Switching Devices: Contactors and Contactor Assemblies

2

2

Introduction

Overview



Size			S00			S0				S2		
Type			3RT10 1			3RT10 2				3RT10 3		
3RT10 contactors • 3RT12 and 3TF68/69 vacuum contactors												
Type			3RT10 15	3RT10 16	3RT10 17	3RT10 23	3RT10 24	3RT10 25	3RT10 26	3RT10 34	3RT10 35	3RT10 36
AC/DC operation			(p. 2/52, 2/56)			(p. 2/53, 2/57)				(p. 2/54, 2/58)		
Type			–			–				–		
AC-3												
I_e/AC-3/400 V		A	7	9	12	9	12	17	25	32	40	50
400 V		**kW**	**3**	**4**	**5.5**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**	**22**
230 V		kW	2.2	3	3	3	3	4	5.5	7.5	11	15
500 V		kW	3.5	4.5	5.5	4.5	7.5	10	11	18.5	22	30
690 V	3RT10/12	kW	4	5.5	5.5	5.5	7.5	11	11	18.5	22	22
1 000 V	3RT10/12	kW	–	–	–	–	–	–	–	–	–	–
AC-4 (for I_a = 6 x I_e)												
400 V		**kW**	**3**	**4**	**4**	**4**	**5.5**	**7.5**	**7.5**	**15**	**18.5**	**22**
400 V	3RT10/12	kW	1.15	2	2	2	2.6	3.5	4.4	8.2	9.5	12.6
(200 000 operating cycles)												
AC-1 (40 °C, ≤ 690 V)												
I_e	3RT10/12	**A**	**18**	**22**	**22**	**40**	**40**	**40**	**40**	**50**	**60**	**60**
3RT14 AC-1 contactors												
Type			–			–				–		
I_e/AC-1/40 °C/ ≤ 690 V		**A**	–			–				–		
Accessories for contactors												
Auxiliary switch blocks	front		**3RH19 11**		(p. 2/180)	**3RH19 21**		(p. 2/180)				
	lateral		–			**3RH19 21**		(p. 2/182)				
Terminal covers			–			–				**3RT19 36-4EA2**		(p. 3/52)
Box terminal blocks			–			–				–		
Surge suppressor			**3RT19 16**		(p. 2/186)	**3RT19 26**		(p. 2/186)		**3RT19 26/36**		(p. 2/186)
3RU11 and 3RB10/12 overload relays (protection devices: overload relays)												
3RU11, thermal, CLASS 10			**3RU11 16**	0.1 – 12 A	(Sect. 5)	**3RU11 26**	1.8 – 25 A	(Sect. 5)		**3RU11 36**	5.5 – 50 A	(Sect. 5)
3RB10, solid-state, CLASS 10/20			**3RB10 16**	0.1 – 12 A	(Sect. 5)	**3RB10 26**	3 – 25 A	(Sect. 5)		**3RB10 36**	6 – 50 A	(Sect. 5)
3RB12, solid-state, CLASS 5 – 30			**3RB12 46**	0.25 – 100 A	(Section 5)							
3RV10 circuit-breakers (protection devices: circuit-breakers)												
Type			**3RV10 11**	0.18 – 12 A	(Sect. 4)	**3RV10 21**	9 – 25 A	(Sect. 4)		**3RV10 31**	22 – 50 A	(Sect. 4)
Link modules			**3RA19 11**		(Sect. 4)	**3RA19 21**		(Sect. 4)		**3RA19 31**		(Sect. 4)
3RA13 reversing contactor assemblies												
Complete units	Type		**3RA13 15**	**3RA13 16**	**3RA13 17**		**3RA13 24**	**3RA13 25**	**3RA13 26**	**3RA13 34**	**3RA13 35**	**3RA13 36**
			(p. 2/96)				(p. 2/97)			(p. 2/98)		
400 V		**kW**	**3**	**4**	**5.5**		**5.5**	**7.5**	**11**	**15**	**18.5**	**22**
Installation kits/wiring connectors			**3RA19 13-2A**		(p. 2/101)	**3RA19 23-2A**		(p. 2/101)		**3RA19 33-2A**		(p. 2/101)
Mechanical interlocks			**3RA19 12-2H**		(p. 2/102)	**3RA19 24-1A/-2B**		(p. 2/100)				
3RA14 contactor assemblies for star-delta starting												
Complete units	Type		**3RA14 15**	**3RA14 16**		**3RA14 23**		**3RA14 25**		**3RA14 34**	**3RA14 35**	**3RA14 36**
			(p. 2/108)			(p. 2/109)				(p. 2/110)	(p. 2/111)	
400 V		**kW**	**5.5**	**7.5**		**11**		**15/18.5**		**22/30**	**37**	**45**
Installation kits/wiring connectors			**3RA19 13-2B**		(p. 2/113)	**3RA19 23-2B**		(p. 2/113)		**3RA19 33-2B/-2C**		(p. 2/113)





	S3 3RT1. 4			**S6** 3RT1. 5			**S10** 3RT1. 6			**S12** 3RT1. 7		**14** 3TF6	
	3RT10 44 (p. 2/55, 2/58)	**3RT10 45**	**3RT10 46**	**3RT10 54** (p. 2/59)	**3RT10 55**	**3RT10 56**	**3RT10 64** (p. 2/59)	**3RT10 65**	**3RT10 66**	**3RT10 75** (p. 2/59)	**3RT10 76**	**–**	
	–			–			**3RT12 64** (p. 2/71)	**3RT12 65**	**3RT12 66**	**3RT12 75** (p. 2/71)	**3RT12 76**	**3TF68** (p. 2/78)	**3TF69**
	65	80	95	115	150	185	225	265	300	400	500	630	820
	30	**37**	**45**	**55**	**75**	**90**	**110**	**132**	**160**	**200**	**250**	**335**	**450**
	18.5	22	22	37	45	55	55	75	90	132	160	200	260
	37	45	55	75	90	110	160	160	200	250	355	434	600
	45	55	55	110	132	160	200	250	250	400	400/500	600	800
	30	37	37	75	90	90	90/315	132/355	132/400	250/560	250/710	600	800
	30	**37**	**45**	**55**	**75**	**90**	**110**	**132**	**160**	**200**	**250**	**355**	**400**
	15.1	17.9	22	29	38	45	54/78	66/93	71/112	84/140	98/161	168	191
	100	**120**	**120**	**160**	**185**	**215**	**275/330**	**330**	**330**	**430/610**	**610**	**700**	**910**
	3RT14 46		(p. 2/116)	**3RT14 56**		(p. 2/124)	**3RT14 66**		2/124) (P.	**3RT14 76**	(p. 2/124)	**–**	
	140			**275**			**400**			**690**		**–**	
												–	
												3TY7 561	(p. 2/198)
	3RT19 46-4EA1/2		(p. 2/191)	**3RT19 56-4EA1/2/3**		(p. 2/191)	**3RT19 66-4EA1/2/3**		(p. 2/191)			**3TX7 686/696**	(p. 2/198)
	–			**3RT19 55/56-4G**		(p. 2/191)	**3RT19 66-4G**		(p. 2/191)			**–**	
				3RT19 56-1C (RC element) (p. 2/187)								**3TX7 572**	(p. 2/197)
	3RU11 46	18 – 100 A	(Sect. 5)	**–**			**–**			**–**		**–**	
	3RB10 46	13 – 100 A	(Sect. 5)	**3RB10 56**	50 – 200 A	(Sect. 5)	**3RB10 66**	55 – 250/200 – 540 A (Section 5)		**3RB10 66**	200 – 540 A (Section 5)	**3RB10 66**	300 – 630 A (Section 5)
				3RB12 53	50 – 205 A	(Sect. 5)	**3RB12 57**	125 – 500 A (Section 5)				**3RB12 62**	200 – 820 A (Section 5)
	3RV10 41	45 – 100 A	(Sect. 4)	**–**			**–**			**–**		**–**	
	3RA19 41		(Sect. 4)	**–**			**–**			**–**		**–**	
	3RA13 44 (p. 2/99)	**3RA13 45**	**3RA13 46**	**–**			**–**			**–**		**3TD68 04** (p. 2/103)	
	30	**37**	**45**	**55**	**75**	**90**	**110**	**132**	**160**	**200**	**250**	**335**	
	3RA19 43-2A		(p. 2/101)	**3RA19 53-2A**		(p. 2/101)	**3RA19 63-2A**		(p. 2/101)	**3RA19 73-2A**	(p. 2/101)	**3TX7 680-1A**	
				3RA19 54-2A		(p. 2/100)						**3TX7 686-1A**	
	3RA14 44 (p. 2/112)	**3RA14 45**		**–**			**–**			**–**		**3TE68 04** (p. 2/115)	
	55	**75**		**–**			**–**			**–**		**630**	
	3RA19 43-2B/-2C		(p. 2/113)	**3RA19 53-2B**		(p. 2/113)	**3RA19 63-2B**		(p. 2/113)	**3RA19 73-2B**	(p. 2/113)	**3TX7 680-1B**	

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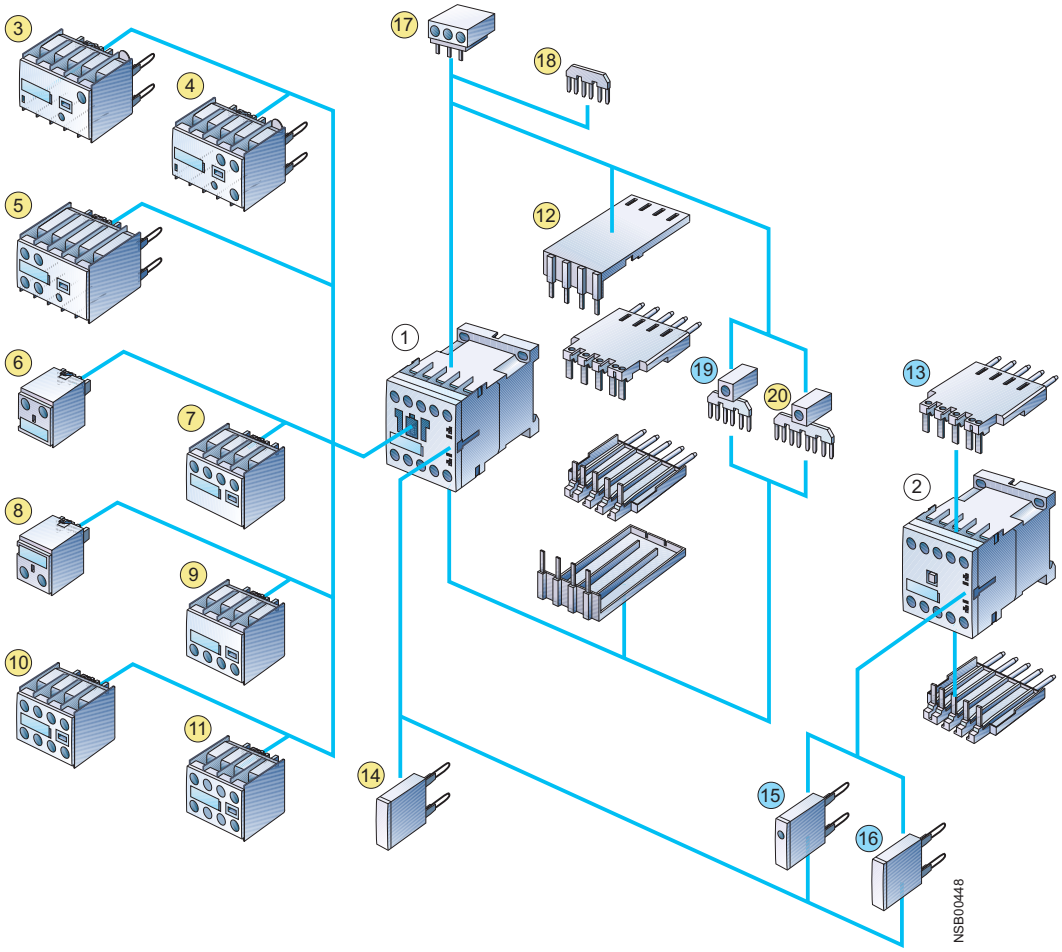
General data

Overview

3RT1 contactors and coupling relays
Size S00 with mountable accessories

The SIRIUS generation is a complete, modular system family, logically designed right down to the last detail, from the basic units to the accessories.



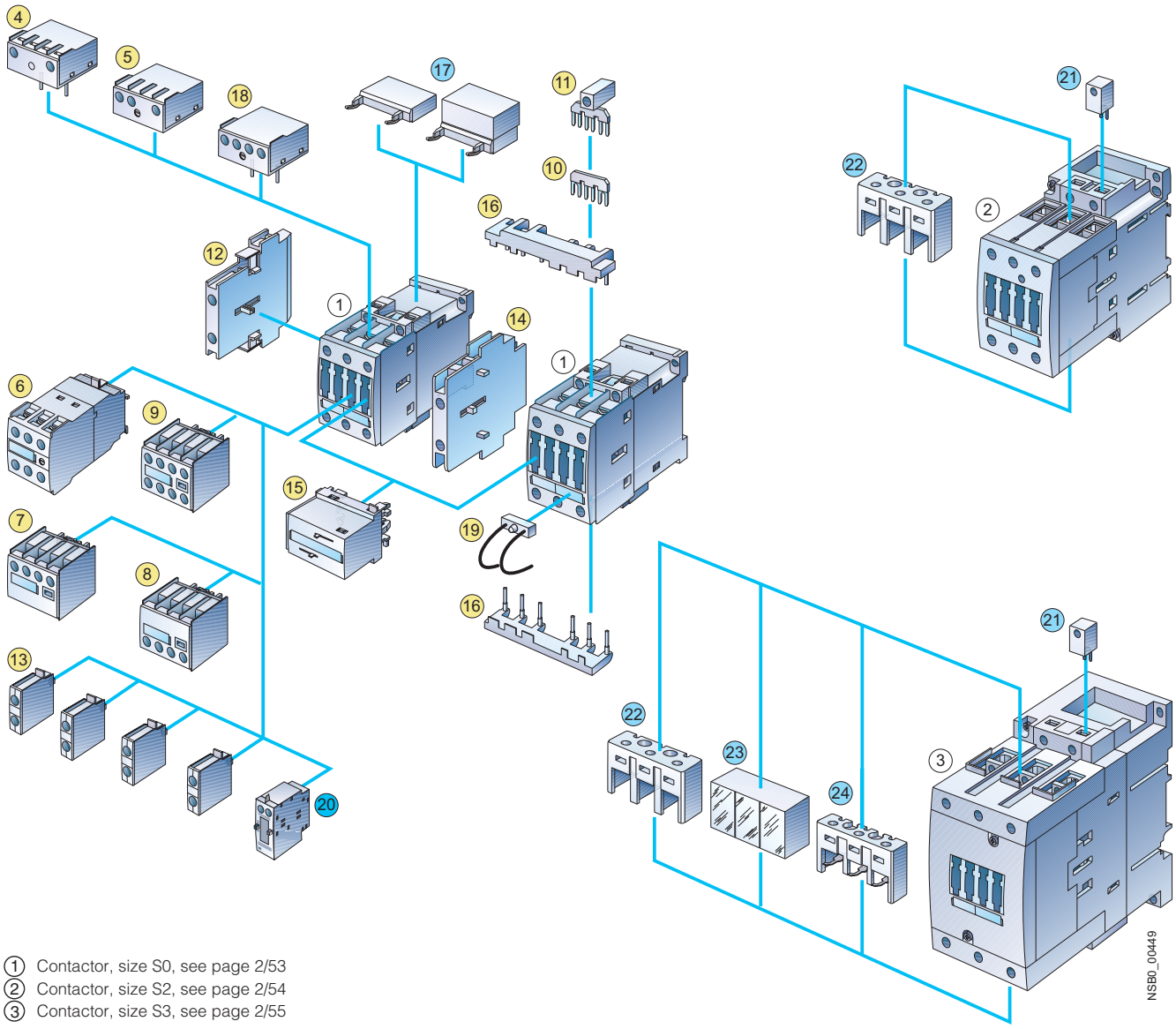
(1) Contactor (page 2/52)
(2) Coupling relay (page 2/86)
(3) Solid-state time-delay block, ON-delay (page 2/185)
(4) Solid-state time-delay block, OFF-delay (page 2/185)
(5) Auxiliary switch block, solid-state time-delay (page 2/184) (ON or OFF-delay or star-delta function)
(6) Single-pole auxiliary switch block, cable entry from above (page 2/180)
(7) 2-pole auxiliary switch block, cable entry from above (page 2/180)
(8) Single-pole auxiliary switch block, cable entry from below (page 2/180)
(9) 2-pole auxiliary switch block, cable entry from below (page 2/180)
(10) 4-pole auxiliary switch block (page 2/180) (terminal designations acc. to EN 50012 or EN 50005)
(11) 2-pole auxiliary switch block, standard design or solid-state compatible design (pages 2/180, 2/183) (terminal designations acc. to EN 50005)
(12) Solder pin adapter for contactors with 4-pole auxiliary switch block (page 2/190)
(13) Solder pin adapter for contactors and coupling relays (page 2/189)

(14) Additional load module for increasing the permissible residual current (page 2/188)
(15) Surge suppressor with LED (page 2/187)
(16) Surge suppressor without LED (page 2/186)
(17) 3-phase feeder terminal (page 2/113)
(18) Link for paralleling (star jumper), 3-pole, without terminal (page 2/113)
(19) Link for paralleling, 3-pole, with terminal (page 2/190)
(20) Link for paralleling, 4-pole, with terminal (page 2/190)

for contactors
for contactors and coupling relays (interface)

For contactor assemblies see Pages 2/94 to 2/102
Assembly kit for reversing contactor assemblies (mech. interlocking, wiring modules) see Page 2/101
For mountable overload relays see protection devices: Overload relays -> SIRIUS overload relays.
For short-circuit protection for fuseless load feeders, see Load feeders -> Fuseless load feeders.

3RT1 contactors
Sizes S0 to S3 with mountable accessories



(1) Contactor, size S0, see page 2/53
(2) Contactor, size S2, see page 2/54
(3) Contactor, size S3, see page 2/55

For sizes S0 to S3:

(4) Solid-state time-delay block, ON-delay (page 2/185)
(5) Solid-state time-delay block, OFF-delay (page 2/185)
(6) Auxiliary switch block, solid-state time-delay (page 2/184) (ON or OFF-delay or star-delta function)
(7) 2-pole auxiliary switch block, cable entry from above (page 2/181)
(8) 2-pole auxiliary switch block, cable entry from below (page 2/181)
(9) 4-pole auxiliary switch block (page 2/181) (terminal designations acc. to EN 50012 or EN 50005)
(10) Link for paralleling (star jumper), 3-pole, without terminal (page 2/113)
(11) Link for paralleling, 3-pole, with terminal (page 2/190)
(12) 2-pole auxiliary switch block, laterally mountable (left or right) (page 2/182) (terminal designations acc. to EN 50012 or EN 50005)
(13) Single-pole auxiliary switch block (up to 4 can be snapped on) (page 2/181)
(14) Mechanical interlock, laterally mountable (page 2/100)
(15) Mechanical interlock, mountable on the front (page 2/100)
(16) Wiring connectors on the top and bottom (reversing duty) (page 2/102)
(17) Surge suppressors (page 2/186) (varistor, RC element, diode assembly), can be mounted on the top or bottom (different for S0 and S2/S3)
(18) Interface for mounting directly onto contactor coil (page 2/189)
(19) LED module for indicating contactor operation (page 2/189)

Only for sizes S2 and S3:

(20) Mechanical latching

Only for sizes S2 and S3:

(21) Repeat coil terminal for making reversing contactor assemblies (page 2/100)
(22) Terminal cover for box terminals (page 2/191)

Only for size S3:

(23) Terminal cover for cable lug and busbar connection (page 2/191)
(24) Auxiliary conductor terminal, 3-pole (page 2/189)

Accessories identical for sizes S0 to S3
Accessories differ according to size

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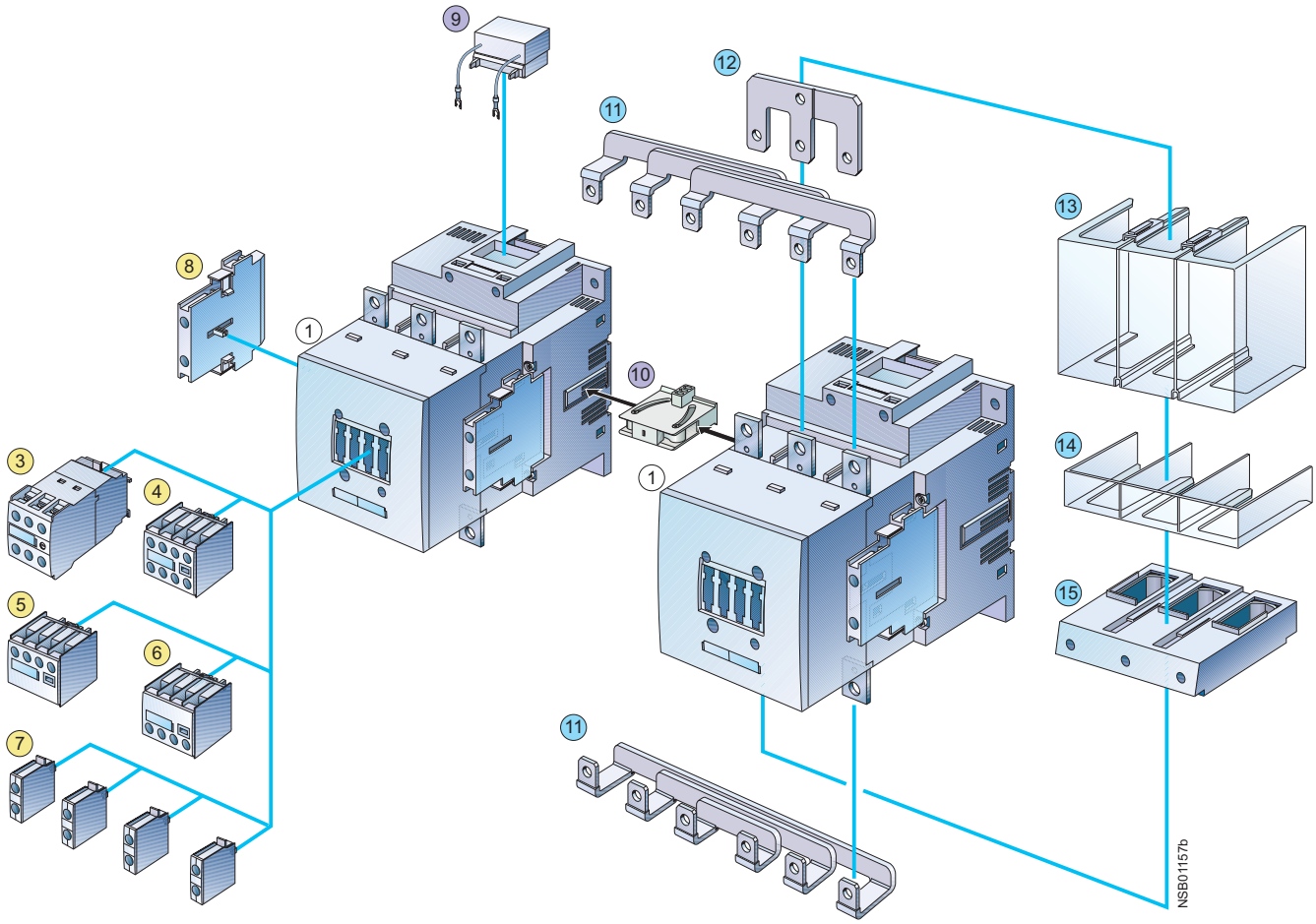
General data

3RT1 contactors
sizes S6 to S12 with accessories



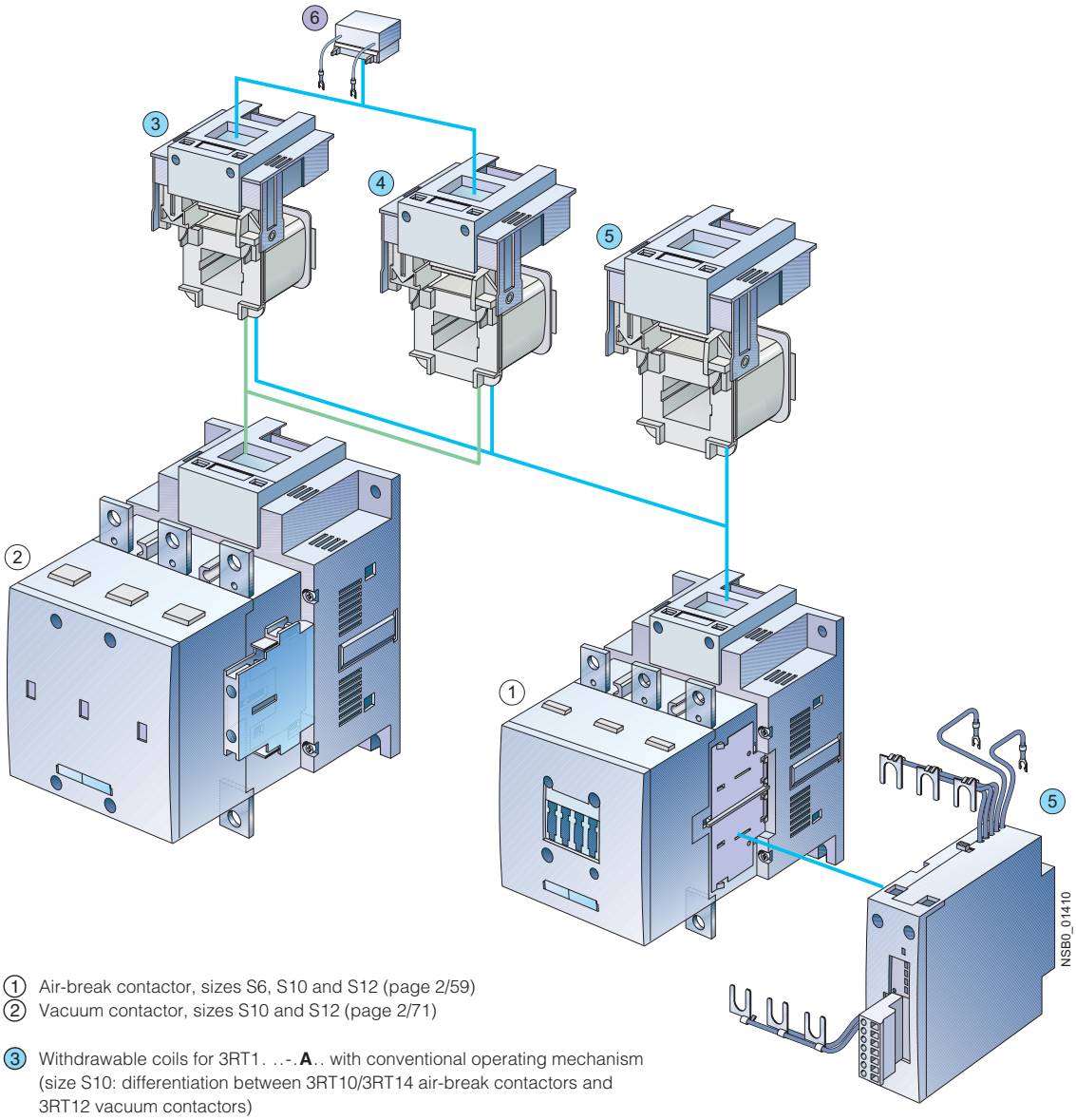
(1) 3RT10 and 3RT14 air-break contactors, sizes S6, S10 and S12 (pages 2/59 and 2/124)

(3) Auxiliary switch block, solid-state time-delay (page 2/184) (ON or OFF-delay or star-delta function)
(4) 4-pole auxiliary switch block (page 2/180) (terminal designations acc. to EN 50012 or EN 50005)
(5) 2-pole auxiliary switch block, cable entry from above (page 2/181)
(6) 2-pole auxiliary switch block, cable entry from below (page 2/181)
(7) Single-pole auxiliary switch block (up to 4 can be snapped on) (page 2/181)
(8) 2-pole auxiliary switch block, laterally mountable (left or right) (page 2/182) (terminal designations acc. to EN 50012 or EN 50005) (identical for S0 to S12)
(9) Surge suppressor (RC element) (page 2/187), for reversing duty into top of withdrawable coil
(10) Mechanical interlock, laterally mountable (page 2/100)

For mountable overload relays see protection devices: Overload relays -> SIRIUS overload relays.

(11) Wiring connectors on the top and bottom (reversing duty) (page 2/102)
(12) Link for paralleling (star jumper), 3-pole, with through hole (page 2/190), different for sizes S6 and S10/S12
(13) Terminal cover for cable lug and bar connection (page 2/191), different for sizes S6 and S10/S12
(14) Terminal cover for box terminal (page 2/191), different for sizes S6 and S10/S12
(15) Box terminal block (page 2/191), 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



(1) Air-break contactor, sizes S6, S10 and S12 (page 2/59)
(2) Vacuum contactor, sizes S10 and S12 (page 2/71)

(3) Withdrawable coils for 3RT1. ..-.**A**.. 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**.. 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 air-break contactors
. ..-.**P**.. and 3RT1. ..-.**Q**..
(6) Surge suppressor (RC element) (page 2/187), plug-mountable on withdrawable coils
- with conventional operating mechanism 3RT1...-.**A**..
- with solid-state operating mechanism 3RT1...-.**N**..

Identical for sizes S6 to S12
Different according to size

For mountable overload relays see protection devices: Overload relays -> SIRIUS overload relays.

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SIRIUS contactors, 3-pole, 3 ... 250 kW

Overview

3RT10 contactors, 3-pole, sizes S00 to S3, up to 45 kW

For AC and DC operation

IEC 60947-4-1, EN 60947-4-1 (VDE 0660, Part 102)

3RT1 contactors are climate-proof. They are finger-safe according to DIN VDE 0106, Part 100.

The 3RT1 contactors are available with screw terminal or Cage Clamp terminals.

Contactors with size S00 have an auxiliary contact integrated into the basic unit.

All basic units can be extended with auxiliary switch blocks. For size S0 and higher, complete units with 2 NO + 2 NC are available (connection designation to EN 50012). The auxiliary switch block can be removed (for more information see "Integration" on Page 2/12).

Sizes S00 and S0 are also available as complete units with a permanently mounted auxiliary switch block (2 NO + 2 NC to EN 50012). These versions are designed in accordance with the special requirements outlined by "SUVA" and are distinguished externally by a red identification plate.

Contacts with size S3 have removable box terminals for the main conductor connections. This permits connection of ring cable lugs or busbars.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts for the 3RT1 contactors or 3RH11 contactor relays, which ensure high contact reliability, must be used.

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

Short-circuit protection of contactors

For more information on short-circuit protection of contactors without overload relays, see Technical specifications. For more information on short-circuit protection of contactors with overload relays see "Overload relays". When installing fuseless motor feeders, the combinations of circuit-breakers and contactors described under "Fuseless load feeders" must be used.

Motor protection

3RU11 thermal overload relays or 3RB10 solid-state overload relays can be fitted to the 3RT1 contactors for protection against overload. The overload relays must be ordered separately.

Overvoltage damping

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

The surge suppressors are plugged onto the front of size 000 contactors. They can be fitted next to a snap-on auxiliary switch block.

For contactors of sizes S0 to S3, varistors and RC elements can either be snapped on at the top or directly below the coil connections. Due to their polarity, diode assemblies are available in two different designs. Depending on the application, they can either be connected only at the bottom (assembly with circuit-breaker) or 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, the plug-in direction is indicated here with "+" and "-".

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

Note: The OFF-delay times of the NO contacts and the ON-delay times of the NC contacts increase if the contactor coils are damped against voltage peaks (interference suppression diodes 6 to 10 times; diode assemblies 2 to 6 times; Varistor +2 to 5 ms).

3RT10 contactors, 3-pole, 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.

Operating mechanism types

Two types of solenoid operation are available:

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

UC operation

The contactors can be operated with AC (40 to 60 Hz) as well as DC.

Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the magnetic coil can be pulled out upwards without tools after the release mechanism has been actuated and can be replaced by any other required coil of the same size.

Auxiliary contact complement

The contactors can be fitted with up to 8 auxiliary contacts (identical auxiliary switch blocks from S0 to S12). Of these no more than 4 are permitted to be NC contacts.

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

Contactors with conventional operating mechanism

Design 3RT1...-.A:
The solenoid is switched directly on and off with the control supply voltage U_s via terminals A1/A2.

Multi-voltage range for control supply voltage U_s:
A single coil covers several control supply voltages of similar ranges which are used worldwide e.g. UC 110-115-120-127 V or UC 220-230-240 V.

In addition, allowance is also made for a coil 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 overloading occurs.

Contactors with solid-state operating mechanism

The magnetic coil is supplied selectively with the power required for reliable switching and holding by series-connected control electronics.

- Extended 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 variant. For example, the coil for UC 200 to 277 V ($U_{S\,min}$ to $U_{S\,max}$), covers the voltages 200-208-220-230-240-254-277 V used worldwide.
- Extended coil operating range 0.7 to 1.25 × U_S:
  The wide range for the rated control supply voltage and the additionally allowed coil operating range of 0.8 × $U_{S\,min}$ to 1.1 × $U_{S\,max}$ results in an extended coil operating range of at least 0.7 to 1.25 × U_S within which the contactors will operate reliably, for the most common control supply voltages 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 of ≥ 0.8 × $U_{S\,min}$ and higher, the electronics will reliably switch the contactor on and as of ≤ 0.5 × $U_{S\,min}$ it is reliably switched off. The differential travel 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 comply with the requirements for operation in industrial installations.

- 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 to EN 55011.

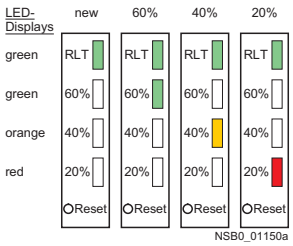
Note:
When used with converters, the control cables must be routed separately from the load cables of the converter.

Indication of remaining lifetime (RLT)

Main contactor contacts are working parts which 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, duty type, etc. Routine checks/visual inspections by the service personnel are needed in order to monitor the state of the main contacts. The "remaining lifetime indication" function 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 of 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 via relay contact or AS-i when remaining lifetime is 20 % i.e. contact material wear is 80 %.
- Additional visual indication of various levels of erosion with LEDs on the laterally mounted electronics module when remaining lifetime of 60 % (green), 40 % (orange), and 20 % (red).



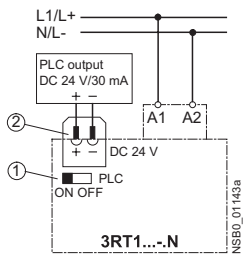
- Early warning to replace contacts.
- Optimum utilization of the contact material.
- Visual inspection of the condition of contacts no longer necessary.
- Reduction of ongoing operating costs.
- Optimum planning of maintenance measures.
- Avoidance of unforeseen plant downtimes.

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

2 control options:

- Control without an interface directly via a DC 24 V/≥ 30 mA PLC output (EN 61131-2). Connection via 2-pole plug-in connection. The screwless spring-operated plug is part of the scope of supply.
  The control supply voltage which supplies the solenoid must be connected to A1/A2.

Note:
Set sliding dolly switch for PLC operation to "PLC ON" position before commissioning (factory setting: "PLC OFF").

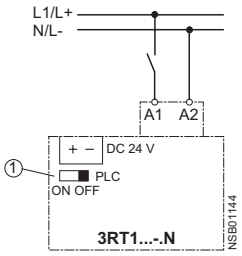


① Sliding dolly switch must be in "PLC ON" position.

② Plug-in connection, 2-pole

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

Note:
Sliding dolly switch must be in "PLC OFF" position (= factory setting).



① Sliding dolly switch must be in "PLC OFF" position
Plug connector, 2-pole

2

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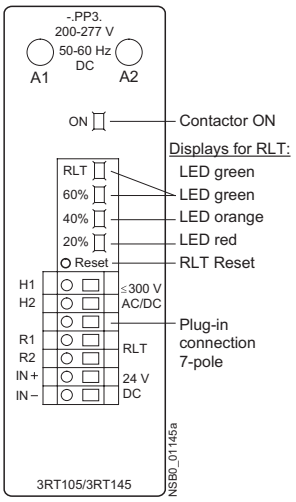
Design 3RT1...-.P: for DC 24 V PLC output or PLC relay output with indication of remaining lifetime (RLT)

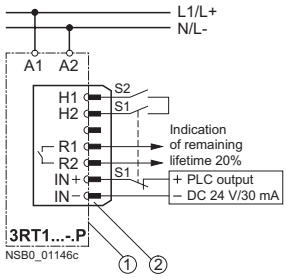


To supply the solenoid and remaining lifetime indicator with power, the control supply voltage U_S must be connected to terminals A1/A2 of the laterally-mounted solid-state module. The control inputs of the contactor are connected to a 7-pole plug-in connection; the screwless spring-operated plug is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

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

2 control options:

- Contactor control without an interface directly via a DC 24 V/ ≥ 30 mA (EN 61131-2) PLC output via terminals IN+/IN-.



① Solid-state module of 3RT1 ...-.P contactor

② Plug-in connection, 7-pole

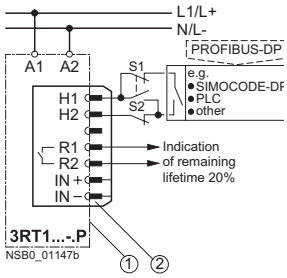
S1 Selector switch for switching from automatic control via PLC semiconductor output to local control.

S2 Local control option

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

- Contactor control via relay outputs e.g. by
  - PLC
  - SIMOCODE-DP 3UF5

via terminals H1/H2. Contact loading: U_S/approx. 5 mA.
When operated via SIMOCODE-DP, a communication link to PROFIBUS DP is also provided.



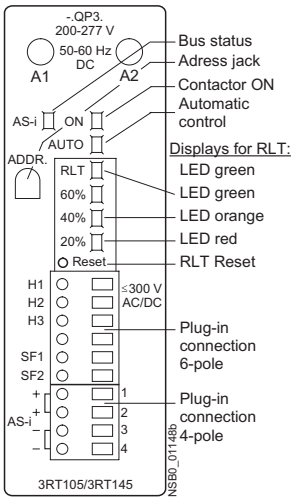
① Solid-state module of 3RT1 ...-.P contactor

② Plug-in connection, 7-pole

S1 Selector switch for switching from automatic control, for example, via SIMOCODE-DP or PLC relay output to local control.

S2 Local control option

Design 3RT1...-.Q : communication-capable with integrated AS-Interface and indication of remaining lifetime (RLT).



To supply the solenoid and indicator of remaining lifetime 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 via the integrated AS-Interface. The inputs and outputs are connected to a 10-pole plug-in connection; the screwless spring-operated plugs (6-pole for external connection and 4-pole for AS-Interface connection) are part of the scope of supply.

- LED indicators:
  The following states are displayed 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")
  - Remaining lifetime (RLT)
- AS-Interface address jack "ADDR":
  The contactor address can be assigned after installation.

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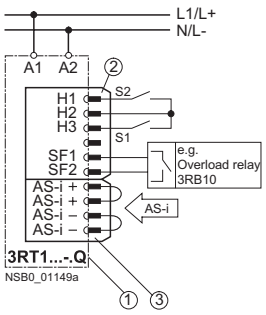
Control circuit:

- Contactor control through AS-Interface via 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 plug is pulled out.
  - The contactor remains functional via the local control inputs and its own 6-pole connector.
- Control signals via AS-i:
  - Contactor ON/OFF
- Status signals via AS-i:
  - Contactor ON/OFF
  - Automatic/local control
  - Remaining lifetime (RLT)
  - Signal via free input e.g. overload relay tripped.



① Solid-state module of 3RT1 ...-.Q contactor

② Plug-in connection, 6-pole

③ Plug-in connection, 4-pole

S1 Selector switch for switching from automatic control, for example, via AS-Interface to local control
S1 open: automatic mode

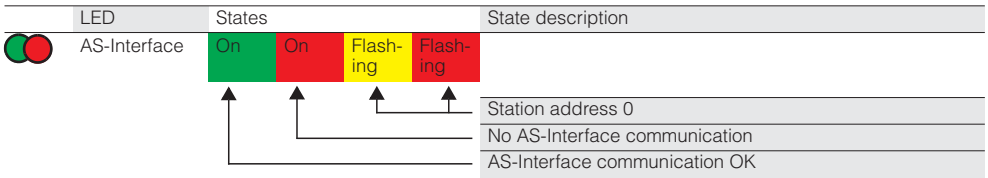
S2 Local control option

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

I/O configuration (hex)		7
ID code (hex)		F
Power supply	V	26.5 ... 31.6 (in accordance with the AS-Interface specification)
AS-Interface current input	mA	max. 20
Contact loading at SF1/2	mA	3 ... 6
Watchdog function (disconnects outputs in the event of AS-Interface fault)		built-in

Indication behavior

During operation, the LEDs display the contactor states shown on the right.



Contactor diagnostics using the application program

- Inputs

Input signals			Device status
DI0	"Ready"	0	Device not ready/manual operation
		1	Device ready/automatic operation
DI1	"Running"	0	Contactor off
		1	Contactor on
DI2	"Remaining lifetime"	0	Remaining lifetime (RLT > 20 %)
		1	Remaining lifetime RLT ≤ 20 %
DI3	"Free input"	0	No input signal at SF1/2
		1	Input signal at SF1/2

- Outputs

Output signals			Device status
DO0	"Running"	0	Contactor off
		1	Contactor on
DO1		0	–
		1	–
DO2		0	–
		1	–
DO3		0	–
		1	–

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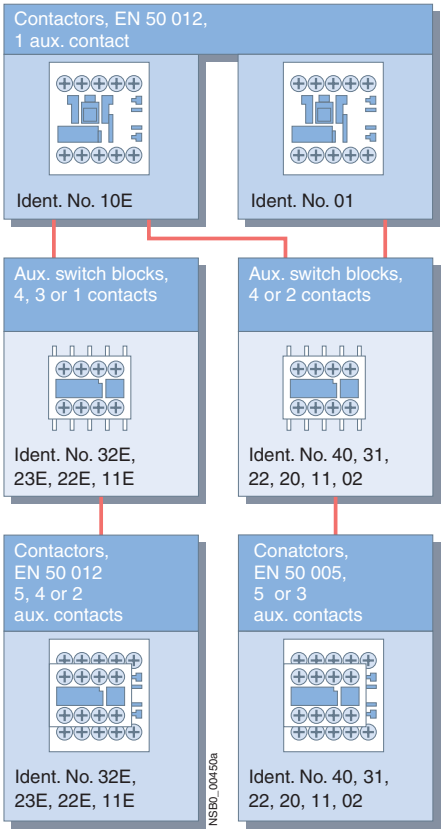
Integration

Auxiliary switch blocks

Depending on the application, the basic 3RT1 units can be extended with various auxiliary switch blocks:

Size S00

3RT10 1. contactors
Terminal designations acc. to EN 50012 or EN 50005.



Contactors of size S00 have an auxiliary contact integrated into the basic unit.

Contactors with one NO contact as the auxiliary contact and with either screw or Cage Clamp terminals, identification number 10E, can be extended with auxiliary switch blocks to obtain contactors with 2, 4, or 5 auxiliary contacts acc. to EN 50012. The identification numbers 11E, 22E, 23E, and 32E on the auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactors which have an NC contact in their basic unit, identification number 01, as these are coded.

All size S00 contactors with one auxiliary contact, identification number 10E or 01, and the contactors with four main contacts can be extended with auxiliary contact blocks, identification numbers 40 to 02, to obtain contactors with 3 or 5 auxiliary contacts (contactors with 4 main contacts: 2 or 4 auxiliary contacts) according to EN 50005.The identification numbers on the auxiliary switch blocks only apply to the fitted auxiliary contacts.

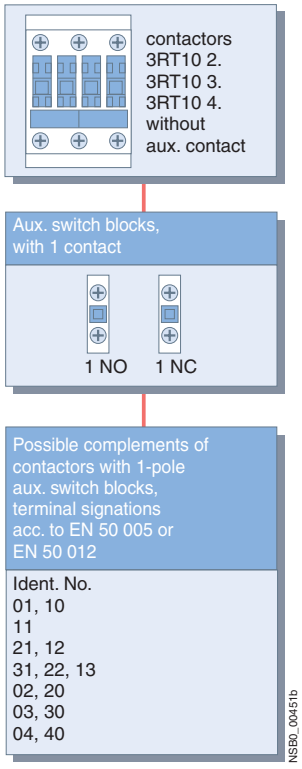
Single or 2-pole auxiliary switch blocks with connection options at the top or bottom make wiring clear and simple, especially when installing feeders. These auxiliary switch blocks are only available with screw terminals.

The solid-state compatible 3RH19 11-1NF.. auxiliary switch blocks for size S00 contactors contain 2 enclosed contact elements. They are especially suitable for switching low voltages and currents (hard gold-plated contacts) or for use in dusty environments. The contact elements are not positively-driven.

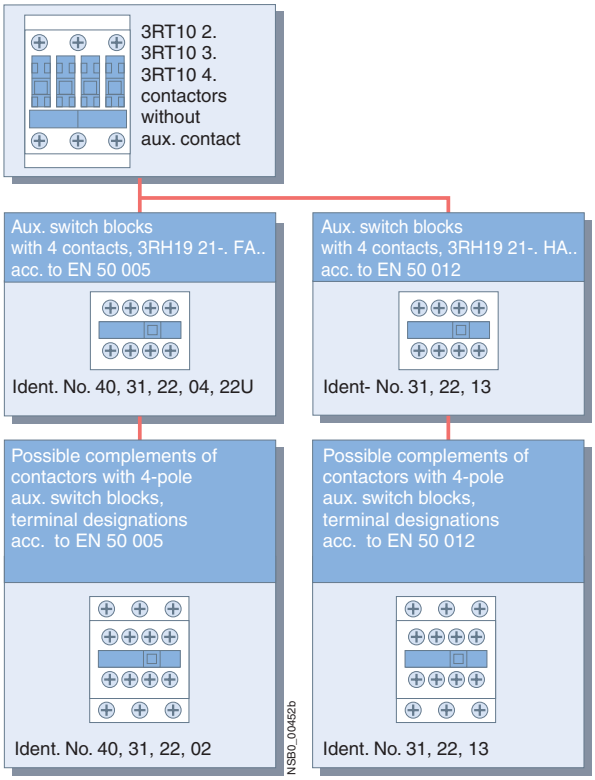
All auxiliary contact variants mentioned above can be fitted by snapping them on to the front location hole of the contactors. At the center of the auxiliary switch block is a release lever for disassembly.

Sizes S0 to S3

3RT10 2. to 3RT10 4. contactors, single-pole auxiliary switch blocks,
terminal designations acc. to EN 50005 or EN 50012.



3RT10 2. to 3RT10 4. contactors,
4-pole auxiliary switch blocks,
terminal designations acc. to EN 50005 or EN 50012.



A comprehensive range of auxiliary switch blocks is available for various applications. The contactors themselves do not have an integrated auxiliary conducting path.

The auxiliary switch variants are identical for all size S0 to S3 contactors.

One 4-pole or up to four single-pole auxiliary switch blocks (screw or Cage Clamp terminals) can be snapped on to the front of the contactors. When the contactors are energized, the NC contacts are first opened and then the NO contacts are closed.

The terminal designations of the single-pole auxiliary switch blocks consist of digits (location number) on the basic unit and function digits on the auxiliary switch blocks.

In addition, 2-pole auxiliary switch blocks (screw terminals) for cable entry from above or below with four-connector block type of construction are available (feeder auxiliary switch).

If the available installation depth is limited, 2-pole auxiliary switch blocks (screw or Cage Clamp terminals) can be fitted laterally on the right or left.

The auxiliary switch blocks designed for mounting on the front can be removed with the help of the release lever in the center; the laterally mounted auxiliary switch blocks can be removed easily by applying pressure to the chequered grips.

The terminal designations of the individual auxiliary switch blocks comply with EN 50005 or EN 50012; while those of the complete contactors with auxiliary switch block (2 NO + 2 NC) comply with EN 50012.

The laterally mountable auxiliary switch blocks to EN 50012 can only be used if no 4-pole auxiliary switch blocks have been snapped on to the front. If single-pole auxiliary switch blocks are used in addition, the location numbers on the contactor must be observed.

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Two enclosed and two standard contact elements are available for the solid-state compatible auxiliary switch block 3RH19 21-.FE22 mountable on the front. The laterally mountable 3RH19 21-2DE11 solid-state compatible auxiliary switch block comprises two enclosed contact elements (1 NO + 1 NC). The enclosed contact elements are especially suited for switching low voltages and currents (hard gold-plated contacts) as well as for use in dusty environments. The contact elements are positively-driven.

Sizes S0 and S2

Up to 4 auxiliary contacts can be fitted; whereby any design of the auxiliary switch blocks is permitted. If two 2-pole laterally mounted auxiliary switch blocks are used, one block must be fitted to the right and one block to the left for symmetry reasons.

Under certain circumstances, more auxiliary contacts are allowed for size S2 (please ask for details).

For 4-pole contactors, see 3RT13 and 3RT15.

Sizes S3 to S12

Up to 8 auxiliary contacts can be fitted, please note the following:

- Of the 8 auxiliary contacts, maximum four can be NC contacts.
- Laterally mounted auxiliary switch blocks must be mounted symmetrically.

For 4-pole contactors, see 3RT13 and 3RT15.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Technical specifications

The SIRIUS switching devices are climate-proof and are suitable for use worldwide.

If the devices are used in environmental conditions which deviate from common industrial conditions (EN 60721-3-3 Stationary use, weather protected"), the manufacturer must be consulted about possible restrictions with regard to the reliability and service life of the device and possible protective measures.

Contactor	Type Size			**3RT1 S00 to S12**
Rated data of the auxiliary contacts				
According to IEC 60947-5-1/EN 60947-5-1 (VDE 0660 Part 200) The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S12				
Rated insulation voltage U_i (pollution degree 3) for laterally mountable auxiliary switch blocks 3RH19 21-.EA.. and 3RH19 21-.KA..			V V	690 max. 500
Conventional thermal current I_{th} = Rated operating current I_e/AC-12			A	10
AC load				
Rated operating current I_e/AC-15/AC-14				
At rated operating 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		3
	400 V	A		3
	500 V	A		2
	660 V[2]	A		1
	690 V[2]	A		1
DC load				
Rated operating current I_e/DC-12				
At rated operating voltage U_e	24 V	A		10
	60 V	A		6
	110 V	A		3
	125 V	A		2
	220 V	A		1
	440 V	A		0.3
	600 V[2]	A		0.15
Rated operating current I_e/DC-13				
At rated operating voltage U_e	24 V	A		10[1]
	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[2]	A		0.1
Contact reliability at 17 V, 1 mA acc. to EN 60947-5-4				Frequency of contact faults < 10^{-8} i.e. < 1 fault per 100 million operating cycles

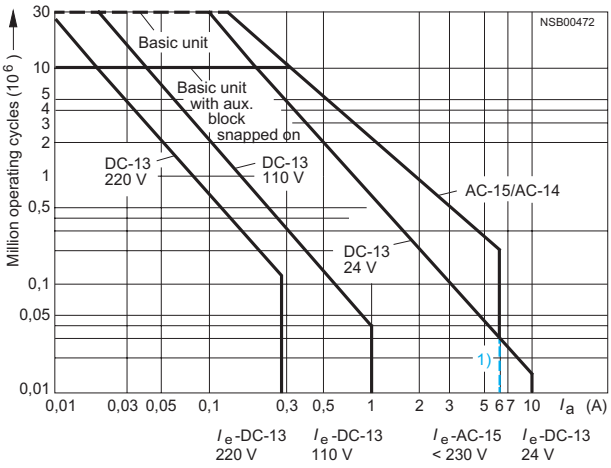
Endurance of the auxiliary contacts

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 for 3RT10
- 3RH19 11, 3RH19 21 auxiliary switch blocks for contactor sizes S00 to S12.



Legend:

I_a = Breaking current
I_e = Rated operating current

1) Attachable auxiliary switch blocks for size S00 and laterally mountable auxiliary switch blocks for S0 to S12: 6 A.

2) Up to 500 V switching capacity for laterally mountable auxiliary switch blocks.

Endurance of the main contacts

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

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

If the contacts are used for **mixed operation** i.e. if normal switching (breaking the rated operating current in accordance with utilization category AC-3) in combination with intermittent inching (breaking several times the rated operating current in accordance with 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 formula:

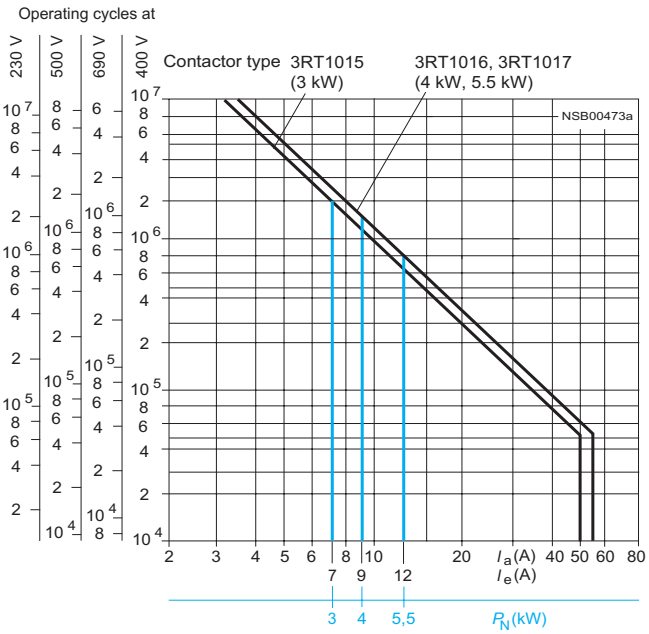
X Contact endurance for mixed operation in operating cycles

A Contact endurance for normal operation ($I_a = I_e$) in operating cycles

B Contact endurance for inching (I_a = multiple of I_e) in operating cycles

C Inching operations as a percentage of total switching operations

Size S00



Size S0

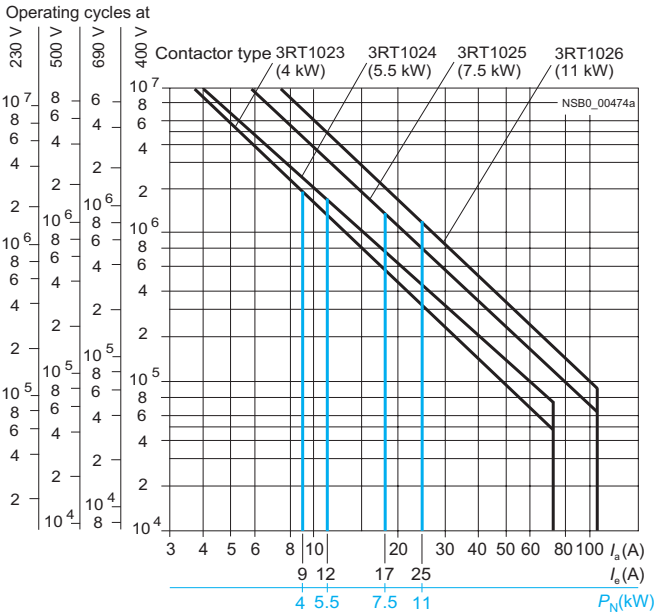


Diagram legend:

P_N= Rated output power of squirrel-cage motors at 400 V

I_a= Breaking current

I_e= Rated operating current

2

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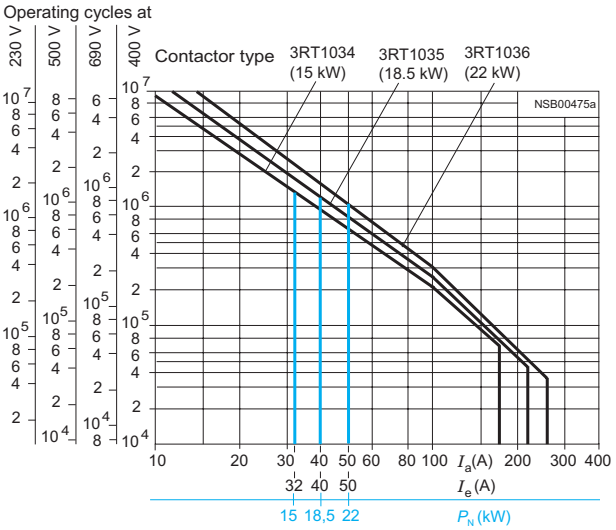
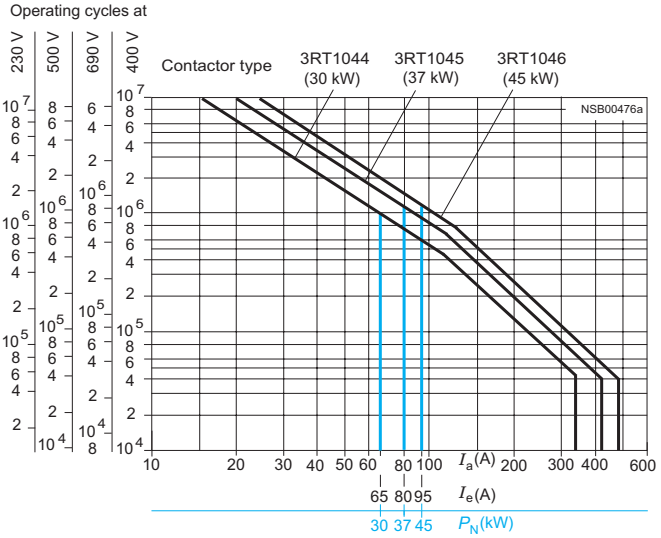
Endurance of the main contacts

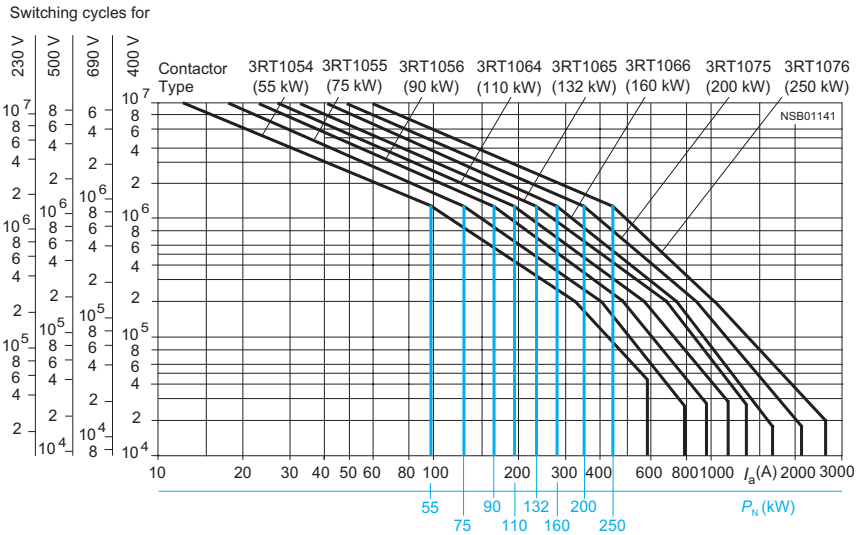
Size S2



Size S3



Sizes S6 to S12



3RT12 vacuum contactors of sizes S10 and S12

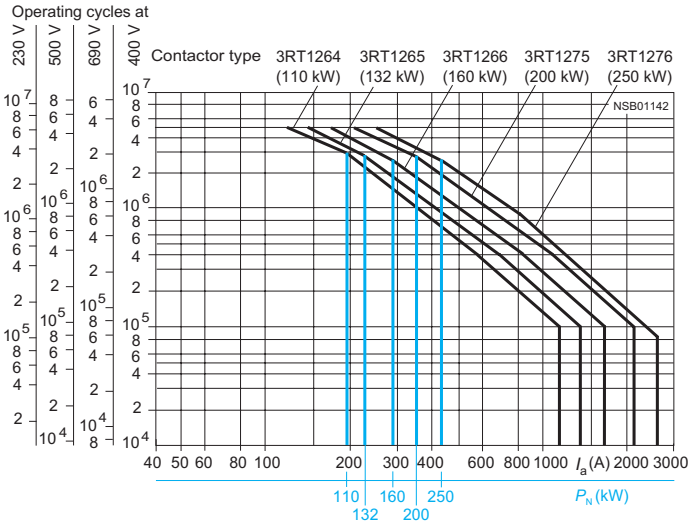
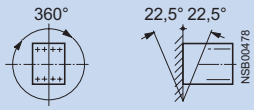


Diagram legend:
P_N= Rated output for squirrel-cage motors at 400 V
I_a= Breaking current
I_e= Rated operating current

Contactor	Type Size		**3RT10 1.** **S00**
General data			
Permissible mounting position The contactors have been designed for operation on a vertical mounting surface.	AC and DC operation		
Upright mounting position:	AC operation		 Special design required. The 13th to 16th position of the Order No. must be replaced with **-1AA0** .
	DC operation		Standard design
Mechanical endurance	Basic unit Basic unit with snap-on auxiliary switch block Solid-state compatible auxiliary switch block	Operating cycles	30 million 10 million 5 million
Electrical endurance			1)
Rated insulation voltage U_i (pollution degree 3)		V	690
Rated impulse withstand voltage U_{imp}		kV	6
Safe isolation between coil and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	400
Positively-driven/mirror contacts			
• Positively-driven operation applies if the NC and NO contact cannot be closed at the same time.	3RT10 1., 3RT13 1. (removable auxiliary switch block)		Yes. This applies to both the basic unit and the auxiliary switch block as well as to the basic unit and the snap-on auxiliary switch block in accordance with ZH 1/457, IEC 60947-4-1, Appendix F
	3RT10 1., 3RT13 1. (permanent aux. switch block)		Yes. This applies to both the basic unit and the auxiliary switch block as well as to the basic unit and the snap-on auxiliary switch block in accordance with ZH 1/457, IEC 60947-4-1, Appendix F, SUVA
• No positively-driven operation for the auxiliary switch blocks	3RH19 11-.NF.. solid-state compatible		
Permissible ambient temperature	during operation during storage	°C °C	-25 ... +60 -55 ... +80
Degree of protection to IEC 60947-1 and IEC 60529			IP20, coil assembly IP40
Shock resistance			
Rectangular pulse	AC operation DC operation	g/ms g/ms	7/5 and 4.2/10 7/5 and 4.2/10
Sine pulse	AC operation DC operation	g/ms g/ms	9.8/5 and 5.9/10 9.8/5 and 5.9/10
Conductor cross-sections			2)
Short-circuit protection of contactors without overload relays			
			Short-circuit protection of contactors with overload relay, see Protection devices: Overload relay -> SIRIUS overload relay. Short-circuit protection of fuseless load feeders, see Load feeders -> Fuseless load feeders.
Main circuit			
• Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE			
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free3)	A A A	35 20 10
• Miniature circuit-breakers (up to 230 V) with C characteristic short-circuit current kA, type of coordination "1"		A	10
Auxiliary circuit			
• Fuse-links gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq 1$ kA)		A	10
• Miniature circuit-breakers (up to 230 V) with C characteristic Short-circuit current $I_k < 400$ A		A	6

1) See Page 2/15.

2) See Page 2/20.

3) Standard conditions for testing in accordance with IEC 60947-4-1.

2

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Contactor	Type Size			3RT10 1. S00
Control circuit				
Coil operating range				
• AC operation		50 Hz 60 Hz		0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
• DC operation		up to 50 °C up to 60 °C		0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
Power consumption of the magnetic coils (when coil is cold and 1.0 x U_s)				
AC operation, 50/60 Hz, standard design	• Closing • p.f. • Closed • p.f.		VA VA 	27/24.3 0.8/0.75 4.4/3.4 0.27/0.27
AC operation, 50 Hz, USA/Canada	• Closing • p.f. for closing • Closed • p.f. for closed		VA VA 	26.4 0.81 4.7 0.26
AC operation, 60 Hz, USA/Canada	• Closing • p.f. for closing • Closed • p.f. for closed		VA VA 	31.7 0.77 5.1 0.27
DC operation	Closing = closed		W	3.3
Permissible residual current of the electronics (with 0 signal)				
	• AC operation			< 3 mA x (230 V/U_s). For higher residual currents, the additional load module 3RT19 16-1GA00 is recommended
	• DC operation			< 10 mA x (24 V/U_s)
Operating times[1] Total break time = Opening delay + Arcing time				
• AC operation for 0.8 to 1.1 x U_s	Closing delay Opening delay		ms ms	8 ... 35 4 ... 30
• AC operation for 0.85 ... 1.1 x U_s	Closing delay Opening delay		ms ms	25 ... 100 7 ... 10
• Arcing time			ms	10 ... 15
Operating times for 1.0 x U_s[1]				
• AC operation	Closing delay Opening delay		ms ms	10 ... 25 5 ... 30
• DC operation	Closing delay Opening delay		ms ms	30 ... 50 7 ... 9

1) The opening delays of the NO contact and the closing delays of the NC contact are increased if the contactor coils are protected against voltage peaks (interference suppression diode 6 to 10 times; diode assembly 2 to 6 times; Varistor +2 to 5 ms).

Contactor	Type Size			3RT10 15 S00	3RT10 16 S00	3RT10 17 S00
Main circuit						
Load rating with AC						
Utilization category AC-1, switching resistive loads						
Rated operating current I_e	at 40 °C up to 690 V at 60 °C up to 690 V		A A	18 16	22 20	22 20
Rated output power of AC loads [1] p.f. = 0.95 (for 60 °C)	230 V 400 V 500 V 690 V		kW kW kW kW	6.3 11 13.8 19	7.5 13 17 22	7.5 13 17 22
Minimum conductor cross-section for load of I_e	for 40 °C for 60 °C		mm^2 mm^2	2.5 2.5	2.5 2.5	2.5 2.5
Utilization categories AC-2 and AC-3						
Rated operating currents I_e	up to 400 V 500 V 690 V		A A A	7 5 4	9 6.5 5.2	12 9 6.3
Rated output power of slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V 400 V 500 V 690 V		kW kW kW kW	2.2 3 3.5 4	3 4 4.5 5.5	3 5.5 5.5 5.5
Thermal load capacity	10 s current[2]		A	56	72	96
Power loss per conducting path	at I_e/AC-3		W	0.42	0.7	1.24

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

2) In accordance with IEC 60947-4-1.
For rated values for various start-up conditions, see Protection devices: Overload relays -> SIRIUS overload relays.

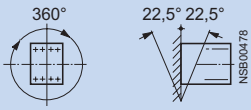
Contactor Type Size			3RT10 15 S00	3RT10 16 S00	3RT10 17 S00
Main circuit					
Load rating with AC					
Utilization category AC-4 (for I_a = 6 x I_e)[1]					
Rated operating current I_e	up to 400 V	A	6.5	8.5	8.5
Rated output power of squirrel-cage motors at 50 and 60 Hz	for 400 V	kW	3	4	4
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	up to 400 V	A	2.6	4.1	4.1
	690 V	A	1.8	3.3	3.3
- Rated output power of squirrel-cage motors at 50 Hz and 60 Hz	at 230 V	kW	0.67	1.1	1.1
	400 V	kW	1.15	2	2
	500 V	kW	1.45	2	2
	690 V	kW	1.15	2.5	2.5
Utilization category AC-5a, switching gas discharge lamps, inductive ballast Per main conducting path at 230 V					
• Uncorrected, rated output power per lamp/ rated operating current per lamp					
	L 18 W/0.37 A	units	30	43	43
	L 36 W/0.43 A	units	26	37	37
	L 58 W/0.67 A	units	16	23	23
• Lead-lag circuit, rated output power per lamp/ rated operating current per lamp					
	L 18 W/0.11 A	units	100	144	144
	L 36 W/0.21 A	units	54	76	76
	L 58 W/0.32 A	units	35	50	50
Switching gas discharge lamps with correction Per main conducting path at 230 V					
Shunt compensation, with inductive ballast rated output power per lamp/ capacitance/rated operating current per lamp					
	L 18 W/4.5 µF/0.11 A	units	16	22	22
	L 36 W/4.5 µF/0.21 A	units	16	22	22
	L 58 W/7 µF/0.32 A	units	10	14	14
• With solid-state ballast (single lamp)					
	L 18 W/6.8 µF/0.10 A	units	44	63	63
	L 36 W/6.8 µF/0.18 A	units	25	35	35
	L 58 W/10 µF/0.27 A	units	16	23	23
• With solid-state ballast (two lamps)					
	L 18 W/10 µF/0.18 A	units	25	35	35
	L 36 W/10 µF/0.35 A	units	13	18	18
	L 58 W/22 µF/0.52 A	units	8	12	12
Utilization category AC-5b, switching incandescent lamps per main conducting path at 230/220 V		kW	1.2	1.6	1.6
Utilization category AC-6a, switching AC transformers					
Rated operating current I_e					
• For inrush current n = 20	up to 400 V	A	3.6	5.1	7.2
• For inrush current n = 30	up to 400 V	A	2.4	3.3	5.1
Rated output power P					
• For inrush current n = 20	for 230 V	kVA	1.4	2	2.9
	400 V	kVA	2.5	3.5	5
	500 V	kVA	3.3	4.6	6.2
	690 V	kVA	4.3	6	8.6
• For inrush current n = 30	for 230 V	kVA	1	1.3	2
	400 V	kVA	1.6	2.3	3.5
	500 V	kVA	2.2	3.1	4.6
	690 V	kVA	2.9	4	6
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n30} \cdot 30/x$					

1) The data only apply to 3RT15 16 and 3RT15 17 (2 NO + 2 NC) up to a rated operating voltage of 400 V

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size			3RT10 15 S00	3RT10 16 S00	3RT10 17 S00
Main circuit						
Load rating with DC						
Utilization category DC-1 **Switching resistive loads (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		15	20	
	60 V	A		15	20	
	110 V	A		1.5	2.1	
	220 V	A		0.6	0.8	
	440 V	A		0.42	0.6	
	600 V	A		0.42	0.6	
• 2 series-connected conducting paths	up to 24 V	A		15	20	
	60 V	A		15	20	
	110 V	A		8.4	12	
	220 V	A		1.2	1.6	
	440 V	A		1.6	0.8	
	600 V	A		0.5	0.7	
• 3 series-connected conducting paths	up to 24 V	A		15	20	
	60 V	A		15	20	
	110 V	A		15	20	
	220 V	A		15	20	
	440 V	A		0.9	1.3	
	600 V	A		0.7	1	
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		15	20	
	60 V	A		0.35	0.5	
	110 V	A		0.1	0.15	
	220 V	A		-	-	
	440 V	A		-	-	
	600 V	A		-	-	
• 2 series-connected conducting paths	up to 24 V	A		15	20	
	60 V	A		3.5	5	
	110 V	A		0.25	0.35	
	220 V	A		-	-	
	440 V	A		-	-	
	600 V	A		-	-	
• 3 series-connected conducting paths	up to 24 V	A		15	20	
	60 V	A		15	20	
	110 V	A		15	20	
	220 V	A		1.2	1.5	
	440 V	A		0.14	0.2	
	600 V	A		0.14	0.2	
Operating frequency						
Operating frequency *z* in operating cycles/hour						
• Contactors without overload relay	No-load operating frequency AC		h^{-1}	10000		
	No-load operating frequency DC		h^{-1}	10000		
Dependence of the operating frequency z′ on the operating current *I*′ and operating voltage *U*′: $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5}$ 1/h		AC-1 (AC/DC)	h^{-1}	1000		
		AC-2 (AC/DC)	h^{-1}	750		
		AC-3 (AC/DC)	h^{-1}	750		
		AC-4 (AC/DC)	h^{-1}	250		
• Contactors with overload relay (mean value)			h^{-1}	15		
Conductor cross-sections						
Screw terminals (1 or 2 conductors connectable) For standard screw driver size 2 and Pozidriv 2	**Main and auxiliary conductors:**					
	• Solid		mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (1 ... 4)		
	• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)		
	• AWG conductor connections, solid or stranded		AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12		
	• Terminal screw			M 3		
	- Tightening torque		Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)		
Cage Clamp terminals (1 or 2 conductors connectable)	**Main and auxiliary conductors; Coil connections:**					
	• Solid		mm^2	2 x (0.25 ... 2.5)		
	• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)		
	• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)		
	• AWG conductor connections, solid or stranded		AWG	2 x (24 ... 14)		

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.
Max. outer diameter of the conductor insulation: 3.6 mm
For conductor cross-sections ≤ 1 mm^2, an "insulation stop" must be used, see Accessories, Page 2/191.

Contactor	Type Size		3RT10 23 S0	3RT10 24 S0	3RT10 25 S0	3RT10 26 S0
General data						
Permissible mounting position The contactors have been designed for operation on a vertical mounting surface.	AC and DC operation					
Upright mounting position:	AC operation		 Standard design			
	DC operation		Special design required, also applies to coupling relays 3RT10 2.-.K.40. The 13th to 16th position of the Order No. must be replaced with **-1AA0** . For 3RT10 2.-3K.44-0LA0 contactors with an extended coil operating range, the 13th to 16th position of the Order No. must be changed to **-1LA0**.			
Mechanical endurance	Basic unit Basic unit with snap-on auxiliary switch block Solid-state compatible auxiliary switch block	Operating cycles	10 million 10 million 5 million			
Electrical endurance			1)			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Rated impulse withstand voltage U_{imp}		kV	6			
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	400			
Positively-driven/mirror contacts						
• Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.	3RT10 2., 3RT13 2. (removable auxiliary switch block)		Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F			
• Positively-driven operation for solid-state compatible auxiliary switch blocks in accordance with SUVA requirements on request.	3RT10 2., 3RT13 2. (permanent auxiliary switch block)		Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F, SUVA			
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60 -55 ... +80			
Degree of protection to IEC 60947-1/IEC 60529			IP20, coil assembly IP20			
Shock resistance						
Rectangular pulse	AC operation DC operation	g/ms g/ms	8.2/5 and 4.9/10 10/5 and 7.5/10			
Sine pulse	AC operation DC operation	g/ms g/ms	12.5/5 and 7.8/10 15/5 and 10/10			
Conductor cross-sections			2)			
Short-circuit protection of contactors without overload relay						
			Short-circuit protection of contactors with overload relay, see Protection devices: Overload relay -> SIRIUS overload relay. Short-circuit protection of fuseless load feeders, see Load feeders -> Fuseless load feeders.			
Main circuit						
• Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE - to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 3)	A A A	63 25 10			100 35 16
• Miniature circuit-breakers with C characteristic (short-circuit current 3 kA, type of coordination "1")		A	25			32
Auxiliary circuit						
• Fuse-links gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq 1$ kA)		A	10			
• Miniature circuit-breakers with C characteristic (short-circuit current $I_k < 400$ A)		A	10			

1) See Page 2/15.

2) See Page 2/24.

3) Standard conditions for testing in accordance with IEC 60947-4-1.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		3RT10 23 S0	3RT10 24 S0	3RT10 25 S0	3RT10 26 S0
Control circuit						
Coil operating range	AC/DC		0.8 ... 1.1 x U_s			
Power consumption of the magnetic coils (when coil is cold and 1.0 x U_s)						
AC operation, 50 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	61 0.82 7.8 0.24			
AC operation, 50/60 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	64 / 63 0.72 / 0.74 8.4/ 6.8 0.24 / 0.28			
AC operation, 50 Hz, USA/Canada	• Closing • p.f. • Closed • p.f	VA VA 	61 0.82 7.8 0.24			
AC operation, 60 Hz, USA/Canada	• Closing • p.f. • Closed • p.f	VA VA 	69 0.76 7.5 0.28			
DC operation	Closing = closed	W	5.4			
Permissible residual current of the electronics (for 0 signal)						
	• AC operation • DC operation	mA mA	< 6 mA x (230 V/U_s) < 16 mA x (24 V/U_s)			
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time						
• AC operation	Closing delay Opening delay	ms ms	8 ... 44 4 ... 20			
• DC operation	Closing delay Opening delay	ms ms	50 ... 170 13.5 ... 15.5			
• Arcing time		ms	10			
Operating times for 1.0 x U_s [1]						
AC operation	Closing delay Opening delay	ms ms	10 ... 17 4 ... 20			
DC operation	Closing delay Opening delay	ms ms	55 ... 85 14 ... 15.5			
Main circuit						
Load rating with AC						
Utilization category AC-1, switching resistive loads						
Rated operating current I_e	for 40 °C up to 690 V for 60 °C up to 690 V	A A	40 35			
Rating of AC loads [2] p.f = 0.95 (for 60 °C)	230 V 400 V 500 V 690 V	kW kW kW kW	13.3 23 29 40			
Minimum conductor cross-section for loads with I_e	for 40 °C for 60 °C	mm² mm²	10 10			
Utilization category AC-2 and AC-3						
Rated operating current I_e	up to 400 V 500 V 690 V	A A A	9 6.5 5.2	12 12 9	17 17 13	25 18 13
Rating for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 110 V 230 V 400 V 500 V 660/690 V	kW kW kW kW kW	1.1 3 4 4.5 5.5	1.5 3 5.5 7.5 7.5	2.2 4 7.5 10 11	3 5.5 11 11 11
Thermal loading rating	10 s current[3]	A	80	110	150	200
Power loss for each conducting path	for I_e/AC-3	W	0.4	0.5	0.9	1.6

1) The opening delays of the NO contact and the closing delays of the NC contact are increased if the contactor coils are damped against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

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

3) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

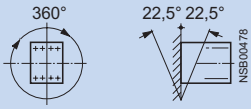
Contactor / Type / Size				3RT10 23 S0	3RT10 24 S0	3RT10 25 S0	3RT10 26 S0
Main circuit							
Load rating with AC							
Utilization category AC-4 (for I_a = 6 x I_e)							
Rated operating current I_e	up to 400 V		A	8.5	12.5	15.5	15.5
Rated output power for squirrel-cage motors at 50 and 60 Hz	for 400 V		kW	4	5.5	7.5	7.5
• The following applies to contact endurances of about 200,000 operating cycles:							
- Rated operating currents I_e	up to 400 V		A	4.1	5.5	7.7	9
	690 V		A	3.3	5.5	7.7	9
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 110 V		kW	0.5	0.73	1	1.2
	230 V		kW	1.1	1.5	2	2.5
	400 V		kW	2	2.6	3.5	4.4
	500 V		kW	2	3.3	4.6	5.6
	690 V		kW	2.5	4.6	6	7.7
Utilization category AC-5a, switching of gas discharge lamps, inductive ballast per main conducting path up to 230 V[1]							
• Uncorrected, rated output power per lamp/ rated operating current per lamp							
	L 18 W/0.37 A		units	95			
	L 36 W/0.43 A		units	81			
	L 58 W/0.67 A		units	52			
• Lead-lag circuit, rated output power per lamp/ rated operating current per lamp							
	L 18 W/0.11 A		units	318			
	L 36 W/0.21 A		units	166			
	L 58 W/0.32 A		units	109			
Switching of gas discharge lamps with compensation per main conducting path at 230 V							
• Shunt compensation, with inductive ballast Rated output power per lamp/capacitor/rated operating current per lamp							
	L 18 W/4.5 µF/0.11 A		units	37			61
	L 36 W/4.5 µF/0.21 A		units	37			61
	L 58 W/7 µF/0.32 A		units	23			39
• With solid-state ballast (single lamp)							
	L 18 W/6.8 µF/0.10 A		units	105			175
	L 36 W/6.8 µF/0.18 A		units	58			97
	L 58 W/10 µF/0.27 A		units	38			64
• With solid-state ballast (two lamps)							
	L 18 W/10 µF/0.18 A		units	58			97
	L 36 W/10 µF/0.35 A		units	30			50
	L 58 W/22 µF/0.52 A		units	20			33
Utilization category AC-5b, switching of incandescent lamps Per main conducting path at 230/220 V			kW	3			4
Utilization category AC-6a, switching of AC transformers							
Rated operating current I_e							
• For inrush current = 20	up to 400 V		A	11.4			20.2
• For inrush current = 30	up to 400 V		A	7.6			13.5
Rated output power P							
• For inrush current = 20	for 230 V		kVA	4.5			8
	400 V		kVA	7.9			13.9
	500 V		kVA	9.9			15.5
	690 V		kVA	13.6			15.5
• For inrush current = 30	for 230 V		kVA	3			5.4
	400 V		kVA	5.2			9.3
	500 V		kVA	6.6			11.7
	690 V		kVA	9.1			15.5
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n30} \cdot 30/x$							
Utilization category AC-6b, switching low-inductance (low-loss, metallized dielectric) AC capacitors							
Rated operating currents I_e	up to 400 V		A	5.8			10.8
Rated output power of single capacitors or banks of capacitors (minimum inductance of 6 µH between capacitators connected in parallel) at 50 Hz, 60 Hz and	for 230 V		kvar	2.5			4
	400 V		kvar	4			7.5
	500 V		kvar	4			7.5
	690 V		kvar	4			7.5

1) For I_e/AC-1 = 35 A (60 °C) and the corresponding minimum conductor cross-section 10 mm^2.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size			3RT10 23 S0	3RT10 24 S0	3RT10 25 S0	3RT10 26 S0
Main circuit							
Load rating with DC							
Utilization category DC-1 **Switching of resistive load (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)							
• 1 conducting path	up to 24 V	A		35			
	60 V	A		20			
	110 V	A		4.5			
	220 V	A		1			
	440 V	A		0.4			
	600 V	A		0.25			
• 2 series-connected conducting paths	up to 24 V	A		35			
	60 V	A		35			
	110 V	A		35			
	220 V	A		5			
	440 V	A		1			
	600 V	A		0.8			
• 3 series-connected conducting paths	up to 24 V	A		35			
	60 V	A		35			
	110 V	A		35			
	220 V	A		35			
	440 V	A		2.9			
	600 V	A		1.4			
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)							
• 1 conducting path	up to 24 V	A		20			
	60 V	A		5			
	110 V	A		2.5			
	220 V	A		1			
	440 V	A		0.09			
	600 V	A		0.06			
• 2 series-connected conducting paths	up to 24 V	A		35			
	60 V	A		35			
	110 V	A		15			
	220 V	A		3			
	440 V	A		0.27			
	600 V	A		0.16			
• 3 series-connected conducting paths	up to 24 V	A		35			
	60 V	A		35			
	110 V	A		35			
	220 V	A		10			
	440 V	A		0.6			
	600 V	A		0.6			
Operating frequency							
Operating frequency *z* in operating cycles/hour							
• Contactors without overload relay	No-load operating frequency AC		h^{-1}	5000			
	No-load operating frequency DC		h^{-1}	1500			
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5}$ 1/h		AC-1 (AC/DC)	h^{-1}	1000			
		AC-2 (AC/DC)	h^{-1}	1000			750
		AC-3 (AC/DC)	h^{-1}	1000			750
		AC-4 (AC/DC)	h^{-1}	300			250
• Contactors with overload relay (mean value)			h^{-1}	15			
Conductor cross-sections							
Screw terminals (1 or 2 conductors connectable)	**Main conductors**						
	• Conductor cross-section						
	• Solid		mm^2	2 x (1 ... 2.5) 2 x (2.5 ... 6) to IEC 60947; max. 1 x 10			
	• Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5) 2 x (2.5 ... 6)			
	• AWG conductor con., solid		AWG	2 x (16 ... 12)			
	• AWG conductor connections, solid or stranded		AWG	2 x (14 ... 10)			
	• AWG conductor con., stranded		AWG	1 x 8			
	• Terminal screws			M 4 (Pozidriv, size 2)			
	- Tightening torque		Nm	2 ... 2.5 (18 ... 22 lb.in)			
	Auxiliary conductors						
	• Conductor cross-section						
	• Solid		mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)			
	• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)			
	• AWG conductor connections, solid or stranded		AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12			
	• Terminal screws			M 3			
	- Tightening torque		Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)			
Cage Clamp terminals (1 or 2 conductors connectable)	**Auxiliary conductors**						
	• Solid		mm^2	2 x (0.25 ... 2.5)			
	• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)			
	• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)			
	• AWG conductor connections, solid or stranded		AWG	2 x (24 ... 14)			

Contactor	Type Size		3RT10 34 S2	3RT10 35 S2	3RT10 36 S2
General data					
Permissible mounting position The contactors have been designed for operation on a vertical mounting surface.	AC and DC operation		 For DC operation and 22.5 ° inclination toward the front: coil operating range 0.85 ... 1.1 x U_s		
Upright mounting position:	AC operation		 Special design required. The 13th to 16th position of the Order No. must be replaced with **-1AA0** .		
	DC operation		-		
Mechanical endurance	Basic units Basic unit with snap-on auxiliary switch block Solid-state compatible auxiliary switch block	Oper-ating cycles	10 million 10 million 5 million		
Electrical endurance			1)		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	400		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.	3RT10 3., 3RT13 3. (removable auxiliary switch block) 3RT10 3., 3RT13 3. (permanent auxiliary switch block)		Yes, between main contacts and auxiliary NC contacts as well as within auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F to SUVA requirements on request		
Permissible ambient temperature	For operation For storage	°C °C	-25 ... + 60 -55 ... + 80		
Degree of protection to IEC 60947-1/IEC 60529			IP20 (terminal enclosure IP00), coil assembly IP40		
Shock resistance					
Rectangular pulse Sine pulse	AC and DC operation AC and DC operation	g/ms g/ms	10/5 and 5/10 15/5 and 8/10		
Conductor cross-sections			2)		
Short-circuit protection of contactors without overload relay					
			Short-circuit protection of contactors with overload relay, see Protection devices: Overload relay -> SIRIUS overload relay. Short-circuit protection of fuseless load feeders, see Load feeders -> Fuseless load feeders.		
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE					
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 3)	A A A	125 63 16	125 63 16	160 80 50
Auxiliary circuit					
• Fuse-links gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq$ 1kA)		A	10		
• Miniature circuit-breakers with C characteristic (short-circuit current $I_k \leq$ 400 A)		A	10		

1) See Page 2/16.

2) See Page 2/29.

3) Standard conditions for testing in accordance with IEC 60947-4-1.

