

**AS-Interface connection,** comprising one basic module and two coupling modules

A	<b>3RA27 12-1CA00</b>
---	-----------------------

A	<b>3RA27 12-2CA00</b>
---	-----------------------



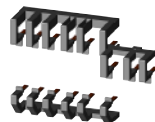
3RA29 23-2BB1

**Assembly kits for making 3-pole contactor assemblies**  
 The assembly kit contains:  
 Mechanical interlock,  
 4 connecting clips for 3 contactors;  
 star jumper,  
 wiring modules on the top and bottom

- For size S00

	<b>3RA29 13-2BB1</b>
--	----------------------

	<b>3RA29 13-2BB2</b>
--	----------------------



3RA29 23-2BB2

- For size S0
  - For main, auxiliary and control current
  - Only for main current

	<b>3RA29 23-2BB1</b>
	--

	--
	<b>3RA29 23-2BB2</b>

<sup>1)</sup> For complete contactor assemblies for wye-delta starting including function modules see pages 3/163 and 3/165.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	----	-----------	--------------	-------------------	-----	----

**Accessories**



3RA29 10-0

**Sealable covers** for 3RA27, 3RA28, 3RA29

A	<b>3RA29 10-0</b>
---	-------------------

1	5 units	41B
---	---------	-----

**Manual** Function modules for AS-Interface

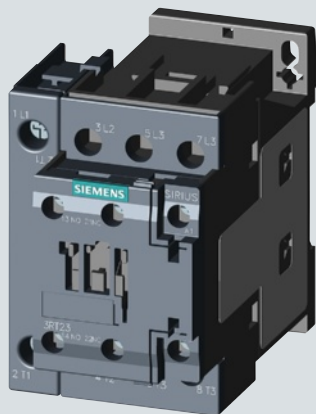
C	<b>3ZX1 012-0RA27-0AB0</b>
---	----------------------------

1	1 unit	401
---	--------	-----



# Controls – Contactors and Contactor Assemblies – Special Applications

# 4



	<b>Price groups</b> PG 41B, 41H
4/2	<b>Introduction</b>
	<b>Contactors for special applications</b>
4/4	SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A
4/11	SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A
4/15	SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A
4/18	3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A
4/22	3TK20 contactors, 4-pole, 4 kW
4/29	SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW
4/33	SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW
4/35	SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar <u>Contactors with extended operating range <math>0.7 \dots 1.25 \times U_s</math> for railway applications</u>
4/39	SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW
4/43	SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW
4/46	3TB5 motor contactors, 55 ... 200 kW
4/48	3TC contactors for switching DC voltage, 2-pole
Ch.5	SIRIUS 3RH21 contactor relays
Ch.5	3TH4 contactor relays <u>Contactors for switching DC voltage</u>
4/50	3TC contactors, 1- and 2-pole, 32 ... 400 A
	<b>Coupling contactors</b>
Ch.3	SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW
Ch.5	SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole
	<b>Power relays/Miniature contactors</b>
4/60	3TG10 contactors, 4-pole, 4 kW

More information can be found on the Internet: [see the opening information, page 13](#)

Note:

3RT1 contactors in sizes S00/S0 to S12 can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

## Introduction

## Overview



Size	<b>S00</b>						<b>S0</b>							
Type	3RT23 1, 3RT25 1						3RT23 2, 3RT25 2							
<b>4-pole 3RT23, 3RT25 contactors</b>														
Type	<b>3RT23 16</b>		<b>3RT23 17</b>		<b>3RT25 16</b>		<b>3RT25 17</b>		<b>3RT25 18</b>		<b>3RT23 25</b>	<b>3RT23 26</b>	<b>3RT23 27</b>	<b>3RT25 26</b>
Number of main contacts	4 NO		4 NO		2 NO + 2 NC		2 NO + 2 NC		2 NO + 2 NC		4 NO	4 NO	4 NO	2 NO + 2 NC
AC, DC operation	(p. 4/13, 4/14)		(p. 4/13, 4/14)		(p. 4/31, 4/32)		(p. 4/31, 4/32)		(p. 4/31, 4/32)		(p. 4/13, 4/14)	(p. 4/13, 4/14)	(p. 4/13, 4/14)	(p. 4/31, 4/32)
<b>AC-1</b>														
$I_e$ at 400 V	A	18 / 16	22 / 20	18 / 16	22 / 20	22 / 20	35 / 30	40 / 35	50 / 42	40 / 35				
40 °C	kW	<b>12</b>	<b>14.5</b>	<b>11</b>	<b>13</b>	<b>13</b>	<b>22</b>	<b>26</b>	<b>33</b>	<b>26</b>				
60 °C	kW	11	13	6.5	7.5	7.5	20	23	33	15				
<b>AC-2 and AC-3</b>														
$I_e$ at 400 V	A	9	12	9	12	16	15.5	17	17	25				
400 V	kW	<b>4</b>	<b>5.5</b>	<b>4</b>	<b>5.5</b>	<b>7.5</b>	<b>7.5</b>	<b>9</b>	<b>9</b>	<b>11</b>				
230 V	kW	3	3	3	3	4	4	4	4	5.5				
<b>Accessories for contactors</b>														
<b>Auxiliary switch blocks</b>	On front	<b>3RH29 11</b>		(Chap. 3)		<b>3RH29 11</b>		(Chap. 3)		<b>3RH29 11</b>		(Chap. 3)		
	Lateral	<b>3RH29 11</b>		(Chap. 3)		<b>3RH29 21</b>		(Chap. 3)		<b>3RH29 21</b>		(Chap. 3)		
<b>Timing relay blocks</b>		<b>3RA28 1.</b>		(Chap. 3)		<b>3RA28 1.</b>		(Chap. 3)		<b>3RA28 1.</b>		(Chap. 3)		
<b>Surge suppressors</b>		<b>3RT29 16</b>		(Chap. 3)		<b>3RT29 16</b>		(Chap. 3)		<b>3RT29 26</b>		(Chap. 3)		



Size	<b>S2</b>				<b>S3</b>				<b>S6, S10, S12</b>						
Type	3RT13 36, 3RT15 35				3RT13 4.				3RT14 5.						
<b>4-pole 3RT13, 3RT15 contactors • 3-pole 3RT14 contactors</b>															
Type	<b>3RT13 36</b>		<b>3RT15 35</b>		<b>3RT13 44</b>		<b>3RT13 46</b>		<b>3RT14 46</b>		<b>3RT14 56</b>		<b>3RT14 66</b>		<b>3RT14 76</b>
Number of main contacts	4 NO		2 NO + 2 NC		4 NO		4 NO		3 NO		3 NO		3 NO		3 NO
AC, DC operation	(p. 4/16)		(p. 4/34)		(p. 4/16)		(p. 4/16)		(p. 4/9)		(p. 4/9)		(p. 4/9)		(p. 4/9)
<b>AC-1 (≤ 690 V)</b>															
$I_e$	40 °C	<b>A</b>	<b>60</b>	<b>60</b>	<b>110</b>	<b>140</b>	<b>140</b>	<b>140</b>	<b>275</b>	<b>400</b>	<b>690</b>				
	60 °C	A	55	55	100	120	130	250	380	650					
400 V	40 °C	<b>kW</b>	<b>39</b>	<b>36</b>	<b>72</b>	<b>92</b>	<b>92</b>	<b>180</b>	<b>263</b>	<b>454</b>					
	230 V	40 °C	kW	23	20	42	53	53	105	151	261				
500 V	--	kW	--	--	--	--	115	225	329	568					
690 V	--	kW	--	--	--	--	159	310	454	783					
1000 V	60 °C	kW	--	--	--	--	98	165	247	410					
<b>AC-2 and AC-3</b>															
$I_e$ /AC-3/400 V	A						44	97	138	170					
400 V	kW	<b>11</b>	<b>18.5</b>				<b>22</b>	<b>55</b>	<b>75</b>	<b>90</b>					
230 V	kW	5.5	9.5	--	--	--	12.7	30	37	55					
500 V	kW	--	--	--	--	--	29.9	55	90	110					
690 V	kW	--	--	--	--	--	38.2	90	132	160					
<b>Accessories for contactors</b>															
<b>Auxiliary switch blocks</b>	On front	<b>3RH19 21</b>		(Ch. 3)		<b>3RH19 21</b>		(Ch. 3)		<b>3RH19 21</b>		(Ch. 3)			
	Lateral	<b>3RH19 21</b>		(Ch. 3)		<b>3RH19 21</b>		(Ch. 3)		<b>3RH19 21</b>		(Ch. 3)			
<b>Terminal covers</b>		<b>3RT19 36-4EA2</b>		(Ch. 3)		<b>3RT19 46-4EA1/2</b>		(Ch. 3)		<b>3RT19 56-4EA1/2/3</b>		(Ch. 3)			
<b>Box terminal blocks</b>		--		--		--		--		<b>3RT19 55/56-4G</b>		(Ch. 3)			
<b>Surge suppressors</b>		<b>3RT19 26/36</b>		(Ch. 3)		--		--		<b>3RT19 56-1C</b>		(RC element) (Ch. 3)			



Size	--								<b>00</b>	--	
Type	3TK1								3TK20	3TG10	
<b>3TK, 3TG contactors</b>											
Type		<b>3TK10</b>	<b>3TK11</b>	<b>3TK12</b>	<b>3TK13</b>	<b>3TK14</b>	<b>3TK15</b>	<b>3TK17</b>	<b>3TK20</b>	<b>3TG10</b>	
AC, DC operation		(p. 4/20)							(p. 4/27)	(p. 4/62)	
<b>AC-1 (40 °C, ≤ 690 V)</b>											
$I_e$	<b>A</b>	<b>200</b>	<b>250</b>	<b>300</b>	<b>350</b>	<b>550</b>	<b>800</b>	<b>1000</b>	<b>18</b>	<b>20</b>	
<b>400 V</b>	<b>kW</b>	<b>132</b>	<b>165</b>	<b>197</b>	<b>230</b>	<b>362</b>	<b>527</b>	<b>658</b>	<b>10</b>	<b>13</b>	
230 V	kW	76	95	114	132	308	303	378	6	7.5	
500 V	kW	165	206	247	288	452	658	828	13	--	
690 V	kW	227	284	341	397	624	908	1135	17	--	
<b>AC-2 and AC-3</b>											
$I_e$ /AC-3/400 V	<b>A</b>	120	145	210	210	400	550	700	8.4	8.4	
<b>400 V</b>	<b>kW</b>	<b>55</b>	<b>75</b>	<b>110</b>	<b>110</b>	<b>200</b>	<b>280</b>	<b>370</b>	<b>4</b>	<b>4</b>	
127 V	kW	--	--	--	--	--	--	--	1.4	--	
230 V	kW	30	45	75	75	110	160	220	2.5	--	
500 V	kW								4		
690 V	kW								4		
<b>Accessories for contactors</b>											
<b>Auxiliary switch blocks</b>	On front Lateral	--								--	--
		<b>3TK19 10</b>								--	--
<b>Terminal covers</b>		<b>3TK19 40</b>	<b>3TK19 42</b>					<b>3TK19 44</b>	<b>3TK19 46</b>	--	
<b>Surge suppressors</b>		<b>3TK19 30</b>					<b>3TK19 34</b>				

Note:






Safety characteristics for contactors  
see "Appendix" → "Standards and Approvals" → "Overview"

**Connection methods**

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TK2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

-  Screw terminals
-  Spring-type terminals
-  Flat connectors
-  Solder pin connections
-  Ring terminal lug connections

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

# Contactors for Special Applications

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

### Overview

#### Standards

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

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

3RT14 contactors are used for switching resistive loads (AC-1) or as contactors, for example for variable-speed operating mechanisms that normally only have to carry the current.

#### Size S3: AC or DC operation

#### Sizes S6 to S12: AC/DC operation

The following applies for sizes S6 to S12:

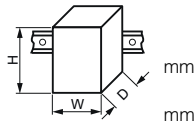
- Withdrawable coils
- Integrated coil circuit (varistor)
- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals

The accessories for the 3RT10 contactors can also be used here.

General descriptions of the sizes S3 to S12 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT10 contactors, 3-pole, 15 to 250 kW".

### Technical specifications

Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
Size		<b>S3</b>	<b>S6</b>	<b>S10</b>	<b>S12</b>
Dimensions (W x H x D)	mm	70 x 146 x 134	120 x 172 x 170	145 x 210 x 202	160 x 214 x 225
	mm	70 x 146 x 183	120 x 172 x 217	145 x 210 x 251	160 x 214 x 271

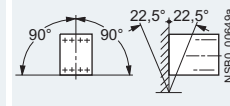
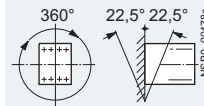


- With mounted auxiliary switch block

#### General technical specifications

##### Permissible mounting positions

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



Upright mounting position



Special version required.

<b>Mechanical endurance</b>	Operating cycles	10 million		
<b>Electrical endurance in operating cycles</b> <b>Utilization category AC-1 at <math>I_e</math></b>	Operating cycles	0.5 million		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	1000		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6	8	
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	690		
<b>Mirror contacts</b> A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.				
<ul style="list-style-type: none"> <li>• Removable auxiliary switch block</li> <li>• Permanently fitted auxiliary switch block</li> </ul>		Yes, acc. to IEC 60947-4-1, Appendix F		
		Acc. to Swiss regulations (SUVA)	--	on request
<b>Permissible ambient temperature</b>	°C			
• During operation	°C	-25 ... +60	-25 ... +60	
• During operation, with AS-Interface interface	°C	--	-25 ... +55	
• During storage	°C	-55 ... +80	-55 ... +80	
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20 (terminal compartment IP00), AC coil assembly IP40, DC coil assembly IP30	IP00/open, coil assembly IP20	
<b>Touch protection</b> acc. to EN 50274		Finger-safe	Finger-safe with cover	
<b>Shock resistance</b>				
• Rectangular pulse, for AC and DC operation	g/ms	6.8/5 and 4/10	8.5/5 and 4.2/10	
• Sine pulse, for AC and DC operation	g/ms	10.6/5 and 6.2/10	13.4/5 and 6.5/10	
<b>Conductor cross-sections</b>		1)	1)	
<b>Electromagnetic compatibility (EMC)</b>		--	2)	

1) Conductor cross-sections see pages 4/7 and 4/8.

2) Electromagnetic compatibility see "SIRIUS 3RT10 Contactors", Chapter 3.

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors	Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
	Size		S3	S6	S10	S12
<b>Short-circuit protection for contactors without overload relays</b>						
<b>Main circuit</b>						
• Fuse links, operational class gG: LV HRC, type 3NA - Type of coordination "1"	A		250	355	500	800
• Fuse links, gR operational class: SITOP, type 3NE - Type of coordination "2"	A		250	350	500	710
<b>Auxiliary circuit</b>						
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A		10			
• Test with miniature circuit breakers up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A		10			
<b>Control circuit</b>						
<b>Coil operating range (AC/DC)</b>			0.8 ... 1.1 x $U_s$		0.8 x $U_{s \min}$ ... 1.1 x $U_{s \max}$	
<b>Power consumption of the solenoid coils (when coil is cold and 1.0 x <math>U_s</math>)</b>						
<b>Standard version:</b>						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 50/60 Hz	Closing	VA	298/274	--		
	P.f.		0.7/0.62	--		
	Closed	VA	27/20	--		
	P.f.		0.29/0.31	--		
<b>For USA and Canada:</b>						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 60 Hz	Closing	VA	300	--		
	P.f.		0.52	--		
	Closed	VA	21	--		
	P.f.		0.29	--		
• DC operation	Closing = Closed	W	15	--		
<b>Power consumption of the solenoid operation (when coil is cool and rated range <math>U_{s \min}</math> ... <math>U_{s \max}</math>)</b>						
<b>Conventional operating mechanisms</b>						
- AC operation	Closing at $U_{s \min}$	VA/p.f.	--	250/0.9	490/0.9	700/0.9
	Closing at $U_{s \max}$	VA/p.f.	--	300/0.9	590/0.9	830/0.9
	Closed at $U_{s \min}$	VA/p.f.	--	4.8/0.8	5.6/0.9	7.6/0.9
	Closed at $U_{s \max}$	VA/p.f.	--	5.8/0.8	6.7/0.9	9.2/0.9
- DC operation	Closing at $U_{s \min}$	W	--	300	540	770
	Closing at $U_{s \max}$	W	--	360	650	920
	Closed at $U_{s \min}$	W	--	4.3	6.1	8.5
	Closed at $U_{s \max}$	W	--	5.2	7.4	10
<b>Solid-state operating mechanism</b>						
- AC operation	Closing at $U_{s \min}$	VA/p.f.	--	190/0.8	400/0.8	560/0.8
	Closing at $U_{s \max}$	VA/p.f.	--	28/0.8	530/0.8	750/0.8
	Closed at $U_{s \min}$	VA/p.f.	--	3.5/0.5	4/0.5	5.4/0.8
	Closed at $U_{s \max}$	VA/p.f.	--	4/0.4	5/0.4	7/0.8
- DC operation	Closing at $U_{s \min}$	W	--	250	440	600
	Closing at $U_{s \max}$	W	--	320	580	800
	Closed at $U_{s \min}$	W	--	2.3	3.2	4
	Closed at $U_{s \max}$	W	--	2.8	3.8	5
<b>PLC control input (IEC 61131-2/type 2)</b>						
• Operating range	V DC			24, at $\leq 30$ mA power consumption		
	V DC			17 ... 30		
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>1)</sup></b>						
Total break time = Opening delay + Arcing time						
• AC operation	- Closing delay	ms	17 ... 90	--		
	- Opening delay	ms	10 ... 25	--		
• DC operation	- Closing delay	ms	90 ... 230	--		
	- Opening delay	ms	14 ... 20	--		
• Arcing time		ms	10 ... 15	--		
<b>Operating times for 1.0 x <math>U_s</math><sup>1)</sup></b>						
• AC operation	- Closing delay	ms	18 ... 30	--		
	- Opening delay	ms	11 ... 23	--		
• DC operation	- Closing delay	ms	100 ... 120	--		
	- Opening delay	ms	16 ... 20	--		

<sup>1)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 to 5 ms, diode assembly: 2 to 6 times).

# Contactors for Special Applications

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors	Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
	Size		S3	S6	S10	S12
<b>Control circuit</b>						
<b>Operating times</b> (Total break time = Opening delay + Arcing time)						
• Conventional operating mechanisms						
- For $0.8 \times U_{s \min} \dots 1.1 \times U_{s \max}$	Closing delay	ms	--	20 ... 95	30 ... 95	45 ... 100
	Opening delay	ms	--	40 ... 60	40 ... 80	60 ... 100
- For $U_{s \min} \dots U_{s \max}$	Closing delay	ms	--	25 ... 50	35 ... 50	50 ... 70
	Opening delay	ms	--	40 ... 60	50 ... 80	70 ... 100
• Solid-state operating mechanism, actuated via A1/A2						
- For $0.8 \times U_{s \min} \dots 1.1 \times U_{s \max}$	Closing delay	ms	--	95 ... 135	105 ... 145	120 ... 150
	Opening delay	ms	--	80 ... 90	80 ... 200	80 ... 100
- For $U_{s \min} \dots U_{s \max}$	Closing delay	ms	--	100 ... 120	110 ... 130	125 ... 150
	Opening delay	ms	--	80 ... 90	80 ... 100	80 ... 100
• Solid-state operating mechanism, actuated via PLC input						
- For $0.8 \times U_{s \min} \dots 1.1 \times U_{s \max}$	Closing delay	ms	--	35 ... 75	45 ... 80	60 ... 90
	Opening delay	ms	--	80 ... 90	80 ... 100	80 ... 100
- For $U_{s \min} \dots U_{s \max}$	Closing delay	ms	--	40 ... 60	50 ... 65	65 ... 80
	Opening delay	ms	--	80 ... 90	80 ... 100	80 ... 100
• Arcing time		ms	--	10 ... 15	10 ... 15	10 ... 15

Contactors	Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
	Size		S3	S6	S10	S12
<b>Main circuit</b>						
<b>AC capacity</b>						
<b>Utilization category AC-1, switching resistive loads</b>						
• Rated operational currents $I_e$	At 40 °C up to 690 V	A	140	275	400	690
	At 60 °C up to 690 V	A	130	250	380	650 <sup>1)</sup>
	At 1000 V	A	60	100	150	250
• Rated power for AC loads <sup>2)</sup> with p.f. = 0.95 (at 60 °C)	At 230 V	kW	50	95	145	245
	400 V	kW	86	165	250	430
	500 V	kW	107	205	315	535
	690 V	kW	148	285	430	740
	1000 V	kW	98	165	247	410
• Minimum conductor cross-section for loads with $I_e$	At 40 °C	mm <sup>2</sup>	50	2 x 70	240	2 x 240
	At 60 °C	mm <sup>2</sup>	50	120	240	2 x 240
<b>Utilization categories AC-2 and AC-3</b> With an electrical endurance of 1.3 million operating cycles						
• Rated operational current $I_e$	Up to 690 V	A	44	97	138	170
• Rated power for slipping or squirrel-cage motors at 50 and 60 Hz (at 60 °C)	At 230 V	kW	12.7	30	37	55
	400 V	kW	22	55	75	90
	500 V	kW	29.9	55	90	110
	690 V	kW	38.2	90	132	160
<b>Power loss per conducting path</b>	At $I_e$ /AC-1	W	12.5	20	27	55

### Switching frequency

Switching frequency  $z$  in operating cycles/hour




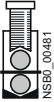
• Contactors without overload relays	No-load switching frequency AC	1/h	5000			
	No-load switching frequency DC	1/h	1000			
• Rated operation	Acc. to AC-1 (AC/DC)	1/h	650			
	Acc. to AC-3 (AC/DC)	1/h	1000			

Dependence of the switching frequency  $z'$  on the operational current  $I'$  and operational voltage  $U$ :  $z' = z \cdot (I_e/I') \cdot (400 V/U)^{1.5} \cdot 1/h$ .

<sup>1)</sup> 600 A for 3RT14 76-N contactor.

<sup>2)</sup> Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors	Type	3RT14 46	
	Size	S3	
<b>Conductor cross-sections</b>			
(1 or 2 conductors can be connected) <b>Front clamping point connected</b> 	<b>Main conductors:</b> With box terminal <ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>	 <b>Screw terminals</b>	2.5 ... 50 4 ... 50
			mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm AWG
<b>Rear clamping point connected</b> 	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>		2.5 ... 50 10 ... 50
			mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm AWG
<b>Both clamping points connected</b> 	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> <li>Terminal screws - Tightening torque</li> </ul>		max. 2 x 35 max. 2 x 35
			mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> mm AWG Nm lb.in
<b>Connection for drilled copper bars</b>	Max. width <sup>1)</sup>	mm	10
	<b>Main conductors:</b> Without box terminal with cable lugs <sup>2)</sup> <ul style="list-style-type: none"> <li>Finely stranded with cable lug</li> <li>Stranded with cable lug</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> AWG	10 ... 50 <sup>3)</sup> 10 ... 70 <sup>3)</sup> 7 ... 1/0
	<b>Auxiliary conductors:</b> <ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>AWG cables, solid or stranded</li> <li>Terminal screws - Tightening torque</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> AWG Nm lb.in	2 x (0.5 ... 1.5) <sup>4)</sup> ; 2 x (0.75 ... 2.5) <sup>4)</sup> according to IEC 60947; max. 2 x (0.75 ... 4) <sup>4)</sup> 2 x (0.5 ... 1.5) <sup>4)</sup> ; 2 x (0.75 ... 2.5) <sup>4)</sup> 2 x (20 ... 16) <sup>4)</sup> ; 2 x (18 ... 14) <sup>4)</sup> ; 1 x 12 M3 0.8 ... 1.2 7 ... 10.3

<sup>1)</sup> If bars larger than 12 x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

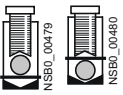









<sup>2)</sup> When connecting conductors which are larger than 25 mm<sup>2</sup>, the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

<sup>3)</sup> Only with crimped cable lugs according to DIN 46234. Cable lug max. 20 mm wide.

<sup>4)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

# Contactors for Special Applications

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type	3RT14 56	3RT14 66	3RT14 76
	Size	S6	S10	S12
<b>Conductor cross-sections</b>				
(1 or 2 conductors can be connected)	<b>Main conductors</b> With 3RT19 55-4G box terminal	<b>Screw terminals</b>		
<b>Front or rear clamping point connected</b> 	• Finely stranded with end sleeve	mm <sup>2</sup> 10 ... 70	--	--
	• Finely stranded without end sleeve	mm <sup>2</sup> 16 ... 70	--	--
<b>Both clamping points connected</b> 	• Stranded	mm <sup>2</sup> 16 ... 70	--	--
	• AWG cables, solid or stranded	AWG 6 ... 2/0	--	--
<b>Front clamping point connected</b> 	• Ribbon cable conductors (Number x Width x Thickness)	mm 3 x 9 x 0.8 ... 6 x 15.5 x 0.8	--	--
	• Finely stranded with end sleeve	mm <sup>2</sup> 10 ... 70	--	--
<b>Rear clamping point connected</b> 	• Finely stranded without end sleeve	mm <sup>2</sup> 16 ... 70	--	--
	• Stranded	mm <sup>2</sup> 2 x 70	--	--
<b>Both clamping points connected</b> 	• AWG cables, solid or stranded	AWG 2 x 1/0	--	--
	• Ribbon cable conductors (Number x Width x Thickness)	mm 2 x (6 x 15.5 x 0.8)	--	--
<b>Front clamping point connected</b> 	• Terminal screws - Tightening torque	Nm lb.in	--	--
	With 3RT19 56-4G box terminal			
<b>Rear clamping point connected</b> 	• Finely stranded with end sleeve	mm <sup>2</sup> 10 ... 120	70 ... 240	70 ... 240
	• Finely stranded without end sleeve	mm <sup>2</sup> 16 ... 120	70 ... 240	70 ... 240
<b>Both clamping points connected</b> 	• Stranded	mm <sup>2</sup> 16 ... 120	95 ... 300	95 ... 300
	• AWG cables, solid or stranded	AWG 6 ... 250 kcmil	3/0 ... 600 kcmil	3/0 ... 600 kcmil
<b>Both clamping points connected</b> 	• Ribbon cable conductors (Number x Width x Thickness)	mm 3 x 9 x 0.8 ... 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
	• Finely stranded with end sleeve	mm <sup>2</sup> 10 ... 120	120 ... 185	120 ... 185
<b>Both clamping points connected</b> 	• Finely stranded without end sleeve	mm <sup>2</sup> 16 ... 120	120 ... 185	120 ... 185
	• Stranded	mm <sup>2</sup> 16 ... 120	120 ... 240	120 ... 240
<b>Both clamping points connected</b> 	• AWG cables, solid or stranded	AWG 6 ... 250 kcmil	250 ... 500 kcmil	250 ... 500 kcmil
	• Ribbon cable conductors (Number x Width x Thickness)	mm 3 x 9 x 0.8 ... 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
<b>Both clamping points connected</b> 	• Terminal screws - Tightening torque	Nm lb.in	M10 (hexagon socket, A/F4) 10 ... 12 90 ... 110	M12 (hexagon socket, A/F 5) 20 ... 22 180 ... 195
	Without box terminal/busbar connection		1)	2)
<b>Both clamping points connected</b> 	• Finely stranded with cable lug	mm <sup>2</sup> 16 ... 95	50 ... 240	50 ... 240
	• Stranded with cable lug	mm <sup>2</sup> 25 ... 120	70 ... 240	70 ... 240
<b>Both clamping points connected</b> 	• AWG cables, solid or stranded	AWG 4 ... 250 kcmil	2/0 ... 500 kcmil	2/0 ... 500 kcmil
	• Connecting bar (max. width)	mm 17	25	25
<b>Both clamping points connected</b> 	• Terminal screws - Tightening torque	Nm lb.in	M8 x 25 (A/F 13) 10 ... 14 (90 ... 110) lb.in	M10 x 30 (A/F 17) 14 ... 24 (124 ... 210 lb.in)
	<b>Auxiliary conductors</b>			
<b>Both clamping points connected</b> 	• Solid	mm <sup>2</sup> 2 x (0.5 ... 1.5) <sup>3)</sup> , 2 x (0.75 ... 2.5) <sup>3)</sup> according to IEC 60947; max. 2 x (0.75 ... 4) <sup>3)</sup>		
	• Finely stranded with end sleeve	mm <sup>2</sup> 2 x (0.5 ... 1.5) <sup>3)</sup> ; 2 x (0.75 ... 2.5) <sup>3)</sup>		
<b>Both clamping points connected</b> 	• AWG cables, solid or stranded	AWG 2 x (18 ... 14)		
	• Terminal screws - Tightening torque	Nm lb.in	M3 (PZ 2) 0.8 ... 1.2 7 ... 10.3	M3 (PZ 2)

1) When connecting cable lugs according to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm<sup>2</sup> to ensure phase spacing.

2) When connecting cable lugs according to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm<sup>2</sup> and more as well as DIN 46235 for conductor cross-sections of 185 mm<sup>2</sup> and more to keep the phase clearance.

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



## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

### Selection and ordering data

#### Size S3: AC or DC operation

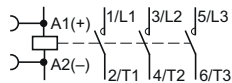


3RT14 46-1A...0

Size	Rated data AC-1, $T_U: 40\text{ °C}$ Operational current $I_e$	Rating of AC loads (p f. = 0.95) at				Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
		230 V	400 V	500 V	690 V	Version								
<b>Up to 690 V A</b>		kW	kW	kW	kW	NO	NC	V						
Order No.										Price per PU				

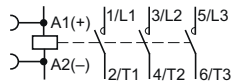
For screw fixing and snap-on mounting onto  
TH 35 and TH 75 standard mounting rail

#### AC operation



<b>S3</b>	<b>140</b>	53	92	115	159	--	--	AC 24, 50 Hz	B	<b>3RT14 46-1AB00</b>	1	1 unit	41B
								AC 110, 50 Hz	B	<b>3RT14 46-1AF00</b>	1	1 unit	41B
								AC 230, 50 Hz	▶	<b>3RT14 46-1AP00</b>	1	1 unit	41B

#### DC operation · DC solenoid system



<b>S3</b>	<b>140</b>	53	92	115	159	--	--	24 DC	▶	<b>3RT14 46-1BB40</b>	1	1 unit	41B
								220 DC	B	<b>3RT14 46-1BM40</b>	1	1 unit	41B

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts [see "3RT10 Contactors", Chapter 3.](#)

# Contactors for Special Applications

## SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Sizes S6 to S12: UC operation (AC/DC)

Integrated coil circuit (varistor)

Main conductors: Busbar connections

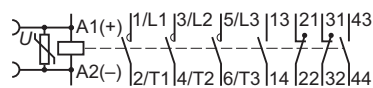
Auxiliary and control conductors: Screw terminals



3RT14 6.

Size	Rated data AC-1, $T_U: 40\text{ °C}$				Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Operational current $I_e$	Rating of AC loads (p f. = 0.95) at				Version						
Up to <b>690 V</b> <b>A</b>	A	230 V	400 V	500 V	690 V	NO	NC	V	Order No.	Price per PU		
		kW	kW	kW	kW							

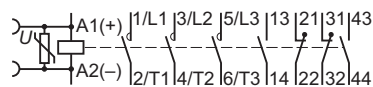
### Conventional operating mechanisms



<b>S6</b>	<b>275</b>	105	180	225	310	2	2	110 ... 127 220 ... 240	▶	<b>3RT14 56-6AF36</b>	1	1 unit	41B
										<b>3RT14 56-6AP36</b>	1	1 unit	41B
<b>S10</b>	<b>400</b>	151	263	329	454	2	2	110 ... 127 220 ... 240	▶	<b>3RT14 66-6AF36</b>	1	1 unit	41B
										<b>3RT14 66-6AP36</b>	1	1 unit	41B
<b>S12</b>	<b>690</b>	261	454	568	783	2	2	110 ... 127 220 ... 240	▶	<b>3RT14 76-6AF36</b>	1	1 unit	41B
										<b>3RT14 76-6AP36</b>	1	1 unit	41B

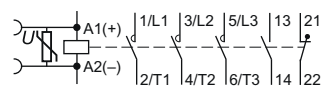
### Solid-state operating mechanism

#### For 24 V DC PLC output



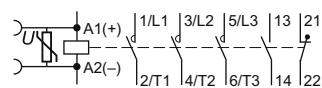
<b>S6</b>	<b>275</b>	105	180	225	310	2	2	96 ... 127 200 ... 277	▶	<b>3RT14 56-6NF36</b>	1	1 unit	41B
										<b>3RT14 56-6NP36</b>	1	1 unit	41B
<b>S10</b>	<b>400</b>	151	263	329	454	2	2	96 ... 127 200 ... 277	▶	<b>3RT14 66-6NF36</b>	1	1 unit	41B
										<b>3RT14 66-6NP36</b>	1	1 unit	41B
<b>S12</b>	<b>690</b>	261	454	568	783	2	2	96 ... 127 200 ... 277	▶	<b>3RT14 76-6NF36</b>	1	1 unit	41B
										<b>3RT14 76-6NP36</b>	1	1 unit	41B

#### For 24 V DC PLC relay output, with remaining lifetime indicator (RLT)



<b>S6</b>	<b>275</b>	105	180	225	310	1	1	96 ... 127 200 ... 277	▶	<b>3RT14 56-6PF35</b>	1	1 unit	41B
										<b>3RT14 56-6PP35</b>	1	1 unit	41B
<b>S10</b>	<b>400</b>	151	263	329	454	1	1	200 ... 277	▶	<b>3RT14 66-6PF35</b>	1	1 unit	41B
										<b>3RT14 66-6PP35</b>	1	1 unit	41B
<b>S12</b>	<b>690</b>	261	454	568	783	1	1	200 ... 277	▶	<b>3RT14 76-6PF35</b>	1	1 unit	41B
										<b>3RT14 76-6PP35</b>	1	1 unit	41B

#### With AS-Interface interface and remaining lifetime indicator (RLT)



<b>S6</b>	<b>275</b>	105	180	225	310	1	1	96 ... 127 200 ... 277	▶	<b>3RT14 56-6QF35</b>	1	1 unit	41B
										<b>3RT14 56-6QP35</b>	1	1 unit	41B
<b>S10</b>	<b>400</b>	151	263	329	454	1	1	200 ... 277	▶	<b>3RT14 66-6QF35</b>	1	1 unit	41B
										<b>3RT14 66-6QP35</b>	1	1 unit	41B
<b>S12</b>	<b>690</b>	261	454	568	783	1	1	200 ... 277	▶	<b>3RT14 76-6QF35</b>	1	1 unit	41B
										<b>3RT14 76-6QP35</b>	1	1 unit	41B

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

## SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

### Overview

#### Standards

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

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have 2 auxiliary contacts 1 NO and 1 NC integrated in the basic unit.

#### Mountable auxiliary contacts

##### Size S00

4 auxiliary contacts, including no more than 3 NC.

##### Size S0

4 additional auxiliary contacts.

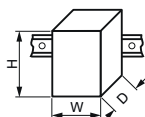
### Application

The contactors are suitable

- For switching of resistive loads
- For isolating systems with ungrounded or poorly grounded neutral conductors
- For system transfers when alternative AC power supplies are used
- For use as contactors which only carry current and do not have to switch in case of inductive loads – e.g. variable-speed operating mechanisms
- For switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

General descriptions of the sizes S00 and S0 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT20 contactors, 3-pole, 3 to 18.5 kW".

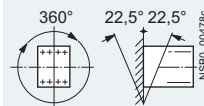
### Technical specifications

Type		3RT23 16	3RT23 17	3RT23 25	3RT23 26	3RT23 27
Size		<b>S00</b>		<b>S0</b>		
Dimensions (W x H x D) <sup>1)</sup>		mm	45 x 57.5 x 73 / 45 x 70 x 73	60 x 85 x 97 / 60 x 101.5 x 97		
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121	60 x 85 x 141 / 60 x 101.5 x 144		

#### General technical specifications

##### Permissible mounting positions

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



Upright mounting position



Special version required

<b>Mechanical endurance</b>	Operating cycles	30 million	10 million
<b>Electrical endurance at I<sub>e</sub>/AC-1</b>	Operating cycles	Approx. 0.5 million	
<b>Rated insulation voltage U<sub>i</sub></b> (pollution degree 3)	V	690	
<b>Permissible ambient temperature</b>	°C	-25 ... +60	
• During operation	°C	-55 ... +80	
• During storage			
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C			
• Device	A	IP20	IP20
• Connection range	A	--	IP00
<b>Touch protection</b> acc. to EN 50274		Finger-safe	

#### Short-circuit protection of contactors without overload relays

##### Main circuit

Fuse links, operational class gG:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
according to IEC 60947-4-1/EN 60947-4-1

- Type of coordination "1"<sup>1)</sup>
- Type of coordination "2"<sup>1)</sup>
- Weld-free

A	35	63
A	20	20
A	10	16

<sup>1)</sup> Dimensions for devices with screw terminals or spring-type terminals.  
Size S0 for AC operation. DC operation: Depth +10 mm

# Contactors for Special Applications

## SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Type		3RT23 16	3RT23 17	3RT23 25	3RT23 26	3RT23 27
Size		S00		S0		
<b>Control circuit</b>						
<b>Coil operating range</b>						
• AC operation	At 50 Hz	0.8 ... 1.1 x $U_s$		--		
	At 60 Hz	0.85 ... 1.1 x $U_s$		--		
• DC operation	At 50 °C	0.8 ... 1.1 x $U_s$		--		
	At 60 °C	0.85 ... 1.1 x $U_s$		--		
• AC/DC operation		--		0.8 ... 1.1 x $U_s$		
<b>Power consumption of the solenoid coils</b> (when coil is cold and $1.0 \times U_s$ )						
• AC operation, 50 Hz, standard version						
- Closing	VA	--		77		
- P.f.		--		0.82		
- Closed	VA	--		9.8		
- P.f.		--		0.25		
• AC operation, 50/60 Hz, standard version						
- Closing	VA	27/24.3	37/33	81/79		
- P.f.		0.8/0.75	0.8/0.75	0.72/0.74		
- Closed	VA	4.2/3.3	5.7/4.4	10.5/8.5		
- P.f.		0.25/0.25	0.25/0.25	0.25/0.28		
• AC operation, 60 Hz, USA, Canada						
- Closing	VA	31.7	43	87		
- P.f.		0.77	0.77	0.76		
- Closed	VA	4.8	6.5	9.4		
- P.f.		0.25	0.25	0.28		
• DC operation (closing = closed)	W	4		5.9		
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>1)</sup></b> Total break time = Opening delay + Arcing time						
• AC operation						
- Closing delay	ms	8 ... 35	8 ... 33	9 ... 38	8 ... 40	
- Opening delay	ms	3.5 ... 14	4 ... 15	4 ... 16	4 ... 16	
• DC operation						
- Closing delay	ms	30 ... 100		50 ... 170		
- Opening delay	ms	7 ... 13		15 ... 17.5		
• Arcing time	ms	10 ... 15		10		
<b>Main circuit</b>						
<b>AC capacity</b>						
<b>Utilization category AC-1, switching resistive loads</b>						
• Rated operational currents $I_e$	At 40 °C, up to 690 V	A	18	22	35	40
	At 60 °C, up to 690 V	A	16	20	30	35
• Rated power for AC loads	At 230 V	kW	6.5	7.5	11	13
P.f. = 0.95 (at 40 °C)	400 V	kW	12	14.5	23	26
• Minimum conductor cross-section	At 40 °C	mm <sup>2</sup>	2.5	2.5	10	10
for loads with $I_e$	At 60 °C	mm <sup>2</sup>	2.5	2.5	10	10
<b>Utilization categories AC-2 and AC-3</b>						
• Rated operational currents $I_e$	At 60 °C, up to 400 V	A	9	12	15.5	17
• Rated power for	At 230 V	kW	3	3	4	4
slipping or squirrel-cage motors	400 V	kW	4	5.5	7.5	9
at 50 and 60 Hz						

<sup>1)</sup> With size S00, DC operation: Operating times for 0.85 ... 1.1 x  $U_s$ .

## SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

### Selection and ordering data

#### AC operation

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



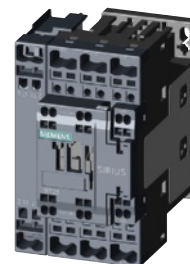
3RT23 1.-1A.00



3RT23 1.-2A.00



3RT23 2.-1A.00

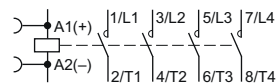


3RT23 2.-2A.00

Rated data AC-1, $T_U$ : 40/60 °C	Auxiliary contacts	Rated control supply voltage $U_s$	DT	Screw terminals		Spring-type terminals	
				Order No.	Price per PU	Order No.	Price per PU
Operational current $I_e$	Ident. No.	Version					
Ratings of AC loads (p.f. = 0.95) at 50 Hz and							
<b>400 V</b>							
<b>A kW</b>	NO	NC	V AC				

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

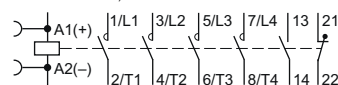
#### Size S00<sup>1)</sup>



18 / 16	<b>12 / 11</b>	--	--	--	24, 50/60 Hz	B	<b>3RT23 16-1AB00</b>	B	<b>3RT23 16-2AB00</b>
					110, 50/60 Hz	B	<b>3RT23 16-1AF00</b>	B	<b>3RT23 16-2AF00</b>
					230, 50/60 Hz	B	<b>3RT23 16-1AP00</b>	A	<b>3RT23 16-2AP00</b>
22 / 20	<b>14.5 / 13</b>	--	--	--	24, 50/60 Hz	B	<b>3RT23 17-1AB00</b>	B	<b>3RT23 17-2AB00</b>
					110, 50/60 Hz	B	<b>3RT23 17-1AF00</b>	B	<b>3RT23 17-2AF00</b>
					230, 50/60 Hz	A	<b>3RT23 17-1AP00</b>	A	<b>3RT23 17-2AP00</b>

#### Size S0

1 NO + 1 NC, Ident. No. 11



35 / 30 <sup>2)</sup>	<b>22 / 20</b>	11	1	1	24, 50 Hz	B	<b>3RT23 25-1AB00</b>	B	<b>3RT23 25-2AB00</b>
					110, 50 Hz	B	<b>3RT23 25-1AF00</b>	B	<b>3RT23 25-2AF00</b>
					230, 50 Hz	A	<b>3RT23 25-1AP00</b>	A	<b>3RT23 25-2AP00</b>
40 / 35 <sup>2)</sup>	<b>26 / 23</b>	11	1	1	24, 50 Hz	B	<b>3RT23 26-1AB00</b>	B	<b>3RT23 26-2AB00</b>
					110, 50 Hz	B	<b>3RT23 26-1AF00</b>	B	<b>3RT23 26-2AF00</b>
					230, 50 Hz	A	<b>3RT23 26-1AP00</b>	A	<b>3RT23 26-2AP00</b>
50 <sup>2)</sup>	<b>33</b>	11	1	1	24, 50 Hz	B	<b>3RT23 27-1AB00</b>	B	<b>3RT23 27-2AB00</b>
					110, 50 Hz	B	<b>3RT23 27-1AF00</b>	B	<b>3RT23 27-2AF00</b>
					230, 50 Hz	A	<b>3RT23 27-1AP00</b>	A	<b>3RT23 27-2AP00</b>

<sup>1)</sup> For size S00: Coil operating range at 50 Hz: 0.8 ... 1.1 x  $U_s$ , at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

<sup>2)</sup> Minimum conductor cross-section 10 mm<sup>2</sup>.

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

# Contactors for Special Applications

## SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

### DC operation - DC solenoid system

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



3RT23 1.-1B.40



3RT23 1.-2B.40



3RT23 2.-1B.40



3RT23 2.-2B.40

Rated data AC-1,  
 $T_U$ : 40/60 °C

Operational current  $I_e$   
 Ratings of AC loads  
 (p.f. = 0.95)  
 at 50 Hz and

**400 V**

A **kW**

Auxiliary contacts

Ident. No. Version



NO NC V DC

Rated control supply voltage  $U_s$

DT **Screw terminals**



Order No.

Price per PU

DT **Spring-type terminals**

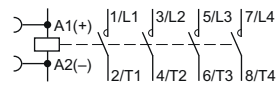


Order No.

Price per PU

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

### Size S00



18 / 16 **12 / 11**

--

--

--

24

220

A

**3RT23 16-1BB40**

**3RT23 16-1BM40**

A

**3RT23 16-2BB40**

**3RT23 16-2BM40**

22 / 20 **14.5 / 13**

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--

--

24

220

A

**3RT23 17-1BB40**

**3RT23 17-1BM40**

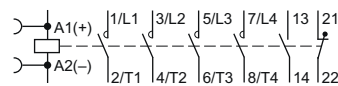
A

**3RT23 17-2BB40**

**3RT23 17-2BM40**

### Size S0

1 NO + 1 NC, Ident. No. **11**



35 / 30<sup>1)</sup> **22 / 20**

**11**

1

1

24

220

A

**3RT23 25-1BB40**

**3RT23 25-1BM40**

A

**3RT23 25-2BB40**

**3RT23 25-2BM40**

40 / 35<sup>1)</sup> **26 / 23**

**11**

1

1

24

220

A

**3RT23 26-1BB40**

**3RT23 26-1BM40**

A

**3RT23 26-2BB40**

**3RT23 26-2BM40**

50<sup>1)</sup> **33**

**11**

1

1

24

220

A

**3RT23 27-1BB40**

**3RT23 27-1BM40**

A

**3RT23 27-2BB40**

**3RT23 27-2BM40**

<sup>1)</sup> Minimum conductor cross-section 10 mm<sup>2</sup>.

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

## SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

### Overview

#### Standards

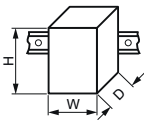
IEC 60947-1, EN 60947-1,  
IEC 60947-4-1, EN 60947-4-1,  
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole 3RT10 contactors can also be used for the 4-pole versions.

The contactors are suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

### Technical specifications

Type		3RT13 36	3RT13 44	3RT13 46
Size		<b>S2</b>	<b>S3</b>	<b>S3</b>
Dimensions (W x H x D)		mm	mm	mm
• With mounted auxiliary switch block		61 x 85 x 86	73 x 112 x 110	93 x 146 x 134
		61 x 85 x 135	73 x 112 x 160	93 x 146 x 183

#### General technical specifications

##### Permissible mounting position<sup>1)</sup>

##### Mechanical endurance

Operating cycles 10 million

##### Electrical endurance at $I_e/AC-1$

Operating cycles Approx. 0.5 million

##### Rated insulation voltage $U_i$ (pollution degree 3)

V 690

##### Permissible ambient temperature

- During operation
- During storage

°C -25 ... +60  
°C -55 ... +80

##### Degree of protection

acc. to IEC 60947-1, Appendix C

Device  
Connection range

IP20  
IP00

##### Touch protection acc. to EN 50274

Finger-safe

#### Short-circuit protection of contactors without overload relays

##### Main circuit

Fuse links, operational class gG:  
LV HRC, 3NA; DIAZED, 5SB; NEOZED, 5SE  
according to IEC 60947-4-1/EN 60947-4-1

- Type of coordination "1"<sup>1)</sup>
- Type of coordination "2"<sup>1)</sup>
- Weld-free

A	160	250	250
A	63	125	160
A	50	63	100

##### Control circuit

##### Coil operating range (AC/DC)

0.8 ... 1.1 x  $U_s$

##### Power consumption of the solenoid coils (when coil is cold and 1.0 x $U_s$ )

• AC operation, 50 Hz	- Closing	VA	145	270
	- P.f.	VA <td>0.79</td> <td>0.68</td>	0.79	0.68
	- Closed	VA <td>12.5</td> <td>22</td>	12.5	22
	- P.f.	VA <td>0.36</td> <td>0.27</td>	0.36	0.27
• AC operation, 50/60 Hz	- Closing	VA	170/155	298/274
	- P.f.		0.76/0.72	0.72/0.62
	- Closed	VA	15/11.8	27/20
	- P.f.		0.35/0.38	0.29/0.31
• DC operation	- Closing	W	13.3	15
	= Closed			

##### Operating times for 0.8 ... 1.1 x $U_s$ <sup>2)</sup>

Total break time = Opening delay + Arcing time

• DC operation	- Closing delay	ms	50 ... 110	110 ... 200
	- Opening delay <th>ms</th> <td>15 ... 30</td> <td>14 ... 20</td>	ms	15 ... 30	14 ... 20
• AC operation	- Closing delay <th>ms</th> <td>4 ... 35</td> <td>20 ... 50</td>	ms	4 ... 35	20 ... 50
	- Opening delay <th>ms</th> <td>10 ... 30</td> <td>10 ... 25</td>	ms	10 ... 30	10 ... 25
• Arcing time		ms	10 ... 15	10 ... 15

#### Main circuit

##### AC capacity

##### Utilization category AC-1, switching resistive loads

• Rated operational currents $I_e$	At 40 °C, up to 690 V	A	60	110	140
	At 60 °C, up to 690 V	A	55	100	120
• Rated power for AC loads	At 230 V	kW	23	42	53
	400 V	kW	39	72	92
• Minimum conductor cross-section	At 40 °C	mm <sup>2</sup>	16	50	50
for loads with $I_e$	At 60 °C	mm <sup>2</sup>	16	50	50

##### Utilization categories AC-2 and AC-3

• Rated operational currents $I_e$	At 60 °C, up to 400 V	A	26	--	--
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	5.5	--	--
	400 V	kW	11	--	--

<sup>1)</sup> In accordance with the corresponding 3-pole 3RT1 contactors.

<sup>2)</sup> With size S00, DC operation: Operating times for 0.85 ... 1.1 x  $U_s$

# Contactors for Special Applications

## SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

### Selection and ordering data

#### AC operation, 4 NO contacts

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

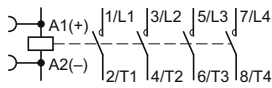


3RT13 3.-1A.00

Rated data AC-1, $T_U$ : 40/60 °C	Rated control supply voltage $U_s$	DT	Screw terminals	DT	Spring-type terminals
Operational current $I_e$	Ratings of AC loads (p.f. = 0.95) at 50 Hz and <b>400 V</b>		Order No.	Price per PU	Order No.
A	<b>kW</b>	V AC			Price per PU

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

#### Size S2



60 / 55

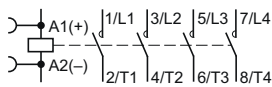
**39 / 36**

24, 50 Hz  
 110, 50 Hz  
 230, 50 Hz

B **3RT13 36-1AB00**  
 B **3RT13 36-1AF00**  
 ▶ **3RT13 36-1AP00**

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 ---  
 ---

#### Size S3



110 / 100

**72 / 66**

24, 50 Hz  
 110, 50 Hz  
 230, 50 Hz

B **3RT13 44-1AB00**  
 B **3RT13 44-1AF00**  
 ▶ **3RT13 44-1AP00**

---  
 ---  
 ---

140 / 120

**92 / 79**

24, 50 Hz  
 110, 50 Hz  
 230, 50 Hz

B **3RT13 46-1AB00**  
 B **3RT13 46-1AF00**  
 ▶ **3RT13 46-1AP00**

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 ---  
 ---

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT10 Contactors", [Chapter 3](#).



# Contactors for Special Applications

**SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A**

**DC operation - DC solenoid system, 4 NO contacts**

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



3RT13 36-1...0

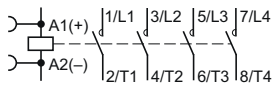


3RT13 4-1...0

Rated data AC-1, $T_U$ : 40/60 °C	Rated control supply voltage $U_s$	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>
Operational current $I_e$	Ratings of AC loads (p.f. = 0.95) at 50 Hz and <b>400 V</b>		Order No.	Price per PU	Order No.
A	<b>kW</b>	V DC			Price per PU

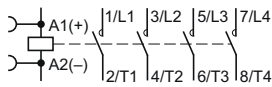
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

**Size S2**



60 / 55	<b>39 / 36</b>	24	▶	<b>3RT13 36-1BB40</b>	---
		220	B	<b>3RT13 36-1BM40</b>	---

**Size S3**



110 / 100	<b>72 / 66</b>	24	B	<b>3RT13 44-1BB40</b>	---
		220	B	<b>3RT13 44-1BM40</b>	---
140 / 120	<b>92 / 79</b>	24	B	<b>3RT13 46-1BB40</b>	---
		220	B	<b>3RT13 46-1BM40</b>	---

Other voltages [according to page 4/38](#) on request.  
 Accessories and spare parts [see "3RT10 Contactors", Chapter 3.](#)



# Contactors for Special Applications

## 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

### Overview

#### Standards

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

The contactors also comply with the requirements of the standards NFC 63-110 and NFC 20-040.

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The contactors are used mainly for resistive loads (AC-1 and p.f. > 0.95). They are also suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

#### Control circuits

The solenoid coils of the 3TK10 to 3TK13 contactors (operating currents up to 350 A) are designed as plug-in coils.

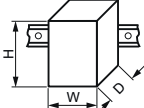
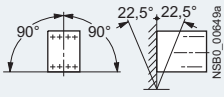
#### Surge suppression

The solenoid coils of the 3TK1 contactors can be connected at a later stage with RC circuits (see "Accessories").

### Technical specifications

Contactors	Type	3TK1
<b>Rated data of the auxiliary contacts</b>		according to IEC 60947-5-1
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Conventional thermal current <math>I_{th}</math> = Rated operational current <math>I_e</math>/AC-12</b>	A	10
<b>AC load</b>		
<b>Rated operational current <math>I_e</math>/AC-15/AC-14</b>		
• For rated operational voltage $U_e$		
	24 V A	6
	110 V A	6
	125 V A	6
	220 V A	6
	230 V A	6
	380 V A	4
	400 V A	4
	500 V A	1
	660 V A	1
	690 V A	1
<b>DC load</b>		
<b>Rated operational current <math>I_e</math>/DC-12</b>		
• For rated operational voltage $U_e$		
	24 V A	--
	60 V A	--
	110 V A	--
	125 V A	--
	220 V A	--
	440 V A	--
	600 V A	--
<b>Rated operational current <math>I_e</math>/DC-13</b>		
• For rated operational voltage $U_e$		
	24 V A	6
	60 V A	6
	110 V A	1.8
	125 V A	--
	220 V A	0.6
	440 V A	--
	600 V A	--
<b>Ⓢ and Ⓣ rated data of the auxiliary contacts</b>		
Rated voltage	V AC, max.	600
Switching capacity		A 600, P 600

## 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Type		3TK10	3TK11	3TK12	3TK13	3TK14	3TK15	3TK17	
Dimensions (W x H x D)		165 x 156 x 155	165 x 172 x 155	201 x 198 x 172		244 x 273 x 226			
<b>General technical specifications</b>									
<b>Permissible mounting positions</b>									
Upright mounting position also permissible									
									
<b>Mechanical endurance</b>	Operating cycles	Mio.	10			5			
<b>Electrical endurance</b> for $I_e/AC-1$ at 55 °C	Operating cycles	Mio.	0.8	0.8	0.8	0.4	0.65	0.5	0.4
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)		V	1000						
<b>Ambient temperature</b>		°C	-25 ... +55						
• During operation		°C	-50 ... +70						
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C			IP00						
<b>Touch protection</b> acc. to EN 50274			Finger-safe with cover						
<b>Shock resistance</b> , sine pulse		g/ms	10/15						
<b>Short-circuit protection</b>									
<b>Main circuit</b>									
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1									
• Type of coordination "1"	A		250		355		800	1000	
• Type of coordination "2"	A		250		315		630	850	
<b>Auxiliary circuit</b>		A	10						
Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1									
<b>Control circuits</b>									
<b>Coil operating range</b>			0.85 ... 1.1 x $U_s$						
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )									
• 50 Hz									
- Closing	VA		820		1100		3500		
- P.f.			0.4		0.35		0.26		
- Closed	VA		44		52		125		
- P.f.			0.34		0.35		0.4		
• 60 Hz									
- Closing	VA		990		1200		4000		
- P.f.			0.35		0.31		0.22		
- Closed	VA		52		65		140		
- P.f.			0.35		0.34		0.43		
<b>Operating times for 1.0 x <math>U_s</math></b>									
• Closing delay	ms		20 ... 40				30 ... 60		
• Opening delay	ms		7 ... 15				10 ... 20		
• Arcing time	ms		10				10		
<b>Main circuit</b>									
<b>AC capacity</b>									
<b>Utilization category AC-1, switching resistive loads</b>									
• Rated operational currents $I_e$		At 40 °C up to 690 V A	200	250	300	350	550	800	1000
		At 50 °C up to 690 V A	180	230	270	310	470	650	850
• Rated power for AC loads with p.f. = 0.95 (at 40°C)		At 230 V kW	76	95	114	132	208	303	378
		400 V kW	132	165	197	230	362	527	658
		500 V kW	165	206	247	288	452	658	828
		690 V kW	227	284	341	397	624	908	1135
• Minimum conductor cross-section for load with $I_e$		At 40 °C mm <sup>2</sup>	95	150	185	240	185	240	300
<b>Utilization categories AC-2 and AC-3</b>									
• Rated operational currents $I_e$		Up to 400 V A	120	145	210	210	400	550	700
• Rated power of squirrel-cage or slipring motors at 50 Hz and 60 Hz		At 230 V kW	30	45	75	75	110	160	220
		400 V kW	55	75	110	110	200	280	370
• Short-time current at 40° C in cold state up to 10 s		A	900	1200	1600	1600	5300	5300	6400
<b>Switching frequency<sup>1)</sup></b>									
<b>Switching frequency z</b> in operating cycles/hour									
• Contactors without overload relays		No-load switching frequency	1/h	3600					
		AC-1	1/h	300					
		AC-3	1/h	300					

<sup>1)</sup> Dependence of the switching frequency  $z'$  on the operational current  $I'$  and operational voltage  $U'$ :  $z' = z \cdot (I_e/I') \cdot (400 V/U')^{1.5} \cdot 1/h$ .

# Contactors for Special Applications

## 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Contactors	Type	3TK10	3TK11	3TK12	3TK13	3TK14	3TK15	3TK17
<b>Conductor cross-sections</b>								
<b>Main conductors:</b>		⊕ <b>Screw terminals</b>						
• Stranded with cable lug	mm <sup>2</sup>	2 x 70	2 x 120	2 x 120		2 x 300		
• AWG cables, solid or stranded	MCM	2 x 00 AWG	2 x 250	2 x 250		2 x 600		
• Connecting bar (max. width)	mm	30	30	33		55		
• Terminal screw		M6	M10	M10		M10		
- Tightening torque	Nm	5	16	16		16		
	lb.in	42	135	135		135		
<b>Auxiliary conductors:</b>								
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)						
• AWG cables, solid or stranded	MCM	20 ... 14						
- Tightening torque	Nm	1.2 (10 lb.in)						

### Selection and ordering data

#### Screw terminals Screw fixing



3TK13

Rated data AC-1		Rating of AC loads (p f. = 0.95) at				Auxiliary contacts		Rated control supply voltage $U_s$	DT	⊕ <b>Screw terminals</b>	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ up to 690 V (at 40 °C)	A	230 V	400 V	690 V	1000 V	NO	NC	V AC		Order No.	Price per PU		
<b>AC operation</b>													
200		75	130	225	205	2	2	220 ... 230, 50 Hz 230 ... 240, 50 Hz 110/120, 50/60 Hz 24, 50 Hz	B D D D	<b>3TK10 42-0AP0</b> <b>3TK10 42-0AU0</b> <b>3TK10 42-0AF0</b> <b>3TK10 42-0AB0</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B
250		90	165	280	200	2	2	220 ... 230, 50 Hz 230 ... 240, 50 Hz 110/120, 50/60 Hz 24, 50 Hz	B D D D	<b>3TK11 42-0AP0</b> <b>3TK11 42-0AU0</b> <b>3TK11 42-0AF0</b> <b>3TK11 42-0AB0</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B
300		110	195	340	325	2	2	220 ... 230, 50 Hz 230 ... 240, 50 Hz 110/120, 50/60 Hz 24, 50 Hz	B D D D	<b>3TK12 42-0AP0</b> <b>3TK12 42-0AU0</b> <b>3TK12 42-0AF0</b> <b>3TK12 42-0AB0</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B
350		130	230	395	370	2	2	220 ... 230, 50 Hz 230 ... 240, 50 Hz 110/120, 50/60 Hz 24, 50 Hz	B D D D	<b>3TK13 42-0AP0</b> <b>3TK13 42-0AU0</b> <b>3TK13 42-0AF0</b> <b>3TK13 42-0AB0</b>	1 1 1 1	1 unit 1 unit 1 unit 1 unit	41B 41B 41B 41B
550		205	360	620	510	2	2	220 ... 230, 50 Hz <sup>1)</sup> 230 ... 240, 50 Hz 110/120, 50/60 Hz	B D D	<b>3TK14 42-0AP0</b> <b>3TK14 42-0AU0</b> <b>3TK14 42-0AF0</b>	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B
800		300	525	905	575	2	2	220 ... 230, 50 Hz <sup>1)</sup> 230 ... 240, 50 Hz 110/120, 50/60 Hz	B D D	<b>3TK15 42-0AP0</b> <b>3TK15 42-0AU0</b> <b>3TK15 42-0AF0</b>	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B
1000		375	655	1135	--	2	2	220 ... 230, 50 Hz <sup>1)</sup> 230 ... 240, 50 Hz 110/120, 50/60 Hz	B D D	<b>3TK17 42-0AP0</b> <b>3TK17 42-0AU0</b> <b>3TK17 42-0AF0</b>	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B

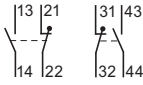
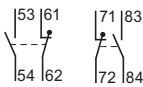
<sup>1)</sup> At 60 Hz: 240 V.

## 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

### Accessories

For contactors	Version	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	V AC							
<b>Surge suppressors</b>								
3TK10 ... 3TK13	RC elements	24 ... 48 110 ... 415	D B	<b>3TK19 30-0A</b> <b>3TK19 30-0B</b>		1 1	1 unit 1 unit	41B 41B
3TK14 ... 3TK17		48 ... 110 220 ... 600	C B	<b>3TK19 34-0C</b> <b>3TK19 34-0D</b>		1 1	1 unit 1 unit	41B 41B
<b>Terminal covers</b>								
3TK10, 3TK11	For mounting onto contactors		B	<b>3TK19 40-0A</b>		1	2 units	41B
3TK12, 3TK13			B	<b>3TK19 42-0A</b>		1	2 units	41B
3TK14, 3TK15			B	<b>3TK19 44-0A</b>		1	2 units	41B
3TK17			B	<b>3TK19 46-0A</b>		1	2 units	41B
<b>Mechanical interlocking of two identical contactors</b>								
3TK10, 3TK11	Locking devices, auxiliary contacts 2 NC		B	<b>3TK19 20-0A</b>		1	1 unit	41B
3TK12, 3TK13			B	<b>3TK19 22-0A</b>		1	1 unit	41B
3TK14 ... 3TK17	Mechanical interlock including mounting plate		B	<b>3TK19 24-0A</b>		1	1 unit	41B

### Spare parts

For contactors	Version	Auxiliary contacts Connections	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type								
<b>Auxiliary switch blocks</b>								
3TK1	For mounting on the side	Left						
	1. block 1 NO + 1 NC		B	<b>3TK19 10-3A</b>		1	1 unit	41B
	2. block 1 NO + 1 NC		B	<b>3TK19 10-3B</b>		1	1 unit	41B

### Contacts with fixing parts

3TK10	4 moving and 8 fixed contacts	D	<b>3TK19 60-0A</b>	1	1 unit	41B
3TK11		D	<b>3TK19 61-0A</b>	1	1 unit	41B
3TK12		D	<b>3TK19 62-0A</b>	1	1 unit	41B
3TK13		D	<b>3TK19 63-0A</b>	1	1 unit	41B
3TK14		D	<b>3TK19 64-0A</b>	1	1 unit	41B
3TK15		D	<b>3TK19 65-0A</b>	1	1 unit	41B
3TK17		D	<b>3TK19 67-0A</b>	1	1 unit	41B

### Arc chutes

3TK10	1 arc chute, 4-pole	D	<b>3TK19 50-0A</b>	1	1 unit	41B
3TK11		D	<b>3TK19 51-0A</b>	1	1 unit	41B
3TK12		D	<b>3TK19 52-0A</b>	1	1 unit	41B
3TK13		D	<b>3TK19 53-0A</b>	1	1 unit	41B
3TK14		D	<b>3TK19 54-0A</b>	1	1 unit	41B
3TK15		D	<b>3TK19 55-0A</b>	1	1 unit	41B
3TK17		D	<b>3TK19 57-0A</b>	1	1 unit	41B

### Solenoid coils

#### AC operation<sup>1)</sup>

3TK10, 3TK11	<b>3TK19 70-0A..</b>
3TK12, 3TK13	<b>3TK19 72-0A..</b>
3TK14 ... 3TK17	<b>3TK19 74-0A..</b>

<sup>1)</sup> Rated control supply voltages: The 10th and 11th digit of the Order No. must be supplemented according to the table.

For contactor type	3TK10/11/12/13	3TK14/15/17
Solenoid coil type	<b>3TK19 70-0A..</b> <b>3TK19 72-0A..</b>	<b>3TK19 74-0A..</b>
Rated control supply voltage $U_s$		

#### AC operation

50 Hz	60 Hz		
24 V	--	B0	--
110 V	120 V	F0	F0
220 ... 230 V	240 V	P0	P0
230 ... 240 V	--	U0	U0

# Contactors for Special Applications

## 3TK20 contactors, 4-pole, 4 kW

### Overview

#### Standards

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

The contactors are suitable for use in any climate. The contactors with screw terminals are finger-safe according to EN 50274.

#### Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

The contactors 3TK2 with 6.3 mm x 0.8 mm flat connectors are coded and can be used in the plug-in base with solder pin connections for printed circuit boards (see "Accessories").

### Application

#### Contactors with plug-in terminals

The main area of application for the 3TK2 contactors with flat connectors is in household equipment. These contactors are also suitable for simple electric controllers.

No auxiliary switch blocks can be retrofitted.

### Technical specifications

#### 3TK20

##### Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current  $I_e$  complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200000 operating cycles. If a shorter endurance is sufficient, the rated operational current  $I_e/AC-4$  can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

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

Characters in the equation:

$X$  = Contact endurance for mixed operation in operating cycles

$A$  = Contact endurance for normal operation ( $I_a = I_e$ ) in operating cycles

$B$  = Contact endurance for inching ( $I_a = \text{multiple of } I_e$ ) in operating cycles

$C$  = Inching operations as a percentage of total switching operations

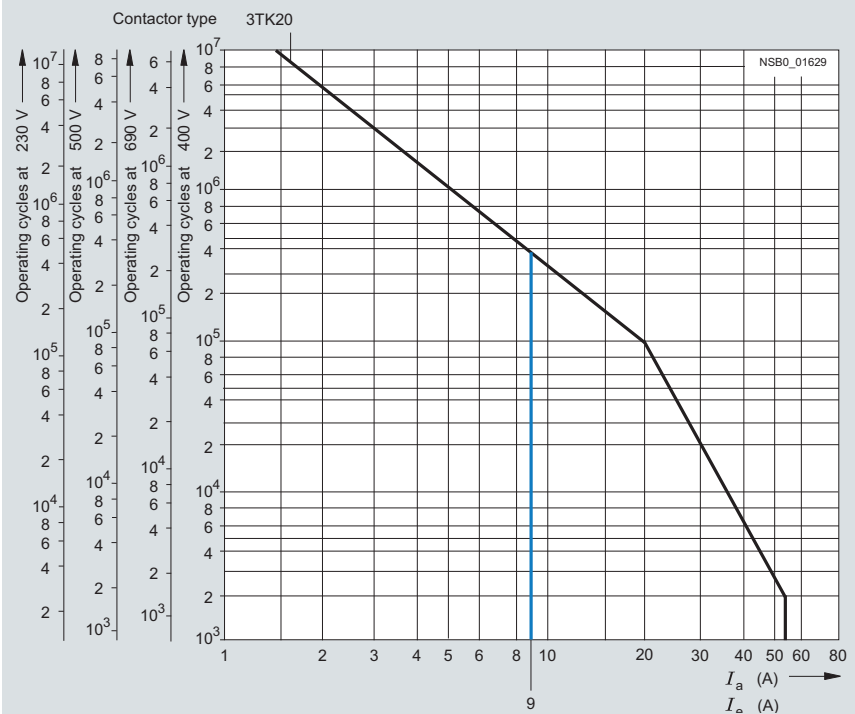
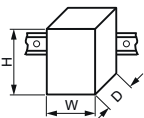


Diagram legend:

$P_N$  = Rated power for squirrel-cage motors at 400 V

$I_a$  = Breaking current

$I_e$  = Rated operational current

Type		<b>3TK20</b>
Size		<b>00</b>
Dimensions (W x H x D)		mm 45 x 48 x 63
<b>General technical specifications</b>		
<b>Permissible mounting positions</b>	AC and DC operation	Any
<b>Mechanical endurance</b>		
<ul style="list-style-type: none"> <li>AC operation</li> <li>DC operation</li> <li>Auxiliary switch blocks</li> </ul>	Operating cycles	10 million 30 million 10 million
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)		
<ul style="list-style-type: none"> <li>Screw terminals</li> <li>Flat connectors 6.3 mm x 0.8 mm</li> <li>Solder pin connections</li> </ul>	V	690 500 500
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (pollution degree 3)		
<ul style="list-style-type: none"> <li>Screw terminals</li> <li>Flat connectors 6.3 mm x 0.8 mm</li> <li>Solder pin connections</li> </ul>	kV	6 6 6
<b>Protective separation</b> between coil and main contacts according to IEC 60947-1, Appendix N	V	Up to 300
<b>Permissible ambient temperature<sup>1)</sup></b>		
<ul style="list-style-type: none"> <li>During operation</li> <li>During storage</li> </ul>	°C	-25 ... +55 -55 ... +80
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00 open IP20 for screw terminals IP40 coil assembly
<b>Touch protection</b> acc. to EN 50274		Finger-safe for screw terminals
<b>Shock resistance</b>		
<ul style="list-style-type: none"> <li>Rectangular pulse <ul style="list-style-type: none"> <li>AC operation</li> <li>DC operation</li> </ul> </li> <li>Sine pulse <ul style="list-style-type: none"> <li>AC operation</li> <li>DC operation</li> </ul> </li> </ul>	g/ms g/ms g/ms g/ms	8.3/5 and 5.2/10 11.3/5 and 9.2/10 13/5 and 8/10 17.4/5 and 12.9/10
<b>Conductor cross-sections</b>		2)
<b>Short-circuit protection for contactors without overload relays</b>		
<b>Main circuit<sup>3)</sup></b>		
<ul style="list-style-type: none"> <li>Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1 <ul style="list-style-type: none"> <li>Type of coordination "1"</li> <li>Type of coordination "2"<sup>4)</sup></li> <li>Weld-free</li> </ul> </li> <li>Miniature circuit breaker with C characteristic</li> </ul>	A A A A	25 10 10 10
<b>Auxiliary circuit</b>		
<ul style="list-style-type: none"> <li>Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current <math>I_k = 1</math> kA acc. to IEC 60947-5-1</li> </ul>	A	6

1) Applies to 50/60 Hz coil:  
At 50 Hz,  $1.1 \times U_N$ , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) See page 4/26.

3) According to excerpt from IEC 60947-4-1  
Type of coordination "1":  
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay can be replaced if necessary.  
Type of coordination "2":  
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.

4) A short-circuit current of  $I_q \leq 6$  kA applies to type of coordination "2".

# Contactors for Special Applications

## 3TK20 contactors, 4-pole, 4 kW

Contactors	Type	3TK20
	Size	00
<b>Control circuits</b>		
<b>Coil operating range<sup>1)</sup></b>		0.8 ... 1.1 x $U_s$
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )		
<b>Standard version:</b>		
• AC operation, 50 Hz		
- Closing	VA	15
- P.f.		0.41
- Closed	VA	6.8
- P.f.		0.42
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.36
- Closed	VA	6.1
- P.f.		0.46
• AC operation, 50/60 Hz <sup>1)</sup>		
- Closing	VA	16.5/13.2
- P.f.		0.43/0.38
- Closed	VA	8.0/5.4
- P.f.		0.48/0.42
<b>For USA and Canada:</b>		
• AC operation, 50 Hz		
- Closing	VA	14.6
- P.f.		0.38
- Closed	VA	6.5
- P.f.		0.40
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.30
- Closed	VA	6.0
- P.f.		0.44
• DC operation (closing = closed)	W	3
<b>Permissible residual current of the electronic circuit<sup>2)</sup></b> (with 0 signal)		
• AC operation	mA	$\leq 3 \times (230 V/U_s)$
• DC operation	mA	$\leq 1 \times (230 V/U_s)$
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>3)</sup></b>		
Total break time = Opening delay + Arcing time		
Values apply with coil in cold state and at operating temperature for operating range		
• AC operation		
- Closing delay	ms	5 ... 19
- Opening delay	ms	2 ... 22
- Dead interval		To use the 3TK20 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	16 ... 65
- Opening delay	ms	2 ... 5
• Arcing time	ms	10 ... 15
<b>Operating times for 1.0 x <math>U_s</math><sup>3)</sup></b>		
• AC operation		
- Closing delay	ms	5 ... 18
- Opening delay	ms	3 ... 21
- Dead interval		To use the 3TK20 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	19 ... 31
- Opening delay	ms	3 ... 4
• Arcing time	ms	10 ... 15

<sup>1)</sup> Applies to 50/60 Hz coil:  
At 50 Hz, 1.1 x  $U_s$ , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

<sup>2)</sup> The 3TX4 490-1J additional load module is recommended for higher residual currents (see "Accessories for 3TF2 Contactors", Chapter 3).

<sup>3)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).



Contactors	Type	<b>3TK20 ..-0...</b>	<b>3TK20 ..-3..., 3TK20 ..-6..., 3TK20 ..-7...</b>
	Size	<b>00</b>	<b>00</b>

## Main circuit

### AC capacity

#### Utilization category AC-1, switching resistive loads

• Rated operational current $I_e$ (at 40 °C)	Up to 400/380 V	A	18	18
	690/660 V	A	18	--
• Rated operational current $I_e$ (at 55 °C)	400/380 V	A	16	16
	690/660 V	A	16	--
• Rated power for AC loads with p.f. = 1	At 230/220 V	kW	6.0	6.0
	400/380 V	kW	10	10
	500 V	kW	13	13
	690/660 V	kW	17	--
• Minimum conductor cross-section for loads with $I_e$		mm <sup>2</sup>	2.5	2.5

#### Utilization categories AC-2 and AC-3

• Rated operational current $I_e$	Up to 220 V	A	9.0	9.0
	230 V	A	9.0	9.0
	380 V	A	9.0	9.0
	400 V	A	8.4	8.4
	500 V	A	6.5	6.5
	660 V	A	5.2	--
	690 V	A	5.2	--
	• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz	At 110 V	kW	1.2
115 V		kW	1.2	1.2
120 V		kW	1.3	1.3
127 V		kW	1.4	1.4
200 V		kW	2.2	2.2
220 V		kW	2.4	2.4
230 V		kW	2.5	2.5
240 V		kW	2.6	2.6
380 V		kW	4.0	4.0
400 V		kW	4.0	4.0
415 V		kW	4.0	4.0
440 V		kW	4.0	4.0
460 V		kW	4.0	4.0
500 V		kW	4.0	4.0
575 V		kW	4.0	--
660 V		kW	4.0	--
690 V	kW	4.0	--	

#### Utilization category AC-4

(contact endurance approx. 200 000 operating cycles at  $I_a = 6 \times I_e$ )

• Rated operational current $I_e$	Up to 400 V	A	2.6	2.6
	690 V	A	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz	At 110 V	kW	0.32	0.32
	115 V	kW	0.33	0.33
	120 V	kW	0.35	0.35
• Max. permissible rated operational current $I_e/AC-4 \cong I_e/AC-3$ up to 500 V, for reduced contact endurance and reduced switching frequency	127 V	kW	0.37	0.37
	200 V	kW	0.58	0.58
	220 V	kW	0.64	0.64
	230 V	kW	0.67	0.67
	240 V	kW	0.70	0.70
	380 V	kW	1.10	1.10
	400 V	kW	1.15	1.15
	415 V	kW	1.20	1.20
	440 V	kW	1.27	1.27
	460 V	kW	1.33	1.33
	500 V	kW	1.45	1.45
	575 V	kW	1.30	--
660 V	kW	1.10	--	
690 V	kW	1.15	--	




### Switching frequency

#### Switching frequency $z$ in operating cycles/hour

• Contactors without overload relays	No-load switching frequency	h <sup>-1</sup>	10000
Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$ : $z' = z \cdot (I_e/I') \cdot (400 V/U')^{1.5} \cdot 1/h$	AC-1	h <sup>-1</sup>	1000
	AC-2	h <sup>-1</sup>	500
	AC-3	h <sup>-1</sup>	1000
• Contactors with overload relays (mean value)		h <sup>-1</sup>	15

# Contactors for Special Applications

## 3TK20 contactors, 4-pole, 4 kW

Contactors	Type Size	3TK20 00
<b>Conductor cross-sections</b>		
<b>Main and auxiliary conductors</b>		
<ul style="list-style-type: none"> <li>• Solid</li> <li>• Finely stranded with end sleeve</li> <li>• Pin-end connector (DIN 46231)</li> <li>• Terminal screw</li> <li>• Prescribed tightening torque for terminal screws</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> mm <sup>2</sup> Nm lb.in	 <b>Screw terminals</b> 2 x (0.5 ... 2.5), 1 x 4 2 x (20 ... 14) AWG, 1 x 12 AWG 2 x (0.5 ... 1.5), 1 x 2.5 1 x 1 ... 2.5 M3 0.8 ... 1.3 7 ... 11
<ul style="list-style-type: none"> <li>• When using a plug-in sleeve 6.3 – 1</li> <li>• Finely stranded with 6.3 – 2.5</li> </ul>	mm <sup>2</sup> mm <sup>2</sup>	 <b>Flat connectors</b> 0.5 ... 1 1 ... 2.5
<ul style="list-style-type: none"> <li>• Solder pin cross-section (does not apply to plug-in bases)</li> </ul>	mm <sup>2</sup>	 <b>Solder pin connections (only for printed circuit boards)</b> 0.8 x 1.2

Contactors	Type Size	3TK20 00
<b>Auxiliary contacts</b>		
<b>Rated data according to IEC 60947-5-1</b>		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Conventional thermal current <math>I_{th}</math> = Rated operational current <math>I_e</math>/AC-12</b>	A	10
<b>AC load</b>		
<b>Rated operational current <math>I_e</math>/AC-15/AC-14</b>		
<ul style="list-style-type: none"> <li>• For rated operational voltage <math>U_e</math></li> </ul>	24 ... 230 V A 380 ... 400 V A 500 V A 660 V A 690 V A	4 3 2 1 1
<b>DC load</b>		
<b>Rated operational current <math>I_e</math>/DC-12</b>		
<ul style="list-style-type: none"> <li>• For rated operational voltage <math>U_e</math></li> </ul>	24 V A 48 V A 110 V A 125 V A 220 V A 440 V A 600 V A	4 2.2 1.1 1.1 0.5 -- --
<b>Rated operational current <math>I_e</math>/DC-13</b>		
<ul style="list-style-type: none"> <li>• For rated operational voltage <math>U_e</math></li> </ul>	24 V A 48 V A 110 V A 125 V A 220 V A 440 V A 600 V A	2.1 1.1 0.52 0.52 0.27 -- --

# Contactors for Special Applications

**3TK20 contactors,  
4-pole, 4 kW**

Contactors	Type	<b>3TK20 ..-0...</b>	<b>3TK20 ..-3..., 3TK20 ..-6..., 3TK20 ..-7...</b>
	Size	<b>00</b>	<b>00</b>
<b>Ⓢ and Ⓞ rated data of the 3TK20 contactors</b>			
<b>Rated insulation voltage <math>U_i</math></b>	V AC	600	300
<b>Uninterrupted current</b> , open and enclosed	A	16	16 (10 for solder pin connection)
<b>Maximum horsepower ratings</b> (Ⓢ and Ⓞ approved values)			
• Rated power for induction motors at 60 Hz			
- Single-phase	At 115 V hp	0.5	--
	200 V hp	1	1
	230 V hp	1.5	1
	460/575 V hp	--	--
- 3-phase	At 115 V hp	--	--
	200 V hp	3	3 (1 for 3TK20..-6)
	230 V hp	3	3 (1 for 3TK20..-6)
	460/575 V hp	5	--
<b>Overload relays</b>	Type	3UA7	
• Setting range	A	8 ... 10	
<b>Ⓢ, Ⓞ and Ⓡ rated data of the auxiliary contacts</b>			
<b>Rated voltage, max.</b>	V AC	600	
Auxiliary switch blocks, max.	V AC	300	
<b>Switching capacity</b>		A 600, Q 300	
Uninterrupted current at 240 V AC	A	10	

## Selection and ordering data

### Size 00

**AC-1: operational current  $I_e = 16 A$  (at 55 °C)**

Rated data Utilization categories AC-2 and AC-3		Main contacts		DT	Screw terminals	Ⓢ	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$	Ratings of induction motors at 50 Hz				Version		Order No.	Price per PU	
At 400/ 380 V	230/ 220 V	<b>400/ 380 V</b>	500 V	690/ 660 V	NO	NC			
A	kW	<b>kW</b>	kW	kW					
Terminal designations									
4 NO			3 NO + 1 NC			2 NO + 2 NC			

## Contactors with screw terminals - for screw fixing and snap-on mounting onto TH 35 standard mounting rail



3TK20..-0...

### AC operation

9	2.4	<b>4</b>	4	4	4	--	C	<b>3TK20 40-0AP0</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-0AP0</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-0AP0</b>	1	1 unit	41B

### DC operation · DC solenoid system

9	2.4	<b>4</b>	4	4	4	--	C	<b>3TK20 40-0BB4</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-0BB4</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-0BB4</b>	1	1 unit	41B

Accessories see "3TF2 Contactors", Chapter 3.

# Contactors for Special Applications

## 3TK20 contactors, 4-pole, 4 kW

Rated data Utilization categories AC-2 and AC-3					Main contacts	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$	Ratings of induction motors at 50 Hz and				Version						
	At 400/ 380 V	230/ 220 V	<b>400/ 380 V</b>	500 V	690/ 660 V	NO					
A	kW	<b>kW</b>	kW	kW							

Terminal designations		
4 NO	3 NO + 1 NC	2 NO + 2 NC

### Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing and snap-on mounting onto TH 35 standard mounting rail



#### AC operation

9	2.4	<b>4</b>	4	--	4	--	C	<b>3TK20 40-3AP0</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-3AP0</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-3AP0</b>	1	1 unit	41B

#### DC operation · DC solenoid system

9	2.4	<b>4</b>	4	--	4	--	C	<b>3TK20 40-3BB4</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-3BB4</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-3BB4</b>	1	1 unit	41B

3TK20...-3...

### Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing (diagonal)



#### AC operation

9	2.4	<b>4</b>	4	--	4	--	C	<b>3TK20 40-7AP0</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-7AP0</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-7AP0</b>	1	1 unit	41B

#### DC operation · DC solenoid system

9	2.4	<b>4</b>	4	--	4	--	C	<b>3TK20 40-7BB4</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-7BB4</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-7BB4</b>	1	1 unit	41B

3TK20...-7...

### Contactors with solder pin connections for printed circuit boards<sup>1)</sup> for screw fixing (diagonal)



#### AC operation

9	2.4	<b>4</b>	4	--	4	--	C	<b>3TK20 40-6AP0</b>	1	1 unit	41B
					3	1	C	<b>3TK20 31-6AP0</b>	1	1 unit	41B
					2	2	C	<b>3TK20 22-6AP0</b>	1	1 unit	41B

#### DC operation · DC solenoid system

9	2.4	<b>4</b>	4	--	<b>4</b>	--	C	<b>3TK20 40-6BB4</b>	1	1 unit	41B
					<b>3</b>	1	C	<b>3TK20 31-6BB4</b>	1	1 unit	41B
					<b>2</b>	2	C	<b>3TK20 22-6BB4</b>	1	1 unit	41B

3TK20...-6...

<sup>1)</sup> Operating range at AC-1 and 220 V:  
0.85 to 1.15 x  $U_s$ ; lower operating range limit according to IEC 60947.

Accessories see "3TF2 Contactors", Chapter 3.

### Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Contactor type 3TK20	
Rated control supply voltage $U_s$	Size <b>00</b>
<b>AC operation</b>	
Solenoid coils for AC 50 and 60 Hz	
<b>50 Hz</b>	<b>60 Hz</b>
24 V AC	29 V AC
110 V AC	132 V AC
230/220 V AC	276 V AC
	B0
	F0
	P0 <sup>1)</sup>
<b>DC operation</b>	
24 V DC	B4

<sup>1)</sup> Operating range at 220 V:  
0.85 to 1.15 x  $U_s$ ; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

### Overview

#### Standards

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

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have 2 auxiliary contacts 1 NO and 1 NC integrated in the basic unit.

#### Mountable auxiliary contacts

Size S00 and S0

4 additional auxiliary contacts, including no more than 2 NC.

### Application

The contactors are suitable for:

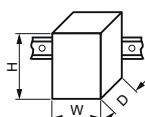
- For changing the polarity of hoisting gear motors
- For switching of two separate loads

#### Note:

Single device for pole reversal; not suitable for reversing duty. 3RT25 contactors are not suitable for switching a load between 2 current sources.

General descriptions of the sizes S00 and S0 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT20 contactors, 3-pole, 3 to 18.5 kW".

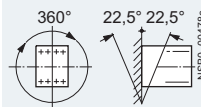
### Technical specifications

Type		3RT25 16 S00	3RT25 17 S00	3RT25 18 S00	3RT25 26 S0
Size					
Dimensions (W x H x D) <sup>1)</sup>		45 x 57.5 x 73 / 45 x 70 x 73			60 x 85 x 97 / 60 x 101.5 x 97
• With mounted auxiliary switch block		45 x 57.5 x 116 / 45 x 70 x 121			60 x 85 x 141 / 60 x 101.5 x 144

#### General technical specifications

##### Permissible mounting positions

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



Upright mounting position



Special version required

<b>Mechanical endurance</b>	Operating cycles	30 million		10 million
<b>Electrical endurance at <math>I_e/AC-1</math></b>	Operating cycles	Approx. 0.5 million		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690		
<b>Permissible ambient temperature</b>				
• During operation	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20		IP20
• Terminal compartment		IP20		IP00
<b>Touch protection</b> acc. to EN 50274		Finger-safe		

#### Short-circuit protection of contactors without overload relays

##### Main circuit

Fuse links, operational class gG:  
LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE  
according to IEC 60947-4-1/EN 60947-4-1

• Type of coordination "1"	A	35		63
• Type of coordination "2"	A	20		35
• Weld-free	A	10		16

#### Control circuits

##### Coil operating range

• AC operation	At 50 Hz	0.8 ... 1.1 x $U_s$		--
	At 60 Hz	0.85 ... 1.1 x $U_s$		--
• DC operation	At 50 Hz	0.8 ... 1.1 x $U_s$		--
	At 60 Hz	0.85 ... 1.1 x $U_s$		--
• AC/DC operation		--		0.8 ... 1.1 x $U_s$

<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )		See 3RT23 16	See 3RT23 17	See 3RT23 26
--	--	--------------	--------------	--------------

<b>Operating times for 0.8 ... 1.1 x <math>U_s</math></b> Total break time = Opening delay + Arcing time		See 3RT23 16	See 3RT23 17	See 3RT23 26
---	--	--------------	--------------	--------------

<sup>1)</sup> Dimensions for devices with screw terminals or spring-type terminals.  
Size S0 for AC operation. DC operation: Depth +10 mm

# Contactors for Special Applications

## SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

Contactors	Type		3RT25 16	3RT25 17	3RT25 18	3RT25 26
	Size		S00	S00	S00	S0
<b>Main circuit</b>						
<b>AC capacity</b>						
<b>Utilization category AC-1, switching resistive loads</b>						
• Rated operational currents $I_e$	At 40 °C up to 690 V	A	18	22		40
	At 60 °C up to 690 V	A	16	20		35
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V	kW	6.5	7.5		15
	400 V	kW	11	13		26
• Minimum conductor cross-section for loads with $I_e$	At 40 °C	mm <sup>2</sup>	2.5	2.5		10
<b>Utilization categories AC-2 and AC-3</b>						
• Rated operational currents $I_e$ (at 60 °C)	Up to 400 V	A	9	12	16	25 / 20 <sup>1)</sup>
• Rated power for slipping or squirrel-cage motors	At 230 V	kW	3	3	4	5.5
	NO contacts at 400 V	kW	4	5.5	7.5	11
	NC contacts at 400 V	kW	4	4	4	11
<b>Load rating with DC</b>						
<b>Utilization category DC-1, switching resistive loads (<math>L/R \leq 1</math> ms)</b>						
• Rated operational currents $I_e$ (at 60 °C)						
- 1 conducting path	Up to 24 V	A	16	20		35
	60 V	A	16	20		20
	110 V	A	2.1	2.1		4.5
	220 V	A	0.8	0.8		1
	440 V	A	0.6	0.6		0.4
- 2 conducting paths in series	Up to 24 V	A	16	20		35
	60 V	A	16	20		35
	110 V	A	12	12		35
	220 V	A	1.6	1.6		5
	440 V	A	0.8	0.8		1
<b>Utilization category DC-3/DC-5<sup>2)</sup>, shunt-wound and series-wound motors (<math>L/R \leq 15</math> ms)</b>						
• Rated operational currents $I_e$ (at 60 °C)						
- 1 conducting path	Up to 24 V	A	16	20		20
	60 V	A	0.5	0.5		5
	110 V	A	0.15	0.15		2.5
	220 V	A	0.75	0.75		1
	440 V	A	--	--		0.09
- 2 conducting paths in series	Up to 24 V	A	16	20		35
	60 V	A	5	5		35
	110 V	A	0.35	0.35		15
	220 V	A	--	--		3
	440 V	A	--	--		0.27

<sup>1)</sup> For AC operation: 25 A; for DC operation: 20 A.