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		3RT10 34 S2	3RT10 35 S2	3RT10 36 S2
Control circuit					
Coil operating range	AC/DC		0.8 ... 1.1 x U_s		
Power consumption of the magnetic coils (when coil is cold and 1.0 x U_s)					
AC operation, 50 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	104 0.78 9.7 0.42	145 0.79 12.5 0.36	
AC operation, 50/60 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	127 / 113 0.73/0.69 11.3/9.5 0.41/0.42	170 / 155 0.76/0.72 15/11.8 0.35/0.38	
AC operation, 50 Hz, USA/Canada	• Closing • p.f. • Closed • p.f.	VA VA 	108 0.76 9.6 0.42	150 0.77 12.5 0.35	
AC operation, 60 Hz, USA/Canada	• Closing • p.f. • Closed • p.f.	VA VA 	120 0.7 10.1 0.42	166 0.71 12.6 0.37	
DC operation	Closing = closed	W	13.3	13.3	
Permissible residual current of the electronics (for 0 signal)	• AC operation • DC operation		< 12 mA x (230 V/U_s) < 38 mA x (24 V/U_s)	< 18 mA x (230 V/U_s) < 38 mA x (24 V/U_s)	
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time					
• AC operation	Closing delay Opening delay	ms ms	11 ... 30 7 ... 10	10 ... 24 7 ... 10	
• DC operation	Closing delay Opening delay	ms ms	50 ... 95 20 ... 30	60 ... 100 20 ... 25	
• Arcing time		ms	10	10	
Operating times for 1.0 x U_s [1]					
• AC operation	Closing delay Opening delay	ms ms	13 ... 22 7 ... 10	12 ... 20 7 ... 10	
• DC operation	Closing delay Opening delay	ms ms	60 ... 75 20 ... 30	70 ... 85 20 ... 25	
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating current I_e	for 40 °C up to 690 V for 60 °C up to 690 V	A A	50 45	60 55	60 55
Rating of AC loads [2] p.f. = 0.95 (for 60 °C)	230 V 400 V 500 V 690 V	kW kW kW kW	18 31 39 54	22 38 46 66	20 35 43 60
Minimum conductor cross-section for loads with I_e	for 40 °C for 60 °C	mm² mm²	16 10	16 16	16 10
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 400 V 500 V 690 V	A A A	32 32 20	40 40 24	50 50 24
Rating for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V 400 V 500 V 690 V	kW kW kW kW	7.5 15 18.5 18.5	11 18.5 22 22	15 22 30 22
Thermal load rating	10 s current[3]	A	320	400	400
Power loss for each conducting path	for I_e/AC-3	W	1.8	2.6	5

1) The opening delays of the NO contact and the closing delays of the NC contact are increased if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

2) Industrial furnaces and electric heaters with resistance heating, for example (increased power consumption on heating up has been taken into account)

3) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

Contactor / Type / Size				3RT10 34 S2	3RT10 35 S2	3RT10 36 S2
Main circuit						
Load rating with AC						
Utilization category AC-4 (for I_a = 6 x I_e)						
Rated operating current I_e		up to 400 V	A	29	35	41
Rated output power for squirrel-cage motors at 50 and 60 Hz		for 400 V	kW	15	18.5	22
• The following applies to contact endurances of about 200,000 operating cycles:						
- Rated operating currents I_e		up to 400 V	A	15.6	18.5	24
		690 V	A	15.6	18.5	24
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz		230 V	kW	4.7	5.4	7.3
		400 V	kW	8.2	9.5	12.6
		500 V	kW	9.8	11.8	15.8
		690 V	kW	13	15.5	21.8
Utilization category AC-5a, switching of gas discharge lamps, inductive ballast Per main conducting path at 230 V						
• Uncorrected, rated output power per lamp/ rated operating current per lamp						
		L 18 W/0.37 A	units	122	149	135
		L 36 W/0.43 A	units	105	128	116
		L 58 W/0.67 A	units	67	82	75
• Lead-lag circuit, rated output power per lamp/ rated operating current per lamp						
		L 18 W/0.11 A	units	409	500	454
		L 36 W/0.21 A	units	214	262	238
		L 58 W/0.32 A	units	141	172	156
Switching of gas discharge lamps with compensation Per main conducting path at 230 V						
• Shunt compensation, with inductive ballast Rated output power per lamp/capacitor/rated operating current per lamp						
		L 18 W/4.5 µF/0.11 A	units	78	98	123
		L 36 W/4.5 µF/0.21 A	units	78	98	123
		L 58 W/7 µF/0.32 A	units	50	63	79
• With solid-state ballast (single lamp)						
		L 18 W/6.8 µF/0.10 A	units	224	280	350
		L 36 W/6.8 µF/0.18 A	units	124	155	194
		L 58 W/10 µF/0.27 A	units	83	104	129
• With solid-state ballast (two lamps)						
		L 18 W/10 µF/0.18 A	units	124	155	194
		L 36 W/10 µF/0.35 A	units	64	80	100
		L 58 W/22 µF/0.52 A	units	43	54	67
Utilization category AC-5b, switching of incandescent lamps Per main conducting path at 230/220 V			kW	5.8	7.3	9.1
Utilization category AC-6a, switching of AC transformers						
Rated operating current I_e						
• For inrush current = 20	up to 400 V		A	31	36.5	43.2
• For inrush current = 30	up to 400 V		A	20.7	24.3	28.8
Rated output power P						
• For inrush current = 20		for 230 V	kVA	12.3	14.5	17.2
		400 V	kVA	21.5	25.3	29.9
		500 V	kVA	26.8	31.6	37.4
		690 V	kVA	23.9	28.7	28.7
• For inrush current = 30		for 230 V	kVA	8.2	9.7	11.5
		400 V	kVA	14.3	16.8	20
		500 V	kVA	17.9	21	24.9
		690 V	kVA	23.9	28.7	28.7
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n30} \cdot 30/x$						
Utilization category AC-6b, Switching of low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C						
Rated operating currents I_e		up to 400 V	A	29	36	36
Rated output power of single capacitors or banks of capacitors (minimum inductance between 20 µH capacitors connected in parallel) at 50 Hz, 60 Hz and		for 230 V	kvar	12	15	15
		400 V	kvar	20	25	25
		525 V	kvar	25	33	33
		690 V	kvar	20	25	25

SIRIUS contactors, 3-pole, 3 ... 250 kW

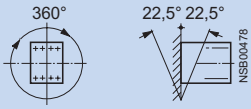
Contactor / Type / Size				3RT10 34 S2	3RT10 35 S2	3RT10 36 S2
Main circuit						
Load rating with DC						
Utilization category DC-1 **Switching of resistive load (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		45	55	50
	60 V	A		20	23	23
	110 V	A		4.5	4.5	4.5
	220 V	A		1	1	1
	440 V	A		0.4	0.4	0.4
	600 V	A		0.25	0.25	0.25
• 2 series-connected conducting paths	up to 24 V	A		45	55	50
	60 V	A		45	45	45
	110 V	A		45	45	45
	220 V	A		5	5	5
	440 V	A		1	1	1
	600 V	A		0.8	0.8	0.8
• 3 series-connected conducting paths	up to 24 V	A		45	55	50
	60 V	A		45	45	45
	110 V	A		45	45	45
	220 V	A		45	45	45
	440 V	A		2.9	2.9	2.9
	600 V	A		1.4	1.4	1.4
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		35	35	35
	60 V	A		6	6	6
	110 V	A		2.5	2.5	2.5
	220 V	A		1	1	1
	440 V	A		0.1	0.1	0.1
	600 V	A		0.06	0.06	0.06
• 2 series-connected conducting paths	up to 24 V	A		45	55	50
	60 V	A		45	45	45
	110 V	A		25	25	25
	220 V	A		5	5	5
	440 V	A		0.27	0.27	0.27
	600 V	A		0.16	0.16	0.16
• 3 series-connected conducting paths	up to 24 V	A		45	55	50
	60 V	A		45	55	50
	110 V	A		45	55	50
	220 V	A		25	25	25
	440 V	A		0.6	0.6	0.6
	600 V	A		0.35	0.35	0.35
Operating frequency						
Operating frequency *z* in operating cycles/hour						
• Contactors without overload relay	No-load operating frequency AC		h^{-1}	5000	5000	5000
	No-load operating frequency DC		h^{-1}	1500	1500	1500
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h		AC-1 (AC/DC)	h^{-1}	1200	1200	1000
		AC-2 (AC/DC)	h^{-1}	750	600	400
		AC-3 (AC/DC)	h^{-1}	1000	1000	800
		AC-4 (AC/DC)	h^{-1}	250	300	300
• Contactors with overload relay (mean value)			h^{-1}	15	15	15

Contactor	Type Size		**3RT10 3. S2**
Conductor cross-sections			
Screw terminals (1 or 2 conductors connectable)			
	Main conductors with box terminal		
Front terminal connected  NSB00479	• Finely stranded with end sleeve	mm²	0.75 ... 25
	• Finely stranded without end sleeve	mm²	0.75 ... 25
	• Stranded	mm²	0.75 ... 35
	• Solid	mm²	0.75 ... 16
	• Ribbon cable (number x width x circumference)	mm	6 x 9 x 0.8
	• AWG conductor connections, solid or stranded	AWG	18 ... 2
Back terminal connected  NSB00480	• Finely stranded with end sleeve	mm²	0.75 ... 25
	• Finely stranded without end sleeve	mm²	0.75 ... 25
	• Stranded	mm²	0.75 ... 35
	• Solid	mm²	0.75 ... 16
	• Ribbon cable (number x width x circumference)	mm	6 x 9 x 0.8
	• AWG conductor connections, solid or stranded	AWG	18 ... 2
Both terminals connected  NSB00481	• Finely stranded with end sleeve	mm²	max.. 2 x 16
	• Finely stranded without end sleeve	mm²	max.. 2 x 16
	• Stranded	mm²	max.. 2 x 25
	• Solid	mm²	max.. 2 x 16
	• Ribbon cable (number x width x circumference)	mm	2 x (6 x 9 x 0.8)
	• AWG conductor connections, solid or stranded	AWG	2 x (18 ... 2)
	• Terminal screws - Tightening torque	Nm	M 6 (Pozidriv, size 2) 3 ... 4.5 (27 ... 40 lb.in)
	Auxiliary conductors		
	• Solid	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12
	• Terminal screw - Tightening torque	Nm	M 3 0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminals (1 or 2 conductors connectable)	**Auxiliary conductors**		
	• Solid	mm²	2 x (0.25 ... 2.5)
	• Finely stranded with end sleeve	mm²	2 x (0.25 ... 1.5)
	• Finely stranded without end sleeve	mm²	2 x (0.25 ... 2.5)
	• AWG conductor connections, solid or stranded		2 x (24 ... 14)

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.
Max. outer diameter of the conductor insulation: 3.6 mm
For conductor cross-sections ≤ 1 mm², an "insulation stop" must be used, see Accessories, Page 2/191.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactors	Type Size		3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
General data					
Permissible mounting position The contactors have been designed for operation on a vertical mounting surface.	AC and DC operation		 For DC operation and 22.5 ° inclination toward the front. Coil operating range 0.85 ... 1.1 x U_s		
Upright mounting position:	AC operation		 Special design required. The 13th to 16th position of the Order No. must be replaced with **-1AA0**.		
	DC operation		-		
Mechanical endurance	Basic units Basic unit with snap-on auxiliary switch block Solid-state compatible auxiliary switch block	Oper-ating cycles	10 million 10 million 5 million		
Electrical endurance			1)		
Rated insulation voltage U_i (pollution degree 3)		V	1000		
Rated impulse withstand voltage U_{imp}		kV	6		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.	3RT10 4., 3RT13 4., 3RT14 4. (removable auxiliary switch block) 3RT10 4., 3RT13 4., 3RT14 4. (permanent auxiliary switch block)		Yes, between main contacts and auxiliary NC contacts as well as within auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F to SUVA requirements on request		
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60 -55 ... +80		
Degree of protection to IEC 60947-1/IEC 60529			IP20 (terminal enclosure IP00), coil assembly IP40		
Shock resistance					
Rectangular pulse Sine pulse	AC and DC operation AC and DC operation	g/ms g/ms	6.8/5 and 4/10 10.6/5 and 6.2/10		
Conductor cross-sections			2)		
Short-circuit protection of contactors without overload relay					
			Short-circuit protection of contactors with overload relay, see Protection devices: Overload relay -> SIRIUS overload relay. Short-circuit protection of fuseless load feeders, see Load feeders -> Fuseless load feeders.		
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 3)	A A A	250 125 63	250 160 100	
Auxiliary circuit					
• Fuse-links, gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq 1$ kA)		A	10		
• Miniature circuit-breakers with C characteristic (short-circuit current $I_k < 400$ A)		A	10		

1) See Page 2/16.

2) See Page 2/34.

3) Standard conditions for testing in accordance with IEC 60947-4-1.

Contactor	Type Size		3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
Control circuit					
Coil operating range	AC/DC		0.8 ... 1.1 x U_s		
Power consumption of the magnetic coils (when coil is cold and 1.0 x U_s)					
AC operation, 50 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	218 0.61 21 0.26	270 0.68 22 0.27	
AC operation, 50/60 Hz, standard design	• Closing • p.f. • Closed • p.f.	VA VA 	247 / 211 0.62/0.57 25/18 0.27/0.3	298 / 274 0.7/0.62 27/20 0.29/0.31	
AC operation, 50 Hz, USA/Canada	• Closing • p.f. • Closed • p.f.	VA VA 	218 0.61 21 0.26	270 0.68 22 0.27	
AC operation, 60 Hz, USA/Canada	• Closing • p.f. • Closed • p.f.	VA VA 	232 0.55 20 0.28	300 0.52 21 0.29	
DC operation	Closing = closed	W	15	15	
Permissible residual current of the electronics (for 0 signal)					
	• AC operation • DC operation	mA mA	< 25 mA x (230 V/U_s) < 43 mA x (24 V/U_s)		
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time					
• AC operation	Closing delay Opening delay	ms ms	16 ... 57 10 ... 19	17 ... 90 10 ... 25	
• DC operation	Closing delay Opening delay	ms ms	90 ... 230 14 ... 20	90 ... 230 14 ... 20	
• Arcing time		ms	10 ... 15	10 ... 15	
Operating times for 1.0 x U_s [1]					
• AC operation	Closing delay Opening delay	ms ms	18 ... 34 11 ... 18	18 ... 30 11 ... 23	
• DC operation	Closing delay Opening delay	ms ms	100 ... 120 16 ... 20	100 ... 120 16 ... 20	
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating currents I_e	for 40 °C up to 690 V 1000 V for 60 °C up to 690 V 1000 V	A A A A	100 50 90 40	120 60 100 50	120 70 100 60
Rating of AC loads [2] p.f. = 0.95 (for 60 °C)	for 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW kW	34 59 74 102 66	38 66 82 114 82	38 66 82 114 98
Minimum conductor cross-section for loads with I_e	for 40 °C for 60 °C	mm² mm²	35 35	50 35	50 35
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 400 V 500 V 690 V 1000 V	A A A A	65 65 47 25	80 80 58 30	95 95 58 30
Rating for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V 400 V 500 V 690 V 1000 V	kW kW kW kW kW	18.5 30 37 55 30	22 37 45 55 37	22 45 55 55 37
Thermal load rating	10 s current [3]	A	600	760	760
Power loss for each conducting path	for I_e/AC-3	W	4.6	7.7	10.8

1) The opening delays of the NO contact and the closing delays of the NC contact are increased if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

2) Industrial furnaces and electric heaters with resistance heating, for example (increased power consumption on heating up taken into account).

3) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

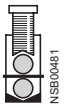
SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor / Type / Size			3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
Main circuit					
Load rating with AC					
Utilization category AC-4 (for I_a = 6 x I_e)					
Rated operating current I_e	up to 400 V	A	55	66	80
Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V	kW	30	37	45
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	up to 400 V	A	28	34	42
	690 V	A	28	34	42
	1000 V	A	20	23	23
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V	kW	8.7	10.4	12
	400 V	kW	15.1	17.9	22
	500 V	kW	18.4	22.4	27
	690 V	kW	25.4	30.9	38
	1000 V	A	22	30	30
Utilization category AC-5a, switching of gas discharge lamps, inductive ballast Per main conducting path at 230 V					
• Uncorrected, rated output power per lamp/ rated operating current per lamp					
	L18W/0.37A	units	243	270	
	L36 W/0.43 A	units	209	232	
	L58 W/0.67 A	units	134	149	
• Lead-lag circuit, rated output power per lamp/ rated operating current per lamp					
	L18 W/0.11 A	units	818	909	
	L36 W/0.21 A	units	428	476	
	L58 W/0.32 A	units	281	312	
Switching of gas discharge lamps with compensation Per main conducting path at 230 V					
• Shunt compensation, with inductive ballast Rated output power per lamp/capacitor/rated operating current per lamp					
	L18 W/4.5 µF/0.11 A	units	160	197	234
	L18 W/4.5 µF/0.21 A	units	160	197	234
	L18 W/7 µF/0.32 A	units	103	127	150
• With solid-state ballast (single lamp)					
	L18 W/6.8 µF/0.10 A	units	455	560	665
	L18 W/6.8 µF/0.18 A	units	253	311	369
	L18 W/10 µF/0.27 A	units	168	207	246
• With solid-state ballast (two lamps)					
	L18 W/10 µF/0.18 A	units	253	311	369
	L18 W/10 µF/0.35 A	units	130	160	190
	L18 W/22 µF/0.52 A	units	88	108	128
Utilization category AC-5b, switching of incandescent lamps Per main conducting path at 230/220 V		kW	9	14.6	17.3
Utilization category AC-6a, switching of AC transformers					
Rated operating current I_e					
• For inrush current = 20	up to 400 V	A	63.5	80	84.4
	up to 690 V	A	47	58	58
• For inrush current = 30	up to 400 V	A	42.3	56.3	56.3
	up to 690 V	A	42.3	56.3	56.3
Rated output power P					
• For inrush current = 20	230 V	kVA	25.3	31.9	33.6
	400 V	kVA	43.9	55.4	58
	500 V	kVA	54.9	69.3	73.1
	690 V	kVA	56.2	69.3	69.3
• For inrush current = 30	230 V	kVA	16.8	22.4	22.4
	400 V	kVA	29.3	39	39
	500 V	kVA	36.6	48.7	48.7
	690 V	kVA	50.3	67.3	67.3
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n30} \cdot 30/x$					
Utilization category AC-6b, switching of low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C					
Rated operating currents I_e	up to 400 V	A	57	72	
Rating of single capacitors or banks of capacitors (minimum inductance between 6 µH capacitors connected in parallel) at 50 Hz, 60 Hz and	for 230 V	kvar	24	29	
	400 V	kvar	40	50	
	525 V	kvar	50	65	
	690 V	kvar	40	50	

Contactor / Type / Size				3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
Main circuit						
Load rating with DC						
Utilization category DC-1 **Switching of resistive load (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		90	100	100
	60 V	A		23	60	60
	110 V	A		4.5	9	9
	220 V	A		1	2	2
	440 V	A		0.4	0.6	0.6
	600 V	A		0.26	0.4	0.4
• 2 series-connected conducting paths	up to 24 V	A		90	100	100
	60 V	A		90	100	100
	110 V	A		90	100	100
	220 V	A		5	10	10
	440 V	A		1	1.8	1.8
	600 V	A		0.8	1	1
• 3 series-connected conducting paths	up to 24 V	A		90	100	100
	60 V	A		90	100	100
	110 V	A		90	100	100
	220 V	A		70	80	80
	440 V	A		2.9	1.8	4.5
	600 V	A		1.4	1	2.6
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		40	40	40
	60 V	A		6	6.5	6.5
	110 V	A		2.5	2.5	2.5
	220 V	A		1	1	1
	440 V	A		0.15	0.15	0.15
	600 V	A		0.06	0.06	0.06
• 2 series-connected conducting paths	up to 24 V	A		90	100	100
	60 V	A		90	100	100
	110 V	A		90	100	100
	220 V	A		7	7	7
	440 V	A		0.42	0.42	0.42
	600 V	A		0.16	0.16	0.16
• 3 series-connected conducting paths	up to 24 V	A		90	100	100
	60 V	A		90	100	100
	110 V	A		90	100	100
	220 V	A		35	35	35
	440 V	A		0.8	0.8	0.8
	600 V	A		0.35	0.35	0.35
Operating frequency						
Operating frequency *z* in operating cycles/hour						
• Contactors without overload relay	No-load operating frequency AC		h^{-1}	5000	5000	5000
	No-load operating frequency DC		h^{-1}	1000	1000	1000
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h		AC-1 (AC/DC)	h^{-1}	1000	900	900
		AC-2 (AC/DC)	h^{-1}	400	400	350
		AC-3 (AC/DC)	h^{-1}	1000	1000	850
		AC-4 (AC/DC)	h^{-1}	300	300	250
• Contactors with overload relay (mean value)			h^{-1}	15	15	15

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

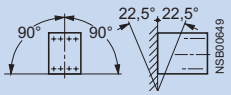
Contactor	Type Size		**3RT10 4. S3**
Conductor cross-sections			
Screw terminals (1 or 2 conductors connectable)	**Main conductors** with box terminal		
Front terminal connected  NSB00479	• Finely stranded with end sleeve	mm²	2.5 ... 35
	• Finely stranded without end sleeve	mm²	4 ... 50
	• Solid	mm²	2.5 ... 16
	• Stranded	mm²	4 ... 70
	• Ribbon cable (number x width x circumference)	mm	6 x 9 x 0.8
	• AWG conductor connections, solid or stranded	AWG	10 ...2/0
Back terminal connected  NSB00480	• Finely stranded with end sleeve	mm²	2.5 ... 50
	• Finely stranded without end sleeve	mm²	10 ... 50
	• Solid	mm²	2.5 ... 16
	• Stranded	mm²	10 ... 70
	• Ribbon cable (number x width x circumference)	mm	6 x 9 x 0.8
	• AWG conductor connections, solid or stranded	AWG	10 ...2/0
Both terminals connected  NSB00481	• Finely stranded with end sleeve	mm²	max.. 2 x 35
	• Finely stranded without end sleeve	mm²	max.. 2 x 35
	• Solid	mm²	max.. 2 x 16
	• Stranded	mm²	max.. 2 x 50
	• Ribbon cable (number x width x circumference)	mm	2 x (6 x 9 x 0.8)
	• AWG conductor connections, solid or stranded	AWG	2 x (10 ...1/0)
	• Terminal screw - Tightening torque	Nm	M 6 (inbus, SW 4) 4 ... 6 (36 ... 53 lb.in)
Connection for drilled copper rails[1]	max. width	mm	10
Without box terminal with cable lugs[2] (1 or 2 conductors connectable)	• Finely stranded with cable lug	mm²	10 ... 503
	• Stranded with cable lug	mm²	10 ...70[3]
	• AWG conductor connections, solid or stranded	AWG	7 ...1/0
	Auxiliary conductors		
	• Solid	mm²	2 x (0.5 ...1.5); 2 x (0.75 ...2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12
	• Terminal screw - Tightening torque	Nm	M 3 0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminals (1 or 2 conductors connectable)	**Auxiliary conductors**		
	• Solid	mm²	2 x (0.25 ... 2.5)
	• Finely stranded with end sleeve	mm²	2 x (0.25 ... 1.5)
	• Finely stranded without end sleeve	mm²	2 x (0.25 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (24 ... 14)

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.
Max. outer diameter of the conductor insulation: 3.6 mm
For conductor cross-sections ≤ 1 mm², an "insulation stop" must be used, see Accessories, Page 2/191.

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

2) If bars larger than 25 mm² are connected, a 3RT19 46-4EA1 cover must be used to comply with the phase clearance.

3) Only with crimped cable lugs to DIN 46234.

Contactor	Type Size		3RT10 54 S6	3RT10 55 S6	3RT10 56 S6
General data					
Permissible mounting position The contactors have been 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		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F		
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60/+55 with AS-Interface -55 ... +80		
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20		
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10		
Conductor cross-sections			2)		
Electromagnetic compatibility (EMC)			3)		
Short-circuit protection					
			Short-circuit protection of contactors with overload relay, see Protection devices: Overload relay -> SIRIUS overload relay.		
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free[4]	A A A	355 315 80	355 315 160	
Auxiliary circuit					
• Fuse-links gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq 1$ kA) or miniature circuit-breaker with C characteristic ($I_k < 400$ A)		A	10		

1) See Page 2/16.

2) See Page 2/39.

3) See Page 2/9.

4) Standard conditions for testing in accordance with IEC 60947-4-1.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		**3RT10 5.** **S6**
Control circuit			
Operating range of the solenoid AC/DC (UC)			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$
Power consumption of the solenoid (when coil is cool and rated range $U_{s\,min}$ ... $U_{s\,max}$)			
• Conventional operating mechanism			
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	250/0.9
	Closing at $U_{s\,max}$	VA/p.f.	300 /0.9
	Closed at $U_{s\,min}$	VA/p.f.	4.8 /0.8
	Closed at $U_{s\,max}$	VA/p.f.	5.8 /0.8
- DC operation	Closing at $U_{s\,min}$	W	300
	Closing at $U_{s\,max}$	W	360
	Closed at $U_{s\,min}$	W	4.3
	Closed at $U_{s\,max}$	W	5.2
• Solid-state operating mechanism			
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	190 /0.8
	Closing at $U_{s\,max}$	VA/p.f.	280 /0.8
	Closed at $U_{s\,min}$	VA/p.f.	3.5 /0.5
	Closed at $U_{s\,max}$	VA/p.f.	4.4 /0.4
- DC operation	Closing at $U_{s\,min}$	W	250
	Closing at $U_{s\,max}$	W	320
	Closed at $U_{s\,min}$	W	2.3
	Closed at $U_{s\,max}$	W	2.8
PLC control input (EN 61131-2/type 2)			DC 24 V/≤ 30 mA power consumption (operating range DC 17 ... 30 V)
Operating times (break-time = opening delay + arcing time)			
• Conventional operating mechanism			
- for 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	20 ... 95
	Opening delay	ms	40 ... 60
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	25 ... 50
	Opening delay	ms	40 ... 60
• Solid-state operating mechanism, operation via PLC input			
- for 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	35 ... 75
	Opening delay	ms	80 ... 90
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	40 ... 60
	Opening delay	ms	80 ... 90
• Solid-state operating mechanism, operation via A1/A2			
- for 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	95 ... 135
	Opening delay	ms	80 ... 90
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	100 ... 120
	Opening delay	ms	80 ... 90
• Arcing time		ms	10 ... 15

Contactor	Type / Size			3RT10 54 S6	3RT10 55 S6	3RT10 56 S6
Main circuit						
Load rating with AC						
Utilization category AC-1, switching resistive loads						
Rated operating currents I_e	for 40 °C up to 690 V	A		160	185	215
	for 60 °C up to 690 V	A		140	160	185
	for 60 °C up to 1000 V	A		80	90	100
Rated output power of AC loads [1] p.f. = 0.95 (for 60 °C)	for 230 V	kW		53	60	70
	400 V	kW		92	105	121
	500 V	kW		115	131	152
	690 V	kW		159	181	210
	1000 V	kW		131	148	165
Minimum conductor cross-section for loads with I_e	for 40 °C	mm^2		70	95	95
	for 60 °C	mm^2		50	70	95
Utilization category AC-2 and AC-3						
Rated operating currents I_e	up to 500 V	A		115	150	185
	690 V	A		115	150	170
	1000 V	A		53	65	65
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V	kW		37	50	61
	400 V	kW		64	84	104
	500 V	kW		81	105	132
	690 V	kW		113	146	167
	1000 V	kW		75	90	90
Thermal load rating	10 s current [2]	A		1100	1300	1480
Power loss per main conducting path	for I_e/AC-3/500 V	W		7	9	13
Utilization category AC-4 (for $I_a = 6 \times I_e$)						
Rated operating current I_e	up to 400 V	A		97	132	160
Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V	kW		55	75	90
• The following applies to contact endurances of about 200,000 operating cycles:						
- Rated operating currents I_e	up to 500 V	A		54	68	81
	690 V	A		48	57	65
	1000 V	A		34	38	42
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V	kW		16	20	25
	400 V	kW		29	38	45
	500 V	kW		37	47	57
	690 V	kW		48	55	65
	1000 V	kW		49	55	60
Utilization category AC-6a, switching of AC transformers						
Rated operating current I_e						
• For inrush current = 20	up to 690 V	A		115	148	148
• For inrush current = 30	up to 690 V	A		90	99	99
Rated output power P						
• For inrush current = 20	for 230 V	kVA		45	58	58
	400 V	kVA		79	102	102
	500 V	kVA		99	128	128
	690 V	kVA		137	176	176
	1000 V	kVA		80	98	117
• For inrush current = 30	for 230 V	kVA		35	39	39
	400 V	kVA		62	68	68
	500 V	kVA		77	85	85
	690 V	kVA		107	118	118
	1000 V	kVA		80	98	117
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n\,30} \cdot 30/x$						
Utilization category AC-6b, switching of low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C						
Rated operating currents I_e	up to 500 V	A		105	125	145
Rated output power of single capacitors or banks of capacitors (minimum inductance between 6 µH capacitors connected in parallel) at 50 Hz, 60 Hz and	for 230 V	kvar		42	50	58
	400 V	kvar		72	86	100
	500 V	kvar		90	108	125
	690 V	kvar		72	86	100

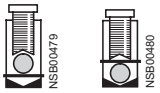
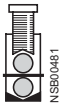
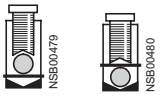
1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up taken into account).

2) In accordance with EC 60947-4-1. For rated values for different start-up conditions see Protection devices: overload relay -> SIRIUS overload relay.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor / Type / Size				3RT10 54 S6	3RT10 55 S6	3RT10 56 S6
Main circuit						
Load rating with DC						
Utilization category DC-1 **Switching of resistive load (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		160		
	60 V	A		160		
	110 V	A		18		
	220 V	A		3.4		
	440 V	A		0.8		
	600 V	A		0.5		
• 2 series-connected conducting paths	up to 24 V	A		160		
	60 V	A		160		
	110 V	A		160		
	220 V	A		20		
	440 V	A		3.2		
	600 V	A		1.6		
• 3 series-connected conducting paths	up to 24 V	A		160		
	60 V	A		160		
	110 V	A		160		
	220 V	A		160		
	440 V	A		11.5		
	600 V	A		4		
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		160		
	60 V	A		7.5		
	110 V	A		2.5		
	220 V	A		0.6		
	440 V	A		0.17		
	600 V	A		0.12		
• 2 series-connected conducting paths	up to 24 V	A		160		
	60 V	A		160		
	110 V	A		160		
	220 V	A		2.5		
	440 V	A		0.65		
	600 V	A		0.37		
• 3 series-connected conducting paths	up to 24 V	A		160		
	60 V	A		160		
	110 V	A		160		
	220 V	A		160		
	440 V	A		1.4		
	600 V	A		0.75		
Operating frequency						
Operating frequency z in operating cycles/hour						
• Contactors without overload relay	No-load operation frequency		h^{-1}	2000	2000	
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h	AC-1		h^{-1}	800	800	
	AC-2		h^{-1}	400	300	
	AC-3		h^{-1}	1000	750	
	AC-4		h^{-1}	130	130	
• Contactors with overload relay (mean value)			h^{-1}	60	60	

Contactor	Type Size		**3RT10 5. S6**
Conductor cross-sections			
Screw terminals (1 or 2 conductors connectable)	**Main conductors:** with 3RT19 55-4G box terminal (55 kW)		
Front or rear clamping point connected  NSB00479 NSB00480	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • Ribbon cable (number x width x circumference) • AWG conductor connections, solid or stranded	mm² mm² mm² mm AWG	16 ...70 16 ...70 16 ...70 min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8 6 ...2/0
Both terminals connected  NSB00481	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • Ribbon cable (number x width x circumference) • AWG conductor connections, solid or stranded • Terminal screw - Tightening torque	mm² mm² mm² mm AWG Nm	max. 1 x 50, 1 x 70 max. 1 x 50, 1 x 70 max. 2 x 70 max. 2 x (6 x 15.5 x 0.8) max. 2 x 1/0 M 10 (inbus, SW 4) 10 ... 12 (90 ... 110 lb.in)
Screw terminals (1 or 2 conductors connectable)	**Main conductors:** with 3RT1956-4G box terminal		
Front or rear clamping point connected  NSB00479 NSB00480	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • Ribbon cable (number x width x circumference) • AWG conductor connections, solid or stranded	mm² mm² mm² mm AWG	16 ... 120 16 ... 120 16 ... 120 min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8 6 ... 250 kcmil
Both clamping points connected  NSB00481	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • Ribbon cable (number x width x circumference) • AWG conductor connections, solid or stranded • Terminal screw - Tightening torque	mm² mm² mm² mm AWG Nm	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 M 10 (inbus, SW 4) 10 ... 12 (90 ... 110 lb.in)
Screw terminals	**Main conductors:** without box terminal/bar connection		
	• Finely stranded with cable lug [1)] • Stranded with cable lug[1)] • AWG conductor connections, solid or stranded • Connecting bar (max. width) • Terminal screws - Tightening torque	mm² mm² AWG mm Nm	16 ... 95 25 ...120 4 ...250 kcmil 17 M 8 x 25 (SW 13) 10 ... 14 (89 ... 124 lb.in)
	Auxiliary conductors		
	• Solid • Finely stranded with end sleeve • AWG conductor connections, solid or stranded • Terminal screws - Tightening torque	mm² mm² AWG Nm	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4) 2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) 2 x (18 ... 14) M 3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminals	**Auxiliary conductors**		
	• Solid • Finely stranded with end sleeve • Finely stranded without end sleeve • AWG conductor connections, solid or stranded	mm² mm² mm² AWG	2 x (0.25 ... 2.5) 2 x (0.25 ... 1.5) 2 x (0.25 ... 2.5) 2 x (24 ... 14)

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.

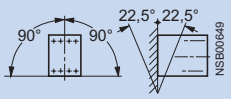
For conductor cross-sections ≤ 1 mm², an "insulation stop" must be used, see Accessories, Page 2/191.

Max. outer diameter of the conductor insulation: 3.6 mm

1) When connecting cable lugs to DIN 46235, the 3RT19 56-4EA1 terminal cover must be used for conductor cross-sections of 95 mm² or more to maintain the phase clearance.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
General data					
Permissible mounting position The contactors have been 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		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F		
Permissible ambient temperature	For operation For storage	°C °C	-25 ... 60/+55 with AS-Interface -55 ... + 80		
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20		
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10		
Conductor cross-sections			2)		
Electromagnetic compatibility (EMC)			3)		
Short-circuit protection					
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free[4]	A A A	500 400 250		
Auxiliary circuit • Fuse-links, gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq 1$ kA) or miniature circuit-breaker with C characteristic (short-circuit current $I_k < 400$ A)		A	10		

1) See Page 2/16.

2) See Page 2/44.

3) See Page 2/9.

4) Standard conditions for testing in accordance with IEC 60947-4-1.

Contactor	Type Size		3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
Control circuit					
Operating range of the solenoid AC/DC (UC)			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid (when coil is cool and rated range $U_{s\,min}$ ... $U_{s\,max}$)					
• Conventional operating mechanism					
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	490 /0.9		
	Closing at $U_{s\,min}$	VA/p.f.	590 /0.9		
	Closed at $U_{s\,min}$	VA/p.f.	5.6 /0.9		
	Closed at $U_{s\,max}$	VA/p.f.	6.7 /0.9		
- DC operation	Closing at $U_{s\,min}$	W	540		
	Closing at $U_{s\,min}$	W	650		
	Closed at $U_{s\,min}$	W	6.1		
	Closed at $U_{s\,max}$	W	7.4		
• Solid-state operating mechanism					
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	400 /0.8		
	Closing at $U_{s\,min}$	VA/p.f.	530 /0.8		
	Closed at $U_{s\,min}$	VA/p.f.	4 /0.5		
	Closed at $U_{s\,max}$	VA/p.f.	5 /0.4		
- DC operation	Closing at $U_{s\,min}$	W	440		
	Closing at $U_{s\,min}$	W	580		
	Closed at $U_{s\,min}$	W	3.2		
	Closed at $U_{s\,max}$	W	3.8		
PLC control input (EN 61131-2/type 2)			DC 24 V/≤ 30 mA power consumption (operating range DC 17 ... 30 V)		
Operating times (Total break time = Opening delay + Arcing time)					
• Conventional operating mechanism					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	30 ... 95		
	Opening delay	ms	40 ... 80		
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	35 ... 50		
	Opening delay	ms	50 ... 80		
• Solid-state operating mechanism, operation via A1/A2					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	105 ... 145		
	Opening delay	ms	80 ... 100		
- at $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	110 ... 130		
	Opening delay	ms	80 ... 100		
• Solid-state operating mechanism, operation via PLC input					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	45 ... 80		
	Opening delay	ms	80 ... 100		
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	50 ... 65		
	Opening delay	ms	80 ... 100		
• Arcing time		ms	10 ... 15		

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor / Type / Size			3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating currents I_e	for 40 °C up to 690 V	A	275	330	
	for 60 °C up to 690 V	A	250	300	
	for 60 °C up to 1000 V	A	100	150	
Rated output power of AC loads [1] p.f. = 0.95 (for 60 °C)	for 230 V	kW	94	113	
	400 V	kW	164	197	
	500 V	kW	205	246	
	690 V	kW	283	340	
	1000 V	kW	164	246	
Minimum conductor cross-section for loads with I_e	for 40 °C	mm^2	150	185	
	for 60 °C	mm^2	120	185	
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 500 V	A	225	265	300
	690 V	A	225	265	280
	1000 V	A	68	95	95
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V	kW	73	85	97
	400 V	kW	128	151	171
	500 V	kW	160	189	215
	690 V	kW	223	265	280
	1000 V	kW	90	132	132
Thermal load rating	10 s current [2]	A	1800	2400	2400
Power loss per main conducting path	for I_e/AC-3/500 V	W	17	18	22
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
Rated operating current I_e	up to 400 V	A	195	230	280
Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V	kW	110	132	160
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	up to 500 V	A	96	117	125
	690 V	A	85	105	115
	1000 V	A	42	57	57
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V	kW	30	37	40
	400 V	kW	54	66	71
	500 V	kW	67	82	87
	690 V	kW	82	102	112
	1000 V	kW	59	80	80
Utilization category AC-6a, switching of AC transformers					
Rated operating current I_e					
• For inrush current = 20	up to 690 V	A	227	265	273
• For inrush current = 30	up to 690 V	A	151	182	182
Rated output power P					
• For inrush current = 20	for 230 V	kVA	90	105	109
	400 V	kVA	157	183	189
	500 V	kVA	196	229	236
	690 V	kVA	271	317	326
	1000 V	kVA	117	164	164
• For inrush current = 30	for 230 V	kVA	60	72	72
	400 V	kVA	105	126	126
	500 V	kVA	130	158	158
	690 V	kVA	180	217	217
	1000 V	kVA	117	164	164
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n\,30} \cdot 30/x$					
Utilization category AC-6b, switching of low-impedance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C					
Rated operating currents I_e	up to 500 V	A	183	220	
Rated output power of single capacitors or banks of capacitors (minimum inductance between 6 µH connected in parallel capacitors) at 50 Hz, 60 Hz and	for 230 V	kvar	73	88	
	400 V	kvar	127	152	
	500 V	kvar	159	191	
	690 V	kvar	127	152	

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

2) In accordance with IEC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

Contactor / Type / Size				3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
Main circuit						
Load rating with DC						
Utilization category DC-1 **Switching of resistive load (L/R ≤ 1 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		200	300	
	60 V	A		200	300	
	110 V	A		18	33	
	220 V	A		3.4	3.8	
	440 V	A		0.8	0.9	
	600 V	A		0.5	0.6	
• 2 series-connected conducting paths	up to 24 V	A		200	300	
	60 V	A		200	300	
	110 V	A		200	300	
	220 V	A		20	300	
	440 V	A		3.2	4	
	600 V	A		1.6	2	
• 3 series-connected conducting paths	up to 24 V	A		200	300	
	60 V	A		200	300	
	110 V	A		200	300	
	220 V	A		200	300	
	440 V	A		11.5	11	
	600 V	A		4	5.2	
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (L/R ≤ 15 ms)** **Rated operating current I_e** (for 60 °C)						
• 1 conducting path	up to 24 V	A		200	300	
	60 V	A		7.5	11	
	110 V	A		2.5	3	
	220 V	A		0.6	0.6	
	440 V	A		0.17	0.18	
	600 V	A		0.12	0.125	
• 2 series-connected conducting paths	up to 24 V	A		200	300	
	60 V	A		200	300	
	110 V	A		200	300	
	220 V	A		2.5	2.5	
	440 V	A		0.65	0.65	
	600 V	A		0.37	0.37	
• 3 series-connected conducting paths	up to 24 V	A		200	300	
	60 V	A		200	300	
	110 V	A		200	300	
	220 V	A		200	300	
	440 V	A		1.4	1.4	
	600 V	A		0.75	0.75	
Operating frequency						
Operating frequency *z* in operating cycles/hour						
• Contactors without overload relay	No-load operation frequency		h^{-1}	2000	2000	2000
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h	AC-1		h^{-1}	750	800	750
	AC-2		h^{-1}	250	300	250
	AC-3		h^{-1}	500	700	500
	AC-4		h^{-1}	130	130	130
• Contactors with overload relay (mean value)			h^{-1}	60	60	60

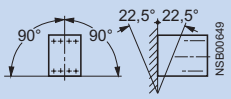
2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		**3RT10 6. S10**
Conductor cross-sections			
Screw terminals	**Main conductors:** with 3RT19 66-4G box terminal		
Front terminal connected  NSB00479	• Finely stranded with end sleeve	mm^2	70 ... 240
	• Finely stranded without end sleeve	mm^2	70 ... 240
	• stranded	mm^2	95 ... 300
	• AWG conductor connections, solid or stranded	AWG	3/0 ... 600 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Back terminal connected  NSB00480	• Finely stranded with end sleeve	mm^2	120 ... 185
	• Finely stranded without end sleeve	mm^2	120 ... 185
	• stranded	mm^2	120 ... 240
	• AWG conductor connections, solid or stranded	AWG	250 ... 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Both terminals connected  NSB00481	• Finely stranded with end sleeve	mm^2	min. 2 x 50, max. 2 x 185
	• Finely stranded without end sleeve	mm^2	min. 2 x 50, max. 2 x 185
	• stranded	mm^2	min. 2 x 70, max. 2 x 240
	• AWG conductor connections, solid or stranded	AWG	min. 2 x 2/0, max. 2 x 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	max. 2 x (20 x 24 x 0.5)
	• Terminal screws - Tightening torque	Nm	M 12 (Inbus, SW 5) 20 ... 22 (180 ... 195 lb.in)
Screw terminals	**Main conductors:** without box terminal/bar connection		
	• finely stranded with cable lug [1]	mm^2	50 ... 240
	• stranded with cable lug[1]	mm^2	70 ... 240
	• AWG conductor connections, solid or stranded	AWG	2/0 ... 500 kcmil
	• Connecting bar (max. width)	mm	25
	• Terminal screws - Tightening torque	Nm	M 10 x 30 (SW 17) 14 ... 24 (124 ... 210 lb.in)
	Auxiliary conductors		
	• Solid	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (18 ... 14)
	• Terminal screws - Tightening torque	Nm	M 3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminals	**Auxiliary conductors**		
	• Solid	mm^2	2 x (0.25 ... 2.5)
	• Finely stranded with end sleeve	mm^2	2 x (0.25 ... 1.5)
	• Finely stranded without end sleeve	mm^2	2 x (0.25 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (24 ... 14)

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.
For conductor cross-sections ≤ 1 mm^2, an "insulation stop" must be used, see Accessories, Page 2/191.
Max. outer diameter of the conductor insulation: 3.6 mm

1) If cable lugs acc. to DIN 46234 are connected as of a conductor cross-section of 240 mm^2 and acc. to DIN 46235 as of a conductor cross-section of 185 mm^2, a 3RT19 66-4EA1 terminal cover must be used to comply with the phase clearance.

Contactor	Type Size		3RT10 75 S12	3RT10 76 S12
General data				
Permissible mounting position The contactors have been 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	
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690	
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F	
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60/+55 with AS-Interface -55 ... +80	
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20	
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10	
Conductor cross-sections			2)	
Electromagnetic compatibility (EMC)			3)	
Short-circuit protection				
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 4)	A A A	630 500 250	630 500 315
Auxiliary circuit • Fuse-links, gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq$ 1 kA) or miniature circuit-breaker with C characteristic (short-circuit current I_k < 400 A)		A	10	

1) See Page 2/16.

2) See Page 2/49.

3) See Page 2/9.

4) Standard conditions for testing acc. to IEC 60947-4-1.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size		3RT10 75 S12	3RT10 76 S12
Control circuit				
Operating range of the solenoid AC/DC (UC)			0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	
Power consumption of the solenoid (when coil is cool and rated range $U_{s\ min}$ ... $U_{s\ max}$)				
• Conventional operating mechanism				
- AC operation	Closing at $U_{s\ min}$	VA/p.f.	700 /0.9	
	Closing at $U_{s\ min}$	VA/p.f.	830 /0.9	
	Closed at $U_{s\ min}$	VA/p.f.	7.6 /0.9	
	Closed at $U_{s\ max}$	VA/p.f.	9.2 /0.9	
- DC operation	Closing at $U_{s\ min}$	W	770	
	Closing at $U_{s\ min}$	W	920	
	Closed at $U_{s\ min}$	W	8.5	
	Closed at $U_{s\ max}$	W	10	
• Solid-state operating mechanism				
- AC operation	Closing at $U_{s\ min}$	VA/p.f.	560 /0.8	
	Closing at $U_{s\ max}$	VA/p.f.	750 /0.8	
	Closed at $U_{s\ min}$	VA/p.f.	5.4 /0.8	
	Closed at $U_{s\ max}$	VA/p.f.	7 /0.8	
- DC operation	Closing at $U_{s\ min}$	W	600	
	Closing at $U_{s\ max}$	W	800	
	Closed at $U_{s\ min}$	W	4	
	Closed at $U_{s\ max}$	W	5	
PLC control input (EN 61131-2/type 2)			DC 24 V/≤ 30 mA power consumption (coil operating range DC 17 ... 30 V)	
Operating times (Total break time = Opening delay + Arcing time)				
• Conventional operating mechanism				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	45 ... 100	
	Opening delay	ms	60 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	50 ... 70	
	Opening delay	ms	70 ... 100	
• Solid-state operating mechanism, operation via A1/A2				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	120 ... 150	
	Opening delay	ms	80 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	125 ... 150	
	Opening delay	ms	80 ... 100	
• Solid-state operating mechanism, operation via PLC input				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	60 ... 90	
	Opening delay	ms	80 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	65 ... 80	
	Opening delay	ms	80 ... 100	
• Arcing time		ms	10 ... 15	

Contactor	Type Size			3RT10 75 S12	3RT10 76 S12
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating currents I_e	for 40 °C up to 690 V		A	430	610
	for 60 °C up to 690 V		A	400	550 [1]
	for 60 °C up to 1000 V		A	200	200
Rated output power of AC loads [2] p.f. = 0.95 (for 60 °C)	for 230 V		kW	151	208
	400 V		kW	263	362
	500 V		kW	329	452
	690 V		kW	454	624
	1000 V		kW	329	329
Minimum conductor cross-section for loads with I_e	for 40 °C		mm^2	2 x 150	2 x 185
	for 60 °C		mm^2	240	2 x 185
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 500 V		A	400	500 [3]
	690 V		A	400	450
	1000 V		A	180	180
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	132	164
	400 V		kW	231	291
	500 V		kW	291	363
	690 V		kW	400	453
	1000 V		kW	250	250
Thermal load rating	10-s-current [4]		A	3200	4000
Power loss per main conducting path	for I_e/AC-3/500 V		W	35	55
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
Rated operating current I_e	up to 400 V		A	350	430
Rated output power output for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V		kW	200	250
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	up to 500 V		A	150	175
	690 V		A	135	150
	1000 V		A	80	80
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	48	56
	400 V		kW	85	98
	500 V		kW	105	123
	690 V		kW	133	148
	1000 V		kW	113	113
Utilization category AC-6a, switching of AC transformers					
Rated operating current I_e					
• For inrush current = 20	up to 690 V		A	377	404
• For inrush current = 30	up to 690 V		A	251	270
Rated output power P					
• For inrush current = 20	for 230 V		kVA	150	161
	400 V		kVA	261	280
	500 V		kVA	326	350
	690 V		kVA	450	483
	1000 V		kVA	311	311
• For inrush current = 30	for 230 V		kVA	100	107
	400 V		kVA	173	187
	500 V		kVA	217	234
	690 V		kVA	300	323
	1000 V		kVA	311	311
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n\,30} \cdot 30/x$					
Utilization category AC-6b, switching low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C					
Rated operating currents I_e	up to 500 V		A	287	407
Rated output power of single capacitors or banks of capacitors (minimum inductance between 6 µH connected in parallel capacitors) at 50 Hz, 60 Hz and	for 230 V		kvar	114	162
	400 V		kvar	199	282
	500 V		kvar	248	352
	690 V		kvar	199	282

1) Ambient temperature 50 °C for 3RT10 76-.N contactor.

2) Industrial furnaces and electric heaters with resistance heating, for example (increased power consumption on heating up taken into account).

3) Ambient temperature 55 °C for 3RT10 76-.N contactor.

4) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size			3RT10 75 S12	3RT10 76 S12
Main circuit					
Load rating with DC					
Rated operating current I_e					
Utilization category DC-1 **Switching of resistance loads (L/R ≤ 1 ms)**					
• 1 conducting path		up to 24 V	A	400	
		60 V	A	330	
		110 V	A	33	
		220 V	A	3.8	
		440 V	A	0.9	
		600 V	A	0.6	
• 2 series-connected conducting paths		up to 24 V	A	400	
		60 V	A	400	
		110 V	A	400	
		220 V	A	400	
		440 V	A	4	
		600 V	A	2	
• 3 series-connected conducting paths		up to 24 V	A	400	
		60 V	A	400	
		110 V	A	400	
		220 V	A	400	
		440 V	A	11	
		600 V	A	5.2	
Utilization category DC-3 -5 **Switching of resistance loads (L/R ≤ 15 ms)**					
• 1 conducting path		up to 24 V	A	400	
		60 V	A	11	
		110 V	A	3	
		220 V	A	0.6	
		440 V	A	0.18	
		600 V	A	0.125	
• 2 series-connected conducting paths		up to 24 V	A	400	
		60 V	A	400	
		110 V	A	400	
		220 V	A	2.5	
		440 V	A	0.65	
		600 V	A	0.37	
• 3 series-connected conducting paths		up to 24 V	A	400	
		60 V	A	400	
		110 V	A	400	
		220 V	A	400	
		440 V	A	1.4	
		600 V	A	0.75	
Operating frequency					
Operating frequency *z* in operating cycles/hour					
• Contactors without overload relay	No-load operation frequency		h^{-1}	2000	2000
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h		AC-1	h^{-1}	700	500
		AC-2	h^{-1}	200	170
		AC-3	h^{-1}	500	420
		AC-4	h^{-1}	130	130
• Contactors with overload relay (mean value)			h^{-1}	60	60

Contactor	Type Size		**3RT10 7. S12**
Conductor cross-sections			
Screw terminals	**Main conductors:** with 3RT19 66-4G box terminal		
Front terminal connected  NSB00479	• Finely stranded with end sleeve	mm²	70 ... 240
	• Finely stranded without end sleeve	mm²	70 ... 240
	• Stranded	mm²	95 ... 300
	• AWG conductor connections, solid or stranded	AWG	3/0 ... 600 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Back terminal connected  NSB00480	• Finely stranded with end sleeve	mm²	120 ... 185
	• Finely stranded without end sleeve	mm²	120 ... 185
	• Stranded	mm²	120 ... 240
	• AWG conductor connections, solid or stranded	AWG	250 ... 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Both terminals connected  NSB00481	• Finely stranded with end sleeve	mm²	min. 2 x 50, max. 2 x 185
	• Finely stranded without end sleeve	mm²	min. 2 x 50, max. 2 x 185
	• Stranded	mm²	min. 2 x 70, max. 2 x 240
	• AWG conductor connections, solid or stranded	AWG	min.2 x 2/0, max. 2 x 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	max. 2 x (20 x 24 x 0.5)
	• Terminal screws - Tightening torque	 Nm	M 12 (Inbus, SW 5) 20 ... 22 (180 ... 195 lb.in)
	Main conductors: without box terminal/bar connection		
	• Finely stranded with cable lug [1]	mm²	50 ... 240
	• Stranded with cable lug[1]	mm²	70 ... 240
	• AWG conductor connections, solid or stranded	AWG	2/0 ... 500 kcmil
	• Connecting bar (max. width)	mm	25
	• Terminal screws - Tightening torque	 Nm	M 10 x 30 (SW 17) 14 ... 24 (124 ... 210 lb.in)
Screw terminals	**Auxiliary conductors:**		
	• Solid	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (18 ... 14)
	• Terminal screws - Tightening torque	 Nm	M 3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminals	**Auxiliary conductors:**		
	• Solid	mm²	2 x (0.25 ... 2.5)
	• Finely stranded with end sleeve	mm²	2 x (0.25 ... 1.5)
	• Finely stranded without end sleeve	mm²	2 x (0.25 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (24 ... 14)

For tools to open the Cage Clamp terminals, see Accessories, Page 2/191.
For conductor cross-sections ≤ 1 mm², an "insulation stop" must be used, see Accessories, Page 2/191.
Max. outer diameter of the conductor insulation: 3.6 mm

1) If cable lugs acc. to DIN 46 234 are connected as of a conductor cross-section of 240 mm² and acc. to DIN 46235 as of a conductor cross-section of 185 mm², a 3RT19 66-4EA1 terminal cover must be used to comply with the phase clearance.

SIRIUS contactors, 3-pole, 3 ... 250 kW

Contactor	Type Size			3RT10 15 S00	3RT10 16 S00	3RT10 17 S00	3RT10 23 S0	3RT10 24 S0	3RT10 25 S0	3RT10 26 S0
CSA and UL rated data										
Rated insulation voltage			AC V	600			600			
Continuous current, at 40 °C	Open and enclosed		A	20			35			
Maximum horsepower ratings (CSA and UL approved values)										
Rating for induction motors at 60 Hz		at 200 V	hp	1½	2	3	2	3	5	7½
		230 V	hp	2	3	3	3	3	5	7½
		460 V	hp	3	5	7½	5	7½	10	15
		575 V	hp	5	7½	10	7½	10	15	20
Short-circuit protection (contactor or overload relay)			kA	5	5	5	5	5	5	5
	Fuse CLASS RK5		A	60	60	60	70	70	70	100
	Power switch to UL 489		A	50	50	50	70	70	70	100
NEMA/EEMAC ratings										
NEMA/EEMAC size				-		0	-			1
Continuous current	Open		A	-		18	-			27
	Enclosed		A	-		18	-			27
Rating for induction motors at 60 Hz		at 200 V	hp	-		3	-			7½
		230 V	hp	-		3	-			7½
		460 V	hp	-		5	-			10
		575 V	hp	-		5	-			10
Overload relay	Type			3RU11 16			3RU11 2			
	Adjustment range		A	0.11 ... 12			1.8 ... 25			

Contactor	Type Size			3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
CSA and UL rated data									
Rated insulation voltage			AC V	600			600		
Continuous current, at 40 °C	Open and enclosed		A	45	55	50	90	105	105
Maximum horsepower ratings (CSA and UL approved values)									
Rating for induction motors at 60 Hz		at 200 V	hp	10	10	15	20	25	30
		230 V	hp	10	15	15	25	30	30
		460 V	hp	25	30	40	50	60	75
		575 V	hp	30	40	50	60	75	100
Short-circuit protection (contactor or overload relay)			kA	5	5	5	10	10	10
	Fuse CLASS RK5		A	125	150	200	250	300	350
	Power switch to UL 489		A	125	150	200	250	300	400
NEMA/EEMAC ratings									
NEMA/EEMAC size				-		2	-		3
Continuous current	Open		A	-		45	-		90
	Enclosed		A	-		45	-		90
Rating for induction motors at 60 Hz		at 200 V	hp	-		10	-		25
		230 V	hp	-		15	-		30
		460 V	hp	-		25	-		50
		575 V	hp	-		25	-		50
Overload relay	Type			3RU11 3			3RU11 4		
	Adjustment range		A	5.5 ... 50			18 ... 100		

Contactor	Size			**S00** **Screw and Cage Clamp terminals** Integrated or snap-on auxiliary switch block	**S0 to S12** **Screw and Cage Clamp terminals** 1- and 4-pole snap-on auxiliary switch block	**Screw and Cage Clamp terminals** Laterally mountable auxiliary switch block
CSA and UL rated data for the auxiliary contacts						
Rated voltage			V AC	600	600	600
Switching capacity				A 600, Q 600	A 600, Q 600	A 300, Q 300
	Continuous current at AC 240 V		A	10	10	10

Contactor	Type Size			3RT10 54 S6	3RT10 55 S6	3RT10 56 S6	3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
CSA and UL rated data for the contactors									
Rated insulation voltage			AC V	600			600		
Continuous current, at 40 °C	Open and enclosed		A	140	195	195	250	330	330
Maximum horsepower ratings (CSA and UL approved values)									
Rated output power for induction motors at 60 Hz		at 200 V	hp	40	50	60	60	75	100
		230 V	hp	50	60	75	75	100	125
		460 V	hp	100	125	150	150	200	250
		575 V	hp	125	150	200	200	250	300
Short-circuit protection			kA	10	10	10	10	18	18
	Fuse CLASS RK5L		A	450	500	500	700	800	800
	Power switch to UL 489		A	350	450	500	500	700	800
NEMA/EEMAC ratings	NEMA/EEMAC size			-	4	-	-	-	5
Continuous current	Open		A	-	150	-	-	-	300
	Enclosed		A	-	135	-	-	-	270
Rated output power for induction motors at 60 Hz		at 200 V	hp	-	40	-	-	-	75
		230 V	hp	-	50	-	-	-	100
		460 V	hp	-	100	-	-	-	200
		575 V	hp	-	100	-	-	-	200
Overload relay	Type			3RB10 56			3RB10 66		

Contactor	Type Size			3RT10 75 S12	3RT10 76 S12
CSA and UL rated data for the contactors					
Rated insulation voltage			AC V	600	
Continuous current, at 40 °C	Open and enclosed		A	400	540
Maximum horsepower ratings (CSA and UL approved values)					
Rated output power for induction motors at 60 Hz		at 200 V	hp	125	150
		230 V	hp	150	200
		460 V	hp	300	400
		575 V	hp	400	500
Short-circuit protection			kA	18	30
	Fuse CLASS RK5L		A	1000	1200
	Power switch to UL 489		A	900	900
NEMA/EEMAC ratings	NEMA/EEMAC size			-	6
Continuous current	Open		A	-	600
	Enclosed		A	-	540
Rated output power for induction motors at 60 Hz		at 200 V	hp	-	150
		230 V	hp	-	200
		460 V	hp	-	400
		575 V	hp	-	400
Overload relay	Type			3RB10 66	

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

Selection and ordering data

AC operation

3RT10 1.-1A...

3RT10 1.-2A...

3RT10 1.-1AP04-3MA0

3RT10 1.-2AP04-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C												
Operating current I_e at	Rating of induction motors at 50 Hz and	Operating current I_e	Ident. no.	Version				Order No.				Order No.		
400 V	**400 V**													
A	**kW**	A		NO	NC	AC V				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S00[1]														
Terminal designations acc. to EN 50012														
7	**3**	18	**10 E**	1	-	24	▶	**3RT10 15-1AB01**	1 unit	0.205	▶	**3RT10 15-2AB01**	1 unit	0.203
						110	▶	**3RT10 15-1AF01**	1 unit	0.203	▶	**3RT10 15-2AF01**	1 unit	0.200
						230	▶	**3RT10 15-1AP01**	1 unit	0.203	▶	**3RT10 15-2AP01**	1 unit	0.201
			01	-	1	24	▶	**3RT10 15-1AB02**	1 unit	0.205	▶	**3RT10 15-2AB02**	1 unit	0.201
						110	▶	**3RT10 15-1AF02**	1 unit	0.203	▶	**3RT10 15-2AF02**	1 unit	0.201
						230	▶	**3RT10 15-1AP02**	1 unit	0.204	▶	**3RT10 15-2AP02**	1 unit	0.201
9	**4**	22	**10 E**	1	-	24	▶	**3RT10 16-1AB01**	1 unit	0.204	▶	**3RT10 16-2AB01**	1 unit	0.203
						110	▶	**3RT10 16-1AF01**	1 unit	0.205	▶	**3RT10 16-2AF01**	1 unit	0.201
						230	▶	**3RT10 16-1AP01**	1 unit	0.204	▶	**3RT10 16-2AP01**	1 unit	0.201
			01	-	1	24	▶	**3RT10 16-1AB02**	1 unit	0.206	▶	**3RT10 16-2AB02**	1 unit	0.201
						110	▶	**3RT10 16-1AF02**	1 unit	0.203	▶	**3RT10 16-2AF02**	1 unit	0.200
						230	▶	**3RT10 16-1AP02**	1 unit	0.205	▶	**3RT10 16-2AP02**	1 unit	0.201
12	**5.5**	22	**10 E**	1	-	24	▶	**3RT10 17-1AB01**	1 unit	0.204	▶	**3RT10 17-2AB01**	1 unit	0.201
						110	▶	**3RT10 17-1AF01**	1 unit	0.203	▶	**3RT10 17-2AF01**	1 unit	0.199
						230	▶	**3RT10 17-1AP01**	1 unit	0.204	▶	**3RT10 17-2AP01**	1 unit	0.199
			01	-	1	24	▶	**3RT10 17-1AB02**	1 unit	0.204	▶	**3RT10 17-2AB02**	1 unit	0.202
						110	▶	**3RT10 17-1AF02**	1 unit	0.203	▶	**3RT10 17-2AF02**	1 unit	0.200
						230	▶	**3RT10 17-1AP02**	1 unit	0.204	▶	**3RT10 17-2AP02**	1 unit	0.201
Size S00[1] **With permanently mounted auxiliary switch block**[2]														
Terminal designations acc. to EN 50012														
7	**3**	18	**22 E**	2	2	230	▶	**3RT10 15-1AP04-3MA0**	1 unit	0.245	B	**3RT10 15-2AP04-3MA0**	1 unit	0.248
9	**4**	22	**22 E**	2	2	230	▶	**3RT10 16-1AP04-3MA0**	1 unit	0.245	B	**3RT10 16-2AP04-3MA0**	1 unit	0.240
12	**5.5**	22	**22 E**	2	2	230	▶	**3RT10 17-1AP04-3MA0**	1 unit	0.245	B	**3RT10 17-2AP04-3MA0**	1 unit	0.247

For further voltages, see Page 2/61
For accessories, see Page 2/180
For technical specifications, see Page 2/17 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/227
For multi-unit/recyclable packaging, see Appendix -> Ordering notes

1) For size S00: 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) Further versions/voltages on request.

***This quantity or a multiple thereof can be ordered.**

AC operation

3RT10 2.-1A.00

3RT10 2.-3A.00

3RT10 2.-1A.04

3RT10 2.-1AL24-3MA0

Rated data AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminal**	PS*	Weight per PU approx.	DT	**Cage Clamp terminal** for coil terminals	PS*	Weight per PU approx.
Rated operating current I_e at	Rating of induction motors at 50 Hz and	Operating current I_e	Ident. no.	Version				Order No.				Order No.		
400 V	**400 V**	up to 690 V												
A	**kW**	A		NO	NC	AC V, at 50 Hz				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S0														
9	**4**	40[1]	**-**	-	-	24	▶	**3RT10 23-1AB00**	1 unit	0.339	B	**3RT10 23-3AB00**	1 unit	0.335
						110	▶	**3RT10 23-1AF00**	1 unit	0.338	B	**3RT10 23-3AF00**	1 unit	0.335
						230	▶	**3RT10 23-1AP00**	1 unit	0.337	▶	**3RT10 23-3AP00**	1 unit	0.334
12	**5.5**	40[1]	**-**	-	-	24	▶	**3RT10 24-1AB00**	1 unit	0.338	B	**3RT10 24-3AB00**	1 unit	0.335
						110	▶	**3RT10 24-1AF00**	1 unit	0.337	B	**3RT10 24-3AF00**	1 unit	0.333
						230	▶	**3RT10 24-1AP00**	1 unit	0.339	▶	**3RT10 24-3AP00**	1 unit	0.335
17	**7.5**	40[1]	**-**	-	-	24	▶	**3RT10 25-1AB00**	1 unit	0.341	B	**3RT10 25-3AB00**	1 unit	0.335
						110	▶	**3RT10 25-1AF00**	1 unit	0.336	B	**3RT10 25-3AF00**	1 unit	0.335
						230	▶	**3RT10 25-1AP00**	1 unit	0.339	▶	**3RT10 25-3AP00**	1 unit	0.336
25	**11**	40[1]	**-**	-	-	24	▶	**3RT10 26-1AB00**	1 unit	0.340	B	**3RT10 26-3AB00**	1 unit	0.337
						110	▶	**3RT10 26-1AF00**	1 unit	0.336	B	**3RT10 26-3AF00**	1 unit	0.338
						230	▶	**3RT10 26-1AP00**	1 unit	0.339	▶	**3RT10 26-3AP00**	1 unit	0.337
Size S0 **with mounted auxiliary switch block (removable)** Terminal designations acc. to EN 50012														
9	**4**	40[1]	**22 E**	2	2	24	▶	**3RT10 23-1AB04**	1 unit	0.407		**-**		
						110	▶	**3RT10 23-1AF04**	1 unit	0.406		**-**		
						230	▶	**3RT10 23-1AP04**	1 unit	0.409		**-**		
12	**5.5**	40[1]	**22 E**	2	2	24	▶	**3RT10 24-1AB04**	1 unit	0.409		**-**		
						110	▶	**3RT10 24-1AF04**	1 unit	0.405		**-**		
						230	▶	**3RT10 24-1AP04**	1 unit	0.408		**-**		
17	**7.5**	40[1]	**22 E**	2	2	24	▶	**3RT10 25-1AB04**	1 unit	0.411		**-**		
						110	▶	**3RT10 25-1AF04**	1 unit	0.410		**-**		
						230	▶	**3RT10 25-1AP04**	1 unit	0.407		**-**		
25	**11**	40[1]	**22 E**	2	2	24	▶	**3RT10 26-1AB04**	1 unit	0.410		**-**		
						110	▶	**3RT10 26-1AF04**	1 unit	0.406		**-**		
						230	▶	**3RT10 26-1AP04**	1 unit	0.408		**-**		
Size S0 **with permanently mounted auxiliary switch block** [2] Terminal designations acc. to EN 50012						AC V, at 50/60 Hz								
12	**5.5**	40[1]	**22 E**	2	2	230	B	**3RT10 24-1AL24-3MA0**	1 unit	0.415		**-**		
17	**7.5**	40[1]	**22 E**	2	2	230	B	**3RT10 25-1AL24-3MA0**	1 unit	0.415		**-**		
25	**11**	40[1]	**22 E**	2	2	230	B	**3RT10 26-1AL24-3MA0**	1 unit	0.415		**-**		

For further voltages, see Page 2/61
For accessories, see Page 2/181
For spare parts, see Page 2/192
For technical specifications, see Page 2/21 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/227
For multi-unit/recyclable packaging, see Appendix -> Ordering notes

1) Minimum conductor cross-section 10 mm².

2) Further versions/voltages on request.

***This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

AC operation

3RT10 3.-1A.00

3RT10 3.-3A.00

3RT10 3.-1A.04

Rated data AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal for coil terminals	PS*	Weight per PU approx.
Operating current I_e at 400 V	Rating of induction motors at 50 Hz and **400 V**	Operating current I_e up to 690 V	Ident. no.	Version NO	NC	AC V		Order No.				Order No.		
A	**kW**	A		NO	NC	AC V				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S2														
32	**15**	50	**-**	-	-	24	▶	**3RT10 34-1AB00**	1 unit	0.810	B	**3RT10 34-3AB00**	1 unit	0.808
						110	▶	**3RT10 34-1AF00**	1 unit	0.815	B	**3RT10 34-3AF00**	1 unit	0.814
						230	▶	**3RT10 34-1AP00**	1 unit	0.816	▶	**3RT10 34-3AP00**	1 unit	0.811
40	**18.5**	60	**-**	-	-	24	▶	**3RT10 35-1AB00**	1 unit	0.838	B	**3RT10 35-3AB00**	1 unit	0.836
						110	▶	**3RT10 35-1AF00**	1 unit	0.835	B	**3RT10 35-3AF00**	1 unit	0.837
						230	▶	**3RT10 35-1AP00**	1 unit	0.839	▶	**3RT10 35-3AP00**	1 unit	0.834
50	**22**	60	**-**	-	-	24	▶	**3RT10 36-1AB00**	1 unit	0.841	B	**3RT10 36-3AB00**	1 unit	0.839
						110	▶	**3RT10 36-1AF00**	1 unit	0.836	B	**3RT10 36-3AF00**	1 unit	0.831
						230	▶	**3RT10 36-1AP00**	1 unit	0.838	▶	**3RT10 36-3AP00**	1 unit	0.837
Size S2 with mounted auxiliary switch block (**removable**) Terminal designations according to EN 50012														
32	**15**	50	**22 E**	2	2	24	▶	**3RT10 34-1AB04**	1 unit	0.908		-		
						110	▶	**3RT10 34-1AF04**	1 unit	0.912		-		
						230	▶	**3RT10 34-1AP04**	1 unit	0.908		-		
40	**18.5**	60	**22 E**	2	2	24	▶	**3RT10 35-1AB04**	1 unit	0.931		-		
						110	▶	**3RT10 35-1AF04**	1 unit	0.931		-		
						230	▶	**3RT10 35-1AP04**	1 unit	0.930		-		
50	**22**	60	**22 E**	2	2	24	▶	**3RT10 36-1AB04**	1 unit	0.932		-		
						110	▶	**3RT10 36-1AF04**	1 unit	0.940		-		
						230	▶	**3RT10 36-1AP04**	1 unit	0.940		-		

Version with **permanently** mounted auxiliary switch block on request.

For further voltages, see Page 2/61
For accessories, see Page 2/181
For spare parts, see Page 2/192
For technical specifications, see Page 2/25 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/228
For multi-unit/recyclable packaging, see Appendix -> Ordering notes

***This quantity or a multiple thereof can be ordered.**

AC operation

3RT10 4.-1A.00

3RT10 4.-3A.00

3RT10 4.-1A.04

Rated data AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal for coil terminals	PS*	Weight per PU approx.
Operating current I_e at 400 V	Rating of induction motors at 50 Hz and **400 V**	Operating current I_e up to 690 V	Ident. no.	Version NO	NC	AC V		Order No.				Order No.		
A	**kW**	A		NO	NC	AC V				kg				kg
For screw terminal and snap-on mounting on 35 and 75 mm standard mounting rail														
Size S3														
65	**30**	100	**-**	-	-	24	▶	**3RT10 44-1AB00**	1 unit	1.700	B	**3RT10 44-3AB00**	1 unit	1.720
						110	▶	**3RT10 44-1AF00**	1 unit	1.700	B	**3RT10 44-3AF00**	1 unit	1.710
						230	▶	**3RT10 44-1AP00**	1 unit	1.700	▶	**3RT10 44-3AP00**	1 unit	1.690
80	**37**	120	**-**	-	-	24	▶	**3RT10 45-1AB00**	1 unit	1.830	B	**3RT10 45-3AB00**	1 unit	1.840
						110	▶	**3RT10 45-1AF00**	1 unit	1.830	B	**3RT10 45-3AF00**	1 unit	1.840
						230	▶	**3RT10 45-1AP00**	1 unit	1.820	▶	**3RT10 45-3AP00**	1 unit	1.810
95	**45**	120	**-**	-	-	24	▶	**3RT10 46-1AB00**	1 unit	1.830	B	**3RT10 46-3AB00**	1 unit	1.850
						110	▶	**3RT10 46-1AF00**	1 unit	1.820	B	**3RT10 46-3AF00**	1 unit	1.840
						230	▶	**3RT10 46-1AP00**	1 unit	1.830	▶	**3RT10 46-3AP00**	1 unit	1.840
Size S3 with mounted auxiliary switch block (**removable**) Terminal designations according to EN 50012														
65	**30**	100	**22 E**	2	2	24	▶	**3RT10 44-1AB04**	1 unit	1.800		-		
						110	▶	**3RT10 44-1AF04**	1 unit	1.800		-		
						230	▶	**3RT10 44-1AP04**	1 unit	1.800		-		
80	**37**	120	**22 E**	2	2	24	B	**3RT10 45-1AB04**	1 unit	1.940		-		
						110	▶	**3RT10 45-1AF04**	1 unit	1.950		-		
						230	▶	**3RT10 45-1AP04**	1 unit	1.930		-		
95	**45**	120	**22 E**	2	2	24	B	**3RT10 46-1AB04**	1 unit	1.940		-		
						110	▶	**3RT10 46-1AF04**	1 unit	1.960		-		
						230	▶	**3RT10 46-1AP04**	1 unit	1.940		-		

Version with **permanently** mounted auxiliary switch block on request.

For further voltages, see Page 2/61
For accessories, see Page 2/181
For spare parts, see Page 2/193
For technical specifications, see Page 2/30 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/229

***This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

DC operation · DC solenoid system

3RT10 1.-1B...

3RT10 1.-2B...

3RT10 1.-1BB44-3MA0

3RT10 1.-2BB44-3MA0

Rated data AC-2 and AC-3, T_u up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
Operating current I_e at	Rating of induction motors at 50 Hz and	Operating current I_e	Ident. no.	Version				Order No.				Order No.		
400 V	400 V	up to 690 V												
A	kW	A		NO	NC	DC V				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S00 Terminal designations acc. to EN 50012														
7	**3**	18	**10 E**	1	-	24	▶	**3RT10 15-1BB41**	1 unit	0.263	▶	**3RT10 15-2BB41**	1 unit	0.260
						220	B	**3RT10 15-1BM41**	1 unit	0.260	B	**3RT10 15-2BM41**	1 unit	0.252
			01	-	1	24	▶	**3RT10 15-1BB42**	1 unit	0.262	▶	**3RT10 15-2BB42**	1 unit	0.261
						220	B	**3RT10 15-1BM42**	1 unit	0.261	B	**3RT10 15-2BM42**	1 unit	0.256
9	**4**	22	**10 E**	1	-	24	▶	**3RT10 16-1BB41**	1 unit	0.262	▶	**3RT10 16-2BB41**	1 unit	0.259
						220	B	**3RT10 16-1BM41**	1 unit	0.260	B	**3RT10 16-2BM41**	1 unit	0.253
			01	-	1	24	▶	**3RT10 16-1BB42**	1 unit	0.263	▶	**3RT10 16-2BB42**	1 unit	0.261
						220	B	**3RT10 16-1BM42**	1 unit	0.261	B	**3RT10 16-2BM42**	1 unit	0.253
12	**5.5**	22	**10 E**	1	-	24	▶	**3RT10 17-1BB41**	1 unit	0.263	▶	**3RT10 17-2BB41**	1 unit	0.261
						220	B	**3RT10 17-1BM41**	1 unit	0.259	B	**3RT10 17-2BM41**	1 unit	0.254
			01	-	1	24	▶	**3RT10 17-1BB42**	1 unit	0.262	▶	**3RT10 17-2BB42**	1 unit	0.261
						220	B	**3RT10 17-1BM42**	1 unit	0.260	B	**3RT10 17-2BM42**	1 unit	0.255
Size S00 with permanently mounted auxiliary switch block [1] Terminal designations acc. to EN 50012														
7	**3**	18	**22 E**	2	2	24	▶	**3RT10 15.-1BB44-3MA0**	1 unit	0.308	B	**3RT10 15.-2BB44-3MA0**	1 unit	0.307
9	**4**	22	**22 E**	2	2	24	▶	**3RT10 16.-1BB44-3MA0**	1 unit	0.309	B	**3RT10 16-2BB44-3MA0**	1 unit	0.308
12	**5.5**	22	**22 E**	2	2	24	▶	**3RT10 17-1BB44-3MA0**	1 unit	0.304	B	**3RT10 17-2BB44-3MA0**	1 unit	0.308

For further voltages, see Page 2/61
For accessories, see Page 2/180
For technical specifications, see Page 2/17 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/227
For multi-unit/recyclable packaging, see Appendix -> Ordering notes

1) Further versions/voltages on request

***This quantity or a multiple thereof can be ordered.**

DC operation · DC solenoid system

3RT10 2.-1B.40

3RT10 2.-3B.40

3RT10 2.-1B.44

3RT10 2.-1BB44-3MA0

Rated data AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
Operating current I_e at 400 V	Rating of induction motors at 50 Hz and **400 V**	Operating current I_e up to 690 V	Ident. no.	Version NO	NC	DC V		Order No.				Order No.		
A	**kW**	A								kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S0														
9	**4**	40[1]	**-**	-	-	24	▶	**3RT10 23-1BB40**	1 unit	0.570	▶	**3RT10 23-3BB40**	1 unit	0.566
						220	B	**3RT10 23-1BM40**	1 unit	0.576	B	**3RT10 23-3BM40**	1 unit	0.572
12	**5.5**	40[1]	**-**	-	-	24	▶	**3RT10 24-1BB40**	1 unit	0.566	▶	**3RT10 24-3BB40**	1 unit	0.568
						220	B	**3RT10 24-1BM40**	1 unit	0.579	B	**3RT10 24-3BM40**	1 unit	0.570
17	**7.5**	40[1]	**-**	-	-	24	▶	**3RT10 25-1BB40**	1 unit	0.570	▶	**3RT10 25-3BB40**	1 unit	0.570
						220	B	**3RT10 25-1BM40**	1 unit	0.575	B	**3RT10 25-3BM40**	1 unit	0.572
25	**11**	40[1]	**-**	-	-	24	▶	**3RT10 26-1BB40**	1 unit	0.569	▶	**3RT10 26-3BB40**	1 unit	0.569
						220	B	**3RT10 26-1BM40**	1 unit	0.580	B	**3RT10 26-3BM40**	1 unit	0.575
Size S0 **with mounted auxiliary switch block (removable)** Terminal designations acc. to EN 50012														
9	**4**	40[1]	**22 E**	2	2	24	▶	**3RT10 23-1BB44**	1 unit	0.639		**-**		
						220	B	**3RT10 23-1BM44**	1 unit	0.644		**-**		
12	**5.5**	40[1]	**22 E**	2	2	24	▶	**3RT10 24-1BB44**	1 unit	0.641		**-**		
						220	B	**3RT10 24-1BM44**	1 unit	0.645		**-**		
17	**7.5**	40[1]	**22 E**	2	2	24	▶	**3RT10 25-1BB44**	1 unit	0.640		**-**		
						220	B	**3RT10 25-1BM44**	1 unit	0.645		**-**		
25	**11**	40[1]	**22 E**	2	2	24	▶	**3RT10 26-1BB44**	1 unit	0.643		**-**		
						220	B	**3RT10 26-1BM44**	1 unit	0.645		**-**		
Size S0 **with permanently mounted auxiliary switch block**[2] Terminal designations acc. to EN 50012														
12	**5.5**	40[1]	**22 E**	2	2	24	B	**3RT10 24.-1BB44-3MA0**	1 unit	0.641		**-**		
17	**7.5**	40[1]	**22 E**	2	2	24	B	**3RT10 25.-1BB44-3MA0**	1 unit	0.640		**-**		
25	**11**	40[1]	**22 E**	2	2	24	B	**3RT10 26.-1BB44-3MA0**	1 unit	0.642		**-**		

For further voltages, see Page 2/61
For accessories, see Page 2/181
For technical specifications, see Page 2/21 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/227
For multi-unit/recyclable packaging, see Appendix -> Ordering notes

1) Minimum conductor cross-section 10 mm².

2) Further versions/voltages on request.

***This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

DC operation · DC solenoid system


3RT10 3.-1B.40


3RT10 3.-3B.40


3RT10 3.-1B.44


3RT10 4.-1B.40


3RT10 4.-3B.40


3RT10 4.-1B.44

Rated data AC-2 and AC-3, T_u: up to 60 °C		AC-1, T_u: 40 °C	Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
Operating current I_e at	Rating of induction motors at 50 Hz and	Operating current I_e	Ident. no.	Version				Order No.				Order No.		
400 V	**400 V**	up to 690 V												
A	kW	A		NO	NC	DC V				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail														
Size S2														
32	**15**	50	**-**	-	-	24	▶	**3RT10 34-1BB40**	1 unit	1.430	▶	**3RT10 34-3BB40**	1 unit	1.430
						220	B	**3RT10 34-1BM40**	1 unit	1.440	B	**3RT10 34-3BM40**	1 unit	1.450
40	**18.5**	60	**-**	-	-	24	▶	**3RT10 35-1BB40**	1 unit	1.440	▶	**3RT10 35-3BB40**	1 unit	1.420
						220	B	**3RT10 35-1BM40**	1 unit	1.430	B	**3RT10 35-3BM40**	1 unit	1.450
50	**22**	60	**-**	-	-	24	▶	**3RT10 36-1BB40**	1 unit	1.440	▶	**3RT10 36-3BB40**	1 unit	1.440
						220	B	**3RT10 36-1BM40**	1 unit	1.440	B	**3RT10 36-3BM40**	1 unit	1.450
Size S2 with mounted auxiliary switch block (removable) Terminal designations acc. to EN 50012														
32	**15**	50	**22 E**	2	2	24	▶	**3RT10 34-1BB44**	1 unit	1.530		**-**		
						220	B	**3RT10 34-1BM44**	1 unit	1.530		**-**		
40	**18.5**	60	**22 E**	2	2	24	▶	**3RT10 35-1BB44**	1 unit	1.530		**-**		
						220	B	**3RT10 35-1BM44**	1 unit	1.520		**-**		
50	**22**	60	**22 E**	2	2	24	▶	**3RT10 36-1BB44**	1 unit	1.530		**-**		
						220	B	**3RT10 36-1BM44**	1 unit	1.500		**-**		
For screw terminal and snap-on mounting on 35 and 75 mm standard mounting rail														
Size S3														
65	**30**	100	**-**	-	-	24	▶	**3RT10 44-1BB40**	1 unit	2.800	▶	**3RT10 44-3BB40**	1 unit	2.800
						220	B	**3RT10 44-1BM40**	1 unit	2.790	B	**3RT10 44-3BM40**	1 unit	2.740
80	**37**	120	**-**	-	-	24	▶	**3RT10 45-1BB40**	1 unit	2.820	▶	**3RT10 45-3BB40**	1 unit	2.800
						220	B	**3RT10 45-1BM40**	1 unit	2.780	B	**3RT10 45-3BM40**	1 unit	2.770
95	**45**	120	**-**	-	-	24	▶	**3RT10 46-1BB40**	1 unit	2.810	▶	**3RT10 46-3BB40**	1 unit	2.820
						220	B	**3RT10 46-1BM40**	1 unit	2.760	B	**3RT10 46-3BM40**	1 unit	2.760
Size S3 with mounted auxiliary switch block (removable) Terminal designations acc. to EN 50012														
65	**30**	100	**22 E**	2	2	24	▶	**3RT10 44-1BB44**	1 unit	2.920		**-**		
						220	B	**3RT10 44-1BM44**	1 unit	2.880		**-**		
80	**37**	120	**22 E**	2	2	24	▶	**3RT10 45-1BB44**	1 unit	2.910		**-**		
						220	B	**3RT10 45-1BM44**	1 unit	2.870		**-**		
95	**45**	120	**22 E**	2	2	24	▶	**3RT10 46-1BB44**	1 unit	2.910		**-**		
						220	B	**3RT10 46-1BM44**	1 unit	2.880		**-**		

Sizes S0 and S2 versions with **permanently** mounted auxiliary switch block on request.

For further voltages, see Page 2/61
For accessories, see Page 2/181
For spare parts, see Page 2/193
For technical specifications, see Page 2/25 2/30 and 2/50
For description, see Page 2/8
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/228
For multi-unit/recyclable packaging,
see Appendix -> Ordering notes

***This quantity or a multiple thereof can be ordered.**

AC/DC operation *(40 Hz to 60 Hz, DC)*
Withdrawable coils
Integrated coil circuit *(varistor)*
Auxiliary and control conductors: screw terminal or Cage Clamp terminals
Main conductor: bar connections, for 3RT1054 (55 kW) box terminals[1)]


3RT1 5


3RT1 6


3RT1 7

Size	Rated data AC-2 and AC-3, T_u: up to 60 °C					AC-1, T_u: 40 °C	Lateral auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Operating current I_e up to 500 V	Rating of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	Operating current I_e up to 690 V					Order No.				Order No.		
	A	kW	**kW**	kW	kW	A	NO	NC	AC/DC V				kg				kg
Conventional operating mechanism																	
S6	115	37	**55**	75	110	160	2	2	110 ... 127 ▶		**3RT10 54-1AF00**	1 unit	3.640	B	**3RT10 54-3AF36**	1 unit	3.640
									220 ... 240 ▶		**3RT10 54-1AP36**	1 unit	3.610	B	**3RT10 54-3AP36**	1 unit	3.610
	150	45	**75**	90	132	185	2	2	110 ... 127 ▶		**3RT10 55-6AF36**	1 unit	3.340	B	**3RT10 55-2AF36**	1 unit	3.340
									220 ... 240 ▶		**3RT10 55-6AP36**	1 unit	3.330	B	**3RT10 55-2AP36**	1 unit	3.330
	185	55	**90**	110	160	215	2	2	110 ... 127 ▶		**3RT10 56-6AF36**	1 unit	3.360	B	**3RT10 56-2AF36**	1 unit	3.360
									220 ... 240 ▶		**3RT10 56-6AP36**	1 unit	3.350	B	**3RT10 56-2AP36**	1 unit	3.350
S10	225	55	**110**	160	200	275	2	2	110 ... 127 ▶		**3RT10 64-6AF36**	1 unit	6.500	B	**3RT10 64-2AF36**	1 unit	6.500
									220 ... 240 ▶		**3RT10 64-6AP36**	1 unit	6.420	B	**3RT10 64-2AP36**	1 unit	6.420
	265	75	**132**	160	250	330	2	2	110 ... 127 ▶		**3RT10 65-6AF36**	1 unit	6.550	B	**3RT10 65-2AF36**	1 unit	6.550
									220 ... 240 ▶		**3RT10 65-6AP36**	1 unit	6.500	B	**3RT10 65-2AP36**	1 unit	6.500
	300	90	**160**	200	250	330	2	2	110 ... 127 ▶		**3RT10 66-6AF36**	1 unit	6.590	B	**3RT10 66-2AF36**	1 unit	6.590
									220 ... 240 ▶		**3RT10 66-6AP36**	1 unit	6.520	B	**3RT10 66-2AP36**	1 unit	6.520
S12	400	132	**200**	250	400	430	2	2	110 ... 127 ▶		**3RT10 75-6AF36**	1 unit	10.300	B	**3RT10 75-2AF36**	1 unit	10.300
									220 ... 240 ▶		**3RT10 75-6AP36**	1 unit	10.000	B	**3RT10 75-2AP36**	1 unit	10.000
	500	160	**250**	355	400	610	2	2	110 ... 127 ▶		**3RT10 76-6AF36**	1 unit	10.400	B	**3RT10 76-2AF36**	1 unit	10.300
									220 ... 240 ▶		**3RT10 76-6AP36**	1 unit	10.300	B	**3RT10 76-2AP36**	1 unit	10.300
Solid-state operating mechanism · for DC 24 V PLC output																	
S6	115	37	**55**	75	110	160	2	2	96 ... 127 A		**3RT10 54-1NF36**	1 unit	3.630	B	**3RT10 54-3NF36**	1 unit	3.630
									200 ... 277 ▶		**3RT10 54-1NP36**	1 unit	3.950	B	**3RT10 54-3NP36**	1 unit	3.950
	150	45	**75**	90	132	185	2	2	96 ... 127 A		**3RT10 55-6NF36**	1 unit	3.320	B	**3RT10 55-2NF36**	1 unit	3.320
									200 ... 277 ▶		**3RT10 55-6NP36**	1 unit	3.320	B	**3RT10 55-2NP36**	1 unit	3.320
	185	55	**90**	110	160	215	2	2	96 ... 127 A		**3RT10 56-6NF36**	1 unit	3.330	B	**3RT10 56-2NF36**	1 unit	3.330
									200 ... 277 ▶		**3RT10 56-6NP36**	1 unit	3.330	B	**3RT10 56-2NP36**	1 unit	3.330
S10	225	55	**110**	160	200	275	2	2	96 ... 127 A		**3RT10 64-6NF36**	1 unit	6.660	B	**3RT10 64-2NF36**	1 unit	6.660
									200 ... 277 A		**3RT10 64-6NP36**	1 unit	6.520	B	**3RT10 64-2NP36**	1 unit	6.520
	265	75	**132**	160	250	330	2	2	96 ... 127 A		**3RT10 65-6NF36**	1 unit	6.710	B	**3RT10 65-2NF36**	1 unit	6.710
									200 ... 277 A		**3RT10 65-6NP36**	1 unit	6.600	B	**3RT10 65-2NP36**	1 unit	6.600
	300	90	**160**	200	250	330	2	2	96 ... 127 A		**3RT10 66-6NF36**	1 unit	6.720	B	**3RT10 66-2NF36**	1 unit	6.720
									200 ... 277 A		**3RT10 66-6NP36**	1 unit	6.600	B	**3RT10 66-2NP36**	1 unit	6.600
S12	400	132	**200**	250	400	430	2	2	96 ... 127 A		**3RT10 75-6NF36**	1 unit	10.300	B	**3RT10 75-2NF36**	1 unit	10.300
									200 ... 277 A		**3RT10 75-6NP36**	1 unit	10.000	B	**3RT10 75-2NP36**	1 unit	10.000
	500	160	**250**	355	400	610	2	2	96 ... 127 A		**3RT10 76-6NF36**	1 unit	10.500	B	**3RT10 76-2NF36**	1 unit	10.500
									200 ... 277 A		**3RT10 76-6NP36**	1 unit	10.200	B	**3RT10 76-2NP36**	1 unit	10.200

For further voltages, see Page 2/61
For accessories, see Page 2/181
For spare parts, see Page 2/194
For technical specifications, see Page 2/35 and 2/51
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/231

1) Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with bar connections instead of box terminals. Without additional charge. The 8th position of the Order No. **"1"** must be replaced with **"6"**, e.g. 3RT10 54-**6**... (for screw terminal), or **"3"** must be replaced with **"2"** (for Cage Clamp terminal).

***This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors, 3-pole, 3 ... 250 kW

AC/DC operation *(40 Hz to 60 Hz, DC)*
Withdrawable coils
Integrated coil circuit *(varistor)*
Auxiliary and control conductors: screw terminals for
main conductors: bar connections for 3RT10 54 (55 kW) box terminals[1)]

3RT10 56-6P

3RT10 56-6Q

Size	Rated data AC-2 and AC-3, T_u: up to 60 °C					AC-1, T_u: 40 °C	Lateral auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminal	PS*	Weight per PU approx.
	Operating current I_e	Rating of induction motors at 50 Hz and				Operating current I_e					Order No.		
	up to 500 V	230 V	**400 V**	500 V	690 V	up to 690 V							
	A	kW	**kW**	kW	kW	A	NO	NC	AC/DC V				kg
Solid-state operating mechanism · for DC 24 V PLC output/PLC relay output, with indication of remaining lifetime RLT													
S6	115	37	**55**	75	110	160	1	1	96 ... 127	B	**3RT10 54-1PF35**	1 unit	4.200
									200 ... 277	B	**3RT10 54-1PP35**	1 unit	4.440
	150	45	**75**	90	132	185	1	1	96 ... 127	B	**3RT10 55-6PF35**	1 unit	3.870
									200 ... 277	B	**3RT10 55-6PP35**	1 unit	3.880
	185	55	**90**	110	160	215	1	1	96 ... 127	B	**3RT10 56-6PF35**	1 unit	3.910
									200 ... 277	B	**3RT10 56-6PP35**	1 unit	4.090
S10	225	55	**110**	160	200	275	1	1	96 ... 127	B	**3RT10 64-6PF35**	1 unit	5.700
									200 ... 277	B	**3RT10 64-6PP35**	1 unit	6.960
	265	75	**132**	160	250	330	1	1	96 ... 127	B	**3RT10 65-6PF35**	1 unit	7.200
									200 ... 277	B	**3RT10 65-6PP35**	1 unit	7.000
	300	90	**160**	200	250	330	1	1	96 ... 127	B	**3RT10 66-6PF35**	1 unit	4.850
									200 ... 277	B	**3RT10 66-6PP35**	1 unit	7.050
S12	400	132	**200**	250	400	430	1	1	96 ... 127	B	**3RT10 75-6PF35**	1 unit	10.700
									200 ... 277	B	**3RT10 75-6PP35**	1 unit	10.500
	500	160	**250**	355	400	610	1	1	96 ... 127	B	**3RT10 76-6PF35**	1 unit	9.100
									200 ... 277	B	**3RT10 76-6PP35**	1 unit	10.600
Solid-state operating mechanism · with AS-Interface and indication of remaining lifetime RLT													
S6	115	37	**55**	75	110	160	1	1	96 ... 127	B	**3RT10 54-1QF35**	1 unit	4.190
									200 ... 277	B	**3RT10 54-1QP35**	1 unit	4.160
	150	45	**75**	90	132	185	1	1	96 ... 127	B	**3RT10 55-6QF35**	1 unit	3.890
									200 ... 277	B	**3RT10 55-6QP35**	1 unit	3.880
	185	55	**90**	110	160	215	1	1	96 ... 127	B	**3RT10 56-6QF35**	1 unit	3.100
									200 ... 277	B	**3RT10 56-6QP35**	1 unit	3.880
S10	225	55	**110**	160	200	275	1	1	96 ... 127	B	**3RT10 64-6QF35**	1 unit	7.010
									200 ... 277	B	**3RT10 64-6QP35**	1 unit	6.930
	265	75	**132**	160	250	330	1	1	96 ... 127	B	**3RT10 65-6QF35**	1 unit	5.700
									200 ... 277	B	**3RT10 65-6QP35**	1 unit	7.000
	300	90	**160**	200	250	330	1	1	96 ... 127	B	**3RT10 66-6QF35**	1 unit	5.700
									200 ... 277	B	**3RT10 66-6QP35**	1 unit	7.010
S12	400	132	**200**	250	400	430	1	1	96 ... 127	B	**3RT10 75-6QF35**	1 unit	9.100
									200 ... 277	B	**3RT10 75-6QP35**	1 unit	10.500
	500	160	**250**	355	400	610	1	1	96 ... 127	B	**3RT10 76-6QF35**	1 unit	11.700
									200 ... 277	B	**3RT10 76-6QP35**	1 unit	9.100

For further voltages, see Page 2/61
For accessories, see Page 2/181
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For dimension drawings, see Page 2/231

1) Alternatively, contactor 3RT10 54-1 (55 kW) can be supplied with bar connections instead of box terminals. Without additional charge. The 8th position of the Order No. **"1"** must be replaced with **"6"**, e.g. 3RT10 54-**6**...

***This quantity or a multiple thereof can be ordered.**

Rated control supply voltages

Contactor type Rated control supply voltage U_s	3RT10 1.	3RT10 2, 3RT10 3, 3RT10 4	3RT14 4	3RT13 1, 3RT15 1	3RT13 2 to 3RT13 4, 3RT15 2 and 3RT15 3	3RT16
Rated control supply voltages (the 10th and 11th position of the Order No. must be changed)						
Sizes S00 ... S3						
•AC operation [1]						
Coils for 50 Hz (exception: size S00: 50 and 60 Hz [2])						
AC 24 V	**B0**	**B0**	**B0**	**B0**	**B0**	**B0**
AC 42 V	**D0**	**D0**	**D0**	**D0**	**–**	**–**
AC 48 V	**H0**	**H0**	**H0**	**H0**	**–**	**–**
AC 110 V	**F0**	**F0**	**F0**	**F0**	**F0**	**F0**
AC 230 V	**P0**	**P0**	**P0**	**P0**	**P0**	**P0**
AC 400 V	**V0**	**V0**	**V0**	**V0**	**V0**	**V0**
Coils for 50 and 60 Hz [2]						
AC 24 V	**B0**	**C2**	**C2**	**B0**	**C2**	**C2**
AC 42 V	**D0**	**D2**	**D2**	**D0**	**D2**	**–**
AC 48 V	**H0**	**H2**	**H2**	**H0**	**H2**	**–**
AC 110 V	**F0**	**G2**	**G2**	**F0**	**G2**	**G2**
AC 220 V	**N2**	**N2**	**N2**	**N2**	**N2**	**N2**
AC 230 V	**P0**	**L2**	**L2**	**P0**	**L2**	**L2**
For the USA and Canada [3]						
50 Hz / 60 Hz						
AC 110 V / AC 120 V	**K6**	**K6**	**K6**	**K6**	**K6**	**K6**
AC 220 V / AC 240 V	**P6**	**P6**	**P6**	**P6**	**P6**	**P6**
For Japan						
50 and 60 Hz [4] / 60 Hz [5]						
AC 100 V / AC 110 V	**G6**	**G6**	**G6**	**G6**	**G6**	**G6**
AC 200 V / AC 220 V	**N6**	**N6**	**N6**	**N6**	**N6**	**N6**
AC 400 V / AC 440 V	**R6**	**R6**	**R6**	**R6**	**R6**	**R6**
• DC operation [1]						
DC 12 V	**A4**	**–**	**–**	**A4**	**–**	**–**
DC 24 V	**B4**	**B4**	**B4**	**B4**	**B4**	**–**
DC 42 V	**D4**	**D4**	**D4**	**D4**	**D4**	**–**
DC 48 V	**W4**	**W4**	**W4**	**W4**	**–**	**–**
DC 60 V	**E4**	**E4**	**E4**	**–**	**–**	**–**
DC 110 V	**F4**	**F4**	**F4**	**F4**	**F4**	**–**
DC 125 V	**G4**	**G4**	**G4**	**G4**	**G4**	**–**
DC 220 V	**M4**	**M4**	**M4**	**M4**	**M4**	**–**
DC 230 V	**P4**	**P4**	**P4**	**P4**	**–**	**–**

Sizes S6 to S12

• AC/DC operation (40 ... 60 Hz, DC)

Conventional operating mechanism

$U_{s\,min}$ ... $U_{s\,max}$ [6]	Contactor type: 3RT1. 5.-.A, 3RT1. 6.-.A, 3RT1. 7.-.A	$U_{s\,min}$ ... $U_{s\,max}$ [6]	Contactor type: 3RT1. 5.-.A, 3RT1. 6.-.A, 3RT1. 7.-.A
AC/DC 23 ... 26 V	**B3**	**AC/DC 240 ... 277 V**	**U3**
AC/DC 42 ... 48 V	**D3**	**AC/DC 380 ... 420 V**	**V3**
AC/DC 110 ... 127 V	**F3**	**AC/DC 440 ... 480 V**	**R3**
AC/DC 200 ... 220 V	**M3**	**AC/DC 500 ... 550 V**	**S3**
AC/DC 220 ... 240 V	**P3**	**AC/DC 575 ... 600 V**	**T3**

Solid-state operating mechanism

$U_{s\,min}$ ... $U_{s\,max}$ [6]	Contactor type: 3RT1. 5.-.N, 3RT1. 6.-.N, 3RT1. 7.-.N	Contactor type: 3RT1. 5.-.P/Q, 3RT1. 6.-.P/Q, 3RT1. 7.-.P/Q
AC/DC 21 ... 27.3 V	**B3**	**–**
AC/DC 96 ... 127 V	**F3**	**F3**
AC/DC 200 ... 277 V	**P3**	**P3**

1) For deviating coil voltages and coil operating ranges of sizes S00 and S0, the DC 24 V SITOP power supply with wide range input (AC 93 to 264 V, DC 30 to 264 V) can be used for coil excitation (see SIDAC-S power supplies -> Stabilized power supplies -> for specific loads and systems -> SITOP Power power supplies).

2) 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.

3) Coil operating range
with size S00: at 50 Hz: 0.85 to 1.1 x U_s
at 60 Hz: 0.8 to 1.1 x U_s
sizes S0 to S3: at 50 Hz and 60 Hz: 0.8 to 1.1 x U_s.

4) Coil operating range
with size S00: at 50/60 Hz: 0.85 to 1.1 x U_s
sizes S0 to S3: at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s.

5) Coil operating range at 60 Hz: 0.8 to 1.1 x U_s.

6) Operating range:
0.8 x $U_{s\,min}$ to 1.1 x $U_{s\,max}$

2

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

Overview

- 3RT12, vacuum contactors for switching motors

Operating mechanism types

Two types of solenoid operation are available:

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

UC operation

The contactors can be operated with AC (40 to 60 Hz) as well as DC.

Withdrawable coils

For simple coil replacement, e.g. for other applications, the solenoid can be pulled out upwards without tools after the release mechanism has been actuated and replaced with any other required coil of the same size.

Auxiliary contact complement

The contactors can be fitted with up to 8 auxiliary contacts (with identical auxiliary switch blocks from S0 to S12). Of these up to 4 can be NC contacts.

Functions

3RT12 vacuum contactors

In contrast to the 3RT10 contactors – where the main contacts switch in air under atmospheric conditions – the contact gaps of the 3RT12 vacuum contactors are contained in hermetically sealed vacuum contact tubes. These contactors neither generate electric arcs nor arcing gases. The special benefit of the 3RT12 vacuum contactors however is that their electrical endurance is at least twice as long as that of the 3RT10 contactors. They are therefore especially suited for frequent switching in jogging/mixed operation e.g. for crane controls.

Advantages:

- Very long electrical endurance
- High short-time current-carrying capacity for heavy starting
- No reduction of the rated operating currents up to 1000 V
- No open electric arcs, no arcing gases, i.e. no minimum distances required to grounded components
- Longer maintenance intervals
- Increased plant availability

Notes on operation:

- Switching motors with rated operating voltages U_e > 500 V:
  To attenuate overvoltages and protect the motor coil insulation against reignition when switching off induction motors, it is recommended to connect the 3RT19 66-1PV surge-suppression module (RC varistor) to the outgoing side (T1/T2/T3) of the contactors (accessory).
  This additional equipment is not required for use in circuits with converters. It could be destroyed by the voltage peaks and harmonics which are generated.
- Switching DC voltage:
  Vacuum contactors are basically unsuitable for switching direct voltages (DC).

Contactors with conventional operating mechanism

Design 3RT1...-.A:
The solenoid is switched directly on and off with the control supply voltage U_s via terminals A1/A2.

Multi-voltage range for control supply voltage U_s:
A single coil covers several control supply voltages of similar ranges which are used worldwide e.g. UC 110-115-120-127 V or UC 220-230-240 V.

In addition, allowance is also made for a coil 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 overloading occurs.

Contactors with solid-state operating mechanism

The magnetic coil is supplied selectively with the power required for reliable switching and holding by series-connected control electronics.

- Extended 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 variant. For example, the coil for UC 200 to 277 V ($U_{s\,min}$ to $U_{s\,max}$), covers the voltages 200-208-220-230-240-254-277 V used worldwide.
- Extended coil operating range 0.7 to 1.25 × U_s:
  The wide range of the rated control supply voltage and the additional coil operating range of 0.8 × $U_{s\,min}$ to 1.1 × $U_{s\,max}$ results in an extended coil operating range of at least 0.7 to 1.25 × U_s for the most common control supply voltages 24, 110, and 230 V for which the contactors operate reliably.
- 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 operating points:
  For voltages of ≥ 0.8 × $U_{s\,min}$ and higher, the electronics will reliably switch the contactor on and off ≤ 0.5 × $U_{s\,min}$. The differential travel 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 operated with overexcitation).
- Low control power consumption when closing and in the closed state.

Electromagnetic compatibility (EMC)

The contactors with solid-state operating mechanism comply with the requirements for use in industrial installations.

- 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
  - Limiting value class A to EN 55011.

Note:
When used with converters, the control cables must be routed separately from the load cables to the converter.

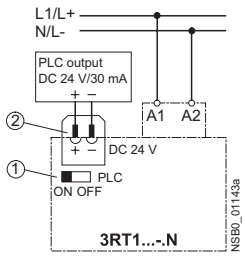
SIRIUS vacuum contactors, 3-pole, 110 ... 250 kW

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

2 control options:

- Control without an interface directly via a DC 24 V/≥ 30 mA PLC output (EN 61131-2). Connection via 2-pole plug-in connection. The screwless spring-operated plug is part of the scope of supply. The control supply voltage which supplies the solenoid must be connected to A1/A2.

Note:
Set sliding dolly switch for PLC operation to "PLC ON" position before commissioning (factory setting: "PLC OFF").

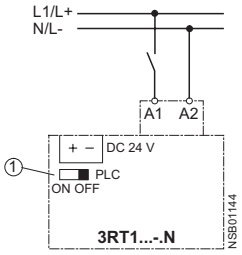


① Sliding dolly switch must be in "PLC ON" position.

② Plug-in connection, 2-pole

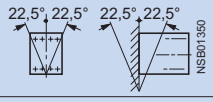
- Conventional control by applying the control supply voltage at A1/A2 via a switching contact.

Note:
Sliding dolly switch must be in "PLC OFF" position (= factory setting).



① Sliding dolly switch must be in "PLC ON" position.
Plug connector, 2-pole

Technical specifications

Contactor	Type Size		3RT12 64 S10	3RT12 65 S10	3RT12 66 S10
General data					
Permissible mounting position The contactors have been 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		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F		
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60/+55 with AS-Interface -55 ... +80		
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20		
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10		
Conductor cross-sections			2)		
Electromagnetic compatibility (EMC)			3)		
Short-circuit protection					
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 4)	A A A	500 500 400		
Auxiliary circuit • Fuse-links, gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq 1$ kA) or miniature circuit-breaker with C characteristic (short-circuit current $I_k \leq 400$ A)		A	10		

1) See Page 2/16

2) See Page 2/66

3) See Page 2/9

4) Standard conditions for testing in accordance with IEC 60947-4-1.

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

Contactor Type Size			3RT12 64 S10	3RT12 65 S10	3RT12 66 S10
Control circuit					
Operating range of the solenoid AC/DC (UC)			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid (when coil is cool and rated range $U_{s\,min}$ ... $U_{s\,max}$)					
• Conventional operating mechanism					
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	530 /0.9		
	Closing at $U_{s\,max}$	VA/p.f.	630 /0.9		
	Closed at $U_{s\,min}$	VA/p.f.	6.1 /0.9		
	Closed at $U_{s\,max}$	VA/p.f.	7.4 /0.9		
- DC operation	Closing at $U_{s\,min}$	W	580		
	Closing at $U_{s\,max}$	W	700		
	Closed at $U_{s\,min}$	W	6.8		
	Closed at $U_{s\,max}$	W	8.2		
• Solid-state operating mechanism					
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	420 /0.8		
	Closing at $U_{s\,max}$	VA/p.f.	570 /0.8		
	Closed at $U_{s\,min}$	VA/p.f.	4.3 /0.8		
	Closed at $U_{s\,max}$	VA/p.f.	5.6 /0.8		
- DC operation	Closing at $U_{s\,min}$	W	460		
	Closing at $U_{s\,max}$	W	630		
	Closed at $U_{s\,min}$	W	3.4		
	Closed at $U_{s\,max}$	W	4.2		
PLC control input (EN 61131-2/type 2)			DC 24 V/≤ 30 mA power consumption (operating range DC 17 ... 30 V)		
Operating times (Total break time = Opening delay + Arcing time)					
• Conventional operating mechanism					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	30 ... 95		
	Opening delay	ms	40 ... 80		
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	35 ... 50		
	Opening delay	ms	50 ... 80		
• Solid-state operating mechanism, operation via A1/A2					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	105 ... 145		
	Opening delay	ms	80 ... 100		
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	110 ... 130		
	Opening delay	ms	80 ... 100		
• Solid-state operating mechanism, operation via PLC input					
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay	ms	45 ... 80		
	Opening delay	ms	80 ... 100		
- for $U_{s\,min}$ ... $U_{s\,max}$	Closing delay	ms	50 ... 65		
	Opening delay	ms	80 ... 100		
• Arcing time		ms	10 ... 15		

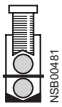
Contactor / Type / Size				3RT12 64 S10	3RT12 65 S10	3RT12 66 S10
Main circuit						
Load rating with AC						
Utilization category AC-1, switching resistive loads						
Rated operating currents I_e	for 40 °C up to 1000 V		A	330		
	for 60 °C up to 1000 V		A	300		
Rated output power of AC loads [1] p.f. = 0.95 (for 60 °C)	for 230 V		kW	113		
	400 V		kW	197		
	500 V		kW	246		
	690 V		kW	340		
	1000 V		kW	492		
Minimum conductor cross-section for loads with I_e	for 40 °C		mm^2	185		
	for 60 °C		mm^2	185		
Utilization category AC-2 and AC-3						
Rated operating currents I_e	up to 1000 V		A	225	265	300
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	73	85	97
	400 V		kW	128	151	171
	500 V		kW	160	189	215
	690 V		kW	223	265	288
	1000 V		kW	320	378	428
Thermal load rating	10 s current[2]		A	1800	2120	2400
Power loss for each conducting path	for I_e/AC-3		W	9	12	14
Utilization category AC-4 (for $I_a = 6 \times I_e$)						
Rated operating current I_e	up to 690 V		A	195	230	280
Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V		kW	110	132	160
• The following applies to contact endurances of about 200,000 operating cycles:						
- Rated operating currents I_e	up to 690 V		A	97	115	140
	1000 V		A	68	81	98
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	30	37	45
	400 V		kW	55	65	79
	500 V		kW	68	81	98
	690 V		kW	94	112	138
	1000 V		kW	95	114	140
Utilization category AC-6a, switching of AC transformers						
Rated operating current I_e						
• For inrush current = 20	up to 690 V		A	278		
• For inrush current = 30	up to 690 V		A	185		
Rated output power P						
• For inrush current = 20	for 230 V		kVA	111		
	400 V		kVA	193		
	500 V		kVA	241		
	690 V		kVA	332		
	1000 V		kVA	482		
• For inrush current = 30	for 230 V		kVA	74		
	400 V		kVA	128		
	500 V		kVA	160		
	690 V		kVA	221		
	1000 V		kVA	320		
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n\,30} \cdot 30/x$						
Utilization category AC-6b, switching low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C						
Rated operating currents I_e	up to 500 V		A	220		
Rating of single capacitors or banks of capacitors (minimum inductance between 6 µH connected in parallel capacitors) at 50 Hz, 60 Hz and	for 230 V		kvar	88		
	400 V		kvar	152		
	500 V		kvar	191		
	690 V		kvar	152		
Operating frequency						
Operating frequency *z* in operating cycles/hour						
• Contactors without overload relay	No-load operation frequency		h^{-1}	2000	2000	
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h	AC-1		h^{-1}	800	750	
	AC-2		h^{-1}	300	250	
	AC-3		h^{-1}	750	750	
	AC-4		h^{-1}	250	250	
• Contactors with overload relay (mean value)			h^{-1}	60	60	

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

2) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

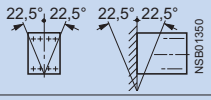
2

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

Contactor	Type Size		**3RT12 6.** **S10**
Main conductor cross-sections			
Screw terminals	**Main conductors:** with 3RT19 66-4G box terminal		
Front terminal connected  NSB00479	• Finely stranded with end sleeve	mm^2	70 ... 240
	• Finely stranded without end sleeve	mm^2	70 ... 240
	• Stranded	mm^2	95 ... 300
	• AWG conductor connections, solid or stranded	AWG	3/0 ... 600 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Back terminal connected  NSB00480	• Finely stranded with end sleeve	mm^2	120 ... 185
	• Finely stranded without end sleeve	mm^2	120 ... 185
	• Stranded	mm^2	120 ... 240
	• AWG conductor connections, solid or stranded	AWG	250 ... 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5
Both terminals connected  NSB00481	• Finely stranded with end sleeve	mm^2	min. 2 x 50, max. 2 x 185
	• Finely stranded without end sleeve	mm^2	min. 2 x 50, max. 2 x 185
	• Stranded	mm^2	min. 2 x 70, max. 2 x 240
	• AWG conductor connections, solid or stranded	AWG	min. 2 x 2/0, max. 1 x 500 kcmil
	• Ribbon cable (number x width x circumference)	mm	max. 2 x (20 x 24 x 0.5)
	• Terminal screws		M 12 (Inbus, SW 5)
	- Tightening torque	Nm	20 ... 22 (180 ... 195 lb.in)
	Main conductors: without box terminal/bar connection		
	• Finely stranded with cable lug [1]	mm^2	50 ... 240
	• Stranded with cable lug [1]	mm^2	70 ... 240
	• AWG conductor connections, solid or stranded	AWG	2/0 ... 500 kcmil
	• Connecting bar (max. width)	mm	25
	• Terminal screws		M 10 x 30 (SW 17)
	- Tightening torque	Nm	14 ... 24 (124 ... 210 lb.in)
Screw terminals	**Auxiliary conductors**		
	• Solid	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG conductor connections, solid or stranded	AWG	2 x (18 ... 14)
	• Terminal screws		M 3 (PZ_2)
	- Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)

1) If cable lugs acc. to DIN 46 234 are connected as of a conductor cross-section of 240 mm^2 and acc. to DIN 46235 as of a conductor cross-section of 185 mm^2, a 3RT19 66-4EA1 terminal cover must be used to comply with the phase clearance.

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

Contactor	Type Size		3RT12 75 S12	3RT12 76 S12
General data				
Permissible mounting position The contactors have been designed for operation on a vertical mounting surface.				
Mechanical endurance		Oper-ating cycles	10 million	
Electrical endurance			1)	
Rated insulation voltage U_i (pollution degree 3)		V	1000	
Rated impulse withstand voltage U_{imp}		kV	8	
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690	
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F	
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +60/+55 with AS-Interface -55 ... +80	
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20	
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10	
Conductor cross-sections			2)	
Electromagnetic compatibility (EMC)			3)	
Short-circuit protection				
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE - to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free 4)	A A A	800 800 500	
Auxiliary circuit • Fuse-links, gL/gG DIAZED 5SB, NEOZED 5SE (weld-free protection for $I_k \geq 1$ kA) or miniature circuit-breaker with C characteristic (short-circuit current $I_k < 400$ A)		A	10	

1) See Page 2/16

2) See Page 2/49

3) See Page 2/9

4) Standard conditions for testing in accordance with IEC 60947-4-1.

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

Contactor	Type Size		3RT12 75 S12	3RT12 76 S12
Control circuit				
Operating range of the solenoid	AC/DC (UC)		0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	
Power consumption of the solenoid (when coil is cool and rated range $U_{s\ min}$ ... $U_{s\ max}$)				
• Conventional operating mechanism				
- AC operation	Closing at $U_{s\ min}$	VA/p.f.	700 /0.9	
	Closing at $U_{s\ max}$	VA/p.f.	830 /0.9	
	Closed at $U_{s\ min}$	VA/p.f.	7.6 /0.9	
	Closed at $U_{s\ max}$	VA/p.f.	9.2 /0.9	
- DC operation	Closing at $U_{s\ min}$	W	770	
	Closing at $U_{s\ max}$	W	920	
	Closed at $U_{s\ min}$	W	8.5	
	Closed at $U_{s\ max}$	W	10	
• Solid-state operating mechanism				
- AC operation	Closing at $U_{s\ min}$	VA/p.f.	560 /0.8	
	Closing at $U_{s\ max}$	VA/p.f.	750 /0.8	
	Closed at $U_{s\ min}$	VA/p.f.	5.4 /0.8	
	Closed at $U_{s\ max}$	VA/p.f.	7 /0.8	
- DC operation	Closing at $U_{s\ min}$	W	600	
	Closing at $U_{s\ max}$	W	800	
	Closed $U_{s\ min}$	W	4	
	Closed $U_{s\ max}$	W	5	
PLC control input (EN 61131-2/type 2)			DC 24 V/≤ 30 mA power consumption (operating range DC 17 ... 30 V)	
Operating times (Total break time = Opening delay + Arcing time)				
• Conventional operating mechanism				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	45 ... 100	
	Opening delay	ms	60 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	50 ... 70	
	Opening delay	ms	70 ... 100	
• Solid-state operating mechanism, operation via A1/A2				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	120 ... 150	
	Opening delay	ms	80 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	125 ... 150	
	Opening delay	ms	80 ... 100	
• Solid-state operating mechanism, operation via PLC input				
- 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$	Closing delay	ms	60 ... 90	
	Opening delay	ms	80 ... 100	
- for $U_{s\ min}$ ... $U_{s\ max}$	Closing delay	ms	65 ... 80	
	Opening delay	ms	80 ... 100	
• Arcing time		ms	10 ... 15	

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

Contactor	Type / Size			3RT12 75 S12	3RT12 76 S12
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating currents I_e	for 40 °C up to 1000 V		A	610	
	for 60 °C up to 1000 V		A	550	
Rated output power of AC loads [1] p.f. = 0.95 (for 60 °C)	for 230 V		kW	208	
	400 V		kW	362	
	500 V		kW	452	
	690 V		kW	624	
	1000 V		kW	905	
Minimum conductor cross-section for loads with I_e	for 40 °C		mm^2	2 x 185	
	for 60 °C		mm^2	2 x 185	
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 1000 V		A	400	500
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	132	164
	400 V		kW	231	291
	500 V		kW	291	363
	690 V		kW	400	507
	1000 V		kW	578	728
Thermal load rating	10 s current[2]		A	3200	4000
Power loss for each conducting path	for I_e/AC-3		W	21	32
Utilization category AC-4 (for I_a = 6 x I_e)					
Rated operating current I_e	up to 690 V		A	350	430
Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 400 V		kW	200	250
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	690 V		A	175	215
	1000 V		A	123	151
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	for 230 V		kW	56	70
	400 V		kW	98	122
	500 V		kW	124	153
	690 V		kW	172	212
	1000 V		kW	183	217
Utilization category AC-6a, switching of AC transformers					
Rated operating current I_e					
• For inrush current = 20	up to 690 V		A	419	
• For inrush current = 30	up to 690 V		A	279	
Rated output power P					
• For inrush current = 20	for 230 V		kVA	167	
	400 V		kVA	290	
	500 V		kVA	363	
	690 V		kVA	501	
	1000 V		kVA	726	
• For inrush current = 30	for 230 V		kVA	111	
	400 V		kVA	193	
	500 V		kVA	241	
	690 V		kVA	332	
	1000 V		kVA	482	
For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n\,30} \cdot 30/x$					
Utilization category AC-6b, switching low-inductance (low-loss, metallized dielectric) AC capacitors Ambient temperature 40 °C					
Rated operating currents I_e	up to 500 V		A	407	
Rated output power of single capacitors or banks of capacitors (minimum inductance between 6 µH connected in parallel capacitors) at 50 Hz, 60 Hz and	for 230 V		kvar	162	
	400 V		kvar	282	
	500 V		kvar	352	
	690 V		kvar	282	
Operating frequency					
Operating frequency *z* in operating cycles/hour					
• Contactors without overload relay	No-load operation frequency		h^{-1}	2000	
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1,5}$ 1/h	AC-1		h^{-1}	700	
	AC-2		h^{-1}	250	
	AC-3		h^{-1}	750	
	AC-4		h^{-1}	250	
• Contactors with overload relay (mean value)			h^{-1}	60	

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

2) In accordance with EC 60947-4-1.
For rated values for different start-up conditions see Protection devices: Overload relay -> SIRIUS overload relay.

2

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

Contactor	Type Size			**3RT12 7.** **S12**
Conductor cross-sections				
Screw terminals	**Main conductors:** with 3RT19 66-4G box terminal			
Front terminal connected  NSB00479	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • AWG conductor connections, solid or stranded • Ribbon cable (number x width x circumference)	mm² mm² mm² 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
Back terminal connected  NSB00480	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • AWG conductor connections, solid or stranded • Ribbon cable (number x width x circumference)	mm² mm² mm² 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 terminals connected  NSB00481	• Finely stranded with end sleeve • Finely stranded without end sleeve • Stranded • AWG conductor connections, solid or stranded • Ribbon cable (number x width x circumference) • Terminal screws - Tightening torque	mm² mm² mm² 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 2/0, max. 2 x 500 kcmil max. 2 x (20 x 24 x 0.5) M 12 (inbus, SW 5) 20 ... 22 (180 ... 195 lb.in)
	Main conductors: without box terminal/bar connection			
	• Finely stranded with cable lug [1] • Stranded with cable lug [1] • AWG conductor connections, solid or stranded • Connecting bar (max. width) • Terminal screws - Tightening torque	mm² mm² AWG mm Nm	50 ... 240 70 ... 240 2/0 ... 500 kcmil 25 M 10 x 30 (SW 17) 14 ... 24 (124 ... 240 lb.in)
Screw terminals	**Auxiliary conductors**		
	• Solid • Finely stranded with end sleeve • AWG conductor connections, solid or stranded • Terminal screws - Tightening torque	mm² mm² AWG Nm	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4) 2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) 2 x (18 ... 14) M 3 (PZ_2) 0.8 ... 1.2 (7 ... 10.3 lb.in)

1) If cable lugs acc. to DIN 46 234 are connected as of a conductor cross-section of 240 mm² and acc. to DIN 46235 as of a conductor cross-section of 185 mm², a 3RT19 66-4EA1 terminal cover must be used to comply with the phase clearance.

Contactor	Type Size			**3RT12 64** **S10**	**3RT12 65** **S10**	**3RT12 66** **S10**	**3RT12 75** **S12**	**3RT12 76** **S12**
CSA and UL rated data								
Rated insulation voltage			AC V	600			600	
Continuous current, at 40 °C	Open and enclosed		A	330			540	
Maximum horsepower ratings (CSA and UL approved values)								
Rated output power for induction motors at 60 Hz		at 200 V	hp	60	75	100	125	150
		230 V	hp	75	100	125	150	200
		460 V	hp	150	200	250	300	400
		575 V	hp	200	250	300	400	500
Short-circuit protection			kA	10	18	18	18	30
	Fuse CLASS RK5/L		A	700	800	800	1200	1200
	Power switch to UL 489		A	500	700	900	1000	1200
NEMA/EEMAC ratings	NEMA/EEMAC size			-		5	-	6
Continuous current	Open		A	-		300	-	600
	Enclosed		A	-		270	-	540
Rated output power for induction motors at 60 Hz		at 200 V	hp	-		75	-	150
		230 V	hp	-		100	-	200
		460 V	hp	-		200	-	400
		575 V	hp	-		200	-	400
Overload relay type	Type			3RB10 66			3RB10 66	

Selection and ordering data

AC/DC operation *(40 Hz to 60 Hz, DC)*
Withdrawable coils
Integrated coil circuit *(varistor)*
Auxiliary and control conductors:
Screw terminals
Main conductors: Bar connections

3RT12 6.

3RT12 7.

Size	Rated data AC-2 and AC-3, T_u: up to 60 °C					Rated data AC-1, T_u: 40 °C	Lateral auxiliary contacts		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e	Rating of induction motors at 50 Hz and				Operating current I_e							
	up to 1000 V	230 V	**400 V**	500 V	690 V	up to 1000 V							
	A	kW	**kW**	kW	kW	A	NO	NC	AC/DC V				kg
Conventional operating mechanism													
S10	225	55	**110**	160	200	330	2	2	110 ... 127 220 ... 240	A A	**3RT12 64-6AF36** **3RT12 64-6AP36**	1 unit 1 unit	7.350 7.220
	265	75	**132**	160	250	330	2	2	110 ... 127 220 ... 240	A A	**3RT12 65-6AF36** **3RT12 65-6AP36**	1 unit 1 unit	7.380 7.300
	300	90	**160**	200	250	330	2	2	110 ... 127 220 ... 240	A A	**3RT12 66-6AF36** **3RT12 66-6AP36**	1 unit 1 unit	7.330 7.310
S12	400	132	**200**	250	400	610	2	2	110 ... 127 220 ... 240	A A	**3RT12 75-6AF36** **3RT12 75-6AP36**	1 unit 1 unit	10.500 10.300
	500	160	**250**	355	500	610	2	2	110 ... 127 220 ... 240	A A	**3RT12 76-6AF36** **3RT12 76-6AP36**	1 unit 1 unit	10.500 10.400
Solid-state operating mechanism · for DC 24 V PLC output													
S10	225	55	**110**	160	200	330	2	2	96 ... 127 200 ... 277	B B	**3RT12 64-6NF36** **3RT12 64-6NP36**	1 unit 1 unit	7.400 7.390
	265	75	**132**	160	250	330	2	2	96 ... 127 200 ... 277	B B	**3RT12 65-6NF36** **3RT12 65-6NP36**	1 unit 1 unit	7.400 7.390
	300	90	**160**	200	250	330	2	2	96 ... 127 200 ... 277	B B	**3RT12 66-6NF36** **3RT12 66-6NP36**	1 unit 1 unit	7.400 7.400
S12	400	132	**200**	250	400	610	2	2	96 ... 127 200 ... 277	B B	**3RT12 75-6NF36** **3RT12 75-6NP36**	1 unit 1 unit	7.250 10.200
	500	160	**250**	355	500	610	2	2	96 ... 127 200 ... 277	B B	**3RT12 76-6NF36** **3RT12 76-6NP36**	1 unit 1 unit	10.500 10.200

For further voltages, see Page 2/61
For other vacuum contactors (335 kW and 450 kW) (3TF68/69), see Page 2/78
For accessories, see Page 2/182
For spare parts, see Page 2/194
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/233

***This quantity or a multiple thereof can be ordered.**

2

Vacuum contactors, 3-pole, 335 ... 450 kW

Overview

EN 60947-4-1 (VDE 0660 Part 102)

The 3TF68/69 contactors are climate-proof. They are finger-safe according to DIN VDE 0106, Part 100. Depending on the arrangement in relation to other devices, the connecting bars may have to be fitted with terminal covers (see Accessories, Page 2/198).

Functions

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 three 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 three vacuum interrupters.

Auxiliary contacts

Contact reliability

The auxiliary contacts are suitable for solid-state circuits

- with currents ≥ 1 mA
- and voltages from 17 V.

Overvoltage damping

Control circuit

Protection of coils against overvoltages:

AC operation

- Fitted with varistors as standard.

DC operation

Retrofitting options:

- With varistors

If TF68/TF69 is to be used for DC operation, an additional reversing contactor is required; this is automatically included in the delivery in the same packaging as the contactor.

Electromagnetic compatibility

3TF68/69..- **C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high immunity against interference.

Contactor type	Rated control supply voltage U_s	Overvoltage type (IEC 60801)	Degree of severity (IEC 60801)	Overvoltage strength
3TF68 44-.C.., 3TF69 44.-C..	110 V ... 132 V	Burst surge	3 4	2 kV 6 kV
	200 V ... 276 V	Burst surge	4 4	4 kV 5 kV
	380 V ... 600 V	Burst surge	4 4	4 kV 6 kV

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 conductor path circuit are recommended (see description below).*

Application

The standard 3TF68..-.C and 3TF69..-.C contactors with electronically-controlled contactor mechanism have high resistance to electromagnetic interference (EMC).
The 3TF68..-.Q and 3TF69..-.Q contactors have been designed for use in installations in which the AC control supply voltage is subject to very high levels of interference.

Causes for such interference can be, for example:

- Frequency converters which are operated nearby can cause periodic overvoltages at the control level of the contactors.
- High-energy pulses caused by switching operations and atmospheric discharges can cause interference on the control wires.

To reduce interference voltages caused by frequency converters, the manufacturer recommends the use of e.g. input filters, output filters, grounding or screening in the installation.

Further measures that should be applied for overvoltage damping:

- Feeding the contactors via control-power transformers to EN 60204 rather than directly from the mains.
- Use of overvoltage arrestors, if required.

For operating conditions where there are high interference voltages and no measures that reduce interference voltage coupling to the control voltage level have been taken, use of contactors 3TF68..-.Q and 3TF69..-.Q is highly recommended.

Design

The magnetic systems of the 3TF68..-.Q and 3TF69..-.Q contactors for AC operation are equipped with rectifiers for DC economy connection.

A 3TC44 reversing contactor with a mounted series resistor is used to switch to the holding excitation.

The reversing contactor can be fitted separately. The reversing contactor is connected to the 3TF6 main contactor via a one-meter connection lead with plug-in connector.

Connection

Control circuit

The rectifier bridge is connected to varistors for protection against overvoltages. The built-in rectifier bridge affords sufficient protection for the coils.

Main circuit

As standard 3TF6 contactors with integrated RC varistors.

Protection of the main conducting paths

An integrated RC varistor circuit for the main conducting paths of the contactors dampens the switching overvoltage rises to safe values. This prevents multiple restriking.

The operator of an installation can therefore rest assured that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

Important note:
The overvoltage damping circuit is not required if 3TF68/69 contactors are used in circuits with DC choppers, frequency converters or variable-speed drives, for example. It could be destroyed by the voltage peaks and harmonics which are generated.This may also cause phase-to-phase short-circuits in the contactors.

*Solution: Order special contactor design without overvoltage damping. The Order No. must contain a **"-Z"** and the order code **"A02"**. Without additional charge.*

Technical specifications

Contactor Type			3TF68 and 3TF69
Rated data for the auxiliary contacts			to IEC 60947-5-1/DIN VDE 0660 Part 200
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = rated operating current I_e/AC-12		A	10
AC load **Rated operating current I_e/AC-15/AC-14** For rated operating voltage U_e			
	24 V	A	10
	110 V	A	10
	125 V	A	10
	220 V	A	6
	230 V	A	5.6
	380 V	A	4
	400 V	A	3.6
	500 V	A	2.5
	660 V	A	2.5
	690 V	A	2.3
DC load **Rated operating current I_e/DC-12** for rated operating voltage U_e			
	24 V	A	10
	48 V	A	10
	110 V	A	3.2
	125 V	A	2.5
	220 V	A	0.9
	440 V	A	0.33
	600 V	A	0.22
Rated operating current I_e/DC-13 For rated operating voltage U_e			
	24 V	A	10
	48 V	A	5
	110 V	A	1.14
	125 V	A	0.98
	220 V	A	0.48
	440 V	A	0.13
	600 V	A	0.07

Contactor Type			3TF68 and 3TF69
CSA and UL rated data for the auxiliary contacts			
Rated voltage		AC V, max.	600
Switching capacity			A 600, P 600

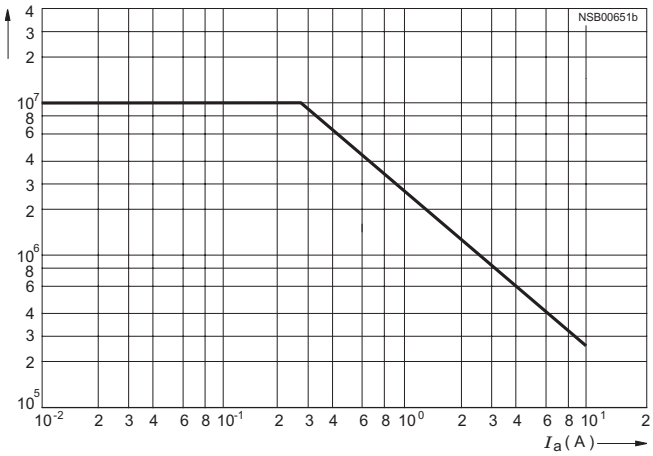
2

Vacuum contactors, 3-pole, 335 ... 450 kW

Contact endurance of 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.

3TF68 and 3TF69
contactors at 230 V AC

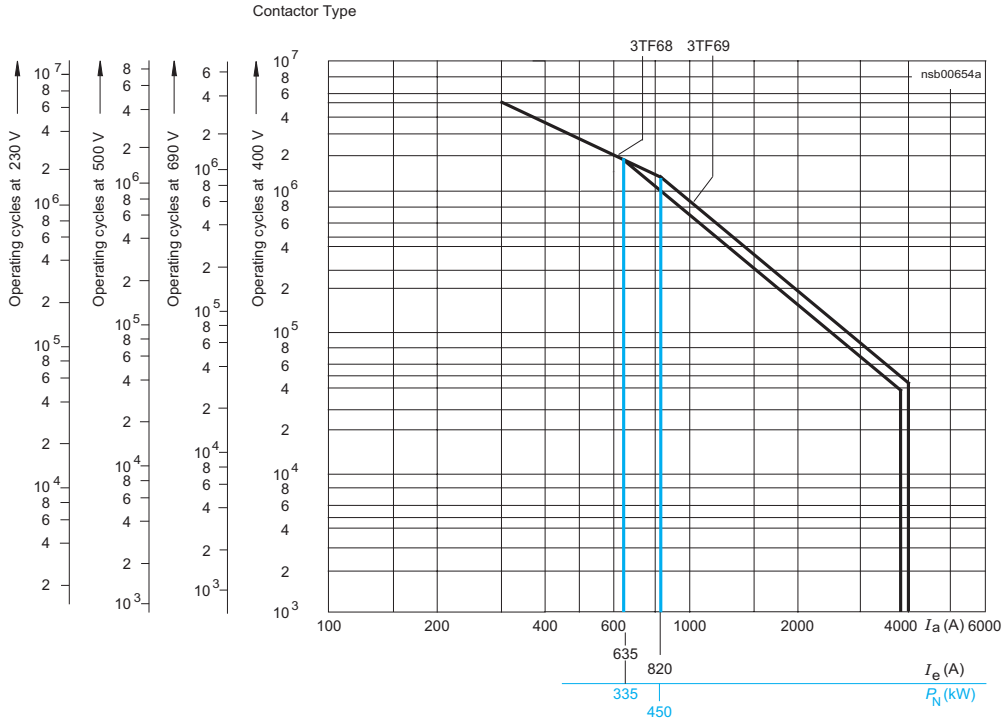


Contact erosion indication for 3TF68 and 3TF69 vacuum contactors

The contact erosion of the vacuum interrupters can be monitored in the closed position by means of three 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 three vacuum interrupters.

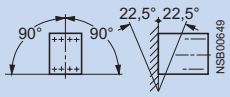
Endurance of the main contacts



3TF68 and 3TF69 contactors

Legend for the diagrams:
P_N = Rated output for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operating current

Vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type Size		3TF68 14	3TF69 14
General data				
Permissible mounting position, mounting instructions[1)2)] The contactors have been designed for operation on a vertical mounting surface[3)].	AC operation and DC economy circuit			
Mechanical endurance	Operating cycles		5 million	
Electrical endurance	Operating cycles		[4)]	
Rated insulation voltage U_i (pollution degree 3)		V	1000	
Rated impulse withstand voltage U_{imp}		kV	8	
Safe isolation between coil and main contacts to DIN VDE 0106 Part 101 and A1 (draft 2/89)		V	1000	
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time. One NC contact each must be connected in series for the right and left auxiliary switch block respectively.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F	
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +55 -55 ... +80	
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, drive system IP40	
Shock resistance				
Rectangular pulse	AC operation DC operation	g/ms g/ms	8.1/5 and 4.7/10 9/5 and 5.7/10	9.5/5 and 5.7/10 8.6/5 and 5.1/10
Sine pulse	AC operation DC operation	g/ms g/ms	12.8/5 and 7.4/10 14.4/5 and 9.1/10	13.5/5 and 7.8/10 13.5/5 and 7.8/10
Conductor cross-sections			See Page 2/77	
Electromagnetic compatibility (EMC)			See Page 2/72	
Short-circuit protection				
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE				
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free [5)]	A A A	1000 500 400	1250 630 500
Auxiliary circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE (weld-free protection at $I_k \geq$ 1kA) or miniature circuit-breaker with C characteristic ($I_k <$ 400 A)		A	10	
Control circuit				
Coil operating range			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	
Power consumption of the magnetic coils (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, $U_{s\,max}$	- Closing - Closed	VA/p.f. VA/p.f.	1200 / 1 13.5 /0.47	600 /0.98 12.9 /0.43
• DC economy circuit[6)]	- Closing at 24 V - Closed	W W	1010 28	960 20.6
For contactors of type 3TF68/69..-.**Q**:				
• AC operation, $U_{s\,min}$[7)]	- Closing - Closed	VA/p.f. VA/p.f.	1000 /0.99 11/1	1150/0.99 11/1
Operating times at 0.8 ... 1.1 x U_s (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)[8)] 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
For contactors of type 3TF68/69..-.**Q**:				
• AC operation, $U_{s\,max}$	- Closing delay - Opening delay	ms ms	35 ... 90 65 ... 90	45 ... 160 30 ... 80
Operating times at 1.0 x U_s (Total break time = Opening delay + Arcing time)				
• AC operation	- Closing delay - Opening delay	ms ms	80 ... 100 (30 ... 45)[8)] 70 ... 100	85 ... 100 70
• DC economy circuit	- Closing delay - Opening delay	ms ms	80 ... 90 50	90 ... 125 19 ... 25
Minimum command duration for closing	Standard Reduced make time	ms ms	120 90	120 -
Minimum interval time between two ON commands		ms	100	300

1) To easily replace the laterally mounted auxiliary contacts, it is recommended to maintain a minimum distance of 30 mm between the contactors.
2) If mounted at a 90° angle (current paths are horizontally above each other), the operating frequency is reduced by 80% compared with the normal values.
3) The contactors can also be supplied for vertical mounting positions. The Order No. must include **"-Z"** and the order code **"B01"**.
4) See Page 2/74
5) Standard conditions for testing in accordance with IEC 60947-4-1.
6) At DC 24 V; for further voltages, deviations of up to ±10 % are possible.
7) Including reversing contactor.
8) Values in brackets apply to contactors with reduced operating times.

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Vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type Size			3TF68 14	3TF69 14
Main circuit					
Load rating with AC					
Utilization category AC-1, switching resistive loads					
Rated operating currents I_e	for 40 °C up to 690 V		A	700	910
	for 55 °C up to 690 V		A	630	850
	for 55 °C up to 1000 V		A	450	800
Rated output power of AC loads p.f. = 0.95 for 55 °C	for 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-section for loads with I_e	for 40 °C		mm^2	2 x 240	$I_e \geq 800$ A: 2 x 260 x 5
	for 55 °C		mm^2	2 x 185	$I_e > 800$ A: 2 x 240
Utilization category AC-2 and AC-3					
Rated operating currents I_e	up to 690 V		A	630	820
	1000 V		A	435	580
Rated output power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	for 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
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
Rated operating current I_e	up to 690 V		A	610	690
Rating for squirrel-cage motors at 50 and 60 Hz	for 400 V		kW	355	400
• The following applies to contact endurances of about 200,000 operating cycles:					
- Rated operating currents I_e	up to 690 V		A	300	360
	1000 V		A	210	250
- Rated output power for squirrel-cage motors at 50 and 60 Hz	for 230 V		kW	97	110
	400 V		kW	168	191
	500 V [1]		kW	210	250
	690 V [1]		kW	278	335
	1000 V [1]		kW	290	350
Utilization category AC-6a, switching of AC transformers					
Rated operating currents I_e	up to 400 V				
• For inrush current = 20			A	513	675
• For inrush current = 30			A	342	450
Rated output power P					
• For inrush current = 20	230 V		kVA	195	256
	400 V		kVA	338	445
	500 V		kVA	444	584
	690 V		kVA	586	771
	1000 V		kVA	752	1003
• For inrush current n = 30 [2]	230 V		kVA	130	171
	400 V		kVA	226	297
	500 V		kVA	296	389
	690 V		kVA	390	514
	1000 V		kVA	592	778
Utilization category AC-6b, switching of low-inductance (low-loss, metallized dielectric) AC capacitors					
Rated operating currents I_e	up to 400 V		A	433	
Rated output power for single capacitors at 50 and 60 Hz	for 230 V		kvar	175	
	400 V		kvar	300	
	500 V		kvar	400	
	690 V		kvar	300	
Rated output power of bank of capacitors (minimum inductance is 6 µH between capacitors connected in parallel) at 50 and 60 Hz	for 230 V		kvar	145	
	400 V		kvar	250	
	500 V		kvar	333	
	690 V		kvar	250	

1) Maximum permissible operating current I_e/AC-4 = I_e/AC-3 up to 500 V, for reduced contact endurance and operating frequency.

2) For deviating inrush current factors x, the power must be recalculated as follows: $P_x = P_{n30} \cdot 30/x$

Vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type Size		3TF68 14	3TF69 14
Main circuit				
Load rating with AC				
Short-time current-carrying capacity (5 ... 30 s)				
• CLASS 5 and 10		A	630	820
• CLASS 15		A	630	662
• CLASS 20		A	536	572
• CLASS 25		A	479	531
• CLASS 30		A	441	500
• Thermal current-carrying capacity 10-s-current [1]			5040	7000
• **Power loss per conducting path** at I_e/AC-3/690 V		W	45	70
Operating frequency				
Operating frequency *z* in operating cycles/hour				
• Contactors without overload relay	No-load operating frequency AC	h^{-1}	2000	1000
	No-load operating frequency DC	h^{-1}	1000	1000
	AC-1	h^{-1}	700	700
	AC-2	h^{-1}	200	200
	AC-3	h^{-1}	500	500
	AC-4	h^{-1}	150	150
• Contactors with overload relay (mean value)		h^{-1}	15	15
Conductor cross-sections				
Screw terminals	**Main conductors**			
	• Bar connections			
	- Finely stranded with cable lug	mm^2	50 ... 240	50 ... 240
	- Stranded with cable lug	mm^2	70 ... 240	50 ... 240
	- Solid or stranded	AWG	2/0 ... 500 kcmil	2/0 ... 500 kcmil
	- Connecting bar (max. width)	mm	50	60 ($U_e \leq$ 690 V) 50 ($U_e >$ 690 V)
	• Terminal screw		M 10 x 30	M 12 x 40
	- Tightening torque	Nm	14 ... 24 (124 ... 210 lb.in)	20 ... 35 (177 ... 310 lb.in)
	• with box terminal [2]			
	- Connectable copper bars			
	- Width	mm	15 ... 25	15 ... 38
	- Max. depth	mm	1 x 26 or 2 x 11	1 x 46 or 2 x 18
	• Terminal screw		SW 6 (Inbus)	SW 8 (Inbus)
	- Tightening torque	Nm	25 ... 40 (221 ... 354 lb.in)	35 ... 50 (266 ... 443 lb.in)
	Auxiliary conductors			
	• Solid	mm^2	min. 2 x 0.5, max. 12 x 12.5	
	• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1) / 2 x (0.75 ... 2.5)	
	• Pin-end connector to DIN 46231	mm^2	2 x (1 ... 1.5)	
	• Solid or stranded	AWG	2 x (18 ... 12)	
	• Tightening torque	Nm	0.8 ... 1.4 (7 ... 12 lb.in)	
CSA and UL rated data				
Rated insulation voltage		AC V	600	600
Continuous current	Open and enclosed	A	630	820
Maximum horsepower ratings (CSA and UL approved values)				
Rated output power for induction motors at 60 Hz	at 200 V	hp	231	290
	230 V	hp	266	350
	460 V	hp	530	700
	575 V	hp	664	860
NEMA/EEMAC ratings				
SIZE			6	7
Continuous current	Open	A	600	820
	Enclosed	A	540	810
Rated output power for induction motors at 60 Hz	at 200 V	hp	150	-
	230 V	hp	200	300
	460 V	hp	400	600
	575 V	hp	400	600
Overload relay	Type		3RB12	
	Adjustment range	A	200 ... 820	

Short-circuit protection with overload relays,
see Protection devices: Overload relay -> SIRIUS overload relay.

1) In accordance with IEC 60947-4-1.

2) For accessories, see Page 2/198

2

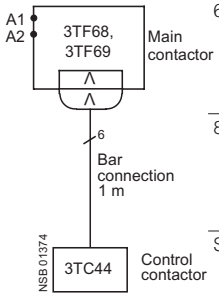
Vacuum contactors, 3-pole, 335 ... 450 kW

Selection and ordering data

Auxiliary and control conductors: screw terminals
for main conductors: bar connections, size 14

Rated data AC-2 and AC-3 (up to 55 °C)						AC-1	Auxiliary contacts		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
Operating current I_e up to 690 V	Rating of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	1000 V	Operating current I_e (at 40 °C)	Version						
A	kW	**kW**	kW	kW	kW	A	NO	NC	V				kg
AC operation[1)2)]													
630	200	**335**	434	600	-	700	4	4	AC 110 ... 132, 50/60 Hz ▶		**3TF68 44-0CF7**	1 unit	19.300
									AC 200 ... 240, 50/60 Hz ▶		**3TF68 44-0CM7**	1 unit	19.800
630	200	**335**	434	600	600	700	4	4	AC 110 ... 132, 50/60 Hz	C	**3TF68 44-8CF7**	1 unit	19.600
									AC 200 ... 240, 50/60 Hz	B	**3TF68 44-8CM7**	1 unit	20.200
820	260	**450**	600	800	-	910	4	4	AC 110 ... 132, 50/60 Hz	B	**3TF68 44-0CF7**	1 unit	21.800
									AC 200 ... 240, 50/60 Hz ▶		**3TF68 44-0CM7**	1 unit	22.100
820	260	**450**	600	800	800	910	4	4	AC 110 ... 132, 50/60 Hz	C	**3TF68 44-8CF7**	1 unit	22.400
									AC 200 ... 240, 50/60 Hz	C	**3TF68 44-8CM7**	1 unit	22.300
DC operation · DC economy circuit													
630	200	**335**	434	600	-	700	3	3	DC 24	C	**3TF68 33-1DB4**	1 unit	19.500
					600					C	**3TF68 33-8DB4**	1 unit	17.900
820	260	**450**	600	800	-	910	3	3	DC 24	C	**3TF68 33-1DB4**	1 unit	22.600
					800					C	**3TF68 33-8DB4**	1 unit	12.200
AC operation · Version for AC controls which are subject to strong interference													
630	200	**335**	434	600	-	700	3	3	AC 110 ... 120, 50/60 Hz	B	**3TF68 33-1QG7**	1 unit	18.500
					-				AC 220 ... 240, 50/60 Hz	B	**3TF68 33-1QL7**	1 unit	21.100
					-				AC 380 ... 420, 50/60 Hz	B	**3TF68 33-1QV7**	1 unit	20.700
					600	700	3	3	AC 110 ... 120, 50/60 Hz	C	**3TF68 33-8QG7**	1 unit	21.000
									AC 220 ... 240, 50/60 Hz	C	**3TF68 33-8QL7**	1 unit	21.000
820	260	450	600	800	-	910	3	3	AC 110 ... 120, 50/60 Hz	B	**3TF69 33-1QG7**	1 unit	22.500
					-				AC 220 ... 240, 50/60 Hz	B	**3TF68 33-1QL7**	1 unit	22.500
					-				AC 380 ... 420, 50/60 Hz	B	**3TF69 33-1QV7**	1 unit	22.600
					800	910	3	3	AC 110 ... 120, 50/60 Hz	D	**3TF69 33-8QG7**	1 unit	21.900
									AC 220 ... 240, 50/60 Hz	D	**3TF68 33-8QL7**	1 unit	22.800
Supplied reversing contactors: 3TC44 17-4A..													

3TF68



For accessories, see Page 2/197
For spare parts, see Page 2/202
For internal circuit diagrams, see Page 2/221
For connection diagrams, see Page 2/225
For dimension drawings, see Page 2/253

1) Built-in overvoltage damping: varistor circuit.

2) For more information on EMC, see description on Page 2/72.
3TF68/69 vacuum contactors are supplied with integrated overvoltage damping for the main conducting paths (description, Page 2/72). The overvoltage damping circuit is not required if 3TF68/69 contactors are used in circuits with DC choppers, frequency converters or variable-speed drives, for example. It 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 charge.
The Order No. must include **"-Z"** and the order code **"A02"**.

Contactor	Type	**3TF** 3TF68..-.C/D 3TF69..-.C/D
Rated control supply voltages (the 10th and 11th position of the Order No. must be changed)		
AC operation · Magnetic coils for 50/60 Hz		
AC/DC 110 ... 132 V		**F7**
AC/DC 200 ... 240 V		**M7**
AC/DC 230 ... 277 V		**P7**
AC/DC 380 ... 460 V		**Q7**
AC/DC 500 ... 600 V		**S7**
DC operation		
DC 24 V		**B4**
DC 110 V		**F4**
DC 125 V		**G4**
DC 220 V		**M4**
DC 230 V		**P4**

***This quantity or a multiple thereof can be ordered.**

Technical specifications

Contactor Type			3TB50	3TB52 to 3TB56
Rated data for the auxiliary contacts			to IEC 60947-5-1/DIN VDE 0660 Part 200	
Rated insulation voltage U_i (Pollution degree 3)		V	690	
Conventional thermal current I_{th} = Rated operating current I_e/AC-12		A	10	
AC load **Rated operating current I_e/AC-15/AC-14** For rated operating voltage U_e				
	24 V	A	10	
	110 V	A	10	
	125 V	A	10	
	220 V	A	6	
	230 V	A	5.6	
	380 V	A	4	
	400 V	A	3.6	
	500 V	A	2.5	
	660 V	A	2.5	
	690 V	A	-	
DC load **Rated operating current I_e/DC-12** For rated operating voltage U_e				
	24 V	A	10	10
	48 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
Rated operating current I_e/DC-13 For rated operating voltage U_e				
	24 V	A	10 (10)[1]	10 (10)[1]
	48 V	A	5 (7)	5 (4)
	110 V	A	1.14 (3.2)	2.4 (1.8)
	125 V	A	0.98 (2.5)	2.1 (1.6)
	220 V	A	0.48 (0.9)	1.1 (0.9)
	440 V	A	0.13 (0.33)	0.32 (0.27)
	600 V	A	0.075 (0.22)	0.21 (0.18)

Contactor Type			3TB50 to 3TB56
CSA and UL rated data for the auxiliary contacts			
Rated voltage		AC V, max.	600
Switching capacity			A 600, P 600

1) Values in brackets apply to auxiliary contacts with offset NC contact.

2

Contactors with DC solenoid system 3-pole, 55 ... 200 kW

Contact endurance of main contacts

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

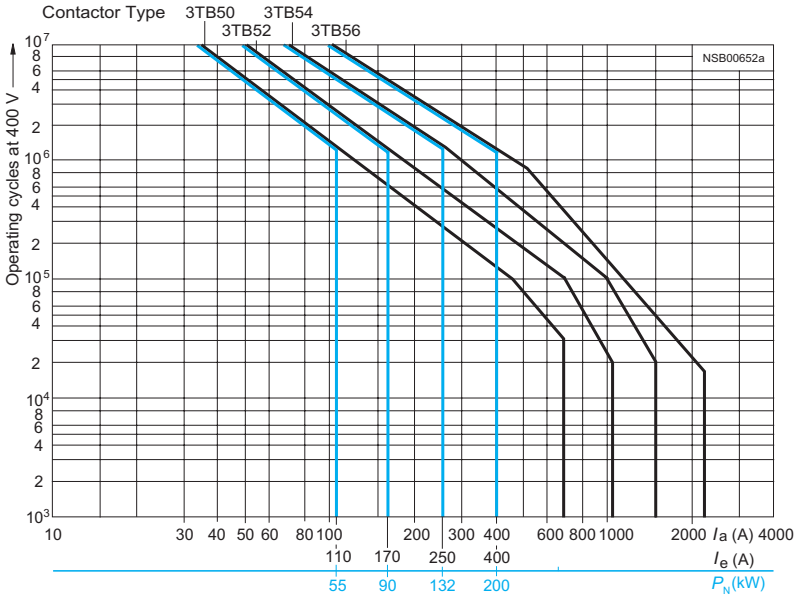
The rated operating current I_e complies with utilization category AC-4 (breaking of 6 times the rated operating current) and is intended for a contact endurance of about 200 000 operating cycles.

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

If the contacts are used for mixed operation i.e. if standard switching (breaking of the rated operating current in accordance with utilization category AC-3) is sometimes mixed with jog mode (breaking of multiples of the rated operating current in accordance with utilization category AC-4), the endurance of the contacts can be estimated with the following formula:

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

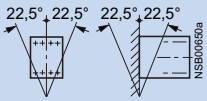
The following abbreviations are used in the formula:
X Contact endurance for mixed operation in operating cycles
A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
B Contact endurance for jog mode (I_a = multiples of I_e) in operating cycles
C Number of jog operations of total operations in percent



3TB50 to 3TB56 contactors

Legend for the diagrams:
P_N = Rated output for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operating current

Contactors with DC solenoid system 3-pole, 55 ... 200 kW

Contactor	Type / Size		3TB50 6	3TB52 8	3TB54 10	3TB56 12
General data						
Permissible mounting position, assembly note [1] The contactors have been designed for operation on a vertical mounting surface.						
Mechanical endurance		Operating cycles	10 million			
Electrical endurance			[2]			
Rated insulation voltage U_i		V	1000			
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)		V	690			
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary switch blocks to ZH 1/457, IEC 60947-4-1, Appendix F			
Permissible ambient temperature	For operation For storage	°C °C	-25 ... +55 -50 ... +80			
Degree of protection to IEC 60947-1/IEC 60529			IP00 (open), coil assembly IP40			
Shock resistance (rectangular pulse)		g/ms	5/10	5.9/10	5.9/10	5.9/10
Short-circuit protection						
Main circuit						
Fuse-links gL/gG NH 3NA, DIAZED 5SB	Type of coordination "1" Type of coordination "2"	A A	250 224	315 250	400 315	630 500
Auxiliary circuit short-circuit current $I_k \geq 1$ kA						
• Fuse-links gL/gG, DIAZED 5SB, NEOZED 5SE		A	16			
• Miniature circuit-breaker with C characteristic		A	10			
Control circuit						
Coil operating range			0.8 ... 1.1 x U_s			
Power consumption of the magnetic coil (for cold coil and 1.0 x U_s) Closing = Closed		W	25	30	60	86
Operating times at 0.8 to 1.1 x U_s Total break time = Opening delay + Arcing time			(Values apply to 20 % low voltage, 10 % overvoltage as well as when the coil is cold and warm)			
• Closing delay		ms	105 ... 360	105 ... 400	105 ... 400	110 ... 400
• Opening delay [3]		ms	18 ... 30	22 ... 35	24 ... 55	40 ... 110
• Arcing time		ms	10 ... 15	10 ... 15	10 ... 15	10 ... 15
Operating times at 1.0 x U_s						
• Closing delay		ms	120 ... 230	130 ... 250	115 ... 250	120 ... 250
• Opening delay [3]		ms	20 ... 26	24 ... 32	35 ... 50	60 ... 95
Main circuit						
Load rating with AC						
Utilization category AC-1, switching resistive loads						
Rated operating current I_e	at 40 °C up to 690 V at 55 °C up to 690 V	A A	170 160	230 200	325 300	425 400
Rated output power of AC loads [4] p.f. = 0.95 (for 55 °C)	230 V 400 V 500 V 690 V	kW kW kW kW	61 105 138 183	76 132 173 228	114 195 260 340	152 262 345 455
Minimum conductor cross-section for loads with I_e		mm^2	70	95	185	240
Utilization category AC-2 and AC-3			[5]			
Utilization category AC-4 (for I_a = 6 x I_e)						
• The following applies to contact endurances of about 200,000 operating cycles:						
- Rated operating current I_e			52	72	103	120
- Rated output power for squirrel-cage motors at 50 Hz and 60 Hz	230 V 400 V 500 V 690 V	kW kW kW kW	15.6 27 35 45	21 37 48 64	31 55 72 92	37.5 65 85.5 106
Maximum permissible rated operating voltage I_e/AC-4	for 400 V	A	110	170	250	400

1) For reversing duty, deviations from the vertical axis are not permitted.

2) See Page 2/80.

3) The opening delays can increase if the contactor coils are damped against voltage peaks.

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

5) See selection tables, Page 2/84

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Contactors with DC solenoid system 3-pole, 55 ... 200 kW

Contactor	Type			3TB50	3TB52	3TB54	3TB56
	Size			6	8	10	12
Main circuit							
Load rating with AC							
Switching of low-inductance (low-loss, metallized dielectric) AC capacitors [1]							
Rated operating current I_e at 400 V			A	87	144	217	289
Rated output power of single capacitors at 50 Hz	230 V		kvar	35	58	87	115
	400 V		kvar	60	100	150	200
	500 V		kvar	80	130	190	265
	690 V		kvar	60	100	150	200
Rated output power of bank of capacitors (minimum inductance between 6 µH connected in parallel capacitors) at 50 Hz	230 V		kvar	30	40	66	85
	400 V		kvar	50	70	115	150
	500 V		kvar	66	90	145	195
	690 V		kvar	50	70	115	150
Load rating with DC							
Utilization category DC-1 **Switching of resistive load** (L/R ≤1 ms) **Rated operating current I_e** (for 55 °C)							
• 1 conducting path	24 V		A	160	200	300	400
	60 V		A	80	80	300	330
	110 V		A	18	18	33	33
	220 V		A	3.4	3.4	3.8	3.8
	440 V		A	0.8	0.8	0.9	0.9
	600 V		A	0.5	0.5	0.6	0.6
• 2 series-connected conducting paths	24 V		A	160	200	300	400
	60V		A	160	200	300	400
	110 V		A	160	200	300	400
	220 V		A	20	20	300	400
	440 V		A	3.2	3.2	4	4
	600 V		A	1.6	1.6	2	2
• 3 series-connected conducting paths	24 V		A	160	200	300	400
	60 V		A	160	200	300	400
	110 V		A	160	200	300	400
	220 V		A	160	200	300	400
	440 V		A	11.5	11.5	11	11
	600 V		A	4	4	5.2	5.2
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors** (L/R ≤15 ms) **Rated operating current I_e** (for 55 °C)							
• 1 conducting path	24 V		A	16	16	35	35
	60 V		A	7.5	7.5	11	11
	110 V		A	2.5	2.5	3	3
	220 V		A	0.6	0.6	0.6	0.6
	440 V		A	0.17	0.17	0.18	0.18
	600 V		A	0.12	0.12	0.125	0.125
• 2 conducting paths in series	24 V		A	160	200	300	400
	60 V		A	160	200	300	400
	110 V		A	160	200	300	400
	220 V		A	2.5	2.5	2.5	2.5
	440 V		A	0.65	0.65	0.65	0.65
	600 V		A	0.37	0.37	0.37	0.37
• 3 series-connected conducting paths	24 V		A	160	200	300	400
	60 V		A	160	200	300	400
	110 V		A	160	200	300	400
	220 V		A	160	200	300	400
	440 V		A	1.4	1.4	1.4	1.4
	600 V		A	0.75	0.75	0.75	0.75
Operating frequency							
Operating frequency *z* in operating cycles/hour							
• Contactors without overload relay	AC-1		h^{-1}	1000			
	AC-2		h^{-1}	500			
	AC-3		h^{-1}	500			
	AC-4		h^{-1}	250			
• Contactors with overload relay (mean value)			h^{-1}	15			

1) Contact lifetime 0.1 million operating cycles.

Contactors with DC solenoid system 3-pole, 55 ... 200 kW

Contactor	Type Size			3TB50 6	3TB52 8	3TB54 10	3TB56 12
Conductor cross-sections							
Screw terminals	**Main conductors**						
	• Finely stranded with cable lug		mm^2	16 ...70	35 ... 95	50 ... 240	50 ... 240
	• Stranded with cable lug		mm^2	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			M 6	M 8	M 10	M 10
	Auxiliary conductors						
	• Solid		mm^2	1 ...2.5			
	• Finely stranded with end sleeve		mm^2	0.75 ... 1.5			
	• Pin-end connector (DIN 46231)		mm^2	2 x 1 ... 2.5			
	Protective conductor: • Stranded with cable lug		mm^2	-	25 ...70	35 ...70	50 ...120
CSA and UL rated data							
CSA rated data							
Continuous current	Open		A	150	170	240	300
	Enclosed		A	135	153	215	270
Rated output 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 relay	Type			3RB1056	3RB1056	3RB1066	3RB1066
	Adjustment range		A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
NEMA/EEMAC size	Contactors			4	4	4	5
	Starter (= contactors + overload relay, enclosed)			3	4	4	5
UL rated data							
Continuous current	Open		A	150	150	240	390
	Enclosed		A	135	135	215	350
Rated output 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[1)]
Overload relay	Type			3RB1056	3RB1056	3RB1066	3RB1066
	Adjustment range			50 ... 200	50 ... 200	50 ... 250	200 ... 540
NEMA/EEMAC size	Contactors			4	4	4	5
	Starter (= contactors + overload relay, enclosed)			3	4	4	5
Short-circuit protection devices							
• Fuse CLASS RK5			A	400	400	450	600
• Power switch to UL 489			A	175	175	250	600

1) At AC 575/AC 600 V.

2

Contactors with DC solenoid system 3-pole, 55 ... 200 kW

Selection and ordering data

Auxiliary and control conductors: Screw terminals
for main conductors: Bar connections

Size	Rated data AC-2 and AC-3 (up to 55 °C) Operating current I_e for 400 V	Rating of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	AC-1 Operating current I_e at 40 °C	Auxiliary contacts Version NO	NC	Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	A	kW	**kW**	kW	kW	A			V				kg
DC operation · DC solenoid system													
6	110	37	**55**	75	90	170	2	2	DC 24	►	**3TB50 17-0BB4**	1 unit	6.430
8	170	55	**90**	110	132	230	2	2	DC 24	A	**3TB50 17-0BB4**	1 unit	8.460
10	250	75	**132**	160	200	325	2	2	DC 24	C	**3TB50 17-0BB4**	1 unit	16.500
12	400	115	**200**	255	355	425	2	2	DC 24	C	**3TB50 17-0BB4**	1 unit	19.300

3TB50

For accessories, see Page 2/197
For spare parts, see Page 2/199
For technical specifications, see Page 2/81
For internal circuit diagrams, see Page 2/222
For connection diagrams, see Page 2/226
For dimension drawings see Page 2/255

Contactor	Type	**3TB** 3TB50 to 3TB56
Rated control supply voltages (the 10th and 11th position of the Order No. must be changed)		
DC operation		
DC 24 V		**B4**
DC 48 V		**W4**
DC 60 V		**E4**
DC 110 V		**F4**
DC 125 V		**G4**
DC 220 V		**M4**
DC 230 V		**P4**

***This quantity or a multiple thereof can be ordered.**

SIRIUS coupling relays (interface), 3-pole, 3 ... 11 kW

Area of application

DC operation

IEC 60947, EN 60947 (VDE 0660)

The 3RT10 coupling relays for switching motors have been designed for the special requirements needed to work with solid-state controls.

Functions

Coupling relays require little power, have an extended coil operating range as well as integrated overvoltage damping against opening surges
(exceptions: 3RT10 1.–1HB4. and 3RT10 1.–.MB4.-0KT0).

Technical specifications

If not listed below, the technical specifications correspond with those of the 3RT10 contactors for switching motors.

The 3RT10 1. coupling relays cannot be extended with auxiliary switch blocks.

Two single-pole auxiliary switch blocks can be contact fitted to the 3RT10 2. coupling relays (for accessories, see Page 2/180).

Contactor	Type Size			3RT10 1.-.HB4. S00	3RT10 1.-.JB4. S00	3RT10 1.-.KB4. S00	3RT10 2.-.KB4. S0
Mechanical endurance			Operating cycles	30 million			10 million
Coil operating range				0.7 ... 1.25 x U_s			
Power consumption of the coil (for cold coil) Closing = Closed		at U_s 17 V 24 V 30 V	W W W	1.2 2.3 3.6			2.1 4.2 6.6
Permissible residual current of the electronics (for 0-signal)			mA	< 10 mA x (24 V/U_s)			< 6 mA x (24 V/U_s)
Overvoltage configuration of the coil				Without overvoltage damping	With diode	With varistor	With varistor
Operating times of the coupling relays							
• Power ON							
- at 17 V	ON-delay NO contact OFF-delay NC contact		ms ms	40 ... 120 30 ... 70			93 ... 270 83 ... 250
- at 24 V	ON-delay NO contact OFF-delay NC contact		ms ms	30 ... 60 20 ... 40			64 ... 87 55 ... 78
- at 30 V	ON-delay NO contact OFF-delay NC contact		ms ms	20 ... 50 15 ... 30			53 ... 64 45 ... 56
• Power OFF at 17 ... 30 V	OFF-delay NO contact ON-delay NC contact		ms ms	7 ... 17 22 ... 30	40 ... 60 60 ... 70	7 ... 17 22 ... 30	18 ... 19 24 ... 25
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)			V	400			

If not listed below, the technical specifications correspond with those of the 3RT10 contactors for switching motors.

The 3RT10 1. coupling relays cannot be extended with auxiliary switch blocks.
Power consumption of the coils **1.4 W** at 24 V.

Contactor	Type Size			3RT10 1.-.MB4.-0KT0 S00	3RT10 1.-.VB4. S00	3RT10 1.-.WB4. S00
Mechanical endurance			Operating cycles	30 million		
Coil operating range				0.85 ... 1.85 x U_s		
Power consumption of the coil (for cold coil) Closing = Closed		at U_s 24 V	W	1.4		
Overvoltage configuration of the coil				Without overvoltage damping	With diode	With varistor
Operating times of the coupling relays						
• Power ON						
- at 20.5 V	ON-delay NO contact OFF-delay NC contact		ms ms	40 ... 130 40 ... 125		
- at 24 V	ON-delay NO contact OFF-delay NC contact		ms ms	40 ... 100 30 ... 90		
- at 44 V	ON-delay NO contact OFF-delay NC contact		ms ms	20 ... 30 15 ... 25		
• Power OFF	OFF-delay NO contact ON-delay NC contact		ms ms	9 ... 12 12 ... 16	45 ... 65 52 ... 72	10 ... 15 15 ... 20
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)			V	400		
Permissible residual current **Vertical position**				On request		

2

SIRIUS coupling relays (interface), 3-pole, 3 ... 11 kW

Selection and ordering data

DC operation

3RT10 1.-1HB4.

3RT10 1.-2JB4

Overvoltage limiter	Rated data AC-2 and AC-3, T_u: up to 60 °C		Auxiliary contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Operating current I_e	Rating of induction motors at 50 Hz and	Ident. no.	Version			Order No.				Order No.		
	for 400 V	**400 V**											
	A	**kW**		NO	NC				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail													
Size S00													
Terminal designations acc. to EN 50012													
Rated control supply voltage U_s = DC 24 V, coil operating range **0.7 to 1.25** x U_s													
Power consumption of the coils **2.3 W** at 24 V (no auxiliary switch block mountable)													
Diode, varistor or RC element, mountable	7	**3**	10	1	-	▶	**3RT10 15-1HB41**	1 unit	0.259	▶	**3RT10 15-2HB41**	1 unit	0.254
			01	-	1	▶	**3RT10 15-1HB42**	1 unit	0.258	▶	**3RT10 15-2HB42**	1 unit	0.254
Built-in diode	7	**3**	10	1	-	▶	**3RT10 15-1JB41**	1 unit	0.259	▶	**3RT10 15-2JB41**	1 unit	0.255
			01	-	1	▶	**3RT10 15-1JB42**	1 unit	0.261	▶	**3RT10 15-2JB42**	1 unit	0.255
Built-in varistor	7	**3**	10	1	-	▶	**3RT10 15-1KB41**	1 unit	0.261	▶	**3RT10 15-2KB41**	1 unit	0.257
			01	-	1	▶	**3RT10 15-1KB42**	1 unit	0.259	▶	**3RT10 15-2KB42**	1 unit	0.256
Diode. varistor or RC element, mountable	9	**4**	10	1	-	▶	**3RT10 16-1HB41**	1 unit	0.258	B	**3RT10 16-2HB41**	1 unit	0.254
			01	-	1	▶	**3RT10 16-1HB42**	1 unit	0.260	B	**3RT10 16-2HB42**	1 unit	0.256
Built-in diode	9	**4**	10	1	-	▶	**3RT10 16-1JB41**	1 unit	0.261	▶	**3RT10 16-2JB41**	1 unit	0.256
			01	-	1	▶	**3RT10 16-1JB42**	1 unit	0.261	▶	**3RT10 16-2JB42**	1 unit	0.256
Built-in varistor	9	**4**	10	1	-	▶	**3RT10 16-1KB41**	1 unit	0.260	▶	**3RT10 16-2KB41**	1 unit	0.255
			01	-	1	▶	**3RT10 16-1KB42**	1 unit	0.260	▶	**3RT10 16-2KB42**	1 unit	0.255
Diode, varistor or RC element, mountable	12	**5.5**	10	1	-	B	**3RT10 17-1HB41**	1 unit	0.260	B	**3RT10 17-2HB41**	1 unit	0.257
			01	-	1	B	**3RT10 17-1HB42**	1 unit	0.260	B	**3RT10 17-2HB42**	1 unit	0.253
Built-in diode	12	**5.5**	10	1	-	▶	**3RT10 17-1JB41**	1 unit	0.258	▶	**3RT10 17-2JB41**	1 unit	0.255
			01	-	1	▶	**3RT10 17-1JB42**	1 unit	0.258	▶	**3RT10 17-2JB42**	1 unit	0.256
Built-in varistor	12	**5.5**	10	1	-	▶	**3RT10 17-1KB41**	1 unit	0.261	▶	**3RT10 17-2KB41**	1 unit	0.256
			01	-	1	▶	**3RT10 17-1KB42**	1 unit	0.261	▶	**3RT10 17-2KB42**	1 unit	0.256

For description, see Page 2/85
For accessories, see Page 2/186
For technical specifications, see Page 2/85
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/230

***This quantity or a multiple thereof can be ordered.**

DC operation

3RT10 1.-1VB4.

3RT10 1.-2WB4.

Overvoltage limiter	Rated data AC-2 and AC-3, T_u: up to 60 °C		Auxiliary contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Operating current I_e	Rating of induction motors at 50 Hz and	Ident. no.	Version			Order No.				Order No.		
	for 400 V	**400 V**											
	A	**kW**		NO	NC				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail													
Size S00													
Terminal designations acc. to EN 50012													
Rated control supply voltage U_s = DC 24 V, coil operating range **0.85 to 1.85** x U_s													
Power consumption of the coils **1.4 W** at 24 V (no auxiliary switch block mountable)													
Diode, varistor or RC element, mountable	7	**3**	10	1	-	B	**3RT10 15-1MB41-0KT0**	1 unit	0.260	B	**3RT10 15-2MB41-0KT0**	1 unit	0.255
			01	-	1	B	**3RT10 15-1MB42-0KT0**	1 unit	0.260	B	**3RT10 15-2MB42-0KT0**	1 unit	0.257
Built-in diode	7	**3**	10	1	-	B	**3RT10 15-1VB41**	1 unit	0.262	B	**3RT10 15-2VB41**	1 unit	0.258
			01	-	1	B	**3RT10 15-1VB42**	1 unit	0.260	B	**3RT10 15-2VB42**	1 unit	0.257
Built-in varistor	7	**3**	10	1	-	B	**3RT10 15-1WB41**	1 unit	0.260	B	**3RT10 15-2WB41**	1 unit	0.257
			01	-	1	B	**3RT10 15-1WB42**	1 unit	0.260	B	**3RT10 15-2WB42**	1 unit	0.258
Diode, varistor or RC element, mountable	9	**4**	10	1	-	B	**3RT10 16-1MB41-0KT0**	1 unit	0.261	B	**3RT10 16-2MB41-0KT0**	1 unit	0.257
			01	-	1	B	**3RT10 16-1MB42-0KT0**	1 unit	0.261	B	**3RT10 16-2MB42-0KT0**	1 unit	0.257
Built-in diode	9	**4**	10	1	-	B	**3RT10 16-1VB41**	1 unit	0.261	B	**3RT10 16-2VB41**	1 unit	0.258
			01	-	1	B	**3RT10 16-1VB42**	1 unit	0.260	B	**3RT10 16-2VB42**	1 unit	0.255
Built-in varistor	9	**4**	10	1	-	B	**3RT10 16-1WB41**	1 unit	0.260	B	**3RT10 16-2WB41**	1 unit	0.255
			01	-	1	B	**3RT10 16-1WB42**	1 unit	0.260	B	**3RT10 16-2WB42**	1 unit	0.257
Diode, varistor or RC element, mountable	12	**5.5**	10	1	-	B	**3RT10 17-1MB41-0KT0**	1 unit	0.262	B	**3RT10 17-2MB41-0KT0**	1 unit	0.256
			01	-	1	B	**3RT10 17-1MB42-0KT0**	1 unit	0.260	B	**3RT10 17-2MB42-0KT0**	1 unit	0.250
Built-in diode	12	**5.5**	10	1	-	B	**3RT10 17-1VB41**	1 unit	0.260	B	**3RT10 17-2VB41**	1 unit	0.255
			01	-	1	B	**3RT10 17-1VB42**	1 unit	0.261	B	**3RT10 17-2VB42**	1 unit	0.255
Built-in varistor	12	**5.5**	10	1	-	B	**3RT10 17-1WB41**	1 unit	0.261	B	**3RT10 17-2WB41**	1 unit	0.256
			01	-	1	B	**3RT10 17-1WB42**	1 unit	0.260	B	**3RT10 17-2WB42**	1 unit	0.257

For description, see Page 2/85
For accessories, see Page 2/186
For technical specifications, see Page 2/85
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/230

***This quantity or a multiple thereof can be ordered.**

2

SIRIUS coupling relays (interface), 3-pole, 3 ... 11 kW

DC operation

3RT10 2 .-1KB40

3RT10 2.-3KB40

Overvoltage limiter	Rated data AC-2 and AC-3, T_u: up to 60 °C		Auxiliary contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Operating current I_e	Rating of induction motors at 50 Hz and	Ident. no.	Version			Order No.				Order No.		
	for 400 V	**400 V**											
	A	**kW**		NO	NC				kg				kg
For screw terminal and snap-on mounting on 35 mm standard mounting rail													
Size S0													
Rated control supply voltage U_s = DC 24 V, coil operating range **0.7 to 1.25 x U_s**													
Power consumption of the coils **4.2 W** at 24 V (two mountable single-pole auxiliary switch blocks)													
Built-on varistor	12	**5.5**	-	-	-	▶	**3RT10 24-1KB40**	1 unit	0.576	B	**3RT10 24-3KB40**	1 unit	0.578
	17	**7.5**	-	-	-	▶	**3RT10 25-1KB40**	1 unit	0.577	▶	**3RT10 25-3KB40**	1 unit	0.580
	25	**11**	-	-	-	▶	**3RT10 26-1KB40**	1 unit	0.582	▶	**3RT10 26-3KB40**	1 unit	0.581

For accessories, see Page 2/181
For technical specifications, see Page 2/85
For internal circuit diagrams, see Page 2/205
For dimension drawings, see Page 2/230

***This quantity or a multiple thereof can be ordered.**

Overview

EN 60947-4-1 (VDE 0660 Part 102)

The 3TG10 contactors with 4 main contacts are available with screw terminals or tab connectors 6.3 x 0.8 mm. The designs with screw terminals are climate-proof and finger-safe acc. to DIN VDE 0106, Part 100.

The 3TG10 contactors are small. The construction width is 36 mm.

Overvoltage damping

The 3TG10 contactors have an integrated circuit against opening surges.

Overload and short-circuit protection

For more information on short-circuit protection of contactors without overload relay see Technical specifications. The 3UA7 overload relay can be used for overload protection (for mounting onto contactors and installation as a single unit).

Area of application

Because the contactors are hum-free, they can be used for household appliances and distribution boards in office and residential areas. Other areas of application are places where there is little space e.g. air conditioners, heating systems, pumps, ventilators i.e. simple electrical controls.

Technical specifications

Contactor Type			3TG10
Rated data for the auxiliary contacts			to IEC 60947-5-1 (VDE 0660 Part 200)
Rated insulation voltage U_i (Pollution degree 3)		V	400
Conventional thermal current I_{th} = Rated operating current I_e/AC-12		A	20 [1)2)]
AC load **Rated operating current I_e/AC-15/AC-14** For rated operating 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	-
	660 V	A	-
	690 V	A	-
DC load **Rated operating current I_e/DC-12** For rated operating voltage U_e			
	24 V	A	16
	48 V	A	8
	110 V	A	2
	125 V	A	1.7
	220 V	A	1
	440 V	A	-
	600 V	A	-
Rated operating current I_e/DC-13 For rated operating voltage U_e			
	24 V	A	3
	48 V	A	1.2
	110 V	A	0.5
	125 V	A	0.4
	220 V	A	0.27
	440 V	A	-
	600 V	A	-

1) For tab connectors 16 A

2) If the three main conducting paths carry a load of 20 A, the following applies for I > 10 A at the auxiliary conducting path: permissible ambient temperature 40 °C.