<sup>2)</sup> For  $U_e > 24$  V the rated operational currents  $I_e$  for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

### Selection and ordering data

#### AC operation, 2 NO + 2 NC<sup>1)</sup>

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



3RT25 1.-1A.00



3RT25 1.-2A.00



3RT25 2.-1A.00

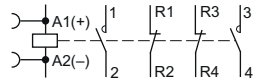


3RT25 2.-2A.00

Rated data		Auxiliary contacts		Rated control supply voltage	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, $T_U$ : up to 60 °C	Operational current $I_e$ At 400 V	AC-1, $T_U$ : 40/60 °C	Operational current $I_e$	$U_s$		Order No.	Price per PU		Order No.	Price per PU
	Ratings of induction motors at 50 Hz and <b>400 V</b>									
A	<b>kW</b>	A								
			NO NC	V AC						

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

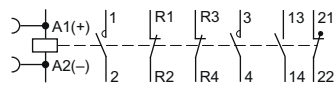
##### Size S00<sup>2)</sup>



9	<b>4</b>	18 / 16	--	--	--	24, 50/60 Hz 110, 50/60 Hz 230, 50/60 Hz	B B A	<b>3RT25 16-1AB00</b> <b>3RT25 16-1AF00</b> <b>3RT25 16-1AP00</b>	B B A	<b>3RT25 16-2AB00</b> <b>3RT25 16-2AF00</b> <b>3RT25 16-2AP00</b>
12	<b>5.5<sup>3)</sup></b>	22 / 20	--	--	--	24, 50/60 Hz 110, 50/60 Hz 230, 50/60 Hz	B B A	<b>3RT25 17-1AB00</b> <b>3RT25 17-1AF00</b> <b>3RT25 17-1AP00</b>	B A A	<b>3RT25 17-2AB00</b> <b>3RT25 17-2AF00</b> <b>3RT25 17-2AP00</b>
16	<b>7.5<sup>3)</sup></b>	22 / 20	--	--	--	24, 50/60 Hz 110, 50/60 Hz 230, 50/60 Hz	B B A	<b>3RT25 18-1AB00</b> <b>3RT25 18-1AF00</b> <b>3RT25 18-1AP00</b>	B B A	<b>3RT25 18-2AB00</b> <b>3RT25 18-2AF00</b> <b>3RT25 18-2AP00</b>

##### Size S0

1 NO + 1 NC, Ident. No. 11



25	<b>11</b>	40 / 35	<b>11</b>	1	1	24, 50 Hz 110, 50 Hz 230, 50 Hz	B B A	<b>3RT25 26-1AB00</b> <b>3RT25 26-1AF00</b> <b>3RT25 26-1AP00</b>	B B A	<b>3RT25 26-2AB00</b> <b>3RT25 26-2AF00</b> <b>3RT25 26-2AP00</b>
----	-----------	---------	-----------	---	---	---------------------------------------	-------------	---	-------------	---

<sup>1)</sup> Single device for pole reversal; not suitable for reversing duty.

<sup>2)</sup> For size S00: Coil operating range  
 at 50 Hz: 0.8 ... 1.1 x  $U_s$   
 at 60 Hz: 0.85 ... 1.1 x  $U_s$ .

<sup>3)</sup> The NC contact can switch no more than 4 kW.

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

# Contactors for Special Applications

## SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

**DC operation - DC solenoid system,  
2 NO + 2 NC<sup>1)</sup>**

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



3RT25 1.-1B.40



3RT25 1.-2B.40



3RT25 2.-1B.40

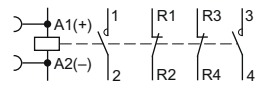


3RT25 2.-2B.40

Rated data		Auxiliary contacts		Rated control supply voltage $U_s$	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, $T_U$ : up to 60 °C	AC-1, $T_U$ : 40/60 °C	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
Operational current $I_e$ At 400 V	Ratings of induction motors at 50 Hz and <b>400 V</b>			V DC						
A	<b>kW</b>	A	NO NC							

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

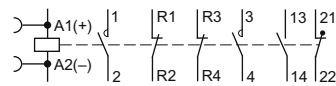
### Size S00



9	<b>4</b>	18 / 16	--	--	--	24 220	A B	<b>3RT25 16-1BB40</b> <b>3RT25 16-1BM40</b>	A B	<b>3RT25 16-2BB40</b> <b>3RT25 16-2BM40</b>
12	<b>5.5<sup>2)</sup></b>	22 / 20	--	--	--	24 220	A B	<b>3RT25 17-1BB40</b> <b>3RT25 17-1BM40</b>	A B	<b>3RT25 17-2BB40</b> <b>3RT25 17-2BM40</b>
16	<b>7.5<sup>2)</sup></b>	22 / 20	--	--	--	24 220	A B	<b>3RT25 18-1BB40</b> <b>3RT25 18-1BM40</b>	A B	<b>3RT25 18-2BB40</b> <b>3RT25 18-2BM40</b>

### Size S0

1 NO + 1 NC, Ident. No. **11**



20	<b>11</b>	40 / 35	<b>11</b>	1	1	24 DC 220 DC	A B	<b>3RT25 26-1BB40</b> <b>3RT25 26-1BM40</b>	A B	<b>3RT25 26-2BB40</b> <b>3RT25 26-2BM40</b>
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<sup>1)</sup> Single device for pole reversal; not suitable for reversing duty.

<sup>2)</sup> The NC contact can switch no more than 4 kW.

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts [see "3RT20 Contactors", Chapter 3.](#)



## Overview

### Standards

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

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

### Note:

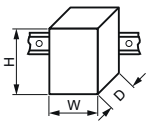
Single device for pole reversal; not suitable for reversing duty.  
3RT15 contactors are not suitable for switching a load between 2 current sources.

The accessories for the 3-pole SIRIUS 3RT10 contactors can also be used for the 4-pole versions.

### Mountable auxiliary contacts

Maximum 4 auxiliary contacts can be either laterally mounted or snapped onto the top (auxiliary switch blocks acc. to EN 50012 or EN 50005).

## Technical specifications

Type		<b>3RT15 35</b>
Size		<b>S2</b>
Dimensions (W x H x D)	mm	73 x 112 x 110
• With mounted auxiliary switch block	mm	73 x 112 x 160
		
<b>General technical specifications</b>		
<b>Permissible mounting position<sup>1)</sup></b>		
<b>Mechanical endurance</b>	Operating cycles	10 million
<b>Electrical endurance at <math>I_e/AC-1</math></b>	Operating cycles	Approx. 0.5 million
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-55 ... +80
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20 (IP00 terminal compartment)
<b>Touch protection</b> acc. to EN 50274		Finger-safe
<b>Short-circuit protection of contactors without overload relays</b>		
<b>Main circuit</b>		
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1		
• Type of coordination "1"	A	160
• Type of coordination "2"	A	80
• Weld-free	A	50
<b>Control circuits</b>		
<b>Coil operating range (AC/DC)</b>		0.8 ... 1.1 x $U_s$
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )		
• AC operation, 50 Hz		
- Closing	VA	145
- P.f.	VA	0.79
- Closed	VA	12.5
- P.f.	VA	0.36
• AC operation, 50/60 Hz		
- Closing	VA	170/155
- P.f.	VA	0.76/0.72
- Closed	VA	15/11.8
- P.f.	VA	0.35/0.38
• DC operation (closing = closed)	W	13.3
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>2)</sup></b> Total break time = Opening delay + Arcing time		
• AC operation		
- Closing delay	ms	4 ... 35
- Opening delay	ms	10 ... 30
• DC operation		
- Closing delay	ms	50 ... 110
- Opening delay	ms	15 ... 30
• Arcing time	ms	10 ... 15

<sup>1)</sup> In accordance with the corresponding 3-pole 3RT1 contactors.

<sup>2)</sup> With size S00, DC operation: Operating times for 0.85 ... 1.1 x  $U_s$ .

# Contactors for Special Applications

## SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

Contactors	Type	<b>3RT15 35</b>
	Size	<b>S2</b>

### Main circuit

#### AC capacity

##### Utilization category AC-1, switching resistive loads

• Rated operational currents $I_e$	At 40 °C up to 690 V	A	60
	At 60 °C up to 690 V	A	55
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V	kW	20
	400 V	kW	36
• Minimum conductor cross-section for loads with $I_e$	At 40 °C	mm <sup>2</sup>	16

##### Utilization categories AC-2 and AC-3

• Rated operational currents $I_e$ (at 60 °C)	Up to 400 V	A	40
• Rated power for slipping or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	9.5
	400 V	kW	18.5

### Selection and ordering data

#### AC and DC operation, 2 NO contacts + 2 NC contacts<sup>1)</sup>

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



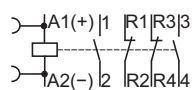
3RT15 35-1...

Rated data		Rated control supply voltage $U_s$		DT	DT
AC-2/AC-3, $T_U$ : Up to 60 °C	AC-1, $T_U$ : 40/60 °C			<b>Screw terminals</b>	<b>Spring-type terminals</b>
Operational current $I_e$	Ratings of induction motors at 50 Hz and	Operational current $I_e$		Order No.	Price per PU
At 400 V	<b>400 V</b>				
A	<b>kW</b>	A	V		Order No.
					Price per PU

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

#### AC operation

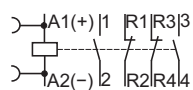
##### Size S2



40	<b>18.5</b>	55 / 50	24, 50 Hz 110, 50 Hz 230, 50 Hz	B B ▶	<b>3RT15 35-1AB00</b> <b>3RT15 35-1AF00</b> <b>3RT15 35-1AP00</b>	-- -- --
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#### DC operation · DC solenoid system

##### Size S2



40	<b>18.5</b>	55 / 50	24 DC 220 DC	▶ B	<b>3RT15 35-1BB40</b> <b>3RT15 35-1BM40</b>	-- --
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<sup>1)</sup> Single device for pole reversal; not suitable for reversing duty.

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT10 Contactors", [Chapter 3](#).

### Overview

#### Standards

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

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

#### Function

The 3RT16 capacitor contactors are special versions of the 3RT10 contactors size S00 to S3. The capacitors are precharged by means of the mounted leading NO contacts and resistors; only then do the main contacts close.

This prevents disturbances in the network and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors.

For the capacitor switching capacity of the basic 3RT10 contactor version.

#### Auxiliary switches

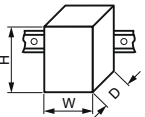

The auxiliary switch block which is snapped onto the capacitor contactor contains the three leading NO contacts and in the case of S00 one standard NC contact and in the case of S0 and S3 one standard NO contact, which is unassigned. Size S00 also contains another unassigned NO contact in the basic unit.

In addition, a 2-pole auxiliary switch block can be mounted laterally on the 3RT16 47 capacitor contactors (2 NO, 2 NC or 1 NO + 1 NC versions); type 3RH19 21-1EA... The fitting of auxiliary switches for 3RT16 17 and 3RT16 27 is not expandable.

### Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT10 17 contactors for size S00, to

those of the 3RT10 26 contactors for size S0 and to those of the 3RT10 45 contactors for size S3 (see Chapter 3).





Type		3RT16 17-.A..3	3RT16 27-.A..1	3RT16 47-.A..1
Size		<b>S00</b>	<b>S0</b>	<b>S3</b>
Dimensions (W x H x D) including auxiliary switches and connecting cables		45 x 101 x 105	45 x 100 x 130	70 x 167 x 183
<b>General technical specifications</b>				
<b>Capacitor rating at rated power</b> (utilization category AC-6b)	230 V, 50/60 Hz kvar <b>400 V, 50/60 Hz kvar</b> 525 V, 50/60 Hz kvar 690 V, 50/60 Hz kvar	3 ... 7.5 <b>5 ... 12.5</b> 7.5 ... 15 10 ... 21	3.5 ... 15 <b>6 ... 25</b> 7.8 ... 30 10 ... 42	3.5 ... 30 <b>5 ... 50</b> 7.5 ... 60 10 ... 84
<b>Auxiliary contacts mounted</b> (unassigned)		1 NO + 1 NC	1 NO	
<b>Auxiliary contacts mountable</b> (lateral), not for sizes S00 and S0		--		2 NC + 2 NO or 1 NO + 1 NC
<b>Max. switching frequency</b>	h <sup>-1</sup>	180	100	
<b>Electrical endurance</b>	Operating cycles	> 250000	> 150000	> 100000
<b>Ambient temperature</b>	°C	60		
<b>Short-circuit protection</b>		1.6 ... 2.2 x I <sub>e</sub>		
<b>Coil operating range</b>		0.8 ... 1.1 x U <sub>s</sub>		
<b>Conductor cross-sections (1 or 2 conductors connectable)</b>				
<b>Main conductors</b>		 <b>Screw terminals</b>		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2</sup> ; 2 x (0.75 ... 2.5) <sup>2</sup> according to IEC 60947; max. 2 x (1 ... 4) <sup>2</sup>	2 x (1 ... 2.5) <sup>2</sup> ; 2 x (2.5 ... 6) <sup>2</sup> according to IEC 60947; max. 1 x 10 <sup>1</sup> 2)	--
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>2</sup> ; 2 x (0.75 ... 2.5) <sup>2</sup>	2 x (1 ... 2.5) <sup>2</sup> ; 2 x (2.5 ... 6) <sup>1</sup> 2)	--
• AWG cables	AWG	2 x (20 ... 16)	2 x (16 ... 12)	--
- Solid or stranded	AWG	2 x (18 ... 14)	2 x (14 ... 10)	--
- Stranded	AWG	1 x 12	1 x 8	--
• Terminal screws	Nm	M3	M4 (Pozidriv size 2)	--
- Tightening torque	lb.in	0.8 ... 1.2 7 ... 10.3	2 ... 2.5 18 ... 22	--

<sup>1</sup>) 3RV19 25-5AB feeder terminal for 16 mm<sup>2</sup>.

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

# Contactors for Special Applications

## SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

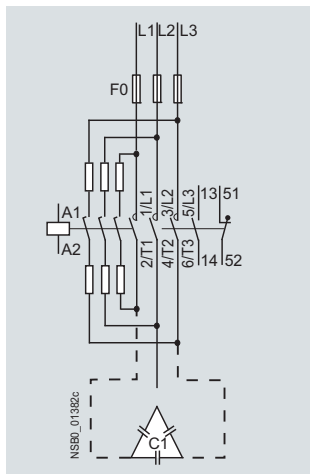
Contactor	Type	3RT16 17-.A..3	3RT16 27-.A..1	3RT16 47-.A..1
	Size	S00	S0	S3
<b>Conductor cross-sections (1 or 2 conductors connectable)</b>				
	<b>Main conductors:</b> With box terminal	 <b>Screw terminals</b>		
<b>Front clamping point connected</b> 	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm -- AWG --	--	2.5 ... 35 4 ... 50 2.5 ... 16 4 ... 70 6 x 9 x 0.8 10 ... 2/0
	<b>Rear clamping point connected</b> 	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> </ul>	mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm -- AWG --	--
<b>Both clamping points connected</b> 	<ul style="list-style-type: none"> <li>Finely stranded with end sleeve</li> <li>Finely stranded without end sleeve</li> <li>Solid</li> <li>Stranded</li> <li>Ribbon cable conductors (Number x Width x Thickness)</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> <li>- Tightening torque</li> </ul>	mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm <sup>2</sup> -- mm -- AWG -- -- Nm -- lb.in --	--	max. 2 x 35 max. 2 x 35 max. 2 x 16 max. 2 x 50 2 x (6 x 9 x 0.8) 2 x (10 ... 1/0) M6 (hexagon socket, A/F 4) 4 ... 6 36 ... 53
	<b>Auxiliary conductors:</b> <ul style="list-style-type: none"> <li>Solid</li> <li>Finely stranded with end sleeve</li> <li>AWG cables, solid or stranded</li> <li>Terminal screw</li> <li>- Tightening torque</li> </ul>	mm <sup>2</sup> -- mm <sup>2</sup> -- AWG -- M3 Nm 0.8 ... 1.2 lb.in 7 ... 10.3	2 x (0.5 ... 1.5) <sup>1)</sup> ; 2 x (0.75 ... 2.5) <sup>1)</sup> according to IEC 60947; max. 2 x (1 ... 4)	2 x (0.5 ... 1.5) <sup>1)</sup> ; 2 x (0.75 ... 2.5) <sup>1)</sup> according to IEC 60947; max. 2 x (0.75 ... 4)

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

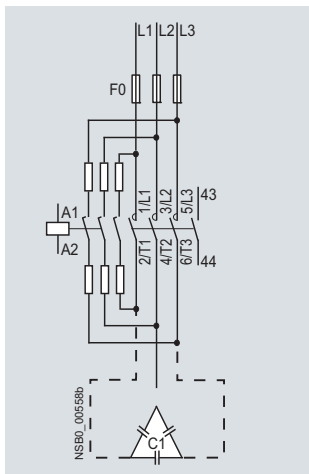
## SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

### Circuit diagrams

Size S00



Sizes S0 and S3



### Selection and ordering data

#### AC operation Screw terminals



3RT16 17-1A.03



3RT16 27-1A.01



3RT16 47-1A.01

Utilization category AC-6b Switching of AC capacitors for an ambient temperature of 60 °C <sup>1)</sup> Capacitor rating at operational voltage 50/60 Hz				Auxiliary contacts, unassigned	Rated control supply voltage $U_s^{2)}$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
At 230 V	At 400 V	At 525 V	At 690 V	Version	V AC	Hz	Order No.	Price per PU		
kvar	kvar	kvar	kvar	NO NC						

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

#### Size S00

3 ... 7.5	5 ... 12.5	7.5 ... 15	10 ... 21	1	1	24	50 / 60	B	<b>3RT16 17-1AB03</b>	1	1 unit	41B
						110		B	<b>3RT16 17-1AF03</b>	1	1 unit	41B
						230		▶	<b>3RT16 17-1AP03</b>	1	1 unit	41B

#### Size S0<sup>3)</sup>

3.5 ... 15	6 ... 25	7.8 ... 30	10 ... 42	1	--	24	50	B	<b>3RT16 27-1AB01</b>	1	1 unit	41B
						110		B	<b>3RT16 27-1AF01</b>	1	1 unit	41B
						230		▶	<b>3RT16 27-1AP01</b>	1	1 unit	41B

#### Size S3

3.5 ... 30	5 ... 50	7.5 ... 60	10 ... 84	1	--	24	50	B	<b>3RT16 47-1AB01</b>	1	1 unit	41B
						110		B	<b>3RT16 47-1AF01</b>	1	1 unit	41B
						230		▶	<b>3RT16 47-1AP01</b>	1	1 unit	41B

1) For size S3: 55 °C.

2) Operating range: 0.85 ... 1.1 x  $U_s$ .

3) For conductor cross-sections > 6 mm<sup>2</sup>  
use 3RV19 25-5AB terminals (2 units).

Other voltages [according to page 4/38](#) on request.

Accessories and spare parts see "3RT10 Contactors",  
Chapter 3.

# Contactors for Special Applications

## SIRIUS 3RT2, 3RT1 contactors

### Options

**Rated control supply voltages, possible on request (the 10th and 11th position of the order number must be changed)**

Rated control supply voltage $U_s$	Contactor type	3RT23 1, 3RT25 1	3RT23 2, 3RT25 2	3RT13 3, 3RT13 4, 3RT15 3	3RT14 4	3RT16 17, 3RT16 27, 3RT16 47
	Size	S00	S0	S2, S3	S3	S00, S0, S3

#### Sizes S00 to S3

#### AC operation

**Solenoid coils for 50 Hz** (exception: Size S00: 50 and 60 Hz<sup>1)</sup>)

24 V AC	B0	B0	B0	B0	B0
42 V AC	D0	D0	--	D0	--
48 V AC	H0	H0	--	H0	--
110 V AC	F0	F0	F0	F0	F0
230 V AC	P0	P0	P0	P0	P0
240 V AC			U0	U0	U0
400 V AC	V0	V0	V0	V0	V0

**Solenoid coils for 50 and 60 Hz<sup>1)</sup>**

24 V AC	B0	C2	C2	C2	C2
42 V AC	D0	D2	D2	D2	--
48 V AC	H0	H2	H2	H2	--
110 V AC	F0	G2	G2	G2	G2
220 V AC	N2	N2	N2	N2	N2
230 V AC	P0	L2	L2	L2	L2
240 V AC	P2	P2	P2	P2	P2

**Solenoid coils (for USA and Canada<sup>2)</sup>)**

50 Hz	60 Hz				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6

**Solenoid coils (for Japan)**

50/60 Hz <sup>3)</sup>	60 Hz <sup>4)</sup>				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6

#### DC operation

12 V DC	A4	--	--	--	--
24 V AC	B4	B4	B4	B4	--
42 V AC	D4	D4	D4	D4	--
48 V AC	W4	--	W4	W4	--
60 V DC	--	--	--	E4	--
110 V DC	F4	F4	F4	F4	--
125 V DC	G4	G4	G4	G4	--
220 V DC	M4	M4	M4	M4	--
230 V DC	P4	--	P4	P4	--

#### Examples

<b>AC operation</b>	3RT23 25-1AP00	Contactors with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT23 25-1AG20	Contactors with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
<b>DC operation</b>	3RT25 26-2BB40	Contactors with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT25 26-2BG40	Contactors with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage	Contactor type	3RT14 56-6A..., 3RT14 66-6A..., 3RT14 76-6A...	Rated control supply voltage	Contactor type	3RT14 56-6N..., 3RT14 66-6N..., 3RT14 76-6N...	3RT14 56-6P/Q..., 3RT14 66-6P/Q..., 3RT14 76-6P/Q...
$U_{s \min} \dots U_{s \max}^{5)}$	Size	S6, S10, S12	$U_{s \min} \dots U_{s \max}^{5)}$	Size	S6, S10, S12	S6, S10, S12

#### Size S6 to S12

#### UC operation (AC 50 to 60 Hz, DC)

23 ... 26 V AC/DC	B3	21 ... 27.3 V AC/DC	B3	--
42 ... 48 V AC/DC	D3	96 ... 127 V AC/DC	F3	F3
110 ... 127 V AC/DC	F3	200 ... 277 V AC/DC	P3	P3
200 ... 220 V AC/DC	M3			
220 ... 240 V AC/DC	P3			
240 ... 277 V AC/DC	U3			
380 ... 420 V AC/DC	V3			
440 ... 480 V AC/DC	R3			
500 ... 550 V AC/DC	S3			
575 ... 600 V AC/DC	T3			

<sup>1)</sup> Coil operating range  
at 50 Hz:  $0.8 \dots 1.1 \times U_s$   
at 60 Hz:  $0.85 \dots 1.1 \times U_s$

<sup>2)</sup> Coil operating range  
Size S00: at 50 Hz:  $0.85 \dots 1.1 \times U_s$   
at 60 Hz:  $0.8 \dots 1.1 \times U_s$   
Size S0 to S3: at 50 Hz and 60 Hz:  $0.8 \dots 1.1 \times U_s$

<sup>3)</sup> Coil operating range  
Size S00: at 50/60 Hz:  $0.85 \dots 1.1 \times U_s$   
Size S0 to S3: at 50 Hz:  $0.8 \dots 1.1 \times U_s$   
at 60 Hz:  $0.85 \dots 1.1 \times U_s$

<sup>4)</sup> Coil operating range  
at 60 Hz:  $0.8 \dots 1.1 \times U_s$

<sup>5)</sup> Coil operating range:  $0.7 \times U_{s \min} \dots 1.3 \times U_{s \max}$

## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

SIRIUS 3RT20 motor contactors,  
5.5 ... 18.5 kW

### Overview

#### Standards

IEC 60947-4-1, EN 60947-4-1,  
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274. These size S00 and S0 contactors have spring-type connections for all terminals.

#### Ambient temperature

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

Uninterrupted duty at temperatures  $> +60$  °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

#### Control and auxiliary circuits

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

### Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

#### Contactors with conventional coil

##### Control and auxiliary circuits

These contactors have an extended operating range from  $0.7$  to  $1.25 \times U_s$ ; on size S00 the coils are fitted with suppressor diodes, on size S0 with varistors. An additional series resistor is not required.

##### Note:

An additional auxiliary switch block cannot be mounted.

##### Side-by-side mounting

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures  $> 60$  °C  $\leq 70$  °C.

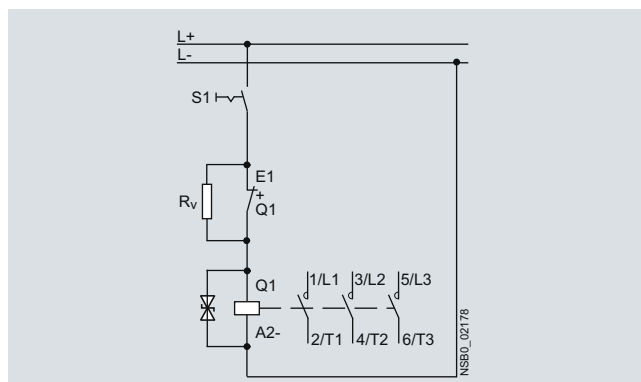
#### 3RT20 1. contactors with coil with series resistor

##### Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from  $0.7$  to  $1.25 \times U_s$  and are fitted as standard with a surge suppressor (suppressor diode or varistor as preferred).

A surge suppressor (a suppressor diode or varistor as preferred) is integrated.

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



Circuit diagram (version with suppressor diode)

The size S00 contactors are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated. A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

A circuit diagram showing the terminals is stuck onto each contactor. One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts. With size S00 it is possible to extend the number of auxiliary contacts.

##### Side-by-side mounting

At ambient temperatures up to  $70$  °C, the size S00 contactors are allowed to be mounted side by side.

#### 3RT20 2. contactors with solid-state operating mechanism, extended operating range

##### Control and auxiliary circuits

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

The contactors are energized via upstream control electronics which ensure the coil operating range of  $0.7$  to  $1.25 \times U_s$  at an ambient temperature of  $70$  °C. They are supplied as complete units with integrated coil electronics. A varistor is integrated for damping opening surges in the coil.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors for switching motors in the matching size (see exploded drawings of the 3RT2 contactors in Chapter 3).

##### Side-by-side mounting

At ambient temperatures up to  $70$  °C, size S0 of these contactor versions are allowed to be mounted side by side.

# Contactors for Special Applications

## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

**SIRIUS 3RT20 motor contactors,  
5.5 ... 18.5 kW**

### Technical specifications

Contactors	Type	3RT20 17	3RT20 2.	3RT20 2.-2XB40-0LA2	3RT20 2.-2XF40-0LA2	
<b>General technical specifications</b>						
<b>Upright mounting position</b>						
• Contactors with coil with series resistor		Special version (on request)				
• Contactors with conventional coil		Special version (on request)				
<b>Ambient temperature</b>						
• During operation		°C	-40 ... +70			
• During storage		°C	-55 ... +80			
<b>Control circuits</b>						
<b>Coil operating range</b>		DC	$0.7 \dots 1.25 \times U_s$	$0.7 \dots 1.3 \times U_s$		
<b>Power consumption of the solenoid coils</b>						
For cold coil and $1.0 \times U_s$						
• Contactors with series resistor	- Closing	W	13	--	--	--
	- Closed	W	4	--	--	--
• Contactors with conventional operating mechanism	- Closing	W	2.8	4.5	--	--
	- Closed	W	2.8	4.5	--	--
• Contactors with solid-state operating mechanism	- Closing	W	--	--	6.7	13.2
	- Closed	W	--	--	0.8	1.56

All details and technical specifications not mentioned here are identical to those of the 3RT20 basic versions; see [Chapter 3](#).



# Contactors for Special Applications

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

**SIRIUS 3RT20 motor contactors,  
5.5 ... 18.5 kW**

### Selection and ordering data

**DC operation · DC solenoid system**

**Spring-type terminals**

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

**Solenoid coil with surge suppressor (S00)**



3RT20 1.-2K.4.



3RT20 1.-2K.42-0LA0

Rated data AC-2 and AC-3 $T_U$ : 70 °C	Ratings of induction motors at				Auxiliary contacts		Rated control supply voltage $U_s$	DT	Spring-type terminals			
	400 V	230 V	400 V	500 V	690 V	Ident. No.			Version	Configurator	Order No.	Price per PU
Operational current $I_e$ at												
A	kW	kW	kW	kW			V DC					

### 3RT20 contactors for switching motors

#### Size S00

**With conventional coil, fitted with suppressor diode**

	• 1 NO, Ident. No. <b>10</b>	• 1 NC, Ident. No. <b>01</b>												
	12	3	5.5	5.5	5.5	10 <sup>1)</sup>	1	--	24 110	▶	<b>3RT20 17-2KB41</b>	1	1 unit	41B
										B	<b>3RT20 17-2KF41</b>	1	1 unit	41B
										▶	<b>3RT20 17-2KB42</b>	1	1 unit	41B
										B	<b>3RT20 17-2KF42</b>	1	1 unit	41B

**With conventional coil, fitted with varistor**

	• 1 NO, Ident. No. <b>10</b>	• 1 NC, Ident. No. <b>01</b>												
	12	3	5.5	5.5	5.5	10 <sup>1)</sup>	1	--	24 110	B	<b>3RT20 17-2LB41</b>	1	1 unit	41B
										B	<b>3RT20 17-2LF41</b>	1	1 unit	41B
										B	<b>3RT20 17-2LB42</b>	1	1 unit	41B
										B	<b>3RT20 17-2LF42</b>	1	1 unit	41B

**With coil with series resistor, fitted with suppressor diode**

	12	3	5.5	5.5	5.5	-- <sup>2)</sup>	--	1 <sup>3)</sup>	24 110	B	<b>3RT20 17-2KB42-0LA0</b>	1	1 unit	41B
										B	<b>3RT20 17-2KF42-0LA0</b>	1	1 unit	41B
	16	4	7.5	10	11	-- <sup>2)</sup>	--	1 <sup>3)</sup>	24 110	B	<b>3RT20 18-2KB42-0LA0</b>	1	1 unit	41B
										B	<b>3RT20 18-2KF42-0LA0</b>	1	1 unit	41B

**With coil with series resistor, fitted with varistor**

	12	3	5.5	5.5	5.5	-- <sup>2)</sup>	--	1 <sup>3)</sup>	24 110	B	<b>3RT20 17-2LB42-0LA0</b>	1	1 unit	41B
										B	<b>3RT20 17-2LF42-0LA0</b>	1	1 unit	41B
	16	4	7.5	10	11	-- <sup>2)</sup>	--	1 <sup>3)</sup>	24 110	B	<b>3RT20 18-2LB42-0LA0</b>	1	1 unit	41B
										B	<b>3RT20 18-2LF42-0LA0</b>	1	1 unit	41B

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

<sup>2)</sup> One 4-pole auxiliary switch block according to EN 50005 can be mounted; no distance required up to 70 °C.

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

Accessories see "3RT20 Contactors", Chapter 3.

# Contactors for Special Applications

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

**SIRIUS 3RT20 motor contactors,  
5.5 ... 18.5 kW**

**DC operation - DC solenoid system**

**Spring-type terminals**

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

**Solenoid coil fitted with varistor (S0)**



3RT20 2.-2K.40



3RT20 2.-2X.40-0LA2

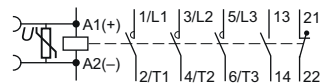
Rated data		Auxiliary contacts		Rated control supply voltage	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
AC-2 and AC-3 $T_U: 70^\circ\text{C}$		Ident. No. Version		$U_s$					
Operational current $I_e$ at	Ratings of induction motors at					Configurator			
400 V	230 V	<b>400 V</b>	500 V	690 V		Order No.	Price per PU		
A	kW	<b>kW</b>	kW	kW	NO NC				
					V DC				

### 3RT20 contactors for switching motors

#### Size S0

With conventional operating mechanism<sup>1)</sup>

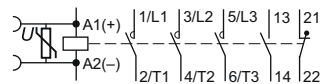
1 NO + 1 NC, Ident. No. 11



17	4	<b>7.5</b>	10	11	<b>11</b>	1	1	24 110	B	<b>3RT20 25-2KB40</b>	1	1 unit	41B
									B	<b>3RT20 25-2KF40</b>	1	1 unit	41B
25	5.5	<b>11</b>	11	11	<b>11</b>	1	1	24 110	B	<b>3RT20 26-2KB40</b>	1	1 unit	41B
									B	<b>3RT20 26-2KF40</b>	1	1 unit	41B
32	7.5	<b>15</b>	18.5	18.5	<b>11</b>	1	1	24 110	B	<b>3RT20 27-2KB40</b>	1	1 unit	41B
									B	<b>3RT20 27-2KF40</b>	1	1 unit	41B

#### With solid-state operating mechanism

1 NO + 1 NC, Ident. No. 11



17	4	<b>7.5</b>	10	11	<b>11</b>	1	1	24 110	B	<b>3RT20 25-2XB40-0LA2</b>	1	1 unit	41B
									B	<b>3RT20 25-2XF40-0LA2</b>	1	1 unit	41B
25	5.5	<b>11</b>	11	11	<b>11</b>	1	1	24 110	B	<b>3RT20 26-2XB40-0LA2</b>	1	1 unit	41B
									B	<b>3RT20 26-2XF40-0LA2</b>	1	1 unit	41B
32	7.5	<b>15</b>	18.5	18.5	<b>11</b>	1	1	24 110	B	<b>3RT20 27-2XB40-0LA2</b>	1	1 unit	41B
									B	<b>3RT20 27-2XF40-0LA2</b>	1	1 unit	41B
38	7.5	<b>18.5</b>	18.5	18.5	<b>11</b>	1	1	24 110	B	<b>3RT20 28-2XB40-0LA2</b>	1	1 unit	41B
									B	<b>3RT20 28-2XF40-0LA2</b>	1	1 unit	41B

For online configurator see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators).

<sup>1)</sup> It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

Accessories see "3RT20 Contactors", Chapter 3.

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

**SIRIUS 3RT10 motor contactors,  
18.5 ... 45 kW**

### Overview

#### Standards

IEC 60947-4-1, EN 60947-4-1,  
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274 (exception: series resistor S2 and S3). The auxiliary conductor and coil terminals of sizes S2 to S3 are all spring-type terminals.

#### Control and auxiliary circuits

Contactors are available with:

- Coils with series resistor
- Coils with solid-state control unit

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

#### Ambient temperature

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

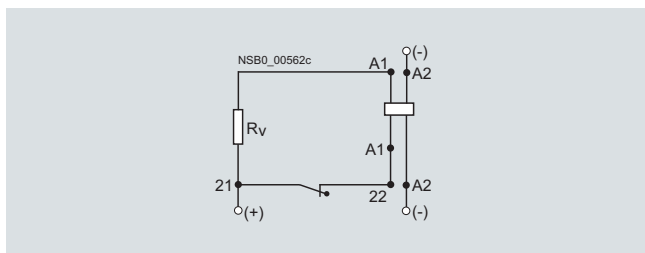
Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

### Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

#### 3RT10 contactors with series resistor

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



Circuit diagram with series resistor

#### Auxiliary switches

The size S2 to S3 contactors are equipped on the front with an auxiliary switch block with 2 NO + 2 NC contacts. The separate series resistor, which is attached laterally next to the contactor on the 35 mm standard mounting rail, is fitted with connecting cables for mounting onto contactors. A circuit diagram showing the terminals is stuck onto each contactor. The NC contact 21-22 of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts.

#### Mounting

The resistor module of the sizes S2 to S3 contactors must be mounted to the left of the contactor owing to the prefabricated connecting cables.

#### Dimensions

Attaching the series resistor increases the width of contactor sizes S2 and S3.

#### 3RT10 contactors with contactor control unit, extended operating range

They are supplied as complete units with a built-on contactor control unit.

#### Control and auxiliary circuits

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.25 x  $U_s$  at an ambient temperature of 70 °C.

A varistor is integrated for damping opening surges in the coil. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors.

#### Mounting

At ambient temperatures up to 70 °C, sizes S2 and S3 of these contactor versions are allowed to be mounted side by side.

#### Dimensions

Because of the built-on contactor control unit, the height of the size S2 and S3 contactors increases by up to 34 mm.

# Contactors for Special Applications

## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

### SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

#### Technical specifications

Contactors	Type	3RT10 3.	3RT10 4.
<b>3RT10 contactors with series resistor</b>			
<b>General technical specifications</b>			
<b>Ambient temperature</b>			
• During operation	°C	-40 ... +70	
<b>Control circuits</b>			
<b>Coil operating range</b>	AC/DC	0.7 ... 1.25 x $U_s$	
<b>Power consumption of the solenoid coils</b>			
• Closing	W	46	78
• Closed	W	14	23
<b>Upright mounting position</b>			
--			
<b>3RT10 contactors with contactor control unit</b>			
<b>Control circuits</b>			
<b>Coil operating range</b>		0.7 ... 1.25 x $U_s$	
<b>Power consumption</b>			
• Closing	W	15	19
• Closed	W	11	12
<b>Upright mounting position</b>			
--			

All details and technical specifications not mentioned here are identical to those of the 3RT10 basic versions (see Chapter 3).

#### Selection and ordering data

**DC operation · DC solenoid system**  
**Spring-type terminals for auxiliary/control circuits**  
**For screw fixing and snap-on mounting onto standard mounting rails**  
**Solenoid coil fitted with varistor**



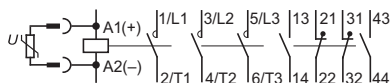
3RT10 3.-3K.44-0LA0

Rated data AC-2 and AC-3 $T_{ij}$ : 70 °C	Auxiliary contacts	Rated control supply voltage $U_s$	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
Operational current $I_e$ at	Version			Order No.	Price per PU		
400 V	NO NC	V DC					
Ratings of induction motors at							
230 V							
<b>400 V</b>							
500 V							
690 V							
A							
kW							
<b>kW</b>							
kW							
kW							

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

#### Size S2

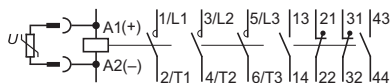
With series resistor



40	11	<b>18.5</b>	22	22	2	1 <sup>1)</sup>	24 110	B B	<b>3RT10 35-3KB44-0LA0</b> <b>3RT10 35-3KF44-0LA0</b>	1 1	1 unit 1 unit	41B 41B
50	15	<b>22</b>	30	22	2	1 <sup>1)</sup>	24 110	B B	<b>3RT10 36-3KB44-0LA0</b> <b>3RT10 36-3KF44-0LA0</b>	1 1	1 unit 1 unit	41B 41B

#### Size S3

With series resistor



65	18.5	<b>30</b>	37	43	2	1 <sup>1)</sup>	24 110	B B	<b>3RT10 44-3KB44-0LA0</b> <b>3RT10 44-3KF44-0LA0</b>	1 1	1 unit 1 unit	41B 41B
80	22	<b>37</b>	45	55	2	1 <sup>1)</sup>	24 110	B B	<b>3RT10 45-3KB44-0LA0</b> <b>3RT10 45-3KF44-0LA0</b>	1 1	1 unit 1 unit	41B 41B
95	22	<b>45</b>	55	55	2	1 <sup>1)</sup>	24 110	B B	<b>3RT10 46-3KB44-0LA0</b> <b>3RT10 46-3KF44-0LA0</b>	1 1	1 unit 1 unit	41B 41B

<sup>1)</sup> The auxiliary contacts are not expandable.

Spare parts see "3RT10 Contactors", Chapter 3.

# Contactors for Special Applications

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

SIRIUS 3RT10 motor contactors,  
18.5 ... 45 kW

### DC operation - DC solenoid system

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

#### Contactor control unit

Solenoid coil fitted with varistor

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

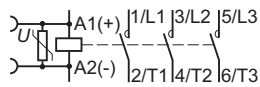


3RT10 ...-3X.40-0LA2

Rated data AC-2 and AC-3 $T_{ij}$ : up to 70 °C	Auxiliary contacts <sup>1)</sup>	Rated control supply voltage $U_s$	DT	Screw terminals	DT	Spring-type terminals for coil terminals
Rated operational current $I_e$ up to 400 V	Version			Order No.	Price per PU	Order No.
Ratings of induction motors at 50 Hz <b>400 V</b>	NO NC	V DC				Price per PU
A kW						

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

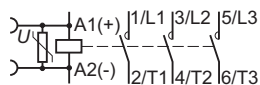
#### Size S2



40	18.5	--	--	24	B	<b>3RT10 35-1XB40-0LA2</b>	C	<b>3RT10 35-3XB40-0LA2</b>
		--	--	110	B	<b>3RT10 35-1XF40-0LA2</b>	B	<b>3RT10 35-3XF40-0LA2</b>
50	22	--	--	24	B	<b>3RT10 36-1XB40-0LA2</b>	B	<b>3RT10 36-3XB40-0LA2</b>
		--	--	110	B	<b>3RT10 36-1XF40-0LA2</b>	B	<b>3RT10 36-3XF40-0LA2</b>

For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail

#### Size S3



65	30	--	--	24	B	<b>3RT10 44-1XB40-0LA2</b>	B	<b>3RT10 44-3XB40-0LA2</b>
		--	--	110	B	<b>3RT10 44-1XF40-0LA2</b>	B	<b>3RT10 44-3XF40-0LA2</b>
80	37	--	--	24	B	<b>3RT10 45-1XB40-0LA2</b>	B	<b>3RT10 45-3XB40-0LA2</b>
		--	--	110	B	<b>3RT10 45-1XF40-0LA2</b>	B	<b>3RT10 45-3XF40-0LA2</b>
95	45	--	--	24	B	<b>3RT10 46-1XB40-0LA2</b>	B	<b>3RT10 46-3XB40-0LA2</b>
		--	--	110	B	<b>3RT10 46-1XF40-0LA2</b>	B	<b>3RT10 46-3XF40-0LA2</b>

<sup>1)</sup> Auxiliary switch blocks mountable as standard contactors.

# Contactors for Special Applications

## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

**3TB5 motor contactors,  
55 ... 200 kW**

### Overview

#### Standards

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

For requirements according to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TB contactors.

#### Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is  $-50$  to  $+70$  °C. Uninterrupted duty at temperatures  $< -25$  °C and  $> +55$  °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

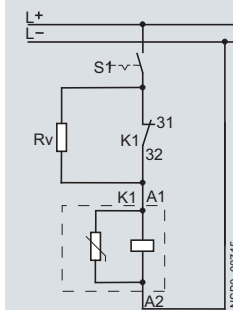
#### Series resistor

The DC solenoid systems of the 3TB contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

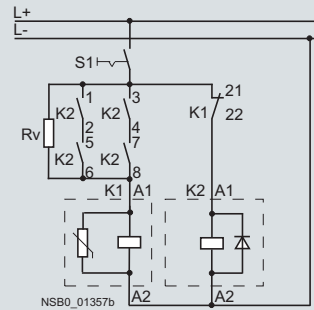
With types 3TB50, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided. With types 3TB52 to 3TB56, the series resistor must be attached separately next to the contactors.

One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data show the number of additional, unassigned auxiliary contacts. It is not possible to extend the number of auxiliary contacts.

**3TB50**



**3TB52 ... 3TB56**



Circuit diagrams with series resistor

#### Reversing contactors

With the 3TB52 to 3TB56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT13 17-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

#### Dimensions

Attaching resistors and varistors increases the width of the contactors.

### Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

#### Control and auxiliary circuits

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

### Technical specifications

Contactors	Type	3TB50	3TB52	3TB54	3TB56
	Size	6	8	10	12
<b>General technical specifications</b>					
<b>Ambient temperature</b>					
• During operation	°C	-40 ... +70			
<b>Control circuits</b>					
<b>Coil operating range</b>		0.7 ... 1.25 x $U_s$			
<b>Power consumption of the solenoid coils</b>					
		For cold coil and $1.0 \times U_s$			
• Closing	W	38	40	190	295
• Closed	W	20	21	43	59

All details and technical specifications not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see [Chapter 3](#).