Contactor Type			3TG10 ..-0...
CSA and UL rated data for the auxiliary contacts			
Rated voltage		AC V, max.	600 auxiliary switch blocks 300
Switching capacity			A 600, Q 600 continuous current: 10 A at AC 240 V

2

Miniature contactors, 4-pole, 4 kW

Contactor	Type		3TG10
General data			
Permissible mounting position	AC and DC operation		Any
Endurance			
• Mechanical		Operating cycles	3 million
• Electrical	AC-1 at I_e	Operating cycles	0.1 million
	AC at I_e	Operating cycles	0.4 million
Rated insulation voltage U_i (pollution degree 3)		V	400
Rated impulse withstand voltage U_{imp}		kV	4
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)		V to	300
Permissible ambient temperature	during operation[1]	°C	-25 ... +55
	during storage	°C	-50 ... +80
Degree of protection to IEC 60947-1 and IEC 60529			IP00, coil assembly IP20
Shock resistance			
Rectangular pulse	AC and DC operation	g/ms	5.1/5 and 3.5/10
Sine pulse	AC and DC operation	g/ms	7.9/5 and 5.2/10
Short-circuit protection			
Fuse-links gL/gG			
• NH 3NA, DIAZED 5SB, NEOZED 5SE			
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1"	A	25
	Type of coordination "2"	A	10
• Miniature circuit-breaker with C characteristic		A	10
Control circuit			
Coil operating ranges			0.85 ... 1.1 x U_s
Power consumption of the coils (when coil is cold and 1.0 x U_s)			
	• AC operation	VA	4.4
	p.f.		0.9 (hum-free)
	• DC operation	W	4
Operating times (Total break time = Opening delay + Arcing time)			
• Power ON			
- ON-delay NO contact	DC operation	ms	11 ... 50
	AC operation	ms	10 ... 50
- OFF-delay NC contact	DC operation	ms	5 ... 45
	AC operation	ms	5 ... 45
• Power OFF			
- OFF-delay NO contact	DC operation	ms	19 ... 35
	AC operation	ms	20 ... 30
- ON-delay NC contact	DC operation	ms	21 ... 39
	AC operation	ms	20 ... 30
• Arcing time		ms	10 ... 15
Main circuit			
Load rating with AC			
Utilization category AC-1, switching resistive loads **Rated operating current I_e** at 55 °C to 400 V[1]		A	20 for screw terminal, 16 for tab connector
Rated output power U_e of AC loads p.f. = 0.95			
• For screw terminal	for 230/220 V	kW	7.5
• For tab connector	for 230/220 V	kW	6.0
• For screw terminal	for 400 V	kW	13
• For tab connector	for 400 V	kW	10
Minimum conductor cross-section for loads with I_e		mm^2	2.5
Utilization category AC-2 and AC-3			
Operating current I_e up to 400 V		A	8.4
Rated output power of slipring and squirrel-cage motors at 50 Hz and 60 Hz and at 400 V		kW	4
Utilization category AC-5a (permissible mains impedance: ≥ 0.5 Ω) **Switching of gas discharge lamps** Per main conducting path at 50 Hz/230 V			
Rated output power/rated operating current per lamp			Number of lamps
• Uncorrected	L 18 W/0.37 A		43
	36 W/0.43 A		37
	58 W/0.67 A		24
• Lead-lag circuit	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

1) If the three main conducting paths carry a load of 20 A, the following applies if I > 10 A for the auxiliary conducting path: permissible ambient temperature 40 °C.

Contactor	Type			3TG10
Main circuit				
Load rating with AC				
Switching of gas discharge lamps with compensation, solid-state ballast Per main conducting path at 230 V, 50 Hz				
Rated output power per lamp/capacitor capacity/ rated operating current per lamp				Number of lamps
• Shunt compensation	18 W/4.5 µF/0.11 A			15
	36 W/4.5 µF/0.21 A			15
	58 W/7 µF/0.32 A			10
• With solid-state ballast (single lamp)	18 W/6.8 µF/0.10 A			39
	36 W/6.8 µF/0.18 A			39
	58 W/10 µF/0.27 A			26
• With solid-state ballast (two lamps)	18 W/10 µF/0.18 A			2 x 26
	36 W/10 µF/0.35 A			2 x 26
	58 W/22 µF/0.52 A			2 x 1
Utilization category AC-5b, switching of incandescent lamps Per main conducting path at 50 Hz/230 V			kW	1.6
Load rating with DC				
Utilization category DC-1, switching of resistance loads (L/R ≤ 1 ms) **Rated operating currents I_e**				
• 1 conducting path		24 V	A	16
		60 V	A	6
		110 V	A	2
		220 V/240 V	A	0.8
• 2 series-connected conducting paths		24 V	A	16
		60 V	A	16
		110 V	A	6
		220 V/240 V	A	1.6
• 3 series-connected conducting paths		24 V	A	18
		60 V	A	18
		110 V	A	16
		220 V/240 V	A	6
• 4 series-connected conducting paths		24 V	A	20
		60 V	A	20
		110 V	A	20
		220 V/240 V	A	20
Utilization category DC-3/DC-5 **Shunt-wound and series-wound motors** (L/R ≤ 15 ms) **Rated operating currents I_e**				
• 1 conducting path		24 V	A	10
		60 V	A	0.5
		110 V	A	0.15
		220 V/240 V	A	-
• 2 series-connected conducting paths		24 V	A	16
		60 V	A	5
		110 V	A	0.35
		220 V/240 V	A	-
• 3 series-connected conducting paths		24 V	A	16
		60 V	A	16
		110 V	A	10
		220 V/240 V	A	1.75
• 4 series-connected conducting paths		24 V	A	18
		60 V	A	16
		110 V	A	10
		220 V/240 V	A	2

2

Miniature contactors, 4-pole, 4 kW

Contactor	Type			3TG10
Main circuit				
Operating frequency				
Operating frequency *z* in operating cycles/hour				
		No-load operation frequency	h^{-1}	10000
		AC-1	h^{-1}	1000
		AC-2	h^{-1}	500
		AC-3	h^{-1}	1000
Conductor cross-sections				
With screw terminals				
Screw terminal				M3
- Finely stranded with end sleeve (DIN 46228 Form A/D/C)			mm^2	2 x (0.75 ... 2.5)
- Solid			mm^2	2 x (1 ... 2.5), 1 x 4
With flat connector				
- Finely stranded				
- When used with push-on sleeve 6.3 mm to DIN 46245/46247				
		6.3 ... 1	mm^2	0.5 ... 1
		6.3 ... 2.5	mm^2	1 ...2.5
Rated data (CSA, UL) (screw terminal)				
Rated insulation voltage	AC		V	600
Continuous current	Open and enclosed		A	20
Maximum horsepower ratings (CSA and UL approved values) Rated output power of induction motors at 60 Hz				1-phase/3-phase
		at 115 V	hp	½ /-
		200 V	hp	1 /3
		230 V	hp	1½ /3
		460 V	hp	- /5
		575 V	hp	- /5
		600 V	hp	- /5
Overload relay	Type			3UA7
	Adjustment range		A	6.3 ... 10

Selection and ordering data

Rated data AC-1 Switching of resistive loads at 55 °C		AC-2 and AC-3		Main contacts		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
Operating current I_e at 400 V	Power of AC loads at 50 Hz, 400 V	Operating current I_e at 400 V[1]	Rating of induction motors at 50 Hz, 400 V	Version						
A	kW	A	kW	NO	NC					kg
With screw terminals For screw terminal and snap-on mounting on 35 mm standard mounting rail										
• AC operation, 45 ... 450 Hz										
20	13	8.4	4	4	-	AC 230 V	▶	**3TG10 10-0AL2**	1 unit	0.156
						AC 110 V	A	**3TG10 10-0AG2**	1 unit	0.158
						AC 24 V	▶	**3TG10 10-0AC2**	1 unit	0.157
				3	1	AC 230 V	▶	**3TG10 01-0AL2**	1 unit	0.157
						AC 110 V	A	**3TG10 01-0AG2**	1 unit	0.158
						AC 24 V	▶	**3TG10 01-0AC2**	1 unit	0.157
DC operation										
20	13	8.4	4	4	-	DC 24 V	▶	**3TG10 10-0BB4**	1 unit	0.157
				3	1	DC 24 V	▶	**3TG10 01-0BB4**	1 unit	0.157

3TG10 ..-0...

With 6.3 x 0.8 mm flat connectors for screw terminal and snap-on mounting on 35 mm standard mounting rail										
• AC operation, 45 ... 450 Hz										
16	10	8.4	4	4	-	AC 230 V	▶	**3TG10 10-1AL2**	1 unit	0.145
						AC 110 V	D	**3TG10 10-1AG2**	1 unit	0.185
						AC 24 V	A	**3TG10 10-1AC2**	1 unit	0.145
				3	1	AC 230 V	▶	**3TG10 01-1AL2**	1 unit	0.144
						AC 110 V	D	**3TG10 01-1AG2**	1 unit	0.146
						AC 24 V	D	**3TG10 01-1AC2**	1 unit	0.147
DC operation										
16	10	8.4	4	4	-	DC 24 V	A	**3TG10 10-1BB4**	1 unit	0.146
				3	1	DC 24 V	D	**3TG10 01-1BB4**	1 unit	0.146

3TG10 ..-1...

1) The parallel connections can be reduced by one pole. The rated operating currents apply to each pole. The parallel connections are insulated.

Accessories

For contactor	Version		DT	Order No.	PS*	Weight per PU approx.
	Maximum rated operating currents I_e/AC-1 (at 55 °C) for the contactors	Maximum connection cross-sections				
Type	A	mm^2				kg
Parallel connections (star jumpers)						
• 3-pole, without connection terminal[1]						
3TG10	16 star jumpers can be reduced by one pole	–	▶	**3RT19 16-4BA31**	1 unit	0.003
• 3-pole, without connection terminal[1]						
3TG10	40	25	▶	**3RT19 16-4BA31**	1 unit	0.015
• 4-pole, with connection terminal[1]						
3TG10	50	25	C	**3RT19 16-4BB41**	1 unit	0.015

For technical specifications, see Page 2/90
For description, see Page 2/89
For internal circuit diagrams, see Page 2/221
For connection diagrams, see Page 2/225
For dimension drawings, see Page 2/252

1) The parallel connections can be reduced by one pole. The rated operating currents apply to each pole. The parallel connections are insulated.

***This quantity or a multiple thereof can be ordered.**

SIRIUS reversing contactor assemblies
Complete units, 3 ... 45 kW

Overview

The 3RA13 reversing contactor assemblies can be ordered as follows:

Sizes S00 to S3

- Fully wired and tested, with mechanical and electrical interlock (for voltages > 500 V, a dead interval of 50 ms on reversing must be taken into account)

Sizes S00 to S12

- As components for customer assembly.

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

For overload relays for motor protection, see protection devices: Overload relay -> SIRIUS overload relay.

The 3RA13 contactor assemblies have screw connections and are suitable for screwing or snapping onto 35 mm standard mounting rails.

Complete equipment assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

The contactor assemblies consist of 2 contactors with the same power. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU11 overload relays for direct mounting or individual mounting or thermistor motor protection tripping units must be ordered separately.

Components for customer assembly

Installation kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays, the mechanical interlock (as of size S0) and - for momentary-contact operation - auxiliary switch blocks for latching must be ordered separately.

Rated data AC-2 and AC-3 for AC 50 Hz 400 V		Size	Order No.					
Rating kW	Operating current I_e A		Contactor	Mechanical interlock [1]	Mechanical interlock [2]	Mechanical interlock [3]	Installation kit	**Fully wired and tested contactor assembly**
3	7	**S00**	3RT10 15	– [4]	–	–	3RA19 13-2A [5]	**3RA13 15-8XB30-1..**
4	9		3RT10 16					**3RA13 16-8XB30-1..**
5.5	12		3RT10 17					**3RA13 17-8XB30-1..**
5.5	12	**S0**	3RT10 24	3RA19 24-1A	3RA19 24-2B	–	3RA19 23-2A [6]	**3RA13 24-8XB30-1..**
7.5	17		3RT10 25					**3RA13 25-8XB30-1..**
11	25		3RT10 26					**3RA13 26-8XB30-1..**
15	32	**S2**	3RT10 34	3RA19 24-1A	3RA19 24-2B	–	3RA19 33-2A [7]	**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 [7]	**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 53-2A [8]	**–**
75	150		3RT10 55					
90	185		3RT10 56					
110	225	**S10**	3RT10 64	–	–	3RA19 54-2A	3RA19 63-2A [8]	**–**
132	265		3RT10 65					
160	300		3RT10 66					
200	400	**S12**	3RT10 75	–	–	3RA19 54-2A	3RA19 73-2A [8]	**–**
250	500		3RT10 76	–	–			

For circuit diagrams, see Page 2/219.
For dimension drawings, see Page 2/248.

1) Can be mounted onto the front.

2) Laterally mountable with one auxiliary contact.

3) Laterally mountable without auxiliary contact.

4) Interlock can only be ordered with installation kit.

5) Installation kit contains: Mechanical interlock; connecting clips for 2 contactors; wiring connectors on the top and bottom.

6) Installation kit contains: wiring connectors on the top and bottom.

7) Installation kit contains: 2 connecting clips for contactors; wiring connectors on the top and bottom.

8) Installation kit contains: wiring module on the top and bottom.

Functions

The operating times of the individual 3RT10 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 via their auxiliary switches (NC contact interlock) and the operating mechanisms. An additional dead interval on reversing of 50 ms is necessary at voltages > 500 V.

The operating times of the individual contactors are not affected by the mechanical interlock.

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.

Sizes S0 to S3

- For maintained-contact operation:
  The contactors have no auxiliary contact in the basic unit; NC contacts for the electrical interlock are therefore integrated in the mechanical interlock that can be mounted on the side of each contactor (one contact each for the left and right-hand contactors).
- For momentary-contact operation:
  Electrical interlock as for maintained-contact operation; for the purpose of latching an auxiliary contact with an NO contact is additionally required for each contactor. This contact can be snapped onto the top of the contactors. Alternatively, auxiliary switch blocks mounted on the side can be used; they must be fitted onto the outside of each contactor.

If the front-mounted mechanical interlock is used for size S0 to S3 contactors, two location holes for single-pole auxiliary switch blocks are provided on the front of each S0 or S2 contactor, while three additional, single-pole auxiliary switch blocks can be snapped onto S3 contactors. The maximum auxiliary switch complements per contactor must not be exceeded.

When size S2 and S3 contactors are combined with a front-mounted mechanical interlock, the installation sets for 3RA19 33–2B and 3RA19 43–2B contactor assemblies cannot be used.

Sizes S6 to S12

To insert the mechanical interlock, the prestamped location holes positioned opposite on the contactor must be knocked out. The internal auxiliary contacts (up to 1 NO + 1 NC per contactor) can be used for the electrical interlock and latching. The mechanical interlock itself does not contain any auxiliary contacts. Additional auxiliary contacts can be used on the outside and front (on the front in the case of 3RT10) of the reversing contactor assembly.

Surge suppression

Sizes S00 to S3

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 fitted onto the coil terminals on the top or bottom (S0 to S3).

Sizes S6 to S12

The contactors are fitted with varistors as standard.

Technical specifications

The technical specifications are identical to those of the 3RT10 .. contactors listed on Page 2/17 onwards.

The CSA and UL approvals only apply to the complete contactor assemblies and not to the components for customer assembly.

2

SIRIUS reversing contactor assemblies
Complete units, 3 ... 45 kW

Selection and ordering data

Size S00 · up to 5.5 kW

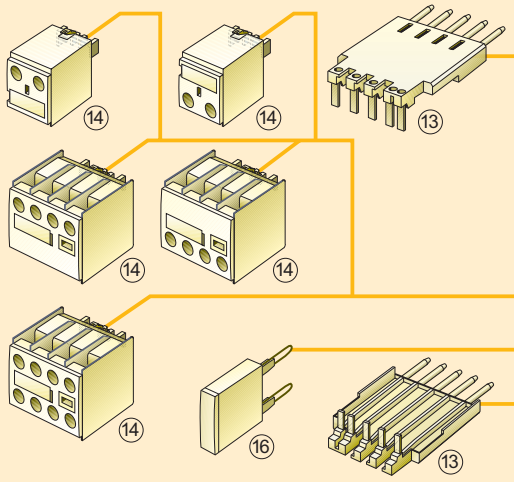
Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	**Fully wired and tested contactor assembly** [2]	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
7	2.2	**3**	3.5	4	24	B	**3RA13 15-8XB30-1AB0**	1 unit	0.429
					110	B	**3RA13 15-8XB30-1AF0**	1 unit	0.430
					230	▶	**3RA13 15-8XB30-1AP0**	1 unit	0.427
9	3	**4**	4.5	5.5	24	B	**3RA13 16-8XB30-1AB0**	1 unit	0.429
					110	B	**3RA13 16-8XB30-1AF0**	1 unit	0.428
					230	▶	**3RA13 16-8XB30-1AP0**	1 unit	0.425
12	3	**5.5**	5.5	5.5	24	B	**3RA13 17-8XB30-1AB0**	1 unit	0.430
					110	B	**3RA13 17-8XB30-1AF0**	1 unit	0.425
					230	▶	**3RA13 17-8XB30-1AP0**	1 unit	0.430
DC operation									
7	2.2	**3**	3.5	4	DC 24	▶	**3RA13 15-8XB30-1BB4**	1 unit	0.548
9	3	**4**	4.5	5.5	DC 24	▶	**3RA13 16-8XB30-1BB4**	1 unit	0.547
12	3	**5.5**	5.5	5.5	DC 24	B	**3RA13 17-8XB30-1BB4**	1 unit	0.545

For circuit diagrams, see Page 2/219.
For dimension drawings, see Page 2/248.

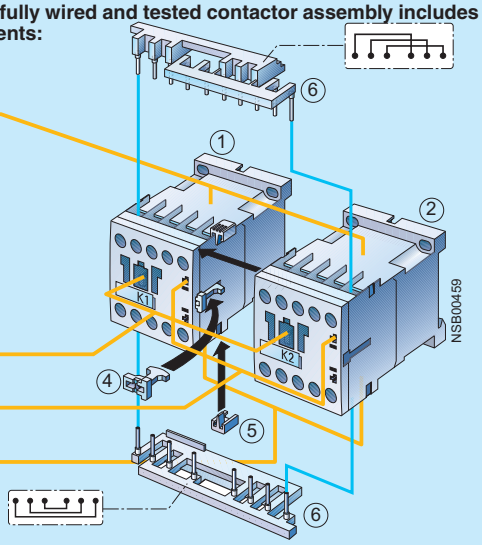
1) Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s;
at 60 Hz: 0.85 to 1.1 x U_s.

2) The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



Accessories		Order No.	Page
13	Solder pin adapter	3RT19 16-4KA1	2/189
14	Auxiliary switch block, front (auxiliary switch block to EN 50005 must be used)	3RH19 11-1....	2/180
16	Surge suppressors	3RT19 16-1....	2/186, 2/187

Components		Order No. K1	K2	Page
1 2	Contactors, 3 kW	3RT10 15	3RT10 15	2/52
1 2	Contactors, 4 kW	3RT10 16	3RT10 16	2/52
1 2	Contactors, 5.5 kW	3RT10 17	3RT10 17	2/52
4 5 6	Installation kit	3RA19 13-2A		2/101

The installation kit contains:

- 4 Mechanical interlock
- 5 2 connecting clips for 2 contactors
- 6 Wiring connectors on the top and bottom for connecting the main conducting paths, electrical interlock included [1], interruptible (NC contact interlock)

1) 3RT10 1 contactors with one NC contact in the basic unit are required for the electrical interlock.

*** This quantity or a multiple thereof can be ordered.**

SIRIUS reversing contactor assemblies
Complete units, 3 ... 45 kW

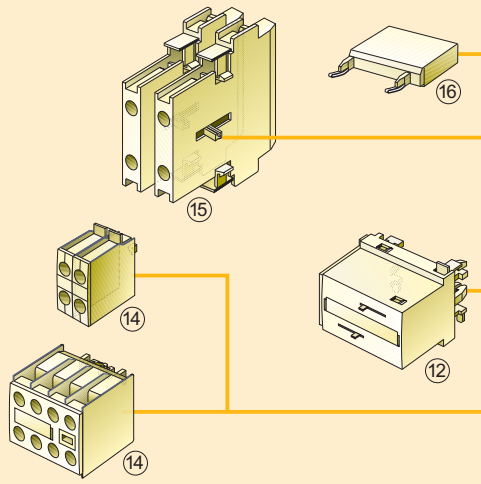
Size S0 · up to 11 kW

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	**Fully wired and tested contactor assembly**	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
12	3	**5.5**	7.5	7.5	24	B	**3RA13 24-8XB30-1AC2**	1 unit	0.766
					110	B	**3RA13 24-8XB30-1AG2**	1 unit	0.763
					230	▶	**3RA13 24-8XB30-1AL2**	1 unit	0.777
17	4	**7.5**	10	11	24	B	**3RA13 25-8XB30-1AC2**	1 unit	0.760
					110	B	**3RA13 25-8XB30-1AG2**	1 unit	0.763
					230	▶	**3RA13 25-8XB30-1AL2**	1 unit	0.773
25	5.5	**11**	11	11	24	B	**3RA13 26-8XB30-1AC2**	1 unit	0.755
					110	B	**3RA13 26-8XB30-1AG2**	1 unit	0.760
					230	▶	**3RA13 26-8XB30-1AL2**	1 unit	0.774
DC operation									
12	3	**5.5**	7.5	7.5	DC 24	▶	**3RA13 24-8XB30-1BB4**	1 unit	1.220
17	4	**7.5**	10	11	DC 24	B	**3RA13 25-8XB30-1BB4**	1 unit	1.220
25	5.5	**11**	11	11	DC 24	B	**3RA13 26-8XB30-1BB4**	1 unit	1.220

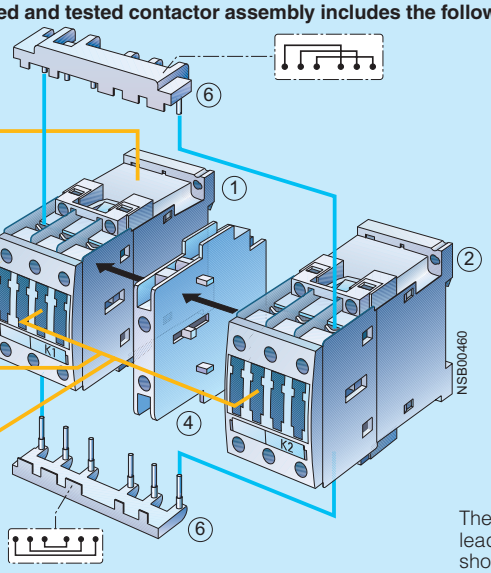
For circuit diagrams, see Page 2/219.
For dimension drawings, see Page 2/248.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		**Order No.**	**Page**
12	Mechanical interlock, front	3RA19 24-1A	2/100
14	Auxiliary switch block, mountable on the front	3RH19 21-1CA..	2/181
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 26-1....	2/186

Components		**Order No.**		**Page**
		K1	**K2**	
1 2	Contactors, 5.5 kW	3RT10 24	3RT10 24	2/53
1 2	Contactors, 7.5 kW	3RT10 25	3RT10 25	2/53
1 2	Contactors, 11 kW	3RT10 26	3RT10 26	2/53
4	Mechanical interlock, lateral	3RA19 24-2B		2/100
6	Installation kit	3RA19 23-2A		2/101

The installation kit contains wiring connectors on the top and bottom (they also form the mechanical connection between the contactors).

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS reversing contactor assemblies
Complete units, 3 ... 45 kW

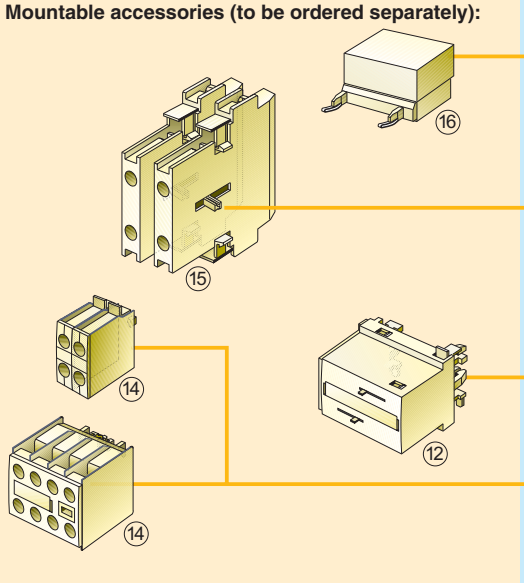
Size S2 · up to 22 kW

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	**Fully wired and tested contactor assembly**	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
32	7.5	**15**	18.5	18.5	24	B	**3RA13 34-8XB30-1AC2**	1 unit	2.250
					110	B	**3RA13 34-8XB30-1AG2**	1 unit	2.260
					230	B	**3RA13 34-8XB30-1AL2**	1 unit	2.220
40	11	**18.5**	22	22	24	B	**3RA13 35-8XB30-1AC2**	1 unit	2.310
					110	B	**3RA13 35-8XB30-1AG2**	1 unit	2.320
					230	B	**3RA13 35-8XB30-1AL2**	1 unit	2.300
50	15	**22**	30	22	24	B	**3RA13 36-8XB30-1AC2**	1 unit	2.340
					110	B	**3RA13 36-8XB30-1AG2**	1 unit	2.310
					230	B	**3RA13 36-8XB30-1AL2**	1 unit	2.290
DC operation									
32	7.5	**15**	18.5	18.5	DC 24	B	**3RA13 34-8XB30-1BB4**	1 unit	3.440
40	11	**18.5**	22	22	DC 24	B	**3RA13 35-8XB30-1BB4**	1 unit	3.440
50	15	**22**	30	22	DC 24	B	**3RA13 36-8XB30-1BB4**	1 unit	3.450

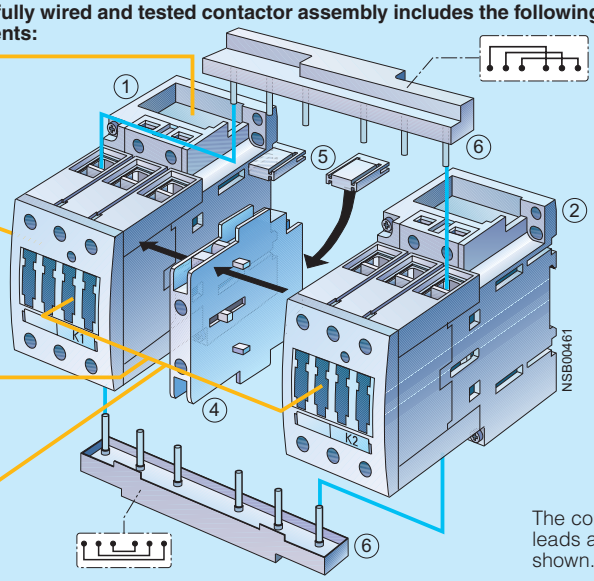
For circuit diagrams, see Page 2/219.
For dimension drawings, see Page 2/248.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
12	Mechanical interlock, front	3RA19 24-1A	2/100
14	Auxiliary switch block, mountable on the front	3RH19 21-1CA..	2/181
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	2/186

Components		Order No. K1	Order No. K2	Page
1 2	Contactors, 15 kW	3RT10 34	3RT10 34	2/54
1 2	Contactors, 18.5 kW	3RT10 35	3RT10 35	2/54
1 2	Contactors, 22 kW	3RT10 36	3RT10 36	2/54
4	Mechanical interlock, lateral	3RA19 24-2B		2/100
5 6	Installation kit	3RA19 33-2A		2/101

The installation kit contains:

5 2 connecting clips for 2 contactors with a clearance of 10 mm

6 Wiring connectors on the top and bottom for connecting the main conducting paths

*** This quantity or a multiple thereof can be ordered.**

SIRIUS reversing contactor assemblies
Complete units, 3 ... 45 kW

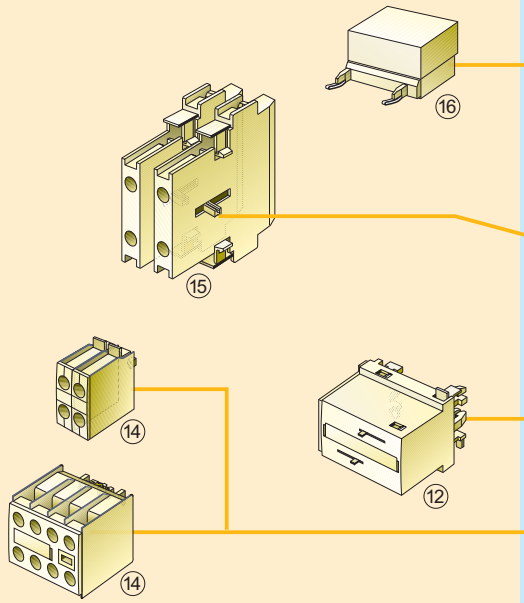
Size S3 · up to 45 kW

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assembly	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
65	18.5	**30**	37	45	24	B	**3RA13 44-8XB30-1AC2**	1 unit	4.240
					110	B	**3RA13 44-8XB30-1AG2**	1 unit	4.250
					230	B	**3RA13 44-8XB30-1AL2**	1 unit	4.220
80	22	**37**	45	55	24	B	**3RA13 45-8XB30-1AC2**	1 unit	4.430
					110	B	**3RA13 45-8XB30-1AG2**	1 unit	4.500
					230	B	**3RA13 45-8XB30-1AL2**	1 unit	4.500
95	22	**45**	55	55	24	B	**3RA13 46-8XB30-1AC2**	1 unit	4.460
					110	B	**3RA13 46-8XB30-1AG2**	1 unit	4.500
					230	B	**3RA13 46-8XB30-1AL2**	1 unit	4.470
DC operation									
65	18.5	**30**	37	45	DC 24	B	**3RA13 44-8XB30-1BB4**	1 unit	6.380
80	22	**37**	45	55	DC 24	B	**3RA13 45-8XB30-1BB4**	1 unit	6.430
95	22	**45**	55	55	DC 24	B	**3RA13 46-8XB30-1BB4**	1 unit	6.470

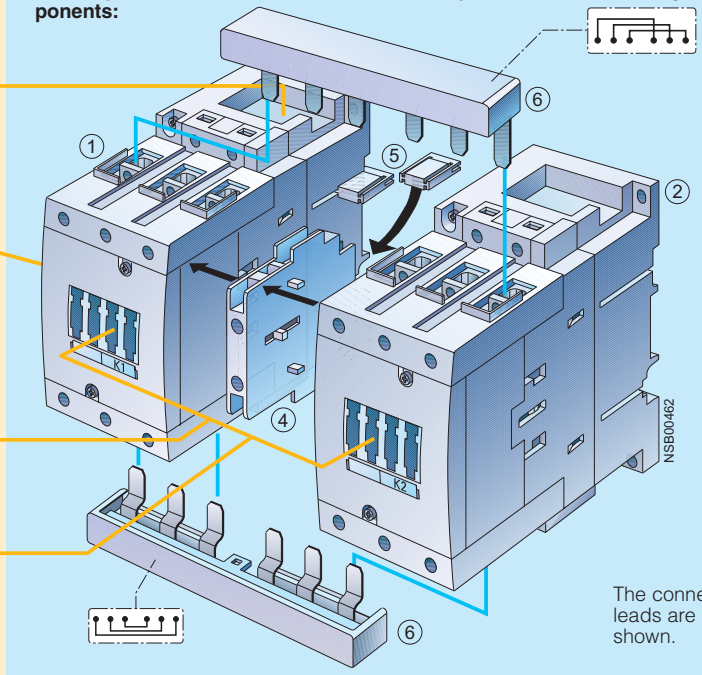
For circuit diagrams, see Page 2/219.
For dimension drawings, see Page 2/248.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
12	Mechanical interlock, front	3RA19 24-1A	2/100
14	Auxiliary switch block, mountable on the front	3RH19 21-1CA..	2/181
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	2/186

Components		Order No. K1	K2	Page
1 2	Contactors, 30 kW	3RT10 44	3RT10 44	2/55
1 2	Contactors, 37 kW	3RT10 45	3RT10 45	2/55
1 2	Contactors, 45 kW	3RT10 46	3RT10 46	2/55
4	Mechanical interlock, lateral	3RA19 24-2B		2/100
5 6	Installation kit	3RA19 43-2A		2/101

The installation kit contains:

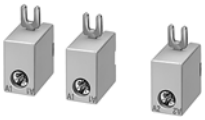
5 2 connecting clips for 2 contactors with a clearance of 10 mm

6 Wiring connectors on the top and bottom for connecting the main conducting paths

*** This quantity or a multiple thereof can be ordered.**

2

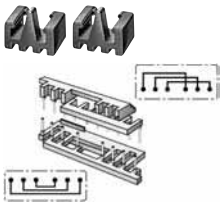
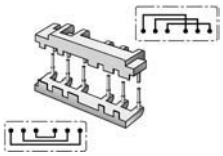
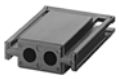
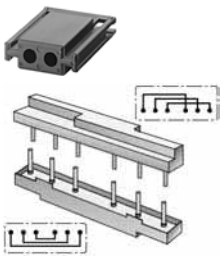
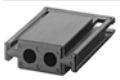
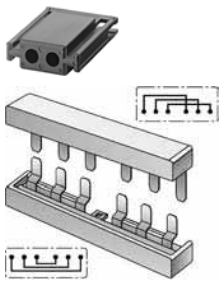
SIRIUS reversing contactor assemblies
Components for customer assembly

	For contactors Type	Size	Version	DT	Order No.	PS*	Weight per PU approx. kg
Mechanical interlocks							
 3RA19 24-1A mounted onto 2 contactors	3RT10 2, 3RT10 3, 3RT10 4; 3RT13 2, 3RT13 3, 3RT13 4	**S0,** **S2,** **S3;**	**For lateral mounting**[1] 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.)	▶	**3RA19 24-2B**	1 unit	0.060
	3RT10 2, 3RT10 3, 3RT10 4; 3RT13 2	**S0,** **S2,** **S3;** **S0**	**Mountable to the front**[2] To contactors with sizes S0 to S3 (for contactors of the same size) Note: Size S0: Wiring connectors must be mounted first sizes S2 and S3: Use 3RA19 32-2C mechanical connectors	▶	**3RA19 24-1A**	1 unit	0.052
 3RA19 54-2A	3RT1. 5 ... 3RT1 . 7	**S6,** **S10,** **S12**	**Laterally mountable,** Without auxiliary contacts; size S6, S10 and S12 contactors can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm.	▶	**3RA19 54-2A**	1 unit	0.045
Repeat coil terminal							
 3RA19 23-3B	3RT10 3, 3RT10 4	**S2, S3**	For the coil connectors A1 and A2 for reversing starters (contactor sizes S2 and S3). 2 x A1 and 1 x A2 required per assembly. (1 set contains 10 x A1 and 5 x A2)	B	**3RA19 23-3B**	1 set	0.082
Base plates							
	3RT10 5 3RT1. 6 3RT1. 7	**S6** **S10** **S12**	For customer assembly of reversing contactor assemblies	A A A	**3RA19 52-2A** **3RA19 62-2A** **3RA19 72-2A**	1 unit 1 unit 1 unit	1.210 2.090 2.320

1) Can also be used for 4-pole contactors with sizes S2 and S3.

2) Can also be used for size S0 4-pole contactors.

*** This quantity or a multiple thereof can be ordered.**

	For contactors Type	Size	Version	DT	Order No.	PS*	Weight per PU approx. kg
Installation kits for making 3-pole contactor assemblies							
 3RA19 13-2A 	3RT1. 1	**S00**	The installation kit contains: mechanical interlock; 2 connecting clips for 2 contactors; wiring connectors on the top and bottom.	►	**3RA19 13-2A**	1 set	0.041
 3RA19 23-2A	3RT1. 2	**S0**	The installation kit contains: Wiring connectors on the top and bottom	►	**3RA19 23-2A**	1 set	0.052
 3RA19 33-2A 	3RT10 3	**S2**	The installation kit contains: 2 connecting clips for 2 contactors Wiring connectors on the top and bottom	►	**3RA19 33-2A**	1 set	0.122
 3RA19 43-2A 	3RT10 4	**S3**	The installation kit contains: 2 connecting clips for 2 contactors Wiring connectors on the top and bottom	►	**3RA19 43-2A**	1 set	0.295
	3RT10 5 3RT1. 6 3RT1. 7	**S6** **S10** **S12**	The installation kit contains: Wiring connectors on the top and bottom	► ► A	**3RA19 53-2A** **3RA19 63-2A** **3RA19 73-2A**	1 set 1 set 1 set	1.280 2.410 3.140

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS reversing contactor assemblies
Components for customer assembly

Wiring connectors

For contactors Type	Size	Contactor clearance mm	Version	DT	Order No.	PS*	Weight per PU approx. kg
3RT1. 1	**S00-S00**	0	Top (in-phase)	▶	**3RA19 13-3D**	5 units	0.011
			Bottom (phase reversal)	▶	**3RA19 13-3E**	5 units	0.003
3RT1. 2	**S0-S0** and **S0-S0**	0 and 10	Top (in-phase)	▶	**3RA19 23-3D**	5 units	0.004
			Bottom (phase reversal)	▶	**3RA19 23-3E**	5 units	0.004
3RT10 3	**S2-S2**	10	Top (in-phase)	▶	**3RA19 33-3D**	1 unit	0.066
			Bottom (phase reversal)	▶	**3RA19 33-3E**	1 unit	0.054
3RT10 4	**S3-S3**	10	Top (in-phase)	▶	**3RA19 43-3D**	1 unit	0.157
			Bottom (phase reversal)	▶	**3RA19 43-3E**	1 unit	0.137
3RT10 5	**S6-S6**	10	Top (in-phase)	A	**3RA19 53-3D**	1 set	0.592

Mechanical connectors

For contactors Type	Size	Contactor clearance mm	Interlock	Version	DT	Order No. 1 pack = 10 sets for 10 assemblies	PS*	Weight per PU approx. kg
3RT1. 1[1]	**S00-S00**	0	Laterally mountable	for 3 and 4-pole contactors	▶	**3RA19 12-2H**	10 sets	0.001
3RT1. 2	**S0-S0**	0	Mountable on front	for 3 and 4-pole contactors	▶	**3RA19 22-2C**	10 sets	0.025
		10[2]	Laterally mountable		▶	**3RT19 22-2D**	10 sets	0.110
3RT1. 3, 3RT1 . 4	**S2-S2** **S3-S3**	0	Mountable on front	for 3-pole contactors	▶	**3RA19 32-2C**	10 sets	0.001
3RT1. 3, 3RT1 . 4; 3RT1. 5	**S2-S2** **S3-S3** **S6-S6**	10	Laterally mountable	for 3-pole contactors	▶	**3RA19 32-2D**	10 sets	0.003
3RT1. 3	**S2-S2**	10	Laterally mountable	for 4-pole contactors	▶	**3RA19 32-2G**	10 sets	0.007
3RT1. 4	**S3-S3**	10	Laterally mountable	for 4-pole contactors	▶	**3RA19 42-2G**	10 sets	0.008


3RA19 12-2H


3RA19 22-2C


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 connectors for size S0, a contactor clearance of 10 mm and a lateral interlock.

*** This quantity or a multiple thereof can be ordered.**

Reversing contactor assemblies 335 kW

Overview

The contactor assemblies are suitable for use in any climate. The contactors are mechanically interlocked. They are finger-safe acc. to DIN VDE 0106 Part 100.

Complete equipment assemblies and components for customer assembly are available. For motor protection, either overload relays for individual mounting or thermistor motor protection trip units must be ordered separately.

Complete equipment assemblies

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 identification plate are provided on a common cover.

Auxiliary contacts

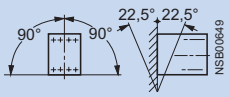
The contactor assemblies each have 2 NO + 2 NC contacts per contactor. 1 NO + 1 NC contacts with momentary-contact operation and 2 NO + 1 NC contacts with continuous operation are unassigned.

Functions

The operating times of the 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 via their auxiliary switches and the operating mechanisms.

The operating times of the individual contactors are not affected by the mechanical interlock.

Technical specifications

Contactor	Type			3TD68
General data				
Permissible mounting position, assembly note[1] The contactors are designed for operation on a vertical mounting surface.				
CSA and UL rated data				
Rated insulation voltage			AC V	600
Continuous current enclosed			A	550
Maximum horsepower ratings (CSA and UL approved values)				
Rated outout power of induction motors at 60 Hz		at 200 V	hp	200
		230 V	hp	229
		460 V	hp	464
		575 V	hp	582
NEMA/EEMAC ratings	NEMA/EEMAC SIZE			6
Uninterrupted current	Free air		A	600
	Enclosed		A	540
Rated outout power of induction motors at 60 Hz		at 200 V	hp	150
		230 V	hp	200
		460 V	hp	400
		575 V	hp	400
Overload relay	Type			3RB10
	Current setting range		A	300 ... 630

1) If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: Operating frequency: to 80% of the standard values.

Short-circuit protection with overload relays, see protection devices: Overload relay -> SIRIUS overload relay.

The technical specifications are identical to those of the 3TF68 and TF69 contactors listed on Pages 2/75 to 2/77.
The mechanical endurance is 5 million operating cycles for 3TD68.
For the unassigned auxiliary contacts of the contactors, see the circuit diagrams of the control circuits on Page 2/222.

Selection and ordering data

Size	Rated data AC-3					Auxiliary contacts per direction of rotation		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e	Ratings of induction motors at 50 Hz and				Version						
	at 400 V	230 V	**400 V**	500 V	690 V							
	A	kW	**kW**	kW	kW	NO	NC	AC V				kg
Complete equipment assemblies												
• **AC operation, 50/60 Hz**												
14	630	200	**335**	434	600	4	4	110 ... 132	C	**3TD68 04-2CF7**	1 unit	56.000
								200 ... 240	C	**3TD68 04-2CM7**	1 unit	54.000

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS star-delta assemblies
Complete units, 3 ... 75 kW

Overview

The 3RA14 contactor assemblies for star-delta starting can be ordered as follows:

Sizes S00 to S3:

- Fully wired and tested, with electrical interlock, dead interval of up to 10 s on reversing (size S00 with electrical and mechanical interlocks)

Sizes S00 to S12

- As components 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.

For overload relays for motor protection, see protection devices: Overload relay -> SIRIUS overload relay.

The 3RA14 contactor assemblies have screw terminals and are suitable for screwing or snapping onto 35 mm 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.

A solid-state time-delay auxiliary switch block is snapped onto the front of the complete contactor assemblies, size S00 up to 7.5 kW, while a time relay is mounted onto the side of sizes S0 to S3, 11 kW to 75 kW.

Rated data at AC 50 Hz 400 V			Size				Accessories for customer assembly	
Rating kW	Operating current I_e	Motor current A		Line/delta contactor	Star contactor	**Order No. complete**	Time relay	Installation kit A, for double infeed
5.5	12	1.9 ... 2.8 2.4 ... 3.4 3.1 ... 4.3 3.8 ... 5.5 4.8 ... 6.9 6 ... 8.6	**S00-S00-S00**	3RT10 15	3RT10 15	**3RA14 15-8XB31-1...**	3RT19 16-2G.51	–
7.5	17	7.8 ... 10.9 9.5 ... 13.8 12.1 ... 17		3RT10 17		**3RA141 6-8XB31-1...**	3RP15 74-1N.30	
11	25	3.1 ... 4.3 3.8 ... 5.5 4.8 ... 6.9 6 ... 8.6 7.8 ... 10.9 9.5 ... 13.8 12.1 ... 17.2 15.5 ... 21.5 19 ... 25	**S0-S0-S0**	3RT10 24	3RT10 24	**3RA14 23-8XC21-1...**	3RP15 74-1N.30	–
15	32	24.1 ... 34 29.3 ... 37.9		3RT10 26		**3RA14 25-8XC21-1...**		
18.5	40	34.5 ... 40						
22	50	9.5 ... 13.8 12.1 ... 17.2 15.5 ... 21.5 19 ... 27.6 24.1 ... 34 31 ... 43 37.9 ... 55.2 48.3 ... 65	**S2-S2-S0**	3RT10 34 3RT10 35	3RT10 26	**3RA14 34-8XC21-1...** –	3RP15 74-1N.30	3RA19 33-2C [3])
37	80	62.1 ... 77.8	**S2-S2-S2**		3RT10 34	**3RA14 35-8XC21-1...**		3RA19 33-2B [3])
45	86	69 ... 86		3RT10 36		**3RA14 36-8XC21-1...**		
55	115	31 ... 43.1 37.9 ... 55.2 48.3 ... 69 62.1 ... 77.6 77.6 ... 108.6	**S3-S3-S2**	3RT10 44	3RT10 35	**3RA14 44-8XC21-1...**	3RP15 74-1N.30	3RA19 43-2C [3])
75	150	98.3 ... 129.3 120.7 ... 150		3RT10 45	3RT10 36	**3RA14 45-8XC21-1...**		
90	160	86 ... 160	**S6-S6-S3**	3RT10 54	3RT10 44	–	3RP15 74-1N.30	–
110	195	86 ... 195						
132	230	86 ... 230		3RT10 55	3RT10 45			
160	280	86 ... 280		3RT10 56	3RT10 46			
200	350	95 ... 350	**S10-S10-S6**	3RT10 64	3RT10 54	–	3RP15 74-1N.30	–
250	430	95 ... 430		3RT10 65	3RT10 55			
315	540	347 ... 540	**S12-S12-S10**	3RT10 75	3RT10 64	–	3RP15 74-1N.30	–
355	610	347 ... 610						
400	690	347 ... 690			3RT10 65			
500	850	347 ... 850		3RT10 76	3RT10 66			

For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/251.

1) Installation kit contains mechanical interlock; 3 connecting clips; wiring connectors on the top (connection between mains and delta contactor) and on the bottom (connection between delta and star contactor); star jumper

2) The installation kit contains 5 connecting clips; wiring connectors on the top (connection between mains and delta contactor) and on the bottom (connection between delta and star contactor); star jumper

3) Installation kit contains wiring connector on the bottom (connection between delta contactor and star contactor) and star jumper.

4) Wiring connector on top from reversing contactor assembly (note conductor cross-sections).

Components for customer assembly

Installation kits with wiring connectors and, if necessary, mechanical connectors are available for contactor assemblies for star-delta starting. Contactors, overload relays, star-delta time relays, auxiliary switches for electrical interlock – if required also supply terminals, mechanical interlocks (exception: in the case of the kit for size S00 contactor assemblies the mechanical interlock between the delta contactor and the star contactor is included in the kit) and base plates – must be ordered separately.

The wiring installation kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and star contactors (bottom).

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 connector, owing to the larger conductor cross-section at the infeed.

Motor protection

Overload relays or thermistor motor protection trip units 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.

			Overload relay, thermal		Overload relay, solid-state	
Installation kit B, for single infeed	Star jumper	Base plates	Adjustment range A	Order No.	Adjustment range A	Order No.
3RA19 13-2B [1])	3RT19 16-4BA31	–	1.1 ... 1.6	3RU11 16-1AB0	0.4 ... 1.6	3RB10 16-1NB0
			1.4 ... 2	3RU11 16-1BB0	1.5 ... 6	3RB10 16-1PB0
			1.8 ... 2.5	3RU11 16-1CB0		
			2.2 ... 3.2	3RU11 16-1DB0		
			2.8 ... 4	3RU11 16-1EB0	3 ... 12	3RB10 16-1SB0
			3.5 ... 5	3RU11 16-1FB0		
			4.5 ... 6.3	3RU11 16-1GB0		
			5.5 ... 8	3RU11 16-1HB0		
			7 ... 10	3RU11 16-1JB0		
3RA19 23-2B [2])	3RT19 26-4BA31	–	1.8 ... 2.5	3RU11 26-1CB0	1.6 ... 6	3RB10 26-1PB0
			2.2 ... 3.2	3RU11 26-1DB0		
			2.8 ... 4	3RU11 26-1EB0		
			3.5 ... 5	3RU11 26-1FB0		
			4.5 ... 6.3	3RU11 26-1GB0	3 ... 12	3RB10 26-1SB0
			5.5 ... 8	3RU11 26-1HB0		
			7 ... 10	3RU11 26-1JB0		
			9 ... 12.5	3RU11 26-1KB0	6 ... 25	3RB10 26-1QB0
			11 ... 16	3RU11 26-4AB0		
			14 ... 20	3RU11 26-4BB0		
			17 ... 22	3RU11 26-4CB0		
			20 ... 25	3RU11 26-4DB0		
3RA19 33-3D [4])	3RT19 26-4BA31	3RA19 32-2E	5.5 ... 8	3RU11 36-1HB0	–	–
			7 ... 10	3RU11 36-1JB0	6 ... 25	3RB10 36-1QB0
			29 ... 12,5	3RU11 36-1KB0		
			11 ... 16	3RU11 36-4AB0		
			14 ... 20	3RU11 36-4BB0		
			18 ... 25	3RU11 36-4DB0		
			22 ... 32	3RU11 36-4EB0	13 ... 50	3RB10 36-1UB0
			28 ... 40	3RU11 36-4FB0		
	3RT19 36-4BA31	3RA19 32-2F	36 ... 45	3RU11 36-4GB0		
			40 ... 50	3RU11 36-4HB0		
3RA19 43-3D [4])	3RT19 36-4BA31	3RA19 42-2E	18 ... 25	3RU11 46-4DB0	13 ... 50	3RB10 46-1UB0
			22 ... 32	3RU11 46-4EB0		
			28 ... 40	3RU11 46-4FB0		
			36 ... 45	3RU11 46-4HB0		
			45 ... 63	3RU11 46-4JB0	25 ... 100	3RB10 46-1EB0
			57 ... 75	3RU11 46-4KB0		
			70 ... 90	3RU11 46-4LB0		
3RA19 53-3D [4])	3RT19 46-4BA31	3RA19 52-2E	–	–	50 ... 200	3RB10 56-1FG0
3RA19 63-2A [5])	3RT19 56-4BA31	3RA19 62-2E	–	–	55 ... 250	3RB10 66-1GG0
3RA19 73-2A [5])	3RT19 66-4BA31	3RA19 72-2E	–	–	200 ... 540	3RB10 66-1KG0

5) Only use wiring connector on top of reversing contactor assembly (note conductor cross-sections); star jumpers must be ordered separately.

SIRIUS star-delta assemblies
Complete units, 3 ... 75 kW

Functions

Star-delta starting can only be used either if the motor normally operates in a Δ connection or starts softly or if the load torque during Y starting is low and does not increase sharply. On the Y step the motors can carry approximately 50 % (class KL 16) or 30 % (class KL 10) of their rated torque; The starting torque is approximately 1/3 of that during direct on-line starting. The starting current is approximately 2 to 2.7 times the rated motor current.

The changeover from Y to Δ must not be effected until the motor has run up to rated speed. Drives which require this changeover to be performed earlier are unsuitable for star-delta starting.

The ratings given in the table are only applicable to motors with a starting current ratio $I_A \leq 8.4 \times I_N$ and using either a 3RT19 16-2G or 3RT19 26-2G solid-state time-delay auxiliary switch block with a star-delta function or a 3RP15 74N. star-delta time relay with a dead interval on reversing of approximately 50 ms.

Surge suppression

Sizes S00 to S3:

All contactor assemblies can be fitted with RC elements, varistors or diode assemblies 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 fitted onto the coil terminals on the top or bottom (S0 to S3).

Sizes S6 to S12:

The contactors are fitted with varistors as standard.

Technical specifications

Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA and 690 V
For overload relays see protection devices: Overload relay -> SIRIUS overload relay.

Ratings	Size of contactors K1-K3-K2	Rated motor current	Overload relay	Current setting range (The overload relays must be set to 0.58 times the rated motor current)	Permissible short-circuit fuses for starters, comprising contactor assemblies and overload relays Single or double infeed [1] Fuse links NH Type 3NA DIAZED Type 5SB NEOZED Type 5SE Operational class gL/gG Type of coordination		NH TYPE 3ND Operational class aM Type of coordination	®-listed fuses Fuse CLASS RK5L	British Standard Fuses BS88 Type of coordination	
					"1"	"2"	"2"		"1"	"2"
kW		A	Type	A	A	A	A	A	A	A
5.5	S00-S00-S00	12	3RU11 16-1HB0	5.5/ 8	35	20	10	30	35	20
7.5	S00-S00-S00	17	3RU11 16-1JB0	7/ 10	35	20	16	40	35	20
11	S0-S0-S0	25	3RU11 26-4AB0	11 ... 16	63	25	20	60	63	25
15	S0-S0-S0	32	3RU11 26-4BB0	14 ... 20	100	35	20	80	100	35
18.5	S0-S0-S0	40	3RU11 26-4DB0	20 ... 25	100	35	20	100	100	35
22	S2-S2-S0	50	3RU11 36-4EB0	22 ... 32	125	63	35	125	125	63
30	S2-S2-S0	65	3RU11 36-4FB0	28 ... 40	125	63	50	150	125	63
37	S2-S2-S2	80	3RU11 36-4GB0	36 ... 45	125	63	50	105	125	63
45	S2-S2-S2	86	3RU11 36-4HB0	40 ... 50	160	80	50	200	160	80
55	S3-S3-S2	115	3RU11 46-4KB0	57 ... 75	250	125	63	300	250	125
75	S3-S3-S2	150	3RU11 46-4LB0	70 ... 90	250	160	80	350	250	160
90	S6-S6-S3	160	3RB10 56-1FG0	50 ... 200	355	315	160	450	355	250
110	S6-S6-S3	195	3RB10 56-1FG0	50 ... 200	355	315	160	450	355	250
132	S6-S6-S3	230	3RB10 56-1FG0	50 ... 200	355	315	160	500	355	315
160	S6-S6-S3	280	3RB10 56-1FG0	50 ... 200	355	315	200	500	355	315
200	S10-S10-S6	350	3RB10 66-1GG0	50 ... 250	500	400	250	700	500	400
250	S10-S10-S6	430	3RB10 66-1KG0	200 ... 540	500	400	315	800	500	400
315	S12-S12-S10	540	3RB10 66-1KG0	200 ... 540	630	500	400	1000	630	450
355	S12-S12-S10	610	3RB10 66-1KG0	200 ... 540	630	500	400	1000	630	450
400	S12-S12-S10	690	3RB10 66-1KG0	200 ... 540	630	500	400	1000	630	450
500	S12-S12-S10	850	3RB10 66-1KG0	200 ... 540	630	500	500	1200	630	500

1) The maximum rated motor current must not be exceeded.

Technical specifications

Starters	Sizes / Type			00-00-00 14 15	00-00-00 14 16	0-0-0 14 23	0-0-0 14 25	2-2-0 14 34	2-2-2 14 35	2-2-2 14 36	3-3-2 14 44	3-3-2 14 45
All technical specifications not mentioned in the table below are identical to those of the individual 3RT contactors and 3RU overload relays												
Mechanical endurance			Operating cycles	3 mill.								
Short-circuit protection without overload relay				1)								
Maximum rated current of the fuse												
Main circuit												
Fuse links, gL/gG												
NH 3NA, DIAZED 5SB, NEOZED 5SE												
single or double infeed												
- to IEC 60947-4-1/	Type of coordination "1"		A	35	35	63	100	125	125	160	250	250
EN 60947-4-1	Type of coordination "2"		A	20	20	25	35	63	63	80	125	160
Control circuit												
Fuse links, gL/gG			A	10								
DIAZED 5SB, NEOZED 5SE			A	6 2) if the aux. contact of the overload relay is connected in the contactor coil circuit								
(short-circuit current I_k ≤1 kA)												
Miniature circuit-breaker with C-characteristic			A	10								
			A	6 2), if the aux. contact of the overload relay is connected in the contactor coil circuit								
Size of contactors	Mains contactor K1		Type 3RT	10 15	10 17	10 24	10 26	10 34	10 35	10 36	10 44	10 45
	K3 delta contactor		Type 3RT	10 15	10 17	10 24	10 26	10 34	10 35	10 36	10 44	10 45
	K2 star contactor		Type 3RT	10 15	10 15	10 24	10 24	10 26	10 34	10 34	10 35	10 36
Unassigned auxiliary contacts of the contactors				3)								
Current-carrying capacity for reversing time up to 10 s												
Rated operating current I_e		at 400 V	A	12	17	25	40	65	80	86	115	150
		500 V	A	8.7	11.3	20.8	31.2	55.4	69.3	86	112.6	138.6
		690 V	A	6.9	9	20.8	22.5	53.7	69.3	69.3	98.7	138.6
Rated output power for induction		at 230 V	kW	3.3	4.7	7.2	12	20.4	25.5	27.8	37	49
motors at 50 Hz and 60 Hz and		400 V	kW	5.8	8.2	12.5	21	35	44	48	65	85
		500 V	kW	5.3	6.9	13	20.5	38	48	60	80	98
		690 V	kW	5.8	7.5	18	20.4	51	66	67	97	136
		1000 V	kW	-	-	-	-	-	-	-	-	-
Operating frequency with overload relay			h^{-1}	15	15	15	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 15 s												
Rated operating current I_e		at 400 V	A	12	17	25	31	44	57	67	97	106
		500 V	A	8.7	11.3	20.8	31	44	57	67	97	106
		690 V	A	6.9	9	20.8	22.5	44	57	67	97	106
Rated output power for induction		at 230 V	kW	3.3	4.7	7.2	9.4	13.8	18.2	21.6	32	35
motors at 50 Hz and 60 Hz and		400 V	kW	5.8	8.2	12.5	16.3	24	31.6	38	55	60
		500 V	kW	5.3	6.9	13	20.4	30	40	47	69	75
		690 V	kW	5.8	7.5	18	20.4	42	55	65	95	104
		1000 V	kW	-	-	-	-	-	-	-	-	-
Operating frequency with overload relay			h^{-1}	15	15	15	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 20 s												
Rated operating current I_e		at 400 V	A	12	17	25	28	39	51	57	85	92
		500 V	A	8.7	11.3	20.8	28	39	51	57	85	92
		690 V	A	6.9	9	20.8	22.5	39	51	57	85	92
Rated output power for induction		at 230 V	kW	3.3	4.7	7.2	8.5	12.2	16.3	18.4	28	30
motors at 50 Hz and 60 Hz and		400 V	kW	5.8	8.2	12.5	14.7	21.3	28	32	48	52
		500 V	kW	5.3	6.9	13	18.4	26.7	35	40	60	65
		690 V	kW	5.8	7.5	18	20.4	37	49	55	83	90
		1000 V	kW	-	-	-	-	-	-	-	-	-
Operating frequency with overload relay			h^{-1}	15	15	15	15	15	15	15	15	15

1) Short-circuit protection with overload relays, see protection devices: Overload relay -> SIRIUS overload relay.

2) Up to I_k ≤ 0.5 kA; ≤ 260 V.

3) See circuit diagrams of the control circuit on Page 2/220.

2

SIRIUS star-delta assemblies
Complete units, 3 ... 75 kW

Selection and ordering data

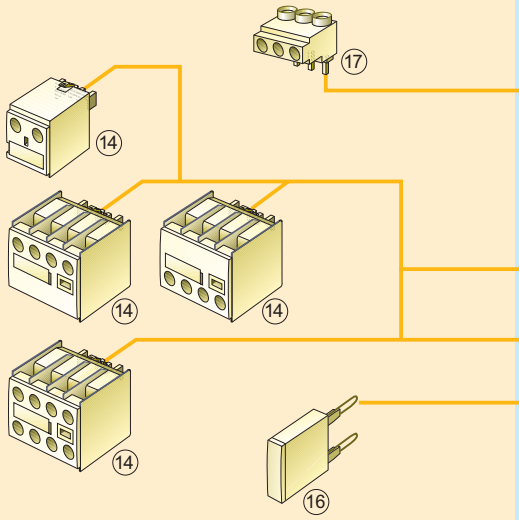
Size S00-S00-S00 · up to 7.5 kW

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assemblies	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
12	3.3	**5.5**	7.2	9.2	24	C	**3RA14 15-8XB31-1AB0**	1 unit	0.940
					110	C	**3RA14 15-8XB31-1AF0**	1 unit	0.934
					230	▶	**3RA14 15-8XB31-1AP0**	1 unit	0.948
17	4.7	**7.5**	10.3	9.2	24	C	**3RA14 16-8XB31-1AB0**	1 unit	0.945
					110	C	**3RA14 16-8XB31-1AF0**	1 unit	0.935
					230	▶	**3RA14 16-8XB31-1AP0**	1 unit	0.928
DC operation									
12	3.3	**5.5**	7.2	9.2	DC 24	B	**3RA14 15-8XB31-1BB4**	1 unit	1.120
17	4.7	**7.5**	10.3	9.2	DC 24	▶	**3RA14 16-8XB31-1BB4**	1 unit	1.110

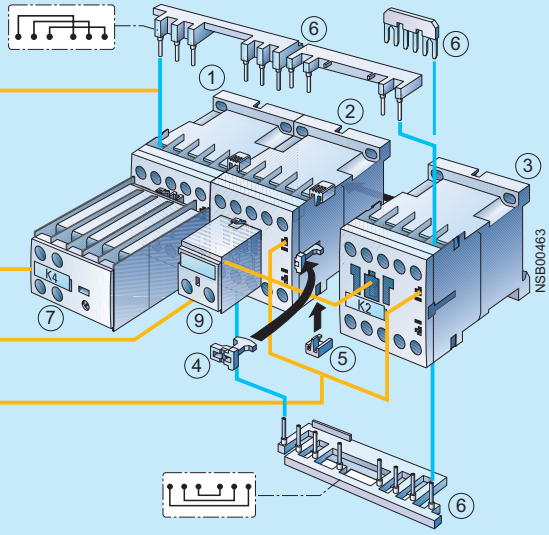
For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/251.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
14	Auxiliary switch block, mountable on the front	3RH19 11-1....	2/180
16	Surge suppressors	3RT19 16-1....	2/186, 2/187
17	3-phase line-side terminal	3RA19 13-3K	2/113

Components		Order No. K1 [1]	K3 [2]	K2 [2]	Page
1 2 3	Contactors, 5.5 kW	3RT10 15	3RT10 15	3RT10 15	2/52
1 2 3	Contactors, 7.5 kW	3RT10 17	3RT10 17	3RT10 15	2/52
7	Solid-state time-delay auxiliary switch block, mountable on the front	3RT19 16-2G.51			2/184
9	Auxiliary switch block with 1 unassigned NO contact	3RH19 11-1BA10			2/180
4 5 6	Installation kit	3RA19 13-2B			2/113

The installation kit contains:

- 4 Mechanical interlock
- 5 3 connecting clips
- 6 Wiring connectors on the top and bottom for connecting the main and control conducting paths

1) Use design with 1 NO.

2) Use design with 1 NC.

*** This quantity or a multiple thereof can be ordered.**

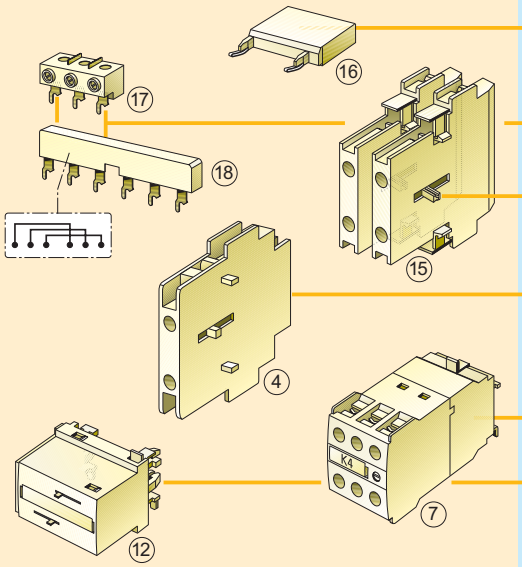
Size S0-S0-S0 · up to 18.5 kW

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assembly	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
25	7.1	**11**	15.6	19	24	C	**3RA14 23-8XC21-1AC2**	1 unit	1.760
					110	C	**3RA14 23-8XC21-1AG2**	1 unit	1.760
					230	▶	**3RA14 23-8XC21-1AL2**	1 unit	1.770
32 / 40	11.4	**15 / 18.5**	19	19	24	C	**3RA14 25-8XC21-1AC2**	1 unit	1.740
					110	C	**3RA14 25-8XC21-1AG2**	1 unit	1.730
					230	▶	**3RA14 25-8XC21-1AL2**	1 unit	1.770
DC operation									
25	7.1	**11**	15.6	19	DC 24	▶	**3RA14 23-8XC21-1BB4**	1 unit	2.380
32 / 40	11.4	**15 / 18.5**	19	19	DC 24	▶	**3RA14 25-8XC21-1BB4**	1 unit	2.440

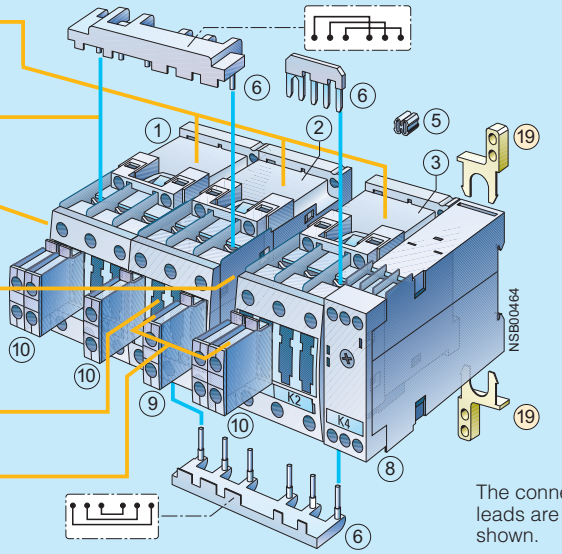
For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/251.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
4	Mechanical interlock, lateral	3RA19 24-2B	2/100
7	Solid-state time-delay auxiliary switch block, front[1]	3RT19 26-2G...	2/184
12	Mechanical interlock, front	3RA19 24-1A	2/100
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 26-1....	2/186
17	3-phase infeed terminal[2]	3RV19 15-5A	2/113
18	3-phase busbar[2]	3RT19 26-4CC20	2/113
19	Push-in lug[3] for time relay screw mounting	3RP19 03	4)

Components		Order No. K1	K3	K2	Page
1 2 3	Contactors, 11 kW	3RT10 24	3RT10 24	3RT10 24	2/53
1 2 3	Contactors, 15/18.5 kW	3RT10 26	3RT10 26	3RT10 24	2/53
8	Time relay, lateral	3RP15 74-1N.30			4)
9	Auxiliary switch block with 1 unassigned NO contact	3RH19 21-1CA10			2/181
10	Auxiliary switch block for local control 2 units 3 units	 3RH19 21-1CA01 3RH19 21-1CA10			2/181
5 6	Installation kit	3RA19 23-2B			2/113

The installation kit contains:

5 Connecting clips

6 Wiring connectors on the top and bottom for connecting the main and control conducting paths

1) 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

2) 17 and 18 can only be mounted with contactors with screw terminal (coil).

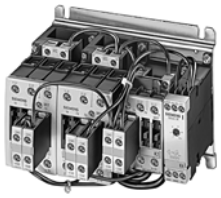
3) Not part of the scope of supply of the preassembled contactor assemblies; can be ordered as an accessory.

4) See SIMIREL time, monitoring, and coupling relays as well as converters -> Time relay -> Time relay in 22.5 mm industrial enclosure.

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS star-delta assemblies
Complete units, 3 ... 75 kW



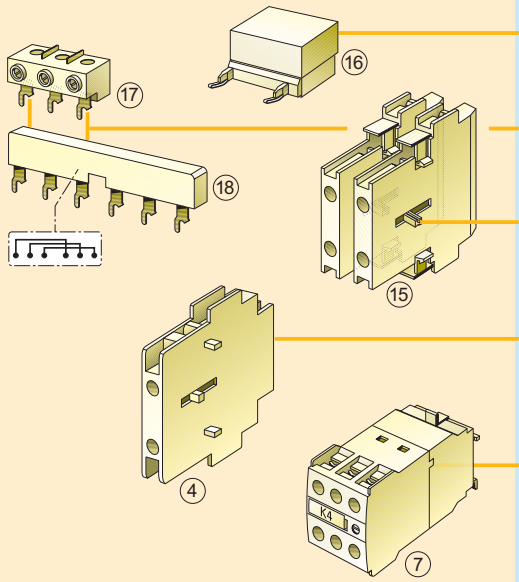
Size S2-S2-S0 · up to 30 kW

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assembly	PS*	Weight per PU approx.
Operating current I_e at 400 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V			Order No.		
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
50 / 65	19.6	**22 / 30**	35	34	24	C	**3RA14 34-8XC21-1AC2**	1 unit	3.140
					110	C	**3RA14 34-8XC21-1AG2**	1 unit	3.120
					230	▶	**3RA14 34-8XC21-1AL2**	1 unit	3.070
DC operation									
50 / 65	19.6	**22 / 30**	35	34	24	▶	**3RA14 34-8XC21-1BB4**	1 unit	4.520

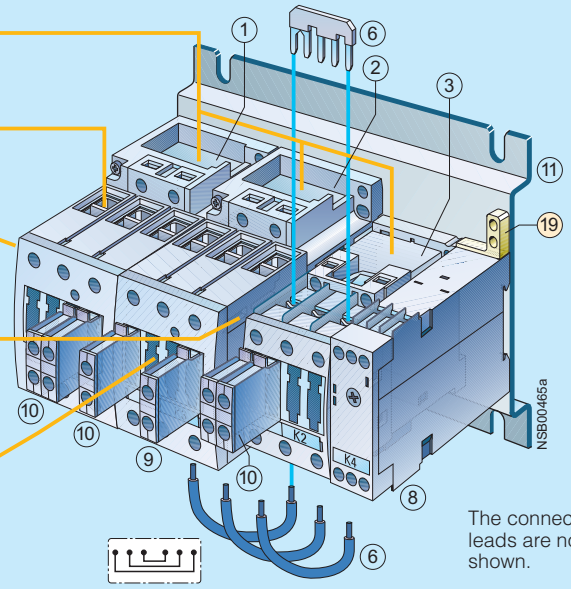
For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/251.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories	Order No.	Page
④ Mech. interlocking, lateral depth compensation required K3: 1,5 mm; K2: 0 mm	3RA19 24-2B	2/100
⑦ Solid-state time-delay auxiliary switch block, front [1]	3RT19 26-2G...	2/184
⑮ Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
⑯ Surge suppressors	3RT19 26-1.... 3RT19 36-1....	2/186, 2/187
⑰ 3-phase line-side terminal	3RV19 35-5A	2/113
⑱ 3-phase busbar	3RV19 35-1A	2/113
⑲ Push-in lug [3] for time relay screw mounting	3RP19 03	[3]

Components	Order No. K1	K3	K2	Page
①②③ Contactors, 22/30 kW	3RT10 34	3RT10 34	3RT10 26	2/53
⑧ Time relay, lateral	3RP15 74-1N.30			[3]
⑨ Auxiliary switch block with 1 unassigned NO contact	3RH19 21-1CA10			2/181
⑩ Auxiliary switch block for local control				
2 units	3RH19 21-1CA01			
3 units	3RH19 21-1CA10			2/181
⑪ Base plate	3RA19 32-2E			2/113
⑥ Installation kit	3RA19 33-2C			2/113

The installation kit contains the star jumper on the top and the wiring jumper on the bottom for connecting the main conducting paths.

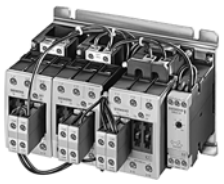
1) Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

2) Not part of the scope of supply of the preassembled contactor assemblies; can be ordered as an accessory.

3) See SIMIREL time, monitoring, and coupling relays as well as converters -> Time relay -> Time relay in 22.5 mm industrial enclosure.

*** This quantity or a multiple thereof can be ordered.**

Size S2-S2-S2 · to 45 kW



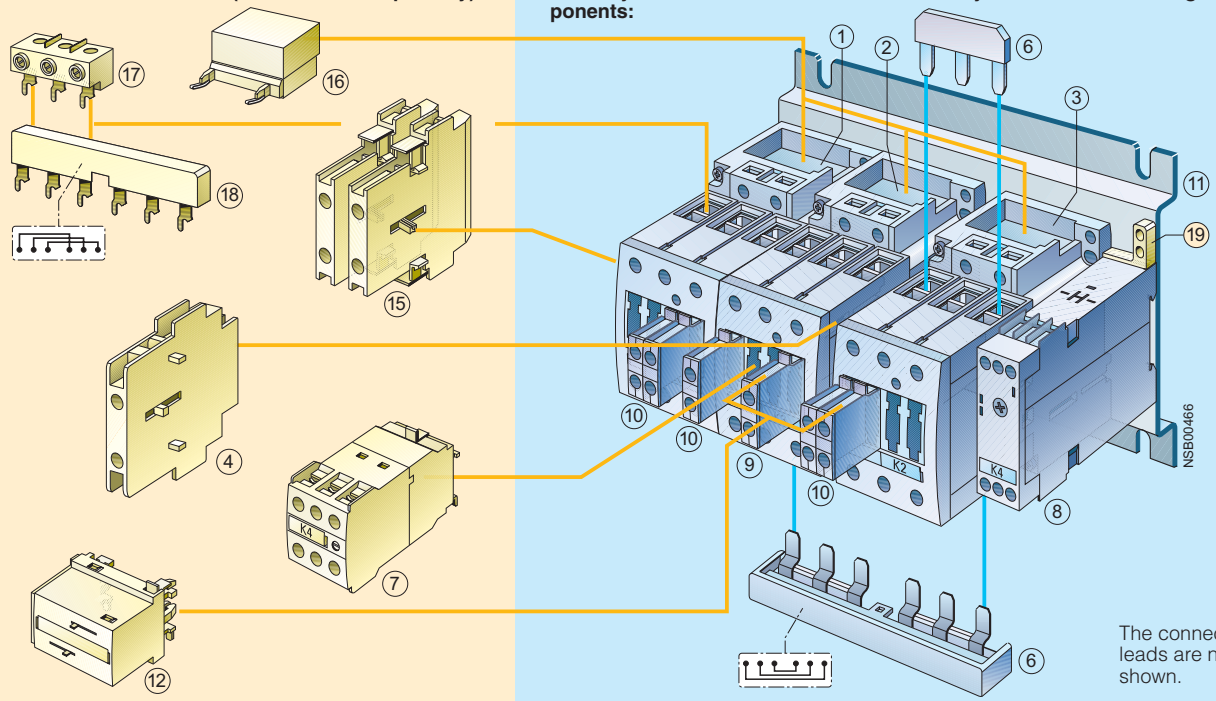
Rated data AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assembly	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and						Order No.		
at 400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
80	25	**37**	51	63	24	C	**3RA14 35-8XC21-1AC2**	1 unit	3.720
					110	C	**3RA14 35-8XC21-1AG2**	1 unit	3.660
					230	▶	**3RA14 35-8XC21-1AL2**	1 unit	3.650
86	27	**45**	55	63	24	C	**3RA14 36-8XC21-1AC2**	1 unit	3.750
					110	C	**3RA14 36-8XC21-1AG2**	1 unit	3.710
					230	▶	**3RA14 36-8XC21-1AL2**	1 unit	3.680
DC operation									
80	25	**37**	51	63	24	B	**3RA14 35-8XC21-1BB4**	1 unit	5.510
86	27	**45**	55	63	24	B	**3RA14 36-8XC21-1BB4**	1 unit	5.480

For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/251.

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.

Mountable accessories (to be ordered separately):

The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
4	Mechanical interlock, lateral	3RA19 24-2B	2/100
7	Solid-state time-delay auxiliary switch block, front [1]	3RT19 26-2G...	2/184
12	Mechanical interlock, front	3RA19 24-1A	2/100
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	2/186, 2/187
17	3-phase line-side terminal	3RV19 35-5A	2/113
18	3-phase busbar	3RV19 35-1A	2/113
19	Push-in lug [3] for time relay screw mounting	3RP19 03	[3]

Components		Order No. K1	K3	K2	Page
1 2 3	Contactors, 37 kW	3RT10 35	3RT10 35	3RT10 34	2/54
1 2 3	Contactors, 45 kW	3RT10 36	3RT10 36	3RT10 34	2/54
8	Time relay, lateral	3RP15 74-1N.30			[3]
9	Auxiliary switch block with 1 unassigned NO contact	3RH19 21-1CA10			2/181
10	Auxiliary switch block for local control				
	2 units	3RH19 21-1CA01			
	3 units	3RH19 21-1CA10			2/181
11	Base plate	3RA19 32-2F			2/113
6	Installation kit	3RA19 33-2B			2/113

The installation kit contains the star jumper on the top and the wiring jumper on the bottom for connecting the main conducting paths.

1) 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.

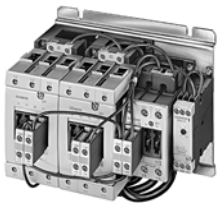
2) Not part of the scope of supply of the preassembled contactor assemblies; can be ordered as an accessory.

3) See SIMIREL time, monitoring, and coupling relays as well as converters -> Time relay -> Time relay in 22.5 mm industrial enclosure.

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS star-delta assemblies
Complete units, 3 ... 75 kW



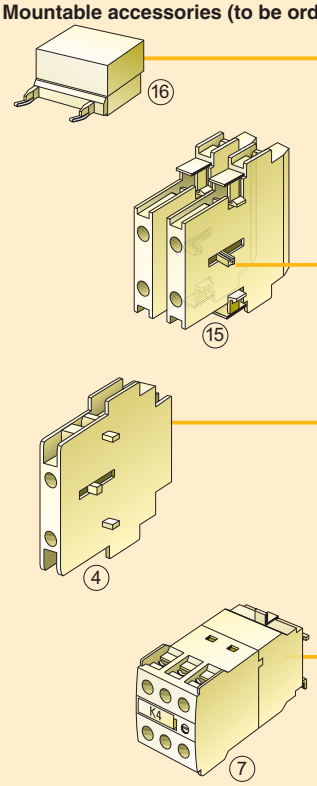
Size S3-S3-S2 · up to 75 kW

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Fully wired and tested contactor assembly	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and								
at 400 V	230 V	**400 V**	500 V	690 V			Order No.		
A	kW	**kW**	kW	kW	V				kg
AC operation, 50/60 Hz									
115	37	**55**	81	93	24	C	**3RA14 44-8XC21-1AC2**	1 unit	5.700
					110	C	**3RA14 44-8XC21-1AG2**	1 unit	5.680
					230	▶	**3RA14 44-8XC21-1AL2**	1 unit	5.820
150	47	**75**	103	110	24	C	**3RA14 45-8XC21-1AC2**	1 unit	5.360
					110	C	**3RA14 45-8XC21-1AG2**	1 unit	5.920
					230	▶	**3RA14 45-8XC21-1AL2**	1 unit	5.970
DC operation									
115	37	**55**	81	93	24	B	**3RA14 44-8XC21-1BB4**	1 unit	8.520
150	47	**75**	103	110	24	B	**3RA14 45-8XC21-1BB4**	1 unit	8.530

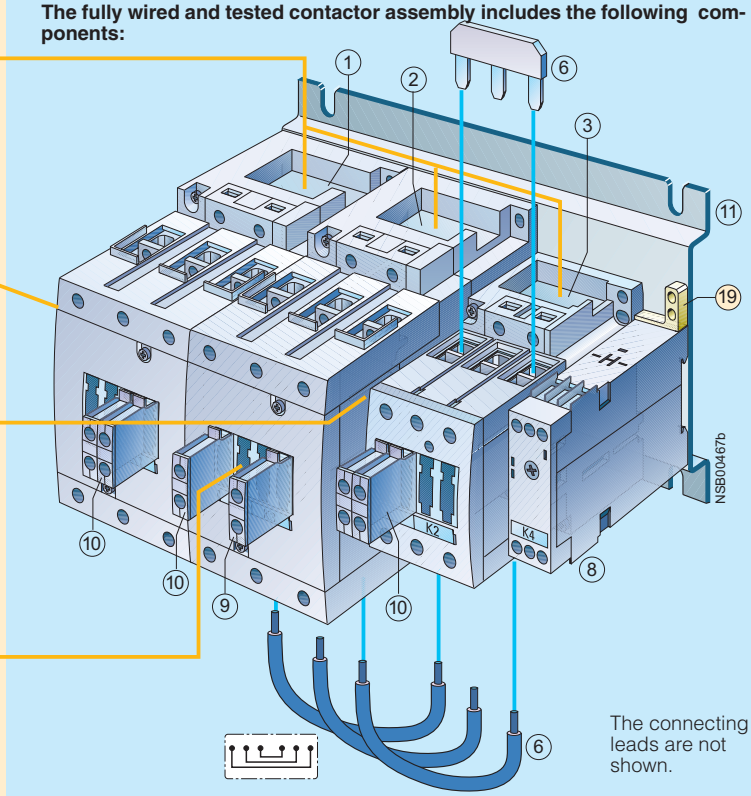
For circuit diagrams, see Page 2/220.
For dimension drawings, see Page 2/252.

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.

Mountable accessories (to be ordered separately):



The fully wired and tested contactor assembly includes the following components:



The connecting leads are not shown.

Accessories		Order No.	Page
4	Mech. interlocking, lateral depth compensation required K3: 0 mm; K2: 27.5 mm	3RA19 24-2B	2/100
7	Solid-state time-delay auxiliary switch block, front [1]	3RT19 26-2G...	2/184
15	Auxiliary switch block, lateral	3RH19 21-1EA..	2/182
16	Surge suppressors	3RT19 .6-1....	2/186
19	Push-in lug [2] for time relay - screw mounting	3RP19 03	3)

Components		Order No. K1	K3	K2	Page
1 2 3	Contactors, 55 kW	3RT10 44	3RT10 44	3RT10 35	2/54
1 2 3	Contactors, 75 kW	3RT10 45	3RT10 45	3RT10 36	2/54
8	Time 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			2/181
	2 units	3RH19 21-1CA01			
	3 units	3RH19 21-1CA10			2/181
11	Base plate	3RA19 42-2E			2/113
6	Installation kit	3RA19 43-2C			2/113

The installation kit contains the star jumper on the top and the wiring jumper on the bottom for connecting the main conducting paths.

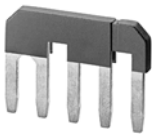
1) Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

2) Not part of the scope of supply of the preassembled contactor assemblies; can be ordered as an accessory.

3) See SIMIREL time, monitoring, and coupling relays as well as converters -> Time relay -> Time relay in 22.5 mm industrial enclosure.

*** This quantity or a multiple thereof can be ordered.**

Version	Size	DT	Order No.	PS*	Weight per PU approx.
					kg
Installation kits					
The installation kit contains: Mechanical interlock 3 connecting clips, star jumper, wiring connectors on the top and bottom	**S00-S00-S00**	►	**3RA19 13-2B**	1 set	0.048
The installation kit contains: 5 connecting clips, star jumper, wiring connectors on the top and bottom	**S0-S0-S0**	►	**3RA19 23-2B**	1 set	0.059
The installation kit contains: Star jumper, wiring connector on the bottom (Wiring connector on the top is not included in the scope of supply). A double infeed between the line contactor and the delta contactor is recommended.	**S2-S2-S0** **S2-S2-S2** **S3-S3-S2** **S3-S3-S3** **S6-S6-S6** **S10-S10-S10** **S12-S12-S12**	► ► ► ► ► A A	**3RA19 33-2C** **3RA19 33-2B** **3RA19 43-2C** **3RA19 43-2B** **3RA19 53-2B** **3RA19 63-2B** **3RA19 73-2B**	1 set 1 set 1 set 1 set 1 set 1 set 1 set	0.051 0.072 0.142 0.166 0.866 1.780 2.200
3-phase feeder terminal					
Feeder terminal block for the line contactor for large conductor cross-sections					
Conductor cross-section: 6 mm^2 Conductor cross-section: 25 mm^2 Conductor cross-section: 50 mm^2	**S00** **S0** **S2**	► ► ►	**3RA19 13-3K** **3RV19 15-5A** **3RV19 35-5A**	1 unit 1 unit 1 unit	0.022 0.042 0.115
3-phase busbar					
Bridging of all line-side terminals of the line-contactor phase-by-phase (K1) and the delta contactor (K3)	**S0** **S2**	► ►	**3RT19 26-4CC20** **3RV19 35-1A**	1 unit 1 unit	0.033 0.137
Link for paralleling, 3-pole (star jumpers)					
Without connection terminal (the links for paralleling can be reduced by one pole)	**S00** **S0** **S2** **S3** **S6** 1) **S10, S12** 1)	► ► ► ► ► ►	**3RT19 16-4BA31** **3RT19 26-4BA31** **3RT19 36-4BA31** **3RT19 46-4BA31** **3RT19 56-4BA31** **3RT19 66-4BA31**	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit	0.003 0.006 0.015 0.028 0.161 0.533
Base plates					
For customer assembly of star-delta contactor assemblies with a **laterally mounted** time relay					
Side-by-side mounting 10 mm clearance between K3 and K2 Side-by-side mounting	**S2, S2, S0** **S2, S2, S2** **S3, S3, S2**	B B B	**3RA19 32-2E** **3RA19 32-2F** **3RA19 42-2E**	1 unit 1 unit 1 unit	0.441 0.484 0.665
10 mm clearance between K1, K3 and K2	**S6, S6, S3** **S6, S6, S6** **S10, S10, S6** **S10, S10, S10** **S12, S12, S10** **S12, S12, S12**	A A A A A A	**3RA19 52-2E** **3RA19 52-2F** **3RA19 62-2E** **3RA19 62-2F** **3RA19 72-2E** **3RA19 72-2F**	1 unit 1 unit 1 unit 1 unit 1 unit 1 unit	1.800 1.940 3.170 3.390 3.590 3.680
For customer assembly of star-delta contactor assemblies with **front-mounted** time relay 10 mm clearance between K1, K3 and K2	**S2-S2-S0** **S2-S2-S2** **S3, S3, S2**	B B B	**3RA19 32-2B** **3RA19 32-2B** **3RA19 42-2B**	1 unit 1 unit 1 unit	0.429 0.429 0.682



3RT19 26-4BA31

1) The 3RT19 56-4EA1 (S6) or 3RT19 66-4EA1 (S10, S12) cover can be used for shock-hazard protection.

*** This quantity or a multiple thereof can be ordered.**

2

Star-delta assemblies, 630 kW

Overview

The contactor assemblies are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

Complete 3TE equipment assemblies and components for customer assembly are available.

The complete equipment assemblies 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 trip units 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.

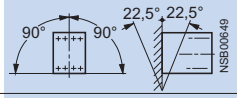
Functions

Star-delta starting can only be used either if the motor normally operates in a Δ connection or starts softly or if the load torque during Y starting is low and does not increase sharply. On the Y step the motors can carry approximately 50 % (class KL 16) or 30 % (class KL 10) of their rated torque; The starting torque is approximately 1/3 of that during direct on-line starting. The starting current is approximately 2 to 2.7 times the rated motor current.

The changeover from Y to Δ must not be effected until the motor has run up to rated speed. Drives which require this changeover to be performed earlier are unsuitable for star-delta starting.

The ratings given in the selection and ordering data are only applicable to motors with a starting current ratio of $I_A \leq 8.4 \times I_N$ and using a 3RP15 74 star-delta time-delay with a dead interval of approximately 50 ms on reversing.

Technical specifications

Starters	Type			3TE68
General data				
Permissible mounting position, assembly note[1] The contactors are designed for operation on a vertical mounting surface.				
Mechanical endurance			Operating cycles	3 mill.
Type of individual contactors	Mains contactor K1		Type	3TF68
	Delta contactor K3		Type	3TF68
	Star contactor K2		Type	3RT1075
Unassigned auxiliary contacts of the individual contactors				[2]
Current-carrying capacity for reversing time up to 10 s				
Rated operating current I_e		up to 690 V	A	1090
Ratings of induction motors at 50 Hz		at 230 V	kW	355
		400 V	kW	612
		500 V	kW	800
		690 V	kW	1046
Operating frequency with overload relay			h^{-1}	3
Current-carrying capacity with reversing time up to 15 s				
Rated operating current I_e		up to 500 V	A	923
		690 V	A	883
Ratings of induction motors at 50 Hz		at 230 V	kW	295
		400 V	kW	515
		500 V	kW	677
		690 V	kW	885
Operating frequency with overload relay			h^{-1}	2
Current-carrying capacity with reversing time up to 20 s				
Rated operating current I_e		up to 500 V	A	800
		690 V	A	765
Ratings of induction motors at 50 Hz		at 230 V	kW	244
		400 V	kW	444
		500 V	kW	590
		690 V	kW	770
Operating frequency with overload relay			h^{-1}	2
Short-circuit protection				
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE				
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1"		A	1000
	Type of coordination "2"		A	500[3]
Auxiliary circuit Fuse links gL/gG (weld-free protection at $I_k \geq 1$ kA) DIAZED 5SB, NEOZED 5SE or miniature circuit-breaker with C characteristic ($I_k < 400$ A)			A	10

1) If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: Operating frequency: to 80% of the standard values.