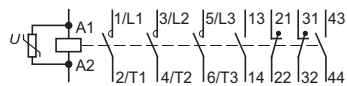
#### Selection and ordering data

##### 3TB50 to 3TB56 contactors for screw fixing Solenoid coil fitted with varistor

Size	Rated data AC-2 and AC-3 at 55 °C					Auxiliary contacts <sup>1)</sup>		Rated control supply voltage $U_s$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
	Opera- tional cur- rent $I_e$ at	Ratings of induction motors at				Version								
	400 V	230 V	<b>400 V</b>	500 V	690 V			V DC						
	A	kW	<b>kW</b>	kW	kW	NO	NC			Order No.	Price per PU			

#### Contactors for switching AC voltage DC operation · DC solenoid system

Terminal designations acc. to EN 50012 or EN 50005



<b>6</b>	110	37	<b>55</b>	75	90	2	1 <sup>2)</sup>	24 110	B	<b>3TB50 17-0LB4</b> ▶ <b>3TB50 17-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>8</b>	170	55	<b>90</b>	110	132	2	1 <sup>2)</sup>	24 110	C D	<b>3TB52 17-0LB4</b> <b>3TB52 17-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>10</b>	250	75	<b>132</b>	160	200	2	1 <sup>2)</sup>	24 110	C A	<b>3TB54 17-0LB4</b> <b>3TB54 17-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>12</b>	400	115	<b>200</b>	255	355	2	1 <sup>2)</sup>	110	▶	<b>3TB56 17-0LF4</b>	1	1 unit	41B

<sup>1)</sup> The number of auxiliary contacts cannot be increased.

<sup>2)</sup> One NC contact used for series resistor.

#### Accessories

##### Spare parts

For contactors	Remarks	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type	V DC						

##### Solenoid coils

##### For contactors with extended operating range

<b>6</b>	3TB50	With series resistor, without varistor	24 110	C D	<b>3TY6 503-0LB4</b> <b>3TY6 503-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>8</b>	3TB52 and 3TC52		24 110	D D	<b>3TY6 523-0LB4</b> <b>3TY6 523-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>10</b>	3TB54		24 110	C C	<b>3TY6 543-0LB4</b> <b>3TY6 543-0LF4</b>	1 1	1 unit 1 unit	41B 41B
<b>12</b>	3TB56 and 3TC56		24 110	C C	<b>3TY6 563-0LB4</b> <b>3TY6 563-0LF4</b>	1 1	1 unit 1 unit	41B 41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

# Contactors for Special Applications

## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

### 3TC contactors for switching DC voltage, 2-pole

#### Overview

##### Standards

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

For requirements according to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274 (exception: series resistor). Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TC contactors.

##### Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is  $-50$  to  $+70$  °C. Uninterrupted duty at temperatures  $< -25$  °C and  $> +55$  °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

At ambient temperatures  $> 55$  °C, a clearance of 10 mm is required for side-by-side mounting of size 2 contactors. There is no need to reduce the technical specifications.

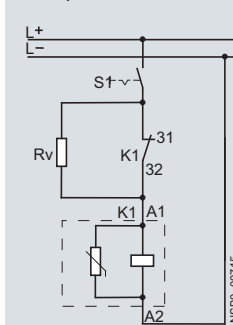
##### Series resistor

The DC solenoid systems of the 3TC contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

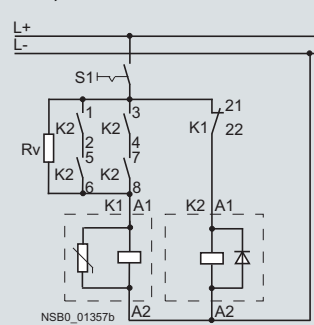
With types 3TC48, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided, while in the case of the 3TC44 it must be mounted and wired between the contactor poles. With types 3TC52 and 3TC56, the series resistor must be attached separately next to the contactors.

One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data show the number of additional, unassigned auxiliary contacts. It is not possible to extend the number of auxiliary contacts.

3TC44, 3TC48



3TC52, 3TC56



Circuit diagrams with series resistor

##### Reversing contactors

With the 3TC52 and 3TC56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT13 17-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

##### Dimensions

Attaching resistors and varistors increases the width of the contactors.

##### Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

##### Control and auxiliary circuits

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

#### Technical specifications

Contactors	Type	3TC44	3TC48	3TC52	3TC56
	Size	2	4	8	12
<b>General technical specifications</b>					
<b>Ambient temperature</b>					
• During operation	°C	-40 ... +70			
<b>Control circuits</b>					
<b>Coil operating range</b>					
0.7 ... 1.25 x $U_s$					
<b>Power consumption of the solenoid coils</b>					
For cold coil and 1.0 x $U_s$					
• Closing	W	48	26	40	295
• Closed	W	13	14	21	59

All details and technical specifications not mentioned here are identical to those of the basic versions of the 3TC contactors; see page 4/50.



# Contactors for Special Applications

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

3TC contactors for switching DC voltage,  
2-pole

### Selection and ordering data

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

**3TC48 to 3TC56: Screw fixing**

**Solenoid coil fitted with varistor**

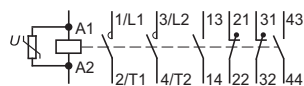


3TC48

Size	Utilization categories	Rated operational current $I_e$ at 750 V	Rated power of loads at				Auxiliary contacts <sup>1)</sup>		Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			220 V	440 V	600 V	750 V	Version	NO						
	A		kW	kW	kW	kW		V DC						
Order No.											Price per PU			

### Contactors for switching DC voltage DC operation · DC solenoid system

Terminal designations according to EN 50012 and EN 50005



2	DC-1	32	7	14	19.2	24	2	1 <sup>2)</sup>	24	B	<b>3TC44 17-0LB4</b>	1	1 unit	41B
	DC-3/DC-5	7.5	5	9	9	4			110	C	<b>3TC44 17-0LF4</b>	1	1 unit	41B
4	DC-1	75	16.5	33	45	56	2	1 <sup>2)</sup>	24	C	<b>3TC48 17-0LB4</b>	1	1 unit	41B
	DC-3/DC-5	75	13	27	38	45			110	C	<b>3TC48 17-0LF4</b>	1	1 unit	41B
8	DC-1	170	48	97	132	165	2	1 <sup>2)</sup>	24	C	<b>3TC52 17-0LB4</b>	1	1 unit	41B
	DC-3/DC-5	170	41	82	110	110			110	C	<b>3TC52 17-0LF4</b>	1	1 unit	41B
12	DC-1	400	88	176	240	300	2	1 <sup>2)</sup>	24	C	<b>3TC56 17-0LB4</b>	1	1 unit	41B
	DC-3/DC-5	400	70	140	200	250			110	D	<b>3TC56 17-0LF4</b>	1	1 unit	41B

<sup>1)</sup> The number of auxiliary contacts cannot be increased.

<sup>2)</sup> One NC contact used for series resistor.

### Accessories

#### Spare parts

For contactors	Remarks	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type	V DC						

#### Arc chutes

##### For contactors with extended operating range

2	3TC44 17-0L...	With cutout for resistor mounting	B	<b>3TY2 442-0B</b>		1	1 unit	41B
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#### Solenoid coils

##### For contactors with extended operating range

2	3TC44	With series resistor, without varistor	24	C	<b>3TY6 443-0LB4</b>	1	1 unit	41B
			110	C	<b>3TY6 443-0LF4</b>	1	1 unit	41B
4	3TC48		24	C	<b>3TY6 483-0LB4</b>	1	1 unit	41B
			110	C	<b>3TY6 483-0LF4</b>	1	1 unit	41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TC contactors; see Chapter 3.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

### Overview

#### 3TC4 and 3TC5

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

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The DC motor ratings given in the tables are applicable to the DC-3 and DC-5 utilization categories with two-pole switching of the load or with the two conducting paths of the contactor connected in series.

One contactor conducting path can switch full power up to 220 V. The ratings for higher voltages are available on request.

#### 3TC7

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

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC circuits.

The solenoid excitation is configured for a particularly large operating range. It is between 0.7 or 0.8 to  $1.2 \times U_s$ .

3TC74 contactors can be used at up to 750 V/400 A and 50 Hz in AC-1 operation.

### Application

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

A version with an especially large coil operating range is available for operation in electrically driven vehicles and in switchgears with significant fluctuations in the actuating voltage (see page 4/49).

### Technical specifications

Contactors	Type	3TC4 and 3TC7	3TC5
<b>Rated data of the auxiliary contacts</b>			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690	
<b>Conventional thermal current <math>I_{th}</math> = Rated operational current <math>I_e/AC-12</math></b>	A	10	10
<b>AC load</b>			
<b>Rated operational current <math>I_e/AC-15/AC-14</math></b> • For rated operational voltage $U_e$			
	24 V A	10	10
	110 V A	10	10
	125 V A	10	10
	220 V A	6	6
	230 V A	5.6	5.6
	380 V A	4	4
	400 V A	3.6	3.6
	500 V A	2.5	2.5
	660 V A	2.5	2.5
	690 V A	--	--
<b>DC load</b>			
<b>Rated operational current <math>I_e/DC-12</math></b> • For rated operational voltage $U_e$			
	24 V A	10	10
	60 V A	10	10
	110 V A	3.2	8
	125 V A	2.5	6
	220 V A	0.9	2
	440 V A	0.33	0.6
	600 V A	0.22	0.4
<b>Rated operational current <math>I_e/DC-13</math></b> • For rated operational voltage $U_e$			
	24 V A	10	10
	60 V A	5	5
	110 V A	1.14	2.4
	125 V A	0.98	2.1
	220 V A	0.48	1.1
	440 V A	0.13	0.32
	600 V A	0.07	0.21

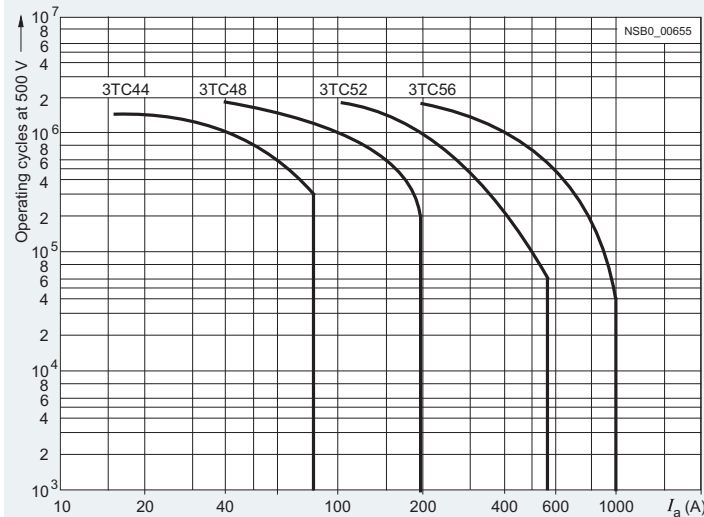
# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

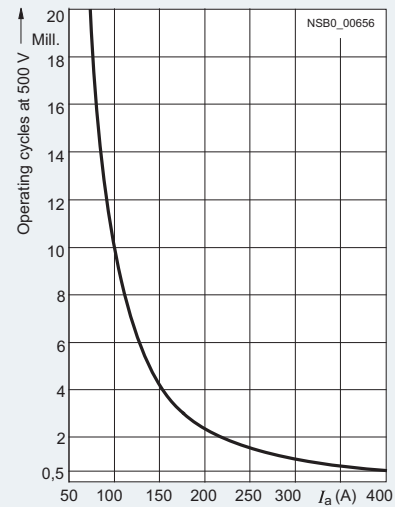
Contactors	Type	<b>3TC44 ... 3TC56</b>
<b>Ⓢ and Ⓣ rated data of the auxiliary contacts</b>		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600

Contactors	Type	<b>3TC44 ... 3TC78</b>
<b>Contact endurance of the main contacts</b>		



3TC44 to 3TC56 contactors

Legend for the diagrams:  
 $I_a$  = Breaking current



3TC74 and 3TC78 contactors

Contactors	Type Size	<b>3TC44 2</b>	<b>3TC48 4</b>	<b>3TC52 8</b>	<b>3TC56 12</b>
<b>General technical specifications</b>					
<b>Permissible mounting positions</b>					
The contactors are designed for operation on a vertical mounting surface.					
<b>Mechanical endurance</b>	Operating cycles	10 million			
<b>Electrical endurance</b>	Operating cycles	1)			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	800		1000	
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	Up to 300		Up to 660	
<b>Mirror contacts<sup>2)</sup></b>		Yes, acc. to IEC 60947-4-1, Appendix F			
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.					
<b>Permissible ambient temperature</b>					
• During operation	°C	-25 ... +55			
• During storage	°C	-50 ... +80			
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00/open, for AC operation, coil assembly IP40			
<b>Shock resistance</b>	Rectangular pulse	g/ms	7.5/5 and 3.4/10	10/5 and 5/10	12/5 and 5.5/10
<b>Short-circuit protection</b>					
<b>Main circuit</b>					
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE					
• Type of coordination "1"	A	50	160	250	400
• Type of coordination "2"	A	35	63	80	250
<b>Auxiliary circuit</b>					
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	16			
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	10			

1) See the endurance diagram above.

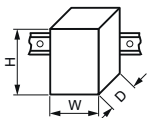

2) For 3TC44, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.

Rated data of the auxiliary contacts see page 4/50.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

Type			<b>3TC44</b>	<b>3TC48</b>	<b>3TC52</b>	<b>3TC56</b>
Size			<b>2</b>	<b>4</b>	<b>8</b>	<b>12</b>
Dimensions (W x H x D)						
• DC operation		mm	70 x 85 x 141	100 x 183 x 180	135 x 238 x 232	160 x 279 x 310
• AC operation		mm	70 x 85 x 100	100 x 183 x 154	135 x 238 x 200	160 x 279 x 251
						
<b>Control circuits</b>						
<b>Coil operating range</b>			0.8 ... 1.1 x U <sub>s</sub>			
<b>Power consumption of the solenoid coils</b> (for cold coil and 1.0 x U <sub>s</sub> )						
• DC operation	- Closing = Closed	W	10	19	30	86
• AC operation, 50 Hz coil	- Closing	VA/p.f.	68/0.86	300/0.5	640/0.48	1780/0.3
	- Closed	VA/p.f.	10/0.29	26/0.24	46/0.23	121/0.22
• AC operation, 60 Hz coil	- Closing	VA/p.f.	95/0.79	365/0.45	730/0.38	2140/0.3
	- Closed	VA/p.f.	12/0.3	35/0.26	56/0.24	140/0.29
• AC operation, 50/60 Hz coil	- Closing at 50 Hz/60 Hz	VA/p.f.	79/73/0.83/0.78	--	--	--
	- Closed at 50 Hz/60 Hz	VA/p.f.	11/9/0.28/0.27	--	--	--
<b>Operating times</b> (for 0.8 ... 1.1 x U <sub>s</sub> ) Total break time = Opening delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• DC operation	- Closing delay	ms	35 ... 190	90 ... 380	120 ... 400	110 ... 400
	- Opening delay <sup>1)</sup>	ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	- Closing delay	ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	- Opening delay <sup>1)</sup>	ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	- DC-1	ms	20			
	- DC-3/DC-5	ms	30			
<b>Main circuit</b>						
<b>Load rating with DC</b>						
<b>Utilization category DC-1, switching resistive loads (L/R ≤ 1 ms)</b>						
• Rated operational currents I <sub>e</sub> (at 55 °C)	Up to U <sub>e</sub> 750 V	A	32	75	220	400
• Minimum conductor cross-section		mm <sup>2</sup>	6	25	95	240
• Rated power at U <sub>e</sub>	At 220 V	kW	7	16.5	48	88
	440 V	kW	14	33	97	176
	600 V	kW	19.2	45	132	240
	750 V	kW	24	56	165	300
<b>Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤ 15 ms)</b>						
• Rated operational currents I <sub>e</sub> (at 55 °C)	Up to 220 V	A	32	75	220	400
	440 V	A	29	75	220	400
	600 V	A	21	75	220	400
	750 V	A	7.5	75	170	400
• Rated power at U <sub>e</sub>	At 110 V	kW	2.5	6.5	20	35
	220 V	kW	5	13	41	70
	440 V	kW	9	27	82	140
	600 V	kW	9	38	110	200
	750 V	kW	4	45	110	250
<b>Switching frequency</b>						
<b>Switching frequency z</b> in operating cycles/hour						
AC/DC operation						
• With resistive load DC-1		h <sup>-1</sup>	1500	1000		
• For inductive load DC-3/DC-5		h <sup>-1</sup>	750	600		
<b>Conductor cross-sections (1 or 2 conductors connectable)</b>						
<b>Main conductors:</b>			 <b>Screw terminals</b>			
• Solid	mm <sup>2</sup>		2 x (2.5 ... 10)	2 x (6 ... 16)	--	--
• Finely stranded with end sleeve	mm <sup>2</sup>		2 x (1.5 ... 4)	--	--	--
• Stranded with cable lug	mm <sup>2</sup>		2 x 16	2 x 35	2 x 120	2 x 150
• Pin-end connector acc. to DIN 46231	mm <sup>2</sup>		2 x (1 ... 6)	--	--	--
• Busbars	mm		--	15 x 2.5	25 x 4	2 x (25 x 3)
• Terminal screw	mm		M5	M6	M10	M10
<b>Auxiliary conductors:</b>						
• Solid	mm <sup>2</sup>		2 x (1 ... 2.5)			
• Finely stranded with end sleeve	mm <sup>2</sup>		2 x (0.75 ... 1.5)			

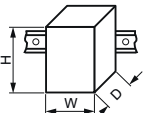
<sup>1)</sup> The opening delay times can increase if the contactor coils are damped against voltage peaks. Only 3TC44 contactors are allowed to be fitted with diodes.

Rated data of the auxiliary contacts see page 4/50.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

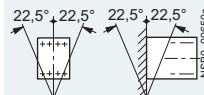
**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

Type		<b>3TC74</b>	<b>3TC78</b>
Design		<b>1-pole contactors</b>	<b>2-pole contactors</b>
Dimensions		mm 78 x 352 x 276	160 x 366 x 290

### General technical specifications

#### Permissible mounting positions

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



<b>Mechanical endurance</b>	Operating cycles	30 million
<b>Electrical endurance</b>	Operating cycles	1)
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	1500
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	8
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	630
<b>Permissible ambient temperature</b>	°C	-25 ... +55
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP00/open

### Short-circuit protection

#### Main circuit

Fuse links, operational class gG:  
LV HRC, type 3NA

- Type of coordination "1"
- Type of coordination "2"

	A	630
	A	500
<b>Auxiliary circuits</b>		
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	16
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	10

### Control circuits

#### Coil operating range

- DC operation
 

At $U_c = 24$ V	0.8 ... 1.2 x $U_s$
At $U_c > 24$ V	0.7 ... 1.2 x $U_s$
- AC operation
 

At $U_c = 24$ V	0.7 ... 1.15 x $U_s$
At $U_c > 24$ V	0.7 ... 1.14 x $U_s$

#### Power consumption of the solenoid coils (when coil is cold and 1.0 x $U_s$ )

• DC operation	Closing = Closed	W	46	92
• AC operation, 50 Hz	Closing, Closed	VA	80 0.95	160 0.95

#### Operating times

(Total break time = Opening delay + Arcing time)

- AC and DC operation
 

- Closing delay	ms	60 ... 100
- Opening delay	ms	20 ... 35
- Arcing time at 0.06 ... 4 x  $I_e$ 

	ms	40 ... 70
--	----	-----------

### Main circuit

#### Load rating with DC

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

• Rated operational current $I_e/DC-1$ (at 55 °C)	A	500	500
• Minimum conductor cross-section	mm <sup>2</sup>	2 x 150	2 x 150
• Rated power			
	At 220 V	kW	110
	440 V	kW	220
	600 V	kW	300
	750 V	kW	375
	1200 V	kW	600
	1500 V	kW	750
• Critical currents, without arc extinction	At 440 V	A	≤ 7
	600 V	A	≤ 13
	750 V	A	≤ 15
	≤ 800 V	A	≤ 7
	1200 V	A	≤ 13
	1500 V	A	≤ 15

##### Utilization categories DC-3 and DC-5, switching DC motors

<b>Permissible rated current for regenerative braking</b>	A	400
At 110 ... 600 V		

### Switching frequency

#### Switching frequency $z$ in operating cycles/hour

AC/DC operation			
• With resistive load DC-1	h <sup>-1</sup>	750	1000
• For inductive load DC-3/DC-5	h <sup>-1</sup>	500	500

1) Endurance see page 4/51.

2) See Selection and ordering data.

Rated data of the auxiliary contacts see page 4/50.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

### 3TC contactors, 1- and 2-pole, 32 ... 400 A

Contactors	Type Design	3TC74 1-pole contactors	3TC78 2-pole contactors
<b>Conductor cross-sections</b>			
<b>Main conductors</b>		⊕ Screw terminals	
• Stranded with cable lug	mm <sup>2</sup>	2 x ... 150	
• Busbars	mm	2 x (30 x 4)	
<b>Auxiliary conductors</b>			
• Solid	mm <sup>2</sup>	1 ... 2.5	
• Finely stranded with end sleeve	mm <sup>2</sup>	0.75 ... 1.5	

### Selection and ordering data



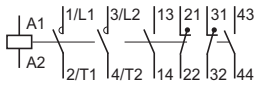
3TC44

3TC48

Size	Utilization category <sup>1)</sup>	Operational current $I_e$ <sup>3)</sup>	Ratings of DC motors at					Auxiliary contacts <sup>2)</sup>		Rated control supply voltage $U_s$	DT	⊕ Screw terminals	PU (UNIT, SET, M)	PS*	PG	
			110 V	220 V	440 V	600 V	750 V	Version				Order No.	Price per PU			
			kW	kW	kW	kW	kW	NO	NC	V						
			A													

### 3TC44 to 3TC56 two-pole contactors

Terminal designations acc. to EN 50012



### DC operation

#### Screw fixing and snap-on mounting onto TH 35 standard mounting rail

2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	24 DC 110 DC 220 DC	▶ ▶ ▶	3TC44 17-0AB4 3TC44 17-0AF4 3TC44 17-0AM4	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B
<b>Screw fixing</b>															
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	24 DC 110 DC 220 DC	A A A	3TC48 17-0AB4 3TC48 17-0AF4 3TC48 17-0AM4	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B
8	DC-3, DC-5	220 <sup>4)</sup>	20	41	82	110	110	2	2	24 DC 110 DC 220 DC	C C C	3TC52 17-0AB4 3TC52 17-0AF4 3TC52 17-0AM4	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	24 DC 110 DC 220 DC	C C C	3TC56 17-0AB4 3TC56 17-0AF4 3TC56 17-0AM4	1 1 1	1 unit 1 unit 1 unit	41B 41B 41B

### AC operation, 50 Hz

#### Screw fixing and snap-on mounting onto TH 35 standard mounting rail

2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	220/230 AC <sup>5)</sup> 110 / 110 AC	▶ ▶	3TC44 17-0BP0 3TC44 17-0BF0	1 1	1 unit 1 unit	41B 41B
<b>Screw fixing</b>															
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	220/230 AC <sup>5)</sup> 110 AC	A C	3TC48 17-0BP0 3TC48 17-0BF0	1 1	1 unit 1 unit	41B 41B
8	DC-3, DC-5	220 <sup>4)</sup>	20	41	82	110	110	2	2	220/230 AC <sup>5)</sup> 110 AC	A C	3TC52 17-0BP0 3TC52 17-0BF0	1 1	1 unit 1 unit	41B 41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	220/230 AC <sup>5)</sup> 110 AC	C C	3TC56 17-0BP0 3TC56 17-0BF0	1 1	1 unit 1 unit	41B 41B

Other rated control supply voltages according to page 4/56 on request.

<sup>1)</sup> Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactors and Contactor Assemblies".

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

<sup>3)</sup> The following rated operational currents are permitted for reversing duty with 3TC44 to 3TC56 contactors:

Contactor Type	Rated operational voltage	
	110 V, 220 V	440 V
3TC44	32 A	7 A
3TC48	75 A	75 A
3TC52	170 A	170 A
3TC56	400 A	400 A

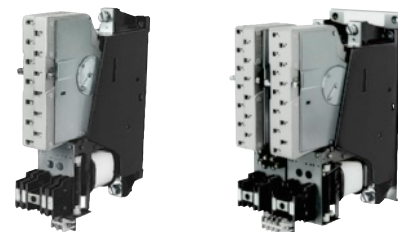
<sup>4)</sup> At > 600 V:  $I_e = 170$  A.

<sup>5)</sup> Operating range at 220 V: 0.85 to 1.15 x  $U_s$

# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**



3TC74

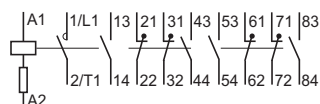
3TC78

Size	Utilization category <sup>1)</sup>	Operational current $I_e$	Ratings of DC motors at							Auxiliary contacts <sup>2)</sup>		Rated control supply voltage $U_s$	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG	
			110 V	220 V	440 V	600 V	750 V	1200 V	1500 V	Version	Version								
			A	kW	kW	kW	kW	kW	kW	kW			NO	NC	V	Order No.	Price per PU		

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

**DC operation**

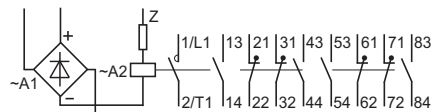
Terminal designations acc. to EN 50005



12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	24 DC 110 DC	C	<b>3TC74 14-0EB</b>		1	1 unit	41B
													C	<b>3TC74 14-0EF</b>		1	1 unit	41B

**AC operation, 50 Hz**

Terminal designations acc. to EN 50005

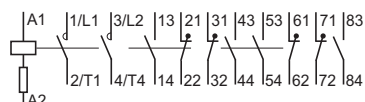


12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	230/220 AC <sup>3)</sup>	C	<b>3TC74 14-1CM</b>		1	1 unit	41B
----	------------	-----	----	----	-----	-----	-----	----	----	---	---	--------------------------	---	---------------------	--	---	--------	-----

**3TC78 2-pole contactors · Operational voltage up to 1500 V**

**DC operation**

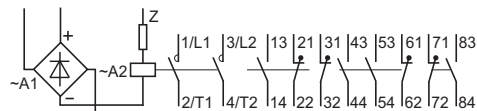
Terminal designations acc. to EN 50005



12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	24 DC 110 DC	C	<b>3TC78 14-0EB</b>		1	1 unit	41B
													C	<b>3TC78 14-0EF</b>		1	1 unit	41B

**AC operation, 50 Hz**

Terminal designations acc. to EN 50005



12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	230/220 AC <sup>3)</sup>	C	<b>3TC78 14-1CM</b>		1	1 unit	41B
----	------------	-----	----	----	-----	-----	-----	-----	-----	---	---	--------------------------	---	---------------------	--	---	--------	-----

- 1) Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactor and Contactor Assemblies".
- 2) The fitting of auxiliary switches cannot be altered on DC-operated contactors.
- 3) Upper operating range limit at 230 V:  $1.14 \times U_s$ .

Other rated control supply voltages according to page 4/56 on request.

Spare parts see page 4/58.



# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

### Options

**Rated control supply voltages (the 10th and 11th position of the order number must be changed)**

	Contactor type	3TC44	3TC48	3TC52/56	3TC74/78
Rated control supply voltage $U_s$					

#### AC operation

Solenoid coils for 50 Hz

24 V AC	B0	B0	--	--
110 V AC	F0	F0	F0	--
230/220 V AC	P0 <sup>1)</sup>	P0 <sup>1)</sup>	P0 <sup>1)</sup>	M <sup>2)</sup>
240 V AC	U0	U0	--	--

#### AC operation

Solenoid coils for 50/60 Hz

24 V AC	C2	--	--	--
110 V AC	G2	--	--	--
120 V AC	K2	--	--	--
220 V AC	N2	--	--	--
230 V AC	L2	--	--	--

#### DC operation

24 V DC	B4	B4	B4	B
48 V DC	W4	W4	--	--
60 V DC	E4	E4	--	--
110 V DC	F4	F4	F4	F
125 V DC	G4	G4	--	--
220 V DC	M4	M4	M4	M
230 V DC	P4	P4	--	--


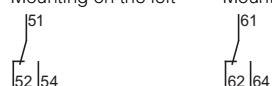
<sup>1)</sup> Operating range at 220 V or 380 V:  $0.85$  to  $1.15 \times U_s$ ;  
lower operating range limit according to IEC 60947.

<sup>2)</sup> Upper operating range limit at 230 V:  $1.14 \times U_s$ .


### Accessories

For contactors	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Size	Type		Order No.	Price per PU		

#### Solid-state compatible auxiliary switch blocks with screw terminals

	<b>2 and 4</b>	3TC44, 3TC48	For operation in dusty atmospheres and in solid-state circuits with rated operational currents $I_e$ AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V For lateral mounting onto contactors. With 1 changeover contact. 2nd auxiliary switch block, left or right (replacement for 3TY6 561-1U, 3TY6 561-1V) Mounting on the left      Mounting on the right	<b>3TY7 561-1UA00</b>	1	1 unit	41B
5TY7 561-1.							

#### Terminal covers






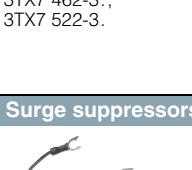

	<b>6</b>	3TC48	For protection against inadvertent contact with exposed busbar connections	M6 B	<b>3TX6 506-3B</b>	1	1 unit	41B
	<b>8 and 12</b>	3TC52, 3TC56	Can be screwed on free screw end. Covers one busbar connection (1 set = 6 units).	M10 B	<b>3TX6 546-3B</b>	1	1 unit	41B
3TX6 526-3B								



# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

For contactors		Version	Rated control supply voltage $U_s$		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG					
Size	Type		V AC	V DC											
<b>Surge suppressors - Varistors</b>															
	<b>2</b>	3TC44 <sup>1)</sup>	<b>Varistors<sup>2)</sup></b> with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	<b>3TX7 402-3G</b>		1	1 unit	41B				
				48 ... 127	70 ... 150	A	<b>3TX7 402-3H</b>		1	1 unit	41B				
				127 ... 240	150 ... 250	A	<b>3TX7 402-3J</b>		1	1 unit	41B				
				240 ... 400	--	C	<b>3TX7 402-3K</b>		1	1 unit	41B				
				400 ... 600	--	C	<b>3TX7 402-3L</b>		1	1 unit	41B				
	<b>4</b>	3TC48	<b>Varistors<sup>2)</sup></b> for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	D	<b>3TX7 462-3G</b>		1	1 unit	41B				
				48 ... 127	70 ... 150	C	<b>3TX7 462-3H</b>		1	1 unit	41B				
				127 ... 240	150 ... 250	B	<b>3TX7 462-3J</b>		1	1 unit	41B				
				240 ... 400	--	A	<b>3TX7 462-3K</b>		1	1 unit	41B				
				400 ... 600	--	C	<b>3TX7 462-3L</b>		1	1 unit	41B				
	<b>8 and 12</b>	3TC52, 3TC56	<b>Varistor</b> for sticking onto the contactor base or for mounting separately	24 ... 48	--	D	<b>3TX7 462-3G</b>		1	1 unit	41B				
				48 ... 127	--	C	<b>3TX7 462-3H</b>		1	1 unit	41B				
				127 ... 240	--	B	<b>3TX7 462-3J</b>		1	1 unit	41B				
				240 ... 400	--	A	<b>3TX7 462-3K</b>		1	1 unit	41B				
				400 ... 600	--	C	<b>3TX7 462-3L</b>		1	1 unit	41B				
	<b>8 and 12</b>	3TC52, 3TC56	<b>Varistors<sup>2)</sup></b> for separate screw connection or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	<b>3TX7 522-3G</b>		1	1 unit	41B				
				--	70 ... 150	B	<b>3TX7 522-3H</b>		1	1 unit	41B				
				--	150 ... 250	B	<b>3TX7 522-3J</b>		1	1 unit	41B				
<b>Surge suppressors - RC elements</b>															
	<b>4</b>	3TC48	<b>RC elements</b> For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	C	<b>3TX7 462-3R</b>		1	1 unit	41B				
				--	24 ... 70	B	<b>3TX7 522-3R</b>		1	1 unit	41B				
				48 ... 127	--	A	<b>3TX7 462-3S</b>		1	1 unit	41B				
				--	70 ... 150	B	<b>3TX7 522-3S</b>		1	1 unit	41B				
				127 ... 240	--	A	<b>3TX7 462-3T</b>		1	1 unit	41B				
				--	150 ... 250	B	<b>3TX7 522-3T</b>		1	1 unit	41B				
				240 ... 400	--	A	<b>3TX7 462-3U</b>		1	1 unit	41B				
				400 ... 600	--	C	<b>3TX7 462-3V</b>		1	1 unit	41B				
					<b>8 and 12</b>	3TC52, 3TC56	<b>RC elements</b> For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	<b>3TX7 522-3R</b>		1	1 unit	41B
								48 ... 127	--	B	<b>3TX7 522-3S</b>		1	1 unit	41B
127 ... 240	--	B	<b>3TX7 522-3T</b>						1	1 unit	41B				
240 ... 400	--	B	<b>3TX7 522-3U</b>						1	1 unit	41B				
400 ... 600	--	B	<b>3TX7 522-3V</b>						1	1 unit	41B				
<b>Surge suppressors - Diodes</b>															
	<b>4 to 12</b>	3TC48, 3TC52, 3TC56	<b>Diode assemblies<sup>3)</sup></b> (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	D	<b>3TX7 462-3D</b>		1	1 unit	41B				

1) The connection piece for mounting the surge suppressor must be bent slightly.

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

3) Not for DC economy circuit.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

### Spare parts

For contactors		Version		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Size	Type	NO	NC		Order No.	Price per PU		
<b>Auxiliary switch blocks</b>								
<b>For mounting on the side</b>								
				Left	Right			
<b>2 and 4</b>	3TC44, 3TC48	Auxiliary switch block (replacement for 3TY6 501-1A/-1B)						
		1	1					
<b>4</b>	3TC48	2nd auxiliary switch block, left <sup>1)</sup>						
		1	1					
		2nd auxiliary switch block, right <sup>1)</sup>						
		1	1					
<b>8 and 12</b>	3TC52, 3TC56	Auxiliary switch block, left						
		1	1					
		Auxiliary switch block, right						
		1	1					
		2nd auxiliary switch block, left <sup>1)</sup>						
		1	1					
		2nd auxiliary switch block, right <sup>1)</sup>						
		1	1					

<sup>1)</sup> Can only be mounted on AC-operated contactors.


For contactors		Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
Size	Type									
<b>Contacts with fixing parts</b>										
In order to ensure reliable operation of the contactors, only <b>original replacement contacts</b> should be used.										
<b>2</b>	3TC44	(1 set = 2 moving and 4 fixed switching elements)			B	<b>3TY2 440-0A</b>		1	1 unit	41B
<b>4</b>	3TC48				B	<b>3TY2 480-0A</b>		1	1 unit	41B
<b>8</b>	3TC52				B	<b>3TY2 520-0A</b>		1	1 unit	41B
<b>12</b>	3TC56				C	<b>3TY2 560-0A</b>		1	1 unit	41B
<b>Arc chutes</b>										
<b>2</b>	3TC44	Arc chutes, 2-pole			C	<b>3TY2 442-0A</b>		1	1 unit	41B
<b>4</b>	3TC48				C	<b>3TY2 482-0A</b>		1	1 unit	41B
<b>8</b>	3TC52				C	<b>3TY2 522-0A</b>		1	1 unit	41B
<b>12</b>	3TC56				C	<b>3TY2 562-0A</b>		1	1 unit	41B
<b>Solenoid coils</b>										
<b>DC operation<sup>1)</sup></b>										
<b>2</b>	3TC44					<b>3TY6 443-0B..</b>				
<b>4</b>	3TC48					<b>3TY6 483-0B..</b>				
<b>8</b>	3TC52					<b>3TY6 523-0B..</b>				
<b>12</b>	3TC56					<b>3TY6 563-0B..</b>				
<b>AC operation<sup>1)</sup></b>										
<b>2</b>	3TC44					<b>3TY7 403-0A..</b>				
<b>4</b>	3TC48					<b>3TY6 483-0A..</b>				
<b>8</b>	3TC52					<b>3TY6 523-0A..</b>				
<b>12</b>	3TC56					<b>3TY6 566-0A..</b>				

<sup>1)</sup> Rated control supply voltages see table, page 4/56. The 10th and 11th digit of the Order No. must be supplemented accordingly.

# Contactors for Special Applications

## Contactors for Switching DC Voltage

**3TC contactors,  
1- and 2-pole, 32 ... 400 A**

For contactors	Version	DT	Screw terminals 	PU (UNIT, SET, M)	PS*	PG		
Type			Order No.	Price per PU				
<b>Auxiliary switch blocks</b>								
3TC74	4 NO + 4 NC	▶	<b>3TY2 741-2J</b>	1	1 unit	41B		
3TC78	Auxiliary switch block left, with 2 NO + 2 NC	▶	<b>3TY2 781-2C</b>	1	1 unit	41B		
	Auxiliary switch block right, with 2 NO + 2 NC	C	<b>3TY2 781-2D</b>	1	1 unit	41B		
For contactors	Version	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC/DC						
<b>Surge suppressors · Varistors</b>								
3TC7	For sticking onto the contactor base	24	C	<b>3TX2 746-2F</b>	1	1 unit	41B	
		110	C	<b>3TX2 746-2G</b>	1	1 unit	41B	
<b>Contacts with fixing parts</b>								
3TC7	Main contacts (1 set) 2 units required per contactor	--	C	<b>3TY2 740-0E</b>	1	1 unit	41B	
<b>Arc chutes</b>								
3TC7	For 3TC78: 2 units required per contactor	--	C	<b>3TY2 742-0C</b>	1	1 unit	41B	

# Power Relays/Miniature Contactors

## 3TG10 contactors 4-pole, 4 kW

### Overview

#### Version

The 3TG10 power relays/miniature contactors with 4 main contacts are available with screw terminals or 6.3 mm x 0.8 mm flat connectors. The versions with screw terminals are climate-proof and finger-safe according to IEC 61140.

The 3TG10 miniature contactors are characterized by their width of only 36 mm.

#### Surge suppression

The 3TG10 power relays/miniature contactors have an integrated protective circuit against opening surges.

### Application

Because they are hum-free they are suitable for use in household appliances and distribution boards in office and residential areas. They can also be used for applications where there is little space such as air conditioners, heating systems, pumps and fans, i.e. for simple electrical controls.

#### Standards

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

#### Overload and short-circuit protection

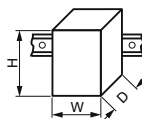
The 3UA7 overload relay can be used for overload protection. This applies to mounting onto contactors and to stand-alone installation.

### Technical specifications

Type

Dimensions (W x H x D)

- With 3UA7 overload relay mounted below



#### 3TG10

mm	36 x 56 x 56
mm	45 x 100 x 62

#### General technical specifications

##### Endurance

- Mechanical
- Electrical
  - AC-1 at  $I_e$
  - AC-3 at  $I_e$

Operating cycles	3 million
Operating cycles	0.1 million
Operating cycles	0.4 million

**Rated insulation voltage  $U_i$**  (pollution degree 3)

V	400
---	-----

**Rated impulse withstand voltage  $U_{imp}$**

kV	4
----	---

##### Protective separation

between coil and contacts acc. to IEC 60947-1, Appendix N

V	Up to 300
---	-----------

##### Permissible ambient temperature

- During operation<sup>1)</sup>
- During storage

°C	-25 ... + 55
°C	-50 ... + 80

**Degree of protection** according to IEC 60947-1 and IEC 60529

IP00, drive system IP20

#### Short-circuit protection

**Fuse links**, operational class gG:

LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1

- Type of coordination "1"
- Type of coordination "2"

Miniature circuit breakers, C characteristic

A	25
A	10
A	10

#### Control circuits

##### Coil operating range

0.85 ... 1.1 x  $U_s$

**Power consumption of the solenoid coils** (when coil is cold and 1.0 x  $U_s$ )

- AC operation, 45 ... 450 Hz
  - P.f.
- DC operation

VA	4.4
	0.9 (hum-free)
W	4

#### AC capacity

##### Utilization category AC-1, switching resistive loads

**Rated operational current  $I_e$**  up to 400 V at 55 °C<sup>1)</sup>

A	20 for screw terminals, 16 for flat connector
---	---

**Rated power  $U_e$**  for AC loads with p.f. = 1, 230/220 V

- For screw terminals
- For flat connector

kW	7.5 (13 at 400 V)
kW	6 (10 at 400 V)

Minimum conductor cross-section for load with  $I_e$

mm <sup>2</sup>	2.5
-----------------	-----

##### Utilization categories AC-2 and AC-3

**Operational current for AC-3 at 400 V rated value**

A	8.4
---	-----

Rated power for slipping or squirrel-cage motors with 50 and 60 Hz and at 400 V

kW	4
----	---

##### Utilization category AC-5a (permissible nominal impedance: $\geq 0.5 \Omega$ )



##### Switching of gas discharge lamps

Per main current path at 230 V, 50 Hz

Rated power/rated operational current per lamp

• Uncorrected	18 W	0.37 A	43
	36 W	0.43 A	37
	58 W	0.67 A	24
• DUO switching	18 W	2 x 0.11 A	2 x 81
	36 W	2 x 0.21 A	2 x 42
	58 W	2 x 0.32 A	2 x 28

<sup>1)</sup> If the three main current paths carry a load of 20 A, the following applies if  $I > 10$  A in the fourth conducting path: Permissible ambient temperature 40 °C.

Type	3TG10				
<b>AC capacity</b>					
<b>Switching gas discharge lamps with correction, ECG</b>					
Per main current path 230 V, 50 Hz					
Rated power per lamp/capacitance/ rated operational current per lamp					
• Shunt compensation	L18 W	4.5 µF	0.11 A	Unit(s)	15
	L36 W	4.5 µF	0.21 A	Unit(s)	15
	L58 W	7 µF	0.32 A	Unit(s)	10
• With ECG (single lamp)	L18 W	6.8 µF	0.10 A	Unit(s)	39
	L36 W	6.8 µF	0.18 A	Unit(s)	39
	L58 W	10 µF	0.27 A	Unit(s)	26
• With ECG (two lamps)	L18 W	10 µF	0.18 A	Unit(s)	2 x 26
	L36 W	10 µF	0.35 A	Unit(s)	2 x 26
	L58 W	22 µF	0.52 A	Unit(s)	2 x 12
<b>Utilization category AC-5b, switching incandescent lamps</b>				kW	1.6
Per main current path at 230 V, 50 Hz					
<b>Load rating with DC</b>					
<b>Utilization category DC-1, switching resistive loads (<math>L/R \leq 15</math> ms)</b>					
• Rated operational currents $I_e$					
- 1 conducting path	Up to 24 V	A	16		
	60 V	A	6		
	110 V	A	2		
	220 V / 240 V	A	0.8		
- 2 conducting paths in series	Up to 24 V	A	16		
	60 V	A	16		
	110 V	A	6		
	220 V / 240 V	A	1.6		
- 3 conducting paths in series	Up to 24 V	A	18		
	60 V	A	18		
	110 V	A	16		
	220 V / 240 V	A	6		
- 4 conducting paths in series	Up to 24 V	A	20		
	60 V	A	20		
	110 V	A	20		
	220 V / 240 V	A	20		
<b>Utilization category DC-3 and DC-5</b>					
<b>Shunt-wound and series-wound motors (<math>L/R \leq 15</math> ms)</b>					
• Rated operational currents $I_e$					
- 1 conducting path	Up to 24 V	A	10		
	60 V	A	0.5		
	110 V	A	0.15		
	220 V / 240 V	A	0		
- 2 conducting paths in series	Up to 24 V	A	16		
	60 V	A	5		
	110 V	A	0.35		
	220 V / 240 V	A	0		
- 3 conducting paths in series	Up to 24 V	A	16		
	60 V	A	16		
	110 V	A	10		
	220 V / 240 V	A	1.75		
- 4 conducting paths in series	Up to 24 V	A	18		
	60 V	A	16		
	110 V	A	10		
	220 V / 240 V	A	2		
<b>Conductor cross-sections</b>					
<b>Terminal screws</b>					
Terminal screws					<b>Screw terminals</b>
• Finely stranded with end sleeve (DIN 46228 Form A/D/C)	mm <sup>2</sup>				M3
• Solid	mm <sup>2</sup>				2 x (0.75 ... 2.5) 2 x (1 ... 2.5), 1 x 4
Permissible opening tool (screwdriver)					3.0 mm x 0.5 mm (3RA29 08-1A) or Pozidriv 2
<b>Flat connectors</b>					
• Finely stranded 6.3 mm plug-in sleeve acc. to DIN 46245/46247	mm <sup>2</sup>				<b>Flat connectors</b>
- 6.3 ... 1	mm <sup>2</sup>				0.5 ... 1
- 6.3 ... 2.5	mm <sup>2</sup>				1 ... 2.5
<b>Ⓢ and Ⓣ rating (screw terminals)</b>					
<b>Rated insulation voltage</b>	AC	V	600		
<b>Uninterrupted current</b>	Open and enclosed	A	20		
<b>Maximum horsepower ratings</b>				Single-phase/Three-phase	
(Ⓢ and Ⓣ approved values), rated power for induction motors with 60 Hz					
	At 115 V	hp	0.5/ --		
	200 V	hp	1/ 3		
	230 V	hp	1.5/ 3		
	460 ... 600 V	hp	0/ 5		

# Power Relays/Miniature Contactors

## 3TG10 contactors 4-pole, 4 kW

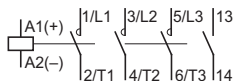
### Selection and ordering data

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

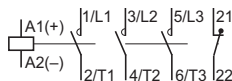
Rated data				Main contacts	Rated control supply voltage $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Utilization category											
AC-1											
Switching of resistive loads at 55 °C											
AC-2 and AC-3											
Operational current $I_e$ up to 400 V	Power of AC loads at 50 Hz and 400 V	Operational current $I_e$ up to 400 V <sup>1)</sup>	Power of AC loads at 50 Hz and 400 V	Version							
A	kW	A	kW	NO	NC	V					

#### 4-pole · Hum-free · With screw terminals

1 NO, Ident. No. **10**



1 NC, Ident. No. **01E**



**AC operation, 45 ... 450 Hz**

20 13 8.4 4

4 -- 24 AC

110 AC

230 AC

3 1 24 AC

110 AC

230 AC

**Screw terminals**



▶ **3TG10 10-0AC2**

▶ **3TG10 10-0AG2**

▶ **3TG10 10-0AL2**

▶ **3TG10 01-0AC2**

▶ **3TG10 01-0AG2**

▶ **3TG10 01-0AL2**

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H



3TG10 ...-0...

**DC operation**

20 13 8.4 4

4 -- 24 DC

24 DC

3 1 24 DC

▶ **3TG10 10-0BB4**

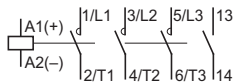
▶ **3TG10 01-0BB4**

1 1 unit 41H

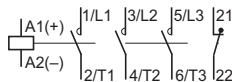
1 1 unit 41H

#### 4-pole · Hum-free · With flat connectors 6.3 mm x 0.8 mm

1 NO, Ident. No. **10**



1 NC, Ident. No. **01E**



**AC operation, 45 ... 450 Hz**

16 10 8.4 4

4 -- 24 AC

110 AC

230 AC

3 1 24 AC

110 AC

230 AC

**Flat connectors**



▶ **3TG10 10-1AC2**

▶ **3TG10 10-1AG2**

▶ **3TG10 10-1AL2**

▶ **3TG10 01-1AC2**

▶ **3TG10 01-1AG2**

▶ **3TG10 01-1AL2**

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H

1 1 unit 41H



3TG10 ...-1...

**DC operation**

16 10 8.4 4

4 -- 24 DC

24 DC

3 1 24 DC

C ▶ **3TG10 10-1BB4**

D ▶ **3TG10 01-1BB4**

1 1 unit 41H

1 1 unit 41H

### Accessories

Max. rated operational currents $I_e$ /AC-1 (at 55 °C) of the contactors	Max. conductor cross-sections	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	mm <sup>2</sup>						

#### Links for paralleling (star jumpers)

**3-pole, without connection terminals<sup>1)2)</sup>**

16

--

▶ **3RT19 16-4BA31**

1 1 unit 41B

**3-pole, with connection terminals<sup>1)3)</sup>**

40

25

▶ **3RT19 16-4BB31**

1 1 unit 41B

**4-pole, with connection terminals<sup>1)4)</sup>**

40

25

C ▶ **3RT19 16-4BB41**

1 1 unit 41B

<sup>1)</sup> The links for paralleling can be reduced by one pole. The rated operational currents apply to each pole. The links for paralleling are insulated.

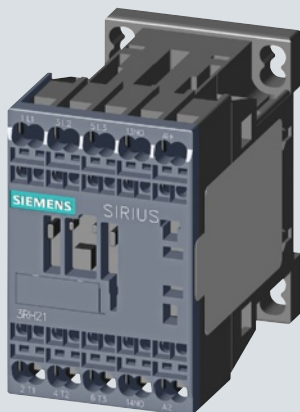
<sup>2)</sup> Replacement for 3TX4 490-2C.

<sup>3)</sup> Replacement for 3TX4 490-2A.

<sup>4)</sup> Replacement for 3TX4 490-2B.

# Controls – Contactors and Contactor Assemblies – Contactor Relays and Relays

5



	<b>Price groups</b> PG 41A, 41B, 41H
5/2	<b>Introduction</b>
	<b>Contactor relays</b>
5/4	SIRIUS 3RH2 contactor relays, 4- and 8-pole
5/15	SIRIUS 3RH24 latched contactor relays, 4-pole
5/16	3TH4 contactor relays, 8- and 10-pole
5/24	3TH2 contactor relays, 4- and 8-pole
	<u>Coupling relays</u>
5/32	SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole
	<u>Contactors with extended operating range <math>0.7 \dots 1.25 \times U_s</math> for railway applications</u>
5/35	SIRIUS 3RH21 contactor relays
5/37	3TH4 contactor relays
	<b>Coupling relays</b>
	<u>3TX7 coupling relays, narrow design</u>
5/39	Relay couplers
5/44	Relay couplers with plug-in connection
5/47	Semiconductor couplers
	<u>SIRIUS 3RS18 coupling relays with industrial housing</u>
5/51	Relay couplers
	<u>Coupling relays with LZS/LZX plug-in relays</u>
5/53	Plug-in relay couplers
	<b>Power relays/Miniature contactors</b>
Ch.4	3TG10 contactors, 4-pole, 4 kW

More information can be found on the Internet: [see opening information, page 13](#)

**Note:**

3RH1 contactor relays can be found

- in the Catalog  
Add-On IC 10 AO · 2012  
in the CD/DVD box
- in the Catalog  
Add-On IC 10 AO · 2012  
at the Information and Download  
Center
- in the interactive catalog CA 01
- in the Industry Mall

5

# Controls – Contactors and Contactor Assemblies

## Introduction

### Overview

#### The advantages at a glance



**S00**  
3RH21



**S00**  
3RH22



3TH42



3TH43



3TH2

Size  
Type

Order No. Page

#### 3RH2 contactor relays

<b>4-pole</b>	• Screw terminals, spring-type terminals and ring terminal lug connections	3RH21	5/10, 5/11
<b>8-pole</b>		3RH22	5/10, 5/11
<b>4-pole, latched</b>		3RH24	5/15
<b>Coupling relays</b>	• Coils for control by PLC	3RH21	5/25
<b>Contactor relays for railway applications</b>	• Coils with extended voltage range	3RH21	5/35

#### 3TH4 contactor relays

<b>8-pole</b>	• Screw terminals	3TH42	5/20
<b>10-pole</b>		3TH43	5/21
<b>Contactor relays for railway applications</b>	• Coils with extended voltage range	3TH42	5/37

#### 3TH2 contactor relays

<b>4-pole</b>	• Screw terminals, flat connectors and solder pin connections	3TH20	5/28
<b>8-pole</b>	• Screw terminals	3TH22	5/28
<b>4-pole, latched</b>	• Screw terminals	3TH27	5/28

#### Accessories for 3RH2 contactor relays

<b>Auxiliary switch blocks</b>	• On front • Lateral	3RH29 11 3RH29 11	5/12 Chapter 3
<b>Timing relay blocks</b>	• On front	3RA28 1.	Chapter 3
<b>Surge suppressors</b>	• On front	3RT29 16	5/13
<b>Additional load module</b>	• On front	3RT29 16	5/13

#### Note:

Safety characteristics for contactors [see Chapter 16](#),  
"Appendix" → "Standards and Approvals" → "Overview".



## The advantages at a glance

Type	3TX7	3RS18	LZS/LZX	3TG10
			Order No.	Page
<b>Coupling relays, narrow design</b>				
<b>Relay couplers</b>	<ul style="list-style-type: none"> <li>Width 6.2 mm (1 NO, 1 CO), 12.5 mm and 17.5 mm</li> <li>Output coupling links</li> <li>Input coupling links with hard gold-plating</li> </ul>		3TX7 002, 3TX7 003, 3TX7 004, 3TX7 005	5/39
<b>Plug-in base couplers, complete with relay</b>	<ul style="list-style-type: none"> <li>Width 6.2 mm (1 NO, 1 CO)</li> <li>Relays, replaceable</li> </ul>		3TX7 014-1..00	5/44
<b>Plug-in base couplers, complete with relay and hard gold-plating</b>	<ul style="list-style-type: none"> <li>Width 6.2 mm (1 CO)</li> </ul>		3TX7 014-1..02	5/44
<b>Semiconductor couplers</b>	<ul style="list-style-type: none"> <li>Output 1 semiconductor, triac or transistor</li> </ul>		3TX7 002, 3TX7 004, 3TX7 005	5/47
<b>Coupling relays in industrial housing</b>				
<b>Relay couplers</b>	<ul style="list-style-type: none"> <li>Protective separation up to 300 V between contacts and relay circuits</li> <li>1, 2 and 3 changeover contacts</li> <li>Hard gold-plated contacts in combination and wide voltage range versions</li> </ul>	3RS18		5/51
<b>Coupling relays with plug-in relays</b>				
<b>Plug-in relay couplers with 2, 3 and 4 changeover contacts</b>	<ul style="list-style-type: none"> <li>Switching capacity 12 A/10 A/6 A</li> <li>Width 27 mm</li> <li>Base optionally with or without logical isolation</li> </ul>		LZS/LZX:PT	5/53
<b>Plug-in relay couplers with 3 changeover contacts and circular base</b>	<ul style="list-style-type: none"> <li>Switching capacity 6 A</li> <li>11-pole circular base</li> <li>Width 38 mm</li> </ul>		LZS/LZX:MT	5/59
<b>Plug-in relay couplers with 1 or 2 changeover contacts</b>	<ul style="list-style-type: none"> <li>Switching capacity 16 A/8 A</li> <li>Width 15.5 mm</li> <li>Base optionally with or without logical isolation</li> </ul>		LZS/LZX:RT	5/60
<b>Miniature contactors (power relays)</b>				
<b>With screw and flat connectors</b>	<ul style="list-style-type: none"> <li>Switching capacity 20 A (AC-1) and 8.4 A (AC-2, AC-3)</li> <li>4-pole, hum-free</li> <li>Width 36 mm</li> </ul>		3TG10	Ch. 4







**Connection methods**

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

Devices of the 3TH2 series are also available for connection with flat connectors and solder pin connectors.

The plug-in bases for LZS/LZX coupling relays are also available with plug-in terminals.

As an option the devices of the 3RH2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

-  Screw terminals
-  Spring-type terminals
-  Flat connectors
-  Solder pin connections
-  Plug-in terminals
-  Ring terminal lug connections

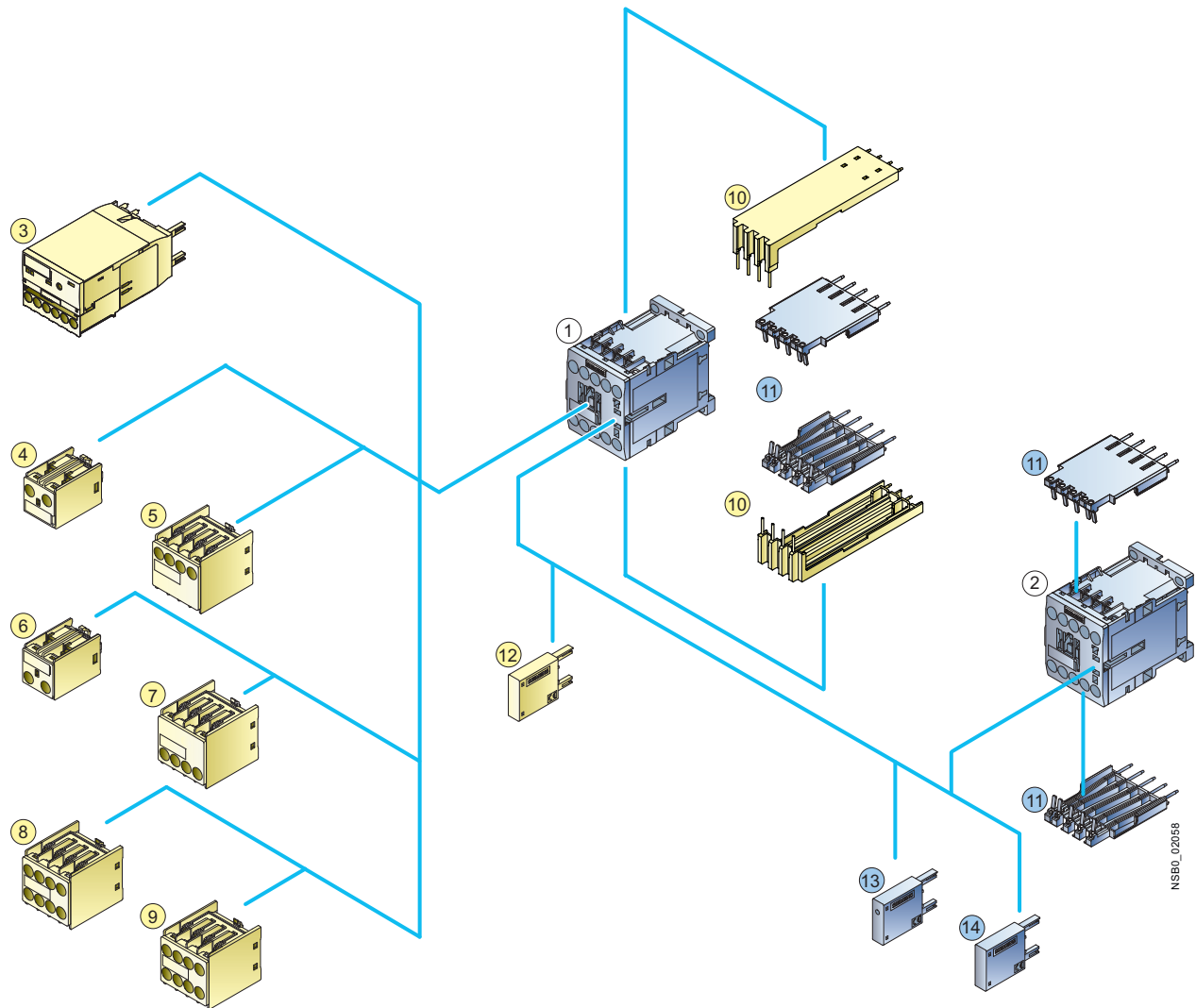
The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

# Contactor Relays

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

### Overview

#### Contactor relays and coupling relays Size S00 with accessories



NSBC\_02058

- ① Contactor relay
- ② Coupling relay for auxiliary circuits
- ③ Solid-state timing relay block
- ④ 1-pole auxiliary switch block, cable entry from the top
- ⑤ 2-pole auxiliary switch block, cable entry from the top
- ⑥ 1-pole auxiliary switch block, cable entry from the bottom
- ⑦ 2-pole auxiliary switch block, cable entry from the bottom
- ⑧ 4-pole auxiliary switch block  
(terminal designations according to EN 50011 or EN 50005)
- ⑨ 2-pole auxiliary switch block, solid-state compatible version  
(terminal designations according to EN 50005)
- ⑩ Solder pin adapter for contactor relays with 4-pole auxiliary switch block
- ⑪ Solder pin adapter for contactor and coupling relays
- ⑫ Additional load module for increasing the permissible residual current
- ⑬ Surge suppressor with LED
- ⑭ Surge suppressor without LED

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

### Standards

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

The 3RH2 contactor relays have screw, ring terminal lug or spring-type terminals. Four contacts are available in the basic unit.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

### Contact reliability

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

### Surge suppression

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

#### Note:

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

### Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□
<b>SIRIUS contactor relays</b>	<b>3 R H</b>													
<b>2nd generation</b>	<b>2</b>													
<b>Device type (e.g. 1 = 4-pole contactor relay, 2 = 8-pole contactor relay)</b>	□													
<b>Number of NO contacts (e.g. 2 = 2 NO)</b>	□													
<b>Number of NC contacts (e.g. 2 = 2 NC)</b>	□													
<b>Connection type (1 = screw, 2 = spring-type terminal)</b>	□													
<b>Operating range / solenoid coil circuit (e.g. A = AC standard / without)</b>	□													
<b>Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)</b>	□ □													
<b>No significance</b>	□													
<b>Special version</b>	□ □ □ □													
<b>Example</b>	<b>3 R H 2 1 2 2 - 1 A P 0 0</b>													

#### Note:

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

### Auxiliary switch blocks

The 3RH2 contactor relays can be expanded by up to four contacts by the addition of snap-on auxiliary switch blocks.

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

3RH29 11-1GA .. auxiliary switch blocks cannot be combined with contactor relays with identification numbers 31E and 22E; they are coded.

All contactor relays with identification numbers 40E, 31E and 22E can be extended with auxiliary switch blocks to obtain contactor relays with 5 to 8 contacts. The permissible combinations and the resulting identification numbers can be found in the selection tables in Chapter 3, pages 3/45 to 3/49.

In addition, fully mounted 3RH22 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block in the 2nd tier is not removable. The terminal designations are according to EN 50011 and IEC 60947-5-1.

These versions are built according to special Swiss regulations SUVA and are distinguished externally by a red labeling plate.

Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than 4 NC contacts are permitted.

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

# Contactor Relays

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

### Technical specifications

Contactor relays

Type

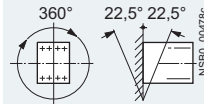
**3RH2**

Size

**S00**

#### Permissible mounting positions

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



Upright mounting position



Special version required

(3RH21 22-2K.40 coupling relays and contactor relays with extended operating range on request)

#### Positively-driven operation of contacts in contactor relays

##### 3RH2:

**Yes**, in the basic unit and the auxiliary switch block as well as between the basic unit and the front-mounted auxiliary switch block (removable) acc. to:

- ZH 1/457
- IEC 60947-5-1, Appendix L

##### 3RH22:

**Yes**, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:

- ZH 1/457
- IEC 60947-5-1, Appendix L

Note:

3RH29 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.

Explanations:

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

##### ZH1/457

Safety Rules for Controls on Power-Operated Metalworking Presses.

##### IEC 60947-5-1, Appendix L

Low-Voltage Controlgear, Controls and Contact Blocks. Special requirements for positively-driven contacts

#### Contact reliability

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

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

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

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

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and free-wheel diodes.

The characteristic curves apply to:

- 3RH21/3RH22 contactor relays
- 3RH24 latched contactor relays
- 3RH29 11 auxiliary switch blocks<sup>1)</sup>
- Auxiliary switch blocks for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

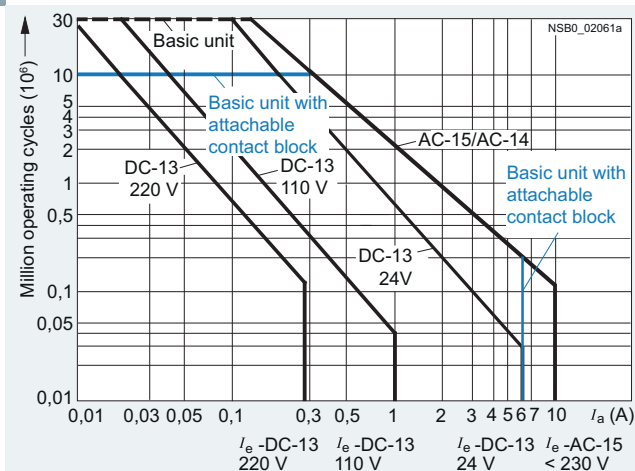


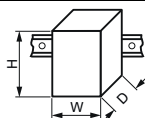
Diagram legend:

$I_a$  = Breaking current

$I_e$  = Rated operational current

<sup>1)</sup>  $I_e = 6$  A for AC-15/AC-14.

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

Type		3RH21	3RH22	3RH24
Size		<b>S00</b>	<b>S00</b>	<b>S00</b>
Dimensions (W x H x D) with screw terminals		45 x 57.5 x 73	--	90 x 57.5 x 73
• With mounted auxiliary switch block		45 x 57.5 x 116	45 x 57.5 x 116	--
<b>General technical specifications</b>				
<b>Mechanical endurance</b>				
• Basic units	Operating cycles	30 million		5 million
• Basic unit with snap-on auxiliary switch block	Operating cycles	10 million		
• Solid-state compatible auxiliary switch block	Operating cycles	5 million		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	690		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6		
<b>Protective separation</b> between the coil and the contacts in the basic unit acc. to IEC 60947-1, Appendix N	V	400		
<b>Permissible ambient temperature</b>				
• During operation	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C		IP20, coil assembly IP40		
<b>Touch protection</b> acc. to EN 50274		Finger-safe		
<b>Shock resistance</b>				
• Rectangular pulse	- AC operation - DC operation	<i>g</i> /ms <i>g</i> /ms	7.3/5 and 4.7/10 >10/5 and >5/10	
• Sine pulse	- AC operation - DC operation	<i>g</i> /ms <i>g</i> /ms	11.4/5 and 7.3/10 >15/5 and >8/10	
<b>Short-circuit protection</b>				
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10		
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1	A	6		
<b>Conductor cross-sections</b>				
<b>Auxiliary conductors and coil terminals</b> (1 or 2 conductors can be connected)				
• Solid	mm <sup>2</sup>	⊕ <b>Screw terminals</b> 2 x (0.5 ... 1.5) <sup>1)</sup> ; 2 x (0.75 ... 2.5) <sup>1)</sup> according to IEC 60947; max. 2 x (0.5 ... 4)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5) <sup>1)</sup> ; 2 x (0.75 ... 2.5) <sup>1)</sup>		
• AWG cables, solid or stranded	AWG	2 x (20 ... 16) <sup>1)</sup> ; 2 x (18 ... 14) <sup>1)</sup>		
• Terminal screw - Tightening torque	Nm	M3 (for standard screwdriver size 2 or Pozidriv 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)		
<b>Auxiliary conductors and coil terminals</b> (1 or 2 conductors can be connected)				
• Operating devices	mm	⊕ <b>Spring-type terminals</b> 3.0 x 0.5; 3.5 x 0.5		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 4)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 12)		
<b>Auxiliary conductors for front and laterally mounted auxiliary switches</b>				
• Operating devices	mm	3.0 x 0.5; 3.5 x 0.5		
• Solid	mm <sup>2</sup>	2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 1.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)		
<b>Auxiliary conductor and coil terminals</b>				
• Terminal screw	mm	⊕ <b>Ring terminal lug connection</b> M3, Pozidriv size 2		
• Operating devices	Nm	Ø 5 ... 6		
• Tightening torque	mm	0.8 ... 1.2		
• Usable ring terminal lugs	mm	d <sub>2</sub> = min. 3.2		
- DIN 46234 without insulation sleeve	mm	d <sub>3</sub> = max. 7.5		
- DIN 46225 without insulation sleeve				
- DIN 46237 with insulation sleeve				
- JIS C2805 Type R without insulation sleeve				
- JIS C2805 Type RAV with insulation sleeve				
- JIS C2805 Type RAP with insulation sleeve				

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

### Note:

Max. external diameter of the cable insulation: 3.6 mm.

Tool for opening the spring-type terminals  
see [Accessories](#), page 5/14.

An insulation stop must be used for conductor cross-sections ≤ 1 mm<sup>2</sup>, see "Accessories", page 5/14.

# Contactors Relays

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

Contactor relays	Type	3RH2.
	Size	S00
<b>Control circuits</b>		
<b>Coil operating range</b>		
• 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 $U_s$
<b>Power consumption of the solenoid coils</b> (when coil is cold 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 (closing = closed)	W	4.0
<b>Permissible residual current of the electronics</b> (with 0 signal)		
• For AC operation <sup>1)</sup>		< 4 mA x (230 V/ $U_s$ )
• For DC operation		< 10 mA x (24 V/ $U_s$ )
<b>Operating times<sup>2)</sup></b>		
Total break time = OFF-delay + Arcing time		
Values apply with coil in cold state and at operating temperature for operating range		
<u>AC operation</u>		
• Closing		
- ON-delay of NO contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms 3RH24 minimum operating time ms	8 ... 33 9 ... 22 ≥ 35
- OFF-delay of NC contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms	6 ... 25 6.5 ... 19
• Opening		
- OFF-delay of NO contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms 3RH24 minimum operating time ms	4 ... 15 4.5 ... 15 ≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms	5 ... 15 5 ... 15
<u>DC operation</u>		
• Closing		
- ON-delay of NO contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms 3RH24 minimum operating time ms	30 ... 100 35 ... 50 ≥ 100
- OFF-delay of NC contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms	25 ... 90 30 ... 45
• Opening		
- OFF-delay of NO contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms 3RH24 minimum operating time ms	7 ... 13 7 ... 12 ≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x $U_s$ ms With 1.0 x $U_s$ ms	13 ... 19 13 ... 18
• Arcing time		
Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$ :		
$z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$		

<sup>1)</sup> The 3RT29 16-1GA00 additional load module is recommended for higher residual currents (see page 5/13).

<sup>2)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Contactor relays	Type Size	3RH2. S00
<b>Load side</b>		
<b>AC capacity</b>		
<b>Rated operational currents <math>I_e</math></b>		
AC-12	A	10
AC-15/AC-14 for rated operational voltage $U_s$	Up to 230 V A 400 V A 500 V A 690 V A	6 3 2 1
<b>Load rating with DC</b>		
<b>Rated operational currents <math>I_e</math></b>		
DC-12 for rated operational voltage $U_s$		
• 1 conducting path	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	6 6 3 1 0.3 0.15
• 2 conducting paths in series	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	10 10 4 2 1.3 0.65
• 3 conducting paths in series	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	10 10 10 3.6 2.5 1.8
DC-13 for rated operational voltage $U_s$		
• 1 conducting path	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	6 2 1 0.3 0.14 0.1
• 2 conducting paths in series	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	10 3.5 1.3 0.9 0.2 0.1
• 3 conducting paths in series	24 V A 60 V A 110 V A 220 V A 440 V A 600 V A	10 4.7 3 1.2 0.5 0.26
<b>Switching frequency</b>		
<b>Switching frequency <math>z</math> in operating cycles/hour</b>		
• For rated operation	AC-12/DC-12	$h^{-1}$ 1000
For utilization category	AC-15/AC-14	$h^{-1}$ 1000
	DC-13	$h^{-1}$ 1000
• No-load switching frequency		$h^{-1}$ 10000
Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$ : $z' = z \cdot I_e / I' \cdot (U_e / U')^{1.5} \cdot 1/h$		
<b>Ⓢ and Ⓞ rated data</b>		
<b>Basic units and auxiliary switch blocks</b>		
• 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

# 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

#### Size S00



3RH21 22-1A..0



3RH21 22-2A..0



3RH22 44-1A..0



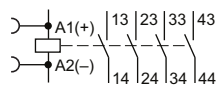
3RH22 44-2A..0

Rated operational current $I_e$ /AC-15/AC-14 at 230 V	Contacts		Rated control supply voltage $U_s$ at 50/60 Hz <sup>2)</sup>	DT	Screw terminals <sup>1)</sup>		DT	Spring-type terminals	
	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
		NO NC							
A			V AC						

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

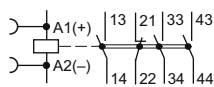
Terminal designations according to EN 50011

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



10

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

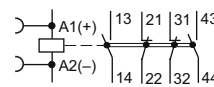


40E

31E

22E

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



B

B

B

#### • With permanently mounted auxiliary switch block

4 NO + 4 NC, Ident. No. **44E**



10<sup>3)</sup>

44E

62E

6 NO + 2 NC, Ident. No. **62E**



A

A

- The 3RH21 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.
- Coil operating range  
at 50 Hz: 0.8 to 1.1 x  $U_s$   
at 60 Hz: 0.85 to 1.1 x  $U_s$ .
- The following applies for mounted auxiliary switches:  $I_e = 6$  A for AC-15/AC-14

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

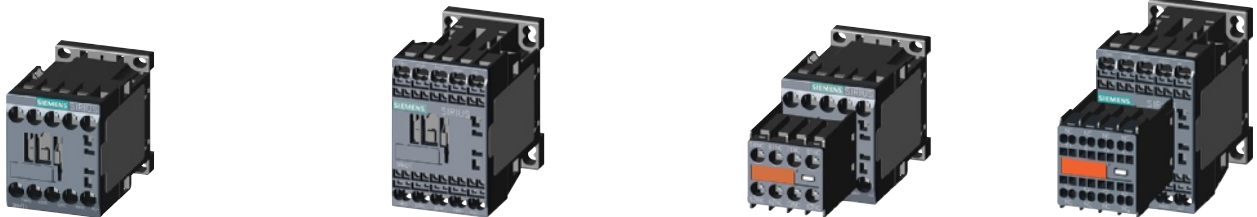


## SIRIUS 3RH2 contactor relays, 4- and 8-pole

### DC operation - DC solenoid system

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

### Size S00



3RH21 22-1B..0

3RH21 22-2B..0

3RH22 44-1B..0

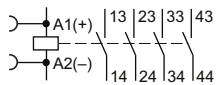
3RH22 44-2B..0

Rated operational current $I_e$ /AC-15/AC-14 at 230 V	Contacts		Rated control supply voltage $U_s$	DT	Screw terminals <sup>1)</sup>		DT	Spring-type terminals	
	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
A		NO NC	V DC						

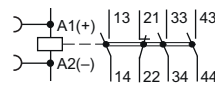
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

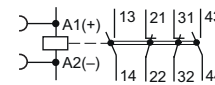
#### 4 NO, Ident. No. 40E



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



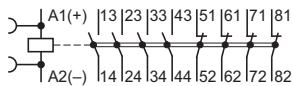
#### 2 NO + 2 NC, Ident. No. 22E



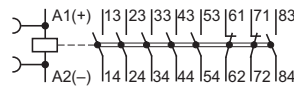
10	40E	4	--	24 220	▶ 3RH21 40-1BB40 ▶ 3RH21 40-1BM40	B	▶ 3RH21 40-2BB40 ▶ 3RH21 40-2BM40
	31E	3	1	24 220	▶ 3RH21 31-1BB40 ▶ 3RH21 31-1BM40	B	▶ 3RH21 31-2BB40 ▶ 3RH21 31-2BM40
	22E	2	2	24 220	▶ 3RH21 22-1BB40 ▶ 3RH21 22-1BM40	B	▶ 3RH21 22-2BB40 ▶ 3RH21 22-2BM40

#### • With permanently mounted auxiliary switch block

#### 4 NO + 4 NC, Ident. No. 44E



#### 6 NO + 2 NC, Ident. No. 62E



10 <sup>2)</sup>	44E	4	4	24	▶ 3RH22 44-1BB40	A	▶ 3RH22 44-2BB40
	62E	6	2	24	▶ 3RH22 62-1BB40	A	▶ 3RH22 62-2BB40

<sup>1)</sup> The 3RH21 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.

<sup>2)</sup> The following applies for mounted auxiliary switches:  $I_e = 6$  A for AC-15/AC-14.

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

# Contactor Relays

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

### Options

**Rated control supply voltages**  
(the 10th and 11th position of the order number must be changed)

Rated control supply voltage $U_s$		Control supply voltage at	Contactor type	3RH21
<b>AC operation</b>				
<b>Solenoid coils for 50/60 Hz and 60 Hz</b>				
<b>50/60 Hz<sup>1)</sup></b>		<b>60 Hz</b>		
24 V AC	--		B0	
42 V AC	--		D0	
48 V AC	--		H0	
110 V AC	--		F0	
220 V AC	--		N2	
230 V AC	--		P0	
400 V AC	--		V0	
<b>Solenoid coils for USA and Canada<sup>2)</sup></b>				
<b>50 Hz</b>		<b>60 Hz</b>		
110 V AC		120 V AC	K6	
220 V AC		240 V AC	P6	
<b>Solenoid coils for Japan<sup>3)</sup></b>				
<b>50/60 Hz</b>		<b>60 Hz</b>		
100 V AC		110 V AC	G6	
200 V AC		220 V AC	N6	
400 V AC		440 V AC	R6	

Rated control supply voltage $U_s$		Control supply voltage at	Contactor type	3RH21
<b>DC operation</b>				
12 V DC			A4	
24 V DC			B4	
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	

1) Coil operating range at 50 Hz: 0.8 to 1.1 x  $U_s$   
at 60 Hz: 0.85 to 1.1 x  $U_s$

2) Coil operating range at 50 Hz: 0.85 to 1.1 x  $U_s$   
at 60 Hz: 0.8 to 1.1 x  $U_s$

3) Coil operating range at 50/60 Hz: 0.85 to 1.1 x  $U_s$   
at 60 Hz: 0.8 to 1.1 x  $U_s$

### Accessories

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



3RH29 11-1GA22



3RH29 11-2GA22

For contactor relays	Contactor relays with AS block	Auxiliary contacts	DT	Screw terminals	DT	Spring-type terminals	
	Ident. No.	Version		⊕		⊕	
		 NO NC		Order No.	Price per PU	Order No.	Price per PU

### Auxiliary switch blocks for snapping onto the front according to EN 50011

Size S00<sup>1)</sup>

For assembling contactor relays with 8 contacts

3RH21 40, 3RH24 40, Ident. No. 40E	<b>80E</b>	4	--	
	<b>71E</b>	3	1	
	<b>62E</b>	2	2	
	<b>53E</b>	1	3	
	<b>44E</b>	--	4 <sup>2)</sup>	

▶ <b>3RH29 11-1GA40</b>	▶ <b>3RH29 11-2GA40</b>
▶ <b>3RH29 11-1GA31</b>	▶ <b>3RH29 11-2GA31</b>
▶ <b>3RH29 11-1GA22</b>	▶ <b>3RH29 11-2GA22</b>
▶ <b>3RH29 11-1GA13</b>	▶ <b>3RH29 11-2GA13</b>
▶ <b>3RH29 11-1GA04</b>	▶ <b>3RH29 11-2GA04</b>

<sup>1)</sup> The 3RH29 11-. GA.. auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the "1" must be replaced with "4", e.g. 3RH29 11-1GA22 → 3RH29 11-4GA22.

Auxiliary switch blocks and solid-state compatible auxiliary switch blocks according to EN 50005 see "Accessories for 3RT2 Contactors", Chapter 3.

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

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
		AC operation	DC operation						
Type		V AC	V DC						

### Surge suppressors without LED (also for spring-type terminals)

#### Size S00



3RT29 16-1B.00

#### For plugging onto the front side of the contactors (with and without auxiliary switch block)

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>	DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC					
3RH2., 3RT2.1.	<b>Varistor</b>	24 ... 48	24 ... 70	▶	<b>3RT29 16-1BB00</b>	1	1 unit	41B
		48 ... 127	70 ... 150	▶	<b>3RT29 16-1BC00</b>	1	1 unit	41B
		127 ... 240	150 ... 250	▶	<b>3RT29 16-1BD00</b>	1	1 unit	41B
		240 ... 400	--	▶	<b>3RT29 16-1BE00</b>	1	1 unit	41B
		400 ... 600	--	A	<b>3RT29 16-1BF00</b>	1	1 unit	41B
3RH2., 3RT2.1.	<b>RC elements</b>	24 ... 48	24 ... 70	▶	<b>3RT29 16-1CB00</b>	1	1 unit	41B
		48 ... 127	70 ... 150	▶	<b>3RT29 16-1CC00</b>	1	1 unit	41B
		127 ... 240	150 ... 250	▶	<b>3RT29 16-1CD00</b>	1	1 unit	41B
		240 ... 400	--	A	<b>3RT29 16-1CE00</b>	1	1 unit	41B
		400 ... 600	--	A	<b>3RT29 16-1CF00</b>	1	1 unit	41B
3RH2., 3RT2.1.	<b>Noise suppression diodes</b>	--	12 ... 250	▶	<b>3RT29 16-1DG00</b>	1	1 unit	41B
3RH2., 3RT2.1.	<b>Diode assemblies</b> (diode and Zener diode) for DC operation	--	12 ... 250	▶	<b>3RT29 16-1EH00</b>	1	1 unit	41B

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units "-Z" and order code "X90" must be added to the Order No.

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>		DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		AC operation	DC operation						
		V AC	V DC						

### Surge suppressors with LED (also for spring-type terminals)

#### Size S00



3RT29 16-1J.00

#### For plugging onto the front side of the contactors (with and without auxiliary switch block)

For contactors	Version	Rated control supply voltage $U_s$ <sup>1)</sup>	Power consumption $P$ of the LED at $U_s$	DT	Order No. <sup>2)</sup>	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC	mW					
3RH2., 3RT2.1.	<b>Varistor</b>	24 ... 48	12 ... 24	10 ... 120	▶	<b>3RT29 16-1JJ00</b>	1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	<b>3RT29 16-1JK00</b>	1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	<b>3RT29 16-1JL00</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	A	<b>3RT29 16-1JP00</b>	1	1 unit	41B
3RH2., 3RT2.1.	<b>Noise suppression diodes</b>	--	24 ... 70	20 ... 470	▶	<b>3RT29 16-1LM00</b>	1	1 unit	41B
		--	50 ... 150	50 ... 700	A	<b>3RT29 16-1LN00</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	<b>3RT29 16-1LP00</b>	1	1 unit	41B

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units "-Z" and order code "X90" must be added to the Order No.

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							

### Additional load modules

#### Size S00



3RT29 16-1GA00


#### For plugging onto the front side of the contactors with or without auxiliary switch block<sup>1)</sup>

3RH2., 3RT2.1.	<b>For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.</b> Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x $U_s$	▶	<b>3RT29 16-1GA00</b>	1	1 unit	41B
-------------------	--	---	-----------------------	---	--------	-----

1) For packs of 10 units, the Order No. must be supplemented with "-Z" and the order code "X90".

# Contactor Relays

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

For contactors	Rated control supply voltage $U_s$	Time setting range $t$	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Type	V	s		Order No.	Price per PU			

### OFF-delay devices

#### Sizes S00 and S0

For contactors and contactor relays with DC operation

#### Non-adjustable delay time

3RH2...-1BF40, 3RT2. 1., 3RT2. 2.	110 AC/DC	S00: > 0.1 S0: > 0.08	D	<b>3RT29 16-2BK01</b>		1	1 unit	41B
3RH2...-1BM40, 3RT2. 1., 3RT2. 2.	220/230 AC/DC	S00: > 0.5 S0: > 0.3	D	<b>3RT29 16-2BL01</b>		1	1 unit	41B
3RH2...-1BB40, 3RT2. 1., 3RT2. 2.	24 DC	S00: > 0.2 S0: > 0.1	A	<b>3RT29 16-2BE01</b>		1	1 unit	41B



3RT29 16-2B.01

Technical specifications see "Accessories for 3RT20 Contactors", Chapter 3.

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							

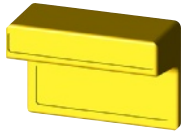
### Control kit

#### Size S00

3RH2.,  
3RT2. 1. For manual operation of the contactor contacts for start-up and service

A **3RT29 16-4MC00**

1 5 units 41B



3RT29 16-4MC00

### Sealable covers

#### Sizes S00 and S0

3RH2.<sup>1)</sup>,  
3RT2. 1.,  
3RT2. 2. Sealable covers for preventing manual operation


A **3RT29 16-4MA10**

1 5 units 41B



3RT29 16-4MA10

<sup>1)</sup> Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

Version	DT	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG
		Order No.	Price per PU			

### Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm<sup>2</sup>



3RT19 16-4JA02

**Insulation stop strip** can be inserted in cable entry of the spring-type terminal (2 strips per contactor required)

- For basic devices S00 (3RT20 1. or 3RH2.), removable individually
- For auxiliary and control current on basic devices size S0 (3RT20 2.) and for mountable 3RH29 auxiliary switches, removable in pairs

B **3RT19 16-4JA02**

1 20 units 41B

B **3RT19 16-4JA02**

1 20 units 41B

### Tools for opening spring-type terminals

#### Screwdrivers

for all SIRIUS devices with spring-type terminals

Length: approx. 200 mm,  
3,0 mm x 0,5 mm,  
titanium gray/black, partially insulated



3RA29 08-1A

A **3RA29 08-1A**

1 1 unit 41B

### System manuals for Industrial Controls – SIRIUS Innovations

- German
- English
- French
- Spanish

C **3ZX1012-0RA01-1AB1**

1 1 unit 401

C **3ZX1012-0RA01-1AC1**

1 1 unit 401

C **3ZX1012-0RA01-1AD1**

1 1 unit 401

C **3ZX1012-0RA01-1AE1**

1 1 unit 401

More accessories see "Accessories for 3RT2 Contactors", Chapter 3.

## SIRIUS 3RH24 latched contactor relays, 4-pole

### Overview

#### Standards

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

The terminal designations comply with EN 50011.

#### Auxiliary switches

The number of auxiliary contacts can be extended by means of front auxiliary switch blocks (max. 4 contacts).

#### Control circuits

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually. Minimum actuating times see "Technical Specifications", page 5/8.

### Selection and ordering data

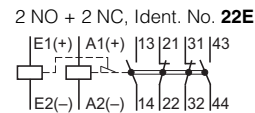
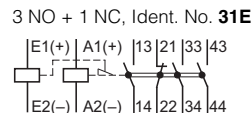
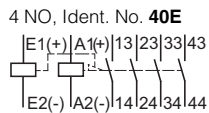


3RH24 22-1A..0

Rated operational current $I_{th}$ /AC-15/AC-14 at <b>230 V</b>	Contacts Ident. No. acc. to EN 50011	Version	Rated control supply voltage $U_s$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
A	NO NC V				Order No.	Price per PU		

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

Terminal designations according to EN 50011



#### AC operation

10	40 E	4	--	AC 50/60 Hz <sup>1)</sup>		B	3RH24 40-1AB00	1	1 unit	41A
				24	110					
				230		B <td>3RH24 40-1AP00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 40-1AP00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
	31 E	3	1	24		B <td>3RH24 31-1AB00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1AB00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				110		B <td>3RH24 31-1AF00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1AF00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				230		B <td>3RH24 31-1AP00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1AP00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
	22 E	2	2	24		B <td>3RH24 22-1AB00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1AB00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				110		B <td>3RH24 22-1AF00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1AF00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				230		B <td>3RH24 22-1AP00</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1AP00	1 <td>1 unit</td> <td>41A</td>	1 unit	41A

#### DC operation · DC solenoid system

10	40 E	4	--	DC		B	3RH24 40-1BB40	1	1 unit	41A
				24	110					
				220		B <td>3RH24 40-1BM40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 40-1BM40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
	31 E	3	1	24		B <td>3RH24 31-1BB40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1BB40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				110		B <td>3RH24 31-1BF40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1BF40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				220		B <td>3RH24 31-1BM40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 31-1BM40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
	22 E	2	2	24		B <td>3RH24 22-1BB40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1BB40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				110		B <td>3RH24 22-1BF40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1BF40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A
				220		B <td>3RH24 22-1BM40</td> <td>1 <td>1 unit</td> <td>41A</td> </td>	3RH24 22-1BM40	1 <td>1 unit</td> <td>41A</td>	1 unit	41A

<sup>1)</sup> Coil operating range  
at 50 Hz: 0.8 to 1.1 ×  $U_s$   
at 60 Hz: 0.85 to 1.1 ×  $U_s$

Accessories see pages 5/12 and 5/13.

# Contactors Relays

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

### Overview

#### Standards

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

The 3TH42 and 3TH43 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274.

#### Terminal designations acc. to EN 50011

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

#### Contact reliability

High contact stability at low voltages and currents thanks to the use of moving double-break contacts, suitable for solid-state circuits with currents  $\geq 1$  mA at a voltage of  $\geq 17$  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 "Accessories", page 5/22).