2) See the circuit diagrams of the control circuits on Page 2/223.

3) The maximum rated motor current must not be exceeded.

Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA and 690 V

Contactor assembly	Rated motor current	Overload relay	Setting range (the overload relays must be set to 0.58 times the rated motor current)	Permissible short-circuit fuses for starters, comprising contactor assemblies and overload relays Single or double infeed [1] fuse links						
				NH 3NA, DIAZED 5SB, NEOZED 5SE type of coordination		NH 3ND, class aM Type of coordination	Siemens Canada, HRC fuses,	UL-listed fuses CLASS RK5	British Standard fuses BS88 Type of coordination	
Type	A	Type	A	"1" A	"2" A	"2" A	Form II A	A	"1" A	"2" A
3TE68	346 ... 935 520 ... 1090	3RB10 66 3RB10 66	200 ... 540 300 ... 630	1000	500	630	1000	1200 CLASS L	1000	500

Short-circuit protection with overload relays, see protection devices: Overload relay -> SIRIUS overload relay.
Use double infeed for higher rated motor currents. (see circuit diagram Page 2/223)

1) The maximum rated motor current must not be exceeded.

Selection and ordering data

Size	Rated data AC-3					Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e	Ratings of induction motors at 50 Hz and								
	at 400 V	230 V	**400 V**	500 V	690 V					
	A	kW	**kW**	kW	kW	AC V				kg
Complete device assemblies, reversing time up to 10 s										
• AC operation, 50 Hz without main conducting path connection between mains and delta contactor										
14	1090	315	**630**	800	1000	110	C	**3TE68 04-5CF0**	1 unit	35.000
14	1090	315	**630**	800	1000	230/220[1])	C	**3TE68 04-5CP0**	1 unit	56.000

For motor protection, overload relays for individual mounting must be ordered separately, see protection devices: Overload relay -> SIRIUS overload relay.

For circuit diagrams, see Page 2/223
For dimension drawings, see Page 2/255.

1) Coil operating range at 220 V:
0.85 to 1.15 x U_s;
lower coil operating range limit according to IEC 60947.

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Overview

AC and DC operation (size S3)
UC operation (AC/DC) (sizes S6 to S12)

IEC 60947, EN 60947 (VDE 0660)

The contactors are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

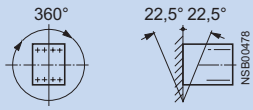
3RT14 contactors are used for switching resistive loads (AC-1) or as contactors, for example, for variable-speed drives that normally only have to carry the current.

For AC-1 applicatons < 140 A, the AC-1 data for the motor contactors apply.
For technical specifications see Page 2/18.

The accessories for the SIRIUS 3RT10 contactors can also be used here.

For more detailed descriptions about the sizes S6 to S12, see 3RT10 motor contactors, Page 2/8.

Technical specifications

Contactor	Type Size		**3RT14 46** **S3**
General data			
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.	AC and DC operation		 For DC operation and 22.5 °C inclination towards the front. Operating range 0.85 ... 1.1 x U_s
Upright mounting position:	AC operation		 Special design required. The 13th to 16th position of the Order No. must be replaced with **-1AA0** . -
	DC operation		
Mechanical endurance		Operating cycles	10 million
Electrical endurance in operating cycles **Utilization category AC-1 at I_e**		Operating cycles	0.5 million
Rated insulation voltage U_i (pollution degree 3)		V	1000
Rated impulse withstand voltage U_{imp}		kV	6
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.	Removable auxiliary switch block Permanently fitted auxiliary switch block		Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary contact blocks to ZH 1/457, IEC 60947-4-1, Appendix F in accordance with Swiss regulations (SUVA) on request.
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +60 -55 ... +80
Degree of protection to IEC 60947-1/IEC 60529			IP20 (terminal enclosure IP00), coil assembly IP40
Shock resistance			
Rectangular pulse Sine pulse	AC and DC operation AC and DC operation	g/ms g/ms	6.8/5 and 4/10 10.6/5 and 6.2/10
Conductor cross-sections			1)
Short-circuit protection of contactors without overload relays			
Main circuit Fuse links, gL/gG, NH, 3NA	Type of coordination "1"	A	250
Fuse links, gR, SITOR 3NE	Type of coordination "2"	A	250
Auxiliary circuit Fuse links gL/gG (weld-free protection at $I_k \geq 1$ kA) DIAZED 5SB, NEOZED 5SE or miniature circuit-breaker with C characteristic (I_k < 400 A)		A	10
Control circuit			
Coil operating range	AC/DC		0.8 ... 1.1 x U_s
Power consumption of the magnetic coils (for cold coil and 1.0 x U_s)			
Standard version, AC operation, 50 Hz	• closing • closed	VA/p.f. VA/p.f.	270/0.68 22/0.27
Standard version, AC operation, 50/60 Hz	• closing • closed	VA/p.f. VA/p.f.	298/274/0.7/0.62 27/20/0.29/0.31
For USA and Canada, AC operation, 50 Hz	• closing • closed	VA/p.f. VA/p.f.	270/0.68 22/0.27
For USA and Canada, AC operation, 60 Hz	• closing • closed	VA/p.f. VA/p.f.	300/0.52 21/0.29
DC operation	Closing = closed	W	15

1) See Page 2/118

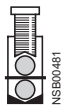
SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type Size			3RT14 46 S3
Control circuit				
Operating times at 0.8 ... 1.1 x U_s [1] (Total break time = Opening delay + Arcing time)				
• AC operation	closing time opening time		ms ms	17 ... 90 10 ... 25
• DC operation	closing time opening time		ms ms	90 ... 230 14 ... 20
• Arcing time			ms	10 ... 15
Switching times for 1.0 x U_s [1]				
AC operation	closing time opening time		ms ms	18 ... 30 11 ... 23
DC operation	closing time opening time		ms ms	100 ... 120 16 ... 20
Main circuit				
AC current-carrying capacity				
Utilization category AC-1, switching resistive loads				
Rated operating currents I_e	at 40 °C up to 690 V at 60 °C up to 690 V at 1000 V		A A A	140 130 60
Rated output power of induction loads p.f. = 0.95 (at 60 °C)	at 230 V 400 V 500 V 690 V 1000 V		kW kW kW kW kW	50 86 107 148 98
Minimum conductor cross-section for loads with I_e	at 40 °C at 60 °C		mm^2 mm^2	50 50
AC-2 and AC-3 utilization categories With an electrical endurance of 1.3 million operating cycles				
Rated operating current I_e	up to 690 V		A	44
Rated output power of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C)	at 230 V 400 V 500 V 690 V		kW kW kW kW	12.7 22 29.9 38.2
Power loss per conducting path	for I_e/AC-1		W	12.5
DC current-carrying capacity				
Utilization category DC-1, switching of resistive loads (L/R ≤ 1 ms) **Rated operating current I_e** (at 60 °C)				
• 1 conducting path	up to 24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	130 80 12 2.5 0.8 0.48
• 2 series-connected conducting paths	up to 24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	130 130 130 13 2.4 1.3
• 3 series-connected conducting paths	up to 24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	130 130 130 130 6 3.4

1) The opening delay of the NO contact and the closing delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms up to 5 ms, diode assembly: 2 to 6 times).

2

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

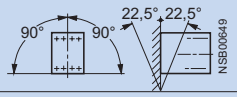
Contactor	Type Size			3RT14 46 S3
Main circuit				
DC current-carrying capacity				
Utilization category DC-3/DC-5, Shunt-wound and series-wound motors (L/R ≤ 15 ms) Rated operating current I_e (at 60 °C)				
• 1 conducting path		up to 24 V	A	6
		60 V	A	3
		110 V	A	1.25
		220 V	A	0.35
		440 V	A	0.15
		600 V	A	0.1
• 2 conducting paths in series		up to 24 V	A	130
		60 V	A	130
		110 V	A	130
		220 V	A	1.75
		440 V	A	0.42
		600 V	A	0.27
• 3 series-connected conducting paths		up to 24 V	A	130
		60 V	A	130
		110 V	A	130
		220 V	A	4
		440 V	A	0.8
		600 V	A	0.45
Operating frequency				
Operating frequency *z* in operating cycles/hour				
Contactors without overload relays	No-load operating frequency AC		h^{-1}	5000
	No-load operating frequency DC		h^{-1}	1000
Rated operation	to AC-1 (AC/DC)		h^{-1}	650
	to AC-3 (AC/DC)		h^{-1}	1000
Dependence of the operating frequency z′ on the operating current *I*′ and operating voltage *U*′: $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5}$ 1/h				
Conductor cross-sections				
Screw terminals (for connecting 1 or 2 conductors)	**Main conductor:** With box terminal			
Front clamping point connected  NSB00479	• Finely stranded with end sleeve		mm²	2.5 ... 50
	• Finely stranded without end sleeve		mm²	4 ... 50
	• Solid		mm²	2.5 ... 16
	• Stranded		mm²	4 ... 70
	• Ribbon cable (number x width x circumference in mm)			6 x 9 x 0.8
	• AWG cables, solid and stranded wire		AWG	10 ... 2/0
Rear clamping point connected  NSB00480	• Finely stranded with end sleeve		mm²	2.5 ... 50
	• Finely stranded without end sleeve		mm²	10 ... 50
	• Solid		mm²	2.5 ... 16
	• Stranded		mm²	10 ... 70
	• Ribbon cable (number x width x circumference in mm)			6 x 9 x 0.8
	• AWG cables, solid and stranded wire		AWG	10 ... 2/0
Both clamping points connected  NSB00481	• Finely stranded with end sleeve		mm²	max. 2 x 35
	• Finely stranded without end sleeve		mm²	max. 2 x 35
	• Solid		mm²	max. 2 x 16
	• Stranded		mm²	max. 2 x 50
	• Ribbon cable (number x width x circumference in mm)			2 x (6 x 9 x 0.8)
	• AWG cables, solid and stranded wire		AWG	2 x (10 ...1/0)
	• Terminal screws - Tightening torque		N/m	M 6 (hexagon socket, A/F 4) 4 ... 6 (36 ... 53 lb.in)
Connection for drilled copper bars	max. width[1]		mm	10
	Main conductor: without box terminal with cable lug[2]			
	• Finely stranded with cable lug		mm²	10 ...50[3]
	• Stranded with cable lug		mm²	10 ...70[3]
	• AWG cables, solid and stranded wire		AWG	7 ... 1/0
	Auxiliary conductor:			
	• Solid		mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve		mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG cables, solid and stranded wire		AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12
	• Terminal screws - Tightening torque		N/m	M 3 0.8 ... 1.2 (7 ... 10.3 lb.in)

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

2) When connecting rails which are larger than 25 mm, the 3RT19 46-4EA1 cover must be used to keep the phase clearance.

3) Only with crimped cable lugs to DIN 46234.

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type Size		3RT14 56 S6	3RT14 66 S10	3RT14 76 S12
General data					
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.					
Mechanical endurance		Operating cycles	10 million		
Electrical endurance Utilization category AC-1 at I_e		Operating cycles	0.5 million		
Rated insulation voltage U_i (pollution degree 3)		V	1000		
Rated impulse withstand voltage U_{imp}		kV	8		
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 [Draft 2/89])		V	690		
Positively-driven/mirror contacts Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary contact blocks to ZH 1/457, IEC 60947-4-1, Appendix F		
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +60/+55 with AS-Interface -55 ... + 80		
Degree of protection to IEC 60947-1/IEC 60529			IP00/open, coil assembly IP20		
Shock resistance	Rectangular pulse Sine pulse	g/ms g/ms	8.5/5 and 4.2/10 13.4/5 and 6.5/10		
Conductor cross-sections			1)		
Electromagnetic compatibility (EMC)			2)		
Short-circuit protection					
Main circuit					
Fuse links, gL/gG, NH, 3NA	Type of coordination "1"	A	355	500	800
Fuse links, gR, SITOR 3NE	Type of coordination "2"	A	350	500	710
Auxiliary circuit					
Fuse links gL/gG (weld-free protection at $I_k \geq 1$ kA) DIAZED 5SB, NEOZED 5SE or miniature circuit-breaker with C characteristic ($I_K < 400$ A)		A	10		

1) See Page 2/122

2) See Page 2/9

2

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type / Size			3RT14 56 S6	3RT14 66 S10	3RT14 76 S12
Control circuit						
Operating range of the solenoid	AC/DC (UC)			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid (when coil is cool and rated range $U_{s\,min}$ ... $U_{s\,max}$)						
• Conventional operating mechanism						
- AC operation	Closing at $U_{s\,min}$		VA/p.f.	250/0.9	490/0.9	700/0.9
	Closing at $U_{s\,min}$		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 $U_{s\,min}$		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
• Solid-state operating mechanism						
- AC operation	Closing at $U_{s\,min}$		VA/p.f.	190/0.8	400/0.8	560/0.8
	Closing at $U_{s\,min}$		VA/p.f.	280/0.8	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.	4.4/0.4	5/0.4	7/0.8
- DC operation	Closing at $U_{s\,min}$		W	250	440	600
	Closing at $U_{s\,min}$		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
PLC control input (EN 61131-2/type 2)				DC 24 V/ ≤30 mA power consumption (operating range DC 17 ... 30 V)		
Operating times (Total break time = Opening time + Arcing time)						
• Conventional operating mechanism						
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	closing time		ms	20 ... 95	30 ... 95	45 ... 100
	opening time		ms	40 ... 60	40 ... 80	60 ... 100
- for $U_{s\,min}$ ... $U_{s\,max}$	closing time		ms	25 ... 50	35 ... 50	50 ... 70
	opening time		ms	40 ... 60	50 ... 80	70 ... 100
• Solid-state operating mechanism, actuated via A1/A2						
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	closing time		ms	95 ... 135	105 ... 145	120 ... 150
	opening time		ms	80 ... 90	80 ... 200	80 ... 100
- for $U_{s\,min}$ ... $U_{s\,max}$	closing time		ms	100 ... 120	110 ... 130	125 ... 150
	opening time		ms	80 ... 90	80 ... 100	80 ... 100
• Solid-state operating mechanism, actuated via PLC input						
- 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	closing time		ms	35 ... 75	45 ... 80	60 ... 90
	opening time		ms	80 ... 90	80 ... 100	80 ... 100
- for $U_{s\,min}$ ... $U_{s\,max}$	closing time		ms	40 ... 60	50 ... 65	65 ... 80
	opening time		ms	80 ... 90	80 ... 100	80 ... 100
• Arcing time			ms	10 ... 15	10 ... 15	10 ... 15
Main circuit						
AC current-carrying capacity						
AC-1, switching resistive loads						
Rated operating currents I_e	at 40 °C up to 690 V		A	275	400	690
	at 60 °C up to 690 V		A	250	380	650[1]
	at 1000 V		A	100	150	250
Rating of AC loads [2] p.f. = 0.95 (for 60 °C)	at 230 V		kW	95	145	245
	400 V		kW	165	250	430
	500 V		kW	205	315	535
	690 V		kW	285	430	740
	1000 V		kW	165	247	410
Minimum conductor cross-section for loads with I_e	at 40 °C		mm²	2 x 70	240	2 x 240
	at 60 °C		mm²	120	240	2 x 240
Power loss per conducting path	for I_e/AC-1		W	20	27	55
Utilization category AC-2 and AC-3 for an electrical endurance of 1.3 million operating cycles						
Rated operating current I_e	up to 690 V		A	97	138	170
Ratings of slipring or squirrel-cage motors at 50 Hz and 60 Hz (at 60 °C)	at 230 V		kW	30	37	55
	400 V		kW	55	75	90
	500 V		kW	55	90	110
	690 V		kW	90	132	160

1) 600 A for 3RT14 76-N contactor.

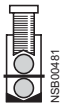
2) Industrial furnaces and electric heaters with resistance heating, for example (increased power consumption on heating up taken into account).

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type / Size			3RT14 56 S6	3RT14 66 S10	3RT14 76 S12
Main circuit						
DC current-carrying capacity						
Utilization category DC-1, switching of resistive loads (L/R ≤ 1 ms) **Rated operating currents I_e** (at 60 °C)						
• 1 conducting path		up to 24 V	A	250	380	500
		60 V	A	250	380	500
		110 V	A	18	33	33
		220 V	A	3.4	3.8	3.8
		440 V	A	0.8	0.9	0.9
		600 V	A	0.5	0.6	0.6
• 2 series-connected conducting paths		up to 24 V	A	250	380	500
		60 V	A	250	380	500
		110 V	A	250	380	500
		220 V	A	20	380	500
		440 V	A	3.2	4	4
		600 V	A	1.6	2	2
• 3 series-connected conducting paths		up to 24 V	A	250	380	500
		60 V	A	250	380	500
		110 V	A	250	380	500
		220 V	A	250	380	500
		440 V	A	11.5	11	11
		600 V	A	4	5.2	5.2
Utilization category DC-3/DC-5, shunt-wound and series-wound motors (L/R ≤ 15 ms) rated operating current I_e (at 60 °C)						
• 1 conducting path		up to 24 V	A	250	380	500
		60 V	A	7.5	11	11
		110 V	A	2.5	3	3
		220 V	A	0.6	0.6	0.6
		440 V	A	0.17	0.18	0.18
		600 V	A	0.12	0.125	0.125
• 2 series-connected conducting paths		up to 24 V	A	250	380	500
		60 V	A	250	380	500
		110 V	A	250	380	500
		220 V	A	2.5	2.5	2.5
		440 V	A	0.65	0.65	0.65
		600 V	A	0.37	0.37	0.37
• 3 series-connected conducting paths		up to 24 V	A	250	380	500
		60 V	A	250	380	500
		110 V	A	250	380	500
		220 V	A	250	380	500
		440 V	A	1.4	1.4	1.4
		600 V	A	0.75	0.75	0.75
Operating frequency						
Operating frequency *z* in operating cycles/hour						
Contactors without overload relays	No-load operating frequency		h^{-1}	2000		
	AC-1		h^{-1}	600		
	AC-3		h^{-1}	1000		
Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5}$ 1/h						

2

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type Size		**3RT14 56 S6**
Conductor cross-sections			
Screw terminals	**Main conductor:** with 3RT19 55-4G box terminal		
Front or rear clamping point connected  NSB00479 NSB00480	• Finely stranded with end sleeve	mm^2	16 ... 70
	• Finely stranded without end sleeve	mm^2	16 ... 70
	• Stranded	mm^2	16 ... 70
	• Ribbon cable (No. x width x circumference)	mm	min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8
	• AWG cables, solid and stranded wire	AWG	6 ... 2/0
Both clamping points connected  NSB00481	• Finely stranded with end sleeve	mm^2	1 x 50 1 x 70
	• Finely stranded without end connector sleeve	mm^2	1 x 50 1 x 70
	• Stranded (max.)	mm^2	2 x 70
	• Ribbon cable (No. x width x circumference)	mm	max. 2 x (6 x 15.5 x 0.8)
	• AWG cables, solid and stranded wire	AWG	max. 2 x 1/0
	Main conductor: with 3RT19 56-4G box terminal		
Front or rear clamping point connected  NSB00479 NSB00480	• Finely stranded with end sleeve	mm^2	16 ... 120
	• Finely stranded without end sleeve	mm^2	16 ... 120
	• Stranded	mm^2	16 ... 120
	• AWG cables, solid and stranded wire	AWG	6 ... 250 kcmil
	• Ribbon cable (No. x width x circumference)	mm	min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8
	• AWG cables, solid and stranded wire	AWG	6 ... 250
Both clamping points connected  NSB00481	• Finely stranded with end sleeve	mm^2	1 x 50 1 x 120
	• Finely stranded without end connector sleeve	mm^2	1 x 50 1 x 120
	• Stranded (max.)	mm^2	2 x 120
	• Ribbon cable (No. x width x circumference)	mm	max. 2 x (10 x 15.5 x 0.8)
	• AWG cables, solid and stranded wire	AWG	max. 2 x 3/0
	• Terminal screws - Tightening torque	N/m	M 10 (hexagon socket, A/F4) 10 ... 12 (90 ... 110 lb.in)
Screw terminals	**Main conductor:** without box terminal/rail connection[1]		
	• Finely stranded with cable lug	mm^2	16 ... 95
	• Stranded with cable lug	mm^2	25 ... 120
	• AWG cables, solid and stranded wire	AWG	4 ...250 kcmil
	• Connecting bar (max. width)	mm	17
	• Terminal screw - Tightening torque	N/m	M 8 x 25 (A/F 13) 10 ... 14 (90 ... 110 lb.in)
	Auxiliary conductors:		
	• Solid	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)
	• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• AWG cables, solid and stranded wire	AWG	2 x (18 ... 14)
	• Terminal screws - Tightening torque	N/m	M 3 (PZ 2) 0.8 ... 1.2 (7 ... 10.3 lb.in)

1) When connecting cable lugs to DIN 46235, the 3RT19 56-4EA1 terminal cover must be used for conductor cross-sections of 95 mm^2 or more to maintain the phase clearance.

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactor	Type Size		3RT14 66 S10	3RT14 76 S12
Conductor cross-sections				
Screw terminals (for connecting 1 or 2 conductors)	**Main conductor:** with 3RT19 66-4G box terminal			
Front clamping point connected  NSB00479	• Finely stranded with end sleeve	mm²	70 ... 240	
	• Finely stranded without end sleeve	mm²	70 ... 240	
	• Stranded	mm²	95 ... 300	
	• Ribbon cable (number x width x circumference in mm)		min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
	• AWG conductor connections, solid or stranded	AWG	3/0 ... 600 kcmil	
Rear clamping point connected  NSB00480	• Finely stranded with end sleeve	mm²	120 ... 185	
	• Finely stranded without end sleeve	mm²	120 ... 185	
	• Stranded	mm²	120 ... 240	
	• Ribbon cable (number x width x circumference in mm)	mm	min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
	• AWG cables, solid and stranded wire	AWG	250 ... 500 kcmil	
Both clamping points connected  NSB00481	• Finely stranded with end sleeve	mm²	min. 2 x 50, max. 2 x 185	
	• Finely stranded without end sleeve	mm²	min. 2 x 50, max. 2 x 185	
	• Stranded	mm²	min. 2 x 70, max. 2 x 240	
	• Ribbon cable (number x width x circumference in mm)	mm	max. 2 x (20 x 24 x 0.5)	
	• AWG cables, solid and stranded wire	AWG	min.2 x 2/0, max. 2 x 500 kcmil	
	• Terminal screws - Tightening torque	 N/m	M 12 (hexagon socket, A/F 5) 20 ... 22 (180 ... 190 lb.in)	
Screw terminals	**Main conductor:** without box terminal/rail connection[1]			
	• Finely stranded with cable lug	mm²	50 ... 240	
	• Stranded with cable lug	mm²	70 ... 240	
	• AWG cables, solid and stranded wire	AWG	2/0 ... 500 kcmil	
	• Connecting bar (max. width)	mm	25	
	• Terminal screws - Tightening torque	 N/m	M 10 x 30 (A/F 17) 14 ... 24 (124 ... 210 lb.in)	
	Auxiliary conductors			
	• Solid	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (0.75 ... 4)	
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)	
	• AWG cables, solid and stranded wire	AWG	2 x (18 ... 14)	
	• Terminal screws - Tightening torque	 N/m	M 3 (PZ 3) 0.8 ... 1.2 (7 ... 10.3 lb.in)	

1) When connecting cable lugs to 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

2

SIRIUS contactors for switching resistive loads (AC-1), 3-pole, 140 ... 690 A

Selection and ordering data

Size	Rated data AC-1, T_u: 40 °C					Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Op. current I_e up to 690 V	Ratings of AC loads (p. f. = 0.95) at 230 V	400 V	500 V	690 V					
	A	kW	kW	kW	kW	V				kg
With screw terminals · for screwing and snapping onto 35 mm and 75 mm standard mounting rails										
• AC operation										
S3	**140**	53	92	115	159	50/24 Hz	B	**3RT14 46-1AB00**	1 unit	1.850
						110, 50 Hz	B	**3RT14 46-1AF00**	1 unit	1.820
						230, 50 Hz	▶	**3RT14 46-1AP00**	1 unit	1.830
• DC operation · DC solenoid system										
S3	**140**	53	92	115	159	DC 24	▶	**3RT14 46-1BB40**	1 unit	2.830
						DC 220	B	**3RT14 46-1BM40**	1 unit	2.770

3RT14 46-1A..0

AC/DC operation *(40 Hz to 60 Hz, DC)*
Withdrawable coils
Integrated coil circuit *(varistor)*
Auxiliary and control conductors: screw terminals
Main conductors: bar connections

Size	Rated data AC-1, T_u: 40 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Op. current I_e up to 690 V	Ratings of AC loads (p. f. = 0.95) at 230 V	400 V	500 V	690 V							
	A	kW	kW	kW	kW	NO	NC	V				kg
Conventional operating mechanism												
S6	**275**	105	180	225	310	2	2	110 ... 127	▶	**3RT14 56-6AF36**	1 unit	3.360
								220 ... 240	▶	**3RT14 56-6AP36**	1 unit	3.330
S10	**400**	151	263	329	454	2	2	110 ... 127	▶	**3RT14 66-6AF36**	1 unit	6.580
								220 ... 240	▶	**3RT14 66-6AP36**	1 unit	6.550
S12	**690**	261	454	568	783	2	2	110 ... 127	A	**3RT14 76-6AF36**	1 unit	10.400
								220 ... 240	▶	**3RT14 76-6AP36**	1 unit	10.300
Solid-state operating mechanism for PLC output DC 24 V												
S6	**275**	105	180	225	310	2	2	96 ... 127	B	**3RT14 56-6NF36**	1 unit	3.320
								200 ... 277	A	**3RT14 56-6NP36**	1 unit	3.400
S10	**400**	151	263	329	454	2	2	96 ... 127	B	**3RT14 66-6NF36**	1 unit	12.500
								200 ... 277	A	**3RT14 66-6NP36**	1 unit	6.550
S12	**690**	261	454	568	783	2	2	96 ... 127	A	**3RT14 76-6NF36**	1 unit	10.400
								200 ... 277	A	**3RT14 76-6NP36**	1 unit	10.100
Solid-state operating mechanism · for PLC output DC 24 V/PLC relay output, with remaining lifetime indicator RLT												
S6	**275**	105	180	225	310	1	1	96 ... 127	B	**3RT14 56-6PF35**	1 unit	3.100
								200 ... 277	B	**3RT14 56-6PP35**	1 unit	4.190
S10	**400**	151	263	329	454	1	1	200 ... 277	B	**3RT14 66-6PP35**	1 unit	5.700
S12	**690**	261	454	568	783	1	1	200 ... 277	B	**3RT14 76-6PP35**	1 unit	10.600
Solid-state operating mechanism · with AS interface and remaining lifetime indicator RLT												
S6	**275**	105	180	225	310	1	1	96 ... 127	B	**3RT14 56-6QF35**	1 unit	3.100
								200 ... 277	B	**3RT14 56-6QP35**	1 unit	3.100
S10	**400**	151	263	329	454	1	1	200 ... 277	B	**3RT14 66-6QP35**	1 unit	10.200
S12	**690**	261	454	568	783	1	1	200 ... 277	B	**3RT14 76-6QP35**	1 unit	6.450

3RT14 6 .

For other voltages, see Page 2/61
For accessories, see Page 2/181.
For spare parts, see Page 2/192
For technical specifications, see Page 2/116, 2/119.
For internal circuit diagrams, see Page 2/205.
For dimension drawings, see Page 2/229, 2/231

*** This quantity or a multiple thereof can be ordered.**

SIRIUS contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 18 ... 140 A

Overview

AC and DC operation

EN 60 947-4-1 (VDE 0660, Part 102)

The contactors are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole versions.

Functions

- Switching resistive loads
- Isolating systems with ungrounded or poorly grounded neutral conductors
- System transfers when alternative AC power supplies are used
- As contactors, e.g. for variable-speed drives which only have to carry current and not switch

Integration

Mountable auxiliary contacts

Size S00

4 auxiliary contacts (acc. to DIN EN 50005)

Sizes S0 to S3

Max. 4 auxiliary contacts (either laterally mounted or snapped onto the top)

Contactor assemblies with mechanical interlock

The 4-pole 3RT13 contactors with 4 NO contacts as the main contacts are suitable for making contactor assemblies with a mechanical interlock, e.g. for system transfers.

Size S00

Contactor assemblies can be constructed from two 3RT13 1 contactors in conjunction with mechanical interlocks and two connecting clips (Order No.: 3RA19 12-2H, package with 10 interlock elements and 20 clips for 10 assemblies).

Size S0

When constructing 4-pole contactor assemblies from two 3RT13 2. contactors, the fourth pole of the left contactor must always be moved to the left side. The contactor assembly can then be made easily with the aid of the 3RA19 24-1A mechanical interlock fitted onto the front and the 3RA19 22-2C mechanical connectors. The laterally mountable 3RA1924 -2B mechanical interlock can be used if the contactor assembly is mounted on a base plate.

Sizes S2 and S3

Contactor assemblies can be constructed from two 3RT13 3. or two 3RT13 4. contactors in conjunction with the laterally mountable 3RA19 24-2B mechanical interlock and the 3RA19 .2-2G mechanical connectors. The mechanical interlock for fitting onto the front cannot be used for size S2 and S3 contactors.

2

SIRIUS contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 18 ... 140 A

Technical specifications

Contactor	Type Size		3RT13 16 S00	3RT13 17	3RT13 25 S0	3RT13 26	3RT13 36 S2	3RT13 44 S3	3RT13 46 S3
General data									
Permissible mounting position [1]									
Mechanical endurance		Operating cycles	30 million		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	in operation when stored	°C °C	–25 ... +60 –55 ... +80						
Degree of protection to IEC 60 947-1 and DIN 40 050	Device Connection range		IP20				IP20 IP00		
Short-circuit protection of contactors without overload relays									
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE - to IEC 60947-4-1/EN 60947-4-1	Type of coordination "1" Type of coordination "2" Weld-free	A A A	35 20 10		63 25 /35 16		160 63 50	250 125 63	250 160 100
Control circuit									
Coil operating range									
	AC at 50 Hz AC at 60 Hz DC at 50 °C DC at 60 °C AC/DC		0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s 0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s		0.8 ... 1.1 x U_s				
Input power of coils (when coil is cold and 1.0 x U_s)									
AC operation, 50/Hz	closing p.f. closed p.f.	VA VA VA VA			61 0.82 7.8 0.24		145 0.79 12.5 0.36	270 0.68 22 0.27	
AC operation, 50/60 Hz	closing p.f. closed p.f.	VA VA 	26.5/24.3 0.79/0.75 4.4/3.4 0.27/0.27		64/63 0.82/0.74 8.4/6.8 0.24/0.28		170/155 0.76/0.72 15/11.8 0.35/0.38	298/274 0.72/0.62 27/20 0.29/0.31	
DC operation	Closing = closed	W	3.3		5.6		13.3	15	
Operating times at 0.8 ... 1.1 x U_s [2] (Break time = Opening time + Arcing time									
AC/DC operation									
• DC operation	closing time opening time	ms ms	25 ... 100 7 ... 10		30 ... 90 13 ... 40		50 ... 110 15 ... 30	110 ... 200 14 ... 20	
• AC operation	closing time opening time	ms ms	8 ... 35 4 ... 30		6 ... 30 13 ... 25		4 ... 35 10 ... 30	20 ... 50 10 ... 25	
• Arcing time		ms	10 ... 15		10 ... 15		10 ... 15	10 ... 15	
Main circuit									
AC current-carrying capacity									
Utilization category AC-1, switching resistive loads									
Rated operating currents I_e	at 40 °C up to 690 V at 60 °C up to 690 V	A A	18 16	22 20	35 30	40 35	60 55	110 100	140 120
Rated output power of AC loads p.f. = 0.95 (at 40 °C)	at 230 V 400 V	kW kW	7 12	8.5 14.5	12.5 22	15 26	23 39	42 72	53 92
Minimum conductor cross-section for loads with I_e	at 40 °C at 60 °C	mm^2 mm^2	2.5 2.5	2.5 2.5	10	10	16	50	50
Utilization categories AC-2 and AC-3									
Rated operating currents I_e	at 60°C, for 400 V	A	9	12	17	25	26	-	-
Rated output power of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V	kW kW	3 4	3 5.5	4 7.5	5.5 11	5.5 11	- -	- -

1) In accordance with the corresponding 3-pole 3RT1 contactors.

2) With size S00, DC operation: Operating times at 0.85 to 1.1 x U_s.

SIRIUS contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 18 ... 140 A

Contactor	Type / Size			3RT13 16 S00	3RT13 17 S00	3RT13 25 S0	3RT13 26
Main circuit							
DC current-carrying capacity							
Utilization category DC-1, switching of resistive loads (LR ≤ 1 ms)							
Rated operating currents I_e (at 40 °C)							
• 1 conducting path	up to 24 V	A		18	22	35	
	60 V	A		18	22	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 series-connected conducting paths	up to 24 V	A		18	22	35	
	60 V	A		18	22	35	
	110 V	A		12	12	35	
	220 V	A		1.6	1.6	5	
	440 V	A		0.8	0.8	1	
• 3 series-connected conducting paths	up to 24 V	A		18	22	35	
	60 V	A		18	22	35	
	110 V	A		18	22	35	
	220 V	A		18	22	35	
	440 V	A		1.3	1.3	2.9	
• 4 series-connected conducting paths	up to 24 V	A		18	22	35	
	60 V	A		18	22	35	
	110 V	A		18	22	35	
	220 V	A		18	22	35	
	440 V	A		1.3	1.3	2.9	
Utilization category DC-3 and DC-5 shunt-wound and series-wound motors (L/R ≤ 15 ms)							
Rated operating currents I_e (at 40 °C)							
• 1 conducting path	up to 24 V	A		18	20	20	
	60 V	A		0.5	0.5	5	
	110 V	A		0.15	0.15	2.5	
	220 V	A		-	-	1	
	440 V	A		-	-	0.09	
• 2 series-connected conducting paths	up to 24 V	A		18	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	
• 3 series-connected conducting paths	up to 24 V	A		18	20	35	
	60 V	A		18	20	35	
	110 V	A		18	20	35	
	220 V	A		1.5	1.5	10	
	440 V	A		0.2	0.2	0.6	
• 4 series-connected conducting paths	up to 24 V	A		18	20	35	
	60 V	A		18	20	35	
	110 V	A		18	20	35	
	220 V	A		1.5	1.5	35	
	440 V	A		0.2	0.2	0.6	

For more technical specifications, see 3RT10 contactors from Page 2/17.

2

SIRIUS contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 18 ... 140 A

Contactor	Type / Size			3RT13 36 S2	3RT13 44 S3	3RT13 46 S3
Main circuit						
DC current-carrying capacity						
Utilization category DC-1, switching of resistive loads (LR ≤ 1 ms)						
Rated operating currents I_e (at 40 °C)						
• 1 conducting path	up to 24 V	A		50	70	80
	60 V	A		23	23	60
	110 V	A		4.5	4.5	9
	220 V	A		1	1	2
	440 V	A		0.4	0.4	0.6
• 2 series-connected conducting paths	up to 24 V	A		50	70	80
	60 V	A		45	70	80
	110 V	A		45	70	80
	220 V	A		5	5	10
	440 V	A		1	1	1.8
• 3 series-connected conducting paths	up to 24 V	A		50	70	80
	60 V	A		45	70	80
	110 V	A		45	70	80
	220 V	A		45	70	80
	440 V	A		2.9	2.9	4.5
• 4 series-connected conducting paths	up to 24 V	A		50	70	80
	60 V	A		45	70	80
	110 V	A		45	70	80
	220 V	A		45	70	80
	440 V	A		2.9	2.9	4.5
Utilization category DC-3 and DC-5 shunt-wound and series-wound motors (L/R ≤ 15 ms)						
Rated operating currents I_e (at 40 °C)						
• 1 conducting path	up to 24 V	A		20	20	20
	60 V	A		6	6	6.5
	110 V	A		2.5	2.5	2.5
	220 V	A		1	1	1
	440 V	A		0.1	0.15	0.15
• 2 series-connected conducting paths	up to 24 V	A		45	70	80
	60 V	A		45	70	80
	110 V	A		25	70	80
	220 V	A		5	7	7
	440 V	A		0.27	0.42	0.42
• 3 series-connected conducting paths	up to 24 V	A		45	70	80
	60 V	A		45	70	80
	110 V	A		45	70	80
	220 V	A		25	35	35
	440 V	A		0.6	0.8	0.8
• 4 series-connected conducting paths	up to 24 V	A		45	70	80
	60 V	A		45	70	80
	110 V	A		45	70	80
	220 V	A		45	70	80
	440 V	A		0.6	0.8	0.8

For more technical specifications, see 3RT10 contactors from Page 2/25.

Selection and ordering data

AC operation

4 NO contacts

3RT13 1.-1A.00

3RT13 2.-1A.00

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	**Screw terminal**	PS*	Weight per PU approx.	DT	**Cage Clamp terminal**	PS*	Weight per PU approx.
Operating current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and **400 V**			Order No.				Order No.		
A	**kW**	V				kg				kg
For screwing and snapping onto 35 mm standard mounting rail										
Size S00 [1]										
18 / 16	**12 / 11**	24/50/60 Hz	▶	**3RT13 16-1AB00**	1 unit	0.206	B	**3RT13 16-2AB00**	1 unit	0.202
		110/50/60 Hz	▶	**3RT13 16-1AF00**	1 unit	0.204	B	**3RT13 16-2AF00**	1 unit	0.198
		230/50/60 Hz	▶	**3RT13 16-1AP00**	1 unit	0.203	▶	**3RT13 16-2AP00**	1 unit	0.202
22 / 20	**14.5 / 13**	24/50/60 Hz	▶	**3RT13 17-1AB00**	1 unit	0.205	B	**3RT13 17-2AB00**	1 unit	0.201
		110/50/60 Hz	▶	**3RT13 17-1AF00**	1 unit	0.203	B	**3RT13 17-2AF00**	1 unit	0.200
		230/50/60 Hz	▶	**3RT13 17-1AP00**	1 unit	0.203	▶	**3RT13 17-2AP00**	1 unit	0.201
Size S0										
35 / 30 [2]	**22 / 20**	24/24 Hz	▶	**3RT13 25-1AB00**	1 unit	0.393		-		
		110, 50 Hz	▶	**3RT13 25-1AF00**	1 unit	0.392		-		
		230, 50 Hz	▶	**3RT13 25-1AP00**	1 unit	0.394		-		
40 / 35 [2]	**26 / 23**	24, 50 Hz	▶	**3RT13 26-1AB00**	1 unit	0.393		-		
		110, 50 Hz	▶	**3RT13 26-1AF00**	1 unit	0.391		-		
		230, 50 Hz	▶	**3RT13 26-1AP00**	1 unit	0.394		-		

Size S00: Snap-on auxiliary switch blocks acc. to EN 50005
Size S0 ... S3: Snap-on auxiliary switch blocks acc. to EN 50012 and EN 50005
(for S0 max. 2 auxiliary contacts, please note information on Page 2/125).

For other voltages, see Page 2/61
For accessories, see Page 2/180.
For spare parts, see Page 2/192
For technical specifications, see Page 2/126.
For description, see Page 2/125.
For internal circuit diagrams, see Page 2/205.
For dimension drawings, see Page 2/234.

1) For frame size S00: 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) Minimum conductor cross-section 10 mm².

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 18 ... 140 A

AC and DC operation
4 NO contacts

3RT13 1.-2B..0

3RT13 36.-1A.00

3RT13 4.-1A.00

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	**Screw terminal**	PS*	Weight per PU approx.	DT	**Cage Clamp terminal**	PS*	Weight per PU approx.
Operating current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and **400 V**			Order No.				Order No.		
A	**kW**	V				kg				kg
For screwing and snapping onto 35 mm standard mounting rail										
AC operation										
Size S2										
60 / 55	**39 / 36**	24, 50 Hz	B	**3RT13 36-1AB00**	1 unit	0.989		-		
		110, 50 Hz	B	**3RT13 36-1AF00**	1 unit	0.994		-		
		230, 50 Hz	▶	**3RT13 36-1AP00**	1 unit	0.985		-		
Size S3										
110 / 100	**72 / 66**	24, 50 Hz	B	**3RT13 44-1AB00**	1 unit	2.200		-		
		110, 50 Hz	B	**3RT13 44-1AF00**	1 unit	2.190		-		
		230, 50 Hz	▶	**3RT13 44-1AP00**	1 unit	2.170		-		
140 / 120	**92 / 79**	24, 50 Hz	B	**3RT13 46-1AB00**	1 unit	2.180		-		
		110, 50 Hz	B	**3RT13 46-1AF00**	1 unit	2.200		-		
		230, 50 Hz	▶	**3RT13 46-1AP00**	1 unit	2.160		-		
DC operation · DC solenoid system										
Size S00										
18 / 16	**12 / 11**	DC 24	▶	**3RT13 16-1BB40**	1 unit	0.264	▶	**3RT13 16-2BB40**	1 unit	0.260
		DC220	B	**3RT13 16-1BM40**	1 unit	0.262	B	**3RT13 16-2BM40**	1 unit	0.253
22 / 20	**14.5 / 13**	DC 24	▶	**3RT13 17-1BB40**	1 unit	0.263	B	**3RT13 17-2BB40**	1 unit	0.260
		DC220	B	**3RT13 17-1BM40**	1 unit	0.260	B	**3RT13 17-2BM40**	1 unit	0.254
Size S0										
35 / 30[1)]	**22 / 20**	DC 24	▶	**3RT13 25-1BB40**	1 unit	0.624		-		
		DC220	B	**3RT13 25-1BM40**	1 unit	0.628		-		
40 / 35[1)]	**26 / 23**	DC 24	▶	**3RT13 26-1BB40**	1 unit	0.625		-		
		DC 220	B	**3RT13 26-1BM40**	1 unit	0.630		-		
Size S2										
60 / 55	**39 / 36**	DC 24	▶	**3RT13 36-1BB40**	1 unit	1.570		-		
		DC 220	B	**3RT13 36-1BM40**	1 unit	1.590		-		
Size S3										
110 / 100	**72 / 66**	DC 24	B	**3RT13 44-1BB40**	1 unit	3.180		-		
		DC 220	B	**3RT13 44-1BM40**	1 unit	3.130		-		
140 / 120	**92 / 79**	DC 24	B	**3RT13 46-1BB40**	1 unit	3.190		-		
		DC220	B	**3RT13 46-1BM40**	1 unit	3.130		-		

Size S00: Snap-on auxiliary switch blocks acc. to EN 50005
Sizes S0 to S3: Snap-on auxiliary switch blocks acc. to EN 50012 and EN 50005 (for S0 max. 2 auxiliary contacts, please note information on Page 2/125).

For other voltages, see Page 2/61
For accessories, see Page 2/180.
For spare parts, see Page 2/192
For technical specifications, see Page 2/126.
For description, see Page 2/125.
For internal circuit diagrams, see Page 2/205.
For dimension drawings, see Page 2/234.

1) Minimum conductor cross-section 10 mm².

*** This quantity or a multiple thereof can be ordered.**

Contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Overview

EN 60947-4-1 (VDE 0660 Part 102)

The contactors also fulfil the requirements of NFC 63–110 and NFC 20–040.

The contactors are suitable for use in any climate. They ar finger-safe acc. to DIN VDE 0106 Part 100. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

Contactor solenoids 3TK10 to 3TK13: as withdrawable coils.

Surge suppression

Control circuit

Contactor solenoids 3TK1: can be retrofitted with RC elements.

Functions

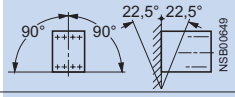
- Isolating systems with ungrounded or poorly grounded neutral conductors
- Switching resistive loads
- System transfers when alternative AC power supplies are used

Technical specifications

Contactor	Type			3TK1
Rated data of the auxiliary contacts				acc. to IEC 60947-5-1/DIN VDE 0660 Part 200
Rated insulation voltage U_i (pollution degree 3)			V	690
Conventional thermal current I_{th} = rated operating current I_e/AC-12				10
AC load **Rated operating current I_e/AC-15/AC-14** For rated operating 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
DC load **Rated operating current I_e/DC-12** For rated operating voltage U_e				
		24 V	A	-
		60 V	A	-
		110 V	A	-
		125 V	A	-
		220 V	A	-
		440 V	A	-
		600 V	A	-
Rated operating current I_e/DC-13 For rated operating 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	-
CSA and UL rated data for the auxiliary contacts				
Rated voltage			AC V, max.	600
Switching capacity				A 600, P 600

2

Contactors for switching resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Contactor	Type		3TK10	3TK11	3TK12	3TK13	3TK14	3TK15	3TK17
General data									
Permissible mounting position Vertical mounting position also permitted.									
Mechanical endurance	Operating cycles	mill.	10				5		
Electrical endurance for I_e/AC-1 at 55 °C	Operating cycles	mill.	0.8	0.8	0.8	0.4	0.65	0.5	0.4
Rated insulation voltage U_i (pollution degree 3)		V	1000						
Ambient temperature	in operation when stored	°C °C	-25 ... +55 -50 ... +70						
Degree of protection acc. to IEC 60947-1 and IEC 60529			IP00						
Shock resistance	Sine pulse	g/ms	10/15						
Short-circuit protection									
Main circuit Fuse links, gL/gG, NH 3NA, DIAZED 5SB, NEOZED 5SE									
- to IEC 60947-4-1/ EN 60947-4-1	Type of coordination "1" Type of coordination "2"	A A	250 250		355 315		800 630	1000 850	
Auxiliary circuit (short-circuit current $I_k \geq$ 1kA) fuse links, gL/gG DIAZED 5SB, NEOZED 5SE		A	10						
Control circuit									
Coil operating range			0.85 ... 1.1 x U_s						
Input power of coils (when coil is cold and 1.0 x U_s)									
50 Hz	closing closed	VA/p.f. VA/p.f.	820/0.4 44/0.34		1100/0.35 52/0.35		3500/0.26 125/0.4		
60 Hz	closing closed	VA/p.f. VA/p.f.	990/0.35 52/0.35		1200/0.31 65/0.34		4000/0.22 140/0.43		
Switching times at 1.0 x U_s (Break time = Opening time + Arcing time)									
	closing time opening time	ms ms	20 ... 40 7 ... 15				30 ... 60 10 ... 20		
Arcing time		ms	10 ... 15				10 ... 15		
Main circuit									
AC current-carrying capacity									
Utilization category AC-1, switching resistive loads									
Rated operating currents I_e	at 40 °C up to 690 V at 55 °C up to 690 V	A A	200 180	250 230	300 270	350 310	550 470	800 650	1000 850
Rated output power of AC loads p.f. = 0.95 (at 40 °C)	at 230 V 400 V 500 V 690 V	kW kW kW kW	76 132 165 227	95 165 206 284	114 197 247 341	132 230 288 397	208 362 452 624	303 527 658 908	378 658 828 1135
Minimum conductor cross-section for loads with I_e	at 40 °C	mm^2	95	150	185	240	2 x 185	2 x 240	2 x 300
Utilization category AC-2 and AC-3									
Rated operating current I_e (at 55 °C)	up to 400 V	A	120	145	210	210	400	550	700
Rated output power of slipring or squir-rel-cage motors at 50 Hz and 60 Hz	at 230 V 400 V	kW kW	30 55	45 75	75 110	75 110	110 200	160 280	220 370
Short-time current at 40 °C in cold state up to 10 s		A	900	1200	1600	1600	5300	5300	6400
Operating frequency[1]									
Operating frequency *z* in operating cycles/hour									
Contactors without overload relays	No-load operating frequency AC-1 AC-3	h^{-1} h^{-1} h^{-1}	3600 300 300						
Conductor cross-sections									
Main conductor:									
• Stranded with cable lug		mm^2	2 x 70	2 x 120	2 x 120		2 x 300		
• Solid or stranded	AWG	MCM	2 x 00	2 x 250	2 x 250		2 x 600		
• Connecting bars (max. width)		mm	30	30	33		55		
• Terminal screw			M 6	M 10	M 10		M 10		
- Tightening torque		N/m lb.in	5 42	16 135	16 135		16 135		
Auxiliary conductors:									
• Solid		mm^2	2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)						
• Solid or stranded	AWG	MCM	2 x (20 ... 14)						
- Tightening torque		N/m	1.2 (10 lb.in)						

1) Dependence of the operating frequency z' on the operating current I' and operating voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5}$ 1/h

Selection and ordering data

Screw terminals
Screw mounting

Rated data AC-1					Auxiliary contacts		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
Operating current I_e up to 690 V (at 40 °C)	Ratings of AC loads (p. f. = 0.95) at 230 V	400 V	690 V	1000 V							
A	kW	kW	kW	kW	NO	NC	AC V				kg
AC operation											
200	75	130	225	205	2	2	220 230/50/Hz	B	**3TK10 42-0AP0**	1 unit	4.420
							230/50/Hz	B	**3TK10 42-0AU0**	1 unit	4.440
							110/120 V, 50/60 Hz	B	**3TK10 42-0AF0**	1 unit	4.370
							24, 50 Hz	B	**3TK10 42-0AB0**	1 unit	4.430
250	90	165	280	200	2	2	220/50/Hz	B	**3TK11 42-0AP0**	1 unit	4.740
							230/50/Hz	d	**3TK11 42-0AU0**	1 unit	4.470
							110/120 V, 50/60 Hz	B	**3TK11 42-0AF0**	1 unit	4.630
							24, 50 Hz	B	**3TK11 42-0AB0**	1 unit	4.730
300	110	195	340	325	2	2	220/50/Hz	B	**3TK12 42-0AP0**	1 unit	7.150
							230/50/Hz	d	**3TK12 42-0AU0**	1 unit	7.160
							110/120 V, 50/60 Hz	B	**3TK12 42-0AF0**	1 unit	7.120
							24, 50 Hz	d	**3TK12 42-0AB0**	1 unit	7.120
350	130	230	395	370	2	2	220 ... 230, 50 Hz	B	**3TK13 42-0AP0**	1 unit	7.150
							230/50/Hz	B	**3TK13 42-0AU0**	1 unit	7.170
							110/120 V, 50/60 Hz	B	**3TK13 42-0AF0**	1 unit	7.110
							24, 50 Hz	d	**3TK13 42-0AB0**	1 unit	7.130
550	205	360	620	510	2	2	220 ... 230, 50 Hz[1)]	B	**3TK14 42-0AP0**	1 unit	18.900
							230/50/Hz	B	**3TK14 42-0AU0**	1 unit	19.000
							110/120 V, 50/60 Hz	B	**3TK14 42-0AF0**	1 unit	19.000
800	300	525	905	575	2	2	220 ... 230, 50 Hz[1)]	B	**3TK15 42-0AP0**	1 unit	19.000
							230/50/Hz	d	**3TK15 42-0AU0**	1 unit	19.100
							110/120 V, 50/60 Hz	B	**3TK15 42-0AF0**	1 unit	19.000
1000	375	655	1135	-	2	2	220 ... 230, 50 Hz[1)]	B	**3TK17 42-0AP0**	1 unit	20.000
							230/50/Hz	d	**3TK17 42-0AU0**	1 unit	20.000
							110/120 50/60 Hz	B	**3TK17 42-0AF0**	1 unit	20.100

3TK13

For accessories and spare parts, see Page 2/203
For technical specifications, see Page 2/132.
For internal circuit diagrams, see Page 2/223.
For connection diagrams, see Page 2/226
For dimension drawings, see Page 2/256.

1) At 60 Hz: 240 V.

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS contactors, 4-pole, 2 NO contacts and 2 NC contacts, 4 ... 18.5 kW

Overview

AC and DC operation

EN 60947-4-1 (VDE 0660, Part 102)

The contactors are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

The accessories for the 3-pole SIRIUS contactors can also be used for the 4-pole versions.

Functions

- Changing the polarity of hoisting gear motors
- Switching two separate loads

Note:
3RT15 contactors are not suitable for switching a load between two current sources.

Integration

Mountable auxiliary contacts

Size S00

4 auxiliary contacts (auxiliary contact blocks to EN 50005)

Sizes S0 and S2

Max. 4 auxiliary contacts (either laterally mounted or snapped onto the top auxiliary switch blocks to EN 50012 and EN 50005).

Technical specifications

Contactor	Type Size		3RT15 16 S00	3RT15 17 S00	3RT15 26 S0	3RT15 35 S2
General data						
Permissible mounting position [1]						
Mechanical endurance		Operating cycles	30 million		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	in operation when stored	°C °C	–25 ... +60 –55 ... +80			
Degree of protection acc. to IEC 60947-1 and IEC 60529			IP20		IP20 (P00 terminal enclosure)	
Short-circuit protection of contactors without overload relays						
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE - to IEC 60947-4-1/ EN 60947-4-1	 Type of coordination "1" Type of coordination "2" Weld-free	 A A A	 35 20 10		 63 35 16	 160 80 50
Control circuit						
Coil operating range						
	AC at 50 Hz		0.8 ... 1.1 x U_s			
	AC at 60 Hz		0.85 ... 1.1 x U_s			
	DC at 50 °C		0.8 ... 1.1 x U_s			
	DC at 60 °C		0.85 ... 1.1 x U_s			
	AC/DC				0.8 ... 1.1 x U_s	
Input power of coils (when coil is cold and 1.0 x U_s)						
AC operation, 50/Hz	closing	VA			61	145
	p.f.	VA			0.82	0.79
	closed	VA			7.8	12.5
	p.f.	VA			0.24	0.36
AC operation, 50/60 Hz	closing	VA	26.5/24.3		64/63	170/155
	p.f.	VA	0.79/0.75		0.82/0.74	0.76/0.72
	closed	VA	4.4/3.4		8.4/6.8	15/11.8
	p.f.	VA	0.27/0.27		0.24/0.28	0.35/0.38
DC operation	closing = closed	W	3.3		5.6	13.3
Operating times at 0.8 ... 1.1 x U_s [2] Total break time = Opening time + Arcing time						
AC/DC operation						
• DC operation	closing time	ms	25 ... 100		30 ... 90	50 ... 110
	opening time	ms	7 ... 10		13 ... 40	15 ... 30
• AC operation	closing time	ms	8 ... 35		6 ... 30	4 ... 35
	opening time	ms	4 ... 30		13 ... 25	10 ... 30
• Arcing time		ms	10 ... 15			

1) In accordance with the corresponding 3-pole 3RT1 contactors.

2) With size S00, DC operation: Operating times at 0.85 to 1.1 x U_s

SIRIUS contactors, 4-pole, 2 NO contacts and 2 NC contacts, 4 ... 18.5 kW

Contactor / Type / Size				3RT15 16 S00	3RT15 17 S00	3RT15 26 S0	3RT15 35 S2
Main circuit							
AC current-carrying capacity							
Utilization category AC-1, switching resistive loads							
Rated operating currents I_e	at 40 °C up to 690 V	A		18	22	40	60
	at 60 °C up to 690 V	A		16	20	35	55
Rated output power of AC loads p.f. = 0.95 (at 60 °C)	at 230 V	kW		6.5	7.5	15	20
	400 V	kW		11	13	26	36
Minimum conductor cross-section for loads with I_e	at 40 °C	mm^2		2.5	2.5	10	16
Utilization category AC-2 and AC-3							
Rated operating currents I_e (at 60 °C)	up to 400 V	A		9	12	251)	40
Rated output power of slipring or squirrel-cage motors at 50 Hz and 60 Hz	at 230 V	kW		3	3	5.5	9.5
	400 V	kW		4	5.5	11	18.5
DC current-carrying capacity							
Utilization category DC-1, switching of resistive loads (L/R ≤ 1 ms) Rated operating current I_e (at 60 °C)							
• 1 conducting path	up to 24 V	A		16	20	35	50
	60 V	A		16	20	20	23
	110 V	A		2.1	2.1	4.5	4.5
	220 V	A		0.8	0.8	1	1
	440 V	A		0.6	0.6	0.4	0.4
• 2 series-connected conducting paths	up to 24 V	A		16	20	35	50
	60 V	A		16	20	35	45
	110 V	A		12	12	35	45
	220 V	A		1.6	1.6	5	5
	440 V	A		0.8	0.8	1	1
Utilization category DC-3 and DC-52), **shunt-wound and series-wound motors (L/R ≤ 15 ms) Rated operating currents I_e** (at 60 °C)							
• 1 conducting path	up to 24 V	A		16	20	20	35
	60 V	A		0.5	0.5	5	6
	110 V	A		0.15	0.15	2.5	2.5
	220 V	A		0.75	0.75	1	1
	440 V	A		-	-	0.09	0.1
• 2 series-connected conducting paths	up to 24 V	A		16	20	35	50
	60 V	A		5	5	35	45
	110 V	A		0.35	0.35	15	25
	220 V	A		1.5	1.5	3	5
	440 V	A		-	-	0.27	0.27

1) For AC operation: 25 A
DC operation: 20 A

2) For U_s > 24 V the rated operating currents I_e for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

2

SIRIUS contactors, 4-pole, 2 NO contacts and 2 NC contacts, 4 ... 18.5 kW

Selection and ordering data

AC and DC operation
2 NO contacts + 2 NC contacts [1])


3RT15 1.-1 . . . .


3RT15 1.-2 . . . .


3RT15 26.-1 . . . .

Rated data AC-2 and AC-3, T_u: to 60 °C		AC-1, T_u: 40/60 °C	Rated control supply voltage U_s	DT	**Screw terminal**	PS*	Weight per PU approx.	DT	**Cage Clamp terminal**	PS*	Weight per PU approx.
Operating current I_e	Ratings of induction motors at 50 Hz and	Operating current I_e			Order No.				Order No.		
at 400 V	**400 V**										
A	**kW**	A	V				kg				kg
For screwing and snapping onto 35 mm standard mounting rail											
AC operation											
Size S00 [2]											
9	**4**	18 / 16	24/50/60 Hz	B	**3RT15 16-1AB00**	1 unit	0.205	B	**3RT15 16-2AB00**	1 unit	0.198
			110/50/60 Hz	B	**3RT15 16-1AF00**	1 unit	0.204	B	**3RT15 16-2AF00**	1 unit	0.196
			230/50/60 Hz	▶	**3RT15 16-1AP00**	1 unit	0.202	▶	**3RT15 16-2AP00**	1 unit	0.201
12	**5.5**	22 / 20	24/50/60 Hz	B	**3RT15 17-1AB00**	1 unit	0.205	B	**3RT15 17-2AB00**	1 unit	0.200
			110/50/60 Hz	▶	**3RT15 17-1AF00**	1 unit	0.203	B	**3RT15 17-2AF00**	1 unit	0.199
			230/50/60 Hz	▶	**3RT15 17-1AP00**	1 unit	0.205	▶	**3RT15 17-2AP00**	1 unit	0.201
Size S0											
25	**11**	40 / 35[3]	24, 50 Hz	B	**3RT15 26-1AB00**	1 unit	0.395		-		
			110, 50 Hz	▶	**3RT15 26-1AF00**	1 unit	0.390		-		
			230, 50 Hz	▶	**3RT15 26-1AP00**	1 unit	0.393		-		
Size S2											
40	**18.5**	60 / 55	24, 50 Hz	B	**3RT15 35-1AB00**	1 unit	0.983		-		
			110, 50 Hz	B	**3RT15 35-1AF00**	1 unit	0.991		-		
			230, 50 Hz	▶	**3RT15 35-1AP00**	1 unit	0.984		-		
DC operation · DC solenoid system											
Size S00											
9	**4**	18 / 16	DC 24	▶	**3RT15 16-1BB40**	1 unit	0.263	▶	**3RT15 16-2BB40**	1 unit	0.260
			DC220	B	**3RT15 16-1BM40**	1 unit	0.262	B	**3RT15 16-2BM40**	1 unit	0.256
12	**5.5**	22 / 20	DC 24	▶	**3RT15 17-1BB40**	1 unit	0.265	B	**3RT15 17-2BB40**	1 unit	0.262
			DC220	B	**3RT15 17-1BM40**	1 unit	0.259	B	**3RT15 17-2BM40**	1 unit	0.255
Size S0											
20	**11**	40 / 35[3]	DC 24	▶	**3RT15 26-1BB40**	1 unit	0.625		-		
			DC220	B	**3RT15 26-1BM40**	1 unit	0.626		-		
Size S2											
40	**18.5**	60 / 55	DC 24	▶	**3RT15 35-1BB40**	1 unit	1.580		-		
			DC220	B	**3RT15 35-1BM40**	1 unit	1.580		-		

For other voltages, see Page 2/61
For accessories, see Page 2/180.
For spare parts, see Page 2/192
For technical specifications, see Page 2/134.
For internal circuit diagrams, see Page 2/205.
For dimension drawings, see Page 2/234.

1) For switching poles; not suitable for reversing.

2) For frame size S00: 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.

3) Minimum conductor cross-section 10 mm².

*** This quantity or a multiple thereof can be ordered.**

Overview

AC operation

IEC 60947, EN 60947 (VDE 0660)

The contactors are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

The 3RT16 capacitor switching contactors are special variants of the size S00 to S3 SIRIUS contactors. 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 power system and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors.

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 contact 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.

For the capacitor making and switching capacity of the basic 3RT10 contactor variant, see the technical specifications.

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 contactors for size S0 and to those of the 3RT10 45 contactors for size S3.

Contactor Type Size			**3RT16 17** **S00**	**3RT16 27** **S0**	**3RT16 47** **S3**
Capacitor power for rated output power (utilization category AC-6b)	230 V, 50/60 Hz **400 V, 50/60 Hz** 525 V, 50/60 Hz 690 V, 50/60 Hz	kvar **kvar** kvar kvar	3 ... 7.5 **5 ... 12.5** 7.5 ... 15 10 ... 21	3.5 ... 15 **6 ... 25** 7.8 ... 30 10 ... 42	3.5 ... 30 **5 ... 50** 7.5 ... 60 10 ... 84
Auxiliary contacts mounted (unassigned)			1 NO contact + 1 NC contact	1 NO	
Auxiliary contacts mountable (lateral), not for sizes S00 and S0			-		2 NO, 2 NC or 1 NO + 1 NC
Coil operating range			0.8 ... 1.1 x U_s		
Max. operating frequency		h^{-1}	180	100	
Electrical endurance		Operating cycles	> 250 000	> 100 000	
Ambient temperature		°C	60		
Standards			IEC 60947/EN 60947 (VDE 0660)		
Short-circuit protection			1.6 ... 2.2 x U_s		

2

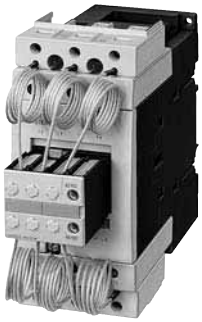
SIRIUS capacitor contactors, 12.5 ... 50 kvar

Selection and ordering data

AC operation

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[1]				Auxiliary contacts, unassigned	Rated control supply voltage U_s[2]	DT	**Screw terminal**	PS*	Weight per PU approx.
Capacitor rating at operating voltage 50/60 Hz							Order No.		
230 V kvar	400 V kvar	500 V kvar	690 V kvar		AC V				kg
For screwing and snapping onto 35 mm standard mounting rail									
Size S00									
3 ... 7.5	5 ... 12.5	7.5 ... 15	10 ... 21	1 NO + 1 NC	24/50/60 Hz	►	**3RT16 17-1AB03**	1 unit	0.278
					110/50/60 Hz	B	**3RT16 17-1AF03**	1 unit	0.276
					230/50/60 Hz	►	**3RT16 17-1AP03**	1 unit	0.275
Size S0									
3.5 ... 15	6 ... 25	7.8 ... 30	10 ... 42	1 NO	24, 50 Hz	B	**3RT16 27-1AB01**	1 unit	0.440
					110, 50 Hz	B	**3RT16 27-1AF01**	1 unit	0.430
					230, 50 Hz	►	**3RT16 27-1AP01**	1 unit	0.431
Size S3									
3.5 ... 30	5 ... 50	7.5 ... 60	10 ... 84	1 NO	24, 50 Hz	B	**3RT16 47-1AB01**	1 unit	2.030
					110, 50 Hz	B	**3RT16 47-1AF01**	1 unit	2.040
					230, 50 Hz	►	**3RT16 47-1AP01**	1 unit	2.030

For other voltages, see Page 2/61
For accessories, see Page 2/182.
For technical specifications, see Page 2/137.
For circuit diagram, see Page 2/209
For dimension drawings, see Page 2/235.

1) For size S3: 55 °C

2) Operating range: 0.85 to 1.1 x U_s.

*** This quantity or a multiple thereof can be ordered.**

Overview

DC operation

IEC 60947-4-1, EN 60947-4-1 (VDE 0660, Part 102), for requirements according to IEC 60077

The contactors are suitable for use in any climate and finger-safe acc. to DIN VDE 0106 Part 100 (exception: series resistors S0 to S3). The contactors are available with both Cage Clamp and screw terminals. The size S00 contactors have Cage Clamp connections for all terminals. The auxiliary conductor and coil terminals of sizes S0 to S3 are all Cage Clamp terminals.

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 > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the operating frequency.

Dimensions

Attaching resistors increases the width of contactor sizes S0 to S3. (see dimension drawings on Page 2/236)

Area of 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.

Functions

Control and auxiliary circuits

The coils of the contactors have an extended operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against voltage surges. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

3RH11 ..-0LA0,
3RT10 ..-0LA0

The DC solenoid systems of the contactors must be modified (to hold-in coil) by means of a series resistor.

The size S00 contactors and contactor relays are supplied prewired with a plug-on module containing the series resistor. The varistor is integrated. A 4-pole auxiliary switch block (to EN 50005) can be fitted additionally.

The size S0 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 leads for mounting the contactors. 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. It is only possible to extend the number of auxiliary contacts with size S00.

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

Installation

At ambient temperatures up to 70 °C, the size S00 contactors and contactor relays are allowed to be mounted side by side. The resistor module of the size S0 to S3 contactors must be mounted to the left of the contactor owing to the prefabricated connecting leads.

3RH11 22-2K.40,
3RT10 17-2K.4.,
3RT10 2.-3K.40

These contactors have an extended operating range from 0.7 to 1.25 x U_s; the coils are fitted with varistors as standard. An additional series resistor is not required. Please note:

- Size S00: It is not possible to mount an auxiliary switch block.
- Size S0: Up to two single-pole auxiliary switch blocks can be mounted.

At ambient temperatures > 60 °C ≤ 70 °C, a spacing of 10 mm is required when they are mounted side by side.

3RT10 contactors with contactor control unit, extended operating range

Control and auxiliary circuits

The coils of the contactors have an extended operating range from 0.7 to 1.25 ×x U_s and are fitted as standard with varistors to provide protection against voltage surges. The opening delay is consequently 2 ms to 5 ms longer than for standard contactors.

3RT10 ..-.X.40-0LA2

The contactors are energized via series-connected control electronics which ensure the coil operating range of 0.7 to 1,25 x U_s at an ambient temperature of 70 °C. They are supplied as complete self-contained units with a built-on contactor control unit. 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.

Mounting

At ambient temperatures up to 70 °C, sizes S0 to S3 of these contactor versions are allowed to be mounted side by side.

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 >+55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the operating frequency.

Dimensions

Because of the built-on contactor control unit, the height of the size S0 to S3 contactors increases by up to 34 mm (see dimension drawings on Page 2/237).

2

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

Technical specifications

Contactor	Type		3RH11	3RT10 17	3RT10 2 .	3RT10 3 .	3RT10 4 .
Coil operating range	AC/DC		0.7 ... 1.25 x U_s				
Power consumption of the magnetic coils			for cold coil and 1.0 x U_s				
Contactors with series resistor	closing	W	11	11	23	46	78
	closed	W	4	4	7	14	23
Contactors without series resistor	closing	W	2.3	2.3	4.2	-	-
	closed	W	2.3	2.3	4.2	-	-
Upright mounting			3RH11 22-2K.40: Please ask 3RH11 22-2K.40-0LA0: Standard design	Standard design	3RT10 2.-3K.40: Special design required [1] 3RT10 2.-3K.44-0LA0: Special design required [2]		

All specifications and technical specifications not mentioned here are identical to those of the standard 3RH and 3RT contactors.

1) The 13th to 16th position of the Order No. must be replaced with "-1AA0" .

2) The 13th to 16th position of the Order No. is replaced with "-1LA0".

Contactor	Type		3RT10 2.	3RT10 3.	3RT10 4.
3RT10 contactors with contactor control unit					
Coil operating range			0.7 ... 1.25 x U_s		
Power consumption for cold coil and 1.0 x U_s Closing = closed		W	6	15	19
Upright mounting position			Special design required [1]	-	

All specifications and technical specifications not mentioned here are identical to those of the standard contactors.

1) The 13th to 16th position of the Order No. is replaced with "-1LA2".

Selection and ordering data

DC operation · DC solenoid
Cage Clamp terminal
for screw and snap-on mounting onto standard mounting rail
Solenoid fitted with varistor

Rated operating current I_e/AC-15/AC-14				Contacts		Rated control supply voltage U_s	DT	**Cage Clamp terminal**	PS*	Weight per PU approx.
T_u: 70 °C at				Version				Order No.		
230 V	400 V	500 V	690 V							
A	A	A	A	NO	NC	DC V				kg
3RH11 contactor relays										
Size S00 · Cage Clamp connections for all terminals										
6	3	2	1	2	2[1])	24[2]) 110[2])	▶ B	**3RH11 22-2KB40** **3RH11 22-2KF40**	1 unit 1 unit	0.255 0.256
6	3	2	1	2	1[3])	24 110	B B	**3RH11 22-2KB40-0LA0** **3RH11 22-2KF40-0LA0**	1 unit 1 unit	0.284 0.285

3RH11 22-2K.40:

3RH11 22-2K.40-0LA0

1) 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.

2) Version without series resistor.

3) One 4-pole auxiliary switch block to EN 50005 can be mounted; no clearance required up to 70 °C.

*** This quantity or a multiple thereof can be ordered.**

2

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

DC operation · DC solenoid
Cage Clamp terminal
for screw and snap-on mounting onto standard mounting rail
Solenoid fitted with varistor

Rated data AC-2 and AC-3					Auxiliary contacts		Rated control supply voltage U_s	DT	**Cage Clamp terminal**	PS*	Weight per PU approx.
T_u: Operating current I_e at 70 °C	Ratings of induction motors at				Version				Order No.		
400 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	NO	NC	DC V				kg
3RT10 contactors for switching motors											
Size S00 · Cage Clamp connections for all terminals											
12	3	**5.5**	5.5	5.5	1[1]	-	24[3] 110[3]	▶ B	**3RT10 17-2KB41** **3RT10 17-2KF41**	1 unit 1 unit	0.256 0.256
12	3	**5.5**	5.5	5.5	-	1[1]	24[3] 110[3]	▶ B	**3RT10 17-2KB42** **3RT10 17-2KF42**	1 unit 1 unit	0.256 0.255
12	3	**5.5**	5.5	5.5	-	-[2]	24 110	B B	**3RT10 17-2KB42-0LA0** **3RT10 17-2KF42-0LA0**	1 unit 1 unit	0.283 0.285
Size S0 · Cage Clamp connections for coil terminals and auxiliary contacts											
17	4	**7.5**	10	11	-	-[4]	24[3] 110[3]	▶ C	**3RT10 25-3KB40** **3RT10 25-3KF40**	1 unit 1 unit	0.580 0.574
25	5.5	**11**	11	11	-	-[4]	24[3] 110[3]	▶ C	**3RT10 26-3KB40** **3RT10 26-3KF40**	1 unit 1 unit	0.581 0.575
17	4	**7.5**	10	11	2	1[5]	24 110	B C	**3RT10 25-3KB44-0LA0** **3RT10 25-3KF44-0LA0**	1 unit 1 unit	0.760 0.745
25	5.5	**11**	11	11	2	1[5]	24 110	B C	**3RT10 26-3KB44-0LA0** **3RT10 26-3KF44-0LA0**	1 unit 1 unit	0.758 0.742
Size S2 · Cage Clamp connections for coil terminals and auxiliary contacts											
32	7.5	**15**	18.5	18.5	2	1[5]	24 110	B B	**3RT10 34-3KB44-0LA0** **3RT10 34-3KF44-0LA0**	1 unit 1 unit	1.630 1.660
40	11	**18.5**	22	22	2	1[5]	24 110	B B	**3RT10 35-3KB44-0LA0** **3RT10 35-3KF44-0LA0**	1 unit 1 unit	1.640 1.650
50	15	**22**	30	22	2	1[5]	24 110	B B	**3RT10 36-3KB44-0LA0** **3RT10 36-3KF44-0LA0**	1 unit 1 unit	1.640 1.660
Size S3 · Cage Clamp connections for coil terminals and auxiliary contacts											
65	18.5	**30**	37	43	2	1[5]	24 110	C B	**3RT10 44-3KB44-0LA0** **3RT10 44-3KF44-0LA0**	1 unit 1 unit	3.070 3.020
80	22	**37**	45	55	2	1[5]	24 110	B B	**3RT10 45-3KB44-0LA0** **3RT10 45-3KF44-0LA0**	1 unit 1 unit	3.080 2.670
95	22	**45**	55	55	2	1[5]	24 110	B B	**3RT10 46-3KB44-0LA0** **3RT10 46-3KF44-0LA0**	1 unit 1 unit	3.090 3.040


3RT10 17-2K.4.-0LA0


3RT10 2.-3K.40


3RT10 3.-3K.44-0LA0

For spare parts, see Page 2/192
For technical specifications, see Page 2/140.
For description, see Page 2/139.
For internal circuit diagrams, see Page 2/209.
For dimension drawings, see Page 2/236.

1) 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.
2) One 4-pole auxiliary switch block to EN 50005 can be mounted; no clearance required up to 70 °C.
3) Version without series resistor.
4) Up to two single-pole auxiliary switch blocks can be mounted. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.
5) The number of auxiliary contacts cannot be increased; no clearance required up to 70 °C.

*** This quantity or a multiple thereof can be ordered.**

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

DC operation, DC solenoid
Cage Clamp/screw terminal
Screw and snap-on mounting onto standard mounting rail
Solenoid fitted with varistor

3RT10..-3X.40-0LA2

Rated data Uitilization categories AC-2 and AC-3 T_u : up to 70 °C		Auxiliary contacts[1]			Rated control supply voltage U_s	DT	**Screw terminal**	PS*	Weight per PU approx.	DT	**Cage Clamp terminal** for coil connections	PS*	Weight per PU approx.
Rated operating current I_e at	Power of induction motors at 50 Hz and	Ident. no.	Version				Order No.				Order No.		
400 V	**400 V**												
A	kW		NO	NC	DC V				kg				kg
For screwing and snapping onto 35 mm standard mounting rail													
Size S0													
17	**7.5**	-	-	-	24	B	**3RT10 25-1XB40-0LA2**	1 unit	0.625	B	**3RT10 25-3XB40-0LA2**	1 unit	0.340
		-	-	-	110	B	**3RT10 25-1XF40-0LA2**	1 unit	0.340	B	**3RT10 25-3XF40-0LA2**	1 unit	0.645
25	**11**	-	-	-	24	B	**3RT10 26-1XB40-0LA2**	1 unit	0.445	B	**3RT10 26-3XB40-0LA2**	1 unit	0.630
		-	-	-	110	B	**3RT10 26-1XF40-0LA2**	1 unit	0.445	B	**3RT10 26-3XF40-0LA2**	1 unit	0.445
Size S2													
32	**15**	-	-	-	24	B	**3RT10 34-1XB40-0LA2**	1 unit	1.430	B	**3RT10 34-3XB40-0LA2**	1 unit	1.460
		-	-	-	110	B	**3RT10 34-1XF40-0LA2**	1 unit	1.430	B	**3RT10 34-3XF40-0LA2**	1 unit	1.500
40	**18.5**	-	-	-	24	B	**3RT10 35-1XB40-0LA2**	1 unit	1.430	B	**3RT10 35-3XB40-0LA2**	1 unit	1.460
		-	-	-	110	B	**3RT10 35-1XF40-0LA2**	1 unit	1.430	B	**3RT10 35-3XF40-0LA2**	1 unit	1.460
50	**22**	-	-	-	24	B	**3RT10 36-1XB40-0LA2**	1 unit	1.430	B	**3RT10 36-3XB40-0LA2**	1 unit	1.480
		-	-	-	110	B	**3RT10 36-1XF40-0LA2**	1 unit	1.430	B	**3RT10 36-3XF40-0LA2**	1 unit	1.460
For screwing and snapping onto 35 mm and 75 mm standard mounting rails													
Size S3													
65	**30**	-	-	-	24	B	**3RT10 44-1XB40-0LA2**	1 unit	2.770	B	**3RT10 44-3XB40-0LA2**	1 unit	2.780
		-	-	-	110	B	**3RT10 44-1XF40-0LA2**	1 unit	2.770	B	**3RT10 44-3XF40-0LA2**	1 unit	2.780
80	**37**	-	-	-	24	B	**3RT10 45-1XB40-0LA2**	1 unit	2.720	B	**3RT10 45-3XB40-0LA2**	1 unit	2.720
		-	-	-	110	B	**3RT10 45-1XF40-0LA2**	1 unit	2.720	B	**3RT10 45-3XF40-0LA2**	1 unit	2.720
95	**45**	-	-	-	24	B	**3RT10 46-1XB40-0LA2**	1 unit	2.910	B	**3RT10 46-3XB40-0LA2**	1 unit	2.910
		-	-	-	110	B	**3RT10 46-1XF40-0LA2**	1 unit	2.910	B	**3RT10 46-3XF40-0LA2**	1 unit	2.910

1) Auxiliary switch blocks mountable as standard contactors.

*** This quantity or a multiple thereof can be ordered.**

2

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

Overview

IEC 60158, EN 60947-4-1 (VDE 0660 Part 102).

For specifications according to IEC 60077.

The contactors are suitable for use in any climate and finger-safe acc. to DIN VDE 0106 Part 100. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

Area of 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.

Functions

Control and auxiliary circuits

The 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 voltage surges. The opening delay is consequently 2 ms to 5 ms longer than for standard contactors.

The DC solenoid systems of the 3TB and 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 3TB50 and 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 3TB52/54/56 and 3TC52/56, 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.

With the 3TB52, 3TC52 and larger contactors, the series resistor must be connected via an additional K2 reversing contactor (3RT10 17). This contactor is automatically included in the delivery in the same packaging as the contactor.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TB, 3TC, 3TF and TH contactors.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 °C 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 operating frequency.

Installation

At ambient temperatures > 55 °C, a clearance of 10 mm must be observed if contactor relays and size 1 and 2 contactors are mounted side by side. There is no need to reduce the technical specifications.

Dimensions

Attaching resistors and varistors increases the width of the contactors. (See dimension drawings on Page 2/260)

Technical specifications

Contactor	Type		3TH42
Coil operating range			0.7 ... 1.25 x U_s
Power consumption of the magnetic coils			for cold coil and 1.0 x U_s
closing = closed		W	5.2

Contactor type	Type		3TC44	3TC48	3TB50	3TB52 3TC52	3TB54	3TB56 3TC56
Coil operating range			0.7 ... 1.25 x U_s					
Power consumption of the magnetic coils								
closing		W	48	26	38	40	190	295
closed		W	13	14	20	21	43	59

Selection and ordering data

With screw terminals
for screw and snap-on mounting to 35 mm standard mounting rail
Solenoid fitted with varistor

Contacts	Rated operating current I_e/AC-15/AC-14				Contacts[1]			Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
					Ident. no. acc. to EN 50011							
	230 V	400 V	500 V	690 V								
Number	**A**	A	A	A		NO	NC	V				kg
3TH42 contactor relays · DC operation · DC solenoid												
8	**10**	6	4	2	**44E**	4	4	DC 24	B	**3TH42 44-0LB4**	1 unit	0.674
								DC110	B	**3TH42 44-0LF4**	1 unit	0.661
					53E	5	3	DC 24	B	**3TH42 53-0LB4**	1 unit	0.669
								DC110	B	**3TH42 53-0LF4**	1 unit	0.660
					62E	6	2	DC 24	B	**3TH42 62-0LB4**	1 unit	0.683
								DC110	B	**3TH42 62-0LF4**	1 unit	0.663

3TH4

1) Contacts not extendable.

3TB50 to 3TB56 contactors
with screw terminals
for screw mounting
Solenoid fitted with varistor

Size	Rated data AC-2 and AC-3					Auxiliary contacts [1]		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e at	Ratings of induction motors at										
	400 V	230 V	**400 V**	500 V	690 V							
	A	kW	**kW**	kW	kW	NO	NC	V				kg
Contactors for switching AC · DC operation · DC solenoid system												
6	110	37	**55**	75	90	2	1	DC 24	C	**3TB50 17-0LB4**	1 unit	6.670
								DC110	C	**3TB50 17-0LF4**	1 unit	6.640
8	170	55	**90**	110	132	2	1	DC 24	C	**3TB52 17-0LB4**	1 unit	9.250
								DC110	C	**3TB52 17-0LF4**	1 unit	9.220
10	250	75	**132**	160	200	2	1	DC 24	C	**3TB54 17-0LB4**	1 unit	16.800
								DC 110	d	**3TB54 17-0LF4**	1 unit	8.840
12	400	115	**200**	255	355	2	1	DC 24	C	**3TB56 17-0LB4**	1 unit	21.100
								DC 110	C	**3TB56 17-0LF4**	1 unit	19.700

1) The number of auxiliary contacts cannot be increased.

With 3TC44 screw terminals
3TC44: for screw and snap-on mounting onto 35 mm standard mounting rail
3TC48 to 3TC56: for screw mounting
Solenoid fitted with varistor

Size	Utilization category	Rated operating current I_e at	Ratings of AC loads at				Auxiliary contacts [1]		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
		750 V	220 V	440 V	600 V	750 V							
		A	kW	kW	kW	kW	NO	NC	V				kg
Contactors for switching DC · DC operation · DC solenoid system													
2	DC-1	32	7	14	19.2	24	2	1	DC 24	B	**3TC44 17-0LB4**	1 unit	1.320
	DC-3 and DC-5	7.5	5	9	9	4			DC110	C	**3TC44 17-0LF4**	1 unit	1.310
4	DC-1	75	16.5	33	45	56	2	1	DC 24	C	**3TC48 17-0LB4**	1 unit	4.850
	DC-3 and DC-5	75	13	27	38	45			DC110	C	**3TC48 17-0LF4**	1 unit	3.710
8	DC-1	170	48	97	132	165	2	1	DC 24	B	**3TC52 17-0LB4**	1 unit	10.700
	DC-3 and DC-5	170	41	82	110	110			DC110	C	**3TC52 17-0LF4**	1 unit	10.800
12	DC-1	400	88	176	240	300	2	1	DC 24	C	**3TC56 17-0LB4**	1 unit	24.100
	DC-3 and DC-5	400	70	140	200	250			DC 110	C	**3TC56 17-0LF4**	1 unit	18.100

3TC48

1) The number of auxiliary contacts cannot be increased.

Contactors with extended operating range 0.7 ... 1.25 x U_s, for railway applications

Spare parts

For contactor Size	Type	Remarks	Rated control supply voltage U_s DC V	DT	Order No.	PS*	Weight per PU approx. kg
Arc chute							
2	3TC44 17-0L..	With cutout for mounting resistor		C	**3TY2 442-0B**	1 unit	0.164
Magnetic coils							
2	3TC44	With series resistor, Without varistor	24 110	C C	**3TY6 443-0LB4** **3TY6 443-0LF4**	1 unit 1 unit	0.340 0.330
4	3TC48		24 110	C C	**3TY6 483-0LB4** **3TY6 483-0LF4**	1 unit 1 unit	1.170 1.110
6	3TB50		24 110	X X	**3TY6 503-0LB4** **3TY6 503-0LF4**	1 unit 1 unit	0.300 0.300
8	3TB52 and 3TC52		24 110	C C	**3TY6 523-0LB4** **3TY6 523-0LF4**	1 unit 1 unit	2.940 2.910
10	3TB54		24 110	X X	**3TY6 543-0LB4** **3TY6 543-0LF4**	1 unit 1 unit	0.400 0.400
12	3TB56 and 3TC56		24 110	X X	**3TY6 563-0LB4** **3TY6 563-0LF4**	1 unit 1 unit	0.560 0.560

All spare parts not mentioned above are identical to those for the standard contactors.

*** This quantity or a multiple thereof can be ordered.**

Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

Overview

3TC4 and 3TC5

EN 60947-4-1 (VDE 0660 Part 102)

The contactors are suitable for use in any climate and finger-safe acc. to DIN VDE 0106 Part 100.

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

EN 60947-4-1 (VDE 0660 Part 102).

The 3TC74 additionally complies with UIC 616 (specifications of European Railway Companies).

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC loads. The electromagnetic excitation is designed for a particularly wide coil operating range.

It is between 0.7 or 0.8 to 1.2 × U_s.

3TC74 contactors can be used at up to 750V/400A and 50 Hz in AC-1 operation.

Area of application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

A design with an especially large operating range is available for use in electrically driven vehicles and in switchgear with significant fluctuations in the operating voltage (see Page 2/145).

Technical specifications

Contactor	Type			3TC4 and 3TC7	3TC5
Rated data of the auxiliary contacts					
Rated insulation voltage U_i (pollution degree 3)			V	690	
Conventional thermal current I_{th} = rated operating current I_e/AC-12				10	10
AC load					
Rated operating current I_e/AC-15/AC-14					
For rated operating 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	-	-
DC load					
Rated operating current I_e/DC-12					
For rated operating 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
Rated operating current I_e/DC-13					
For rated operating 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

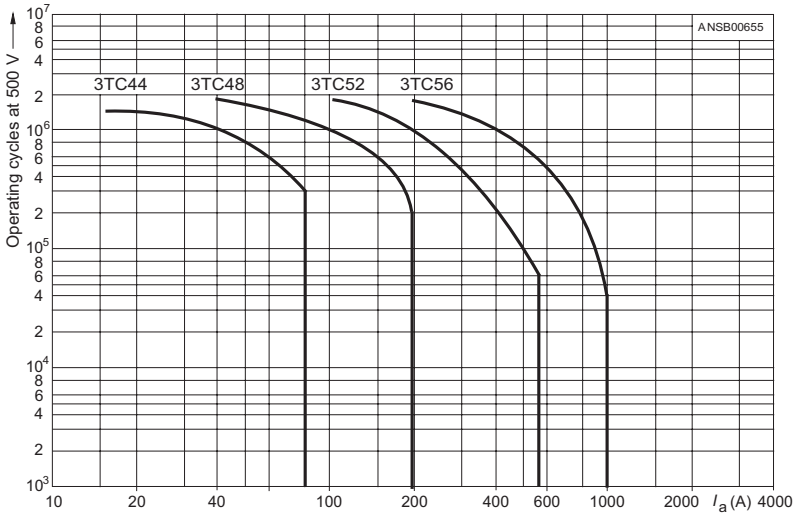
Contactor	Type		3TC44 ... 3TC56
CSA and UL rated data for the auxiliary contacts			
Rated voltage		AC V, max.	600
Switching capacity			A 600, P 600

2

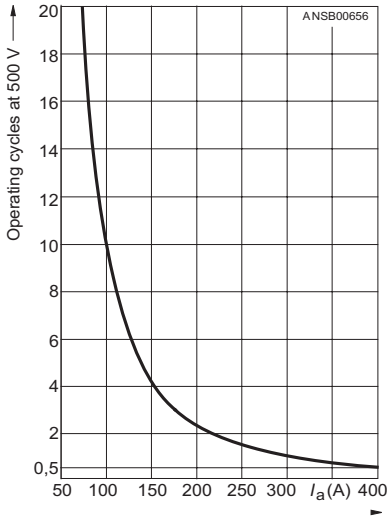
Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

Contactor	Type	3TC44 ... 3TC56

Endurance of the main contacts

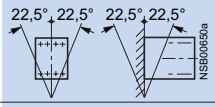


3TC44 to 3TC56 contactors



3TC74 and 3TC78 contactors

Legend:
I_a = Breaking current

Contactor	Type Size		3TC44 2	3TC48 4	3TC52 8	3TC56 12
General data						
Permissible mounting position [1] The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance	Operating cycles		10 million			
Electrical endurance	Operating cycles		[2]			
Rated insulation voltage U_i (pollution degree 3)		V	800		1000	
Safe isolation between coil and main contacts to DIN VDE 0106 Part 101 and A1 (Draft 2/89)		V	up to 300		up to 660	
Positively-driven operation/mirror contact[3] Positively-driven operation applies when the NC and NO contact cannot be closed at the same time.			Yes, between main contacts and auxiliary NC contacts as well as within the auxiliary contact blocks to ZH 1/457, IEC 60947-4-1, Appendix F			
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +55 -50 ... +80			
Degree of protection acc. to IEC 60947-1 and IEC 60529			IP00/open, for AC operation, coil assembly IP40			
Shock resistance	Rectangular pulse	g/ms	7.5/5 and 3.4/10	10/5 and 5/10	12/5 and 5.5/10	12/5 and 5.6/10
Short-circuit protection						
Main circuit Fuse-links gL/gG NH 3NA, DIAZED 5SB, NEOZED 5SE	 Type of coordination "1" Type of coordination "2"	 A A	 35 50	 63 160	 80 250	 250 400
Auxiliary circuit (short-circuit current $I_k \geq 1$kA)						
• Fuse links, gL/gG DIAZED 5SB, NEOZED 5SE		A	16			
• Miniature circuit-breaker with C-characteristic		A	10			

For the rated data of the auxiliary contacts, see Page 2/147

1) The contactors can also be supplied for upright mounting positions. The order number must include **"-Z"** and the order code **"B01"**.