#### Note:

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

### Technical specifications

Contactors relays

Type

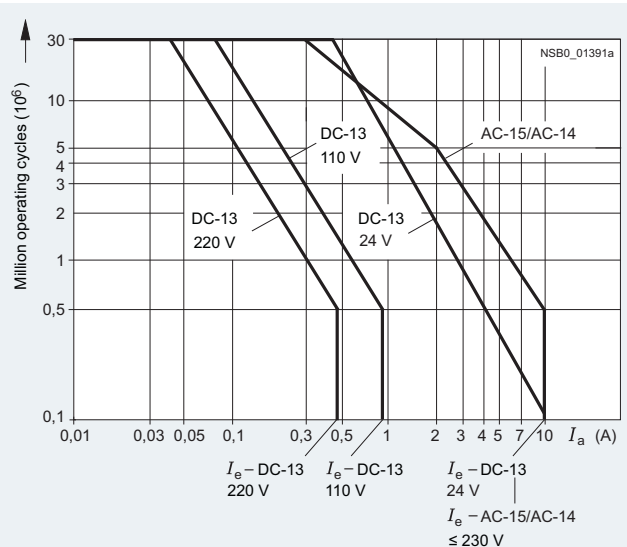
**3TH42, 3TH43**

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

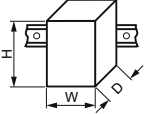
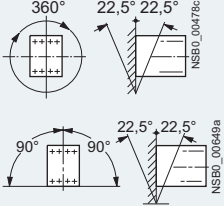

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

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

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



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

Type			<b>3TH42</b>	<b>3TH43</b>
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
<b>General technical specifications</b>				
<b>Permissible mounting positions</b>				
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				
<b>Mechanical endurance</b>	Basic units	Operating cycles	30 million	
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)		V	690	
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		kV	8	
<b>Protective separation</b> between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	Up to 500	
<b>Permissible ambient temperature</b>				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
<b>Degree of protection</b> acc. to IEC 60947-1, Appendix C			IP20	
<b>Shock resistance</b>				
• 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	
<b>Short-circuit protection</b>				
• Short-circuit test with fuse links of gG operational class: 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	
• Short-circuit test with miniature circuit breaker up to 230 V: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1				
- C Characteristic		A	16	
- B Characteristic		A	16	
<b>and <math>U_s</math> rated data</b>				
<b>Basic units</b>				
<b>Rated control supply voltage <math>U_s</math></b>			Max. 600 V AC, 230 V DC (acc. to UL 240 V DC)	
<b>Rated voltage</b>			600 V AC, 600 V DC	
<b>Switching capacity</b>			A 600, P 600	
<b>Conductor cross-sections</b>				
• Solid			mm <sup>2</sup>	2 x (0.5 ... 1) <sup>1)</sup> ; 2 x (1 ... 2.5) <sup>1)</sup> ; 1 x 4
• Finely stranded with end sleeve				
• Terminal screw			mm <sup>2</sup>	2 x (0.75 ... 2.5)
				M3.5

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

# Contactors Relays

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

Contactors relays	Type	3TH42, 3TH43
<b>Control circuits</b>		
<b>Coil operating range</b>		
AC operation		0.8 ... 1.1 x $U_s$ <sup>1)</sup>
DC operation (except 24 V)		0.8 ... 1.1 x $U_s$
• At 24 V DC		0.8 ... 1.2 x $U_s$
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )		
• 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		
<b>Permissible residual current of the electronics</b> (with 0 signal)		
• For AC operation		≤8 mA x (220 V/ $U_s$ )
• For DC operation		≤1.25 mA x (220 V/ $U_s$ )
<b>Operating times</b> <sup>2)</sup>		
Total break time = OFF-delay + arcing time (the values apply up to and including 20 % undervoltage, 10 % overvoltage, and with the coil in the cold state and at operating temperature)		
<u>AC operation</u>		
• Closing		
- ON-delay NO	ms	8 ... 35
- OFF-delay NC	ms	6 ... 20
• Opening		
- OFF-delay NO	ms	4 ... 18
- ON-delay NC	ms	5 ... 30
• Arcing time	ms	10
<u>DC operation</u>		
• Closing		
- ON-delay NO	ms	20 ... 170
- OFF-delay NC	ms	18 ... 110
• Opening		
- OFF-delay NO	ms	10 ... 25
- ON-delay NC	ms	15 ... 30
Arcing time	ms	10
<b>Operating times</b> <sup>2)</sup> for 1.0 x $U_s$		
<u>AC operation</u>		
• Closing		
- ON-delay NO	ms	10 ... 25
- OFF-delay NC	ms	7 ... 20
• Opening		
- OFF-delay NO	ms	5 ... 18
- ON-delay NC	ms	7 ... 20
<u>DC operation</u>		
• Closing		
- ON-delay NO	ms	30 ... 70
- OFF-delay NC	ms	28 ... 65
• Opening		
- OFF-delay NO	ms	10 ... 20
- ON-delay NC	ms	15 ... 25

<sup>1)</sup> Coils for USA, Canada and Japan: 0.85 ... 1.1  $U_s$  at 60 Hz.

<sup>2)</sup> The OFF-delay of the NO contacts and the ON-delay of the NC contacts are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 9 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).



Contactor relays	Type	3TH42, 3TH43	
<b>Load side</b>			
<b>AC capacity</b>			
<b>Rated operational currents <math>I_e</math></b>			
AC-12	A	16	
AC-15/AC-14 for rated operational voltage $U_e$			
	230 V A	10	
	400 V A	6	
	500 V A	4	
	690 V A	2	
<b>Rated power of induction motors</b>			
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	
<b>Load rating with DC</b>			
<b>Rated operational currents <math>I_e</math></b>			
DC-12, for rated operational voltage $U_e$			
• 1 conducting path			
	Up to 48 V A	10	
	110 V A	2.1	
	220 V A	0.8	
	440 V A	0.6	
• 2 conducting paths in series			
	Up to 48 V A	10	
	110 V A	10	
	220 V A	1.6	
	440 V A	0.8	
• 3 conducting paths in series			
	Up to 48 V A	10	
	110 V A	10	
	220 V A	10	
	440 V A	1.3	
DC-13, for rated operational voltage $U_e$			
• 1 conducting path			
	Up to 24 V A	10	
	48 V A	5	
	110 V A	1	
	220 V A	0.45	
	440 V A	0.25	
	600 V A	0.2	
• 2 conducting paths in series			
	Up to 24 V A	10	
	48 V A	10	
	110 V A	2.5	
	220 V A	0.75	
	440 V A	0.5	
	600 V A	0.4	
• 3 conducting paths in series			
	Up to 24 V A	10	
	48 V A	10	
	110 V A	10	
	220 V A	2	
	440 V A	0.9	
	600 V A	0.8	
<b>Switching frequency</b>			
<b>Switching frequency <math>z</math><sup>1)</sup> in operating cycles/hour</b>			
For rated operation	AC-12/DC-12	h <sup>-1</sup>	1000
For utilization category	AC-2	h <sup>-1</sup>	500
	AC-3	h <sup>-1</sup>	1000
	AC-15/AC-14	h <sup>-1</sup>	3600
	DC-13	h <sup>-1</sup>	3600
	No-load switching frequency	h <sup>-1</sup>	10000

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

# Contactors Relays

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

### Selection and ordering data

#### 8-pole contactor relays



3TH42 ..-0...

Contacts	Rated operational current $I_e$ /AC-15/AC-14 at				Contacts	DT	<b>Screw terminals</b>	⊕	PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version	Order No.	Price per PU			
Number	<b>A</b>	A	A	A							
					NO	NC					

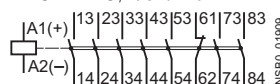
#### For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

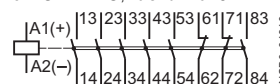
8 NO, Ident. No. **80E**



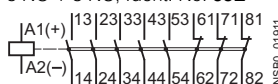
7 NO + 1 NC, Ident. No. **71E**



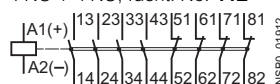
6 NO + 2 NC, Ident. No. **62E**



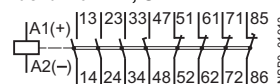
5 NO + 3 NC, Ident. No. **53E**



4 NO + 4 NC, Ident. No. **44E**



3 NO + 3 NC and 1 NO + 1 NC make-before-break,  
Ident. No. **44E, U**



#### AC operation, rated control supply voltage $U_s = 50$ Hz 230/220 V AC<sup>1)</sup>

8	10	6	4	2	<b>80 E</b>	8	--	--	--	▶	<b>3TH42 80-0AP0</b>	1	1 unit	41A
					<b>71 E</b>	7	1	--	--	▶	<b>3TH42 71-0AP0</b>	1	1 unit	41A
					<b>62 E</b>	6	2	--	--	D	<b>3TH42 62-0AP0</b>	1	1 unit	41A
					<b>53 E</b>	5	3	--	--	▶	<b>3TH42 53-0AP0</b>	1	1 unit	41A
					<b>44 E</b>	4	4	--	--	▶	<b>3TH42 44-0AP0</b>	1	1 unit	41A
					<b>44 E, U</b>	3	3	1	1	▶	<b>3TH42 93-0AP0</b>	1	1 unit	41A

#### DC operation · DC solenoid system, rated control supply voltage $U_s = 24$ V DC

8	10	6	4	2	<b>80 E</b>	8	--	--	--	▶	<b>3TH42 80-0BB4</b>	1	1 unit	41A
					<b>71 E</b>	7	1	--	--	▶	<b>3TH42 71-0BB4</b>	1	1 unit	41A
					<b>62 E</b>	6	2	--	--	▶	<b>3TH42 62-0BB4</b>	1	1 unit	41A
					<b>53 E</b>	5	3	--	--	▶	<b>3TH42 53-0BB4</b>	1	1 unit	41A
					<b>44 E</b>	4	4	--	--	▶	<b>3TH42 44-0BB4</b>	1	1 unit	41A
					<b>44 E, U</b>	3	3	1	1	▶	<b>3TH42 93-0BB4</b>	1	1 unit	41A

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

#### Note:

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

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

Other voltages [according to page 5/22](#) on request.

Accessories [see pages 5/22 and 5/23](#).

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

### 10-pole contactor relays



3TH43 ...-0A..

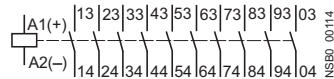
3TH43 ...-0B..

Contacts	Rated operational current $I_e/AC-15/AC-14$ at				Contacts	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	230 V	400 V	500 V	690 V						
					Ident. No. acc. to EN 50011	Version	Order No.	Price per PU		
Number	A	A	A	A	NO	NC	NO	NC		

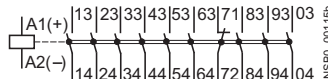
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

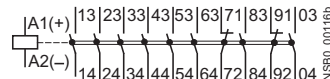
10 NO, Ident. No. **100E**



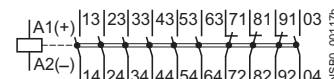
9 NO + 1 NC, Ident. No. **91E**



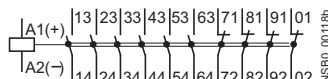
8 NO + 2 NC, Ident. No. **82E**



7 NO + 3 NC, Ident. No. **73E**



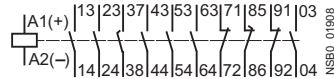
6 NO + 4 NC, Ident. No. **64E**



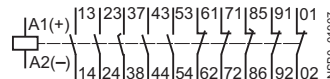
5 NO + 5 NC, Ident. No. **55E**



6 NO + 2 NC and 1 NO + 1 NC make-before-break, Ident. No. **63E, 11U**



4 NO + 4 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, 11U**



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

10	10	6	4	2	100 E	10	--	--	--	▶	3TH43 10-0AP0	1	1 unit	41A
					91 E	9	1	--	--	▶	3TH43 91-0AP0	1	1 unit	41A
					82 E	8	2	--	--	▶	3TH43 82-0AP0	1	1 unit	41A
					73 E	7	3	--	--	▶	3TH43 73-0AP0	1	1 unit	41A
					73 E, U	6	2	1	1	▶	3TH43 46-0AP0	1	1 unit	41A
					64 E	6	4	--	--	▶	3TH43 64-0AP0	1	1 unit	41A
					55 E	5	5	--	--	▶	3TH43 55-0AP0	1	1 unit	41A
					55 E, U	4	4	1	1	▶	3TH43 94-0AP0	1	1 unit	41A

### DC operation · DC solenoid system, rated control supply voltage $U_s = 24 \text{ V DC}^1)$

10	10	6	4	2	100 E	10	--	--	--	▶	3TH43 10-0BB4	1	1 unit	41A
					91 E	9	1	--	--	▶	3TH43 91-0BB4	1	1 unit	41A
					82 E	8	2	--	--	▶	3TH43 82-0BB4	1	1 unit	41A
					73 E	7	3	--	--	▶	3TH43 73-0BB4	1	1 unit	41A
					73 E, U	6	2	1	1	▶	3TH43 46-0BB4	1	1 unit	41A
					64 E	6	4	--	--	▶	3TH43 64-0BB4	1	1 unit	41A
					55 E	5	5	--	--	▶	3TH43 55-0BB4	1	1 unit	41A
					55 E, U	4	4	1	1	▶	3TH43 94-0BB4	1	1 unit	41A

<sup>1)</sup> Operating range at 220 V: 0.85 to 1.1 x  $U_s$ , lower operating range limit according to IEC 60947.

#### Note:

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

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

# Contactors Relays

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

### Options



**Rated control supply voltages**  
(the 10th and 11th position of the order number must be changed)

Control supply voltage at			Rated control supply voltage $U_s$	Control supply voltage at			Rated control supply voltage $U_s$	
3TH42/3TH43			3TH42/3TH43			3TH42/3TH43		
<b>AC operation</b>			<b>Solenoid coils for AC 50 and 60 Hz</b>			<b>Solenoid coils for AC 50 and 60 Hz</b>		
<b>50 Hz</b>			<b>60 Hz</b>			<b>50/60 Hz</b>		
24 V AC	29 V AC	B0	24 V AC	29 V AC	B0	24 V AC	29 V AC	C2
36 V AC	42 V AC	G0	36 V AC	42 V AC	G0	42 V AC	42 V AC	D2
42 V AC	50 V AC	D0	42 V AC	50 V AC	D0	110 V AC	110 V AC	G2
48 V AC	58 V AC	H0	48 V AC	58 V AC	H0	115 V AC	115 V AC	J2
60 V AC	72 V AC	E0	60 V AC	72 V AC	E0	120 V AC	120 V AC	K2
110 V AC	132 V AC	F0	110 V AC	132 V AC	F0	220 V AC	220 V AC	N2
125/127 V AC	150/152 V AC	L0	125/127 V AC	150/152 V AC	L0	230 V AC	230 V AC	L2
230/220 V AC	276 V AC	P0 <sup>1)</sup>	230/220 V AC	276 V AC	P0 <sup>1)</sup>	240 V AC	240 V AC	P2
240 V AC	288 V AC	U0	240 V AC	288 V AC	U0	440 V AC	440 V AC	R2
400/380 V AC	480/460 V AC	V0 <sup>1)</sup>	400/380 V AC	480/460 V AC	V0 <sup>1)</sup>	<b>DC operation</b>		
415 V AC	500 V AC	R0	415 V AC	500 V AC	R0	12 V DC	12 V DC	A4
500 V AC	600 V AC	S0	500 V AC	600 V AC	S0	24 V DC	24 V DC	B4
<b>For Japan</b>			<b>For USA and Canada</b>			30 V DC	30 V DC	C4
100 V AC	100-110 V AC	G6 <sup>2)</sup>	110 V AC	120 V AC	K6 <sup>2)</sup>	36 V DC	36 V DC	V4
200 V AC	200-220 V AC	N6 <sup>2)</sup>	220 V AC	240 V AC	P6 <sup>2)</sup>	42 V DC	42 V DC	D4
						48 V DC	48 V DC	W4
						60 V DC	60 V DC	E4
						110 V DC	110 V DC	F4
						125 V DC	125 V DC	G4
						220 V DC	220 V DC	M4
						230 V DC	230 V DC	P4
						240 V DC	240 V DC	Q4

<sup>1)</sup> Operating range at 220 V or 380 V: 0.85 to 1.1 x  $U_s$

<sup>2)</sup> Operating range at 60 Hz: 0.85 to 1.1 x  $U_s$


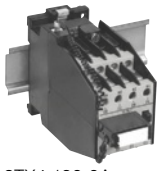


### Accessories

Version	Rated control supply voltage $U_s$		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
	AC V	DC V							
<b>Surge suppressors<sup>1)</sup> for 3TH4 contactor relays</b>									
	<b>Noise suppression diodes</b> with line spacer, for mounting onto the coil terminal		--	24 ... 250	A	<b>3TX7 402-3A</b>	1	1 unit	41B
	<b>Diode assemblies</b> (diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal		--	24 ... 250	A	<b>3TX7 402-3D</b>	1	1 unit	41B
	<b>Varistors<sup>2)</sup></b> with line spacer, for mounting onto the coil terminal		24 ... 48	24 ... 70	A	<b>3TX7 402-3G</b>	1	1 unit	41B
			48 ... 127	70 ... 150	A	<b>3TX7 402-3H</b>	1	1 unit	41B
			127 ... 240	150 ... 250	A	<b>3TX7 402-3J</b>	1	1 unit	41B
			240 ... 400	--	C	<b>3TX7 402-3K</b>	1	1 unit	41B
			400 ... 600	--	C	<b>3TX7 402-3L</b>	1	1 unit	41B
<b>RC elements</b> with line spacer, for mounting onto the coil terminal		24 ... 48	24 ... 70	A	<b>3TX7 402-3R</b>	1	1 unit	41B	
		48 ... 127	70 ... 150	A	<b>3TX7 402-3S</b>	1	1 unit	41B	
		127 ... 240	150 ... 250	A	<b>3TX7 402-3T</b>	1	1 unit	41B	
		240 ... 400	--	C	<b>3TX7 402-3U</b>	1	1 unit	41B	
		400 ... 600	--	C	<b>3TX7 402-3V</b>	1	1 unit	41B	
<b>Covers</b> for switch position indicator		--	--	B	<b>3TX4 210-0P</b>	1	1 unit	41B	

<sup>1)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

<sup>2)</sup> Includes the peak value of the alternating voltage on the DC side.

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

For contactors	Version	Rated control supply voltage $U_s$		Time setting range (minimum times)	DT	Screw terminals 		PU (UNIT, SET, M)	PS*	PG
		AC 50/60 Hz	DC			Order No.	Price per PU			
Type		V	V	s						
<b>ON-delay devices</b>										
 3TH42, 3TH43	<b>NTC thermistors</b>	220 ... 230		0.1	B	<b>3TX4 180-0A</b>		1	1 unit	41A
		Time tolerance +100 %, -50 %								
<b>Coupling links for control by PLC for 3TH4 contactor relays</b>										
 3TH42, 3TH43	Operating range: 17 to 30 V DC Power consumption: 0.5 W at 24 V DC				A	<b>3TX4 090-0C</b>		1	1 unit	41B
		• For mounting directly to contactor coil <b>without</b> surge suppressor								
					A	<b>3TX4 090-0D</b>		1	1 unit	41B
<b>OFF-delay devices for contactors with DC operation</b>										
 3TH42 ...-0AN1	Bridging of voltage interruptions up to 1.2 sec									
	3TH42 ...-0BF4	110	--	0.15 or 0.3	A	<b>3TX4 701-0AN1</b>		1	1 unit	41B
	3TH43 ...-0BF4									
	3TH42 ...-0BM4	220	--	0.6 or 1.2	A	<b>3TX4 701-0AN1</b>		1	1 unit	41B
	3TH43 ...-0BM4									
	3TH42 ...-0BP4	230	--	0.6 or 1.2	A	<b>3TX4 701-0AN1</b>		1	1 unit	41B
3TH43 ...-0BP4										
3TH42 ...-0BB4	--	24	0.4 or 0.8	B	<b>3TX4 701-0BB4</b>		1	1 unit	41B	
3TH43 ...-0BB4										

## 3TH2 contactor relays, 4- and 8-pole

### Overview

#### Standards

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

The terminal designations comply with EN 50011.

The 3TH2 contactor relays are suitable for use in any climate.

The contactor relays with screw terminal are finger-safe according to EN 50274.

#### Connections

The 3TH20 contactor relays with 4 auxiliary contacts are available with SIGUT screw terminals, 6.3 mm x 0.8 mm flat connectors and solder pin connections.

The contactor relays with 6.3 mm x 0.8 mm flat connectors can be used in the plug-in base with solder pin connections for printed circuit boards. The contactor relays are coded and the plug-in base is codable in order to ensure non-interchangeability.

The 3TH22 contactor relays with 8 integrated contacts are available with screw terminals. The terminal designations are according to EN 50011.

#### Contact reliability

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

#### 3TH27 latched contactor relays

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually.

### Accessories

#### Auxiliary switch blocks

The contactor relays with 4 contacts with screw terminals can be expanded by up to 4 contacts by the addition of snap-on auxiliary switch blocks (see [Accessories, page 5/30](#)).

A cover (with unit labeling plate) must be removed from the front of the contactor relay for this purpose. The auxiliary switch block is then easy to mount. The auxiliary switch blocks can be removed again by unlocking them with a laterally arranged orange slide.

The contactor relays with screw terminals with 4 contacts according to EN 50011, with the identification number 40E, can be extended with 80E, 71E, 62E, 53E or 44E auxiliary switch blocks to obtain contactor relays with 8 contacts according to EN 50011. The identification numbers 80E, 71E, 62E, 53E or 44E on the coded auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactor relays with identification number 31E and 33E.

All contactor relays with screw terminals with 4 contacts according to EN 50011, identification number 40E, 31E or 22E, can be extended with auxiliary switch blocks with identification number 40, 31, 22, 20, 11 or 02 to obtain contactor relays with 6 or 8 contacts according to EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

#### Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode for short break times) can be plugged onto all contactors and auxiliary switch blocks with screw terminals from the front in order to damp opening surges in the coil (see [Accessories, page 5/31](#)).

The unit labeling plate must be removed for this purpose. It can be snapped onto the attached surge suppressor.

#### Additional load module

The 3TX4 490-1J additional load module (see [Accessories, page 5/31](#)) can be used by programmable logic controllers to increase the permissible residual current and to limit the residual voltage of semiconductor outputs.

This module ensures the safe opening of 3TH2 and 3TF2 contactor relays with direct control through 230 V AC semiconductor outputs. It is accommodated in the same enclosure as the 3TX4 490-3. surge suppressors and can be plugged into the contactor.

### Technical specifications

Contactor relays

Type

**3TH2**

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

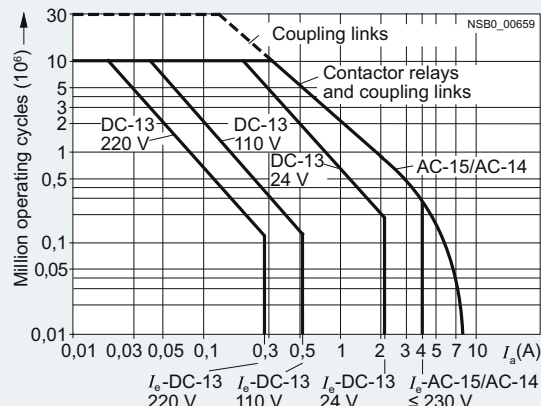
The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

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

Legend for the diagram:

$I_e$  = Rated operational current

$I_a$  = Breaking current



#### Positively-driven operation of contacts in contactor relays

##### 3TH20:

**Yes**, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (removable) acc. to:

- ZH 1/457
- IEC 60947-5-1, Appendix L

##### 3TH22:

**Yes**, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:

- ZH 1/457
- IEC 60947-5-1, Appendix L
- SUVA

Explanations:

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

##### ZH1/457

Safety rules for control units on power-operated presses in the metal-working industry.

##### IEC 60947-5-1, Appendix L

Low-Voltage Controlgear, Control Equipment and Switching Elements. Special requirements for positively-driven contacts

##### SUVA

Accident prevention regulations of the "Schweizer Unfallverhütungsanstalt" (Swiss Institute for Accident Insurance)




Type	Dimensions (W x H x D)	mm	Contactor relays		Auxiliary switch blocks
			3TH20 ...-....	3TH22 ...-....	3TX4 ...-..
• With 3TX4 490 surge suppressor		mm	45 x 48 x 63	45 x 48 x 91	45 x 33 x 28
		mm	45 x 48 x 88	45 x 48 x 116	--
General technical specifications					
<b>Permissible mounting positions</b>	AC and DC operation		Any		
<b>Mechanical endurance</b>	• AC operation • DC operation	Operating cycles	10 million 30 million		
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)		V	690	500	500
• Screw terminals		V	500	--	--
• Flat connectors 6.3 mm x 0.8 mm		V	500	--	--
• Solder pin connections		V	500	--	--
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (pollution degree 3)		kV	6	6	6
• Screw terminals		kV	6	--	--
• Flat connectors 6.3 mm x 0.8 mm		kV	6	--	--
• Solder pin connections		kV	6	--	--
<b>Protective separation</b> between coil and contacts (according to IEC 60947-1, Appendix N)		V	Up to 300		
<b>Permissible ambient temperature<sup>1)</sup></b>	• During operation • During storage	°C	-25 ... +55 -55 ... +80		
<b>Degree of protection</b> acc. to IEC 60947-1 Appendix C			IP00 open IP20 for screw terminals IP40 coil assembly		
<b>Touch protection</b> acc. to EN 50274			Finger-safe for screw terminals		
<b>Shock resistance</b>					
• Rectangular pulse	- AC operation - DC operation	$g/ms$ $g/ms$	7/5 and 4/10 10/5 and 6/10		
• Sine pulse	- AC operation - DC operation	$g/ms$ $g/ms$	9/5 and 6/10 13/5 and 8/10		
<b>Conductor cross-sections</b>			2)		

<sup>1)</sup> Applies to 50/60 Hz coil:  
Operating range at 60 Hz:  $0.85 \dots 1.1 \times U_N$ ;  
at 50 Hz,  $1.1 \times U_N$ , side-by-side mounting and 100 % ON period  
the maximum ambient temperature is +40 °C.

<sup>2)</sup> For conductor cross-sections see page 5/26.

# Contactors Relays

## 3TH2 contactor relays, 4- and 8-pole

Contactor relays	Type	3TH2	
<b>Short-circuit protection</b>			
Short-circuit test with fuse links of gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current $I_k = 1 \text{ kA acc. to IEC 60947-5-1}$	A	6	
<b>Conductor cross-sections</b>			
<b>Main and auxiliary conductors</b>			
<ul style="list-style-type: none"> <li>• Solid</li> <li>• Finely stranded with end sleeve</li> <li>• Terminal screw</li> </ul>	mm <sup>2</sup>	 <b>Screw terminals</b> 2 x (0.5 ... 2.5) 2 x (0.5 ... 1.5) M3	
	mm <sup>2</sup>		
<ul style="list-style-type: none"> <li>• Finely stranded When using a plug-in sleeve</li> </ul>	- 6.3 ... 1	 <b>Flat connectors</b> 0.5 ... 1 1 ... 2.5	
	- 6.3 ... 2.5		
<ul style="list-style-type: none"> <li>• Solder pin cross-section (does not apply to plug-in bases)</li> </ul>	mm <sup>2</sup>	 <b>Solder pin connections (only for printed circuit boards)</b> 0.8 x 1.2	
	mm <sup>2</sup>		
<b>Control circuits</b>			
<b>Coil operating range<sup>1)</sup></b>	0.8 ... 1.1 x $U_s$		
<b>Power consumption of the solenoid coils</b> (when coil is cold and 1.0 x $U_s$ )			
• AC operation, 50 Hz	Closing	VA	15
	P.f.		0.41
• AC operation, 60 Hz	Closing	VA	6.8
	P.f.		0.42
• AC operation, 50/60 Hz <sup>1)</sup>	Closing	VA	14.4
	P.f.		0.36
• DC operation	Closing	VA	6.1
	P.f.		0.46
• DC operation	Closing	VA	16.5/13.2
	P.f.		0.43/0.38
• DC operation	Closing	VA	8.0/5.4
	P.f.		0.48/0.42
• DC operation	Closing = Closed	W	3
<b>Permissible residual current of the electronics</b> (with 0 signal)			
	AC operation	mA	$\leq 3 \times (220 \text{ V}/U_s)$
	DC operation	mA	$\leq 1 \times (220 \text{ V}/U_s)$
<b>Operating times for 0.8 ... 1.1 x <math>U_s</math><sup>2)</sup></b>			
Total break time = Opening delay + Arcing time			
Values apply with coil in cold state and at operating temperature for operating range			
• AC operation	- Closing	ON-delay NO	ms
		OFF-delay NC	ms
• DC operation	- Opening	OFF-delay NO	ms
		ON-delay NC	ms
• DC operation	- Closing	ON-delay NO	ms
		OFF-delay NC	ms
• DC operation	- Opening	OFF-delay NO	ms
		ON-delay NC	ms
• Arcing time			ms
<b>Operating times for 1.0 x <math>U_s</math><sup>2)</sup></b>			
• AC operation	- Closing	ON-delay NO	ms
		OFF-delay NC	ms
• DC operation	- Opening	OFF-delay NO	ms
		ON-delay NC	ms
• DC operation	- Closing	ON-delay NO	ms
		OFF-delay NC	ms
• DC operation	- Opening	OFF-delay NO	ms
		ON-delay NC	ms

<sup>1)</sup> Applies to 50/60 Hz coil  
Operating range at 60 Hz: 0.85 ... 1.1 x  $U_s$ ;  
at 50 Hz, 1.1 x  $U_s$ , side-by-side mounting and 100 % ON period the  
maximum ambient temperature is +40 °C.

<sup>2)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are  
increased if the contactor coils are attenuated against voltage peaks  
(noise suppression diode 6 to 10 times;  
diode assembly 2 to 6 times, varistor +2 to 5 ms).




Contactor relays	Type	3TH2	
<b>Load side</b>			
<b>AC capacity</b>			
<b>Utilization category AC-12</b>			
Rated operational current $I_e$ (at 60 °C)	A	10	
<b>Utilization categories AC-15 and AC-14</b>			
Rated operational current $I_e$ For rated operational voltage $U_e$			
	230/220 V A	4	
	400/380 V A	3	
	500 V A	2	
	690/660 V A	1	
<b>Rated power of induction motors</b>			
Acc. to utilization category AC-2 and AC-3	110 V kW	0.2	
	230/220 V kW	0.55	
	400/380 V kW	1.1	
	500 V kW	1.5	
	690/660 V kW	1.5	
<b>Load rating with DC</b>			
<b>Utilization category DC-12</b>			
Rated operational current $I_e$ For rated operational voltage $U_e$	A	10	
• 1 conducting path <sup>1)</sup>	Up to 24 V A	4	
	60 V A	2	
	110 V A	1.1	
	240/220 V A	0.5	
• 2 conducting paths in series	Up to 24 V A	10	
	60 V A	10	
	110 V A	4	
	240/220 V A	2	
• 3 conducting paths in series	Up to 24 V A	10	
	60 V A	10	
	110 V A	6	
	240/220 V A	2.5	
<b>Utilization category DC-13</b>			
Rated operational current $I_e$ For rated operational voltage $U_e$			
• 1 conducting path	Up to 24 V A	2.1	
	60 V A	0.9	
	110 V A	0.52	
	240/220 V A	0.27	
• 2 conducting paths in series	Up to 24 V A	10	
	60 V A	3.5	
	110 V A	1.3	
	240/220 V A	0.9	
• 3 conducting paths in series	Up to 24 V A	10	
	60 V A	4.7	
	110 V A	3	
	240/220 V A	1.2	
<b>Switching frequency</b>			
<b>Switching frequency z</b> in operating cycles/hour			
Rated operation for utilization category			
Dependence of the switching frequency $z'$ on the operational current $I'$ and operational voltage $U'$ $z' = z \cdot (I_e/I') \cdot (400 V/U')^{1.5} \cdot 1/h$	AC-12/DC-12	$h^{-1}$	1000
	AC-2	$h^{-1}$	500
	AC-3	$h^{-1}$	1000
	AC-15/AC-14	$h^{-1}$	1200
	DC-13	$h^{-1}$	1200
No-load switching frequency		$h^{-1}$	10000

<sup>1)</sup> Contact endurance  $0.1 \times 10^6$  operating cycles.

# Contactor Relays

## 3TH2 contactor relays, 4- and 8-pole

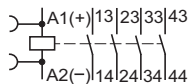
### Selection and ordering data

Contacts	Rated operational current $I_e$ /AC-15/AC-14 at				Contacts		DT	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					
Number	A	A	A	A				Order No.	Price per PU		
						NO NC					

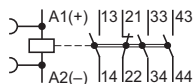
#### For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

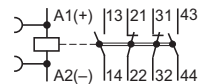
4 NO, Ident. No. **40E**



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



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



#### AC operation

4	4	3	2	1	Ident. No.	3 NO + 1 NC	2 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG
					<b>40E</b>	4	--	A	<b>3TH20 40-0AP0</b>	1	1 unit	41A
					<b>31E</b>	3	1	A	<b>3TH20 31-0AP0</b>	1	1 unit	41A
					<b>22E</b>	2	2	A	<b>3TH20 22-0AP0</b>	1	1 unit	41A

#### DC operation · DC solenoid system

4	4	3	2	1	Ident. No.	3 NO + 1 NC	2 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG
					<b>40E</b>	4	--	A	<b>3TH20 40-0BB4</b>	1	1 unit	41A
					<b>31E</b>	3	1	A	<b>3TH20 31-0BB4</b>	1	1 unit	41A
					<b>22E</b>	2	2	A	<b>3TH20 22-0BB4</b>	1	1 unit	41A

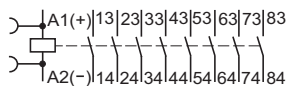
3TH20 ..-0A..

#### With permanently mounted auxiliary switch blocks

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

Terminal designations according to EN 50011

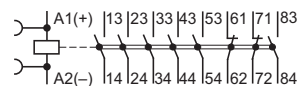
8 NO, Ident. No. **80E**



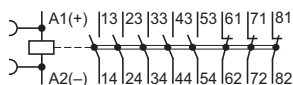
7 NO + 1 NC, Ident. No. **71E**



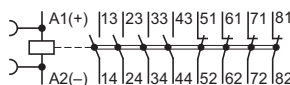
6 NO + 2 NC, Ident. No. **62E**



5 NO + 3 NC, Ident. No. **53E**



4 NO + 4 NC, Ident. No. **44E**



#### AC operation

8	4	3	2	--	Ident. No.	7 NO + 1 NC	6 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG	
					<b>80E</b>	8	0	C	<b>3TH22 80-0AP0</b>	53.50	1	1 unit	41A
					<b>71E</b>	7	1	C	<b>3TH22 71-0AP0</b>	53.50	1	1 unit	41A
					<b>62E</b>	6	2	C	<b>3TH22 62-0AP0</b>	53.50	1	1 unit	41A
					<b>53E</b>	5	3	C	<b>3TH22 53-0AP0</b>	53.50	1	1 unit	41A
					<b>44E</b>	4	4	C	<b>3TH22 44-0AP0</b>	53.50	1	1 unit	41A

#### DC operation · DC solenoid system

8	4	3	2	--	Ident. No.	7 NO + 1 NC	6 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG	
					<b>80E</b>	8	0	C	<b>3TH22 80-0BB4</b>	58.60	1	1 unit	41A
					<b>71E</b>	7	1	C	<b>3TH22 71-0BB4</b>	58.60	1	1 unit	41A
					<b>62E</b>	6	2	C	<b>3TH22 62-0BB4</b>	58.60	1	1 unit	41A
					<b>53E</b>	5	3	C	<b>3TH22 53-0BB4</b>	58.60	1	1 unit	41A
					<b>44E</b>	4	4	C	<b>3TH22 44-0BB4</b>	58.60	1	1 unit	41A

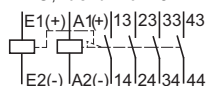
3TH22 ..-0A..

#### Latched contactor relays

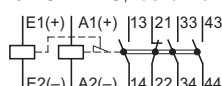
#### For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

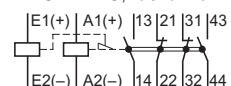
4 NO, Ident. No. **40E**



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



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



#### AC operation

4	4	3	2	1	Ident. No.	3 NO + 1 NC	2 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG	
					<b>40E</b>	4	--	C	<b>3TH27 40-0AP0</b>	130.—	1	1 unit	41A
					<b>31E</b>	3	1	C	<b>3TH27 31-0AP0</b>	130.—	1	1 unit	41A
					<b>22E</b>	2	2	C	<b>3TH27 22-0AP0</b>	130.—	1	1 unit	41A

#### DC operation · DC solenoid system

4	4	3	2	1	Ident. No.	3 NO + 1 NC	2 NO + 2 NC	Order No.	Price per PU	PU	PS*	PG	
					<b>40E</b>	4	--	C	<b>3TH27 40-0BB4</b>	135.—	1	1 unit	41A
					<b>31E</b>	3	1	C	<b>3TH27 31-0BB4</b>	135.—	1	1 unit	41A
					<b>22E</b>	2	2	C	<b>3TH27 22-0BB4</b>	135.—	1	1 unit	41A

3TH27 ..

Accessories see pages 5/30 and 5/31.

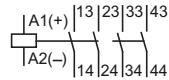
## 3TH2 contactor relays, 4- and 8-pole

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

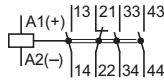
### Contactor relays with 6.3 mm x 0.8 mm flat connectors

Terminal designations according to EN 50011

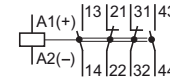
4 NO, Ident. No. **40E**



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



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



#### AC operation

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

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-3AP0	3TH20 31-3AP0	3TH20 22-3AP0	1	1 unit	41A

For screw fixing (diagonal)

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-7AP0	3TH20 31-7AP0	3TH20 22-7AP0	1	1 unit	41A

#### DC operation - DC solenoid system

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

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-3BB4	3TH20 31-3BB4	3TH20 22-3BB4	1	1 unit	41A

For screw fixing (diagonal)

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-7BB4	3TH20 31-7BB4	3TH20 22-7BB4	1	1 unit	41A



3TH20 ...-3...

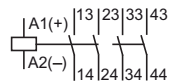


3TH20 ...-7...

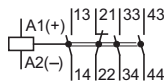
### Contactor relays with solder pin connections for printed circuit boards

Terminal designations according to EN 50011

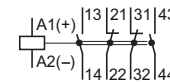
4 NO, Ident. No. **40E**



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



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



#### AC operation

For screw fixing (diagonal)

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-6AP0	3TH20 31-6AP0	3TH20 22-6AP0	1	1 unit	41A

#### DC operation - DC solenoid system

For screw fixing (diagonal)

4	4	3	2	--	40E	31E	22E	4	--	C	3TH20 40-6BB4	3TH20 31-6BB4	3TH20 22-6BB4	1	1 unit	41A



3TH20 ...-6...

Accessories see pages 5/30 and 5/31.

### Options

#### Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage $U_s$	Contactor type	3TH20 ..-0...	3TH20 ..-3..., 3TH20 ..-6..., 3TH20 ..-7..., 3TH22, 3TH27	Rated control supply voltage $U_s$	Contactor type	3TH20 ..-0...	3TH20 ..-3..., 3TH20 ..-6..., 3TH20 ..-7..., 3TH22, 3TH27

#### AC operation

Solenoid coils for AC 50 and 60 Hz

50 Hz	60 Hz	B0	--
24 V AC	29 V AC	F0	--
110 V AC	132 V AC	P0 <sup>1)</sup>	P0 <sup>1)</sup>
230/220 V AC	276 V AC		

<sup>1)</sup> Operating range at 220 V or 380 V: 0.85 to 1.15 x  $U_s$ ; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

#### DC operation

Solenoid coils for DC

24 V DC	110 V DC	220 V DC	B4	B4
			F4	--
			M4	--

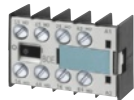
# Contactor Relays

## 3TH2 contactor relays, 4- and 8-pole

### Accessories

Rated operational current $I_e$ /AC-15/AC-14 at	Contacts	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
230/ 400/ 500 V 220 V 380 V	Ident. No. Version		Order No.	Price per PU			
A A A	NO NC NO NC						

### Snap-on auxiliary switch blocks for 3TH20 contactor relays



3TX4 440-0A

For expansion to 8 contacts according to EN 50011  
Only for 3TH20 40-0... (with 4 NO, Ident. No. 40E)

4	3	2	80E	4	--	--	--	▶	3TX4 440-0A	1	1 unit	41A
			71E	3	1	--	--	▶	3TX4 431-0A	1	1 unit	41A
			62E	2	2	--	--	▶	3TX4 422-0A	1	1 unit	41A
			53E	1	3	--	--	▶	3TX4 413-0A	1	1 unit	41A
			44E	--	4	--	--	▶	3TX4 404-0A	1	1 unit	41A

For expansion to 6 or 8 contacts according to EN 50005

4	3	2	40E	4	--	--	--	▶	3TX4 440-2A	1	1 unit	41A
			31E	3	1	--	--	▶	3TX4 431-2A	1	1 unit	41A
			22E	2	2	--	--	▶	3TX4 422-2A	1	1 unit	41A
			22; 2U	--	--	2	2	D	3TX4 422-2G	1	1 unit	41A
4	3	2	20E	2	--	--	--	▶	3TX4 420-2A	1	1 unit	41A
			11E	1	1	--	--	▶	3TX4 411-2A	1	1 unit	41A
			02E	--	2	--	--	▶	3TX4 402-2A	1	1 unit	41A
			11; U	--	--	1	1	D	3TX4 411-2G	1	1 unit	41A

For contactors	Rated control supply voltage $U_s$	OFF-delay (minimum times)	DT	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
Type	50/60 Hz AC V DC V	s		Order No.	Price per PU			

### OFF-delay devices for contactors with DC operation




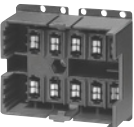




3TX4 490-1A

Bridging of voltage interruptions up to 0.8 sec

3TH2. ...-0BB4	--	24	0.25 or 0.5	A	3TX4 490-1H	1	1 unit	41B
3TH2. ...-0BF4	110	--	0.1 or 0.2	A	3TX4 490-1A	1	1 unit	41B
3TH2. ...-0BM4, 3TH2. ...-0BP4	220	--	0.4 or 0.8					

## 3TH2 contactor relays, 4- and 8-pole

For contactors	Rated control supply voltage		Power consumption of LED at $U_s$	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V AC	V DC							
<b>Surge suppressors<sup>1)</sup> for plugging onto contactors with and without auxiliary switch blocks</b>									
<b>Version without LED</b>									
 3TX4 490-3A	<b>RC elements</b>								
	3TH2...-0...	24 ... 48	24 ... 70	--	B	<b>3TX4 490-3R</b>	1	1 unit	41B
		48 ... 127	70 ... 150	--	B	<b>3TX4 490-3S</b>	1	1 unit	41B
		127 ... 240	150 ... 250	--	B	<b>3TX4 490-3T</b>	1	1 unit	41B
		240 ... 400	--	--	B	<b>3TX4 490-3U</b>	1	1 unit	41B
		400 ... 600	--	--	B	<b>3TX4 490-3V</b>	1	1 unit	41B
<b>Varistors</b>									
3TH2...-0...	≤48	24 ... 70	--	B	<b>3TX4 490-3G</b>	1	1 unit	41B	
	48 ... 127	70 ... 150	--	B	<b>3TX4 490-3H</b>	1	1 unit	41B	
	127 ... 240	150 ... 250	--	B	<b>3TX4 490-3J</b>	1	1 unit	41B	
	240 ... 400	--	--	B	<b>3TX4 490-3K</b>	1	10 units	41B	
	400 ... 600	--	--	B	<b>3TX4 490-3L</b>	1	10 units	41B	
<b>Noise suppression diodes</b>									
3TH2...-0...	--	12 ... 250	--	B	<b>3TX4 490-3A</b>	1	1 unit	41B	
<b>Diode assemblies (diode and Zener diode) For DC operation and short break times</b>									
3TH2...-0...	--	24 ... 250	--	B	<b>3TX4 490-3B</b>	1	1 unit	41B	
<b>Version with LED</b>									
 3TX4 490-4G	<b>Varistors</b>								
	3TH2...-0...	24 ... 48	12 ... 24	10 ... 120	B	<b>3TX4 490-4G</b>	1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	B	<b>3TX4 490-4H</b>	1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	B	<b>3TX4 490-4J</b>	1	1 unit	41B
		--	150 ... 250	160 ... 950	B	<b>3TX4 490-4K</b>	1	1 unit	41B
<b>Noise suppression diodes</b>									
3TH2...-0...	--	24 ... 70	20 ... 470	B	<b>3TX4 490-4A</b>	1	1 unit	41B	
	--	70 ... 150	50 ... 700	B	<b>3TX4 490-4B</b>	1	1 unit	41B	
	--	150 ... 250	160 ... 950	B	<b>3TX4 490-4C</b>	1	1 unit	41B	
<b>Additional load modules for 3TH2 contactor relays for plugging onto contactors with and without auxiliary switch blocks</b>									
 3TX4 490-1J	For increasing the permissible residual current and for limiting the residual voltage of SIMATIC semiconductor outputs								
	3TH2...-0A...	230/220, 50 Hz	--		B	<b>3TX4 490-1J</b>	1	1 unit	41B
		230, 60 Hz	--						
		230, 50/60 Hz	--						
		Operating range 0.8 ... 1.1 × $U_s$							
<b>Plug-in bases with solder pin connections for printed circuit boards, width 45 mm</b>									
 3TX4 491-2A	For 3TH2 contactor relays; with flat connectors 1 × 6.3 mm ... 0.8 mm								
	Rated insulation voltage $U_i$ : 400 V (for pollution degree 3); rated impulse withstand voltage $U_{imp}$ : 6 kV; rated operational current $I_e$ : 6 A;  and  rated data: max. 300 V, 6 A								
	3TH20...-3...				A	<b>3TX4 491-2A</b>	1	5 units	41A
	3TH20...-7...								
<b>Release tools</b>									
3TH20...-7...	For releasing contactors from 3TX4 491-2A plug-in bases			D	<b>3TX4 491-2K</b>	1	1 unit	41B	

<sup>1)</sup> The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

# Contactor Relays

## Coupling Relays

### SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

#### Overview

##### DC operation

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

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




The 3RH21 coupling relays cannot be extended with auxiliary switch blocks.




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

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

#### Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH21 contactor relays (see page 5/6).

Contactor type		3RH21 ...HB40	3RH21 ...JB40	3RH21 ...KB40
Size		S00	S00	S00
<b>Control circuits</b>				
<b>Coil operating range</b>		0.7 ... 1.85 x $U_s$		
<b>Power consumption of the solenoid coil</b> (for cold coil) Closing = Closed				
• At $U_s = 17$ V	W	1.4		
• At $U_s = 24$ V	W	2.8		
• At $U_s = 30$ V	W	4.4		
<b>Permissible residual current</b> of the electronics for 0 signal		< 10 mA x (24 V/ $U_s$ )		
<b>Overvoltage configuration of the solenoid coil</b>		No overvoltage damping 	With diode 	With suppressor diode 
<b>Operating times</b>				
• <b>Closing</b> at 17 V				
- ON-delay NO	ms	40 ... 130		
- OFF-delay NC	ms	30 ... 80		
• At 24 V				
- ON-delay NO	ms	35 ... 60		
- OFF-delay NC	ms	25 ... 40		
• At 30 V				
- ON-delay NO	ms	25 ... 50		
- OFF-delay NC	ms	15 ... 30		
• <b>Opening</b> at 17 ... 30 V				
- OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20
- ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30
<b>Upright mounting position</b>		Request required		

Contactor type		3RH21 ...MB40-0KT0	3RH21 ...VB40	3RH21 ...WB40
Size		S00	S00	S00
<b>Control circuits</b>				
<b>Coil operating range</b>		0.85 ... 1.85 x $U_s$		
<b>Power consumption of the solenoid coil</b> (for cold coil) Closing = Closed at $U_s = 24$ V	W	1.6		
<b>Permissible residual current</b> of the electronics for 0 signal		< 8 mA x (24 V/ $U_s$ )		
<b>Overvoltage configuration of the solenoid coil</b>		Diode, varistor or RC element, attachable 	Built-in diode 	Built-in suppressor diode 

# Contactor Relays Coupling Relays

**SIRIUS 3RH21 coupling relays  
for switching auxiliary circuits, 4-pole**

<b>Contactor type</b>	<b>3RH21 ...MB40-0KT0</b>	<b>3RH21 ...VB40</b>	<b>3RH21 ...WB40</b>
Size	<b>S00</b>	<b>S00</b>	<b>S00</b>
<b>Control circuits</b>			
<b>Operating times</b>			
• Closing at 20.5 V			
- ON-delay NO	ms	30 ... 120	
- OFF-delay NC	ms	20 ... 110	
• At 24 V			
- ON-delay NO	ms	25 ... 90	
- OFF-delay NC	ms	15 ... 80	
• At 44 V			
- ON-delay NO	ms	15 ... 60	
- OFF-delay NC	ms	10 ... 50	
• Closing at 17 ... 30 V			
- OFF-delay NO	ms	5 ... 20	20 ... 80
- ON-delay NC	ms	10 ... 30	30 ... 90
5 ... 20			10 ... 30
<b>Upright mounting position</b>	Request required		

## Selection and ordering data

### DC operation

### Low power consumption

### Extended operating range of the solenoid coil

### Integrated coil circuit

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



3RH21 ...-1.B40

3RH21 ...-2.B40

Rated operational current $I_{th}/AC-15/AC-14$ at <b>230 V</b>	Auxiliary contacts Ident. No. acc. to EN 50011	Version	DT	<b>Screw terminals</b>	DT	<b>Spring-type terminals</b>
				Order No.	Price per PU	Order No.
		NO NC				Price per PU

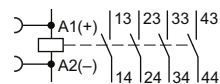
**For screw fixing and snap-on mounting onto  
TH 35 standard mounting rail**

### Size S00

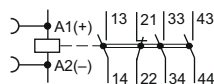
### Diode, varistor or RC element, attachable

Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)

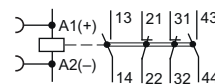
4 NO, Ident. No. **40E**



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



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



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25 x  $U_s$**

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

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1HB40</b>	B	<b>3RH21 40-2HB40</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1HB40</b>	B	<b>3RH21 31-2HB40</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1HB40</b>	B	<b>3RH21 22-2HB40</b>

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85 x  $U_s$**

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

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1MB40-0KT0</b>	B	<b>3RH21 40-2MB40-0KT0</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1MB40-0KT0</b>	B	<b>3RH21 31-2MB40-0KT0</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1MB40-0KT0</b>	B	<b>3RH21 22-2MB40-0KT0</b>

Surge suppressors [see page 5/13](#).

# Contactor Relays

## Coupling Relays

### SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole



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



3RH21 ...-1-B40



3RH21 ...-2-B40

Rated operational current $I_{th}/AC-15/AC-14$ at 230 V	Auxiliary contacts Ident. No. acc. to EN 50011	Version	DT	Screw terminals	DT	Spring-type terminals
				Order No.	Price per PU	Order No. Price per PU
		 				

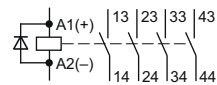
**A**  
 For screw fixing and snap-on mounting onto TH 35 standard mounting rail

**Size S00**

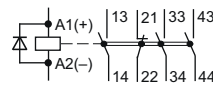
**With integrated coil circuit (diode)**

Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)

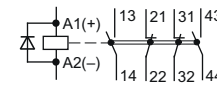
4 NO, Ident. No. **40E**



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



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



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25 x  $U_s$**   
 Power consumption of the solenoid coils **2.8 W** at 24 V

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1JB40</b>	B	<b>3RH21 40-2JB40</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1JB40</b>	B	<b>3RH21 31-2JB40</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1JB40</b>	B	<b>3RH21 22-2JB40</b>

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85 x  $U_s$**

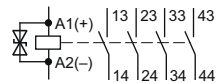
Power consumption of the solenoid coils **1.6 W** at 24 V

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1VB40</b>	B	<b>3RH21 40-2VB40</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1VB40</b>	B	<b>3RH21 31-2VB40</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1VB40</b>	B	<b>3RH21 22-2VB40</b>

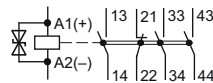
**With integrated coil circuit (suppressor diode)**

Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)

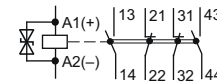
4 NO, Ident. No. **40E**



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



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



Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.7 to 1.25 x  $U_s$**   
 Power consumption of the solenoid coils **2.8 W** at 24 V

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1KB40</b>	B	<b>3RH21 40-2KB40</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1KB40</b>	B	<b>3RH21 31-2KB40</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1KB40</b>	B	<b>3RH21 22-2KB40</b>

Rated control supply voltage  $U_s = 24$  V DC, coil operating range **0.85 to 1.85 x  $U_s$**

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

<b>10</b>	<b>40E</b>	4	--	B	<b>3RH21 40-1SB40</b>	X	<b>3RH21 40-2SB40</b>
	<b>31E</b>	3	1	B	<b>3RH21 31-1SB40</b>	X	<b>3RH21 31-2SB40</b>
	<b>22E</b>	2	2	B	<b>3RH21 22-1SB40</b>	B	<b>3RH21 22-2SB40</b>



## Contactors with Extended Operating Range $0.7 \dots 1.25 \times U_s$ for Railway Applications

### SIRIUS 3RH21 contactor relays

#### Overview

##### DC operation

IEC 60947-4-1, EN 60947-4-1, for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactor relays are finger-safe according to EN 50274. The size S00 contactor relays have spring-type connections for all terminals.

##### Ambient temperature

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

Uninterrupted duty at temperatures  $> +60$  °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

##### Control and auxiliary circuits

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

#### Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

##### Contactor relays with conventional coil

##### Control and auxiliary circuits

These contactor relays have an extended operating range from  $0.7$  to  $1.25 \times U_s$ ; the coils are fitted with a suppressor diode as standard. An additional series resistor is not required.

##### Note:

An additional auxiliary switch block cannot be mounted.

##### Side-by-side mounting

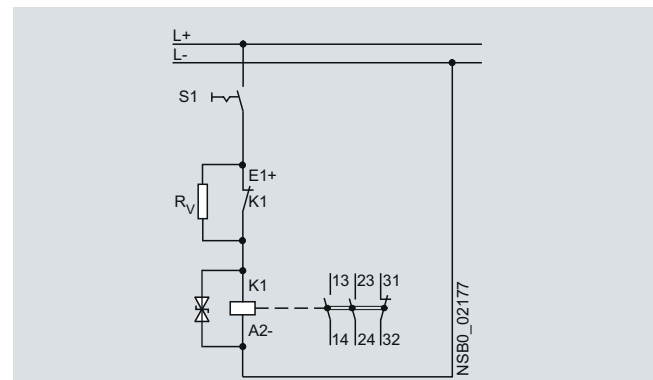
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures  $> 60$  °C  $\leq 70$  °C.

##### Contactor relays with series resistor

##### Control and auxiliary circuits

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

The size S00 contactor relays are supplied prewired with a plug-on module containing the series resistor. A surge suppressor (a suppressor diode or varistor as preferred) is integrated.



Circuit diagram (version with suppressor diode)

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

##### Side-by-side mounting

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

#### Technical specifications

Contactor relays	Type	3RH21 ..	
<b>General technical specifications</b>			
<b>Upright mounting position</b>			
• Contactors with series resistor			Special version (on request)
• Contactors without series resistor			Special version (on request)
<b>Ambient temperature</b>			
• During operation	°C	-40 ... +70	
• During storage	°C	-55 ... +80	
<b>Control circuits</b>			
<b>Coil operating range</b>	DC	$0.7 \dots 1.25 \times U_s$	
<b>Power consumption of the solenoid coils</b>			
• Contactors with series resistor	- Closing	W	13
	- Closed	W	4
• Contactors without series resistor	- Closing	W	2.8
	- Closed	W	2.8

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/4.

# Contactor Relays

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

### SIRIUS 3RH21 contactor relays

#### Selection and ordering data

DC operation · DC solenoid system

Spring-type terminals

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

Solenoid coil with surge suppression



3RH21 22-2K.40



3RH21 22-2K.40-0LA0

Rated operational current				Contacts		Rated control supply voltage $U_s$	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
$I_e$ /AC-15/AC-14 $T_U$ : 70 °C at				Version							
230 V	400 V	500 V	690 V	NO	NC	V DC					
A	A	A	A					Order No.	Price per PU		

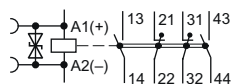
#### 3RH21 contactor relays

##### Size S00

With conventional coil, fitted with suppressor diode

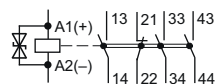
Terminal designations acc. to EN 50011

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



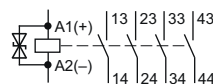
10 3 2 1 2 2<sup>1)</sup> 24

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



24  
110  
3 1<sup>1)</sup> 24  
4 --<sup>1)</sup> 24

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

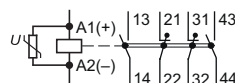


▶	<b>3RH21 22-2KB40</b>	1	1 unit	41A
A	<b>3RH21 22-2KF40</b>	1	1 unit	41A
▶	<b>3RH21 31-2KB40</b>	1	1 unit	41A
B	<b>3RH21 40-2KB40</b>	1	1 unit	41A

With conventional coil, fitted with varistor

Terminal designations acc. to EN 50011

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



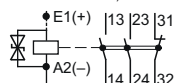
10 3 2 1 2 2<sup>1)</sup> 24  
110

B	<b>3RH21 22-2LB40</b>	1	1 unit	41A
B	<b>3RH21 22-2LF40</b>	1	1 unit	41A

With series resistor, fitted with suppressor diode

Terminal designations acc. to EN 50011

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



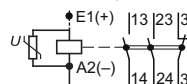
10 3 2 1 2 1<sup>2)</sup> 24  
110

B	<b>3RH21 22-2KB40-0LA0</b>	1	1 unit	41A
B	<b>3RH21 22-2KF40-0LA0</b>	1	1 unit	41A

With series resistor, fitted with varistor

Terminal designations acc. to EN 50011

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



10 3 2 1 2 1<sup>2)</sup> 24  
110

B	<b>3RH21 22-2LB40-0LA0</b>	1	1 unit	41A
B	<b>3RH21 22-2LF40-0LA0</b>	1	1 unit	41A

<sup>1)</sup> It is not possible to mount an auxiliary switch block.

<sup>2)</sup> 4-pole auxiliary switch block acc. to EN 50005 can be mounted.

## Contactors with Extended Operating Range 0.7 ... 1.25 x $U_s$ for Railway Applications

### 3TH4 contactor relays

#### Overview

##### Standards

IEC 60947-4-1, EN 60947-4-1;  
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactor relays are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

##### Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 55 °C. There is no need to reduce the technical specifications.

#### Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

##### Control and auxiliary circuits

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

#### Technical specifications

Contactor relay	Type	3TH42	
<b>General technical specifications</b>			
<b>Permissible ambient temperature</b>			
• During operation	°C	-50 ... +70 <sup>1)</sup>	
• During storage	°C	-55 ... +80	
<b>Control circuits</b>			
<b>Coil operating range</b>		0.7 ... 1.25 x $U_s$	
<b>Power consumption of the solenoid coils</b> (for cold coil)			
	0.7 x $U_s$ W	2.6	
	1.0 x $U_s$ W	5.2	
	1.25 x $U_s$ W	8.2	
(For cold coil: Closing = Closed)			
<b>Permissible residual current of the electronics</b> (with 0 signal)		≤10 mA x (24 V/ $U_s$ )	
• DC operation			
<b>Operating times</b> (Total break time = OFF-delay + Arcing time)			
• Closing			
- 0.7 x $U_s$	ON-delay (NO)	ms	70 ... 200
	OFF-delay (NC)	ms	28 ... 33
- 1 x $U_s$	ON-delay (NO)	ms	45 ... 80
	OFF-delay (NC)	ms	30 ... 34
- 1.25 x $U_s$	ON-delay (NO)	ms	40 ... 60
	OFF-delay (NC)	ms	31 ... 35
• Opening			
- 0.7 ... 1.25 x $U_s$	OFF-delay (NO)	ms	20 ... 30
	ON-delay (NC)	ms	22 ... 32
• Arcing time			
		ms	10

<sup>1)</sup> Side-by-side mounting with 10 mm distance.

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/16.



# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

Relay couplers

### Overview

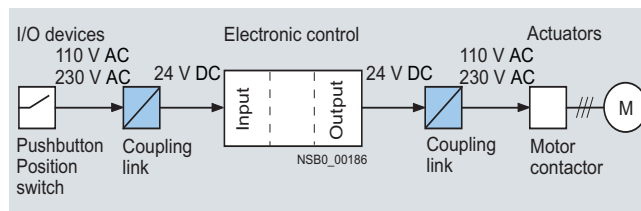
#### AC and DC operation

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

In the coupling links in double-decker design, the connections are arranged on two levels; the units are extremely compact. Connection method: Screw terminals or spring-type terminals. For test purposes, versions are available with manual-0-automatic switches.

The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.



Application example: Motor control

### Technical specifications

Type			
Dimensions (W x H x D)			
For width B see Selection and ordering data			
	mm	<b>3TX7 002, 3TX7 003</b> W x 60 x 62	<b>3TX7 004, 3TX7 005</b> W x 80 x 84

#### General technical specifications

<b>Rated insulation voltage</b> $U_i$ (pollution degree 3)	V	300
<b>Protective separation</b> <sup>1)</sup> between coil and contacts acc. to IEC 60947-1, Appendix N	V	Up to 300 AC
<b>Permissible ambient temperature</b>		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
<b>Degree of protection</b>		
• Connections		IP20
• Enclosure		IP30
<b>Short-circuit protection</b>		
• Short-circuit test with fuse links of gG operational class with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	4

#### Conductor cross-sections

(For 3TX7 002, 3TX7 004)		<b>Screw terminals</b>
• Solid	mm <sup>2</sup>	1 x (0.25 ... 4)
• Finely stranded without end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)
• Terminal screws		M3
- Corresponding opening tool		Screwdriver, size 3.5 mm x 0.5 mm
(For 3TX7 003, 3TX7 005)		<b>Spring-type terminals</b>
• Solid or finely stranded	mm <sup>2</sup>	1 x (0.08 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.25 ... 1.5)
• Corresponding opening tool		Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)

<sup>1)</sup> For 3TX7 00...-1FB02, no protective separation acc. to IEC 60947-1, Appendix N.

Type	3TX7 002- 3TX7 003-	1AB00 1AB02	1BB00	1FB02	1CB00	2AB00	2AE00	1BF00 2BF02	2AF00 2AF05	
<b>Control side</b>										
<b>Operating range</b>		0.8 ... 1.25 x $U_s$					0.8 ... 1.1 x $U_s$			
<b>Power consumption</b>										
• At $U_s = 24$ V AC/DC	W	0.75		1.2		0.75		--		
• At $U_s = 230$ V AC/DC	W	--		--		--		1.2		
Type		<b>3TX7 004, 3TX7 005</b>				<b>Exception: 3TX7 005-...05</b>				
<b>Control side</b>										
<b>Operating range</b>		0.7 ... 1.25 x $U_s$				0.8 ... 1.1 x $U_s$				
• At $U_s = 24$ V AC/DC		0.7 ... 1.25 x $U_s$				0.8 ... 1.1 x $U_s$				
• At $U_s = 110$ V AC/DC and 230 V		0.8 ... 1.1 x $U_s$				0.7 ... 1.25 x $U_s$				
- Exception: 3TX7 005-1LN00		0.7 ... 1.25 x $U_s$								
<b>Power consumption</b>										
• At $U_s = 24$ V AC/DC	W	0.5				--				
• At $U_s = 230$ V AC	VA	--				6				
• At $U_s = 230$ V DC	W	--				1				

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers

Type			3TX7 002, 3TX7 003	Exception: 3TX7 002-1CB00
<b>Load side</b>				
<b>Rated operational currents <math>I_e^{(1)}</math></b>				
Conventional thermal current $I_{th}$		A	6	
Rated operational current $I_e$ acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
<b>Switching current</b> for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.2	
	At 230 V	A	0.2	
<b>Switching voltage</b>				
	AC/DC	V	24 ... 250	
<b>Min. contact load</b> for 3TX7 00...02				
			1 V AC/DC/0.1 A	
<b>Mechanical endurance</b>				
		Operating cycles	20 x 10 <sup>6</sup>	
<b>Electrical endurance at <math>I_e</math></b>				
		Operating cycles	1 x 10 <sup>5</sup>	

Type			3TX7 004-1B, -1L, 3TX7 005-1L	3TX7 004-.M, 3TX7 005-.M,
<b>Load side</b>				
<b>Rated operational currents <math>I_e^{(1)}</math></b>				
Conventional thermal current $I_{th}$		A	6	
Rated operational current $I_e$ acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
<b>Switching current</b> for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.3	
	At 230 V	A	0.2	
<b>Power limit for hard gold-plating</b>				
• Voltage		V	30	
• Current		mA	20	
<b>Switching voltage</b>				
	AC/DC	V	17 ... 250	
<b>Min. switching voltage</b> (reliability 1 ppm)				
• Standard contacts			17 V DC/5 mA	
• Hard gold-plated contacts			5 V DC/1 mA	
<b>Mechanical endurance</b>				
		Operating cycles	20 x 10 <sup>6</sup>	
<b>Electrical endurance at <math>I_e</math></b>				
		Operating cycles	1 x 10 <sup>6</sup>	0.5 x 10 <sup>6</sup>

<sup>1)</sup> Capacitive loads can result in micro-weldings on the contacts.

#### Note:

If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers

#### Relay couplers – circuit diagrams for 3TX7 002, 3TX7 003

Terminal designations acc. to EN 50005

##### Output/input coupling links

3TX7 002-1AB00  
3TX7 002-1AB02  
3TX7 002-2A.00  
3TX7 002-2AF05  
3TX7 003-1AB00

##### Output coupling links

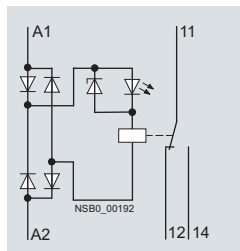
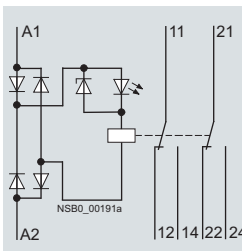
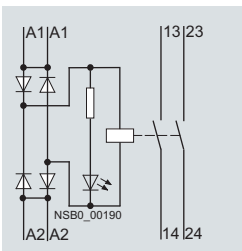
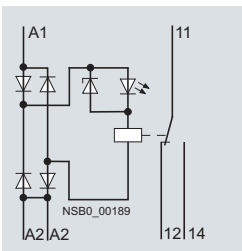
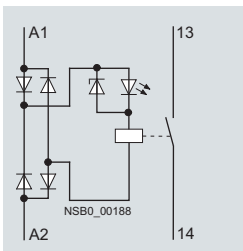
3TX7 002-1BB00  
3TX7 002-1BF00  
3TX7 003-1BB00

3TX7 002-1CB00  
3TX7 003-1CB00

3TX7 002-1FB02

##### Input coupling links

3TX7 002-2BF02



#### Relay couplers – circuit diagrams for 3TX7 004, 3TX7 005

##### Output coupling links

3TX7 00.-1M.00

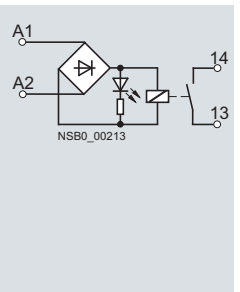
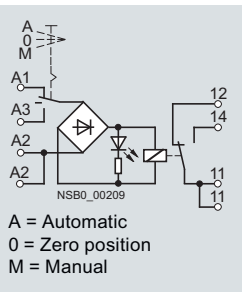
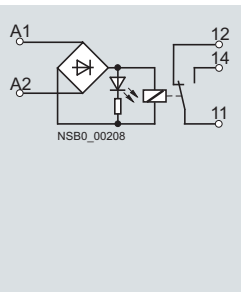
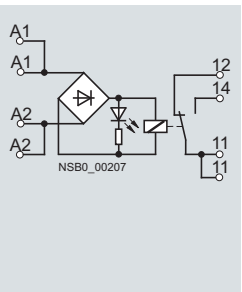
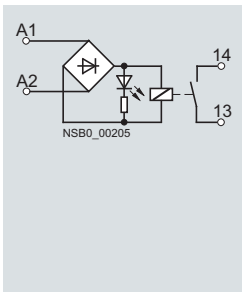
3TX7 00.-1BB00  
3TX7 00.-1BF05

3TX7 00.-1L.0.

3TX7 00.-1BB10

##### Input coupling links

3TX7 00.-2M.02





# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers

#### Selection and ordering data

##### AC and DC operation · For snap-on mounting onto TH 35 standard mounting rail

Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts Version		Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V	NO	CO	mm						
<b>3TX7 002 relay coupling links with screw terminals</b>									
<b>Output coupling links</b>					<b>Screw terminals</b> 				
24 AC/DC	1	--	11.5	▶	<b>3TX7 002-1AB00</b>		1	1 unit	41H
24 AC/DC	1 <sup>1)</sup>	--	11.5	▶	<b>3TX7 002-1AB02</b>		1	1 unit	41H
24 AC/DC	--	1	17.5	▶	<b>3TX7 002-1BB00</b>		1	1 unit	41H
230 AC/DC <sup>3)</sup>	--	1	17.5	▶	<b>3TX7 002-1BF00</b>		1	1 unit	41H
24 AC/DC	2 <sup>2)</sup>	--	22.5	▶	<b>3TX7 002-1CB00</b>		1	1 unit	41H
24 AC/DC	--	2 <sup>1) 2)</sup>	22.5	▶	<b>3TX7 002-1FB02</b>		1	1 unit	41H
<b>Input coupling links</b>									
24 AC/DC	1	--	11.5	▶	<b>3TX7 002-2AB00</b>		1	1 unit	41H
110 AC/DC <sup>4)</sup>	1	--	11.5	▶	<b>3TX7 002-2AE00</b>		1	1 unit	41H
230 AC/DC <sup>3)</sup>	2 <sup>2)</sup>	--	11.5	▶	<b>3TX7 002-2AF00</b>		1	1 unit	41H
230 AC/DC	1 <sup>2)</sup>	--	11.5	▶	<b>3TX7 002-2AF05</b>		1	1 unit	41H
230 AC/DC <sup>3)</sup>	--	1 <sup>1)</sup>	17.5	▶	<b>3TX7 002-2BF02</b>		1	1 unit	41H
<b>3TX7 003 relay coupling links with spring-type terminals</b>									
<b>Output coupling links</b>					<b>Spring-type terminals</b> 				
24 AC/DC	1	--	11.5	▶	<b>3TX7 003-1AB00</b>		1	1 unit	41H
24 AC/DC	--	1	17.5	▶	<b>3TX7 003-1BB00</b>		1	1 unit	41H
24 AC/DC	2 <sup>2)</sup>	--	22.5	▶	<b>3TX7 003-1CB00</b>		1	1 unit	41H
<b>Input coupling links</b>									
230 AC/DC	1	--	11.5	A	<b>3TX7 003-2AF00</b>		1	1 unit	41H



3TX7 002



3TX7 003

1) Hard gold-plated contacts.

2) Different potential up to 300 V permitted; no protective separation.

3) Observe max. permissible cable length for AC control voltage: 7 m.

4) Observe max. permissible cable length for AC control voltage: 15 m.

#### Note:

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

#### Note:







A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.



# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers

Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts Version	Manual-0-automatic switch for testing purposes	Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
V	 NO	 CO	mm							
<b>3TX7 004 relay couplers with screw terminals</b>										
<b>Output coupling links</b>					<b>Screw terminals</b> 					
 3TX7 004-1LB00	24 AC/DC	--	1	Without	6.2	▶	<b>3TX7 004-1LB00</b>	1	1 unit	41H
	24 AC/DC	--	1 <sup>2)</sup>	Without	6.2	▶	<b>3TX7 004-1LB02</b>	1	1 unit	41H
	24 AC/DC	--	1	With	12.5	▶	<b>3TX7 004-1BB10</b>	1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	<b>3TX7 004-1LF00</b>	1	1 unit	41H
	230 AC/DC	--	1	Without	12.5 <sup>1)</sup>	▶	<b>3TX7 004-1BF05</b>	1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	<b>3TX7 004-1MB00</b>	1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	<b>3TX7 004-1MF00</b>	1	1 unit	41H
	<b>Input coupling links</b>									
	24 AC/DC	1 <sup>2)</sup>	--	Without	6.2	▶	<b>3TX7 004-2MB02</b>	1	1 unit	41H
	110 AC/DC	1 <sup>2)</sup>	--	Without	6.2	▶	<b>3TX7 004-2ME02</b>	1	1 unit	41H
230 AC/DC	1 <sup>2)</sup>	--	Without	6.2	▶	<b>3TX7 004-2MF02</b>	1	1 unit	41H	
<b>3TX7 005 relay couplers with spring-type terminals</b>										
<b>Output coupling links</b>					<b>Spring-type terminals</b> 					
 3TX7 005-2MB02	24 AC/DC	--	1	Without	6.2	▶	<b>3TX7 005-1LB00</b>	1	1 unit	41H
	24 AC/DC	--	1 <sup>2)</sup>	Without	6.2	▶	<b>3TX7 005-1LB02</b>	1	1 unit	41H
	110 AC/DC <sup>3)</sup>	--	1	Without	6.2	B	<b>3TX7 005-1LN00</b>	1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	<b>3TX7 005-1LF00</b>	1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	<b>3TX7 005-1MB00</b>	1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	<b>3TX7 005-1MF00</b>	1	1 unit	41H
	<b>Input coupling links</b>									
	24 AC/DC	1 <sup>2)</sup>	--	Without	6.2	C	<b>3TX7 005-2MB02</b>	1	1 unit	41H
	230 AC/DC	1 <sup>2)</sup>	--	Without	6.2	B	<b>3TX7 005-2MF02</b>	1	1 unit	41H

1) For long cables.

2) Hard gold-plated contacts.

3) Extended operating range  $0.7 \dots 1.25 \times U_s$

#### Note:

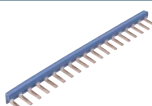

For replacement products, see 3RS18 coupling links with industrial housing or other 3TX7 0 products.

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

#### Note:

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

### Accessories

For coupling links	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
<b>Connecting comb, blue</b>							
 3TX7 004-8AA00	3TX7 004	For linking the same potentials	▶	<b>3TX7 004-8AA00</b>	1	1 unit	41H
		24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm					
<b>Connecting cable, blue</b>							
 3TX7 004-8BA00	3TX7 002 and 3TX7 004 with screw terminals	With infeed, blue	A	<b>3TX7 004-8BA00</b>	1	1 unit	41H
	3TX7 003 and 3TX7 005 with spring-type terminals	24 terminals, current carrying capacity for infeed max. 12 A Length of cable between 2 terminals approx. 11 cm					

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers with plug-in connection

#### Overview

Coupling links are used to connect signals from and to a PLC. The plug-in relays enable the relay to be replaced at the end of its service life without detaching the wiring.

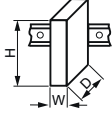


For easy linking of the signals, each terminal can be jumpered using an external connecting comb.

#### Benefits

- Plug-in base couplers with spring-type terminals and 6.2 mm width
- Fast exchange with existing wiring (plug-in relay)
- Tested complete units → shorter mounting time
- Single relays available as components

- The wire inlet and terminals can be reached from the front. This results in faster wiring time and wiring errors are prevented.
- Linking of control supply voltage and control signals with 16-pole connecting comb
- Galvanic isolation plate for isolating different voltages for neighboring units
- Integrated reverse polarity protection and EMC arc-suppression diode
- Clearly visible functional state of the relay coupler by yellow LED
- Protective separation according to IEC 61140
- Device versions with hard gold-plated contacts, hence high contact reliability
- 230 V AC/DC versions available

#### Technical specifications

Type			<b>3TX7 014, 3TX7 015</b>
Dimensions (W x H x D)		mm	6.2 x 90 x 92
• Galvanic isolation plate 3TX7 014-7CE00		mm	1 x 89.2 x 94.2
			
<b>General technical specifications</b>			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 2)	V		300
<b>Protective separation</b> between coil and contacts acc. to IEC 60947-1, Appendix N	V		Up to 300 AC
<b>Permissible ambient temperature</b>		°C	-25 ... +55
• During operation		°C	-40 ... +80
• During storage			
<b>Degree of protection</b>			IP20
• Enclosure			IP40
• Relays			
<b>Short-circuit protection</b>		A	4
• Short-circuit test with fuse links of gG operational class with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1			
<b>Conductor cross-sections</b>			
For 3TX7 014:			 <b>Screw terminals</b>
• Solid	mm <sup>2</sup>		0.5 ... 2.5
• Finely stranded with or without end sleeve	mm <sup>2</sup>		0.5 ... 1.5
• Terminal screws			M2.5
- Corresponding opening tool			Screwdriver, 3.0 mm x 0.5 mm (3RA29 08-1A)
For 3TX7 015:			 <b>Spring-type terminals</b>
• Solid or finely stranded	mm <sup>2</sup>		0.5 ... 2.5
• Finely stranded with end sleeve	mm <sup>2</sup>		0.5 ... 1.5
• Corresponding opening tool			Screwdriver, 3.0 mm x 0.5 mm (3RA29 08-1A)
<b>Operating range and power consumption</b>			
<b>Type</b>			<b>3TX7 01.-1.M</b> <b>3TX7 01.-1.B</b> <b>3TX7 0.-1.E</b> <b>3TX7 01.-1.F</b>
<b>Control side</b>			
<b>Operating range</b>			0.85 ... 1.1 $U_s$ 0.7 ... 1.25 $U_s$ 0.8 ... 1.1 $U_s$ 0.8 ... 1.1 $U_s$
<b>Power consumption, max.</b>			
• At $U_s = 24$ V	W		0.5
• At $U_s = 115$ V	W		0.5
• At $U_s = 230$ V	W		1
<b>Protection circuit</b>			
• DC			Freewheel diode + Reverse polarity protection
• AC			Rectifier bridge

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

**Relay couplers with plug-in connection**



Type	3TX7 014, 3TX7 015	
<b>Load side</b>		
<b>Rated currents<sup>1)</sup></b>		
• Conventional thermal current $I_{th}$	A	5
• Rated operational currents $I_e$		
- AC-15	At 24 ... 230 V A	3
- DC-13	At 24 V A	1
	At 110 V A	0.2
	At 230 V A	0.1
<b>Switching voltage</b>	AC/DC V	24 ... 250
<b>Min. contact load</b> (reliability 1 ppm)		
• Standard contact		17 V DC/5 mA
• Hard gold-plated contacts		5 V DC/1 mA
<b>Mechanical endurance</b>	Operating cycles	$20 \times 10^6$
<b>Electrical endurance</b> at $I_e$ acc. to AC-15	Operating cycles	$1 \times 10^5$

<sup>1)</sup> Capacitive loads can result in micro-weldings on the contacts.

**Note:**


If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

**Selection and ordering data**

Rated control supply voltage $U_c$ at AC 50/60 Hz	Contacts Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V	 NO  CO						

**Plug-in base couplers, width 6.2 mm,  
complete with relay**



3TX7 014-1AM00

					Screw terminals			
24 DC	1	--	A	<b>3TX7 014-1AM00</b>		1	5 units	41H
24 DC	--	1	A	<b>3TX7 014-1BM00</b>		1	5 units	41H
24 AC/DC	--	1	A	<b>3TX7 014-1BB00</b>		1	5 units	41H
115 AC/DC	--	1	A	<b>3TX7 014-1BE00</b>		1	5 units	41H
230 AC/DC	--	1	A	<b>3TX7 014-1BF00</b>		1	5 units	41H

**Plug-in base couplers, width 6.2 mm,  
complete with relay and hard gold-plating<sup>1)</sup>**

24 DC	--	1	A	<b>3TX7 014-1BM02</b>		1	5 units	41H
24 AC/DC	--	1	A	<b>3TX7 014-1BB02</b>		1	5 units	41H
115 AC/DC	--	1	A	<b>3TX7 014-1BE02</b>		1	5 units	41H
230 AC/DC	--	1	A	<b>3TX7 014-1BF02</b>		1	5 units	41H

**Plug-in base couplers, width 6.2 mm,  
complete with relay**

					Spring-type terminals			
24 DC	1	--	A	<b>3TX7 015-1AM00</b>		1	5 units	41H
24 DC	--	1	A	<b>3TX7 015-1BM00</b>		1	5 units	41H
24 AC/DC	--	1	A	<b>3TX7 015-1BB00</b>		1	5 units	41H
115 AC/DC	--	1	A	<b>3TX7 015-1BE00</b>		1	5 units	41H
230 AC/DC	--	1	A	<b>3TX7 015-1BF00</b>		1	5 units	41H

**Plug-in base couplers, width 6.2 mm,  
complete with relay and hard gold-plating<sup>1)</sup>**

24 DC	--	1	A	<b>3TX7 015-1BM02</b>		1	5 units	41H
24 AC/DC	--	1	A	<b>3TX7 015-1BB02</b>		1	5 units	41H
115 AC/DC	--	1	A	<b>3TX7 015-1BE02</b>		1	5 units	41H
230 AC/DC	--	1	A	<b>3TX7 015-1BF02</b>		1	5 units	41H

<sup>1)</sup> The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for solid-state inputs of programmable logic controllers.

**Note:**

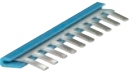

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Relay couplers with plug-in connection

#### Accessories

For coupling links	Rated control supply voltage $U_s$	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V								
<b>Replacement relay modules<sup>1)</sup>, width 6.2 mm, 1 changeover contact</b>								
<b>For complete unit</b>								
3TX7 014 and 3TX7 015	12 DC			• 24 V AC/DC	A	3TX7 014-7BQ00	1 20 units	41H
				• 24 V DC, hard gold-plating	A			
3TX7 014 and 3TX7 015	24 DC			• 24 V DC	A	3TX7 014-7BM00	1 20 units	41H
				• 24 V DC, hard gold-plating	A			
3TX7 014 and 3TX7 015	60 DC			• 115 V or 230 V AC/DC	A	3TX7 014-7BP00	1 20 units	41H
				• 115 V or 230 V AC/DC, hard gold-plated	A			
<b>Connecting comb, blue</b>								
	3TX7 014 and 3TX7 015	--		For linking the same potentials 16 terminals, current carrying capacity for infeed max. 6 A	A	3TX7 014-7AA00	1 5 units	41H
3TX7 014-7AA00								
<b>Galvanic isolation plates</b>								
	3TX7 014 and 3TX7 015	--	--		A	3TX7 014-7CE00	1 10 units	41H
3TX7 014-7CE00								

<sup>1)</sup> The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for solid-state inputs of programmable logic controllers.

#### Terminals and assignment of the replacement relay modules

Plug-in base couplers		Spare modules	
3TX7 014-.....	$U_s$	NO (13/14) or CO (11/12/14)	3TX7 014-.....
3TX7 015-.....	(+)A1/(-)A2		
-1AM00	24 V DC	NO (normally open contact)	-7BM00
-1BM00	24 V DC	CO (changeover contact)	-7BM00
-1BB00	24 V AC/DC		-7BQ00
-1BE00	115 V AC/DC		-7BP00
-1BF00	230 V AC/DC		-7BP00
-1BM02 <sup>1)</sup>	24 V DC	CO (changeover contact)	-7BM02 <sup>1)</sup>
-1BB02 <sup>1)</sup>	24 V AC/DC		-7BQ02 <sup>1)</sup>
-1BE02 <sup>1)</sup>	115 V AC/DC		-7BP02 <sup>1)</sup>
-1BF02 <sup>1)</sup>	230 V AC/DC		-7BP02 <sup>1)</sup>

<sup>1)</sup> Hard gold-plated contacts

#### Note:

For more information about replacement relay modules see the [Industry Mall](#), the [interactive catalog CA 01](#) or the [Internet](#).

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Semiconductor couplers

#### Overview

##### AC and DC operation

IEC 60947, EN 60947,  
IEC 60664-1, EN 60664-1 and EN 50005;  
optocouplers: IEC 60747-5, EN 60747-5;  
programmable controllers: IEC 61131-2

The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.

In the coupling links in double-decker design, the connections are arranged on two levels; these units are extremely compact. For test purposes, versions are available with manual-0-automatic switches. This design can also be supplied with spring-type terminals.

##### Surge suppression

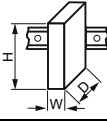


In the case of optocouplers, the contact element is a semiconductor. These are not subject to wear; so welding is not possible.

##### Note:

With semiconductors, the switching current is not dependent on the inductance of the load, i.e. the switching current for a DC-13 load is the same as that for an inductive 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 any number of operating cycles because this does not affect the endurance of the semiconductor provided it is not overheated.

#### Technical specifications

Type		<b>3TX7 002</b>	<b>3TX7 004, 3TX7 005</b>
Dimensions (W x H x D) For W see <a href="#">Selection and ordering data</a>		mm W x 60 x 62	mm W x 80 x 80
<b>General technical specifications</b>			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	300	
<b>Optoelectronic coupling elements: Protective separation</b> acc. to IEC 60947-1, Appendix N	V	Up to 300	
<b>Permissible ambient temperature</b>			
• During operation	°C	-25 ... +60	
• During storage	°C	-40 ... +80	
<b>Conductor cross-sections</b>			
(For 3TX7 002, 3TX7 004)		 <b>Screw terminals</b>	
• Solid	mm <sup>2</sup>	1 x (0.25 ... 4)	
• Finely stranded without end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5)	
• Terminal screws - Corresponding opening tool		M3 Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)	
(For 3TX7 005)		 <b>Spring-type terminals</b>	
• Solid or finely stranded	mm <sup>2</sup>	--	1 x (0.08 ... 2.5)
• Finely stranded with end sleeve	mm <sup>2</sup>	--	1 x (0.25 ... 1.5)
• Corresponding opening tool		--	Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Semiconductor couplers

Type		3TX7 002-3AB00	3TX7 002-3AB01	3TX7 002-4AB00	3TX7 002-4AG00
<b>Control side</b>					
<b>Operating range</b>	V	17 ... 30 DC	11 ... 30 DC	17 ... 30 AC/DC	88 ... 264 AC
<b>Power consumption, max.</b>					
• At 17 V DC	mA	18	5	--	--
• At 24 V DC	mA	20	7	--	--
• At 30 V DC	mA	22	8.5	--	--
• At 17 V AC/DC	mA	--	--	10	--
• At 24 V AC/DC	mA	--	--	14	--
• At 30 V AC/DC	mA	--	--	18	--
• At 88 V AC/DC	mA	--	--	--	9
• At 230 V AC/DC	mA	--	--	--	24
• At 264 V AC/DC	mA	--	--	--	28
<b>Load side</b>					
<b>Switching current</b>	A	1.8	1.5 <sup>2)</sup>	0.1	0.1
<b>Short-time loading capacity</b>	A	20	4	1	1
	ms	20	200	20	20
<b>Switching voltage (operating range)<sup>1)</sup></b>					
• Effective AC 50/60 Hz	V	48 ... 264	--	--	--
• DC		--	≤60	≤30	≤30
<b>Minimum load current</b>	mA	60	--	--	--
<b>Voltage drop conducting</b>	V	≤1.5	≤1.1	≤1.7	≤0.3

1) Observe minimum switching voltage for 3TX7 002-3AB00.

2) See derating diagram.

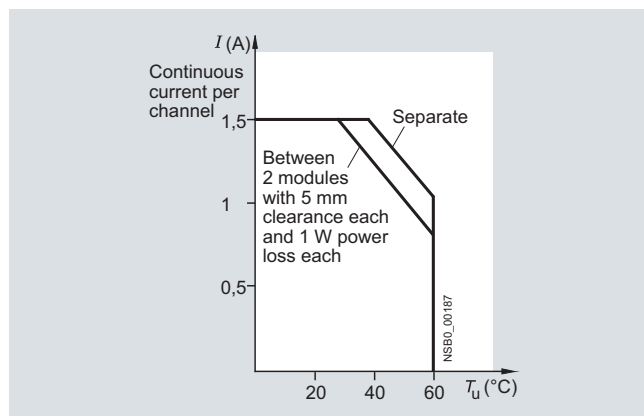
Type		3TX7 004- 3TX7 005-	3AB04	3AC.4	3AC03	3PB54	3PB74	4PG24	3PG74
<b>Control side</b>									
<b>Operating range</b>	V		11 ... 30 DC					110 ... 230 AC/DC	88 ... 253 AC/DC
<b>Power consumption, max.</b>									
• At 24 V DC	W		0.5		0.25	0.2		--	--
• At 110 V DC	W		--		--	--		--	0.2
• At 230 V AC	VA		--		--	--		1.5	1.5
<b>Load side</b>									
<b>Switching voltage</b>	V		10 ... 48 DC	10 ... 30 DC	24 ... 250 AC	10 ... 30 DC	11 ... 30 DC	10 ... 30 DC	11 ... 30 DC
<b>Switching current</b>	A		0.5	5	2	1.5	3	0.1	3
<b>Short-time loading capacity</b>									
• Current	A		1.5	Short-circuit proof <sup>1)</sup>	100	Short-circuit proof <sup>2)</sup>		0.2	Short-circuit proof <sup>2)</sup>
• Duration	ms		20	--	20	--	--	3	--
<b>Minimum load current</b>	mA		--	500 <sup>3)</sup>	50	--	--	--	--

1) In the event of a short circuit or overload, the semiconductor output switches off. In order to operate the device again, it must be temporarily disconnected from the power supply.

2) In the event of a short circuit or overload, the current is limited by the semiconductor output.

3) If the current falls below the minimum load current, the built-in semiconductor detects an open circuit in the load circuit. The control must be temporarily switched off for resetting.