2) See Page 2/148.

3) For 3TC44 contactors, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.

Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

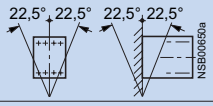
Contactor	Type / Size			3TC44 2	3TC48 4	3TC52 8	3TC56 12
Control circuit							
Coil operating range				0.8 ... 1.1 x U_s			
Power consumption of the coils (for cold coil and 1.0 x U_s)							
DC operation	• closing = closed		W	10	19	30	86
AC operation, 50 Hz coil	• closing		VA/p.f.	68/0.86	300/0.5	640/0.48	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	-	-	-
	• Holding power at 50 Hz/60 Hz		VA/p.f.	11/9/0.28/0.27	-	-	-
Switching times (at 0.8 ... 1.1 x U_s) Total break time = Opening delay + Arcing time				(The values apply up to and including 20 % undervoltage and 10 % overvoltage, and with the coil in the cold state and at operating temperature)			
• DC operation	Closing time		ms	35 ... 190	90 ... 380	120 ... 400	110 ... 400
	Opening delay [1]		ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	Closing time		ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	Opening delay [1]		ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	DC-1		ms	20			
	DC-3/DC-5		ms	30			
Main circuit							
DC current-carrying capacity							
Utilization category DC-1, switching resistive load (L/R ≤ 1 ms)							
Rated operating currents I_e (at 55 °C)		up to U_e 750 V	A	32	75	220	400
Minimum conductor cross-section			mm^2	6	25	95	240
Power rating at U_e		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
Utilization categories DC-3 and DC-5, shunt and series-wound motors (L/R ≤ 15 ms)							
Rated operating currents I_e (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
Power rating at U_e		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
Operating frequency							
Operating frequency *z* in operating cycles/hour							
AC/DC operation	with resistive load DC-1		h^{-1}	1500	1000		
	for inductive load DC 3/DC-5		h^{-1}	750	600		
Conductor cross-sections							
Screw terminals (for connecting 1 or 2 conductors)	**Main conductor:**						
	• Solid		mm^2	2 x (2.5 ... 10)	-	-	-
	• Finely stranded with end sleeve		mm^2	2 x (1.5 ... 4)	-	-	-
	• Stranded with cable lug		mm^2	-	2 x 35	2 x 120	2 x 150
	• Pin terminal to DIN 46231		mm^2	2 x (1 ... 6)	-	-	-
	• Busbars		mm	-	15 x 2.5	25 x 4	2 x (25 x 3)
	• Terminal screw			M 5	M 6	M 10	M 10
	Auxiliary conductors						
	• Solid		mm^2	2 x (1 ... 2.5)			
	• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 1.5)			

For the rated data of the auxiliary contacts see Page 2/147

1) 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.

2

Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

Contactor	Type			3TC74 1-pole contactors	3TC78 2-pole contactors
General data					
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.					
Mechanical endurance	Operating cycles			30 million	
Electrical endurance	Operating cycles			1)	
Rated insulation voltage U_i (pollution degree 3)			V	1500	
Rated impulse withstand voltage U_{imp}			kV	8	
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)			V	630	
Permissible ambient temperature			°C	-25 ... +55	
Degree of protection acc. to IEC 60947-1 and IEC 60529				IP00/open	
Short-circuit protection					
Main circuit Fuse links, gL/gG, NH, 3NA	Type of coordination "1" Type of coordination "2"		A A	630 500	
Auxiliary circuit short-circuit current I_k ≥1 kA • Fuse links, operational class gL/gG DIAZED Type 5SB, NEOZED Type 5SE			A	16	
• Miniature circuit-breaker with C-characteristic			A	10	
Control circuit					
Coil operating range					
DC operation		24 V > 24 V		0.8 ... 1.2 x U_s 0.7 ... 1.2 x U_s	
AC operation		24 V > 24 V		0.7 ... 1.15 x U_s 0.7 ... 1.2 x U_s	
Input power of 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
Switching times Break time = Opening time + Arcing time				(The values apply up to and including 15 % undervoltage and 10 % overvoltage, and with the coil in the cold state and at operating temperature)	
• AC and DC operation	closing time opening time		ms ms	60 ... 100 20 ... 35	
• Arcing time at 0.06 ... 4 x I_e			ms	40 ... 70	
Main circuit					
DC current-carrying capacity					
Utilization category DC-1, switching resistive load (L/R ≤1 ms)					
Rated operating current I_e/DC-1 (at 55 °C)			A	500	500
Minimum conductor cross-section			mm^2	2 x 150	2 x 150
Rating at		220 V 440 V 600 V 750 V 1200 V 1500 V	kW kW kW kW kW kW	110 220 300 375 - -	110 220 300 375 600 750
Critical currents, without arc extinction		440 V 600 V 750 V ≤ 800 V 1200 V 1500 V	A A A A A A	≤ 7 ≤ 13 ≤ 15 - - -	- - - ≤ 7 ≤ 13 ≤ 15
Utilization categories DC-3 and DC-5, switching DC motors				2)	
Permissible rated current for regenerative braking For 110/600 V			A	400	
Operating frequency					
Operating frequency *z* in operating cycles/hour AC/DC operation	with resistive load DC-1 for inductive load DC 3/DC-5		h^{-1} h^{-1}	750 500	1000 500
Conductor cross-section					
Screw terminal	**Main conductor:** • Stranded with cable lug • Busbars		 mm^2 mm	 2 x 150 2 x (30 x 4)	
	Auxiliary conductors: • Solid • Finely stranded with end sleeve		 mm^2 mm^2	 1 ... 2.5 0.75 ... 1.5	

For the rated data of the auxiliary contacts see Page 2/147

1) See Page 2/148.

2) See selection table on Page 2/151

Selection and ordering data

Size	Rated data DC-3 and DC-5 [1]						Auxiliary contacts[2]		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e[3]	Ratings of DC motors at					Version						
		110 V	220 V	440 V	600 V	750 V							
	A	kW	kW	kW	kW	kW	NO	NC	V				kg
3TC44 to 3TC56 2-pole contactors · Operating voltage I_e up to 440 V													
• DC operation · For screwing and snapping onto 35 mm standard mounting rail													
2	32	2.5	5	9	9	4	2	2	DC 24	▶	**3TC44 17-0AB4**	1 unit	1.050
									DC110	▶	**3TC44 17-0AF4**	1 unit	1.040
									DC 220	▶	**3TC44 17-0AM4**	1 unit	1.050
• DC operation · Screw mounting													
4	75	6.5	13	27	38	45	2	2	DC 24	▶	**3TC48 17-0AB4**	1 unit	4.680
									DC 110	▶	**3TC48 17-0AF4**	1 unit	4.740
									DC 220	B	**3TC48 17-0AM4**	1 unit	4.510
8	220[4]	20	41	82	110	110	2	2	DC 24	B	**3TC52 17-0AB4**	1 unit	10.500
									DC110	B	**3TC52 17-0AF4**	1 unit	9.820
									DC 220	B	**3TC52 17-0AM4**	1 unit	9.870
12	400	35	70	140	200	250	2	2	DC 24	C	**3TC56 17-0AB4**	1 unit	17.800
									DC 110	C	**3TC56 17-0AF4**	1 unit	19.300
									DC 220	C	**3TC56 17-0AM4**	1 unit	22.800
• Ac operation, 50 Hz · For screwing and snapping onto 35 mm standard mounting rail													
2	32	2.5	5	9	9	4	2	2	AC 230/220[5]	▶	**3TC44 17-0BP0**	1 unit	0.673
									AC 110	▶	**3TC44 17-0BF0**	1 unit	0.683
• AC operation, 50 Hz · Screw mounting													
4	75	6.5	13	27	38	45	2	2	AC 230/220[5]	▶	**3TC48 17-0BP0**	1 unit	3.440
									AC 110	C	**3TC48 17-0BF0**	1 unit	3.480
8	220[4]	20	41	82	110	110	2	2	AC 230/220[5]	▶	**3TC52 17-0BP0**	1 unit	7.000
									AC 110	B	**3TC52 17-0BF0**	1 unit	7.040
12	400	35	70	140	200	250	2	2	AC 230/220[5]	B	**3TC56 17-0BP0**	1 unit	14.400
									AC 110	C	**3TC56 17-0BF0**	1 unit	14.300

3TC44

3TC48

3TC52

For further rated control supply voltages U_s, see Page 2/153.

1) For the permissible load for the utilization category DC-1, see Page 2/149.

2) The auxiliary switch complement cannot be altered on DC-operated contactors.

3) The following rated operating currents are permitted for reversing duty with 3TC44 to 3TC56 contactors:

Type	Rated operating voltage for contactor 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

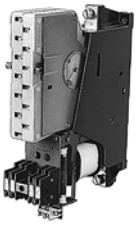
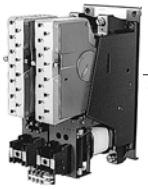
4) For > 600 V: I_e = 170 A.

5) Operating range at 220 V: 0.85 to 1.15 x U_s.

*** This quantity or a multiple thereof can be ordered.**

2

Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

Size	Rated data DC-3 and DC-5 [1]								Auxiliary contacts[2]		Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Operating current I_e	Ratings of DC motors at 110 V	220 V	440 V	600 V	750 V	1200 V	1500 V							
	A	kW	kW	kW	kW	kW	kW	kW	NO	NC	V				kg
3TC74 single-pole contactors · operating voltage I_e up to 750 V															
 3TC74	**DC operation**														
	12	400	35	70	140	200	250	-	-	4	4	DC 24	B	**3TC74 14-0EB**	1 unit	10.700
												DC110	C	**3TC74 14-0EF**	1 unit	10.600
	• AC operation, 50 Hz														
	12	400	35	70	140	200	250	-	-	4	4	AC 230/220[3]	C	**3TC74 14-1CM**	1 unit	10.800
3TC78 2-pole contactors · operating voltage I_e up to 1500 V															
 3TC78	**DC operation**														
	12	400	35	70	140	200	250	400	500	4	4	DC 24	C	**3TC78 14-0EB**	1 unit	22.500
												DC 110	C	**3TC78 14-0EF**	1 unit	15.900
	• AC operation, 50 Hz														
	12	400	35	70	140	200	250	400	500	4	4	AC 230/220[3]	C	**3TC78 14-1CM**	1 unit	23.800

For further rated control supply voltages U_s, see Page 2/153
For accessories, see Page 2/201.
For technical specifications, see Page 2/150.
For internal circuit diagrams, see Page 2/224.
For connection diagrams, see Page 2/226
For dimension drawings, see Page 2/259.

1) For the permissible load for the utilization category DC-1, see Page 2/149.

2) The auxiliary switch complement cannot be altered on DC-operated contactors.

3) Upper operating range limit at 230 V: 1.14 x U_s.

*** This quantity or a multiple thereof can be ordered.**

Contactors for switching DC voltage, single-pole and 2-pole, 32 ... 400 A

Contactor type Rated control supply voltage U_s	Control supply voltage at	3TC 3TC44	3TC48 to 3TC56	3TC74 and 3TC78
Rated control supply voltages (the 10th and 11th position of the order number must be changed)				
AC operation · coils for 50 Hz				
50 Hz	60 Hz			
AC 24 V	AC 29 V	**B0**	**B0**	–
AC 42 V	AC 50 V	**D0**	–	–
AC 48 V	AC 58 V	**H0**	–	–
AC 60 V	AC 72 V	**E0**	–	–
AC 110 V	AC 132 V	**F0**	**F0**	–
AC 125/127 V	AC 150/152 V	**L0**	–	–
AC 230/220 V	AC 277 V	**P0** [1]	**P0** [1]	**M** [2]
AC 240 V	AC 288 V	**U0**	**U0**	–
AC 400/380 V	AC 480/460 V	**V0** [1]	**V0** [1]	–
AC 415 V	AC 500 V	**R0**	–	–
AC 500 V	AC 600 V	**S0**	–	–
AC operation · coils for 50/60 Hz				
AC 24 V		**C2**	–	–
AC 110 V		**G2**	–	–
AC 115 V		**J2**	–	–
AC 120 V		**K2**	–	–
AC 208 V		**M2**	–	–
AC 220 V		**N2**	–	–
AC 230 V		**L2**	–	–
AC 240 V		**P2**	–	–
AC 440 V		**R2**	–	–

1) Coil operating range at 220 V or 380 V: 0.85 to 1.15 x U_s; lower coil operating range limit according to IEC 60947.

2) Upper operating range limit at 230 V: 1.14 x U_s.

Contactor type Rated control supply voltage U_s	3TC 3TC44 and 3TC48	3TC52 and 3TC56	3TC74 and 3TC78
Rated control supply voltages (the 10th and 11th position of the order number must be changed)			
DC operation			
DC 24 V	**B4**	**B4**	**B**
DC 36 V	**V4**	–	–
DC 42 V	**D4**	–	–
DC 48 V	**W4**	**W4**	–
DC 60 V	**E4**	**E4**	–
DC 110 V	**F4**	**F4**	**F**
DC 125 V	**G4**	**G4**	–
DC 180 V	**K4**	–	–
DC 220 V	**M4**	**M4**	**M**
DC 230 V	**P4**	**P4**	–

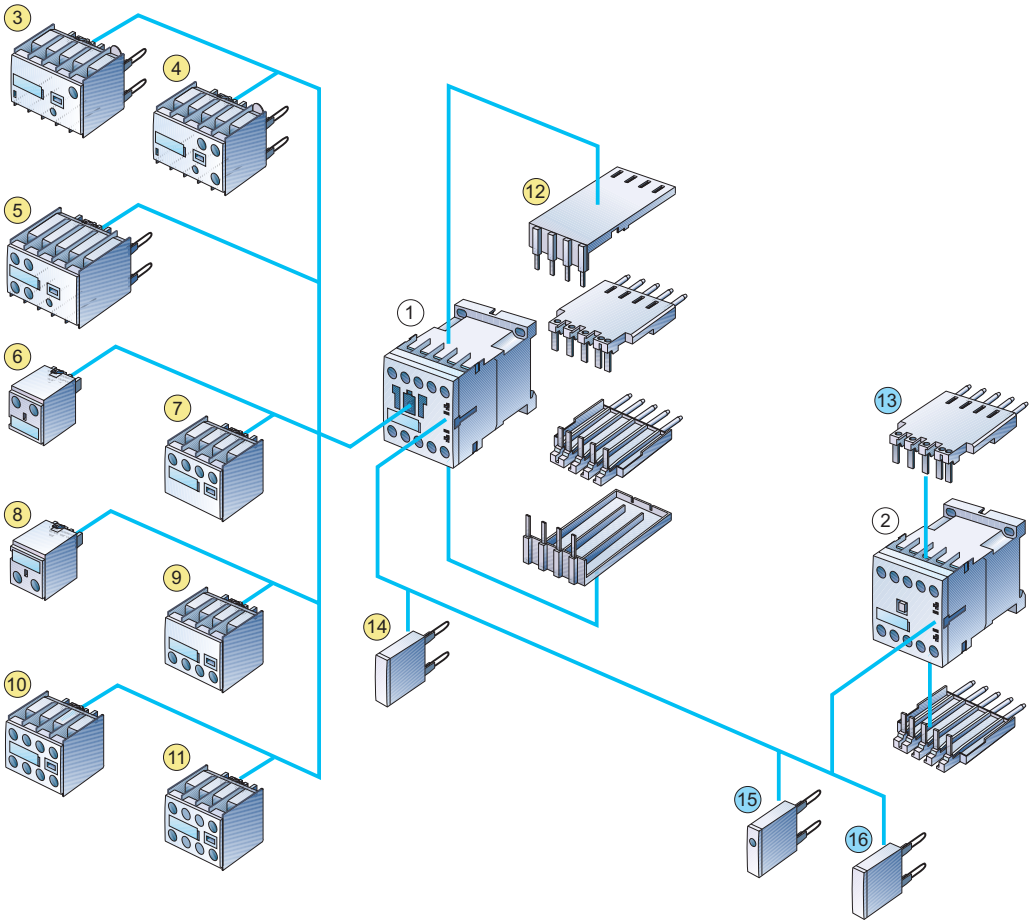
2

SIRIUS contactor relays, 4- and 8-pole

Overview

The SIRIUS generation is a complete, modular system family, logically designed right down to the last detail, from the basic units to the accessories.

Contactor relays and coupling relays
Size S00 with accessories



(1) Contactor relays, see Page 2/160
(2) Coupling relay for auxiliary circuits, see Page 2/173
(3) Solid-state time-delay block, ON-delay, see Page 2/185
(4) Solid-state time delay block, OFF-delay, see Page 2/185
(5) Auxiliary switch block with solid-state time delay, see Page 2/184
(Versions ON or OFF-delay)
(6) Single-pole auxiliary switch block, cable entry from above, see Page 2/180
(7) Single-pole auxiliary switch block, cable entry from above, see Page 2/180
(8) Single-pole auxiliary switch block, cable entry from below, see Page 2/180
(9) Single-pole auxiliary switch block, cable entry from below, see Page 2/180
(10) 4-pole auxiliary switch block, see Page 2/180
(terminal designations acc. to EN 50011 or EN 50005)
(11) 2-pole auxiliary switch block, standard design or solid-state compatible design, see Page 2/180
(terminal designations acc. to EN 50005)
(12) Solder pin adapter for contactor relays with 4-pole auxiliary switch block, see Page 2/190
(13) Solder pin adapter for contactor relays and coupling relays, see Page 2/189
(14) Additional load module for increasing the permissible residual current, see Page 2/188
(15) Surge suppressor with LED, see Page 2/187
(16) Surge suppressor without LED, see Page 2/186

AC and DC operation

IEC 60947, EN 60947 (VDE 0660)

The 3RH1 contactor relays are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

The 3RH1 contactor relays have screw or Cage Clamp terminals. Four contacts are available in the basic unit.

Functions

Contact reliability

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

Surge suppression

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

Note:
The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 10 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Integration

Auxiliary switch blocks

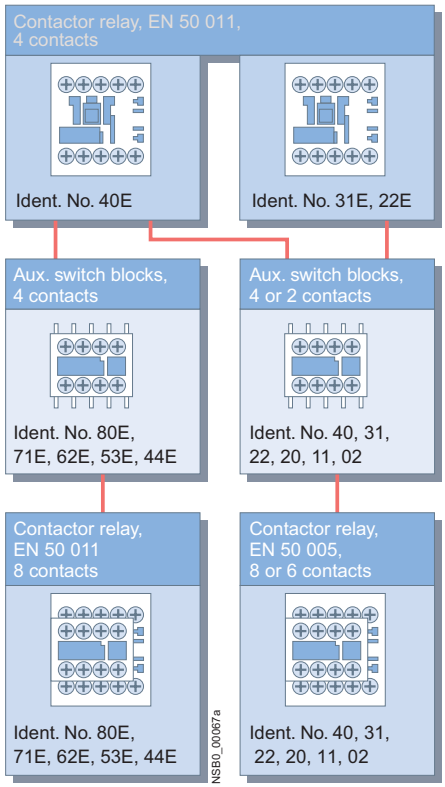
The 3RH1 contactor relays can be expanded by up to four contacts by the addition of mountable auxiliary switch blocks.

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.

The contactor relays with 4 contacts in accordance with EN 50011, with the identification number 40E, can be extended with 80E to 44E auxiliary switch blocks to obtain contactor relays with 8 contacts in accordance with EN 50011. The identification numbers 80E to 44E on the auxiliary switch blocks apply to the complete contactors (see illustration alongside). These auxiliary switch blocks (3RH19 11–1GA ..) cannot be combined with contactor relays with identification numbers 31E and 22E; they are coded.

All contactor relays with 4 contacts in accordance with EN 50011, identification numbers 40E to 22E, can be extended with auxiliary switch blocks 40 to 02 to obtain contactor relays with 6 or 8 contacts in accordance with EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

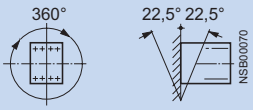
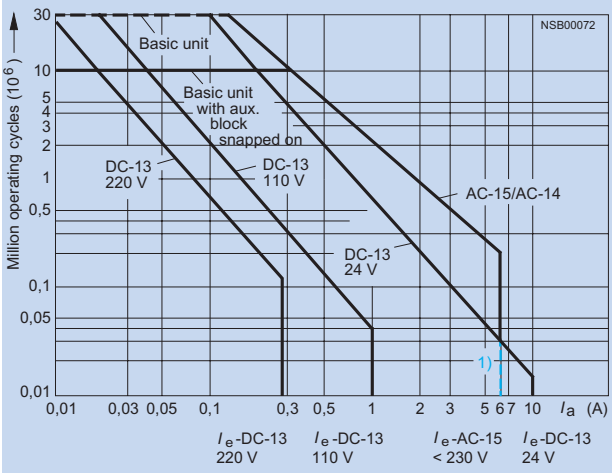
In addition, fully mounted 3RH12 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block is not removable.
The terminal designations comply with EN 50011. These versions are built in accordance with special Swiss regulations (SUVA) and are distinguished externally by a red identification plate.



2

SIRIUS contactor relays, 4- and 8-pole

Technical specifications

Contactor	Type Size	**3RH1** **S00**
Permissible mounting position		
The contactors are designed for operation on a vertical mounting surface.	AC and DC operation	
Upright mounting (only for 3RH11/3RH12/3RH14)	AC operation	 Special design required: The 13th to 16th position of the Order No. must be replaced with **-1AA0** .
	DC operation	Standard version (for coupling relays and contactor relays with extended operating range 3RH11 22-2K.40, please ask)
Positively-driven operation of contacts in contactor relays		
RH1: **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) according to: • ZH 1/457 • IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999 **3RH12:** **Yes,** in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (fixed) according to: • ZH 1/457 • IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999 • SUVA *Note* *3RH19 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.*		Explanation: 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, Amendment 2, Annex L, Edition 10.1999** 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)
Contact reliability		
Contact reliability at 17 V, 1 mA acc. to DIN 19240		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. The conditions are arbitrary i.e. control stations that do not switch synchronously to the phase angle of the network. 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 and freewheel diodes would be suitable as protective features. The characteristic curves apply to: • 3RH11, 3RH12 contactor relays • 3RH14 latched contactor relays • 3RH19 11 auxiliary switch blocks.		 Legend: I_a = Breaking current I_e = Rated operating current

1) Snap-on auxiliary switch blocks I_e/DC-13 max. 6 A.

Contactor	Type Size		3RH11, 3RH12 S00	3RH14 S00
CSA and UL rated data				
Basic units and auxiliary switch blocks				
Rated control supply voltage		AC V	max. 600	
Rated voltage		AC V	600	
Switching capacity			A 600, Q 600	
Continuous current at AC 240 V		A	10	
General data				
Mechanical endurance	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	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Safe isolation between coil and contacts in the basic unit (acc. to DIN VDE 0106 Part 101 and A1 [draft 02/89])		V	400	
Permissible ambient temperature	in operation	°C	-25 ... +60	
	when stored	°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1 and IEC 60529			IP20, coil assembly IP40	
Shock resistance				
Rectangular pulse	AC/DC operation	g/ms	10/5 and 5/10	
Sine pulse	AC/DC operation	g/ms	15/5 and 8/10	
Conductor cross-sections				
Screw terminal (1 or 2 conductors connectable)	**Auxiliary conductor and coil terminals**			
	• Solid	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (1 ... 4)	
	• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)	
	• Solid or stranded AWG conductors	AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12	
	• Terminal screws		M 3	
	- Tightening torque	N/m	0.8 ... 1.2 (7 ... 10.3 lb.in)	
Cage Clamp terminal (1 or 2 conductors connectable)	**Auxiliary conductor and coil terminals**			
	• Solid	mm^2	2 x (0.25 ... 2.5)	
	• Finely stranded with end sleeve	mm^2	2 x (0.25 ... 1.5)	
	• Finely stranded without end sleeve	mm^2	2 x (0.25 ... 2.5)	
	• Solid or stranded AWG conductors	AWG	2 x (24 ... 14)	
Short-circuit protection				
(weld-free protection at $I_k \geq 1$ kA)				
• Fuse links, operational class gL/gG				
- DIAZED Type 5SB		A	10	
- NEOZED Type 5SE		A	10	
• or miniature circuit-breakers with C characteristic (short-circuit current $I_k < 400$ A)		A	6	

For associated 8WA2 803/8WA2 804 opening tool, see Page 2/191.

An "insulation stop" must be used for conductor cross-sections ≤ 1 mm^2, see accessories on Page 2/191.

Max. outer diameter of conductor insulation: 3.6 mm.

2

SIRIUS contactor relays, 4- and 8-pole

Contactor	Type Size			3RH1. S00
Control circuit				
Coil operating range				
AC operation		at 50 Hz at 60 Hz		0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
DC operation		at +50 °C at +60 °C		0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
Power consumption of magnetic coil (when coil is cold and 1.0 x U_s)				
AC operation, 50/Hz	• closing • closed		VA/p.f. VA/p.f.	27 / 0.8 4.6 / 0.27
AC operation, 60/Hz	• closing • closed		VA/p.f. VA/p.f.	24 / 0.75 3.5 / 0.27
DC operation	closing = closed		W	3.2
Permissible residual current of the electronics (with 0 signal)				
	for AC operation [1] for DC operation		mA mA	< 3 mA x (230 V/U_s) < 10 mA x (24 V/U_s)
Operating times				
Total break time = Opening time + Arcing time[2]				
AC operation	Values apply with coil in cold state and at operating temperature for operating range			
Closing				
• ON-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time		ms ms ms	8 ... 35 10 ... 25 ≥ 35
• OFF-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s		ms ms	6 ... 20 7 ... 20
Opening				
• OFF-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time		ms ms ms	4 ... 30 5 ... 30 ≥ 30
• ON-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s		ms ms	5 ... 30 7 ... 20
DC operation				
Closing				
• ON-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time		ms ms ms	25 ... 100 30 ... 50 ≥ 100
• OFF-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s		ms ms	20 ... 90 25 ... 45
Opening				
• OFF-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time		ms ms ms	7 ... 10 7 ... 9 ≥ 30
• ON-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s		ms ms	13 ... 16 13 ... 15
Arcing time			ms	10 ... 15

1) The 3RT19 16-1GA00 additional load module is recommended for higher residual currents, see accessories on Page 2/188.

2) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 10 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Contactor Type Size				**3RH1. S00**
Load side				
Rated operating currents I_e				
AC-12			A	10
AC-15/AC-14 For rated operating voltage U_e	up to 230 V 400 V 500 V 690 V		A A A A	6 3 2 1
DC-12 For rated operating voltage U_e				
• 1 conducting path	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10 6 3 1 0.3 0.15
• 2 series-connected conducting paths	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10 10 4 2 1.3 0.65
• 3 series-connected conducting paths	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10 10 10 3.6 2.5 1.8
DC-13 For rated operating voltage U_e				
• 1 conducting path	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10[1)] 2 1 0.3 0.14 0.1
• 2 series-connected conducting paths	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10 3.5 1.3 0.9 0.2 0.1
• 3 series-connected conducting paths	24 V 60 V 110 V 220 V 440 V 600 V		A A A A A A	10 4.7 3 1.2 0.5 0.26
Operating frequency z				
• in operating cycles/hour for rated operation for utilization category		AC-12/DC-12 AC-15/AC-14 DC-13	h^{-1} h^{-1} h^{-1}	1000 1000 1000
• No-load operating frequency			h^{-1}	10000
Dependence of the operating frequency z' on the operating current I' and operating voltage U' $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5}$ 1/h				

1) Snap-on auxiliary switch blocks 6 A.

SIRIUS contactor relays, 4- and 8-pole

Selection and ordering data

AC and DC operation

3RH11 ..-1...

3RH11 ..-2...

3RH12 ..-1...

3RH12 ..-2...

Rated operating current	Contacts			Rated control supply voltage U_s	DT	Screw terminal	PS	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
I_e/AC-15/AC-14 at **230 V**	Ident. no.	Version				Order No.				Order No.		
		NO	NC									
A				V			Units	kg			Units	kg
For screwing and snapping onto 35 mm standard mounting rail												
AC operation												
				AC 50/60 Hz[1]								
• **Size S00** Terminal designations according to EN 50011												
6	**40E**	4	-	24	▶	**3RH11 40-1AB00**	1 unit	0.204	▶	**3RH11 40-2AB00**	1 unit	0.201
				110	▶	**3RH11 40-1AF00**	1 unit	0.202	▶	**3RH11 40-2AF00**	1 unit	0.199
				230	▶	**3RH11 40-1AP00**	1 unit	0.204	▶	**3RH11 40-2AP00**	1 unit	0.200
	31E	3	1	24	▶	**3RH11 31-1AB00**	1 unit	0.204	▶	**3RH11 31-2AB00**	1 unit	0.200
				110	▶	**3RH11 31-1AF00**	1 unit	0.202	▶	**3RH11 31-2AF00**	1 unit	0.199
				230	▶	**3RH11 31-1AP00**	1 unit	0.203	▶	**3RH11 31-2AP00**	1 unit	0.199
	22E	2	2	24	▶	**3RH11 22-1AB00**	1 unit	0.203	▶	**3RH11 22-2AB00**	1 unit	0.201
				110	▶	**3RH11 22-1AF00**	1 unit	0.202	▶	**3RH11 22-2AF00**	1 unit	0.200
				230	▶	**3RH11 22-1AP00**	1 unit	0.204	▶	**3RH11 22-2AP00**	1 unit	0.199
With permanently mounted auxiliary switch block [2]												
6	**44E**	4	4	230	▶	**3RH12 44-1AP00**	1 unit	0.254	B	**3RH12 44-2AP00**	1 unit	0.253
	62E	6	2	230	A	**3RH12 62-1AP00**	1 unit	0.251	B	**3RH12 62-2AP00**	1 unit	0.254
DC operation · DC solenoid system												
				DC								
6	**40E**	4	-	24	▶	**3RH11 40-1BB40**	1 unit	0.264	▶	**3RH11 40-2BB40**	1 unit	0.260
				220	▶	**3RH11 40-1BM40**	1 unit	0.261	B	**3RH11 40-2BM40**	1 unit	0.257
	31E	3	1	24	▶	**3RH11 31-1BB40**	1 unit	0.262	▶	**3RH11 31-2BB40**	1 unit	0.259
				220	▶	**3RH11 31-1BM40**	1 unit	0.259	B	**3RH11 31-2BM40**	1 unit	0.254
	22E	2	2	24	▶	**3RH11 22-1BB40**	1 unit	0.264	▶	**3RH11 22-2BB40**	1 unit	0.261
				220	▶	**3RH11 22-1BM40**	1 unit	0.260	B	**3RH11 22-2BM40**	1 unit	0.255
With permanently mounted auxiliary switch block [2]												
6	**44E**	4	4	24	▶	**3RH12 44-1BB40**	1 unit	0.312	B	**3RH12 44-2BB40**	1 unit	0.311
	62E	6	2	24	A	**3RH12 62-1BB40**	1 unit	0.313	B	**3RH12 62-2BB40**	1 unit	0.314

For further voltages, see Page 2/161.
For accessories for 3RH11, see Pages 2/163 and 2/180
For technical specifications, see Page 2/156.
Overview, see Page 2/154
Connection diagrams, see Page 2/215
For dimensional drawings, see Page 2/239
For multi-unit/re-usable packaging, see Appendix ->
Ordering notes

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) Other versions/voltages on request.

*** This quantity or a multiple thereof can be ordered.**

Contactor	Type	3RH11

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

AC operation

Magnetic coils for AC 50 and 60 Hz

Rated control supply voltage U_s	Control supply voltage at	
AC V 50/60 Hz [1])	**AC V 60 Hz**	**Option**
24	**-**	**B0**
42	**-**	**D0**
48	**-**	**H0**
110	**-**	**F0**
220	**-**	**N2**
230	**-**	**P0**
400	**-**	**V0**

For Japan [2])

100	**110**	**G6**
200	**220**	**N6**
400	**440**	**R6**

For USA and Canada [3])

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

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 50/60 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 Hz: 0.85 to 1.1 x U_s,
at 60 Hz: 0.8 to 1.1 x U_s.

DC operation

Rated control supply voltage U_s	
DC V	**Option**
12	**A4**
24	**B4**
42	**D4**
48	**W4**
60	**E4**
110	**F4**
125	**G4**
220	**M4**
230	**P4**

2

Latched SIRIUS contactor relays, 4-pole

Overview

AC and DC operation

IEC 60947, EN 60947 (VDE 0660)

The terminal designations comply with EN 50011.

The contactor coil and the coil of the release solenoid are both designed for continuous duty.

The number of auxiliary contacts can be extended by means of auxiliary switch blocks (up to 4 poles).

RC elements, varistors 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. (For minimum actuating times, see Page 2/158)

Selection and ordering data

Rated operating current I_e/ AC-15/AC-14	Contacts			Rated control supply voltage U_s	DT	Order No.	PS*	Weight approx.
	Ident. no. acc. to EN 50011	Version						
at **230 V**		I	L					
A		NO	NC	V			Units	kg
With screw terminals · for screwing and snapping onto 35 mm standard mounting rail								
AC operation				AC 50/60 Hz[1]				
6	**40E**	4	-	24	B	**3RH14 40-1AB00**	1 unit	0.385
				42	B	**3RH14 40-1AD00**	1 unit	0.380
				110	B	**3RH14 40-1AF00**	1 unit	0.385
				230	A	**3RH14 40-1AP00**	1 unit	0.384
	31E	3	1	24	B	**3RH14 31-1AB00**	1 unit	0.385
				42	B	**3RH14 31-1AD00**	1 unit	0.386
				110	B	**3RH14 31-1AF00**	1 unit	0.385
				230	B	**3RH14 31-1AP00**	1 unit	0.386
	22E	2	2	24	B	**3RH14 22-1AB00**	1 unit	0.389
				42	B	**3RH14 22-1AD00**	1 unit	0.388
				110	B	**3RH14 22-1AF00**	1 unit	0.387
				230	▶	**3RH14 22-1AP00**	1 unit	0.389
DC operation · DC solenoid system				DC				
6	**40E**	4	-	24	▶	**3RH14 40-1BB40**	1 unit	0.509
				110	B	**3RH14 40-1BF40**	1 unit	0.504
				220	B	**3RH14 40-1BM40**	1 unit	0.502
	31E	3	1	24	B	**3RH14 31-1BB40**	1 unit	0.504
				110	B	**3RH14 31-1BF40**	1 unit	0.510
				220	B	**3RH14 31-1BM40**	1 unit	0.494
	22E	2	2	24	▶	**3RH14 22-1BB40**	1 unit	0.504
				110	B	**3RH14 22-1BF40**	1 unit	0.505
				220	B	**3RH14 22-1BM40**	1 unit	0.496

3RH14 22-1BB40

Further voltages on request.
For accessories for 3RH11, see Pages 2/163 and 2/180
For technical specifications, see Page 2/156.
Overview, see Page 2/154
Connection diagrams, see Page 2/215
For dimensional drawings, see Page 2/239

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.

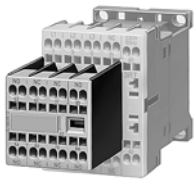
*** This quantity or a multiple thereof can be ordered.**

Overview

Snap-on contactor relay blocks to EN 50011 for assembling contactor relays with 8 contactors

Selection and ordering data

3RH19 11-1GA .



3RH19 11-2GA .

For contactor relays	Rated operating current I_e/ AC-15/AC-14	Contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
		Ident. no.	Version			Order No.				Order No.		
	at **230 V**											
	A		NO	NC			Units	kg			Units	kg
Snap-on auxiliary switch blocks acc. to EN 50011												
	for assembling contactor relays with 8 contacts											
3RH11 40, 3RH14 40[1] (Ident 40 E)	**6**	**80E**	4	-	▶	**3RH19 11-1GA40**	1 unit	0.052	▶	**3RH19 11-2GA40**	1 unit	0.059
		71E	3	1	▶	**3RH19 11-1GA31**	1 unit	0.052	▶	**3RH19 11-2GA31**	1 unit	0.059
		62E	2	2	▶	**3RH19 11-1GA22**	1 unit	0.052	▶	**3RH19 11-2GA22**	1 unit	0.058
		53E	1	3	▶	**3RH19 11-1GA13**	1 unit	0.052	▶	**3RH19 11-2GA13**	1 unit	0.058
		44E	-	4	▶	**3RH19 11-1GA04**	1 unit	0.052	▶	**3RH19 11-2GA04**	1 unit	0.058

For other accessories for size S00 contactor relays, see Accessories on Page 2/180.
Accessories for 3RT10 1. contactors for switching motors, size S00.

For multi-unit/re-usable packaging, see Appendix -> Ordering notes

1) Only 3RH19 11-1 .

*** This quantity or a multiple thereof can be ordered.**

2

Contactor relays, 8- and 10-pole

Overview

AC and DC operation

IEC 60947 and EN 60947 (VDE 0660)

The 3TH42/3TH43 contactor relays are suitable for use in any climate. They are finger-safe acc. to DIN VDE 0106 Part 100.

Terminal designations according to EN 50011

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

Functions

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 ≥1 mA for voltages at 17 V.

Make-before-break contacting

The 3TH42/3TH43 contactor relays are available in variants with make-before-break contacting (make-before-break between 1 NO and 1 NC).

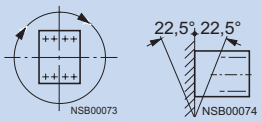
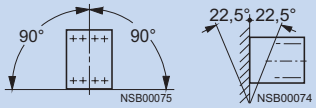
The make-before-break time is approximately 1 ms. This is not sufficient to cause another contactor to close. If the make-before-break current paths are connected in series, a fleeting contact element is created; the wiping time is approximately 1 ms.

Surge suppression

The 3TH42/3TH43 contactors 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).

Note:
The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 10 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Technical specifications

Contactor	Type	3TH42/3TH43
Permissible mounting position		
The contactors are designed for operation on a vertical mounting surface.	AC operation	
	DC operation	
Upright mounting position:	AC and DC operation	 Special design required

Positively-driven operation in contactor relays with 8 and 10 contacts

3TH42/3TH43
Yes, the contactor relays satisfy the conditions for positively-driven operation according to:
- ZH 1/457
- IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999
- SUVA

Explanation:
There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

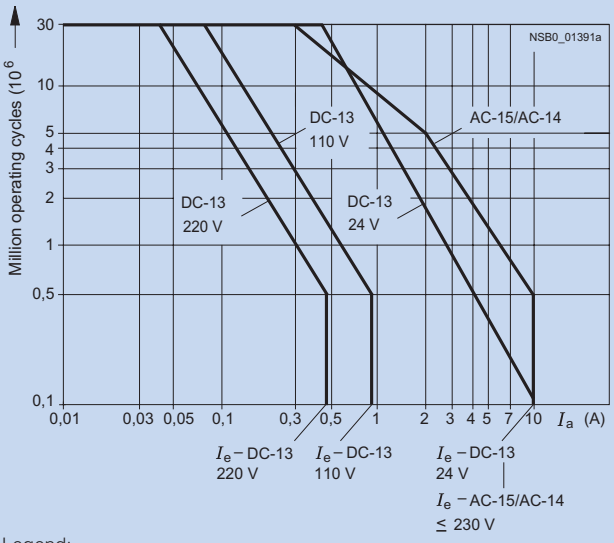
ZH1/457
Safety rules for control units on power-operated presses in the metal-working industry.

IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999
Low-voltage controlgear, control equipment, and switching elements. Special requirements for positively-driven contacts

SUVA
Accident prevention regulations of the Schweizer Unfallversicherungsanstalt (Swiss Institute for Accident Insurance).

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

The contact endurance is mainly dependent on the breaking current. The conditions are arbitrary i.e. control stations that do not switch synchronously to the phase angle of the network.
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 and freewheeling diodes would be suitable as protective features.



Legend:
I_a = Breaking current
I_e = Rated operating current

2

Contactor relays, 8- and 10-pole

Contactor	Type		3TH42/3TH43
CSA and UL rated data			
Basic units			
Rated control supply voltage U_s			max. AC 600 V, DC 230 V (to UL DC 240 V)
Rated voltage **Switching capacity**			AC 600 V, DC 600 V A 600, P 600
General data			
Mechanical endurance	Basic units	Operating cycles	30 million
Rated insulation voltage U_i (pollution degree 3)		V	690
Rated impulse withstand voltage U_{imp}		kV	8
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)		V	up to 500
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +55 -55 ... +80
Degree of protection to IEC 60947-1 and IEC 60529			IP20
Shock resistance			
Rectangular pulse	AC operation DC operation	g/ms g/ms	7.7/5 and 4.4/10 9.3/5 and 5.4/10
Sine pulse	AC operation DC operation	g/ms g/ms	12/5 and 6.8/10 14.7/5 and 8.5/10
Conductor cross-sections			
Screw terminals solid finely stranded with end sleeve		 mm^2 mm^2	M 3.5 2 x (0.5 ... 1) 2 x (1 ... 2.5) 1 x 4 2 x (0.75 ... 2.5)
Short-circuit protection			
(weld-free protection at I_k ≥1 kA)			
• Fuse links, operational class gL/gG	NH Type 3NA DIAZED Type 5SB NEOZED Type 5SE, quick	A A A	16 16 20
• Miniature circuit-breaker	C characteristic B characteristic	A A	16 16

Contactor	Type		3TH42/3TH43
Control circuit			
Coil operating range			
AC operation			0.8 ... 1.1 x U_s [1]
DC operation (exception: 24 V)			0.8 ... 1.1 x U_s
• at DC 24 V			0.8 ... 1.2 x U_s
Power consumption of magnetic coils (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, standard version			
• closing		VA/p.f.	80 / 0.8
• closed		VA/p.f.	10.7 / 0.29
AC operation, 60 Hz, standard version			
• 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	closing = closed	W	6.2
Permissible residual current of the electronics (with 0 signal)			
for AC operation		mA	≤ 8 x (220 V/U_s)
for DC operation		mA	≤ 1.25 x (220 V/U_s)
Operating times [2] Total break time = opening time + 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)			
AC operation			
Closing			
• ON-delay NO contact		ms	8 ... 35
• opening time NC contact		ms	6 ... 20
Opening			
• OFF-delay NO contact		ms	4 ... 18
• closing time NC contact		ms	5 ... 30
Arcing time		ms	10
DC operation			
Closing			
• ON-delay NO contact		ms	20 ... 170
• opening time NC contact		ms	18 ... 110
Opening			
• OFF-delay NO contact		ms	10 ... 25
• closing time NC contact		ms	15 ... 30
Arcing time		ms	10
Switching times [2] **at 1.0 x U_s**			
AC operation			
Closing			
• ON-delay NO contact		ms	10 ... 25
• opening time NC contact		ms	7 ... 20
Opening			
• OFF-delay NO contact		ms	5 ... 18
• closing time NC contact		ms	7 ... 20
DC operation			
Closing			
• ON-delay NO contact		ms	30 ... 70
• opening time NC contact		ms	28 ... 65
Opening			
• OFF-delay NO contact		ms	10 ... 20
• closing time NC contact		ms	15 ... 25

1) Coils for USA, Canada and Japan: 0.85 to 1.1 x U_s, at 60 Hz:

2) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 9 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

2

Contactor relays, 8- and 10-pole

Contactor	Type			3TH42/3TH43
Load side				
Rated operating currents I_e				
AC-12			A	16
AC-15/AC-14 for rated operating voltage U		230 V	A	10
		400 V	A	6
		500 V	A	4
		690 V	A	2
DC-12, for rated operating 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
		600 V	A	0.6
• 2 series-connected conducting paths		up to 48 V	A	10
		110 V	A	10
		220 V	A	1.6
		440 V	A	0.8
		600 V	A	0.7
• 3 series-connected conducting paths		up to 48 V	A	10
		110 V	A	10
		220 V	A	10
		440 V	A	1.3
		600 V	A	1
DC-13, for rated operating voltage U_e				
• 1 conducting path		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 series-connected conducting paths		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 series-connected conducting paths		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
Rated output power of induction motors acc. to utilization category 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
Operating frequency z [1]				
Operating cycles per hour for rated operation for utilization category		AC-12/DC-12	h^{-1}	1000
		AC-2	h^{-1}	500
		AC-3	h^{-1}	1000
		AC-15/AC-14	h^{-1}	3600
		DC-13	h^{-1}	3600
		No-load operating frequency	h^{-1}	10000

1) Dependence of the operating frequency z on the operating current I' and operating voltage U': $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5}$ 1/h.

Selection and ordering data

Contacts	Rated operating current I_e/AC-15/AC-14				Contacts					DT	Order No.	PS*	Weight per PU approx.
					Ident. no. acc. to EN 50011	Version							
	For **230/ 220 V**	400/ 380 V	500 V	690/ 660 V		NO	NC	NO	NC				
Number	**A**	A	A	A								Units	kg
With screw terminals · for screwing and snapping onto 35 mm standard mounting rail													
AC operation, rated control supply voltage U_s: AC 50 Hz 230/220 V [1]													
8	**10**	6	4	2	**80 E**	8	-	-	-	B	**3TH43 80-0AP0**	1 unit	0.422
					71 E	7	1	-	-	B	**3TH43 71-0AP0**	1 unit	0.420
					62 E	6	2	-	-	B	**3TH42 62-0AP0**	1 unit	0.420
					53 E	5	3	-	-	d	**3TH42 53-0AP0**	1 unit	0.420
					44 E	4	4	-	-	B	**3TH42 44-0AP0**	1 unit	0.419
					44 E,U	3	3	1	1	B	**3TH42 93-0AP0**	1 unit	0.425
DC operation · DC solenoid system, rated control supply voltage U_s: DC 24 V													
8	**10**	6	4	2	**80**	8	-	-	-	B	**3TH42 80-0BB4**	1 unit	0.664
					71 E	7	1	-	-	B	**3TH42 71-0BB4**	1 unit	0.663
					62 E	6	2	-	-	B	**3TH42 62-0BB4**	1 unit	0.673
					53 E	5	3	-	-	B	**3TH42 53-0BB4**	1 unit	0.662
					44 E	4	4	-	-	B	**3TH42 44-0BB4**	1 unit	0.660
					44 E,U	3	3	1	1	B	**3TH42 93-0BB4**	1 unit	0.667

3TH42 ..-0...

For accessories for 3TH42, see Page 2/171
For technical specifications, see Page 2/165.
For dimensional drawings, see Page 2/240

Spare parts
Magnetic coils:
AC operation: 3TY74 03-0A.
DC operation: 3TY48 03-0B.
Further voltages on request. The contacts cannot be replaced on 3TH42/3TH43 contactor relays.

1) Coil operating range at 220 V: 0.85 to 1.15 x U_S; lower coil operating range limit according to IEC 60947.

Contacts	Rated operating current I_e/AC-15/AC-14				Contacts					DT	Order No.	PS*	Weight per PU approx.
					Ident. no. acc. to EN 50011	Version							
	at **230 V**	400 V	500 V	690 V		NO	NC	NO	NC				
Number	**A**	A	A	A								Units	kg
With screw terminals · for screwing and snapping onto 35 mm standard mounting rail													
AC operation, rated control supply voltage U_s: AC 50 Hz 230/220 V [1]													
10	**10**	6	4	2	**100 E**	10	-	-	-	▶	**3TH43 10-0AP0**	1 unit	0.465
					91 E	9	1	-	-	▶	**3TH43 91-0AP0**	1 unit	0.465
					82 E	8	2	-	-	▶	**3TH43 82-0AP0**	1 unit	0.465
					73 E	7	3	-	-	▶	**3TH43 73-0AP0**	1 unit	0.463
					73 E,U	6	2	1	1	▶	**3TH43 46-0AP0**	1 unit	0.466
					64 E	6	4	-	-	▶	**3TH43 64-0AP0**	1 unit	0.462
					55 E	5	5	-	-	▶	**3TH43 55-0AP0**	1 unit	0.463
					55 E,U	4	4	1	1	▶	**3TH43 94-0AP0**	1 unit	0.465
DC operation · DC solenoid system, rated control supply voltage U_s: DC 24 V													
10	**10**	6	4	2	**100 E**	10	-	-	-	▶	**3TH43 10-0BB4**	1 unit	0.704
					91E	9	1	-	-	▶	**3TH43 91-0BB4**	1 unit	0.707
					82E	8	2	-	-	▶	**3TH43 82-0BB4**	1 unit	0.705
					73E	7	3	-	-	▶	**3TH43 73-0BB4**	1 unit	0.697
					73EU	6	2	1	1	▶	**3TH43 46-0BB4**	1 unit	0.706
					64 E	6	4	-	-	▶	**3TH43 64-0BB4**	1 unit	0.708
					55E	5	5	-	-	▶	**3TH43 55-0BB4**	1 unit	0.705
					55EU	4	4	1	1	▶	**3TH43 94-0BB4**	1 unit	0.707

3TH43 ..-0A

3TH43 ..-0B

For accessories for 3TH42, see Page 2/171
For technical specifications, see Page 2/165.
Connection diagrams, see Page 2/216
For dimensional drawings, see Page 2/240

Spare parts
Magnetic coils:
AC operation: 3TY74 03-0A.
DC operation: 3TY48 03-0B.
Further voltages on request. The contacts cannot be replaced on 3TH42/3TH43 contactor relays.

1) Coil operating range at 220 V or 380 V: 0.85 to 1.1 x U_S; lower coil operating range limit according to IEC 60947.

*** This quantity or a multiple thereof can be ordered.**

2

Contactor relays, 8- and 10-pole

Contactor	Type	3TH42/3TH43

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

AC operation

Coils for AC 50 Hz

Rated control supply voltage U_s AC V 50 Hz	Control supply voltage at AC V 60 Hz	Option
24	29	**B0**
36	42	**G0**
42	50	**D0**
48	58	**H0**
60	72	**E0**
110	132	**F0**
125/127	150/152	**L0**
230/220	276	**P0** [1]
240	288	**U0**
400/380	480/460	**V0** [1]
415	500	**R0**
500	600	**S0**
For Japan		
100	**100-110**	**G6** [2]
200	**200-220**	**N6** [2]
For USA and Canada		
110	**120**	**K6** [2]
220	**240**	**P6** [2]

Coils for AC 50 and 60 Hz

Rated control supply voltage U_s AC 50/60 Hz	Option
24	**C2**
42	**D2**
110	**G2**
115	**J2**
120	**K2**
220	**N2**
230	**L2**
240	**P2**
440	**R2**

DC operation

Rated control supply voltage U_s DC V	Option
12	**A4**
24	**B4**
30	**C4**
36	**V4**
42	**D4**
48	**W4**
60	**E4**
110	**F4**
125	**G4**
220	**M4**
230	**P4**
240	**Q4**

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

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

Selection and ordering data

Surge suppressors[1]

3TX7 402-3.

Version	Rated control supply voltage U_s AC V	Rated control supply voltage U_s DC V	DT	Order No.	PS* Units	Weight per PU approx. kg
Suppression diode with line spacer, for mounting onto the coil terminal	-	24 ... 250	▶	**3TX7 402-3A**	1 unit	0.015
Diode assembly (diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal	-	24 ... 250	▶	**3TX7 402-3D**	1 unit	0.015
Varistor[2] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	▶	**3TX7 402-3G**	1 unit	0.015
	48 ... 127	70 ... 150	▶	**3TX7 402-3H**	1 unit	0.015
	127 ... 240	150 ... 250	▶	**3TX7 402-3J**	1 unit	0.016
	240 ... 400	-	C	**3TX7 402-3K**	1 unit	0.024
	400 ... 600	-	C	**3TX7 402-3L**	1 unit	0.024
RC element with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	▶	**3TX7 402-3R**	1 unit	0.025
	48 ... 127	70 ... 150	▶	**3TX7 402-3S**	1 unit	0.025
	127 ... 240	150 ... 250	▶	**3TX7 402-3T**	1 unit	0.023
	240 ... 400	-	C	**3TX7 402-3U**	1 unit	0.024
	400 ... 600	-	C	**3TX7 402-3V**	1 unit	0.024
Cover for ON/OFF indicator	-	-	B	**3TX4 210-0P**	1 unit	0.001

Interfaces for control by PLC

3TX4 090
mounted to contactor

Coil operating range: DC 17 V ... 30 V Power consumption: 0.5 W at DC 24 V						
for mounting directly to contactor coil **without** surge suppressor			A	**3TX4 090-0C**	1 unit	0.055
for mounting directly to contactor coil **with** surge suppressor			A	**3TX4 090-0D**	1 unit	0.057

1) The opening delay of the NO contact and the closing delay of the NC contact are increased if the contactor coils are attentuated against voltage peaks (interference suppression diode 6 to 10 times; diode assemblies 2 to 6 times, varistor +2 to 5 ms).

2) Includes the peak value of the ripple voltage on the DC side.

ON-delay devices

3TX4 180-0A

For contactor Type	Version	Rated control supply voltage U_s at 50/60 Hz V	Time range (minimum times) s	DT	Order No.	PS* Units	Weight per PU approx. kg
3TH42/ 3TH43	**NTC thermistor** time tolerance +100 %, -50 % for examples see Page 2/216	220 ... 230	0.1	C	**3TX4 180-0A**	1 unit	0.012

OFF-delay devices for bridging short-time power failures (up to 1.2 s)

3TX4 701-0AN1

For contactor Type	Rated control supply voltage U_s AC 50/60 Hz V	Rated control supply voltage U_s DC V	OFF-delay s	DT	Order No.	PS* Units	Weight per PU approx. kg
3TH42 ..-0BF4 3TH43 ..-0BF4	110		0.15 or 0.3 s	A	**3TX4 701-0AN1**	1 unit	0.169
3TH42 ..-0BM4 3TH43 ..-0BM4	220		0.6 or 1.2 s	A	**3TX4 701-0AN1**	1 unit	0.169
3TH42 ..-0BP4 3TH43 ..-0BP4	230		0.6 or 1.2 s	A	**3TX4 701-0AN1**	1 unit	0.169
3TH42 ..-0BB4 3TH43 ..-0BB4		24	0.4 or 0.8 s	A	**3TX4 701-0BB4**	1 unit	0.168

*** This quantity or a multiple thereof can be ordered.**

2

SIRIUS coupling relays for switching auxiliary circuits, 4-pole

Area of application

DC operation

IEC 60947 and EN 60947 (VDE 0660)

The 3RH11 coupling relays for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

Functions

No auxiliary switch blocks can be snapped onto 3RH11 coupling relays.

Coupling relays have a low power consumption, an extended coil operating range and an integrated surge suppressor for damping opening surges
(exceptions: 3RH11 ..-.HB40 and 3RH11 ..-.MB4.-0KT0).

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH11 contactor relays (Page 2/156 onwards).
The size S00 coupling relays (3RH11) cannot be extended with auxiliary switch blocks.

Contactor type Size			**3RH11 . .HB40** S00	**3RH11 . .JB40** S00	**3RH11 ..-.KB40** S00
Coil operating range			0.7 ... 1.25 x U_s		
Power consumption of the magnetic coil (for cold coil) Closing = closed					
at U_s 17 V		W	1.2		
at U_s 24 V		W	2.3		
at U_s 30 V		W	3.6		
Permissible residual current of the electronics with 0 signal		mA	< 10 mA x (24 V/U_s)		
Overvoltage configuration of the coil			no surge suppression 	with diode 	with varistor 
Switching times					
• Closing					
- at 17 V	ON-delay NO contact	ms	40 ... 120		
	opening time NC	ms	30 ... 70		
- at 24 V	ON-delay NO contact	ms	30 ... 60		
	opening time NC	ms	20 ... 40		
- at 30 V	ON-delay NO contact	ms	20 ... 50		
	opening time NC	ms	15 ... 30		
• Opening					
- For 17/30 V	OFF-delay NO contact	ms	7 ... 17	40 ... 60	7 ... 17
	closing time NC	ms	22 ... 30	60 ... 70	22 ... 30
Upright mounting position			Request required		

Contactor type Size			**3RH11 ..-.MB40-0KT0** S00	**3RH11 ..-.VB40** S00	**3RH11 ..-.WB40** S00
Coil operating range			0.85 ... 1.85 x U_s		
Power consumption of the magnetic coil (for cold coil) Closing = closed U_s = 24 V		W	1.4		
Permissible residual current			< 8 mA x 24 V/U_s		
Overvoltage configuration of the magnetic coil			no surge suppression 	with diode 	with varistor 
Switching times of the coupling relays					
• Closing					
- at 20.5 V	ON-delay NO contact	ms	30 ... 120		
	opening time NC	ms	20 ... 110		
- at 24 V	ON-delay NO contact	ms	25 ... 90		
	opening time NC	ms	15 ... 80		
- at 44 V	ON-delay NO contact	ms	15 ... 60		
	opening time NC	ms	10 ... 50		
• Opening					
- For 17/30 V	OFF-delay NO contact	ms	5 ... 20	20 ... 80	5 ... 20
	closing time NC	ms	10 ... 30	30 ... 90	10 ... 30
Upright mounting position			Request required		

Selection and ordering data

DC operation

3RH11..-1.B40

3RH11..-2.B40

Surge suppressors	Rated operating current I_e/AC15/ AC-14	Auxiliary contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
		Ident. no. acc. to EN 50011	Version			Order No.				Order No.		
	230 V											
	A		NO	NC			Units	kg			Units	kg
For screwing and snapping onto 35 mm standard mounting rail												
• **Size S00** Terminal designations according to EN 50011 Rated control supply voltage U_s = DC 24 V, coil operating range **0.7 to 1.25 U_s** Power consumption of the coils **2.3 W** at 24 V (no auxiliary switch blocks can be mounted)												
Diode, varistor or RC element, attachable	**6**	**40E**	4	-	▶	**3RH11 40-1HB40**	1 unit	0.258	B	**3RH11 40-2HB40**	1 unit	0.254
		31E	3	1	▶	**3RH11 31-1HB40**	1 unit	0.258	B	**3RH11 31-2HB40**	1 unit	0.253
		22E	2	2	▶	**3RH11 22-1HB40**	1 unit	0.259	▶	**3RH11 22-2HB40**	1 unit	0.255
Built-in diode	**6**	**40 E**	4	-	▶	**3RH11 40-1JB40**	1 unit	0.258	B	**3RH11 40-2JB40**	1 unit	0.256
		31E	3	1	▶	**3RH11 31-1JB40**	1 unit	0.259	▶	**3RH11 31-2JB40**	1 unit	0.256
		22E	2	2	▶	**3RH11 22-1JB40**	1 unit	0.260	▶	**3RH11 22-2JB40**	1 unit	0.255
Varistor integrated	**6**	**40E**	4	-	▶	**3RH11 40-1KB40**	1 unit	0.259	▶	**3RH11 40-2KB40**	1 unit	0.256
		31E	3	1	▶	**3RH11 31-1KB40**	1 unit	0.259	▶	**3RH11 31-2KB40**	1 unit	0.254
		22E	2	2	▶	**3RH11 22-1KB40**	1 unit	0.259	▶	**3RH11 22-2KB40**	1 unit	0.255
Rated control supply voltage U_s = DC 24 V, coil operating range **0.85 to 1.85 x U_s** Power consumption of the coils **1.4 W** at 24 V (no auxiliary switch blocks can be mounted)												
Diode, varistor or RC element, attachable	**6**	**40E**	4	-	B	**3RH11 40-1MB40-0KT0**	1 unit	0.259	B	**3RH11 40-2MB40-0KT0**	1 unit	0.255
		31E	3	1	B	**3RH11 31-1MB40-0KT0**	1 unit	0.259	B	**3RH11 31-2MB40-0KT0**	1 unit	0.255
		22E	2	2	B	**3RH11 22-1MB40-0KT0**	1 unit	0.262	B	**3RH11 22-2MB40-0KT0**	1 unit	0.256
Built-in diode	**6**	**40 E**	4	-	B	**3RH11 40-1VB40**	1 unit	0.260	B	**3RH11 40-2VB40**	1 unit	0.256
		31E	3	1	B	**3RH11 31-1VB40**	1 unit	0.260	B	**3RH11 31-2VB40**	1 unit	0.256
		22E	2	2	B	**3RH11 22-1VB40**	1 unit	0.261	B	**3RH11 22-2VB40**	1 unit	0.256
Varistor integrated	**6**	**40E**	4	-	B	**3RH11 40-1WB40**	1 unit	0.260	B	**3RH11 40-2WB40**	1 unit	0.255
		31E	3	1	B	**3RH11 31-1WB40**	1 unit	0.260	B	**3RH11 31-2WB40**	1 unit	0.256
		22E	2	2	B	**3RH11 22-1WB40**	1 unit	0.261	B	**3RH11 22-2WB40**	1 unit	0.255

For accessories, see Page 2/163 and 2/180.
For technical specifications, see Page 2/172.
For internal circuit diagrams, see Page 2/218.
For dimension drawings, see Page 2/239.

*** This quantity or a multiple thereof can be ordered.**

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

Overview

Snap-on auxiliary switch blocks

The auxiliary switch blocks and the max. number of blocks that can be mounted are described in the sections on motor contactors (Page 2/12) and contactor relays (Page 2/155).

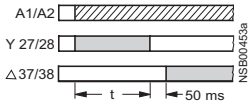
Solid-state time-delay auxilary switch block

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

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

The timer module with a STAR-DELTA function is equipped with one delayed and one instantaneous NO contact, with an interval time of 50 ms between the two. The delay time of the NO contact can be set between 1.5 s and 30 s.

Star-delta function



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

Size S00

The solid-state, time-delay auxiliary switch block is fitted onto the front of the contactor. The timer module is supplied with power directly by plug-in contacts via the coil terminals of the contactor, in parallel with A1/A2. The timing function is activated by closing the contactor on which the auxiliary switch block is mounted. The OFF-delay variant operates without an auxiliary power supply. Minimum ON period: 200 ms.

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

The solid-state, time-delay auxiliary switch block cannot be mounted on size S00 coupling relays.

Sizes S0 to S12

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

The timer module is supplied with power via 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 variant operates without an auxiliary power supply. Minimum ON period: 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 damping opening surges.

Solid-state time-delay block with semiconductor output

The timer module, which is available in "ON-delay" and "OFF-delay" with auxiliary power supply versions, allows time-delayed functions up to 100 s (3 distinct delay ranges). Contactors fitted with a time-delay block close or open after a delay according to the set time.

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

With the OFF-delay variant of the time relay, the contactor coil is contacted directly via the relay; terminals A1 and A2 of the coil must not be connected.

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

Size S00

The variant for size S00 contactors is fitted onto the front of the contactor (with the supply voltage switched off) and then slid into its latched position; at the same time, the time relay is connected by means of plug-in contacts to coil terminals A1 and A2 of the contactor. Any contactor coil terminals which are not required are sealed off by means of covers on the enclosure of the time-delay block, to prevent them from being connected inadvertently.

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

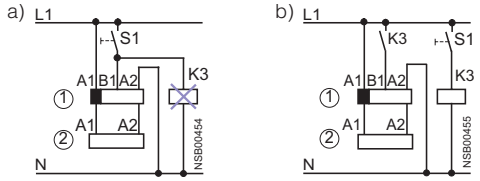
The solid-state, time-delay block cannot be mounted on size S00 coupling relays.

Sizes S0 to S3

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

A varistor is integrated in the timer module for damping opening surges in the contactor coil.

Configuration note



① Time-delay block
② Contactor

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

The 3RT19 16-2D... / 3RT19 26-2D... OFF-delay time 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 in accordance with (b).

OFF-delay device for size S00 to S3 contactors

AC and DC operation

IEC 60947, EN 60947

For screw and snap-on fitting on 35 mm 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 power during a voltage dip, ensuring that the contactor does not trip. The 3RT1 916 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 for DC operation only). 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 contactor coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are dis-

charged via the 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.

Actuation

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 variant 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 suppressor

- without LED (also for Cage Clamp terminal) sizes S00, S0, S2, S3, S6 to S12
- with LED (also for Cage Clamp terminal) size S00

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 suppression diodes and Zener diodes for rapid switch-off) 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.

With all size S0 to S3 contactors, varistors, RC elements and diode assemblies can be plugged on directly at the coil terminals, either on the top or underneath.

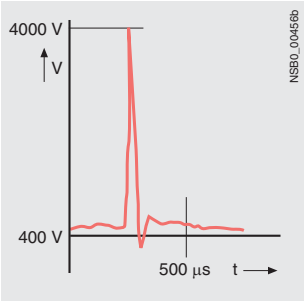
The plug-in direction of the diodes and diode assemblies is determined by a coding device.

Coupling relays are supplied either without surge suppression or with a varistor or diode connected as standard, according to the design.

Note:
The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 10 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Electromagnetic interference suppression module, 3-phase for size S00 contactors

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.



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 conducting path and the EMC interference 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.

Greater operational reliability

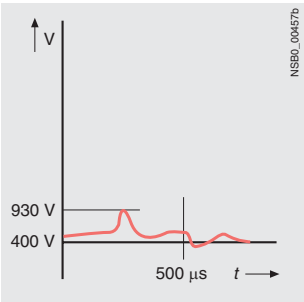
Since the EMC interference suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system 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 drives up to 5.5 kW is adequate.

Two electrical variants are available:

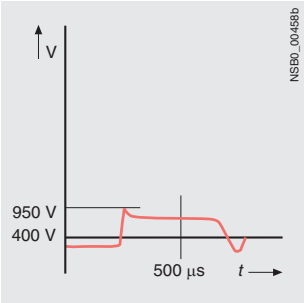
- The advantages of the RC circuit lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.



2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

- 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 drives). There is no limiting below the knee-point voltage, however.



Additional load module

- Size S00 for plugging onto the front of the contactors with and without auxiliary contact block

Coupling devices for mounting on contactors of sizes S0 to S3

DC operation

IEC 60947 and EN 60947

The interface is suitable for use in any climate. It is finger-safe acc. to DIN VDE 0106 Part 100. The terminal designations comply with EN 50005.

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

Low power consumption in conformity with the technical specifications of the solid-state systems. A light-emitting diode indicates the circuit state.

Surge suppression

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

Mounting

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

Solder pin adapter

The solder pin adapters for the size S00 contactors 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

Screw adapter

Plug-on adapters improve the accessibility of the screw fixing for size S0 contactors. As a result it is possible to position the screwdriver vertically even when using insulated screwdrivers or power screwdrivers.

Optionally the adapters can be rotated through 90° before mounting.

Sealable covers for sizes S00 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.

Technical specifications

Technical specifications acc. to IEC 61812-1 (VDE 0435 Part 2021)

Contactor	Type			**3RT19 26-3A** **Mechanical latching block for 3RT10 2. and 3RT10 3. contactors.**
Rated insulation voltage U_i (pollution degree 3)			V	690
Mechanical endurance (operating cycles)		with 3RT10 2. 3RT10 3.		3 million 50 000
Permissible ambient temperature	in operation when stored		°C °C	-25 ... +60 -50 ... +80
Degree of protection to EN 60947 and EN 60529				IP20
Coil operating range at AC 50/60 Hz and DC				0.85 ... 1.1 x U_s
Power consumption of the magnetic coils of the unlocking magnet (when coil is cold and 1.0 x U_s) AC and DC operation			W	approx. 4
Command duration for de-energizing AC operation DC operation			ms ms	18 ... 31 18 ... 26
Conductor cross-sections solid			mm^2 AWG	2 x (0.5 ... 2.5); 1 x 4 2 x 14 1 x 12
finely stranded with end sleeve			mm^2 AWG	2 x (0.5 ... 2.5); 1 x 2.5 2 x 14 1 x 12
Tightening torque for the terminal screws			N/m lb.in	0.8 ... 1.1 7 ... 9.5

Contactor	Type		3RT19 .6-2C	3RT19 .6-2D	3RT19 16-2L	3RT19 .6-2E	3RT19 .6-2F	3RT19 .6-2G
			Solid-state time-delay blocks with semiconductor output			Solid-state time-delay auxiliary switch blocks		
Rated insulation voltage pollution degree 3 overvoltage category III acc. to DIN VDE 0110		AC V	250		300	250		
Operating range			0.8 ... 1.1 x U_s, 0.95 ... 1.05 times rated frequency		0.85 ... 1.1 x U_s, 0.95 ... 1.05 times rated frequency			
Rated output power Power consumption at AC 230 V, 50 Hz		W VA	1 1		 4	2		
Rated operating currents I_e								
• AC-140, DC-13		A A	0.3 A with 3RT19 16 0.3 A with 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			
DIAZED protection operational class gL/gG		A	-		4			
Switching frequency for load • with I_e AC 230 V • with 3RT10 16 contactor, AC 230 V		 h^{-1} h^{-1}	 2500 2500t		 5000			
Recovery time		ms	50		150			
Minimum ON-period		ms	35		35 (OFF-delay with auxiliary voltage)	200 (with OFF-delay)		
Residual current	max.	mA	5		-			
Voltage dip switched through	max.	VA	3.5		-			
Short-time loading rating	up to 10 ms	A	10		-			
Setting accuracy referred to upper limit of scale	max.	%	±15					
Repeat accuracy	max.	%	±1					
Mechanical endurance		Operating cycles	100×10^6		10×10^6			
Permissible ambient temperature								
	in operation	°C	-25 ... +60					
	when stored	°C	-40 ... +85					
Degree of protection to EN 60529 • Cover • Terminals			 IP40 IP20					
Conductor connection • Solid • Finely stranded with end sleeve • Solid or stranded AWG conductors • Terminal screw - Tightening torque		 mm^2 mm^2 AWG N/m	 min. 2 x 0.5, max. 12 x 12.5 2 x (0.5 ... 2.5) 2 x (18 ... 14) M3 0.8 ... 1.2					
Permissible mounting position			any					
Shock resistance Half sine to IEC 60068-2-27		g/ms	15 / 11					
Vibration resistance acc. to IEC 60068-2-6		Hz/mm	10 ... 55 /0.35					
EMC tests	basic specification		IEC 61000-4-6		IEC 61000-6-2/ IEC 61000-6-4	IEC 61000-4-6		
Overvoltage protection			varistor integrated in time relay			-		

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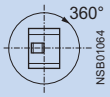
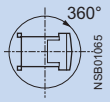
Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

Version			3RT19 16-2BE01 OFF-delay device	3RT19 16-2BK01	3RT 1916-2BL01
Connectable contactor sizes: Important! Caution: only contactors and contactor relays with DC operation can be connected.					
	• DC supply • AC supply		S00 ... S3 -	S00/S0 S00/S0	S00/S0 S00/S0
	Type		3RT10 ., .-1BB4. 3RH1. ..-1BB40	3RT10 1.-1BF4 3RT102 .-1BF4 3RH1. ..-1BF40	3RT10 1.-1BM4./1BP4. 3RT10 2.-1BM4./1BP4. 3RH1. ..-1BM40/1BP40
Permissible mounting position					
Rated control supply voltage U_s Operating range		V	24 (DC) 0.9 ... 1.1 x U_s	110 (UC)	220/230 (UC)
Rated frequency/ies with AC supply	F	Hz ±5 %	-	50 / 60	50 / 60
Ambient temperature permissible:					
• when stored	T_u	°C	-40 ... + 80		
• in operation					
- Series-mounting without clearance	T_u	°C	-25 ... +50		
- Series-mounting with 5 mm clearance	T_u	°C	-25 ... +60		
OFF-delay [1] (minimum times at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)			Note: In practice the mean value is 1.5 times the minimum time.		
• S00	t_{off} >	ms	250	130	600
• S0	t_{off} >	ms	150	100	400
• S2 (only for DC supply)	t_{off} >	ms	90	-	-
• S2 (only for DC supply)	t_{off} >	ms	70	-	-
Installed capacity C 3RT19 16-2B.01 Capacitor voltage		µF V	2000 35	68 180	68 350
ON-delay (maximum at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)			Note: The total ON-delay = contactor make time + t_{on}		
• S00	t_{on} <	ms	10	60	200
• S0	t_{on} <	ms	10	80	250
Mechanical endurance	in million operating cycles		30		
Endurance, electrical approx.	in million operating cycles		> 1		
Operating frequency max. (at T_u = 60 °C)		h^{-1}	300		
Power loss P_v max. appr.		W	0.4	0.5	1
Surge suppression			with varistor, integrated		
Conductor cross-sections			[2]		
U_{sp} = coil voltage T_{sp} = coil temperature					

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

2) See 3RT10 1 contactors, Page 2/20.

Contactor	Type			3RH19 24	3TX7 090
				Coupling relays for mounting to contactors to IEC 60947/EN 60947	
General data					
Rated insulation voltage U_i (pollution degree 3)			V	300	
Safe isolation acc. to DIN VDE 0106 Part 101 between coil and contacts			AC V	up to 300	
Degree of protection	terminals enclosure			IP20 IP40	
Permissible ambient temperature	in operation when stored		°C °C	-25 ... +60 -40 ... +80	
Conductor cross-section	solid finely stranded with end sleeve terminal screws		mm^2 mm^2	2 x (0.5 ... 2.5) 2 x (0.5 ... 1.5) M 3	
Short-circuit protection (weld-free protection at $I_k \geq 1$ kA) fuse links, gL/gG NH, 3NA, DIAZED, 5SB, NEOZED, 5SE			A	6	
Control side					
Rated control supply voltage U_s			DC V	24	
Operating range			DC V	17 ... 30	
Power consumption at U_s			W	0.5	
Nominal current input			mA	20	
Release voltage			V	$\geq$ 4	
Status indication				yellow LED	
Snubber				Varistor	
Load side					
Mechanical endurance	in million operating cycles			20	
Electrical endurance at I_e	in million operating cycles			0.1	
Operating frequency	operating cycles		h^{-1}	5000	
Make time			ms	approx. 7	
Break time			ms	approx. 4	
Bounce time			ms	approx. 2	
Contact material				AgSnO	
Switching voltage			AC/DC V	24 ... 250	
Permissible residual current of the electronics (with 0 signal)			mA	2.5	
Rated operating currents [1] Conventional thermal current I_{th}			A	6	
Rated operating current I_e acc. to utilization category (EN 60947)					
• AC-15		at 24 V at 110 V at 230 V	A A A	3 3 3	
• DC-13		at 24 V at 110 V at 230 V	A A A	1 0.2 0.1	
Operating current for resistive loads to EN 60255 (relay standard) and EN 60947					
• AC-12		at 24 V at 110 V at 230 V	A A A	6 6 6	
• DC-12		at 24 V at 110 V at 230 V	A A A	6 0.3 0.2	

1) Capacitive loads can result in micro-welds on the contacts.

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

Selection and ordering data


3RH19 11-1HA .
3RH19 11-1FA..


3RH19 11-2HA .
3RH19 11-2FA..


3RH19 21-1HA .


3RH19 21-2HA .


3RH19 11-1AA .


3RH19 11-1LA ..

For contactors	Auxiliary contacts					DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Ident. no.	Version					Order No.				Order No.		
Type		NO	NC	NO	NC				kg				kg
Auxiliary switch blocks for snapping onto the front acc. to EN 50012													
Size S00													
	For assembling contactors with 2, 4 or 5 auxiliary contacts												
3RT10 1.-1...1, 3RT10 1.-2...1 Ident 10 E	**11E**	-	1	-	-	▶	**3RH19 11-1HA01**	1 unit	0.035	▶	**3RH19 11-2HA01**	1 unit	0.041
	22E	1	2	-	-	▶	**3RH19 11-1HA12**	1 unit	0.046	▶	**3RH19 11-2HA12**	1 unit	0.052
	23E	1	3	-	-	▶	**3RH19 11-1HA13**	1 unit	0.051	▶	**3RH19 11-2HA13**	1 unit	0.058
	32E	2	2	-	-	▶	**3RH19 11-1HA22**	1 unit	0.052	▶	**3RH19 11-2HA22**	1 unit	0.059
Sizes S0 ... S12 [1]													
	4-pole												
3RT1. 2, 3RT1 . x 3 ... 37	**31**	3	1	-	-	▶	**3RH19 21-1HA31**	1 unit	0.074	▶	**3RH19 21-2HA31**	1 unit	0.070
	22	2	2	-	-	▶	**3RH19 21-1HA22**	1 unit	0.073	▶	**3RH19 21-2HA22**	1 unit	0.069
	13	1	3	-	-	▶	**3RH19 21-1HA13**	1 unit	0.073	▶	**3RH19 21-2HA13**	1 unit	0.071
	22 [2]	2	2	-	-	B	**3RH19 21-1XA22-0MA0**	1 unit	0.075	B	**3RH19 21-2XA22-0MA0**	1 unit	0.071
Auxiliary switch blocks for snapping onto the front acc. to EN 50005													
Size S00													
	2 or 4-pole auxiliary switch blocks for assembling contactors with 3 or 5 auxiliary contacts												
3RT1. 1, 3RH11, 3RH14	**20**	2	-	-	-	▶	**3RH19 11-1FA20**	1 unit	0.041	▶	**3RH19 11-2FA20**	1 unit	0.047
	11	1	1	-	-	▶	**3RH19 11-1FA11**	1 unit	0.040	▶	**3RH19 11-2FA11**	1 unit	0.047
	02	-	2	-	-	▶	**3RH19 11-1FA02**	1 unit	0.040	▶	**3RH19 11-2FA02**	1 unit	0.046
	11 U	-	-	1	1	▶	**3RH19 11-1FB11**	1 unit	0.040	A	**3RH19 11-2FB11**	1 unit	0.046
	40	4	-	-	-	▶	**3RH19 11-1FA40**	1 unit	0.052	▶	**3RH19 11-2FA40**	1 unit	0.059
	31	3	1	-	-	▶	**3RH19 11-1FA31**	1 unit	0.052	▶	**3RH19 11-2FA31**	1 unit	0.059
	22	2	2	-	-	▶	**3RH19 11-1FA22**	1 unit	0.051	▶	**3RH19 11-2FA22**	1 unit	0.058
	22 U	-	-	2	2	▶	**3RH19 11-1FC22**	1 unit	0.052	▶	**3RH19 11-2FC22**	1 unit	0.058
	11, 11 U	1	1	1	1	▶	**3RH19 11-1FB22**	1 unit	0.052	B	**3RH19 11-2FB22**	1 unit	0.045
	1 and 2-pole auxiliary switch blocks. Cable entry from one side **• Cable entry from above**												
3RT1. 1, 3RH11, 3RH14	**-**	1	-	-	-	▶	**3RH19 11-1AA10**	1 unit	0.016		**-**		
	-	-	1	-	-	▶	**3RH19 11-1AA01**	1 unit	0.016		**-**		
	-	1	1	-	-	▶	**3RH19 11-1LA11**	1 unit	0.052		**-**		
	-	2	-	-	-	▶	**3RH19 11-1LA20**	1 unit	0.052		**-**		
	• Cable entry from below												
3RT1. 1, 3RH11, 3RH14	**-**	1	-	-	-	▶	**3RH19 11-1BA10**	1 unit	0.015		**-**		
	-	-	1	-	-	▶	**3RH19 11-1BA01**	1 unit	0.016		**-**		
	-	1	1	-	-	▶	**3RH19 11-1MA11**	1 unit	0.052		**-**		
	-	2	-	-	-	▶	**3RH19 11-1MA20**	1 unit	0.053		**-**		

For technical specifications, see Page 2/14.
For internal circuit diagrams, see Page 2/206.
For position of terminals, see Page 2/211.
For multi-unit/re-usable packaging, see Appendix -> Ordering notes

1) exception: 3RT16.

2) with location digits 5, 6, 7, 8

*** This quantity or a multiple thereof can be ordered.**


3RH19 21-1F ..


2RH19 21-2F ..


3RH19 21-1C ..


3RH19 21-2C ..


3RH19 21-1LA ..


3RH19 21-1MA ..

For contactors	Auxiliary contacts					DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Ident. no.	Version					Order No.				Order No.		
Type		NO	NC	NO	NC				kg				kg
Auxiliary switch blocks for snapping onto the front acc. to EN 50005													
Sizes S0 ... S12[1]													
	4-pole auxiliary switch blocks												
3RT1. 2,	**40**	4	-	-	-	▶	**3RH19 21-1FA40**	1 unit	0.076	▶	**3RH19 21-2FA40**	1 unit	0.071
3RT1 . 3	**31**	3	1	-	-	▶	**3RH19 21-1FA31**	1 unit	0.074	▶	**3RH19 21-2FA31**	1 unit	0.070
...	**22**	2	2	-	-	▶	**3RH19 21-1FA22**	1 unit	0.074	▶	**3RH19 21-2FA22**	1 unit	0.069
3RT1. 7	**04**	-	4	-	-	▶	**3RH19 21-1FA04**	1 unit	0.072	A	**3RH19 21-2FA04**	1 unit	0.068
	22 U	-	-	2	2	▶	**3RH19 21-1FC22**	1 unit	0.074	A	**3RH19 21-2FC22**	1 unit	0.069
	1-pole auxiliary switch blocks to EN 50005 and EN 50012												
3RT1. 2	**-**	1	-	-	-	▶	**3RH19 21-1CA10**	1 unit	0.020	▶	**3RH19 21-2CA10**	1 unit	0.018
...	**-**	-	1	-	-	▶	**3RH19 21-1CA01**	1 unit	0.019	▶	**3RH19 21-2CA01**	1 unit	0.017
3RT1. 7	**-**	-	-	1	-	A	**3RH19 21-1CD10**	1 unit	0.020		**-**		
	-	-	-	-	1	A	**3RH19 21-1CD01**	1 unit	0.019		**-**		
	2-pole auxiliary switch blocks with cable entry from one side **• Cable entry from above**												
3RT1. 2,	**-**	1	1	-	-	▶	**3RH19 21-1LA11**	1 unit	0.074		**-**		
3RT1 . 3	**-**	2	-	-	-	▶	**3RH19 21-1LA20**	1 unit	0.075		**-**		
...	**-**	-	2	-	-	▶	**3RH19 21-1LA02**	1 unit	0.074		**-**		
3RT1. 7													
	• Cable entry from below												
3RT1. 2,	**-**	1	1	-	-	▶	**3RH19 21-1MA11**	1 unit	0.074		**-**		
3RT1 . 3	**-**	2	-	-	-	▶	**3RH19 21-1MA20**	1 unit	0.076		**-**		
...	**-**	-	2	-	-	▶	**3RH19 21-1MA02**	1 unit	0.073		**-**		
3RT1. 7													

For technical specifications, see Page 2/14.
For internal circuit diagrams, see Page 2/206.
For position of terminals, see Page 2/211.

1) Exception: 3RT16.


3RH19 11-1GA ..


3RH19 11-2GA ..

For contactor relays	Contacts			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Ident. no.	Version			Order No.				Order No.		
		NO	NC				kg				kg
Snap-on auxiliary switch blocks acc. to EN 50011											
	For assembling contactor relays with 8 contacts										
3RH11 40, 3RH14 40[1] (Ident 40 E)	**80E**	4	-	▶	**3RH19 11-1GA40**	1 unit	0.052	▶	**3RH19 11-2GA40**	1 unit	0.059
	71E	3	1	▶	**3RH19 11-1GA31**	1 unit	0.052	▶	**3RH19 11-2GA31**	1 unit	0.059
	62E	2	2	▶	**3RH19 11-1GA22**	1 unit	0.052	▶	**3RH19 11-2GA22**	1 unit	0.058
	53E	1	3	▶	**3RH19 11-1GA13**	1 unit	0.052	▶	**3RH19 11-2GA13**	1 unit	0.058
	44E	-	4	▶	**3RH19 11-1GA04**	1 unit	0.052	▶	**3RH19 11-2GA04**	1 unit	0.058

For technical specifications, see Page 2/14.
For multi-unit/re-usable packaging, see appendix -> Ordering notes

1) Only 3RH19 11-1...

*** This quantity or a multiple thereof can be ordered.**

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

3RH19 21-1DA11
3RH19 21-1JA11

3RH19 21-2DA11
3RH19 21-2JA11

3RH19 21-1EA..
3RH19 21-1KA..

3RH19 21-2EA..
3RH19 21-2KA..

For contactors	Auxiliary contacts		DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
	Version			Order No.				Order No.		
Type	NO	NC				kg				kg
Laterally mountable auxiliary switch blocks acc. to EN 50012										
Sizes S0 ... S12										
	• **First laterally mountable auxiliary switch block (right or left), 2-pole**									
3RT1. 2 ... 3RT1. 7	1	1	▶	**3RH19 21-1DA11**	1 unit	0.047	▶	**3RH19 21-2DA11**	1 unit	0.051
Sizes S3 ... S12										
	• **Second laterally mountable auxiliary switch block (right or left), 2-pole**									
3RT1. 4 ... 3RT1. 7	1	1	▶	**3RH19 21-1JA11**	1 unit	0.050	A	**3RH19 21-2JA11**	1 unit	0.051
Laterally mountable auxiliary switch blocks acc. to EN 50005										
Sizes S0 ... S12										
	• **First laterally mountable auxiliary switch block (right or left), 2-pole**									
3RT1. 2 ... 3RT1. 7	2	-	▶	**3RH19 21-1EA20**	1 unit	0.048	▶	**3RH19 21-2EA20**	1 unit	0.050
	1	1	▶	**3RH19 21-1EA11**	1 unit	0.047		**-**		
	-	2	▶	**3RH19 21-1EA02**	1 unit	0.050	▶	**3RH19 21-2EA02**	1 unit	0.051
Sizes S3 ... S12										
	• **Second laterally mountable auxiliary switch block (right or left), 2-pole**									
3RT1. 4 ... 3RT1. 7	2	-	▶	**3RH19 21-1KA20**	1 unit	0.050	B	**3RH19 21-2KA20**	1 unit	0.049
	1	1	▶	**3RH19 21-1KA11**	1 unit	0.048		**-**		
	-	2	▶	**3RH19 21-1KA02**	1 unit	0.048	B	**3RH19 21-2KA02**	1 unit	0.050

For technical specifications, see Page 2/14.
For internal circuit diagrams, see Page 2/205.
For position of terminals, see Page 2/210.

*** This quantity or a multiple thereof can be ordered.**


3RH19 11-1NF ..


3RH19 11-2NF ..


3RH19 21-1FE22


3RH19 21-2FE22


3RH19 21-2DE11
3RH19 21-2JE11

For contactors	Version	Contacts				DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
		Version					Order No.				Order No.		
Type		NO	NO	NC	NC				kg				kg
Solid-state compatible auxiliary switch blocks, for snapping onto the front, acc. to EN 50005													
Size S00													
3RT1. 1, 3RH11, 3RH14	For use in dusty atmosphere and solid-state circuits with rated operating currents I_e/AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. Hard gold-plated contacts. No positively-driven operation	1 2 -	- - -	- - -	1 - 2	▶ ▶ ▶	**3RH19 11-1NF11** **3RH19 11-1NF20** **3RH19 11-1NF02**	1 unit 1 unit 1 unit	0.042 0.041 0.041	▶ ▶ ▶	**3RH19 11-2NF11** **3RH19 11-2NF20** **3RH19 11-2NF02**	1 unit 1 unit 1 unit	0.047 0.047 0.048
Sizes S0 ... S12													
3RT1. 2 3RT1. 7	For use in dusty atmosphere and solid-state circuits with rated operating currents I_e/AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. Hard gold-plated contacts. 1 NO + 1 NC standard auxiliary switches: For technical specifications, see Page 2/14.	1	1	1	1	▶	**3RH19 21-1FE22**	1 unit	0.073	B	**3RH19 21-2FE22**	1 unit	0.070
Solid-state compatible auxiliary switch blocks, laterally mountable, acc. to EN 50012													
Sizes S0 ... S12													
	• First laterally mountable auxiliary switch block (right or left), 2-pole												
3RT1. 2 3RT1. 7	1 NO + 1 NC solid-state compatible auxiliary switches: For use in dusty atmosphere and solid-state circuits with rated operating currents I_e/AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. Hard gold-plated contacts.	1	-	-	1		-			▶	**3RH19 21-2DE11**	1 unit	0.049
Sizes S3 ... S12													
	• Second laterally mountable auxiliary switch block (right or left), 2-pole												
3RT1. 4 3RT1. 7	1 NO + 1 NC solid-state compatible auxiliary switches: For use in dusty atmosphere and solid-state circuits with rated operating currents I_e/AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. Hard gold-plated contacts.	1	-	-	1		-			B	**3RH19 21-2JE11**	1 unit	0.052

For technical specifications, see Page 2/14.
For internal circuit diagrams, see Page 2/205.
For position of terminals, see Page 2/210.

*** This quantity or a multiple thereof can be ordered.**

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays


3RT19 16-2....


3RT19 26-2....

For contactors Type	Auxiliary contacts	Rated control supply voltage U_s [1] V	Time setting range t s	DT	Order No.	PS*	Weight per PU approx. kg
Solid-state time-delay auxiliary switch blocks for snapping onto the front Terminal designations acc. to DIN 46199, Part 5							
Size S00							
	• ON-delay (varistor integrated)						
3RT1. 1, 3RH11[2], 3RH14	1 NO + 1 NC	AC/DC 24[3]	0.05 ... 1	▶	**3RT19 16-2EJ11**	1 unit	0.085
			0.5 ... 10	▶	**3RT19 16-2EJ21**	1 unit	0.084
			5 ... 100	C	**3RT19 16-2EJ31**	1 unit	0.086
		AC 100 ... 127[3]	0.05 ... 1	C	**3RT19 16-2EC11**	1 unit	0.087
			0.5 ... 10	▶	**3RT19 16-2EC21**	1 unit	0.087
			5 ... 100	▶	**3RT19 16-2EC31**	1 unit	0.086
		AC 200 ... 240[3]	0.05 ... 1	A	**3RT19 16-2ED11**	1 unit	0.088
			0.5 ... 10	▶	**3RT19 16-2ED21**	1 unit	0.089
			5 ... 100	▶	**3RT19 16-2ED31**	1 unit	0.087
	• OFF-delay without auxiliary voltage [4] (varistor integrated)						
3RT1. 1, 3RH11[2], 3RH14	1 NO + 1 NC	AC/DC 24[3]	0.05 ... 1	▶	**3RT19 16-2FJ11**	1 unit	0.087
			0.5 ... 10	▶	**3RT19 16-2FJ21**	1 unit	0.086
			5 ... 100	▶	**3RT19 16-2FJ31**	1 unit	0.089
		AC/DC 100 ... 127[3]	0.05 ... 1	D	**3RT19 16-2FK11**	1 unit	0.086
			0.5 ... 10	▶	**3RT19 16-2FK21**	1 unit	0.087
			5 ... 100	C	**3RT19 16-2FK31**	1 unit	0.088
		AC/DC 200 ... 240[3]	0.05 ... 1	A	**3RT19 16-2FL11**	1 unit	0.089
			0.5 ... 10	▶	**3RT19 16-2FL21**	1 unit	0.086
			5 ... 100	▶	**3RT19 16-2FL31**	1 unit	0.089
	• OFF-delay with auxiliary voltage						
3RT10 1, 3RH11	1 CO	AC/DC 24	0.5 ... 10	B	**3RT19 16-2LJ21**	1 unit	0.060
		AC 100 ... 127	0.5 ... 10	B	**3RT19 16-2LC21**	1 unit	0.062
		AC 200 ... 240	0.5 ... 10	B	**3RT19 16-2LD21**	1 unit	0.063
	• Star-delta function (varistor integrated)						
3RT10 1[2]	1 NO delayed and 1 NO instantaneous, dead interval 50 ms	AC/DC 24[3]	1.5 ... 30	▶	**3RT19 16-2GJ51**	1 unit	0.086
		AC 100 ... 127[3]	1.5 ... 30	D	**3RT19 16-2GC51**	1 unit	0.087
		AC 200 ... 240[3]	1.5 ... 30	▶	**3RT19 16-2GD51**	1 unit	0.088
Sizes S0 ... S12							
	• ON-delay						
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	AC/DC 24[5]	0.05 ... 1	D	**3RT19 26-2EJ11**	1 unit	0.081
			0.5 ... 10	▶	**3RT19 26-2EJ21**	1 unit	0.081
			5 ... 100	C	**3RT19 26-2EJ31**	1 unit	0.082
		AC 100 ... 127[5]	0.05 ... 1	C	**3RT19 26-2EC11**	1 unit	0.083
			0.5 ... 10	▶	**3RT19 26-2EC21**	1 unit	0.083
			5 ... 100	D	**3RT19 26-2EC31**	1 unit	0.083
		AC 200 ... 240[5]	0.05 ... 1	D	**3RT19 26-2ED11**	1 unit	0.085
			0.5 ... 10	▶	**3RT19 26-2ED21**	1 unit	0.085
			5 ... 100	C	**3RT19 26-2ED31**	1 unit	0.085
	• OFF-delay without auxiliary voltage [4]						
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	AC/DC 24[5]	0.05 ... 1	▶	**3RT19 26-2FJ11**	1 unit	0.083
			0.5 ... 10	▶	**3RT19 26-2FJ21**	1 unit	0.084
			5 ... 100	▶	**3RT19 26-2FJ31**	1 unit	0.085
		AC/DC 100 ... 127[5]	0.05 ... 1	D	**3RT19 26-2FK11**	1 unit	0.087
			0.5 ... 10	▶	**3RT19 26-2FK21**	1 unit	0.084
			5 ... 100	C	**3RT19 26-2FK31**	1 unit	0.087
		AC/DC 200 ... 240[5]	0.05 ... 1	D	**3RT19 26-2FL11**	1 unit	0.086
			0.5 ... 10	A	**3RT19 26-2FL21**	1 unit	0.084
			5 ... 100	▶	**3RT19 26-2FL31**	1 unit	0.086
	• Star-delta function						
3RT10, 3RT13, 3RT14, 3RT15	1 NO delayed and 1 NO instantaneous, dead interval 50 ms	AC/DC 24[3]	1.5 ... 30	▶	**3RT19 26-2GJ51**	1 unit	0.084
		AC 100 ... 127[5]	1.5 ... 30	▶	**3RT19 26-2GC51**	1 unit	0.085
		AC 200 ... 240[5]	1.5 ... 30	▶	**3RT19 26-2GD51**	1 unit	0.088

For internal circuit diagrams, see Page 2/205.
For position of terminals, see Page 2/213.

1) The AC voltages are valid for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling relays.

3) The terminals for the control supply voltage are connected to the contactor by the integrated spring contacts of the solid-state time auxiliary switch above it when this switch is mounted

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

5) 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 leads.

*** This quantity or a multiple thereof can be ordered.**

For contactors	Rated control supply voltage U_s	Time setting range t	DT	Order No.	PS*	Weight per PU approx.
Type	V	s				kg
Solid-state time-delay blocks with semiconductor output						
Size S00						
	for mounting at the front of the contactors					
	• ON-delay (varistor integrated)					
 3RT19 16-2C...						
3RT1. 1, 3RH11[1], 3RH14	AC/DC 24...66	0.05 ... 1	C	**3RT19 16-2CG11**	1 unit	0.051
		0.5 ... 10	▶	**3RT19 16-2CG21**	1 unit	0.051
		5 ... 100	▶	**3RT19 16-2CG31**	1 unit	0.054
	AC/DC 90...240	0.05 ... 1	A	**3RT19 16-2CH11**	1 unit	0.047
		0.5 ... 10	▶	**3RT19 16-2CH21**	1 unit	0.047
		5 ... 100	▶	**3RT19 16-2CH31**	1 unit	0.051
	• OFF-delay with auxiliary voltage (varistor integrated)					
 3RT19 16-2D...						
3RT1. 1, 3RH11[1], 3RH14	AC/DC 24...66	0.05 ... 1	C	**3RT19 16-2DG11**	1 unit	0.052
		0.5 ... 10	C	**3RT19 16-2DG21**	1 unit	0.052
		5 ... 100	C	**3RT19 16-2DG31**	1 unit	0.057
	AC/DC 90...240	0.05 ... 1	D	**3RT19 16-2DH11**	1 unit	0.053
		0.5 ... 10	▶	**3RT19 16-2DH21**	1 unit	0.053
		5 ... 100	C	**3RT19 16-2DH31**	1 unit	0.052
Sizes S0 ... S3						
	For mounting onto coil terminals on top of the contactors					
	• ON-delay (varistor integrated)					
 3RT19 26-2C...						
3RT10 2, 3RT10 3, 3RT10 4, 3RT13,[2] 3RT15	AC/DC 24...66	0.05 ... 1	A	**3RT19 26-2CG11**	1 unit	0.048
		0.5 ... 10	A	**3RT19 26-2CG21**	1 unit	0.049
		5 ... 100	C	**3RT19 26-2CG31**	1 unit	0.048
	AC/DC 90...240	0.05 ... 1	▶	**3RT19 26-2CH11**	1 unit	0.048
		0.5 ... 10	▶	**3RT19 26-2CH21**	1 unit	0.047
		5 ... 100	▶	**3RT19 26-2CH31**	1 unit	0.048
	• OFF-delay with auxiliary voltage (varistor integrated)					
 3RT19 26-2D...						
3RT10 2, 3RT10 3, 3RT10 4, 3RT13,[2] 3RT15	AC/DC 24...66	0.05 ... 1	D	**3RT19 26-2DG11**	1 unit	0.050
		0.5 ... 10	C	**3RT19 26-2DG21**	1 unit	0.051
		5 ... 100	D	**3RT19 26-2DG31**	1 unit	0.051
	AC/DC 90...240	0.05 ... 1	C	**3RT19 26-2DH11**	1 unit	0.050
		0.5 ... 10	A	**3RT19 26-2DH21**	1 unit	0.050
		5 ... 100	C	**3RT19 26-2DH31**	1 unit	0.050
OFF-delay devices						
 3RT19 16-2B.01						
3RT1. 1, 3RT1 . 2, 3RH1...-1BF40	AC/DC 110		▶	**3RT19 16-2BK01**	1 unit	0.143
3RT1. 1, 3RT1 . 2, 3RH1...-1BM40	AC/DC 220/230		▶	**3RT19 16-2BL01**	1 unit	0.143
3RT1. 1 ... 3RT1. 4, 3RH1...-1BB40	DC 24		▶	**3RT19 16-2BE01**	1 unit	0.114
Mechanical latching blocks						
Sizes S0 and S2						
	For mounting on one contactor; contactor remains in the energized state even after a voltage failure.					
 3RT13 26.-3A.31						
3RT10 2, 3RT10 3	AC/DC 24		B	**3RT19 26-3AB31**	1 unit	0.122
	AC/DC 110		B	**3RT19 26-3AF31**	1 unit	0.130
	AC/DC 230		B	**3RT19 26-3AP31**	1 unit	0.125

OFF-delay device:
For circuit diagrams, see Page 2/208.
For dimension drawings, see Page 2/241.
Time-delay blocks:
For circuit diagrams, see Page 2/209.
Mechanical latching blocks:
For dimension drawings, see Page 2/242.

1) Cannot be fitted onto coupling relays.

2) Not to be used for 3RT10 4. and 3RT13 4. contactors with $U_s \leq 42$ V.

*** This quantity or a multiple thereof can be ordered.**

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

3RT19 16-1DG00

3RT19 26-1B.00

For contactors Type	Version	Rated control supply voltage U_s [1] AC operation AC V	DC operation DC V	DT	Order No. [2]	PS*	Weight per PU approx. kg
Surge suppressors without LED (also for Cage Clamp terminal)							
Size S00	**For plugging onto the front of the contactors with or without auxiliary switch block**						
3RT1 ., 3RH1 .	**Varistor**	24 ... 48	24 ... 70	▶	**3RT19 16-1BB00**	1 unit	0.007
		48 ... 127	70 ... 150	▶	**3RT19 16-1BC00**	1 unit	0.008
		127 ... 240	150 ... 250	▶	**3RT19 16-1BD00**	1 unit	0.008
		240 ... 400	-	▶	**3RT19 16-1BE00**	1 unit	0.009
		400 ... 600	-	A	**3RT19 16-1BF00**	1 unit	0.009
3RT1 ., 3RH1 .	**RC element**	24 ... 48	24 ... 70	▶	**3RT19 16-1CB00**	1 unit	0.009
		48 ... 127	70 ... 150	▶	**3RT19 16-1CC00**	1 unit	0.009
		127 ... 240	150 ... 250	▶	**3RT19 16-1CD00**	1 unit	0.009
		240 ... 400	-	▶	**3RT19 16-1CE00**	1 unit	0.009
		400 ... 600	-	▶	**3RT19 16-1CF00**	1 unit	0.009
3RT1 ., 3RH1 .	**Suppression diode**	-	12 ... 250	▶	**3RT19 16-1DG00**	1 unit	0.007
3RT1 ., 3RH1 .	**Diode assembly** (diode and Zener diode) for DC operation	-	12 ... 250	▶	**3RT19 16-1EH00**	1 unit	0.008
Size S0	**For fitting onto the coil terminals at the top or bottom**						
3RT1. 2	**Varistor**	24 ... 48	24 ... 70	▶	**3RT19 26-1BB00**	1 unit	0.023
		48 ... 127	70 ... 150	▶	**3RT19 26-1BC00**	1 unit	0.024
		127 ... 240	150 ... 250	▶	**3RT19 26-1BD00**	1 unit	0.024
		240 ... 400	-	▶	**3RT19 26-1BE00**	1 unit	0.029
		400 ... 600	-	B	**3RT19 26-1BF00**	1 unit	0.029
3RT1. 2	**RC element**	24 ... 48	24 ... 70	▶	**3RT19 26-1CB00**	1 unit	0.023
		48 ... 127	70 ... 150	▶	**3RT19 26-1CC00**	1 unit	0.023
		127 ... 240	150 ... 250	▶	**3RT19 26-1CD00**	1 unit	0.023
		240 ... 400	-	▶	**3RT19 26-1CE00**	1 unit	0.024
		400 ... 600	-	B	**3RT19 26-1CF00**	1 unit	0.027
3RT1. 2	**Diode assembly**						
	for DC operation	-	24	▶	**3RT19 26-1ER00**	1 unit	0.023
	• connectable at the top (e.g. for contactor with overload relay)	-	30 ... 250	▶	**3RT19 26-1ES00**	1 unit	0.024
	• Connectable at the bottom (e.g. for fuseless load feeders)	-	24	▶	**3RT19 26-1TR00**	1 unit	0.023
		-	30 ... 250	A	**3RT19 26-1TS00**	1 unit	0.024

1) Can be used for AC operation at 50/60 Hz. Further voltages on request.

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

*** This quantity or a multiple thereof can be ordered.**

For contactors Type	Version	Rated control supply voltage U_s [1] AC operation AC V	Rated control supply voltage U_s [1] DC operation DC V	DT	Order No. [2]	PS*	Weight per PU approx. kg
Surge suppressors without LED (also for Cage Clamp terminal)							
Sizes S2 and S3							
	For fitting onto the coil terminals at top or bottom						
 3RT19 26-1B.00							
3RT1. 3, 3RT1 . 4	**Varistor**	24 ... 48	24 ... 70	▶	**3RT19 26-1BB00**	1 unit	0.023
		48 ... 127	70 ... 150	▶	**3RT19 26-1BC00**	1 unit	0.024
		127 ... 240	150 ... 250	▶	**3RT19 26-1BD00**	1 unit	0.024
		240 ... 400	-	▶	**3RT19 26-1BE00**	1 unit	0.029
		400 ... 600	-	B	**3RT19 26-1BF00**	1 unit	0.029
 3RT19 36-1C.00							
3RT1. 3, 3RT1 . 4	**RC element**	24 ... 48	24 ... 70	▶	**3RT19 36-1CB00**	1 unit	0.040
		48 ... 127	70 ... 150	▶	**3RT19 36-1CC00**	1 unit	0.038
		127 ... 240	150 ... 250	▶	**3RT19 36-1CD00**	1 unit	0.041
		240 ... 400	-	▶	**3RT19 36-1CE00**	1 unit	0.040
		400 ... 600	-	B	**3RT19 36-1CF00**	1 unit	0.040
3RT1. 3, 3RT1 . 4	**Diode assembly** for DC operation						
	• connectable at the top (e.g. for contactor with overload relay)		24	▶	**3RT19 36-1ER00**	1 unit	0.024
			30 ... 250	▶	**3RT19 36-1ES00**	1 unit	0.024
	• Connectable at the bottom (e.g. for fuseless load feeders)		24	▶	**3RT19 36-1TR00**	1 unit	0.024
			30 ... 250	A	**3RT19 36-1TS00**	1 unit	0.024
Sizes S6 to S12							
	for connecting to withdrawable coil with screw terminals with contactors with **• 3RT1...-.A... conventional operating mechanism** **• 3RT1...-.N... solid-state operating mechanism**						
 3RT19 56-1C.00							
3RT1. 5, 3RT1. 6, 3RT1. 7	**RC element**	24 ... 48	24 ... 70	▶	**3RT19 56-1CB00**	1 unit	0.033
		48 ... 127	70 ... 150	▶	**3RT19 56-1CC00**	1 unit	0.032
		127 ... 240	150 ... 250	▶	**3RT19 56-1CD00**	1 unit	0.033
		240 ... 400	-	▶	**3RT19 56-1CE00**	1 unit	0.033
		400 ... 600	-	C	**3RT19 56-1CF00**	1 unit	0.037

1) Can be used for AC operation at 50/60 Hz. Further voltages on request.

2) For packs of 10 or 5 units, the Order No. must be supplemented with **"–Z"** and the order code **"X90"**.

For contactors Type	Version	Rated control supply voltage U_s [1] AC operation AC V	Rated control supply voltage U_s [1] DC operation DC V	Power input of the LED at U_s mW	DT	Order No. [2]	PS*	Weight per PU approx. kg
Surge suppressors with LED (also for Cage Clamp terminal)								
Size S00								
	For plugging onto the front of the contactors with and without auxiliary switch blocks							
 3RT19 16-1L.00								
3RT1, 3RH1 .	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT19 16-1JJ00**	1 unit	0.008
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT19 16-1JK00**	1 unit	0.008
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT19 16-1JL00**	1 unit	0.009
		-	150 ... 250	160 ... 950	▶	**3RT19 16-1JP00**	1 unit	0.008
3RT1, 3RH1 .	**Suppression diode**	-	24 ... 70	20 ... 470	▶	**3RT19 16-1LM00**	1 unit	0.007
		-	50 ... 150	50 ... 700	▶	**3RT19 16-1LN00**	1 unit	0.007
		-	150 ... 250	160 ... 950	▶	**3RT19 16-1LP00**	1 unit	0.007

1) Can be used for AC operation at 50/60 Hz. Further voltages on request.

2) For packs of 10 or 5 units, the Order No. must be supplemented with **"–Z"** and the order code **"90"**.

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

For contactors Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
EMC suppression module; 3-phase ≤ 5.5 kW					
Size S00 (for contactors with AC or DC operation) [1]					
3RT1. 1	**RC element** (3 x 220 Ω/0.22 µF)				
	up to 400 V	►	**3RT19 16-1PA1**	1 unit	0.078
	up to 575 V	A	**3RT19 16-1PA2**	1 unit	0.078
	up to 690 V	C	**3RT19 16-1PA3**	1 unit	0.081
3RT1. 1	**Varistor**				
	up to 400 V	A	**3RT19 16-1PB1**	1 unit	0.084
	up to 575 V	B	**3RT19 16-1PB2**	1 unit	0.083
	up to 690 V	D	**3RT19 16-1PB3**	1 unit	0.087
Main conducting path surge suppression module for 3RT12 vacuum contactors					
Size S10 and S12					
3RT12	Rated operating voltage U_e = AC 690 V	B	**3RT19 66-1PV3**	1 unit	0.380
	Rated operating voltage U_e = AC 1000 V	B	**3RT19 66-1PV4**	1 unit	0.775
	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.				
Additional load module					
Size S00 (also for Cage Clamp terminal)					
	For plugging onto the front side of the contactors with and without auxiliary switch blocks[2]				
3RT1. 1, 3RH1 .	For increasing the permissible residual current and for limiting the residual voltage. Ensures safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. Also performs the function of a surge damping circuit. Rated voltage: AC 50/60 Hz, 180 V to 255 V. Operating range: 0.8 to 1.1 x U_s.	►	**3RT19 16-1GA00**	1 unit	0.008
Control kit					
Size S00					
3RT1. 1, 3RH1 .	For manual operation of the contactor contacts for start-up and service[3]		-		

3RT19 16-1PA .


3RT19 16-1GA00

1) See also description on Page 2/175

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

3) See load feeders -> Communication-capable load feeders -> ET 200S -> ET 200S motor starters (3RK1 903-0CA00).

*** This quantity or a multiple thereof can be ordered.**

	For contactors Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
Interface for control by PLC						
	Sizes S0 ... S3					
		For mounting onto the coil terminals of the contactors				
 3RH19 24-1GP11	3RT1. 2, 3RT1 . 3, 3RT1 . 4	Operating range DC 17 V to 30 V Power consumption: 0.5 W at DC 24 V Permissible residual current of electronics (with 0 signal): 2.5 mA Rated operating current I_e: AC-15/AC-14 at 230 V: 3 A, DC-13 at 230 V: 0.1 A With LED for indicating circuit state. With integrated varistor for damping opening surges.	►	**3RH19 24-1GP11**	1 unit	0.056
LED module for indicating contactor operation (also for Cage Clamp terminal)						
	Sizes S0 ... S3					
 3RT19 26-1QT00 mounted to contactor	3RT1. 2, 3RT1 . 3, 3RT1 . 4	For snapping into the location hole of an identification label on the front of a contactor. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: AC/DC 24 V to 240 V, polarized. (1 pack. = 5 units)	B	**3RT19 26-1QT00**	5 units	0.007
Auxiliary conductor terminal, 3-pole						
	Size S3					
 3RT19 46-4F	3RT10 4.	For connecting auxiliary and control leads to the main conductor terminals (for one side)	B	**3RT19 46-4F**	1 unit	0.033
Soldering terminal adapter for contactors						
	Size S00					
 	3RT1. 1, 3RH11	Installation kit for soldering contactors onto a printed circuit board. For 1 contactor, 1 set is required.	A	**3RT19 16-4KA1**	4 sets	0.030

3RH19 24-1GP11 interface:
For terminal diagram, see Page 2/207.

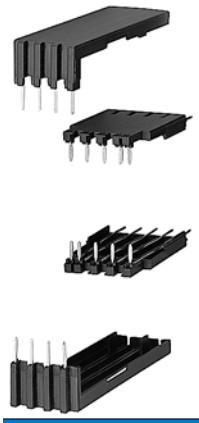
*** This quantity or a multiple thereof can be ordered.**

2

Accessories for SIRIUS 3RT, 3RH contactors and contactor relays

Soldering terminal adapter for contactors with mounted 4-pole auxiliary switch block

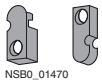
Size S00



For contactors Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
3RT1. 1, 3RH11	Installation kit for soldering contactors with an auxiliary switch block onto a printed circuit board For 1 contactor, 1 set is required.	A	**3RT19 16-4KA2**	4 sets	0.070

Screw adapter for contactors with screw or Cage Clamp terminal

Size S0



For contactors Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
3RT1. 2 .	Screw adapter for easy screw fixing, 2 units required per contactor (1 package contains 10 sets for 10 contactors)	A	**3RT19 26-4P**	10 sets	0.002


3RT19 16-4BB31


3RT19 16-4BB41


3RT19 36-4BB31


3RT19 56-4BA31

Links for paralleling

Size	For contactors Type	Max. conductor cross-sections mm²	DT	Order No.	PS*	Weight per PU approx. kg
	3-pole, with connection terminal [1)2)]					
S00	3RT10 1.	25	▶	**3RT19 16-4BB31**	1 unit	0.015
S0	3RT10 2.	35, stranded	▶	**3RT19 26-4BB31**	1 unit	0.018
S2	3RT10 3.	95	▶	**3RT19 36-4BB31**	1 unit	0.107
	3-pole, with through hole (star jumpers) [1)2)]					
S3	3RT10 4. 3RT14 4	185	▶	**3RT19 46-4BB31**	1 unit	0.197
S6	3RT1. 5	-	▶	**3RT19 56-4BA31**	1 unit	0.161
S10/S12	3RT1. 6, 3RT1 . 7	-	▶	**3RT19 66-4BA31**	1 unit	0.533
	4-pole, with connection terminal [1)2)]					
S00	3RT1. 1.	25	C	**3RT19 16-4BB41**	1 unit	0.015

Screw adapter:
For dimension drawings, see Page 2/241.

1) The parallel connections can be reduced by one pole.

2) • For sizes S00 to S2: The parallel connections are insulated.
• Size S3 A cover is included for shock-harzard 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 shock-hazard protection.

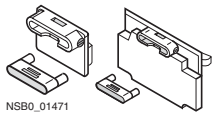
*** This quantity or a multiple thereof can be ordered.**

For contactors Size	Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
Box terminal block for contactors with screw terminals						
		for round and ribbon cables [1]				
S6	3RT1. 5 (3RB10 5)	up to 70 mm² [2]	▶	**3RT19 55-4G**	1 unit	0.237
		up to 120 mm²	▶	**3RT19 56-4G**	1 unit	0.266
		Auxiliary conductor connection for box terminal	B	**3TX7 500-0A**	1 unit	0.008
S10/S12	3RT1. 6, 3RT1. 7 (3RB10 6)	up to 240 mm² With auxiliary conductor connection	▶	**3RT19 66-4G**	1 unit	0.664
Covers for contactors with screw terminals						
		Terminal cover for box terminals				
S2	3RT10 3	Additional shock-hazard protection for mounting to box terminals (2 units per contactor required)	▶	**3RT19 36-4EA2**	1 unit	0.020
S3	3RT10 4, 3RT14 4		▶	**3RT19 46-4EA2**	1 unit	0.017
S6	3RT1. 5	Length: 25 mm	▶	**3RT19 56-4EA2**	1 unit	0.021
S10/S12	3RT1. 6, 3RT1. 7	Length: 30 mm	▶	**3RT19 66-4EA2**	1 unit	0.036
		Terminal cover for cable lug and busbar connection				
S3	3RT10 4, 3RT14 4	For maintaining the voltage clearances and as shock-hazard protection if box terminal is removed) [3] (2 units required per contactor)	▶	**3RT19 46-4EA1**	1 unit	0.037
S6	3RT1. 5	Length: 100 mm	▶	**3RT19 56-4EA1**	1 unit	0.067
S10/S12	3RT1. 6, 3RT1. 7	Length: 120 mm	▶	**3RT19 66-4EA1**	1 unit	0.123
		For rail cover between contactor and 3RB10 overload relay or wiring connector for contactor assemblies				
S6	3RT1. 5	Length: 27 mm	▶	**3RT19 56-4EA3**	1 unit	0.021
S10/S12	3RT1. 6, 3RT1. 7	Length: 42 mm	▶	**3RT19 66-4EA3**	1 unit	0.061
Sealable covers						
S00	3RT1.1 3RH1.[4]	Sealable cover for preventing manual operation	A	**3RT19 16-4MA10**	5 units	0.005
S0 ... S12	3RT1. 2... 3RT1. 7[4]	1 units required per contactor	B	**3RT19 26-4MA10**	5 units	0.006


3RT19 5-4G


3RT19 36-4EA2


3RT19 46-4EA1



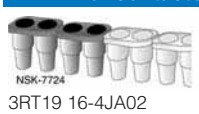
1) For connectable cross-sections, see technical specifications of contactors, Page 2/14

2) On 3RT10 54-1 contactor (55 kW) as standard.

3) Refer to the note on Page 2/34, conductor cross-sections.

4) Exception: Contactors and contactor relays with front mounted auxiliary switch block.

Version	DT	Order No.	PS*	Weight per PU approx. kg
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm² for contactors with Cage Clamp terminals				
Insulation stop strip can be inserted in cable entry of Cage Clamp (2 strips per contactor required, can be removed in pairs) Fits into cable entries of all SIRIUS devices with Cage Clamp terminals of cable cross-section up to 2,5 mm².	B	**3RT19 16-4JA02**	20 units	0.100
Tool for opening Cage Clamp connection				
for all SIRIUS devices with Cage Clamp terminal, conductor cross-section max. 2.5 mm² — Length: about 100 mm; 3.5 x 0.5 (orange)	A	**8WA2 804**	1 unit	0.012
Length: about 175 mm; 3.5 x 0.5 (green)	A	**8WA2 803**	1 unit	0.024



3RT19 16-4JA02


8WA2 804

2

Spare parts for SIRIUS 3RT contactors

Selection and ordering data

3RT13 24.-5A.01

3RT13 24.-5A.02

3RT13 34.-5A.01

For contactor		Rated control supply voltage U_s			DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
						Order No.				Order No.		
		50 Hz	50/60 Hz	60 Hz								
Size	Type	V	V	V				kg				kg
Magnetic coils · AC operation												
S0	3RT10 2., 3RT13 2., 3RT15 2.	24	-	-	▶	**3RT19 24-5AB01**	1 unit	0.092	B	**3RT19 24-5AB02**	1 unit	0.093
		42	-	-	B	**3RT19 24-5AD01**	1 unit	0.092	B	**3RT19 24-5AD02**	1 unit	0.069
		48	-	-	B	**3RT19 24-5AH01**	1 unit	0.092	B	**3RT19 24-5AH02**	1 unit	0.095
		110	-	-	▶	**3RT19 24-5AF01**	1 unit	0.090	B	**3RT19 24-5AF02**	1 unit	0.090
		230	-	-	▶	**3RT19 24-5AP01**	1 unit	0.090	B	**3RT19 24-5AP02**	1 unit	0.091
		400	-	-	▶	**3RT19 24-5AV01**	1 unit	0.092	B	**3RT19 24-5AV02**	1 unit	0.092
		-	24	-	▶	**3RT19 24-5AC21**	1 unit	0.090	B	**3RT19 24-5AC22**	1 unit	0.090
		-	42	-	B	**3RT19 24-5AD21**	1 unit	0.090	B	**3RT19 24-5AD22**	1 unit	0.069
		-	48	-	B	**3RT19 24-5AH21**	1 unit	0.091	B	**3RT19 24-5AH22**	1 unit	0.092
		-	110	-	▶	**3RT19 24-5AG21**	1 unit	0.093	B	**3RT19 24-5AG22**	1 unit	0.092
		-	220	-	B	**3RT19 24-5AN21**	1 unit	0.095	B	**3RT19 24-5AN22**	1 unit	0.094
		-	230	-	B	**3RT19 24-5AL21**	1 unit	0.095	B	**3RT19 24-5AL22**	1 unit	0.093
		110	-	120	B	**3RT19 24-5AK61**	1 unit	0.089	B	**3RT19 24-5AK62**	1 unit	0.090
		220	-	240	B	**3RT19 24-5AP61**	1 unit	0.096	B	**3RT19 24-5AP62**	1 unit	0.094
		-	100	110	B	**3RT19 24-5AG61**	1 unit	0.069	B	**3RT19 24-5AG62**	1 unit	0.068
		-	200	220	B	**3RT19 24-5AN61**	1 unit	0.069	B	**3RT19 24-5AN62**	1 unit	0.068
		-	400	440	B	**3RT19 24-5AR61**	1 unit	0.090	B	**3RT19 24-5AR62**	1 unit	0.091
S2	3RT10 34	24	-	-	▶	**3RT19 34-5AB01**	1 unit	0.109	B	**3RT19 34-5AB02**	1 unit	0.105
		42	-	-	B	**3RT19 34-5AD01**	1 unit	0.110	B	**3RT19 34-5AD02**	1 unit	0.087
		48	-	-	B	**3RT19 34-5AH01**	1 unit	0.109	B	**3RT19 34-5AH02**	1 unit	0.095
		110	-	-	▶	**3RT19 34-5AF01**	1 unit	0.114	B	**3RT19 34-5AF02**	1 unit	0.116
		230	-	-	B	**3RT19 34-5AP01**	1 unit	0.109	B	**3RT19 34-5AP02**	1 unit	0.107
		400	-	-	B	**3RT19 34-5AV01**	1 unit	0.115	B	**3RT19 34-5AV02**	1 unit	0.115
		-	24	-	▶	**3RT19 34-5AC21**	1 unit	0.112	B	**3RT19 34-5AC22**	1 unit	0.109
		-	42	-	B	**3RT19 34-5AD21**	1 unit	0.112	B	**3RT19 34-5AD22**	1 unit	0.088
		-	48	-	B	**3RT19 34-5AH21**	1 unit	0.114	B	**3RT19 34-5AH22**	1 unit	0.113
		-	110	-	B	**3RT19 34-5AG21**	1 unit	0.112	B	**3RT19 34-5AG22**	1 unit	0.109
		-	220	-	B	**3RT19 34-5AN21**	1 unit	0.111	B	**3RT19 34-5AN22**	1 unit	0.125
		-	230	-	B	**3RT19 34-5AL21**	1 unit	0.114	B	**3RT19 34-5AL22**	1 unit	0.112
		110	-	120	B	**3RT19 34-5AK61**	1 unit	0.112	B	**3RT19 34-5AK62**	1 unit	0.110
		220	-	240	B	**3RT19 34-5AP61**	1 unit	0.115	B	**3RT19 34-5AP62**	1 unit	0.117
		-	100	110	B	**3RT19 34-5AG61**	1 unit	0.088	B	**3RT19 34-5AG62**	1 unit	0.083
		-	200	220	B	**3RT19 34-5AN61**	1 unit	0.088	B	**3RT19 34-5AN62**	1 unit	0.083
		-	400	440	B	**3RT19 34-5AR61**	1 unit	0.113	B	**3RT19 34-5AR62**	1 unit	0.109
	3RT10 35, 3RT10 36, 3RT13 3., 3RT15 3.	24	-	-	▶	**3RT19 35-5AB01**	1 unit	0.104	B	**3RT19 35-5AB02**	1 unit	0.102
		42	-	-	B	**3RT19 35-5AD01**	1 unit	0.106	B	**3RT19 35-5AD02**	1 unit	0.088
		48	-	-	B	**3RT19 35-5AH01**	1 unit	0.108	B	**3RT19 35-5AH02**	1 unit	0.085
		110	-	-	▶	**3RT19 35-5AF01**	1 unit	0.106	B	**3RT19 35-5AF02**	1 unit	0.104
		230	-	-	▶	**3RT19 35-5AP01**	1 unit	0.108	B	**3RT19 35-5AP02**	1 unit	0.104
		400	-	-	B	**3RT19 35-5AV01**	1 unit	0.116	B	**3RT19 35-5AV02**	1 unit	0.107
		-	24	-	▶	**3RT19 35-5AC21**	1 unit	0.110	B	**3RT19 35-5AC22**	1 unit	0.106
		-	42	-	B	**3RT19 35-5AD21**	1 unit	0.110	B	**3RT19 35-5AD22**	1 unit	0.088
		-	48	-	B	**3RT19 35-5AH21**	1 unit	0.108	B	**3RT19 35-5AH22**	1 unit	0.107
		-	110	-	B	**3RT19 35-5AG21**	1 unit	0.108	B	**3RT19 35-5AG22**	1 unit	0.103
		-	220	-	B	**3RT19 35-5AN21**	1 unit	0.108	B	**3RT19 35-5AN22**	1 unit	0.105
		-	230	-	B	**3RT19 35-5AL21**	1 unit	0.111	B	**3RT19 35-5AL22**	1 unit	0.107
		110	-	120	B	**3RT19 35-5AK61**	1 unit	0.108	B	**3RT19 35-5AK62**	1 unit	0.106
		220	-	240	B	**3RT19 35-5AP61**	1 unit	0.107	B	**3RT19 35-5AP62**	1 unit	0.104
		-	100	110	B	**3RT19 35-5AG61**	1 unit	0.111	B	**3RT19 35-5AG62**	1 unit	0.083
		-	200	220	B	**3RT19 35-5AN61**	1 unit	0.088	B	**3RT19 35-5AN62**	1 unit	0.083
		-	400	440	B	**3RT19 35-5AR61**	1 unit	0.111	B	**3RT19 35-5AR62**	1 unit	0.110

*** This quantity or a multiple thereof can be ordered.**

Spare parts for SIRIUS 3RT contactors


3RT19 44-5A.01


3RT19 45.-5A.01


3RT19 45-5A.02


3RT19 44-5B.42

For contactor		Rated control supply voltage U_s				DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
							Order No.				Order No.		
		AC 50 Hz	AC 50/60 Hz	AC 60 Hz	DC								
Size	Type	V	V	V	V				kg				kg
Magnetic coils · AC operation													
S3	3RT10 44	24	-	-	-	B	**3RT19 44-5AB01**	1 unit	0.191	B	**3RT19 44-5AB02**	1 unit	0.190
		42	-	-	-	B	**3RT19 44-5AD01**	1 unit	0.188	B	**3RT19 44-5AD02**	1 unit	0.130
		48	-	-	-	B	**3RT19 44-5AH01**	1 unit	0.186	B	**3RT19 44-5AH02**	1 unit	0.171
		110	-	-	-	B	**3RT19 44-5AF01**	1 unit	0.189	B	**3RT19 44-5AF02**	1 unit	0.185
		230	-	-	-	B	**3RT19 44-5AP01**	1 unit	0.180	B	**3RT19 44-5AP02**	1 unit	0.185
		400	-	-	-	B	**3RT19 44-5AV01**	1 unit	0.194	B	**3RT19 44-5AV02**	1 unit	0.190
		-	24	-	-	B	**3RT19 44-5AC21**	1 unit	0.182	B	**3RT19 44-5AC22**	1 unit	0.183
		-	42	-	-	B	**3RT19 44-5AD21**	1 unit	0.199	B	**3RT19 44-5AD22**	1 unit	0.130
		-	48	-	-	B	**3RT19 44-5AH21**	1 unit	0.195	B	**3RT19 44-5AH22**	1 unit	0.190
		-	110	-	-	B	**3RT19 44-5AG21**	1 unit	0.184	B	**3RT19 44-5AG22**	1 unit	0.185
		-	220	-	-	B	**3RT19 44-5AN21**	1 unit	0.179	B	**3RT19 44-5AN22**	1 unit	0.130
		-	230	-	-	B	**3RT19 44-5AL21**	1 unit	0.184	B	**3RT19 44-5AL22**	1 unit	0.178
		110	-	120	-	B	**3RT19 44-5AK61**	1 unit	0.192	B	**3RT19 44-5AK62**	1 unit	0.188
		220	-	240	-	B	**3RT19 44-5AP61**	1 unit	0.193	B	**3RT19 44-5AP62**	1 unit	0.188
		-	100	110	-	B	**3RT19 44-5AG61**	1 unit	0.130	B	**3RT19 44-5AG62**	1 unit	0.123
		-	200	220	-	B	**3RT19 44-5AN61**	1 unit	0.185	B	**3RT19 44-5AN62**	1 unit	0.123
		-	400	440	-	B	**3RT19 44-5AR61**	1 unit	0.190	B	**3RT19 44-5AR62**	1 unit	0.177
	3RT10 45, 3RT10 46, 3RT13 4., 3RT14 46 3RT15 4.	24	-	-	-	B	**3RT19 45-5AB01**	1 unit	0.169	B	**3RT19 45-5AB02**	1 unit	0.165
		42	-	-	-	B	**3RT19 45-5AD01**	1 unit	0.166	B	**3RT19 45-5AD02**	1 unit	0.130
		48	-	-	-	B	**3RT19 45-5AH01**	1 unit	0.180	B	**3RT19 45-5AH02**	1 unit	0.130
		110	-	-	-	B	**3RT19 45-5AF01**	1 unit	0.170	B	**3RT19 45-5AF02**	1 unit	0.169
		230	-	-	-	▶	**3RT19 45-5AP01**	1 unit	0.169	B	**3RT19 45-5AP02**	1 unit	0.170
		400	-	-	-	B	**3RT19 45-5AV01**	1 unit	0.173	B	**3RT19 45-5AV02**	1 unit	0.157
		-	24	-	-	B	**3RT19 45-5AC21**	1 unit	0.168	B	**3RT19 45-5AC22**	1 unit	0.166
		-	42	-	-	B	**3RT19 45-5AD21**	1 unit	0.182	B	**3RT19 45-5AD22**	1 unit	0.130
		-	48	-	-	B	**3RT19 45-5AH21**	1 unit	0.181	B	**3RT19 45-5AH22**	1 unit	0.174
		-	110	-	-	B	**3RT19 45-5AG21**	1 unit	0.169	B	**3RT19 45-5AG22**	1 unit	0.161
		-	220	-	-	B	**3RT19 45-5AN21**	1 unit	0.173	B	**3RT19 45-5AN22**	1 unit	0.170
		-	230	-	-	B	**3RT19 45-5AL21**	1 unit	0.171	B	**3RT19 45-5AL22**	1 unit	0.163
		110	-	120	-	B	**3RT19 45-5AK61**	1 unit	0.179	B	**3RT19 45-5AK62**	1 unit	0.171
		220	-	240	-	B	**3RT19 45-5AP61**	1 unit	0.180	B	**3RT19 45-5AP62**	1 unit	0.130
		-	100	110	-	B	**3RT19 45-5AG61**	1 unit	0.130	B	**3RT19 45-5AG62**	1 unit	0.123
		-	200	220	-	B	**3RT19 45-5AN61**	1 unit	0.176	B	**3RT19 45-5AN62**	1 unit	0.123
		-	400	440	-	B	**3RT19 45-5AR61**	1 unit	0.170	B	**3RT19 45-5AR62**	1 unit	0.169
Magnetic coils · DC operation													
S2	3RT10 3., 3RT13 3., 3RT15 3.	-	-	-	24	B	**3RT19 34-5BB41**	1 unit	0.630	B	**3RT19 34-5BB42**	1 unit	0.625
		-	-	-	42	B	**3RT19 34-5BD41**	1 unit	0.637	B	**3RT19 34-5BD42**	1 unit	0.557
		-	-	-	48	B	**3RT19 34-5BW41**	1 unit	0.618	B	**3RT19 34-5BW42**	1 unit	0.652
		-	-	-	60	B	**3RT19 34-5BE41**	1 unit	0.630	B	**3RT19 34-5BE42**	1 unit	0.633
		-	-	-	110	B	**3RT19 34-5BF41**	1 unit	0.585	B	**3RT19 34-5BF42**	1 unit	0.612
		-	-	-	125	B	**3RT19 34-5BG41**	1 unit	0.632	B	**3RT19 34-5BG42**	1 unit	0.557
		-	-	-	220	B	**3RT19 34-5BM41**	1 unit	0.635	B	**3RT19 34-5BM42**	1 unit	0.637
		-	-	-	230	B	**3RT19 34-5BP41**	1 unit	0.720	B	**3RT19 34-5BP42**	1 unit	0.602
S3	3RT10 4., 3RT13 4., 3RT14 4., 3RT15 4.	-	-	-	24	B	**3RT19 44-5BB41**	1 unit	1.050	B	**3RT19 44-5BB42**	1 unit	1.030
		-	-	-	42	B	**3RT19 44-5BD41**	1 unit	1.040	B	**3RT19 44-5BD42**	1 unit	0.805
		-	-	-	48	B	**3RT19 44-5BW41**	1 unit	0.974	B	**3RT19 44-5BW42**	1 unit	1.000
		-	-	-	60	B	**3RT19 44-5BE41**	1 unit	1.030	B	**3RT19 44-5BE42**	1 unit	1.010
		-	-	-	110	B	**3RT19 44-5BF41**	1 unit	0.970	B	**3RT19 44-5BF42**	1 unit	0.970
		-	-	-	125	B	**3RT19 44-5BG41**	1 unit	0.960	B	**3RT19 44-5BG42**	1 unit	0.805
		-	-	-	220	B	**3RT19 44-5BM41**	1 unit	1.000	B	**3RT19 44-5BM42**	1 unit	0.959
		-	-	-	230	B	**3RT19 44-5BP41**	1 unit	0.956	B	**3RT19 44-5BP42**	1 unit	0.958

*** This quantity or a multiple thereof can be ordered.**

2

Spare parts for SIRIUS 3RT contactors

Withdrawable coils

Conventional operating mechanism

3RT19 55-5A

For contactor		Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
Size	Type	AC/DC V		Order No.		kg		Order No.		kg
S6	3RT10 5, 3RT14 5	23 ... 26	B	**3RT19 55-5AB31**	1 unit	0.649	B	**3RT19 55-5AB32**	1 unit	0.649
		42 ... 48	B	**3RT19 55-5AD31**	1 unit	0.576	B	**3RT19 55-5AD32**	1 unit	0.576
		110 ... 127	B	**3RT19 55-5AF31**	1 unit	0.591	B	**3RT19 55-5AF32**	1 unit	0.591
		200 ... 220	B	**3RT19 55-5AM31**	1 unit	0.568	B	**3RT19 55-5AM32**	1 unit	0.568
		220 ... 240	B	**3RT19 55-5AP31**	1 unit	0.568	B	**3RT19 55-5AP32**	1 unit	0.568
		240 ... 277	B	**3RT19 55-5AU31**	1 unit	0.579	B	**3RT19 55-5AU32**	1 unit	0.579
		380 ... 420	B	**3RT19 55-5AV31**	1 unit	0.569	B	**3RT19 55-5AV32**	1 unit	0.569
		440 ... 480	B	**3RT19 55-5AR31**	1 unit	0.613	B	**3RT19 55-5AR32**	1 unit	0.613
		500 ... 550	B	**3RT19 55-5AS31**	1 unit	0.610	B	**3RT19 55-5AS32**	1 unit	0.610
		575 ... 600	B	**3RT19 55-5AT31**	1 unit	0.605	B	**3RT19 55-5AT32**	1 unit	0.605
S10	3RT10 6, 3RT14 6	23 ... 26	B	**3RT19 65-5AB31**	1 unit	0.835	B	**3RT19 65-5AB32**	1 unit	0.835
		42 ... 48	B	**3RT19 65-5AD31**	1 unit	0.840	B	**3RT19 65-5AD32**	1 unit	0.840
		110 ... 127	▶	**3RT19 65-5AF31**	1 unit	0.809	B	**3RT19 65-5AF32**	1 unit	0.809
		200 ... 220	C	**3RT19 65-5AM31**	1 unit	0.805	B	**3RT19 65-5AM32**	1 unit	0.805
		220 ... 240	▶	**3RT19 65-5AP31**	1 unit	0.784	B	**3RT19 65-5AP32**	1 unit	0.784
		240 ... 277	B	**3RT19 65-5AU31**	1 unit	0.855	B	**3RT19 65-5AU32**	1 unit	0.855
		380 ... 420	B	**3RT19 65-5AV31**	1 unit	0.817	B	**3RT19 65-5AV32**	1 unit	0.817
		440 ... 480	B	**3RT19 65-5AR31**	1 unit	0.825	B	**3RT19 65-5AR32**	1 unit	0.825
		500 ... 550	C	**3RT19 65-5AS31**	1 unit	0.829	B	**3RT19 65-5AS32**	1 unit	0.829
		575 ... 600	C	**3RT19 65-5AT31**	1 unit	0.650	B	**3RT19 65-5AT32**	1 unit	0.650
S10	3RT12 6 vacuum contactor	23 ... 26	B	**3RT19 66-5AB31**	1 unit	1.060		**-**		
		42 ... 48	B	**3RT19 66-5AD31**	1 unit	0.995		**-**		
		110 ... 127	A	**3RT19 66-5AF31**	1 unit	1.000		**-**		
		200 ... 220	C	**3RT19 66-5AM31**	1 unit	0.650		**-**		
		220 ... 240	A	**3RT19 66-5AP31**	1 unit	0.930		**-**		
		240 ... 277	C	**3RT19 66-5AU31**	1 unit	0.833		**-**		
		380 ... 420	B	**3RT19 66-5AV31**	1 unit	0.825		**-**		
		440 ... 480	C	**3RT19 66-5AR31**	1 unit	0.650		**-**		
		500 ... 550	C	**3RT19 66-5AS31**	1 unit	0.650		**-**		
		575 ... 600	C	**3RT19 66-5AT31**	1 unit	0.650		**-**		
S12	3RT10 7, 3RT14 7, 3RT12 7 vacuum contactor	23 ... 26	B	**3RT19 75-5AB31**	1 unit	1.420	B	**3RT19 75-5AB32**	1 unit	1.420
		42 ... 48	B	**3RT19 75-5AD31**	1 unit	1.250	B	**3RT19 75-5AD32**	1 unit	1.250
		110 ... 127	▶	**3RT19 75-5AF31**	1 unit	1.310	B	**3RT19 75-5AF32**	1 unit	1.310
		200 ... 220	C	**3RT19 75-5AM31**	1 unit	1.100	B	**3RT19 75-5AM32**	1 unit	1.100
		220 ... 240	▶	**3RT19 75-5AP31**	1 unit	1.200	B	**3RT19 75-5AP32**	1 unit	1.200
		240 ... 277	B	**3RT19 75-5AU31**	1 unit	1.300	B	**3RT19 75-5AU32**	1 unit	1.300
		380 ... 420	B	**3RT19 75-5AV31**	1 unit	1.210	B	**3RT19 75-5AV32**	1 unit	1.210
		440 ... 480	B	**3RT19 75-5AR31**	1 unit	1.260	B	**3RT19 75-5AR32**	1 unit	1.260
		500 ... 550	C	**3RT19 75-5AS31**	1 unit	1.200	B	**3RT19 75-5AS32**	1 unit	1.200
		575 ... 600	C	**3RT19 75-5AT31**	1 unit	1.130	B	**3RT19 75-5AT32**	1 unit	1.130

*** This quantity or a multiple thereof can be ordered.**

Withdrawable coils

3RT19 55-5N...

For contactor		Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$	DT	Screw terminal	PS*	Weight per PU approx.	DT	Cage Clamp terminal	PS*	Weight per PU approx.
Size	Type	AC/DC V		Order No.				Order No.		
Solid-state operating mechanism · for PLC output DC 24 V										
S6	3RT10 5, 3RT14 5	21 ... 27.3 96 ... 127 200 ... 277	C B B	**3RT19 55-5NB31** **3RT19 55-5NF31** **3RT19 55-5NP31**	1 unit 1 unit 1 unit	0.654 0.567 0.567	B B B	**3RT19 55-5NB32** **3RT19 55-5NF32** **3RT19 55-5NP32**	1 unit 1 unit 1 unit	0.654 0.567 0.567
S10	3RT10 6, 3RT14 6	21 ... 27.3 96 ... 127 200 ... 277	B B A	**3RT19 65-5NB31** **3RT19 65-5NF31** **3RT19 65-5NP31**	1 unit 1 unit 1 unit	0.808 0.926 0.813	B B B	**3RT19 65-5NB32** **3RT19 65-5NF32** **3RT19 65-5NP32**	1 unit 1 unit 1 unit	0.808 0.926 0.813
	3RT12 6 vacuum contactors	21 ... 27.3 96 ... 127 200 ... 277	B B C	**3RT19 66-5NB31** **3RT19 66-5NF31** **3RT19 66-5NP31**	1 unit 1 unit 1 unit	0.650 0.650 0.810		- - -		
S12	3RT10 7, 3RT14 7, 3RT12 7 vacuum contactors	21 ... 27.3 96 ... 127 200 ... 277	B A A	**3RT19 75-5NB31** **3RT19 75-5NF31** **3RT19 75-5NP31**	1 unit 1 unit 1 unit	1.350 0.951 1.060	B B B	**3RT19 75-5NB32** **3RT19 75-5NF32** **3RT19 75-5NP32**	1 unit 1 unit 1 unit	1.350 0.951 1.060
Solid-state operating mechanism · for DC 24 V PLC output/PLC relay output, with remaining lifetime indication (Withdrawable coil with lateral electronics module)										
S6	3RT10 5, 3RT14 5	96 ... 127 200 ... 277	B B	**3RT19 55-5PF31** **3RT19 55-5PP31**	1 unit 1 unit	0.570 0.955		- -		
S10	3RT10 6, 3RT14 6	96 ... 127 200 ... 277	C B	**3RT19 65-5PF31** **3RT19 65-5PP31**	1 unit 1 unit	0.650 1.170		- -		
S12	3RT10 7, 3RT14 7	96 ... 127 200 ... 277	C B	**3RT19 75-5PF31** **3RT19 75-5PP31**	1 unit 1 unit	1.100 1.420		- -		
Solid-state operating mechanism · with AS-Interface and remaining lifetime indication (Withdrawable coil with lateral electronics module)										
S6	3RT10 5, 3RT14 5	96 ... 127 200 ... 277	C A	**3RT19 55-5QF31** **3RT19 55-5QP31**	1 unit 1 unit	0.961 0.946		- -		
S10	3RT10 6, 3RT14 6	96 ... 127 200 ... 277	B ►	**3RT19 65-5QF31** **3RT19 65-5QP31**	1 unit 1 unit	0.650 0.650		- -		
S12	3RT10 7, 3RT14 7	96 ... 127 200 ... 277	B B	**3RT19 75-5QF31** **3RT19 75-5QP31**	1 unit 1 unit	1.100 1.460		- -		

*** This quantity or a multiple thereof can be ordered.**

2

Spare parts for SIRIUS 3RT contactors

For contactor Size	Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
Arc chutes						
S2	3RT10 3 .	Arc chute, 3-pole	C	**3RT19 36-7A**	1 unit	0.112
S3	3RT10 4 ., 3RT14 46		C	**3RT19 46-7A**	1 unit	0.299
S6	3RT10 54		B	**3RT19 54-7A**	1 unit	0.760
	3RT10 55		B	**3RT19 55-7A**	1 unit	0.760
	3RT10 56		B	**3RT19 56-7A**	1 unit	0.755
S10	3RT10 64		B	**3RT19 64-7A**	1 unit	1.350
	3RT10 65		B	**3RT19 65-7A**	1 unit	1.350
	3RT10 66		B	**3RT19 66-7A**	1 unit	1.350
S12	3RT10 75		B	**3RT19 75-7A**	1 unit	1.640
	3RT10 76		►	**3RT19 76-7A**	1 unit	1.650
S6	3RT14 56		B	**3RT19 56-7B**	1 unit	0.720
S10	3RT14 66		B	**3RT19 66-7B**	1 unit	1.350
S12	3RT14 76		B	**3RT19 76-7B**	1 unit	1.400
Contacts with fixing parts						
• For contactors with 3 main contacts						
S2	3RT10 34	Main contacts (3 NO contacts) for utilization category AC-3 (1 set = 3 movable and 6 fixed switching elements with fixing parts)	►	**3RT19 34-6A**	1 set	0.041
	3RT10 35		►	**3RT19 35-6A**	1 set	0.044
	3RT10 36		►	**3RT19 36-6A**	1 set	0.046
S3	3RT10 44		►	**3RT19 44-6A**	1 set	0.098
	3RT10 45		►	**3RT19 45-6A**	1 set	0.111
	3RT10 46		►	**3RT19 46-6A**	1 set	0.116
S6	3RT10 54		►	**3RT19 54-6A**	1 set	0.239
	3RT10 55		►	**3RT19 55-6A**	1 set	0.281
	3RT10 56		►	**3RT19 56-6A**	1 set	0.295
S10	3RT10 64		►	**3RT19 64-6A**	1 set	0.443
	3RT10 65		►	**3RT19 65-6A**	1 set	0.513
	3RT10 66		►	**3RT19 66-6A**	1 set	0.555
S12	3RT10 75		►	**3RT19 75-6A**	1 set	0.766
	3RT10 76		A	**3RT19 76-6A**	1 set	0.915
S3	3RT14 46	Main contacts (3 NO contacts) for utilization category AC-1 (1 set = 3 movable and 6 fixed switching elements with fixing parts)	B	**3RT19 46-6D**	1 set	0.113
S6	3RT14 56		B	**3RT19 56-6D**	1 set	0.285
S10	3RT14 66		B	**3RT19 66-6D**	1 set	0.543
S12	3RT14 76		►	**3RT19 76-6D**	1 set	0.899
• For 3RT12 vacuum contactors						
S10	3RT12 64	3 vacuum interrupters with fixing parts	B	**3RT19 64-6V**	1 set	1.530
	3RT12 65		B	**3RT19 65-6V**	1 set	1.470
	3RT12 66		B	**3RT19 66-6V**	1 set	1.520
S12	3RT12 75		B	**3RT19 75-6V**	1 set	1.770
	3RT12 76		B	**3RT19 76-6V**	1 set	1.770
• For contactors with 4 main contacts						
S2	3RT13 26	Main contacts (4 NO contacts) for utilization category AC-1 (1 set = 4 movable and 8 fixed switching elements with fixing parts)	B	**3RT19 36-6E**	1 set	0.058
S3	3RT13 44		C	**3RT19 44-6E**	1 set	0.149
	3RT13 46		C	**3RT19 46-6E**	1 set	0.150

*** This quantity or a multiple thereof can be ordered.**

Selection and ordering data

For contactor		Version	Rated control supply voltage U_s		DT	Order No.	PS*	Weight per PU approx.
Size	Type		AC V	DC V				kg
Surge suppressors [1] · Varistors								
 3TX7 402-3.								
2	3TC44[2]	**Varistors** [3] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	▶	**3TX7 402-3G**	1 unit	0.015
			48 ... 127	70 ... 150	▶	**3TX7 402-3H**	1 unit	0.015
			127 ... 240	150 ... 250	▶	**3TX7 402-3J**	1 unit	0.016
			240 ... 400	-	C	**3TX7 402-3K**	1 unit	0.024
			400 ... 600	-	C	**3TX7 402-3L**	1 unit	0.024
 3TX7 462-3.								
4 and 6	3TB50 and 3TC56	**Varistors** [3] for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	▶	**3TX7 462-3G**	1 unit	0.014
			48 ... 127	70 ... 150	▶	**3TX7 462-3H**	1 unit	0.014
			127 ... 240	150 ... 250	▶	**3TX7 462-3J**	1 unit	0.014
			240 ... 400	-	▶	**3TX7 462-3K**	1 unit	0.016
			400 ... 600	-	▶	**3TX7 462-3L**	1 unit	0.016
8 and 12	3TC52 and 3TC56	**Varistors** for sticking onto the contactor base or for mounting separately	24 ... 48	-	▶	**3TX7 462-3G**	1 unit	0.014
			48 ... 127	-	▶	**3TX7 462-3H**	1 unit	0.014
			127 ... 240	-	▶	**3TX7 462-3J**	1 unit	0.014
			240 ... 400	-	▶	**3TX7 462-3K**	1 unit	0.016
			400 ... 600	-	▶	**3TX7 462-3L**	1 unit	0.016
 3TX7 522-3., 3TX7 572-3.								
8 ... 12	3TB52 ... 3TB56, 3TC52 and 3TC56	**Varistors** [3] for separate screw connection or snapping onto 35 mm standard mounting rail	-	24 ... 70	A	**3TX7 522-3G**	1 unit	0.083
			-	70 ... 150	B	**3TX7 522-3H**	1 unit	0.082
			-	150 ... 250	A	**3TX7 522-3J**	1 unit	0.084
14	3TF68 and 3TF69	**Varistors** [3] for DC economy circuit; for snapping onto the side of auxiliary switches	-	24 ... 48	B	**3TX7 572-3G**	1 unit	0.075
			-	48 ... 127	▶	**3TX7 572-3H**	1 unit	0.085
			-	127 ... 250	A	**3TX7 572-3J**	1 unit	0.081
Surge suppressors · RC elements								
 3TX7 462-3., 3TX7 522-3.								
4	3TC48	**RC element** for snapping onto the side of auxiliary switches or onto a 35 mm standard mounting rail	24 ... 48	-	A	**3TX7 462-3R**	1 unit	0.084
			-	24 ... 70	A	**3TX7 522-3R**	1 unit	0.080
			48 ... 127	-	▶	**3TX7 462-3S**	1 unit	0.079
			-	70 ... 150	▶	**3TX7 522-3S**	1 unit	0.088
			127 ... 240	-	▶	**3TX7 462-3T**	1 unit	0.080
			-	150 ... 250	▶	**3TX7 522-3T**	1 unit	0.085
			240 ... 400	-	▶	**3TX7 462-3U**	1 unit	0.087
			400 ... 600	-	C	**3TX7 462-3V**	1 unit	0.086
6 ... 12	3TB50, 3TC52 and 3TC56	**RC element** for snapping onto the side of auxiliary switches or onto a 35 mm standard mounting rail	24 ... 48	-	A	**3TX7 522-3R**	1 unit	0.080
			48 ... 127	-	▶	**3TX7 522-3S**	1 unit	0.088
			127 ... 240	-	▶	**3TX7 522-3T**	1 unit	0.085
			240 ... 400	-	▶	**3TX7 522-3U**	1 unit	0.085
			400 ... 600	-	A	**3TX7 522-3V**	1 unit	0.086

1) The surge suppressor is integrated as standard in the following contactors: 3TF68 and 3TF69 (AC operation): fitted with varistor.

2) The connection piece for mounting the surge suppressor must be bent slightly.

3) Includes the peak value of the ripple voltage on the DC side.

*** This quantity or a multiple thereof can be ordered.**

2

Accessories for 3TB, 3TC, 3TF contactors

	For contactor		Version		DT	Order No.	PS*	Weight per PU approx.
	Size	Type						kg
Surge suppressors[1] · Diodes								
 3TX7 462-3.	**6 ... 12**	3TB52 ... 3TB56, 3TC48 ... 3TC56	**Diode assemblies** (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	Rated control supply voltage U_s DC 24 ... 250 V	►	**3TX7 462-3D**	1 unit	0.014
Solid-state compatible auxiliary switch block with screw terminals								
 5TY7 561-1.	**14 2 and 4**	3TF68 and 3TF69, 3TC44 ... 3TC48	For mounting onto the side of contactors. For use in dusty atmosphere and solid-state circuits with rated operating currents I_e/AC-14 and DC-13 from 1 mA to 300 mA at 3 V to 60 V. With 1 changeover contact. 2nd auxiliary switch block, left or right (replacement for 3TY6 561-1U, 3TY6 561-1V)		B	**3TY7 561-1UA00**	1 unit	0.053
Interfaces for control by PLC								
	14	3TF68 and 3TF69	Operating range: DC 17 V to 30 V. Power consumption: 0.5 W at DC 24 V Fitted with varistor. For technical specifications see Page 2/179. For snapping onto the side of auxiliary switch blocks, with surge suppression		►	**3TX7 090-0D**	1 unit	0.076
Terminal covers for protection against inadvertent contact with the exposed busbar connections (DIN VDE 0106 Part 100)								
 3TX7	**14**	3TF68 3TF69	For screwing onto free screw end on middle connecting bar. 2 units required per contactor (1 set = 2 units)		B B	**3TX7 686-0A** **3TX7 696-0A**	1 set 1 set	0.410 0.402
 3TX6 526-3B	**6**	3TB50, 3TC48	Can be screwed on free screw end. Covers one rail connection (1 set = 6 units).	M 6	B	**3TX6 506-3B**	1 set	0.075
	8 and SIRIUS S6	3TB52 3RT1.5		M 8	B	**3TX6 526-3B**	1 set	0.140
	10 and 14 and SIRIUS S10, S12	3TB54 ... 3TB56, 3TC52, 3TC56 3RT1.6, 3RT1.7		M 10	B	**3TX6 546-3B**	1 set	0.249
Links for paralleling (star jumper) - 3-pole, without connection terminal [2]								
	14	3TF68			B	**3TX7 680-0D**	1 unit	0.256
	• Cover plate for link for paralleling							
	14	3TF68	A cover plate must be used in order to protect against inadvertent contact with free rail connections (DIN VDE 0106 Part 100).		C	**3TX7 680-0E**	1 unit	0.080
Box terminals for laminated copper bars								
	• Without auxiliary conductor connection (1 set = 3 units)							
	14	3TF68	With single covers for protection against inadvertent contact (DIN VDE 0106 Part 100)		B	**3TX7 570-1E**	1 set	0.675
	• With auxiliary conductor connection (1 set = 3 units)							
	14	3TF68	With single covers for protection against inadvertent contact (DIN VDE 0106 Part 100)		►	**3TX7 570-1F**	1 set	0.698
	14	3TF69	Conductor cross-sections for auxiliary conductors: singe-wire 2 x (0.75 ... 2.5) mm^2 finely stranded with end sleeve 2 x (0.5 ... 2.5) mm^2 single-wire or stranded 2 x (18 ... 12) AWG tightening torque 0.8 Nm ... 1.4 Nm (7 ... 12 lb.in)		B	**3TX7 690-1F**	1 set	1.930

1) Not for DC economy circuit.

2) The link for paralleling can be reduced by one pole.

*** This quantity or a multiple thereof can be ordered.**

Selection and ordering data

Auxiliary switch blocks


3TY6 561-1A

For contactor Size	Type	Number and design of the contacts NO	NC			DT	Order No.	PS*	Weight per PU approx. kg
6	3TB50	1	1	-	Auxiliary switch block, left or right (replacement for 3TY6 501-1A, -1B)	B	**3TY6 501-1AA00**	1 unit	0.053
		1	-	1	Auxiliary switch block, right	B	**3TY6 501-1E**	1 unit	0.054
8 ... 12	3TB52 ... 3TB56	1	1	-	Auxiliary switch block, left	B	**3TY6 561-1A**	1 unit	0.074
		1	1	-	Auxiliary switch block, right	B	**3TY6 561-1B**	1 unit	0.075
		1	-	1	Auxiliary switch block, right	C	**3TY6 561-1E**	1 unit	0.076

Magnetic coils


3TY6 5.

For contactor Size	Type	Version	DT	Order No.	PS*	Weight per PU approx. kg
DC operation						
6	3TB50		C	**3TY6 503-0B..**	1 unit	0.230
8	3TB52		C	**3TY6 523-0B..**	1 unit	0.400
10	3TB54		C	**3TY6 543-0B..**	1 unit	0.400
12	3TB56		C	**3TY6 563-0B..**	1 unit	0.560

Arc chutes


3TY6 502-0A

6	3TB50	1 arc chute, 3-pole	B	**3TY6 502-0A**	1 unit	0.751
8	3TB52		B	**3TY6 522-0A**	1 unit	1.170
10	3TB54		B	**3TY6 542-0A**	1 unit	1.450
12	3TB56		B	**3TY6 562-0A**	1 unit	1.580

Contacts with fixing parts


3TY6 520-0A

In order to ensure reliable operation of the contactors, only **Siemens original replacement interrupters** should be used.

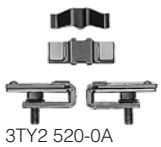
6	3TB50	3 moving and 6 fixed contacts	B	**3TY6 500-0A**	1 set	0.283
8	3TB52		B	**3TY6 520-0A**	1 set	0.359
10	3TB54		B	**3TY6 540-0A**	1 set	0.529
12	3TB56		B	**3TY6 560-0A**	1 set	0.756

For rated control supply voltages for magnetic coils, see Page 2/204.

2

Spare parts for 3TC4 and 3TC5 contactors

Selection and ordering data

For contactor		Auxiliary contacts		Version	DT	Order No.	PS*	Weight per PU approx.
Size	Type	S	NC					kg
Auxiliary switch blocks								
 3TY6 561-1A								
2 and 4	3TB50, 3TC48	1	1	Auxiliary switch block, left or right (replacement for 3TY6 501-1A/-1B)	B	**3TY6 501-1AA00**	1 unit	0.053
2	3TC48	1	1	2nd auxiliary switch block, left[1)]	B	**3TY6 501-1K**	1 unit	0.055
				2nd auxiliary switch block, right[1)]	B	**3TY6 501-1L**	1 unit	0.051
8 and 12	3TC52, 3TC56	1	1	Auxiliary switch block, left	B	**3TY6 561-1A**	1 unit	0.074
				Auxiliary switch block, right	B	**3TY6 561-1B**	1 unit	0.075
				2nd auxiliary switch block, left[1)]	B	**3TY6 561-1K**	1 unit	0.077
				2nd auxiliary switch block, right[1)]	B	**3TY6 561-1L**	1 unit	0.078
Contacts with fixing parts								
 3TY2 520-0A								
2	3TC44			In order to ensure reliable operation of the contactors, only **Siemens original replacement interrupters** should be used. (1 set = 2 moving and 2 fixed switching elements)	B	**3TY2 440-0A**	1 set	0.065
4	3TC48				B	**3TY2 480-0A**	1 set	0.100
8	3TC52				B	**3TY2 520-0A**	1 set	0.237
12	3TC56				B	**3TY2 560-0A**	1 set	0.424
Arc chutes								
 3TC2 48								
2	3TC44			1 arc chute, 2-pole	B	**3TY2 442-0A**	1 unit	0.166
4	3TC48				B	**3TY2 482-0A**	1 unit	0.503
8	3TC52				B	**3TY2 522-0A**	1 unit	1.200
12	3TC56				C	**3TY2 562-0A**	1 unit	2.040
Magnetic coils								
• DC operation								
2	3TC44				D	**3TY6 443-0B..**	1 unit	0.300
4	3TC48				C	**3TY6 483-0B..**	1 unit	1.000
8	3TC52				C	**3TY6 523-0B..**	1 unit	2.300
12	3TC56				C	**3TY6 563-0B..**	1 unit	4.800
• AC operation								
2	3TC44				C	**3TY7 403-0A..**	1 unit	0.100
4	3TC48				C	**3TY6 483-0A..**	1 unit	0.200
8	3TC52				C	**3TY6 523-0A..**	1 unit	0.350
12	3TC56				C	**3TY6 566-0A..**	1 unit	0.650

For rated control supply voltages for coils, see Page 2/204.

1) Can only be mounted on AC-operated contactors.

*** This quantity or a multiple thereof can be ordered.**

Selection and ordering data

Device type	For contactor	Version	Rated control supply voltage U_s	DT	Order No.	PS*	Weight per PU approx.
	Type		V				kg
Varistor		for sticking onto the contactor base (PS* = 10 units)	AC/DC 24 V AC/DC 110 V	B C	**3TX2 746-2F** **3TX2 746-2G**	1 unit 1 unit	0.011 0.015
Contacts with fixing parts	3TC7	Main contacts (1 set) for 3TC78: 2 units required per contactor		B	**3TY2 740-0E**	1 set	0.356
Auxiliary switch blocks	3TC74	4 NO + 4 NC		B	**3TY2 741-2J**	1 unit	0.268
	3TC78	Auxiliary contact, left, with 2 NO + 2 NC		C	**3TY2 781-2C**	1 unit	0.186
		Auxiliary contact, right, with 2 NO + 2 NC		C	**3TY2 781-2D**	1 unit	0.184
Arc chutes	3TC7	for 3TC78: 2 units required per contactor		B	**3TY2 742-0C**	1 unit	3.910

*** This quantity or a multiple thereof can be ordered.**

2

Spare parts for 3TF6 contactors

Selection and ordering data

For contactor		Number and design of the contacts NO	NC			DT	Order No.	PS*	Weight per PU approx.
Size	Type								kg
Auxiliary switch blocks									
• With screw terminals									
14	3TF68 and 3TF69	1	1	-	1st auxiliary switch block, left or right, replacement for: 3TY7 561-1A, -1B.	B	**3TY7 561-1AA00**	1 unit	0.048
		1	-	1	Auxiliary switch block, left or right	B	**3TY7 561-1EA00**	1 unit	0.048
		1	1	-	2nd auxiliary switch block, left or right, replacement for: 3TY7 561-1K, -1L.	B	**3TY7 561-1KA00**	1 unit	0.050
• For coil reconnection with DC economy circuit, with screw terminals									
14	3TF68 and 3TF69	-	-	1	Auxiliary switch block	C	**3TY7 681-1G**	1 unit	0.050


3TY7 561-1.

For contactor		Version	DT	Order No.	PS*	Weight per PU approx.
Size	Type					kg
Magnetic coils						
• AC operation						
14	3TF68 3TF69	The coils are fitted as standard with varistors against overvoltage. The coil is supplied with switch-on electronics.	C D	**3TY7 683-0C..** **3TY7 693-0C..**	1 unit 1 unit	0.650 0.650
• DC operation · DC economy circuit						
14	3TF68 3TF69	Reversing contactors are required for size 14 contactors: Contactor type 3TF68 and 3TF69 Reversing contactor 3TC44 (70 mm wide, 85 mm high) The coils are supplied without reversing contactor.	D C	**3TY7 683-0D..** **3TY7 693-0D..**	1 unit 1 unit	0.560 0.560


3TY7.

				Order No. per set		
Vacuum interrupters						
In order to ensure reliable operation of the contactors, only Siemens original replacement interrupters should be used.						
14	3TF68 3TF69	3 vacuum interrupters with mounting parts	B B	**3TY7 680-0B** **3TY7 690-0B**	1 set 1 set	3.490 3.630

Version		DT	Order No.	PS*	Weight per PU approx.
	AC V				kg
Reversing contactors (3TC44)					
Complete with resistor and 1 m connecting lead and connector for 3TF68..-.Q, 3TF69..-.Q	110 ... 120	C	**3TY7 684-0QG7**	1 unit	1.200
	220 ... 240	C	**3TY7 684-0QL7**	1 unit	0.963
	380 ... 420	X	**3TY7 684-0QV7**	1 unit	1.200
Magnetic coils for main contactor, with rectifier bridge					
For 3TF68..-.Q	110 ... 120	C	**3TY7 683-0QG7**	1 unit	2.700
	220 ... 240	C	**3TY7 683-0QL7**	1 unit	1.500
	380 ... 420	C	**3TY7 683-0QV7**	1 unit	2.700
For 3TF69..-.Q	110 ... 120	C	**3TY7 693-0QG7**	1 unit	0.650
	220 ... 240	C	**3TY7 693-0QL7**	1 unit	1.450
	380 ... 420	C	**3TY7 693-0QV7**	1 unit	1.430

For rated control supply voltages for coils, see Page 2/204.
For solid-state compatible auxiliary switch block, see Page 2/198.

*** This quantity or a multiple thereof can be ordered.**

Selection and ordering data

For contactor Type	Version		DT	Order No.	PS*	Weight per PU approx. kg
Surge suppressors · RC elements						
3TK10 ... 3TK13	AC 24 ... 48 V		B	**3TK19 30-0A**	1 unit	0.033
	AC/DC 110 ... 415 V		►	**3TK19 30-0B**	1 unit	0.040
3TK14 ... 3TK17	AC 48 ... 110 V		B	**3TK19 34-0C**	1 unit	0.042
	AC 220 ... 600 V		B	**3TK19 34-0D**	1 unit	0.044
Terminal shrouds						
3TK10, 3TK11	For mounting onto contactors		►	**3TK19 40-0A**	2 units	0.148
3TK12, 3TK13			B	**3TK19 42-0A**	2 units	0.157
3TK14, 3TK15			B	**3TK19 44-0A**	2 units	0.202
3TK17			B	**3TK19 46-0A**	2 units	0.203
Auxiliary switch blocks						
3TK1	1st auxiliary switch block, left or right	1 NO + 1 NC	B	**3TK19 10-3A**	1 unit	0.055
	2nd auxiliary switch block, left or right	1 NO + 1 NC	B	**3TK19 10-3B**	1 unit	0.055
Locking devices						
3TK10, 3TK11	For mechanical interlock of 2		►	**3TK19 20-0A**	1 unit	0.144
3TK12, 3TK13	contactors of the same type, auxiliary contacts, 2 NC contacts		B	**3TK19 22-0A**	1 unit	0.143
3TK14, 3TK15, 3TK17	Mechanical interlock, including mounting plate		B	**3TK19 24-0A**	1 unit	6.750
Arc chutes						
3TK10	1 arc chute, 4-pole		D	**3TK19 50-0A**	1 unit	0.055
3TK11			D	**3TK19 51-0A**	1 unit	0.065
3TK12			D	**3TK19 52-0A**	1 unit	1.250
3TK13			D	**3TK19 53-0A**	1 unit	1.380
3TK14			D	**3TK195 4-0A**	1 unit	0.001
3TK15			D	**3TK19 55-0A**	1 unit	3.680
3TK17			D	**3TK19 57-0A**	1 unit	3.780
Magnetic coils						
3TK10, 3TK11			D	**3TK19 70-0A..**	1 unit	0.350
3TK12, 3TK13			D	**3TK19 72-0A..**	1 unit	0.450
3TK14, 3TK15, 3TK17			D	**3TK19 74-0A..**	1 unit	0.950
Contacts with fixing parts						
3TK10	4 moving and 8 fixed contacts		►	**3TK19 60-0A**	1 set	0.254
3TK11			►	**3TK19 61-0A**	1 set	0.254
3TK12			►	**3TK19 62-0A**	1 set	0.573
3TK13			B	**3TK19 63-0A**	1 set	0.582
3TK14			D	**3TK19 64-0A**	1 set	2.350
3TK15			D	**3TK19 65-0A**	1 set	2.350
3TK17			B	**3TK19 67-0A**	1 set	2.310

For rated control supply voltages for coils, see Page 2/204.

*** This quantity or a multiple thereof can be ordered.**

2

Spare parts for 3T contactors

Selection and ordering data

Coil type		3TY7 403-0A.. 3TY6 483-0A.. 3TY6 523-0A.. 3TY6 566-0A..	3TY7 683-0C.. 3TY7 693-0C..	3TK1 970-0A.. 3TK1 972-0A..	3TK1 974-0A..
Rated control supply voltage U_s	Operating voltage at				
Rated control supply voltages (the 10th and 11th position of the order number must be changed)					
AC operation					
Coils for 50 Hz					
50 Hz	60 Hz				
AC 24 V	**AC 29 V**	**B0**	**–**	**B0** [3]	**–**
AC 36 V	**AC 42 V**	**G0**	**–**	**–**	**–**
AC 42 V	**AC 50 V**	**D0**	**–**	**–**	**–**
AC 48 V	**AC 58 V**	**H0**	**–**	**–**	**–**
AC 60 V	**AC 72 V**	**E0**	**–**	**–**	**–**
AC 110 V	**AC 132 V**	**F0**	**–**	**F0** [3]	**F0** [3]
AC 125/127 V	**AC 150/152 V**	**L0**	**–**	**–**	**–**
AC 230/220 V	**AC 277 V**	**P0** [1]	**–**	**P0** [3]	**P0** [3]
AC 240 V	**AC 288 V**	**U0**	**–**	**U0** [3]	**U0** [3]
AC 400/380 V	**AC 480/460 V**	**V0** [1]	**–**	**–**	**–**
AC 415 V	**AC 500 V**	**R0**	**–**	**–**	**–**
AC 500 V	**AC 600 V**	**S0**	**–**	**–**	**–**
Coils for 50/60 Hz					
AC 110 V/ 132 V		**–**	**F7**	**–**	**–**
AC 200 V/ 240 V		**–**	**M7**	**–**	**–**
AC 230 V/ 277 V		**–**	**P7** [2]	**–**	**–**
AC 380 V/ 460 V		**–**	**Q7**	**–**	**–**
AC 500 V/ 600 V		**–**	**S7**	**–**	**–**

Coil type	3TY6 443-0B.. 3TY6 483-0B.. 3TY6 503-0B.. 3TY6 523-0B.. 3TY6 543-0B.. 3TY6 563-0B..	3TY7 683-0D.. 3TY7 693-0D..
Rated control supply voltage U_s		
Rated control supply voltages (the 10th and 11th position of the order number must be changed)		
DC operation		
DC 24 V	**B4**	**B4**
DC 36 V	**V4**	**–**
DC 42 V	**D4**	**–**
DC 48 V	**W4**	**–**
DC 60 V	**E4**	**–**
DC 110 V	**F4**	**F4**
DC 125 V	**G4**	**G4**
DC 220 V	**M4**	**M4**
DC 230 V	**P4**	**P4**

1) Operating range at 220 V or 380 V:
0.85 to 1.15 x U_s;
lower operating range limit according to IEC 60947.

2) Lower operating range limit at 220 V:
0.85 x U_s acc. to IEC 60947.

3) Rated control supply voltages U_s:

	50 Hz	60 Hz
B0:	24 V	–
F0:	110 V	120 V
P0:	220 V to 230 V	240 V (only 3TK1 974)
U0:	230 V to 240	V

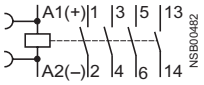
20Circuit diagrams

Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

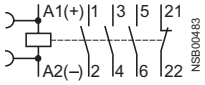
Size S00
Terminal designations according to EN 50012

3RT10 1 contactors

1 NO
Ident no.: 10E

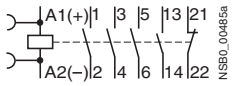


1 NC
01

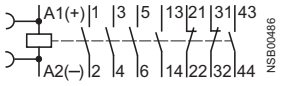


3RT10 1 contactors (with 1 NO)
with 3RH19 11-. H... auxiliary switch block on the front

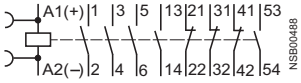
1 NO + 1 NC
Ident no.: 11E



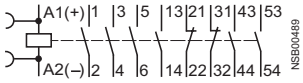
2 NO + 2 NC
22E



2 NO + 3 NC
Ident no.: 23E

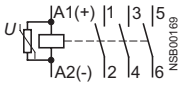


3 NO + 2 NC
32E



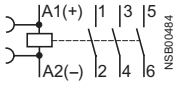
Sizes S0 to S3
Terminal designations according to EN 50012

3RT10 . . - . X . 40-0LA2 contactors
Varistor built-in



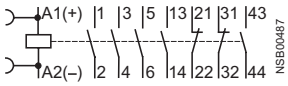
Sizes S0 to S12
Terminal designations according to EN 50012

3RT10 2 ... 3RT10 7, 3RT12, 3RT14 contactors



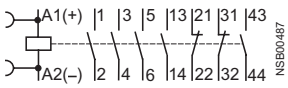
3RT10 2 to 3RT10 7, 3RT14 contactors
with 4-pole 3RH19 21-. HA22 auxiliary switch block on the front

2 NO + 2 NC
Ident no.: 22E



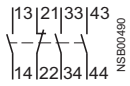
3RT1. 5, 3RT1. 6, 3RT1. 7 contactors (Sizes S6, S10, S12)
with lateral 2-pole 3RH19 21-1DA11 auxiliary switch blocks

2 NO + 2 NC

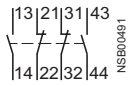


3RH19 21-. HA ../-. XA..,
can be snapped onto the front [1)]

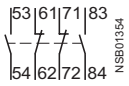
3 NO + 1 NC
Ident no.: 31



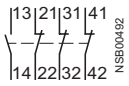
2 NO + 2 NC
22



2 NO + 2 NC
22



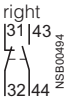
1 NO + 3 NC
13



3RH19 21-. DA11,
3RH19 21-2DE11 first laterally mountable auxiliary switch block (solid-state compatible)

1 NO + 1 NC
left

1 NO + 1 NC
right



3RH19 21-. JA11,
3RH19 21-2JE11 second laterally mountable auxiliary switch block (solid-state compatible)
(only for sizes S3 to S12)

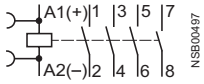
1 NO + 1 NC
left

1 NO + 1 NC
right

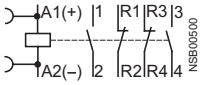
Contactors with 4 main contacts, size S00
Terminal designations acc. to EN 50005

3RT13 and 3RT15 contactors

4 NO



2 NO + 2 NC

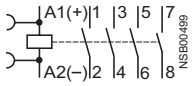


(3RH19 11 auxiliary switch blocks acc. to EN 50005 can be snapped on)

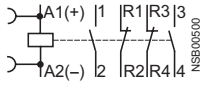
Contactors with 4 main contacts, sizes S0 to S3
Terminal designations acc. to EN 50005

3RT13 and 3RT15 contactors

4 NO



2 NO + 2 NC



(3RH19 21 auxiliary switch blocks acc. to EN 50005 can be snapped on)

Surge suppressors for sizes S00 to S3 (coded plug-in direction; Exception: for 3RT19 16-1T... diode assembly, designation with +/–)

Diode

Diode assembly

Varistor

RC element

Diode with LED

Varistor with LED

1) Not for 3RT12 vacuum contactors.

2

Project planning aids

Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

Accessories for size S00 contactors and contactor relays
Terminal designations acc. to EN 50005

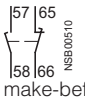
3RH19 11- . F... auxiliary switch blocks and 3RH19 11- . NF.. solid-state compatible auxiliary switch blocks, for snapping onto the front

2 NO
Ident no.: 20

1 NO + 1 NC
11

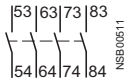
2 NC
02

1 NO + 1 NC
11 U

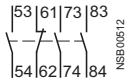


make-before-break

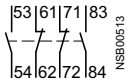
4 NO
Ident no.: 40



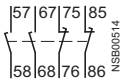
3 NO + 1 NC
31



2 NO + 2 NC
22

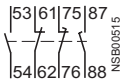


2 NO + 2 NC
22 U



make-before-break

2 NO + 2 NC
11/11 U



1 NO + 1 NC standard
1 NO + 1 NC make-before-break

3RH19 11-1AA and 3RH19 11-1BA.. auxiliary switch blocks,
for snapping onto the front,
cable entry from above or below

1 NO

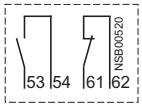
1 NC

3RH19 11-1LA.. and 3RH19 11-1MA.. auxiliary switch blocks,
for snapping onto the front,
cable entry from above or below

2 NO

1 NO + 1 NC

Internal wiring

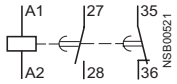


Example: 1 NO + 1 NC,
cable entry from below

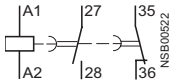
Accessories for size S00 contactors and contactor relays
Terminal designations acc. to DIN 46199 Part 5

3RT19 16-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

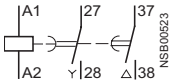
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay



2 NO
Star-delta function

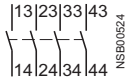


(Integrated varistors not shown)

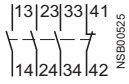
Accessories for size S0 to S12 contactors
Terminal designations acc. to EN 50005

3RH19 21- F... auxiliary switch blocks..., 4-pole, can be snapped onto the front [1])

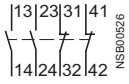
4 NO
Ident no.: 40



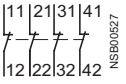
3 NO + 1 NC
31



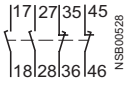
2 NO + 2 NC
22



4 NC
04



2 NO + 2 NC
22 U



make-before-break

3RH19 21- . CA.., 1-pole, can be snapped onto the front [1])

1 NO

1 NC

3RH19 21-1CD..auxiliary switch blocks, 1-pole make-before-break, can be snapped onto the front [1])

1 NO

1 NC

(terminal designations according to EN 50005 or EN 50012)

1) Not for 3RT12 vacuum contactors.