#### Derating diagram for 3TX7 002-3AB01



Load current as a function of ambient temperature  $T_u$

# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

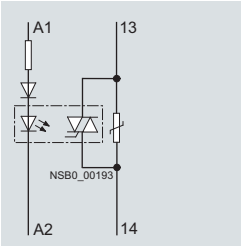
### Semiconductor couplers

#### Semiconductor couplers – circuit diagrams

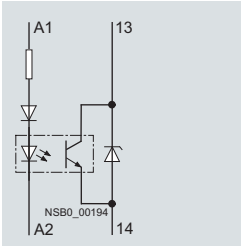
Terminal designations acc. to EN 50005

##### Output coupling links

3TX7 002-3AB00

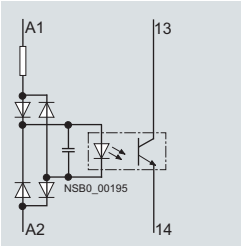


3TX7 002-3AB01

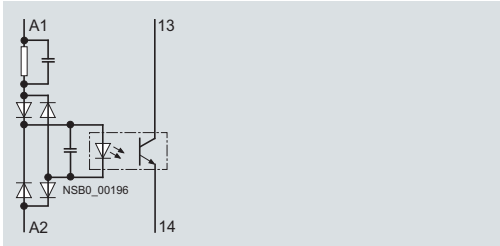


##### Input coupling links

3TX7 002-4AB00

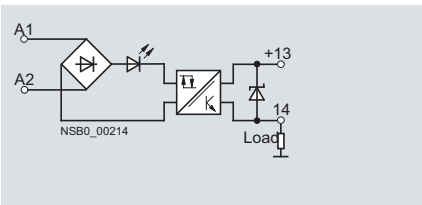


3TX7 002-4AG00

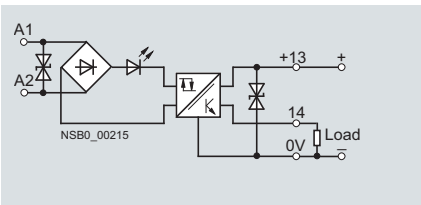


##### Output coupling links

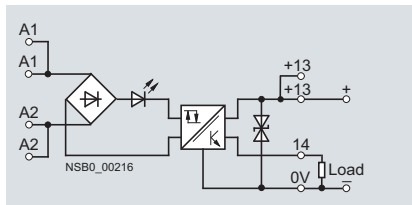
3TX7 00.-3AB04  
3TX7 00.-3PB41



3TX7 00.-3PB54  
3TX7 00.-3PG74  
3TX7 00.-3PB74

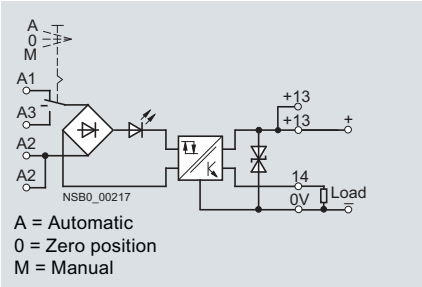


3TX7 00.-3AC04

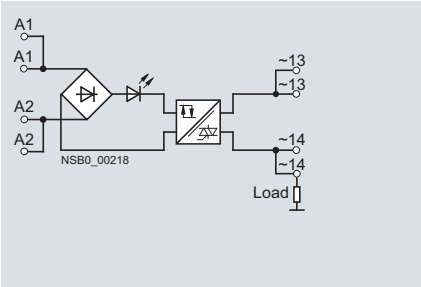


##### Output coupling links

3TX7 00.-3AC14

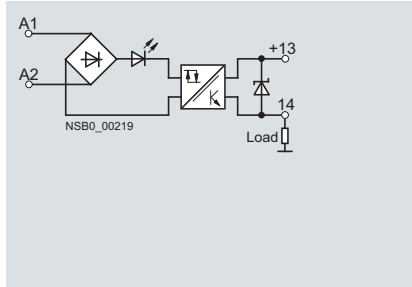


3TX7 00.-3AC03



##### Input coupling links

3TX7 00.-4AB04








# Coupling Relays

## 3TX7 Coupling Relays, Narrow Design

### Semiconductor couplers

#### Selection and ordering data

##### AC and DC operation · For snap-on mounting onto TH 35 standard mounting rail

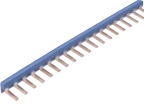

	Rated control supply voltage $U_s$ at AC 50/60 Hz	Switching voltage	Switching current	Manual-0-automatic switch for testing purposes	Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
	V	V	A		mm							
<b>3TX7 002 semiconductor couplers with screw terminals, 1 transistor</b>												
	<b>Output coupling links</b>						<b>Screw terminals</b> 					
	24 DC	48 ... 264 AC	1.8	--	11.5	▶	<b>3TX7 002-3AB00</b>		1	1 unit	41H	
		< 60 DC	1.5	--	11.5	▶	<b>3TX7 002-3AB01</b>		1	1 unit	41H	
	<b>Input coupling links</b>											
	24 AC/DC	< 30 DC	0.1	--	11.5	▶	<b>3TX7 002-4AB00</b>		1	1 unit	41H	
110 ... 240 AC	< 30 DC	0.1	--	12.5	▶	<b>3TX7 002-4AG00</b>		1	1 unit	41H		
<b>3TX7 004 semiconductor couplers with screw terminals</b>												
	<b>Output coupling links</b>											
	24 DC	≤48 DC	0.5	--	6.2	▶	<b>3TX7 004-3AB04</b>		1	1 unit	41H	
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	<b>3TX7 004-3PB54</b>		1	1 unit	41H	
	24 DC	≤30 DC	3	--	6.2	▶	<b>3TX7 004-3PB74</b>		1	1 unit	41H	
	110 ... 230 AC/DC	≤30 DC	3	--	6.2	A	<b>3TX7 004-3PG74</b>		1	1 unit	41H	
	24 DC	≤30 DC	5	--	12.5	▶	<b>3TX7 004-3AC04</b>		1	1 unit	41H	
	24 DC	≤30 DC	5	Yes	12.5	B	<b>3TX7 004-3AC14</b>		1	1 unit	41H	
	24 DC	24 ... 250 AC	2	--	12.5	▶	<b>3TX7 004-3AC03</b>		1	1 unit	41H	
	<b>Input coupling links</b>											
110 ... 230 AC/DC	≤30 DC	0.1	--	6.2	▶	<b>3TX7 004-4PG24</b>		1	1 unit	41H		
<b>3TX7 005 semiconductor couplers with spring-type terminals</b>												
	<b>Output coupling links</b>						<b>Spring-type terminals</b> 					
	24 DC	≤48 DC	0.5	--	6.2	▶	<b>3TX7 005-3AB04</b>		1	1 unit	41H	
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	<b>3TX7 005-3PB54</b>		1	1 unit	41H	
	24 DC	≤30 DC	3	--	6.2	A	<b>3TX7 005-3PB74</b>		1	1 unit	41H	
	110 ... 230 AC/DC			--	6.2	A	<b>3TX7 005-3PG74</b>		1	1 unit	41H	
	24 DC	≤30 DC	5	--	12.5	▶	<b>3TX7 005-3AC04</b>		1	1 unit	41H	
	24 DC			Yes	12.5	C	<b>3TX7 005-3AC14</b>		1	1 unit	41H	
	24 DC	24 ... 250 AC	2	--	12.5	C	<b>3TX7 005-3AC03</b>		1	1 unit	41H	
	<b>Input coupling links</b>											
110 ... 230 AC/DC	≤30 DC	0.1	--	6.2	▶	<b>3TX7 005-4PG24</b>		1	1 unit	41H		

#### Note:

For replacement products, see 3RS18 coupling links with industrial housing or other 3TX7 0 products.

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

#### Accessories

	For coupling links	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type								
<b>Connecting comb, blue</b>								
	3TX7 004	For linking the same potentials	▶	<b>3TX7 004-8AA00</b>		1	1 unit	41H
	24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm							
<b>Connecting cable, blue</b>								
	3TX7 002 and 3TX7 004 with screw terminals	With infeed, blue	A	<b>3TX7 004-8BA00</b>		1	1 unit	41H
	3TX7 003 and 3TX7 005 with spring-type terminals	24 terminals, current carrying capacity for infeed max. 12 A Length of cable between 2 terminals approx. 11 cm						



# Coupling Relays

## 3RS18 Coupling Relays with Industrial Housing

Relay couplers

### Overview

The 3RS18 coupling relays are couplers in the proven 22.5 mm industrial enclosure. This enclosure supports the same connection methods as for the 3RP15 timing relays, including spring-type connection; 2 wires can be clamped.

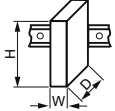


The series comprises devices with up to 3 changeover contacts with screw terminals or spring-type terminals and in combination voltage or wide voltage range versions.

The relay coils are attenuated internally with noise suppression diodes.

Versions:

- Wide voltage range: One connection for a wide voltage range
- Combination voltage: Two connections for different voltage ranges
- Versions with solid-state compatible outputs (hard gold-plating)
- 1, 2 or 3 changeover contacts

### Technical specifications

Type		3RS1800-A...	3RS1800-B...	3RS1800-H...
Dimensions (W x H x D)	 mm	22.5 x 86 x 84	22.5 x 86 x 94	22.5 x 86 x 103
<b>General technical specifications</b>				
<b>Rated insulation voltage</b> $U_i$ pollution degree 3	V	500		
<b>Protective separation</b> acc. to IEC 60947-1, Appendix N between the coil and the contacts and between the individual contacts.	V	300		
<b>Permissible ambient temperature</b>				
• During operation	°C	-25 ... +60		
• During storage	°C	-40 ... +80		
<b>Degree of protection</b> acc. to IEC 60529				
• Enclosure		IP20		
• Cover		IP40		
<b>Short-circuit protection</b>				
• Short-circuit test with fuse links of gG operational class with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	4		
<b>Conductor cross-sections</b>				
For 3RS18 00-1:		 <b>Screw terminals</b>		
• Solid	mm <sup>2</sup>	1 x (0.5 ... 4); 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded	mm <sup>2</sup>	2 x (20 ... 14)		
• Terminal screw		M3.5		
- Corresponding opening tool		Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)		
• Tightening torque	Nm	0.8 ... 1.2		
For 3RS18 00-2:		 <b>Spring-type terminals</b>		
• Solid	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• Finely stranded without end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (0.25 ... 1)		
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)		
• Corresponding opening tool		Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)		
<b>Control side</b>				
<b>Operating range</b>		0.85 ... 1.1 x $U_s$		
<b>Power consumption, max.</b>	AC or DC VA/W	8 / 1		
<b>Load side</b>				
<b>Conventional thermal current</b> $I_{th}$	A	6		
<b>Rated operational currents</b> $I_e$				
• AC-15	At 24 ... 400 V	3		
• DC-13	At 24 V A	1		
	At 110 V A	0.2		
	At 230 V A	0.1		
<b>Switching current</b> for resistive load				
• AC-12	At 24 ... 400 V A	5		
• DC-12	At 24 V A	5		
	At 115 V A	0.2		
	At 230 V A	0.2		
<b>Switching voltage</b>				
• Max. AC	V	400		
• Max. DC	V	250		
<b>Min. contact load</b>				
• Standard contacts		17 V DC, 5 mA at 1 ppm fault		
• Hard gold-plated contacts		5 V DC, 1 mA at 1 ppm fault		
<b>Mechanical endurance</b>	Operating cycles	$20 \times 10^6$		
<b>Electrical endurance</b> at $I_e$	Operating cycles	$1 \times 10^6$		

# Coupling Relays

## 3RS18 Coupling Relays with Industrial Housing

### Relay couplers

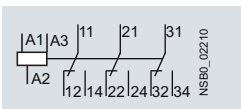
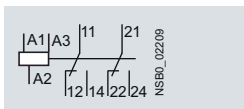
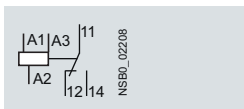
#### Circuit diagrams

Terminal designations acc. to EN 50005

3RS18 00-.AP00,  
3RS18 00-.AQ00

3RS18 00-.BP00,  
3RS18 00-.BQ00,  
3RS18 00-.BW00

3RS18 00-.HP00.,  
3RS18 00-.HQ00.,  
3RS18 00-.HW00.

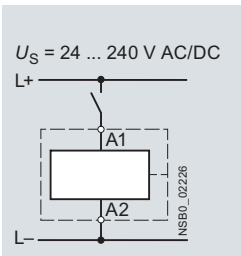
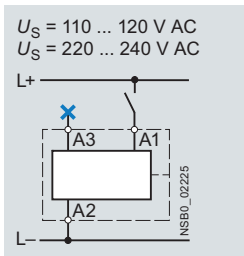
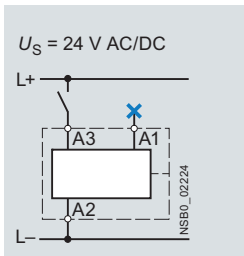


#### Connection of the control supply voltage $U_s$

3RS18 00-..P0.,  
3RS18 00-..Q0.

3RS18 00-..P0.,  
3RS18 00-..Q0.

3RS18 00-..W0.



#### Note:

The position of the connection points on the device is based on the principle of logical separation, i.e. the coil terminals A1, A2, A3 are above and the terminals for the changeover contacts 11, 12, 14 etc. are below.

#### Selection and ordering data

Rated control supply voltage $U_s$ at AC 50/60 Hz	Connection $U_s$	Contacts Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V		W						

#### Coupling relays with industrial housing with screw terminals, 22.5 mm

Wide voltage range	Connection $U_s$	Contacts Version	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
				Order No.	Price per PU			
24 ... 240 AC/DC	A1 - A2	2	A	3RS18 00-1BW00		1	1 unit	41H
		3	A	3RS18 00-1HW00		1	1 unit	41H
		3 <sup>1)</sup>	A	3RS18 00-1HW01		1	1 unit	41H
Combination voltage 24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	A	3RS18 00-1AQ00		1	1 unit	41H
		2	A	3RS18 00-1BQ00		1	1 unit	41H
		3	C	3RS18 00-1HQ00		1	1 unit	41H
		3 <sup>1)</sup>	C	3RS18 00-1HQ01		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	3RS18 00-1AP00		1	1 unit	41H
		2	A	3RS18 00-1BP00		1	1 unit	41H
		3	A	3RS18 00-1HP00		1	1 unit	41H
		3 <sup>1)</sup>	A	3RS18 00-1HP01		1	1 unit	41H

#### Coupling relays with industrial housing with spring-type terminals, 22.5 mm

Wide voltage range	Connection $U_s$	Contacts Version	DT	Spring-type terminals		PU (UNIT, SET, M)	PS*	PG
				Order No.	Price per PU			
24 ... 240 AC/DC	A1 - A2	2	A	3RS18 00-2BW00		1	1 unit	41H
		3	A	3RS18 00-2HW00		1	1 unit	41H
		3 <sup>1)</sup>	C	3RS18 00-2HW01		1	1 unit	41H
Combination voltage 24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	C	3RS18 00-2AQ00		1	1 unit	41H
		2	C	3RS18 00-2BQ00		1	1 unit	41H
		3	C	3RS18 00-2HQ00		1	1 unit	41H
		3 <sup>1)</sup>	C	3RS18 00-2HQ01		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	3RS18 00-2AP00		1	1 unit	41H
		2	A	3RS18 00-2BP00		1	1 unit	41H
		3	A	3RS18 00-2HP00		1	1 unit	41H
		3 <sup>1)</sup>	C	3RS18 00-2HP01		1	1 unit	41H

<sup>1)</sup> Hard gold-plated contacts.

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

#### Overview

Plug-in relay coupling links can be ordered as complete units or as individual modules for customer assembly.

#### Function

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems. In the versions equipped with LEDs, these indicate the switching state. The LZS:PT/MT plug-in relay couplers have a test button. This can be used to force the plug-in relay coupler into the switching state and to lock it. This is indicated by a raised petrol-colored lever.

#### Control with solid-state output

In the case of solid-state outputs (e.g. proximity switches) 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 plug-in relay coupler.

#### Surge suppression

The 24 V DC relays LZX:RT and LZX: PT with LEDs can be supplied with, all others without integral surge suppression (free-wheel 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 retaining 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 retaining 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 safe isolation, 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 Appendix N).

#### Notes on the previous LZX series

The complete units and accessory parts of the LZX series are no longer listed in this catalog. The complete units of the LZS series are fully compatible with the corresponding units of the LZX series. Prices for the LZS series are lower than for 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, retaining brackets and labels can be combined and/or used in only the respective series, LZS or LZX.

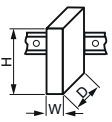




The LZS series offers not only service-proven screw connections but also versions with plug-in terminals (push-in).

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

#### Technical specifications

Relay type		<b>LZX:RT print relay, 8-pole, (12.7 mm) 1 CO/2 CO</b>				<b>LZX:PT industrial relay, 8-, 11- and 14-pole, (22.5 mm) 2 CO/3 CO/4 CO</b>				
Dimensions (W x H x D)		mm	15.5 x 78 x 71				28 x 74 x 72			
• LZS:RT.A4 / LZS:PT.A5		mm	15.5 x 77 x 71				28 x 77 x 79			
• LZS:RT.B4 / LZS:PT.B5		mm	15.5 x 98 x 71				28 x 98 x 79			
• LZS:RT.D4 / LZS:PT.D5		mm								
<b>General technical specifications</b>										
<b>Rated control supply voltage</b> $U_s$ <sup>1)</sup>	V	24 DC	24 AC	115 AC	230 AC	24 DC	24 AC	115 AC	230 AC	
<b>Rated insulation voltage</b> $U_i$ (pollution degree 3)	V	250				250				
<b>Overvoltage category</b> acc. to IEC 60664-1		III				III				
<b>Protective separation</b> between coil and contacts acc. to IEC 60947-1, Appendix N		Up to 250 V (with plug-in base LZS:RT78726) No (for complete units with standard socket)				No				
<b>Degree of protection</b>		IP67 IP20				IP50 IP20				
<b>Permissible ambient temperature</b>		-40 ... +70 -40 ... +80				-40 ... +70 -40 ... +80				
• During operation	°C									
• During storage	°C									
<b>Conductor cross-sections</b>										
			 <b>Screw terminals</b>				 <b>Screw terminals</b>			
• Solid	mm <sup>2</sup>	2 x 2.5				2 x 2.5				
• Finely stranded with or without end sleeve	mm <sup>2</sup>	2 x 1.5				2 x 1.5				
• Corresponding opening tool		Screwdriver, size 3.0 ... 3.5 mm x 0.5 mm (3RA29 08-1A)								
			 <b>Plug-in terminals</b>				 <b>Plug-in terminals</b>			
• Solid	mm <sup>2</sup>	2 x 0.75 ... 1.5				2 x 0.75 ... 1.5				
• Finely stranded with or without end sleeve	mm <sup>2</sup>	2 x 0.75 ... 1.5/1.0				2 x 0.75 ... 1.5/1.0				
<b>Control side</b>										
<b>Operating range</b> at 20 °C	V	16.8 ... 52	18 ... 52	86.3 ... 127	172 ... 264	18 ... 40.8	19.2 ... 39.6	92 ... 190	184 ... 380	
<b>Power consumption at</b> $U_s$										
• AC	VA	--	0.75			--	1			
• DC	W	0.4	--			0.75	--			
<b>Release voltage</b>	V	2.4	7.2	34.5	69	3.6	7.2	34.5	69	
<b>Protection circuit</b>		Freewheel diode for complete unit	--			Freewheel diode in LED module	--			
<b>Load side</b>										
<b>Switching voltage</b> AC/DC	V	24 ... 250				24 ... 250				
<b>Rated currents</b> <sup>2)</sup>										
• Conventional thermal current $I_{th}$	A									
- 1 CO contact	A	16				--				
- 2 CO contacts	A	6				12				
- 3 CO contacts	A	--				10				
- 4 CO contacts	A	--				6				
• Rated operational current $I_e$ AC-15 acc. to utilization categories (IEC 60947-5-1)	A	6/3				5/5/4				
• Rated operational current $I_e$ DC-13 with suppressor diode acc. to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V				5 at 24 V, 0.5 at 230 V				
<b>Short-circuit protection</b>										
• Short-circuit test with fuse links of gG operational class: DIAZED, Type 5SB with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10				6				
<b>Min. contact load</b> (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 mV/1 mA				
<b>Mechanical endurance</b>	Operating cycles	30 x 10 <sup>6</sup>	10 x 10 <sup>6</sup>			10 x 10 <sup>6</sup>				
<b>Electrical endurance</b> (resistive load at 250 V AC)	Operating cycles	1 x 10 <sup>5</sup>				1 x 10 <sup>5</sup>				

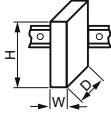

<sup>1)</sup> AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10 %; the power loss will reduce slightly.

<sup>2)</sup> Capacitive loads can result in micro-weldings on the contacts.

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

Relay type					<b>MT industrial relay, 11-pole (35.5 mm) 3 CO</b>			
Dimensions (W x H x D)	mm				36 x 69 x 36			
<b>AC and DC operation</b>								
<b>Rated control supply voltage <math>U_s</math><sup>1)</sup></b>	V	24 DC	24 AC	115 AC	230 AC			
<b>Rated insulation voltage <math>U_i</math></b> (pollution degree 3)	V	250						
<b>Overvoltage category</b> acc. to IEC 60664-1	III							
<b>Protective separation</b> between coil and contacts acc. to IEC 60947-1, Appendix N	No							
<b>Degree of protection of relay/base</b>	IP50 IP20							
<b>Permissible ambient temperature</b>	°C	-40 ... +60	-45 ... +50	-45 ... +50	-45 ... +50			
• During operation	°C	-45 ... +80	-45 ... +80	-45 ... +80	-45 ... +80			
• During storage								
<b>Conductor cross-sections</b>								
Connection type	 <b>Screw terminals</b>							
• Solid	mm <sup>2</sup>	2 x 2.5						
• Finely stranded with or without end sleeve	mm <sup>2</sup>	2 x 1.5						
• Corresponding opening tool	Screwdriver, size 1 or Pozidriv 1							
<b>Control side</b>								
<b>Operating range</b> at 20 °C	V	18 ... 38	19.2 ... 38	92 ... 137	184 ... 264			
<b>Power consumption</b>	VA	--	2.3					
• AC	W	1.2	--					
• DC								
<b>Release voltage</b>	V	2.4	9.6	46	92			
<b>Protection circuit</b>	--							
<b>Load side</b>								
<b>Switching voltage</b>	V	24 ... 250						
• AC/DC								
<b>Rated currents<sup>2)</sup></b>								
• Conventional thermal current $I_{th}$	A	10						
• Rated operational current $I_g$ /DC-13 acc. to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V						
• Rated operational current $I_g$ /AC-15 acc. to utilization categories (IEC 60947-5-1)	A	5 at 24 V and 230 V						
<b>Short-circuit protection</b>								
• Short-circuit test with fuse links of gG operational class: DIAZED, Type 5SB with short-circuit current $I_k = 1$ kA acc. to IEC 60947-5-1	A	10						
<b>Min. contact load</b> (reliability: 1 ppm)	12 V DC/10 mA							
<b>Mechanical endurance</b>	Operating cycles	20 x 10 <sup>6</sup>						
<b>Electrical endurance</b> (resistive load at 250 V AC)	Operating cycles	4 x 10 <sup>5</sup>						

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

<sup>2)</sup> Capacitive loads can result in micro-weldings on the contacts.

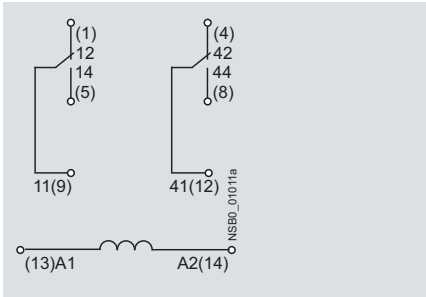
# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

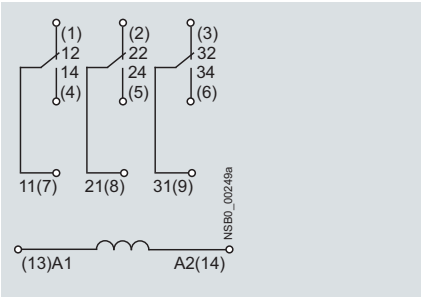
### Plug-in relay couplers

#### Circuit diagrams

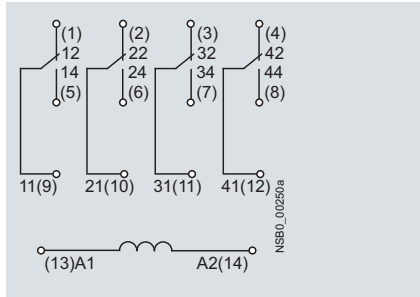
**LZX:PT270**  
2-pole



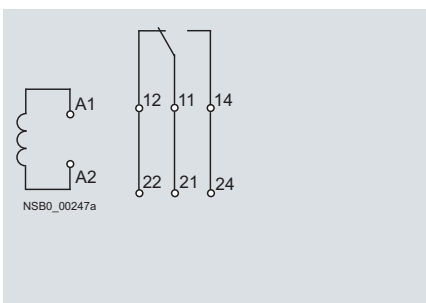
**LZX:PT370**  
3-pole



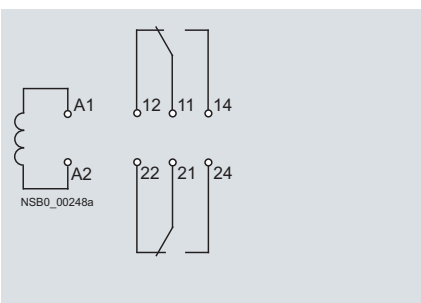
**LZX:PT520, LZX:PT570, LZX:PT580**  
4-pole



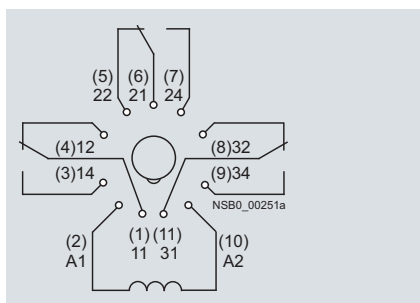
**LZX:RT3**  
1-pole



**LZX:RT4**  
2-pole



**LZX:MT32**  
3-pole



**Note:**

Values in brackets: socket designations  
Without brackets: contact/coil designations





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# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

#### Selection and ordering data

Version	Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
	V		mm							
<b>Complete units, 11- and 14-pole, PT series</b>										
 LZS:PT3A5L24	<b>Complete units with plug-in base</b> for snap-on mounting onto TH 35 standard mounting rail comprising:				<b>Screw terminals</b> 					
	<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Standard plug-in base with screw terminals</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>									
	3 CO contacts	24 DC 24 AC 115 AC 230 AC	3	28	A A A A	<b>LZS:PT3A5L24</b> <b>LZS:PT3A5R24</b> <b>LZS:PT3A5S15</b> <b>LZS:PT3A5T30</b>		1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
	4 CO contacts	24 DC 24 AC 115 AC 230 AC	4	28	A A A A	<b>LZS:PT5A5L24</b> <b>LZS:PT5A5R24</b> <b>LZS:PT5A5S15</b> <b>LZS:PT5A5T30</b>		1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
<b>Complete units with plug-in base with logical separation</b> for snap-on mounting onto TH 35 standard mounting rail comprising:										
<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Plug-in base with logical isolation and screw terminals</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>										
4 CO contacts	24 DC 24 AC 115 AC 230 AC	4	28	A A A A	<b>LZS:PT5B5L24</b> <b>LZS:PT5B5R24</b> <b>LZS:PT5B5S15</b> <b>LZS:PT5B5T30</b>		1 5 units	41H		
							1 5 units	41H		
							1 5 units	41H		
							1 5 units	41H		
<b>Complete units, 8- and 14-pole, PT series</b>										
 LZS:PT5D5L24	<b>Complete units with plug-in base with logical separation</b> for snap-on mounting onto TH 35 standard mounting rail comprising:				<b>Plug-in terminals</b> 					
	<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Plug-in base with logical separation and plug-in terminals (push-in)</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>									
	2 CO contacts	24 DC 230 AC	2	28	A A	<b>LZS:PT2D5L24</b> <b>LZS:PT2D5T30</b>		1 5 units	41H	
								1 5 units	41H	
	4 CO contacts	24 DC 24 AC 115 AC 230 AC	4	28	A A A A	<b>LZS:PT5D5L24</b> <b>LZS:PT5D5R24</b> <b>LZS:PT5D5S15</b> <b>LZS:PT5D5T30</b>		1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
								1 5 units	41H	
								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).

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

Version	Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
<b>Individual modules for customer assembly, PT series</b>									
<b>Industrial relays, 8-, 11-, and 14-pole</b>									
<b>Mini industrial relays</b>									
 LZX:PT370024	<ul style="list-style-type: none"> <li>With test bracket and mechanical switch position indicator, without LED<sup>1)</sup></li> </ul>								
	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		A	LZX:PT370524		1	1 unit	41H
		4		▶	LZX:PT570524		1	1 unit	41H
	115 AC	2	22.5	C	LZX:PT270615		1	1 unit	41H
		3		A	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
	<ul style="list-style-type: none"> <li>With hard gold-plating</li> </ul>								
	24 DC	4	22.5	▶	LZX:PT580024		1	1 unit	41H
230 AC			▶	LZX:PT580730		1	1 unit	41H	
<ul style="list-style-type: none"> <li>Without test bracket</li> </ul>									
24 DC	4	22.5	▶	LZX:PT520024		1	1 unit	41H	
230 AC			C	LZX:PT520730		1	1 unit	41H	
<b>Plug-in bases for PT relays</b>									
<b>Standard plug-in bases</b>									
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
	<b>Screw terminals</b> 								
<b>Plug-in bases with logical separation</b>									
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
	<b>Plug-in terminals</b> 								
<b>Plug-in bases with logical separation</b>									
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

<sup>1)</sup> 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 a protective separation.






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



# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

Version	Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
<b>Individual modules for customer assembly, PT series</b>									
<b>More individual modules</b>									
<b>LED modules</b>									
• Red									
	With freewheel diode	24 DC	--	12.5	▶ LZS:PTML0024		1	1 unit	41H
LZS:PTML0024	Without freewheel diode	24 AC/DC			▶ LZS:PTML0524		1	1 unit	41H
		110 ... 230 AC/DC			▶ LZS:PTML0730		1	1 unit	41H
• Green									
	With freewheel diode	24 DC	--	12.5	▶ LZS:PTMG0024		1	1 unit	41H
LZS:PT17021	Without freewheel diode	24 AC			▶ LZS:PTMG0524		1	1 unit	41H
		110 ... 230 AC/DC			▶ LZS:PTMG0730		1	1 unit	41H
<b>Fixing/ejection brackets for PT base with logical separation</b>									
	Screw terminals and plug-in terminals		--	26	▶ LZS:PT17021		100	10 units	41H
<b>Fixing/ejection brackets for standard plug-in base without logical separation</b>									
	Screw terminals		--	26	▶ LZS:PT17024		100	10 units	41H
LZS:PT17024									
<b>Labels</b>									
		--	--	26	▶ LZS:PT17040		100	10 units	41H
LZS:PT17040									
<b>RC elements</b>									
		6 ... 60 AC	--	26	▶ LZS:PTMU0524		1	1 unit	41H
LZS:PT17040		110 ... 230 AC			▶ LZS:PTMU0730		1	1 unit	41H
<b>Freewheel diodes with connection to A1</b>									
		6 ... 230 DC	--	26	▶ LZS:PTMT00A0		1	1 unit	41H
LZS:PTMU0730									
<b>Connecting cable, 24-pole</b>									
	Current carrying capacity 12 A, with supply, blue				A	3TX7 004-8BA00	1	1 unit	41H
<b>Connecting combs for PT screw base</b>									
	6-pole, 10 A current carrying capacity, natural-colored					▶ LZS:PT170R6	1	10 units	41H
3TX7 004-8BA00									
<b>Connecting brackets for PT push-in base</b>									
	2-pole, 10 A current carrying capacity, natural-colored					▶ LZS:PT170P1	1	10 units	41H
<b>Individual modules for customer assembly, MT series</b>									
<b>Industrial relays, 11-pole</b>									
<b>Industrial relays with test bracket</b>									
	Without LED	24 DC	3	35.5	A	▶ LZX:MT321024	1	1 unit	41H
LZX:MT326024	With LED	24 DC	3	35.5	A	▶ LZX:MT323024	1	1 unit	41H
	Without LED	24 AC	3	35.5	A	▶ LZX:MT326024	1	1 unit	41H
	With LED	24 AC	3	35.5	C	▶ LZX:MT328024	1	1 unit	41H
	Without LED	115 AC	3	35.5	C	▶ LZX:MT326115	1	1 unit	41H
	With LED	115 AC	3	35.5	C	▶ LZX:MT328115	1	1 unit	41H
	Without LED	230 AC	3	35.5	A	▶ LZX:MT326230	1	1 unit	41H
	With LED	230 AC	3	35.5	A	▶ LZX:MT328230	1	1 unit	41H
<b>Plug-in bases</b>									
	for mounting onto TH 35 standard mounting rail		--	38		<b>Screw terminals</b>			
						▶ LZS:MT78750	1	1 unit	41H
LZS:MT78750									
<b>Retaining brackets</b>									
		--	--	38		▶ LZS: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 a protective separation.

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






**Note:**

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

Version	Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
	V		mm							
<b>Complete units, 8-pole, 5 mm pinning, RT series</b>										
 LZS:RT4A4T30	<b>Complete units with plug-in base</b> for snap-on mounting onto TH 35 standard mounting rail comprising:				<b>Screw terminals</b>					
	<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Standard plug-in base with screw terminals</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>									
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	A	LZS:RT3A4L24 LZS:RT3A4R24 LZS:RT3A4S15 LZS:RT3A4T30			1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	A	LZS:RT4A4L24 LZS:RT4A4R24 LZS:RT4A4S15 LZS:RT4A4T30			1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
 LZS:RT4B4T30	<b>Complete units with plug-in base with logical separation</b> for snap-on mounting onto TH 35 standard mounting rail comprising:									
	<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Plug-in base with logical isolation and screw terminals</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>									
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	A	LZS:RT3B4L24 LZS:RT3B4R24 LZS:RT3B4S15 LZS:RT3B4T30		1 5 units	41H	
					A			1 5 units	41H	
					A			1 5 units	41H	
					A			1 5 units	41H	
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	A	LZS:RT4B4L24 LZS:RT4B4R24 LZS:RT4B4S15 LZS:RT4B4T30		1 5 units	41H	
					A			1 5 units	41H	
					A			1 5 units	41H	
					A			1 5 units	41H	
 LZS:RT3D4L24	<b>Complete units with plug-in base with logical separation</b> for snap-on mounting onto TH 35 standard mounting rail comprising:				<b>Plug-in terminals</b>					
	<ul style="list-style-type: none"> <li>Coupling relays with plug-in relays</li> <li>Plug-in base with logical separation and plug-in terminals (push-in)</li> <li>LED module (version 24 V DC: LED module with freewheel diode)</li> <li>Fixing/ejection brackets</li> <li>Labels</li> </ul>									
	1 CO contact	24 DC 24 AC 115 AC 230 AC	1	15.5	A	LZS:RT3D4L24 LZS:RT3D4R24 LZS:RT3D4S15 LZS:RT3D4T30			1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
	2 CO contacts	24 DC 24 AC 115 AC 230 AC	2	15.5	A	LZS:RT4D4L24 LZS:RT4D4R24 LZS:RT4D4S15 LZS:RT4D4T30			1 5 units	41H
					A				1 5 units	41H
					A				1 5 units	41H
					A				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).

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

Version	Rated control supply voltage $U_s$ at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V		mm						
<b>Individual modules for customer assembly, RT series</b>									
	<b>Print relays, 8-pole, 5 mm pinning</b>								
	<b>Print relays</b> with hard gold-plating Version with 1 CO contact								
LZX:RT314024	24 DC 230 AC	1	12.7	▶ C	LZX:RT315024 LZX:RT315730		1 1	1 unit 1 unit	41H 41H
	<b>Print relays</b> Version with 1 CO contact								
	24 DC 24 AC 115 AC 230 AC	1	12.7	▶ C C ▶	LZX:RT314024 LZX:RT314524 LZX:RT314615 LZX:RT314730		1 1 1 1	1 unit 1 unit 1 unit 1 unit	41H 41H 41H 41H
LZS:RT78725	<b>Print relays</b> Version with 2 CO contacts								
	12 DC 24 DC 24 AC 115 AC 230 AC	2	12.7	▶ C ▶ ▶ ▶	LZX:RT424012 LZX:RT424024 LZX:RT424524 LZX:RT424615 LZX:RT424730		1 1 1 1 1	1 unit 1 unit 1 unit 1 unit 1 unit	41H 41H 41H 41H 41H
	<b>Standard plug-in bases</b> for mounting onto TH 35 standard mounting rail								
	--	--	15.5	▶	<b>Screw terminals</b> LZS:RT78725		1	1 unit	41H
LZS:RT78726	<b>Plug-in bases with logical separation</b> for mounting onto TH 35 standard mounting rail								
	--	--	15.5	▶	<b>Plug-in terminals</b> LZS:RT78726		1	1 unit	41H
	<b>Plug-in bases with logical separation</b> for mounting onto TH 35 standard mounting rail								
	--	--	15.5	▶	LZS:RT7872P		1	1 unit	41H
LZS:RT7872P	<b>LED modules</b>								
	• Red								
	With freewheel diode	24 DC	--	▶	LZS:PTML0024		1	1 unit	41H
	Without freewheel diode	24 AC/DC 110 ... 230 AC/DC	--	▶	LZS:PTML0524 LZS:PTML0730		1 1	1 unit 1 unit	41H 41H
LZS:PTML0024	• Green								
	With freewheel diode	24 DC	--	▶	LZS:PTMG0024		1	1 unit	41H
	Without freewheel diode	24 AC/DC 110 ... 230 AC/DC	--	▶	LZS:PTMG0524 LZS:PTMG0730		1 1	1 unit 1 unit	41H 41H
	<b>Fixing/ejection brackets</b> for RT base								
	--	--	15.5	▶	LZS:RT17016		100	10 units	41H
LZS:RT17016	<b>Labels</b>								
	--	--	15.5	▶	LZS:RT17040		100	10 units	41H
	<b>RC elements</b>								
	6 ... 60 AC 110 ... 230 AC	--	15.5	▶	LZS:PTMU0524 LZS:PTMU0730		1 1	1 unit 1 unit	41H 41H
LZS:RT17040	<b>Freewheel diodes with connection to A1</b>								
	6 ... 230 DC	--	15.5	▶	LZS:PTMT00A0		1	1 unit	41H
	<b>Connecting cable, 24-pole</b> Current carrying capacity 12 A, with supply, blue								
				A	3TX7 004-8BA00		1	1 unit	41H
LZS:PTMT0730	<b>Connecting combs for RT screw base</b>								
	8-pole, 10 A current carrying capacity, natural-colored			▶	LZS:RT170R8		1	10 units	41H
	<b>Connecting brackets for PT push-in base</b>								
	2-pole, 10 A current carrying capacity, natural-colored			▶	LZS:RT170P1		100	10 units	41H
									
3TX7 004-8BA00									

#### Note:

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00

(see Chapter 15, "Stabilized Power Supplies").

# Coupling Relays

## Coupling Relays with LZS/LZX Plug-In Relays

### Plug-in relay couplers

#### More information

#### Configuration notes

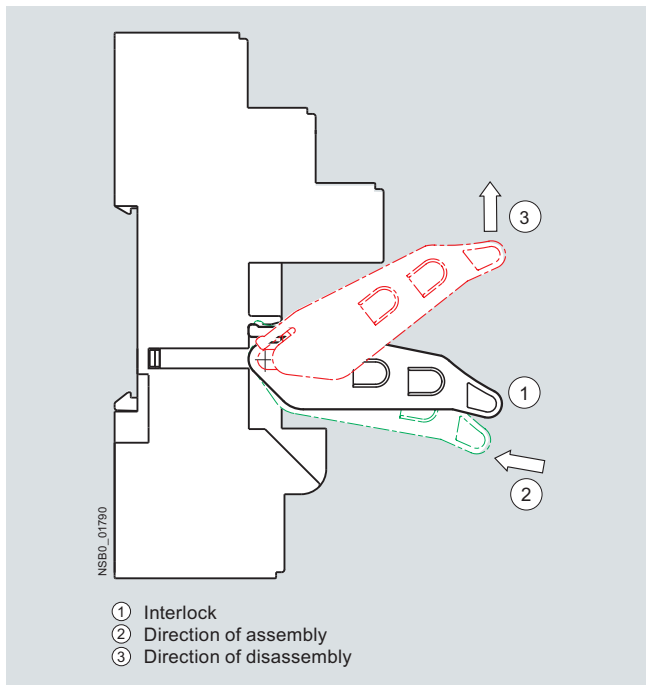
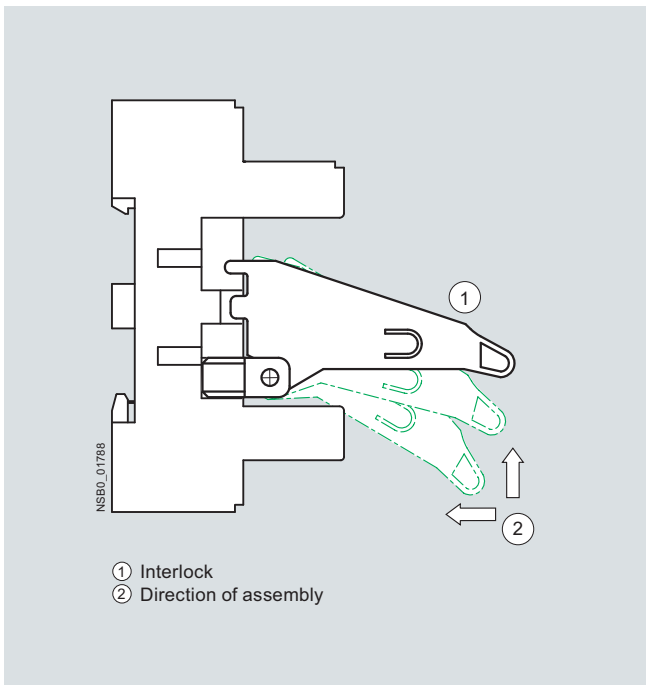
##### PT series

Mounting the LZS:PT17024 fixing/ejection bracket on the LZS:PT787.0 standard plug-in base with screw terminals

##### RT series

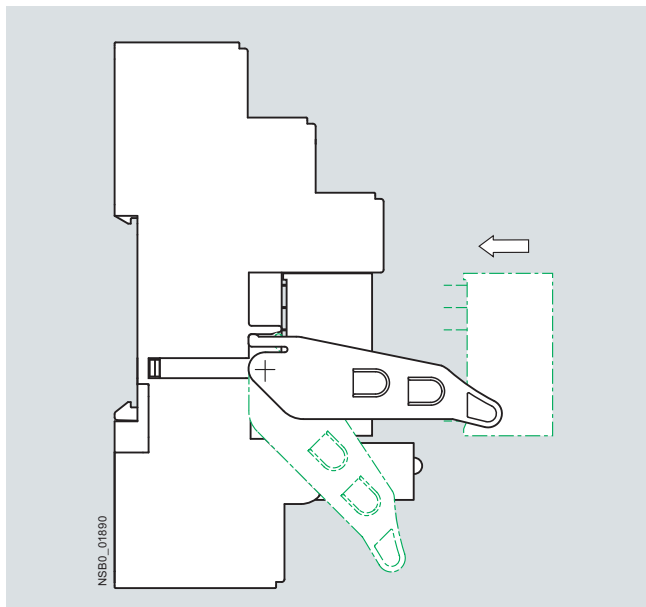
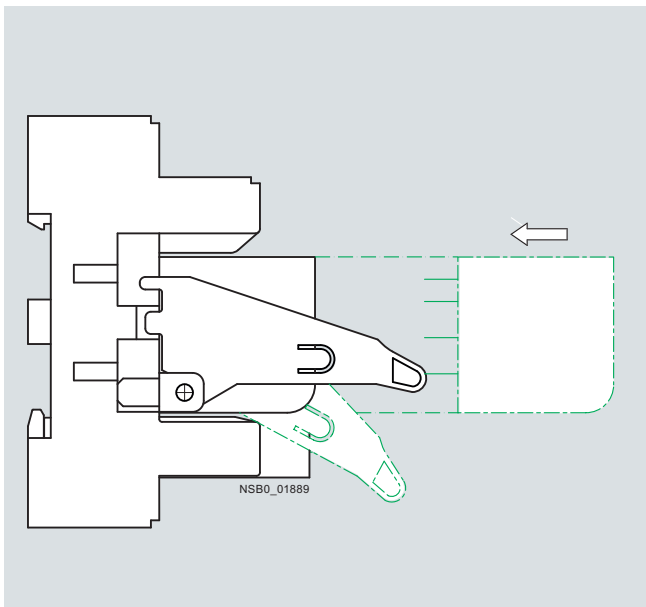
Mounting the LZS:RT17016 fixing/ejection bracket on the LZS:RT7872. plug-in base

5



Mounting the coupling relay with plug-in relay

Mounting the coupling relay with plug-in relay



**Note:**

The LZS:PT17021 and LZS:PT17024 ejection brackets of the coupling relays with plug-in relay are not status displays!

**Note:**

The LZS:RT17016 ejection brackets of the coupling relays with plug-in relay are not status displays!