Internal circuit diagrams for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

Accessories for size S0 to S12 contactors
Terminal designations acc. to EN 50005

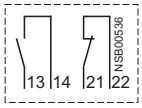
3RH19 21-1LA.. and 3RH19 21-1MA.. auxiliary switch block, 2-pole, can be snapped onto the front [1)]
cable entry from above or below

2 NO

1 NO + 1 NC

2 NC

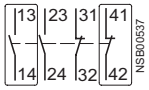
Internal wiring



Example: 1 NO + 1 NC,
cable entry from below

3RH19 21- . FE22 solid-state compatible auxiliary switch block, 4-pole, can be snapped onto the front[1)]

2 NO + 2 NC
Ident no.: 22



3RH19 21- . EA.. first laterally mountable auxiliary switch blocks (right)

2 NO

1 NO + 1 NC

2 NC

3RH19 21- . KA.. second laterally mountable auxiliary switch blocks (left) (only for sizes S3 to S12)

2 NO

1 NO + 1 NC

2 NC

3RH19 21- . EA.. first laterally mountable auxiliary switch blocks (right)

2 NO

1 NO + 1 NC

2 NC

3RH19 21- . KA.. second laterally mountable auxiliary switch blocks (right) (only for sizes S3 to S12)

2 NO

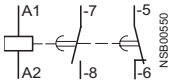
1 NO + 1 NC

2 NC

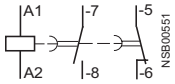
Accessories for size S0 to S12 contactors
Terminal designations acc. to DIN 46199 Part 5

3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

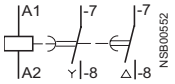
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay

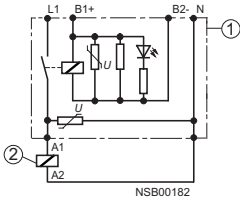


2 NO
Star-delta function



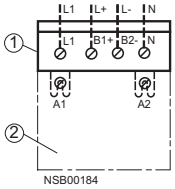
3RH19 24-1GP11 coupling relay with surge suppression

Terminal diagram



① Interface
② Contactor

Connection example



① Interface
② Contactor

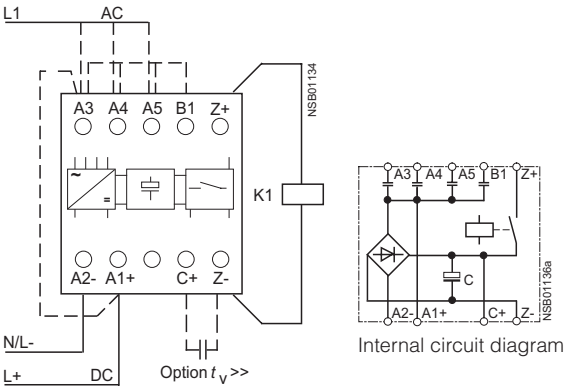
1) Not for 3RT12 vacuum contactors.

2

Project planning aids

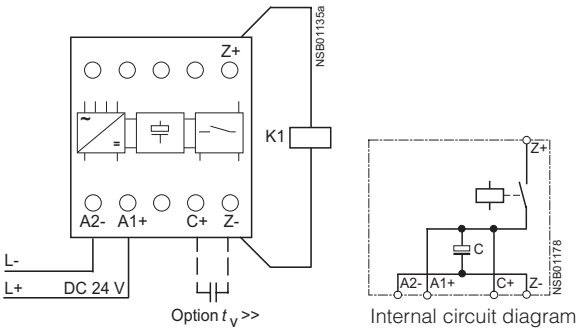
Circuit diagrams for accessories for sizes S00 to S3

3RT19 16-2BK01, UC 110 V
3RT19 16-2BL01, UC 230 V OFF-delay devices



Internal circuit diagram

3RT19 16-2BE01 OFF-delay device, DC 24 V



Internal circuit diagram

3RT19 16-2BK01, UC 110 V

UC 110 V		A1	A3	A4	A5	B1	A2	Z+	Z–	t_V (ms) >
S00	DC	L+	●				L–	3RT1. 1.-.BF4. 3RH1. . .-.BF4.		130
	50 Hz		L1			●	N			130
	60 Hz		L1				N			130
S0	DC	L+	●				L–	3RT1. 2.-.BF4.		100
	50 Hz		L1		●		N			100
	60 Hz		L1		●		N			100

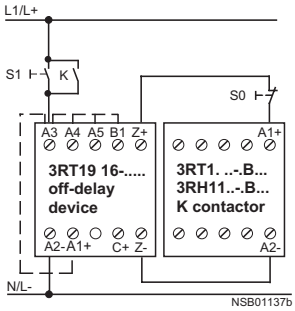
3RT19 16-2BE01, DC 24 V

DC 24 V	A1	A2	Z+	Z–	t_V (ms) >
S00	L+	L–	3RT1. .1BB4. 3RH1. . .-.BB4.		250
S0	L+	L–	3RT1. .2BB4.		150
S2	L+	L–	3RT1. .3BB4.		90
S3	L+	L–	3RT1. .4BB4.		70

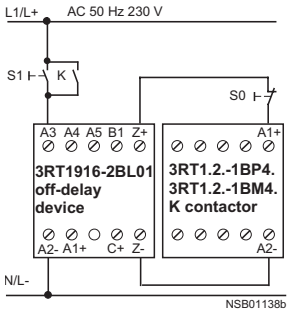
3RT19 16-2BL01, UC 230 V

UC 230 V		A1	A3	A4	A5	B1	A2	Z+	Z–	t_V (ms) >
S00	DC	L+	●				L–	3RT1 . 1.-.BM4. 3RT1. 1.-.BP4. 3RH1. . .-.BM4. 3RH1. . .-.BP4.		600
	50 Hz			L1			N			600
	60 Hz				L1	●	N			600
S0	DC	L+	●				L–	3RT1 . 2.-.BM4. 3RT1. 2.-.BP4.		400
	50 Hz		L1				N			400
	60 Hz			L1		●	N			400

Operation <u>after</u> OFF-delay
(contactor only switches off with delay in case of voltage failure)

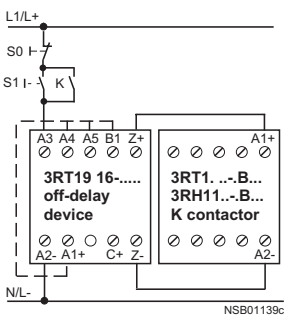


Block diagram

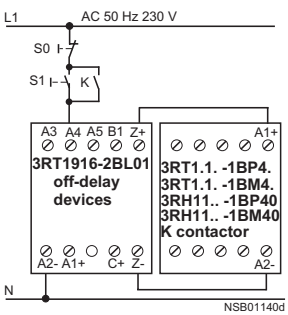


Typical circuit diagram:
Size S0 contactor,
DC operation,
connected to AC 50 Hz 230 V

Operation <u>before</u> OFF-delay
(contactor always switches off with delay)



Block diagram



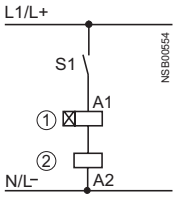
Typical circuit diagram:
Size S00 contactor,
DC operation,
connected to AC 50 Hz 230 V

Circuit diagrams for accessories for sizes S00 to S3

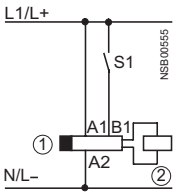
Accessories for size S00 to S3 contactors and contactor relays

Solid-state time-delay blocks
(note planning aids on Page 2/174!)

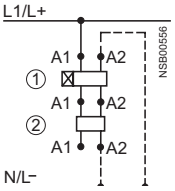
3RT19 16-2C...
ON-delay
Size S00



3RT19 16-2D...
OFF-delay (with auxiliary voltage)
Size S00

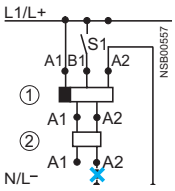


3RT19 26-2C...
ON-delay
Sizes S0 to S3



A2 can be connected to N (L–) via either the contactor or the time relay.
- - - optionally connected

3RT19 26-2D...
OFF-delay (with auxiliary voltage)
Sizes S0 to S3

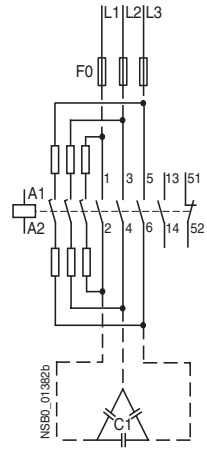


A2 must only be connected with N(L–) from the time relay.
x do not connect

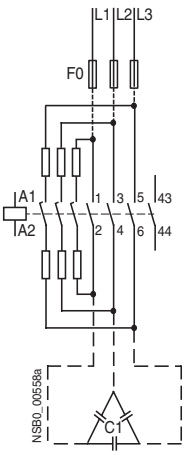
① Time-delay block
② Contactor

3RT16 capacitor contactors

Size S00



Sizes S0 and S3

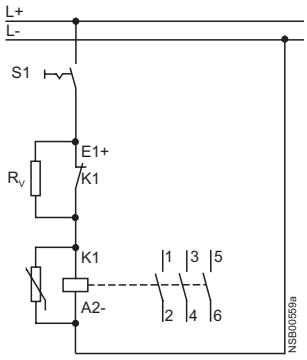


Internal circuit diagrams for accessories for sizes S00 to S3

Contactors with extended operating range 0.7 to 1.25 × U_s

Size S00
Terminal designations according to EN 50012

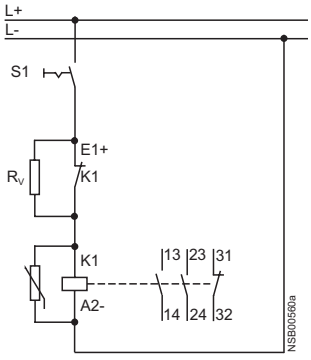
3RT10 17-2K.42-0LA0 contactors



Series resistor R_V
plugged on,
NC contact prewired.

Terminal designations according to EN 50011

3RH11 22-2K.40-0LA0 contactor relays



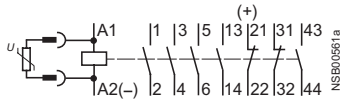
2 NO + 1 NC unassigned

Series resistor R_V
plugged on,
NC contact prewired.

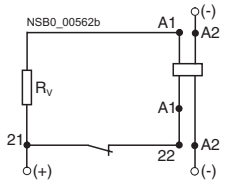
Sizes S00 to S3
Terminal designations according to EN 50012

3RT10 2.-, 3RT10 3.-,
3RT10 4.-3K.44-0LA0 contactors
with front 4-pole 3RH19 21-1HA22 auxiliary switch block

2 NO + 2 NC
Ident no.: 22



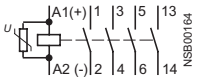
Circuit diagram of the series resistor wiring



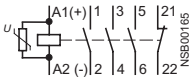
The series resistor is supplied separately packed. The 21/22 NC contact is necessary to wire the series resistor.

3RT10 17-2K.41/2K.42 contactor
Varistor integrated
Size S00

1 NO
Ident no.: 10E

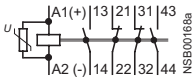


1 NC
01E



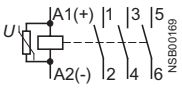
3RH11 22-2K.40 contactor relay
Varistor integrated
Size S00

2 NO + 2 NC
22E



3RT10 25-3K.40 contactor
Varistor integrated
Size S0

(two single-pole auxiliary switch blocks can be snapped on)



2

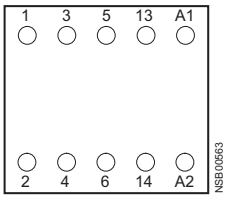
Project planning aids

Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

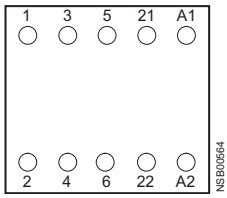
Size S00
Terminal designations according to EN 50012

3RT10 1 contactors, 3RT10 1 coupling relays
3RT10 17-2K.4. contactors with extended operating range

1 NO
Ident no.: 10E

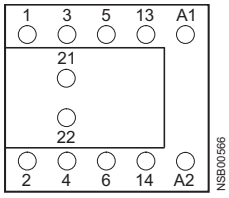


1 NC
01

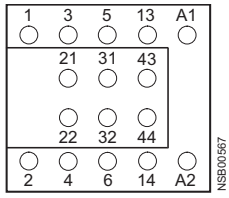


3RT10 1 contactors (with 1 NO contact)
with snapped onto the front
3RH19 11-. H… auxiliary switch blocks

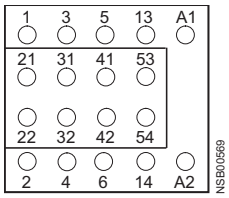
1 NO + 1 NC
Ident no.: no.: 11E



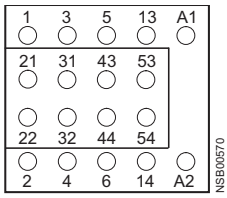
2 NO + 1 NC
22E



2 NO + 3 NC
Ident no.: no.: 23E

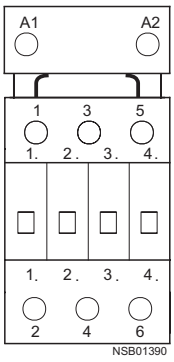


3 NO + 2 NC
32E



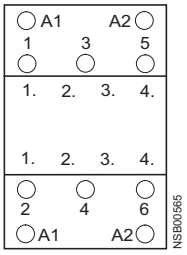
Sizes S0 to S3
Terminal designations according to EN 50012

3RT10 . . - . X . 40-0LA2 contactors
with contactor control unit



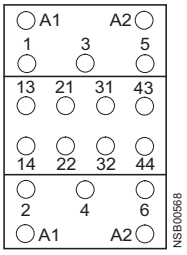
Sizes S0 to S12
Terminal designations according to EN 50012

3RT10 2, 3RT 10 3,
3RT10 4, 3RT14 46 contactors,
3RT10 2 coupling relays,
3RT10 25-3K.40 contactors with
extended operating range



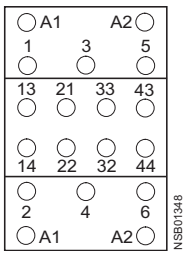
3RT10 2, 3RT10 3, 3RT10 4
contactors
with 4-pole 3RH19 21-. HA22 auxiliary switch block snapped onto the front

2 NO + 2 NC
Ident no.: 22 E



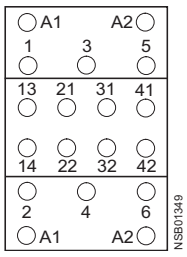
3RT10 2, 3RT10 3, 3RT10 4
contactors
with 4-pole 3RH19 21-. HA31 auxiliary switch block snapped onto the front

3 NO + 1 NC
Ident no.: 31 E



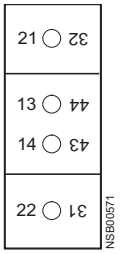
3RT10 2, 3RT10 3, 3RT10 4
contactors
with 4-pole 3RH19 21-. HA13 auxiliary switch block snapped onto the front

1 NO + 3 NC
13 E

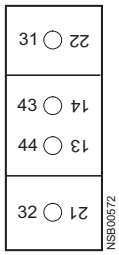


3RH19 21- . DA11 [1]
can be mounted on the left or right

1 NO + 1 NC
left

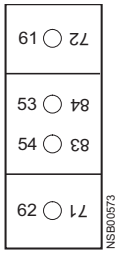


right

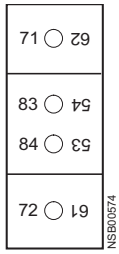


3RH19 21- . JA11 [1]
can be mounted on the left or right
(only for sizes S3 to S12)

1 NO + 1 NC
left



right



1) Note location identifier. Can only be used if no 4-pole auxiliary switch block is snapped onto the front.

Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

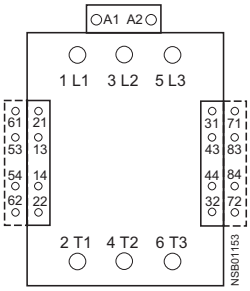
Sizes S6 to S12

Contactors 3RT1 .5, 3RT1 .6, 3RT1 .7

- with conventional operating mechanism (3RT1. ..-.**A**...)

with laterally mountable 3RH19 21-1DA11 auxiliary switch blocks (for 2 NO + 2 NC, incl. in contactor)
3RH19 21-1JA11
(expandable to 4 NO + 4 NC)

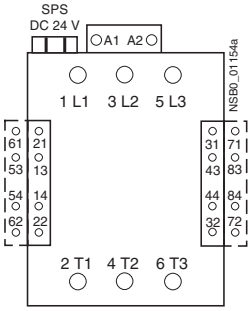
2 NO + 2 NC or 4 NO + 4 NC



- with solid-state operating mechanism (3RT1. ..-.**N**...)

with laterally mountable 3RH19 21-1DA11 auxiliary switch blocks (for 2 NO + 2 NC, incl. in contactor)
3RH19 21-1JA11
(expandable to 4 NO + 4 NC)

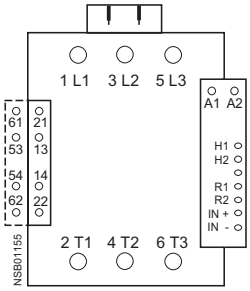
2 NO + 2 NC or 4 NO + 4 NC



- with solid-state operating mechanism (3RT1. ..-.**P**...)

with laterally mountable 3RH19 21-1DA11 auxiliary switch blocks (for 1 NO + 1 NC, incl. in contactor)
3RH19 21-1JA11
(expandable to 2 NO + 2 NC)

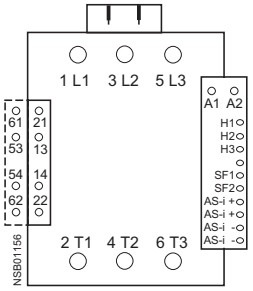
1 NO + 1 NC or 2 NO + 2 NC



- with solid-state operating mechanism (3RT1. ..-.**Q**...)

with laterally mountable 3RH19 21-1DA11 auxiliary switch blocks (for 1 NO + 1 NC, incl. in contactor)
3RH19 21-1JA11
(expandable to 2 NO + 2 NC)

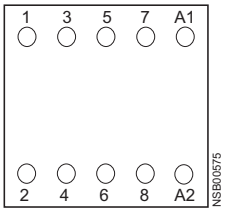
1 NO + 1 NC or 2 NO + 2 NC



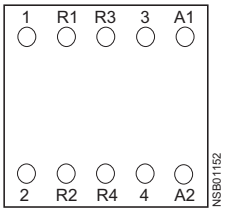
Contactors with 4 main contacts, size S00
Terminal designations acc. to EN 50005

3RT13 and 3RT15 contactors

4 NO



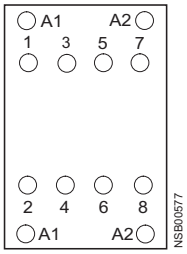
2 NO + 2 NC



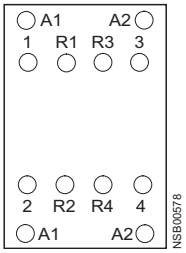
Contactors with 4 main contacts, sizes S0 to S3
Terminal designations acc. to EN 50005

3RT13 and 3RT15 contactors

4 NO



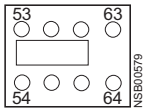
2 NO + 2 NC



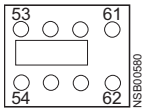
Accessories for size S00 contactors and contactor relays
Terminal designations acc. to EN 50005

3RH19 11- . F... and 3RH19 11- . NF.. auxiliary switch blocks, for snapping onto the front,

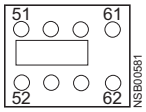
2 NO
Ident no.: 20



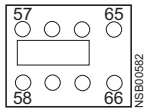
1 NO + 1 NC
11



2 NC
02

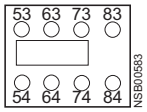


1 NO + 1 NC
11 U

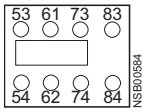


make-before-break

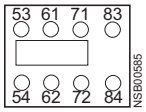
4 NO
Ident no.: 40



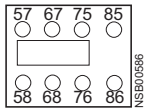
3 NO + 1 NC
31



2 NO + 2 NC
22

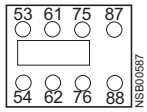


2 NO + 2 NC
22 U



make-before-break

2 NO + 2 NC
11/11 U



1 NO + 1 NC ON-delay
1 NO + 1 NC With make-before-break

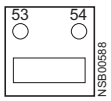
Project planning aids

Position of the terminals for 3RT1 contactors and accessories (valid for screw and Cage Clamp terminals)

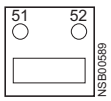
Accessories for size S00 contactors and contactor relays
Terminal designations acc. to EN 50005

3RH19 11-1AA.. auxiliary switch blocks can be snapped onto the front
Cable entry from above

1 NO

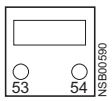


1 NC

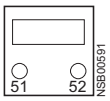


3RH19 11-1BA.. auxiliary switch blocks can be snapped onto the front
Cable entry from below

1 NO

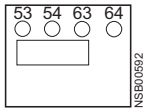


1 NC



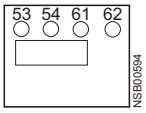
3RH19 11-1LA20

2 NO



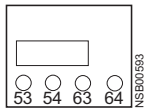
3RH19 11-1LA11

1 NO + 1 NC



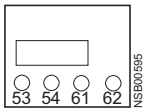
3RH19 11-1MA20

2 NO



3RH19 11-1MA11

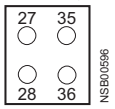
1 NO + 1 NC



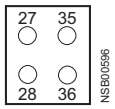
Terminal designations according to DIN 46199 Part 5

3RT19 16-2E.../2F../2G... solid-state, time-delay auxiliary switch blocks

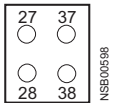
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay



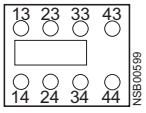
2 NO
Star-delta function



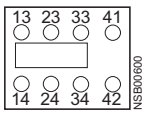
Accessories for size S0 to S12 contactors
Terminal designations acc. to EN 50005

3RH19 21- . F..., 4-pole,
for snapping onto the front,

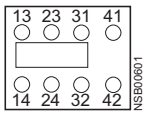
4 NO
Ident no.: 40



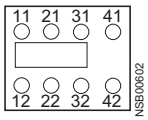
3 NO + 1 NC
31



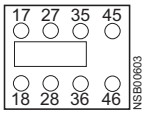
2 NO + 2 NC
22



4 NC
04



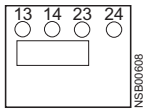
2 NO + 2 NC
22 U



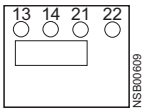
make-before-break

3RH19 21-1LA.. auxiliary switch blocks, 2-pole,
for snapping onto the front, cable entry from the top

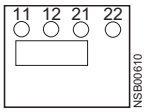
2 NO



1 NO + 1 NC

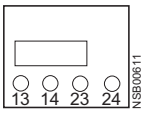


2 NC

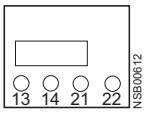


3RH19 21-1MA.. auxiliary switch blocks, 2-pole,
for snapping onto the front, cable entry from the bottom

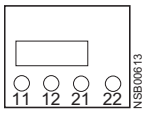
2 NO



1 NO + 1 NC

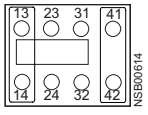


2 NC



3RH19 21- . FE22 solid-state compatible auxiliary switch blocks, 4-pole,
for snapping onto the front

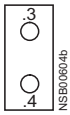
2 NO + 2 NC
Ident no.: 22



Terminal designations according to EN 50005 or EN 50012

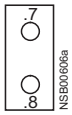
3RH19 21- . CA.., 1-pole,
for snapping onto the front

1 NO



1 NC

1 NO



with extended
contact-making

1 NC

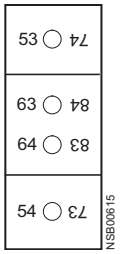
with extended
contact-making

Position of the terminals for 3RT1 contactors and accessories

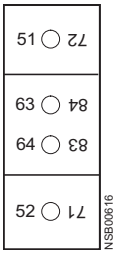
Accessories for size S0 to S12 contactors
Terminal designations acc. to EN 50005

3RH19 21-.EA.. first laterally mountable auxiliary switch blocks (right)

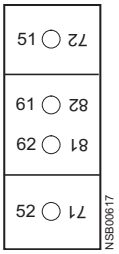
2 NO



1 NO + 1 NC

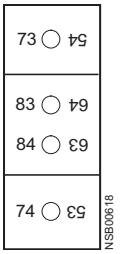


2 NC

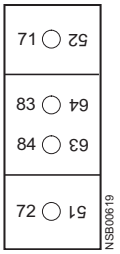


3RH19 21-. EA.. first laterally mountable auxiliary switch blocks (right)

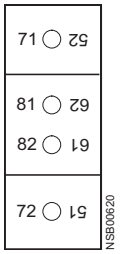
2 NO



1 NO + 1 NC

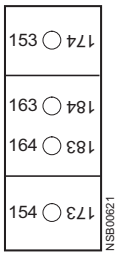


2 NC

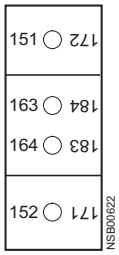


3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (left) (only for sizes S3 to S12 can only be used if no auxiliary contacts are snapped onto to the front)

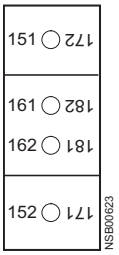
2 NO



1 NO + 1 NC

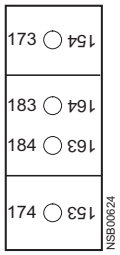


2 NC

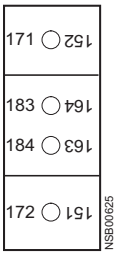


3RH19 21-. KA.. second laterally mountable auxiliary switch blocks (right) (only for sizes S3 to S12 can only be used if no auxiliary contacts are snapped onto to the front)

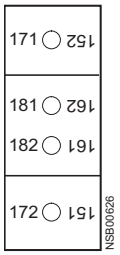
2 NO



1 NO + 1 NC



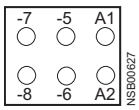
2 NC



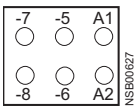
Accessories for size S0 to S12 contactors
Terminal designations acc. to DIN 46199 Part 5

3RT19 26-2E.../2F.../2G... solid-state, time-delay auxiliary switch blocks

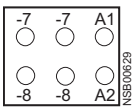
1 NO + 1 NC
ON-delay



1 NO + 1 NC
OFF-delay

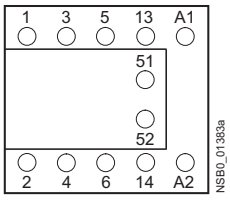


2 NO
Star-delta function



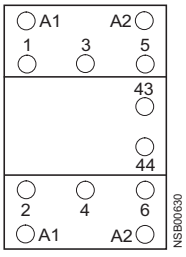
3RT16 capacitor contactors

Size S00
with 4-pole auxiliary switch block mounted on the front



The auxiliary switch block contains 3 leading contacts (not shown) and one unassigned NC contact.

Sizes S0 and S3
with 4-pole auxiliary switch block mounted on the front



The auxiliary switch block contains 3 leading contacts (not shown) and one unassigned NO contact.

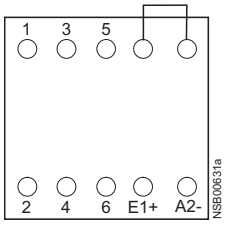
2

Project planning aids

Position of the terminals for 3RT1 contactors and accessories

Contactors with extended operating range 0.7 to 1.25 × U_S
Size S00
Terminal designations acc. to DIN EN 50012

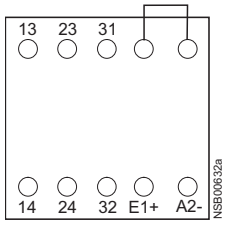
3RT10 17-2K.42-0LA0 contactors



Series resistor R_V plugged on, NC contact prewired.
3RH19 11 -2 auxiliary switch blocks acc. to EN 50005 can be snapped on

Terminal designations according to EN 50011

3RH11 22-2K.40-0LA0 contactor relays

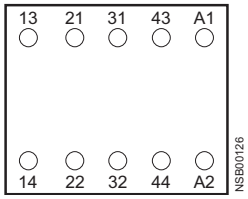


Series resistor R_V plugged on, NC contact prewired.
3RH19 11 -2 auxiliary switch blocks acc. to EN 50005 can be snapped on

Contactor relays with extended operating range 0.7 to 1.25 × U_S
Size S00

3RH11 22-2K.40 contactor relays

2 NO + 2 NC
Ident no.: 22 E

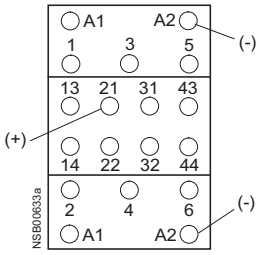


It is not possible to mount an auxiliary switch block.

Contactors with extended operating range 0.7 to 1.25 × U_S
Sizes S0 to S3
Terminal designations acc. to DIN EN 50012

3RT10 2.-, 3RT10 3.-, 3RT10 4.-3K.44-0LA0 contactors
with front 4-pole 3RH19 21-2HA22 auxiliary switch block

2 NO + 2 NC
Ident no.: 22 E



For circuit diagram of the series resistor wiring, see Page 2/209.

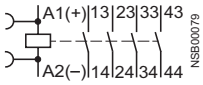
Note:
Position of terminals for 3RT10 17-2K.4.
and 3RT10 25-3K.40 contactors, see Page 2/210.

Connection diagrams for 3RH1 contactor relays, size S00

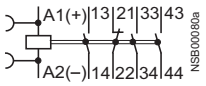
Terminal designations according to EN 50011

3RH11 contactor relays

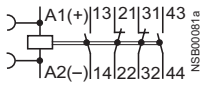
4 NO
Ident no.: 40E



3 NO + 1 NC
31 E

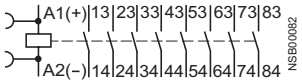


2 NO + 2 NC
22E

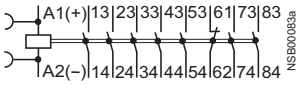


3RH1140 contactor relays
with 3RH19 11-1GA..,
3RH12 44, 3RH12 62 auxiliary switch blocks snapped onto the front

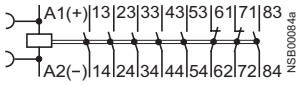
8 NO
Ident no.: 80E



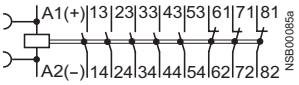
7 NO + 1 NC
71E



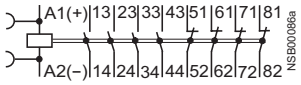
6 NO + 2 NC
62E



5 NO + 3 NC
Ident no.: 53E

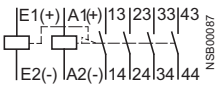


4 NO + 4 NC
44E

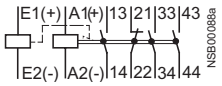


3RH14 latched contactor relays

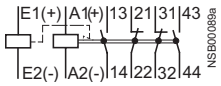
4 NO
Ident no.: 40E



3 NO + 1 NC
1E



2 NO + 2 NC
22E



Surge suppressor (plug-in direction coded)

Diode

Diode assembly

Varistor

RC element

Diode with LED

Varistor with LED

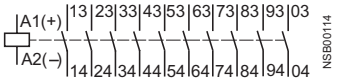
2

Project planning aids

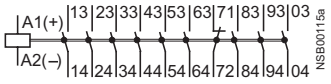
Connection diagrams for 3TH43 contactor relays with 10 contacts

Terminal designations according to EN 50011

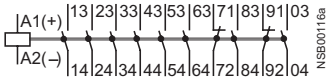
10 NO
Ident no.: 100E



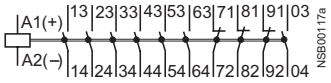
9 NO + 1 NC
91E



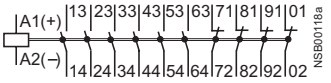
8 NO + 2 NC
82E



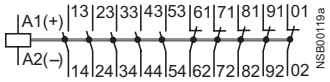
7 NO + 3 NC
Ident no.: 73E



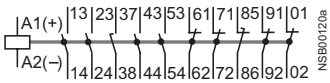
6 NO + 4 NC
64E



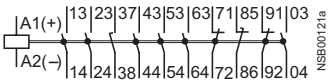
5 NO + 5 NC
55E



4 NO + 4 NC, 1 NO + 1 NC make-before-break
Ident no.: 55E; U



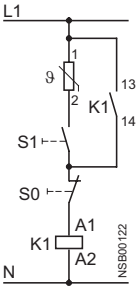
6 NO + 2 NC, 1 NO + 1 NC make-before-break
73E; U



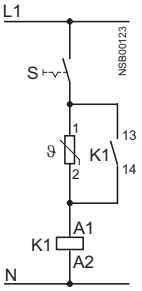
Circuit diagrams for 3TH43 contactor relays with 10 contacts

3TX4 180-0A NTC thermistor module
Typical circuit diagrams

Momentary-contact operation

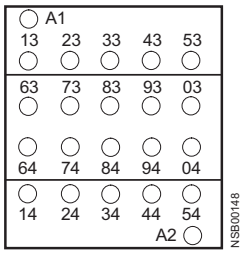


Maintained-contact operation

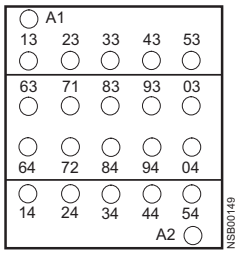


Position of the terminals for 3TH43 contactor relays with 10 contacts

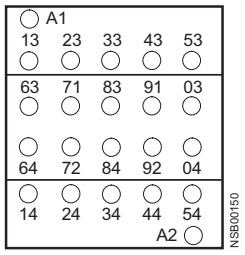
10 NO
Ident no.: 100E



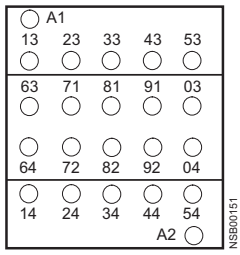
9 NO + 1 NC
91E



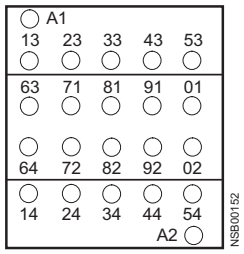
8 NO + 2 NC
82E



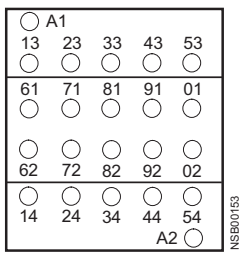
7 NO + 3 NC
73E



6 NO + 4 NC
Ident no.: 64E



5 NO + 5 NC
55E

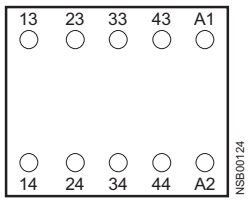


Position of the terminals for 3RH1 contactor relays, size S00

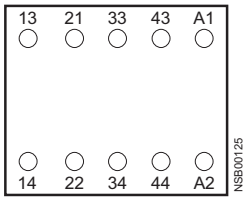
Terminal designations according to EN 50011

3RH11 contactor relays

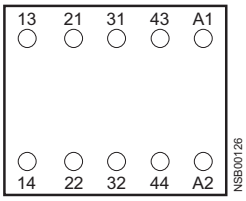
4 NO
Ident no.: 40E



3 NO + 1 NC
31E

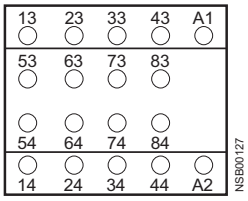


2 NO + 2 NC
22E

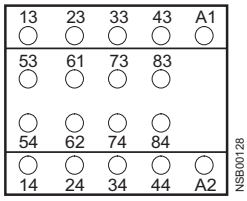


3RH1140 contactor relays
with 3RH19 11-1GA..,
3RH12 44, 3RH12 62 auxiliary switch blocks snapped onto the front

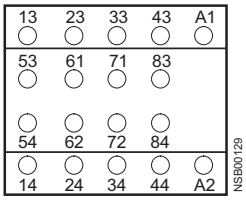
8 NO
Ident no.: 80E



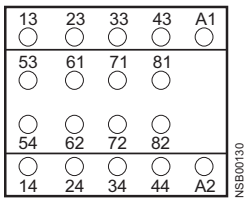
7 NO + 1 NC
71E



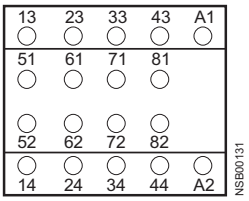
6 NO + 2 NC
62E



5 NO + 3 NC
53E

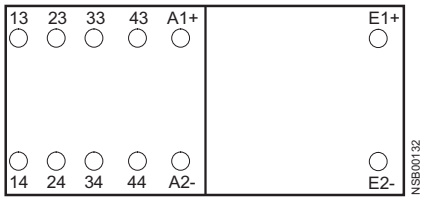


4 NO + 4 NC
Ident no.: 44E

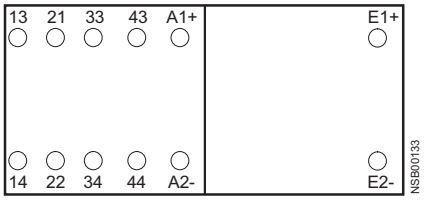


3RH14 latched contactor relays

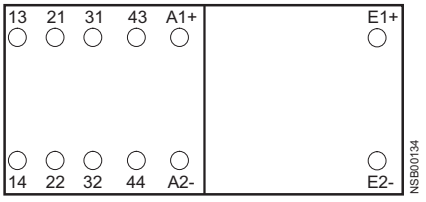
4 NO
Ident no.: 40E



3 NO + 1 NC
31E



2 NO + 2 NC
Ident no.: 22E



2

Project planning aids

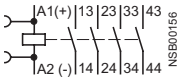
Connection diagrams for 3RH11 coupling relays for switching auxiliary circuits

DC operation
• L+ is to be connected to coil terminal A1.

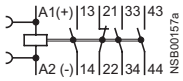
3RH11 coupling relays for auxiliary circuits, size S00
Terminal designations according to EN 50011
(it is not possible to snap on an auxiliary switch block)

Surge suppressor can be mounted

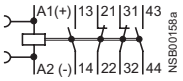
4 NO
Ident no.: 40E



3 NO + 1 NC
31E

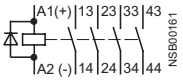


2 NO + 2 NC
22E

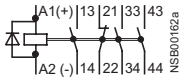


Diode integrated

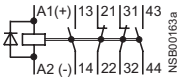
4 NO
Ident no.: 40E



3 NO + 1 NC
31E

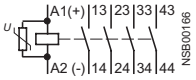


2 NO + 2 NC
22E

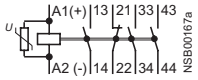


Varistor integrated

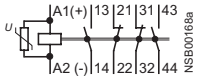
4 NO
Ident no.: 40E



3 NO + 1 NC
31E



2 NO + 2 NC
22E



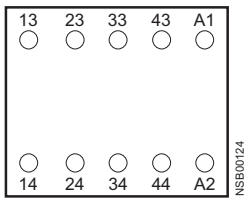
Surge suppressors for size S00 coupling relays
see 3RH11 contactor relays, page 2/215.

Position of the terminals for 3RH11 coupling relays for switching auxiliary circuits

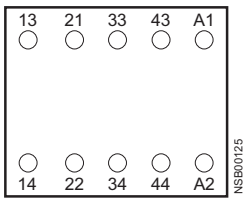
Size S00

3RH11 coupling relays

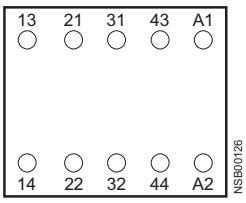
4 NO
Ident no.: 40E



3 NO + 1 NC
31E



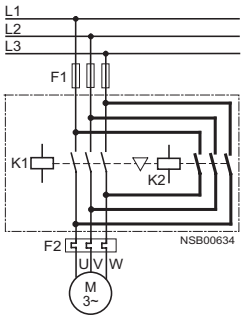
2 NO + 2 NC
22E



Circuit diagrams for 3RA13 reversing contactor assemblies

Size S00

Main circuit

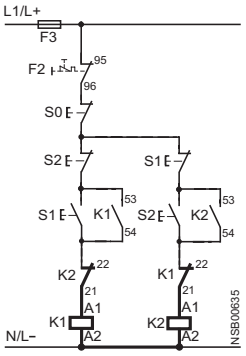


The 3RA19 13-2A installation kit contains, among other things, wiring connectors for connecting the main conducting paths.

Control circuit

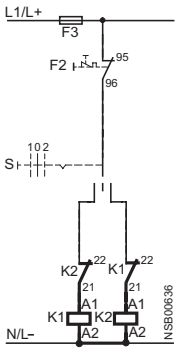
the terminal designations for the contactors comply with EN 50012)

for momentary-contact operation



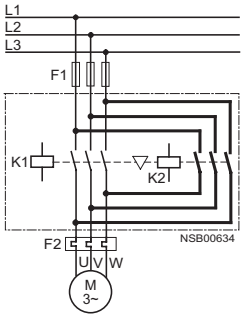
The 3RA19 13-2A installation kit contains, among other things, the electrical interlock.

for maintained-contact operation



Sizes S0 to S3

Main circuit

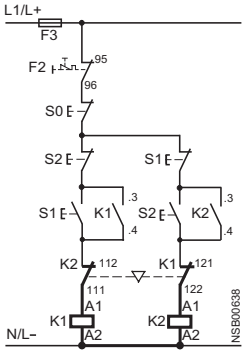


The 3RA19 .3-2A installation kits contain, among other things, the wiring connectors on the top and bottom for connecting the main conducting paths.

Control circuit

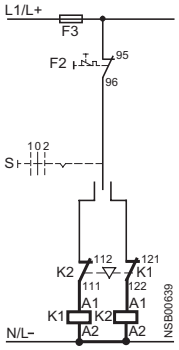
the terminal designations for the contactors comply with EN 50005)

for momentary-contact operation



The 3RA19 24-2B mechanical interlock contains one NC contact for the NC contact interlock for each contactor

for maintained-contact operation

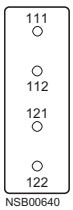


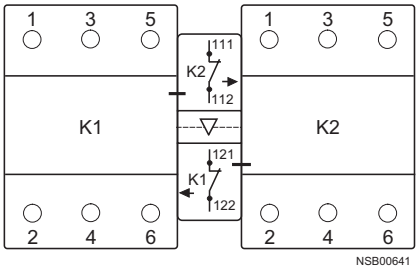
Position of the terminals for 3RA13 reversing contactor assemblies

Sizes S0 to S3
Terminal designations according to EN 50005

3RA19 24-2B mechanical interlock (laterally mountable), integrated in reversing contactor assemblies (reversing starters), contains one NC contact for the electrical interlock for each contactor

2 NC





S0 "OFF" button
S1 "Clockwise ON" button
S2 "Counterclockwise ON" button
S "CW-OFF-CCW" button

K1 Clockwise contactor
K2 Counterclockwise contactor

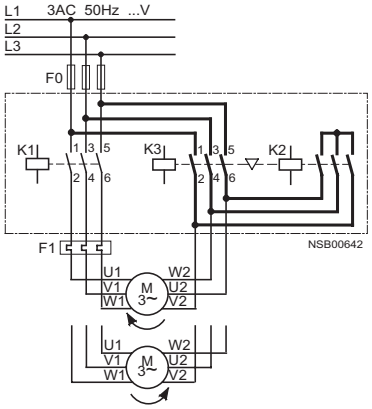
F1 Fuses for main circuit
F3 Fuses for control circuit
F2 Overload relay

2

Project planning aids

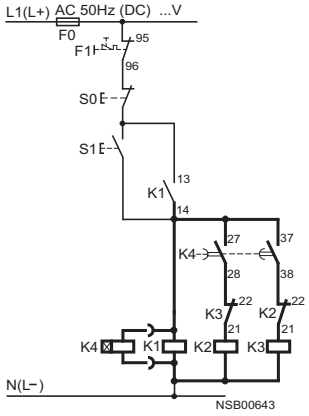
Circuit diagrams for 3RA14 star-delta starting contactor assemblies

Size S00
Main circuit

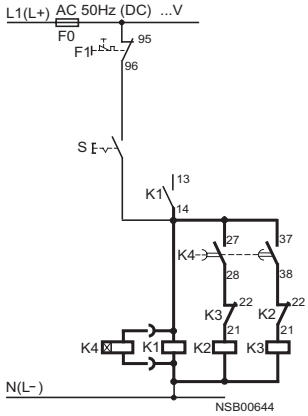


Control circuits
with 3RT19 16-2G... solid state time-delay auxiliary switch block,
snapped onto the front (example circuits)

for momentary-contact operation



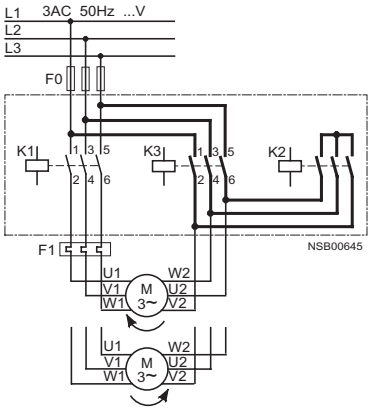
for maintained-contact operation



The 27/28 contact element for the solid-state time-delay auxiliary switch block with star-delta function is only closed on the delta level; the contact element is open in the delta stage as well as in the de-energized state.

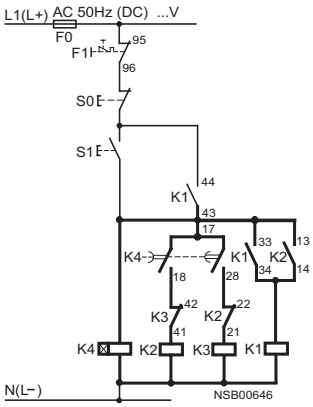
Sizes S0 to S3 (S6 to S12, depending on power)
Main circuit

Size S0

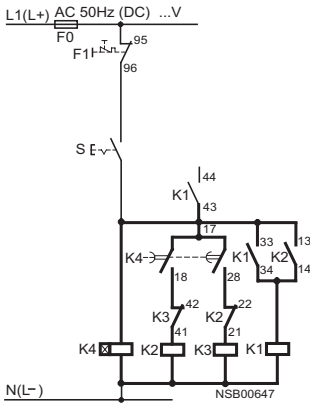


Control circuits with 3RP15 7. time relay
laterally mounted (example circuits)

for momentary-contact operation

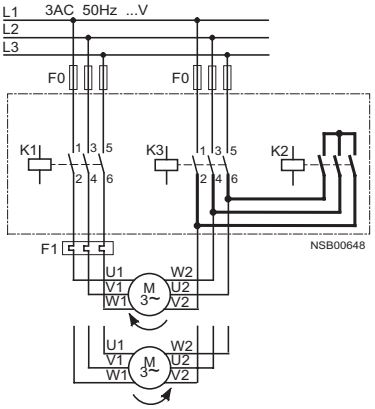


for maintained-contact operation



The contact element 17/18 is only closed in the star stage; the contact element is open in the delta stage as well as in the de-energized state.
S1 (S) is connected to terminal K1/33.

Sizes S0 to S3 (S6 to S12, depending on power)



S0 "OFF" button
S1 "ON" button
S Maintained-contact switch

K1 Line contactor
K2 Star contactor
K3 Delta contactor
K4 Solid-state, time-delay auxiliary switch block or time relay

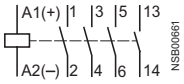
F0 Fuses
F1 Overload relay

Internal circuit diagrams for 3TG10 miniature contactors

3TG10 10 contactors

1 NO

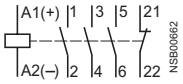
Ident no.: 10E



3TG10 01 contactors

1 NC

01E



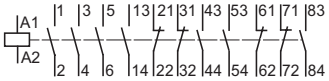
Internal circuit diagrams for 3TF68 and 3TF69 vacuum contactors, 3-pole

3TF68 44 and 3TF69 44 contactors

4 NO + 4 NC

AC operation

max. complement of auxiliary switches

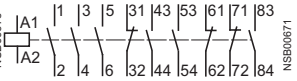


3TF68 33 and 3TF69 33 contactors

3 NO + 3 NC

DC operation

max. complement of auxiliary switches



3TY7 681-1G
auxiliary switch blocks

for coil reconnection, 3TF68 and 3TF69, DC economy circuit

3TY7 561-1AA00
auxiliary switch blocks

1st auxiliary switch block, left or right

mounted on left mounted on right

3TY7 561-1KA00
auxiliary switch blocks

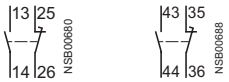
2nd auxiliary switch block, left or right

mounted on left mounted on right

3TY7 561-1EA00
auxiliary switch blocks

with overlapping contacting

mounted on left mounted on right



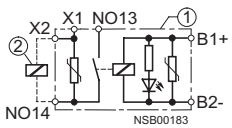
3TY7 561-1.
auxiliary switch blocks

Solid-state compatible aux. switch block

mounted on left mounted on right

3TX7 090-0D
interface for control by PLC

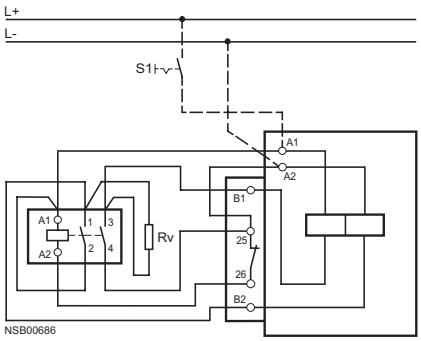
with surge suppression



① Inferface
② Contactor

Circuit diagrams for DC economy circuit · Maintained-contact operation, 3TF68 and 3TF69 vacuum contactors, 3-pole

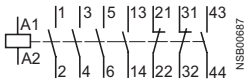
3TF68 33 and 3TF69 3 contactors



Project planning aids

Internal circuit diagrams for 3TB50 to 3TB56 contactors, 3-pole

Sizes 6 to 12
3TB50 to 3TB56
DC operation
Auxiliary contacts: **2 NO + 2NC**

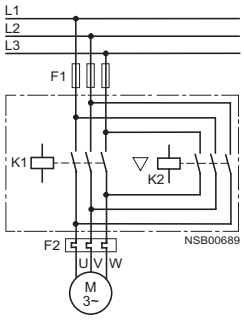


3TY6 501-1E, 3TY6 561-1E auxiliary switch blocks
with overlapping contacting

Circuit diagrams for 3TD68 reversing contactor assemblies

Main circuit

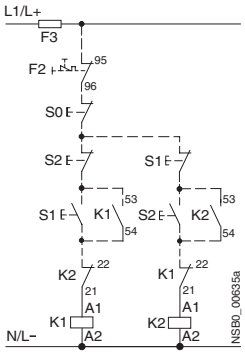
In the main circuit the connections are made between contactors K1 and K2.



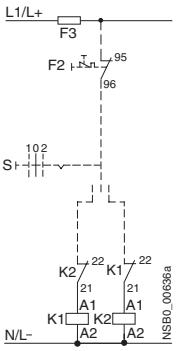
Control circuits

The control circuit leads indicated by broken lines are not wired in the factory.

Momentary-contact operation



Maintained-contact operation



Terminal designations of the unassigned auxiliary contacts

Contactor assembly	With electrical interlock				Without electrical interlock			
	Contactor K1		Contactor K2		Contactor K1		Contactor K2	
	NO	NC	NO	NC	NO	NC	NO	NC
3TD68	13 – 14 43 – 44 53 – 54 83 – 84	21 – 22 61 – 62 71 – 72	13 – 14 43 – 44 53 – 54 83 – 84	31 – 32 61 – 62 71 – 72	13 – 14 43 – 44 53 – 54 83 – 84	21 – 22 31 – 32 61 – 62 71 – 72	13 – 14 43 – 44 53 – 54 83 – 84	21 – 22 31 – 32 61 – 62 71 – 72

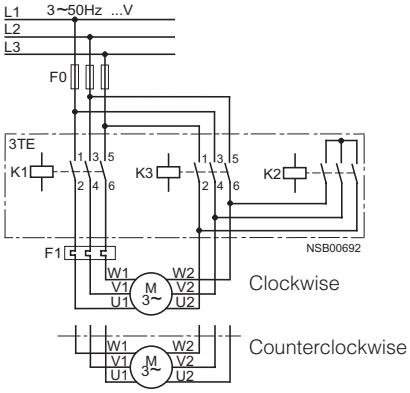
S0 "OFF" button
S1 "Clockwise ON" button
S2 "Counterclockwise ON" button"
S "CW-OFF-CCW" button
K1 Clockwise contactor
K2 Counterclockwise contactor
F1 Fuses for main circuit
F3 Fuses for control circuit
F2 Overload relay

Circuit diagrams for 3TE68 star-delta starting contactor assemblies

Main circuit

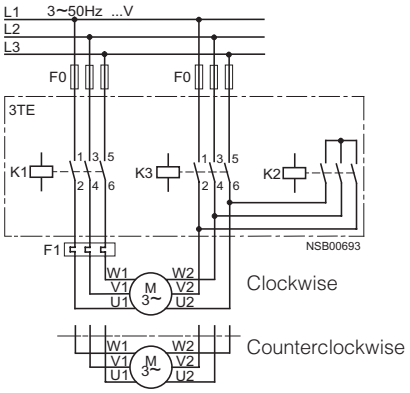
Single infeed

Without main conducting path connection between line and delta contactors



Double infeed

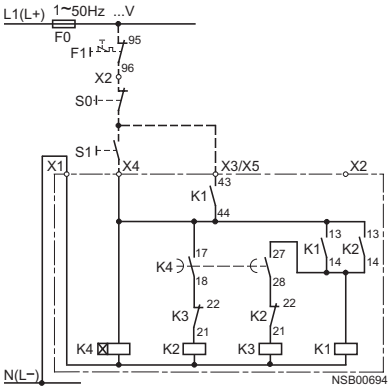
Without main conducting path connection between line and delta contactors



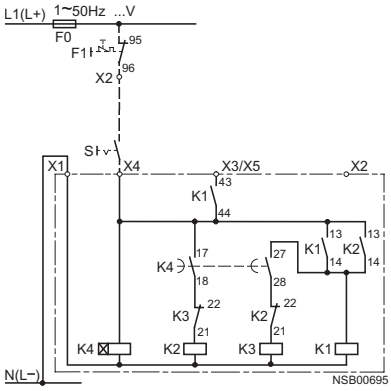
Control circuit

The control circuit leads indicated by broken lines are not wired in the factory. The contact element 17/18 of the time relay is only closed in the star stage; the contact element is open in the delta stage as well as in the de-energized state.

Momentary-contact operation



Maintained-contact operation



Terminal designations of the unassigned auxiliary contacts

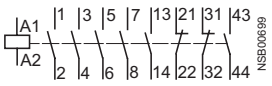
Contactor	Line		Delta		Star	
Assmbly	NO	NC	NO	NC	NO	NC
3TE68	53 – 54 83 – 84	21 – 22 31 – 32 61 – 62 71 – 72	13 – 14 43 – 44 53 – 54 83 – 84	31 – 32 61 – 62 71 – 72	43 – 44	31 – 32

Legend:

S0 "OFF" pushbutton
S1 "ON" pushbutton
S Maintained-contact switch
K1 Line contactor
K2 Star contactor
K3 Delta contactor
K4 Timing element or time relay
F0 Fuses
F1 Overload relay

Internal circuit diagrams for 3TK1 contactors, 4-pole (4S) for switching resistive loads (AC-1)

3TK1 contactors



3TK1 910-3B auxiliary switch block

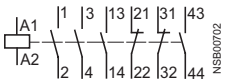
mounted on left

mounted on right

2

Project planning aids

Internal circuit diagram for 3TC44 to 3TC56 contactors for switching DC voltage

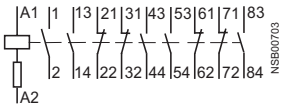


Internal circuit diagrams for 3TC74, 3TC78 contactors for switching DC voltage

DC operation

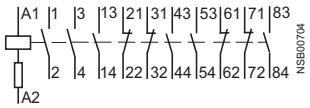
3TC74 contactors

Auxiliary contacts **4 NO + 4 NC**



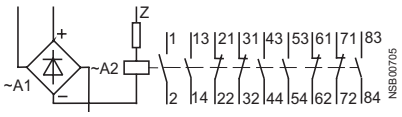
3TC78 contactors

Auxiliary contacts **4 NO + 4 NC**

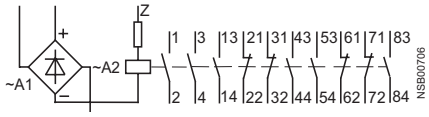


AC operation

Auxiliary contacts **4 NO + 4 NC**
Must be operated in the DC circuit

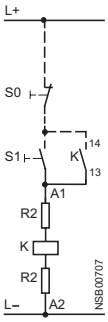


Auxiliary contacts **4 NO + 4 NC**
Must be operated in the DC circuit

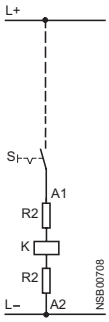


Circuit diagrams for 3TC74, 3TC78 contactors for switching DC voltage

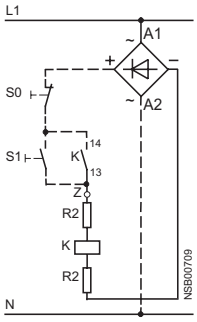
3TC74 contactors
Momentary-contact operation
DC operation



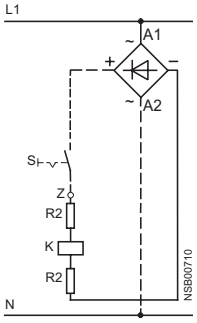
Maintained-contact operation



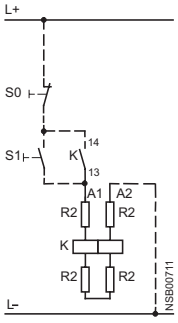
Momentary-contact control
AC operation (must be operated in the DC circuit)



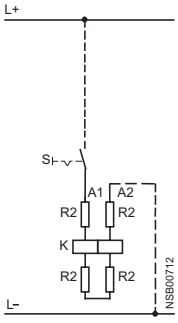
Maintained-contact control



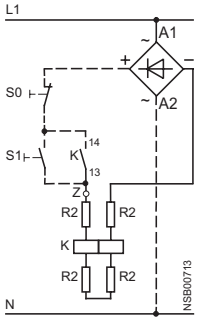
3TC78 contactors
Momentary-contact operation
DC operation



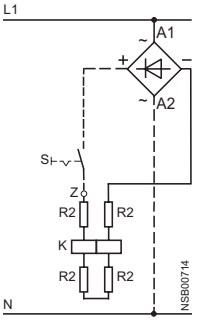
Maintained-contact operation



Momentary-contact control
AC operation (must be operated in the DC circuit)

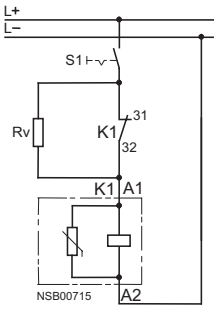


Maintained-contact control

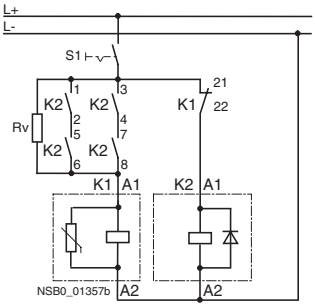


Circuit diagrams for 3T contactors with extended operating range 0.7 to 1.25 x U_s

Circuit with series resistor Rv (size 2 or larger), without reversing contactor



Circuit with series resistor Rv and reversing contactor K2 (for size 8 contactors K1 or larger)



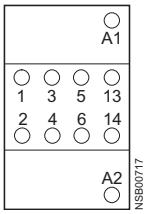
Rv:
Two resistors are connected in series for 3TB54, 3TB56 and 3TC56 contactors.

K2
For 3TB52 to 3TB56 and 3TC52 to 3TC56:
3RT13 17-1F . 40

Position of the terminals for 3TG10 miniature contactors

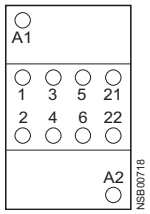
3TG10 10 contactors

1 NO



3TG10 01 contactors

1 NC

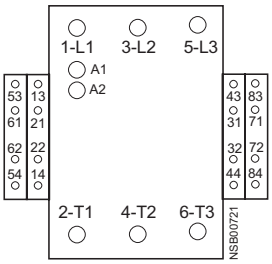


Position of the terminals for 3TF68 and 3TF69 vacuum contactors, 3-pole

AC operation

3TF68 and 3TF69 contactors

4 NO + 4 NC

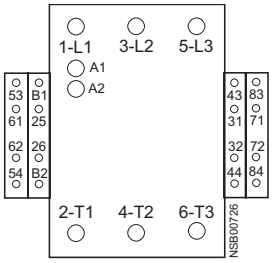


DC operation

3TF68 and 3TF69 contactors

3 NO + 3 NC

max. number of auxiliary contacts that can be fitted



3TY7 561-1 . solid-state compatible auxiliary switch blocks for lateral mounting

left mounted

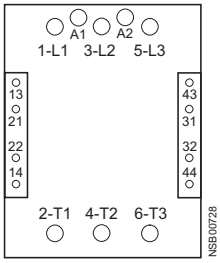
right mounted

Project planning aids

Position of the terminals for 3TB50 to 3TB56 contactors, 3-pole

Size 6 to 12
3TB50 to 3TB56 contactors

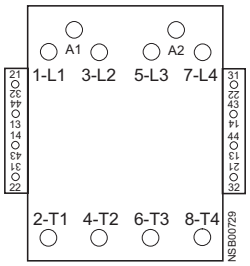
2 NO + 2 NC



Position of the terminals for 3TK1 contactors for switching resistive loads (AC-1)

3TK10 to 3TK17 contactors

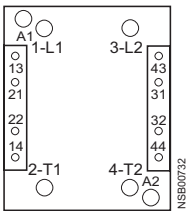
2 NO + 2 NC



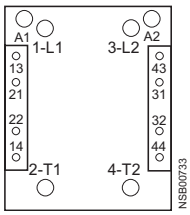
Position of the terminals for 3TC contactors for switching DC voltage

AC and DC operation

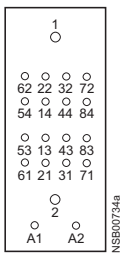
Size 2
3TC44 contactors



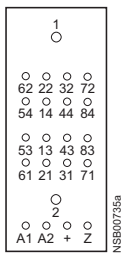
Sizes 4, 8 and 12
3TC48 to 3TC56 contactors



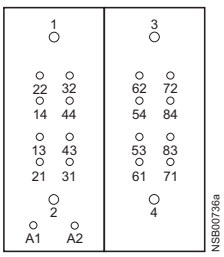
DC operation
3TC74 contactors



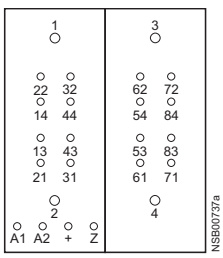
AC operation
3TC74 contactors



DC operation
3TC78 contactors



AC operation
3TC78 contactors



Dimension drawings

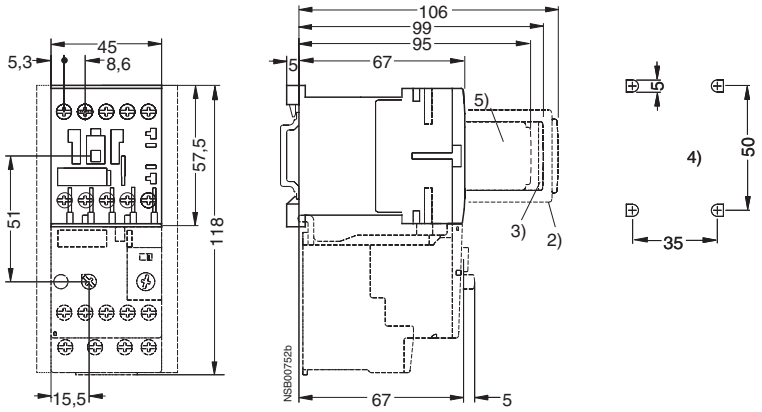
3RT10 contactors, 3-pole

3RT10 1 contactors, size S00

Screw terminal

with surge suppressor, auxiliary switch block and mounted overload relay

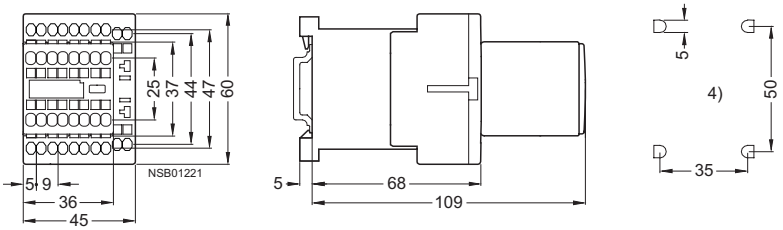
Lateral clearance from grounded parts = 6 mm



2) Auxiliary switch block (also 3RH19 11-.N.. solid-state compatible design NF .)
3) Surge suppressor (also 3RT19 16-1GA00 additional load module)
4) Drilling pattern
5) Auxiliary switch block, 1-pole

3RT10 1 contactors, size S00

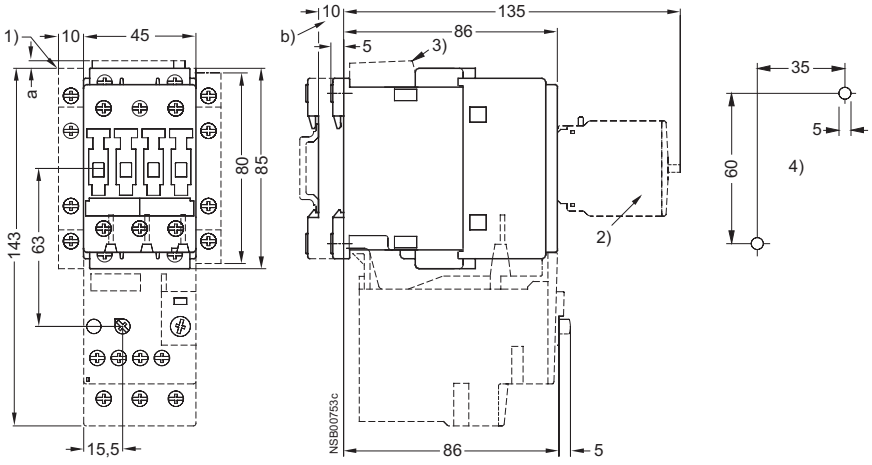
Cage Clamp terminal with auxiliary switch block



3RT10 2 contactors, 3RT10 2 coupling relays, size S0

Screw terminal

with surge suppressor, auxiliary switch blocks and mounted overload relay



For size S0:

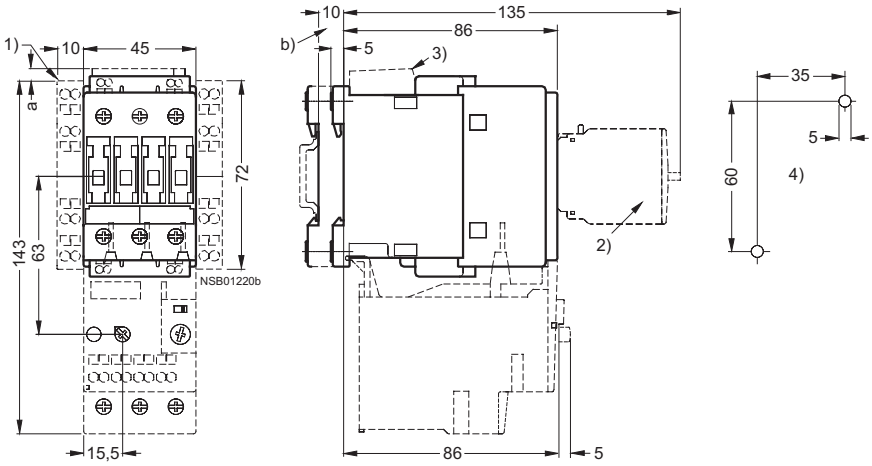
a = 3 mm at < 240 V
a = 7 mm at > 240 V
b = DC 10 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front, 1, 2 and 4-pole (also 3RH19 21- . FE22 solid-state compatible design FE22)
3) Surge suppressor
4) Drilling pattern

Project planning aids

3RT10 contactors, 3-pole

3RT10 2 contactors, 3RT10 2 coupling relays, size S0

Cage Clamp terminal
with surge suppressor, auxiliary switch blocks and mounted overload relay

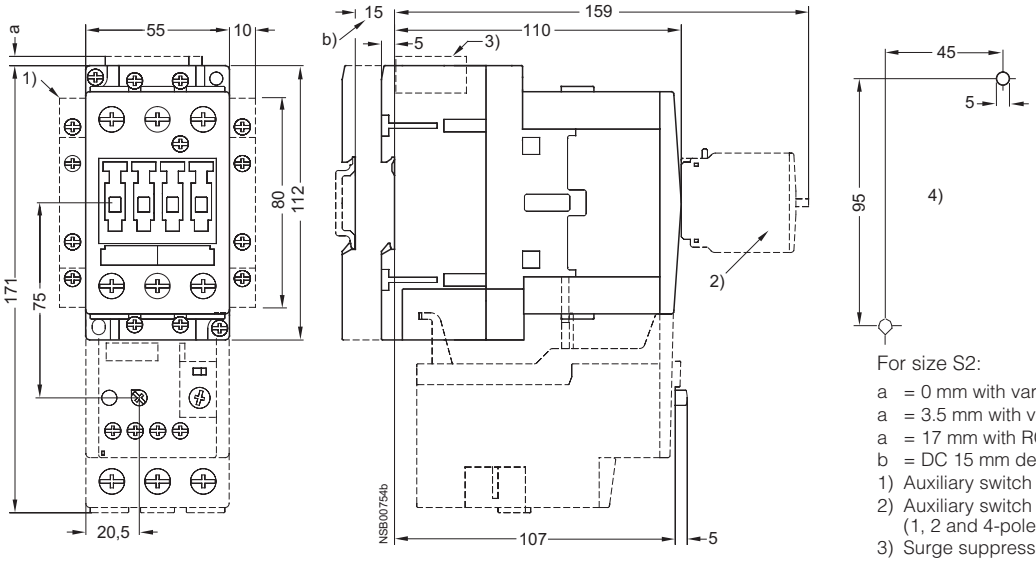


For size S0:

a = 0 mm with varistor < 240 V, diode assembly
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element
b = DC 15 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
3) Surge suppressor
4) Drilling pattern

3RT10 3 contactors, size S2

Screw terminal
with surge suppressor, auxiliary switch blocks and mounted overload relay



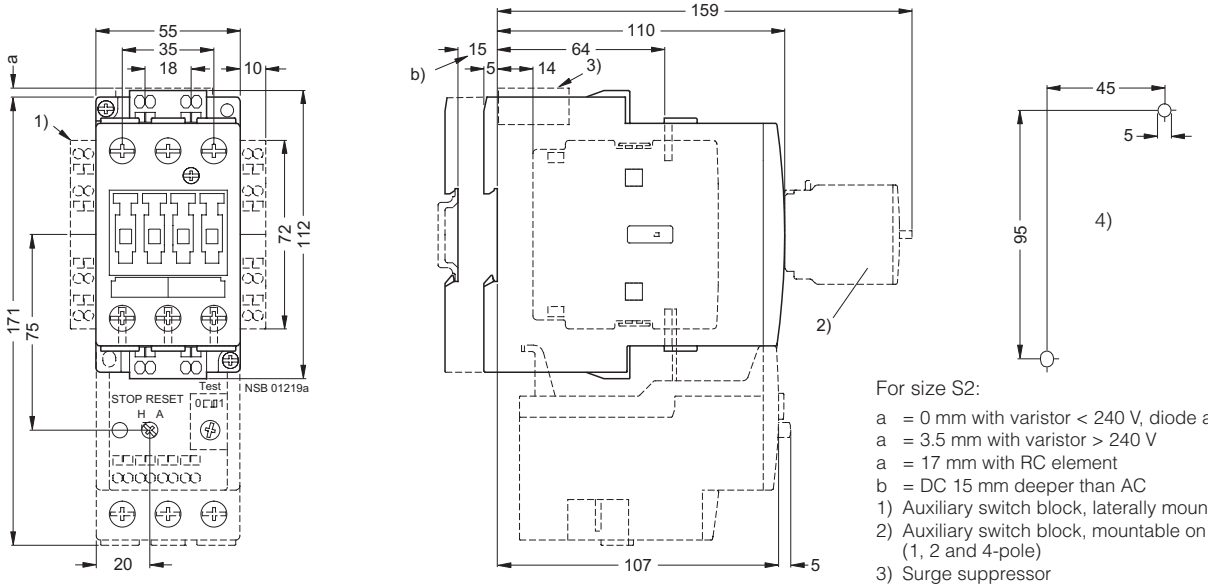
For size S2:

a = 0 mm with varistor < 240 V, diode assembly
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element
b = DC 15 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
3) Surge suppressor
4) Drilling pattern

3RT10 and 3RT14 contactors, 3-pole

3RT10 3 contactors, size S2

Cage Clamp terminal
with surge suppressor, auxiliary switch blocks and mounted overload relay



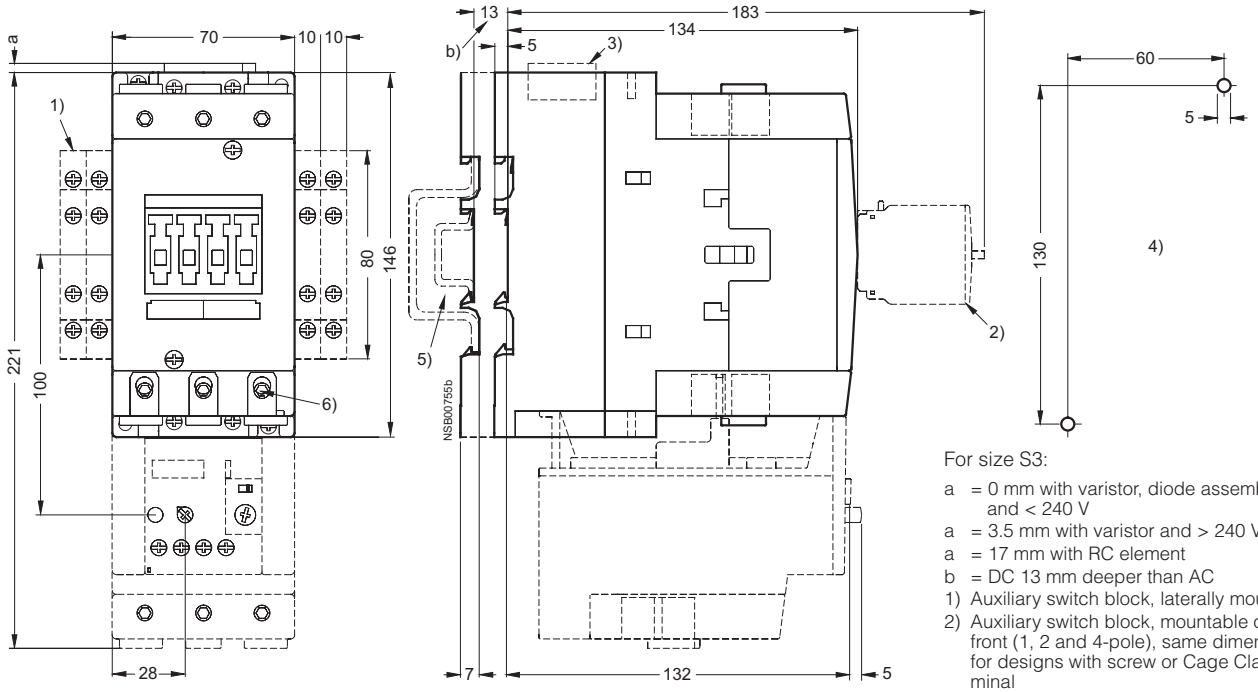
For size S2:

a = 0 mm with varistor < 240 V, diode assembly
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element
b = DC 15 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole)
3) Surge suppressor
4) Drilling pattern

Lateral clearance from grounded parts = 6 mm

3RT10 4, 3RT14 46 contactors, size S3

Screw terminal
with surge suppressor, auxiliary switch blocks and mounted overload relay



For size S3:

a = 0 mm with varistor, diode assembly and < 240 V
a = 3.5 mm with varistor and > 240 V
a = 17 mm with RC element
b = DC 13 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole), same dimensions for designs with screw or Cage Clamp terminal
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50022 or 75 mm standard mounting rail acc. to EN 50023
6) Hexagon socket screw 4 mm

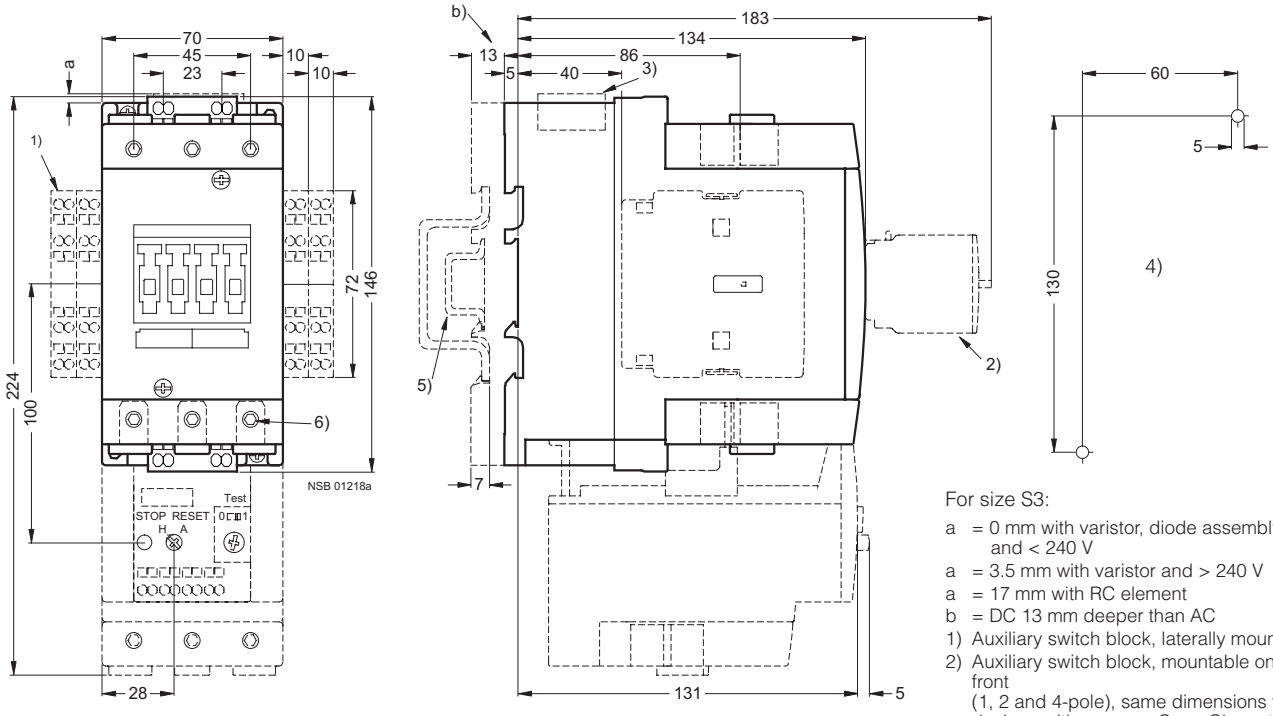
2

Project planning aids

3RT10 contactors, 3-pole

3RT10 4 contactors, size S3

Cage Clamp terminal
with surge suppressor, auxiliary switch blocks
and mounted overload relay



For size S3:

a = 0 mm with varistor, diode assembly and < 240 V
a = 3.5 mm with varistor and > 240 V
a = 17 mm with RC element
b = DC 13 mm deeper than AC
1) Auxiliary switch block, laterally mountable
2) Auxiliary switch block, mountable on the front (1, 2 and 4-pole), same dimensions for designs with screw or Cage Clamp terminal
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50022 or 75 mm standard mounting rail acc. to EN 50023
6) Hexagon socket screw 4 mm

3RT10 coupling relays, size S00
with surge suppressor

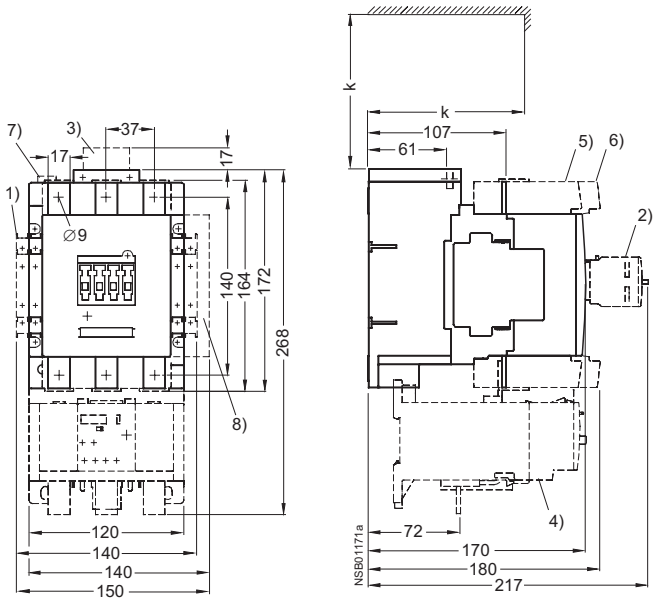
Deviating dimensions for coupling relays with Cage Clamp terminal:
Height: 60 mm

3) Surge suppressor
4) Drilling pattern

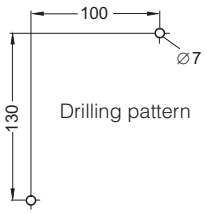
3RT10 and 3RT14 contactors, 3-pole

3RT10 5, 3RT14 5 contactors, size S6

with lateral and front mounted auxiliary switch block
mounted overload relay and box terminals,
lateral electronics module with remaining lifetime indicator



Clearance from grounded parts
lateral: 10 mm
front: 20 mm



For size S6:

k = 120 mm (minimum clearance for removing the withdrawable coil)
1) 2nd auxiliary switch block, lateral
2) Auxiliary switch block, mountable on the front
3) RC element
4) 3RB10 overload relay, mounted
5) 3RT19 55-4G box terminal block (hexagon socket 4 mm)
6) 3RT19 56-4G box terminal block (hexagon socket 4 mm)
7) PLC connection DC 24 V and changeover switch (at 3RT1…-.N)
8) Solid-state module with remaining lifetime indication (auxiliary switch block not mountable on right-hand side)

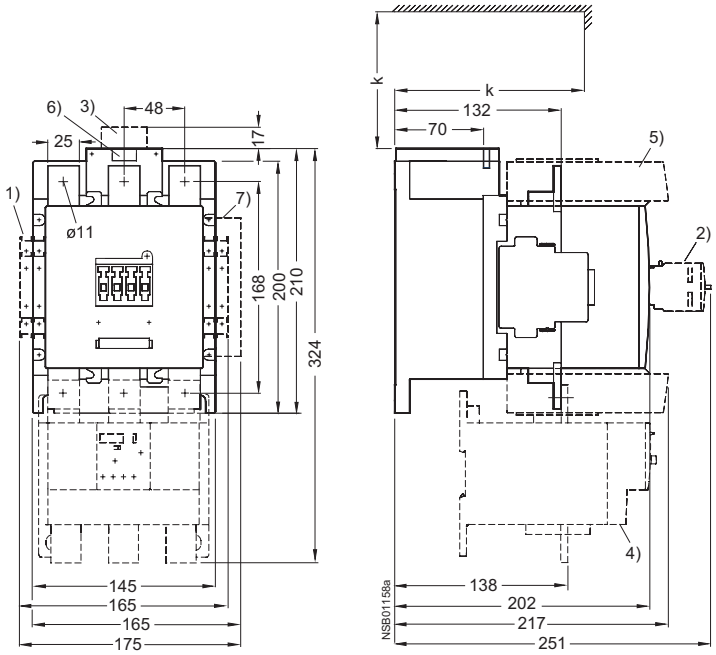
2

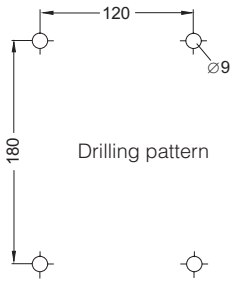
Project planning aids

3RT10 and 3RT14 contactors, 3-pole

3RT10 6, 3RT14 6 contactors, size S10

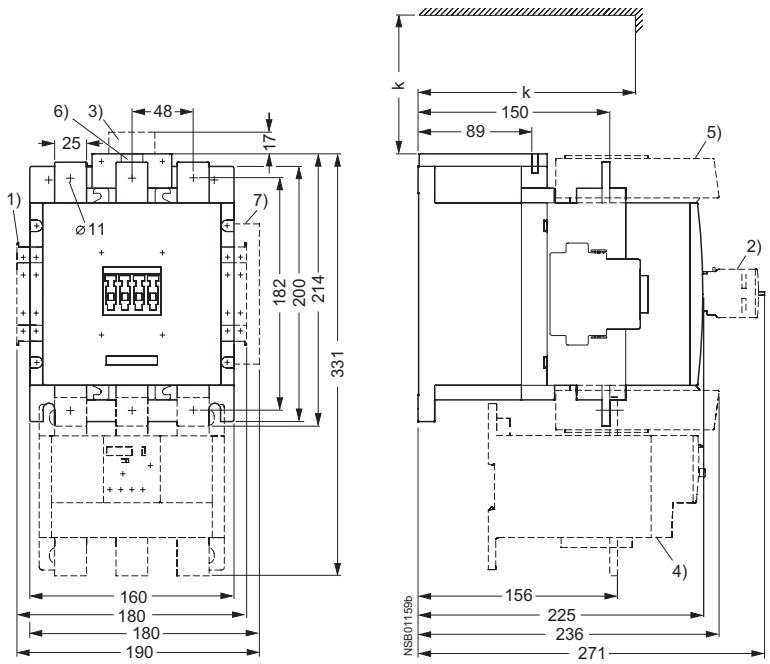
with lateral and front mounted auxiliary switch block
mounted overload relay and box terminals,
lateral electronics module with remaining lifetime indicator

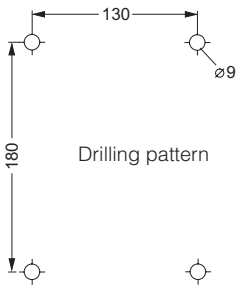




3RT10 7, 3RT14 7 contactors, size S12

with lateral and front mounted auxiliary switch block
mounted overload relay and box terminals,
lateral electronics module with remaining lifetime indicator





For sizes S10 and S12:
Clearance from grounded parts
lateral: 10 mm
front: 20 mm

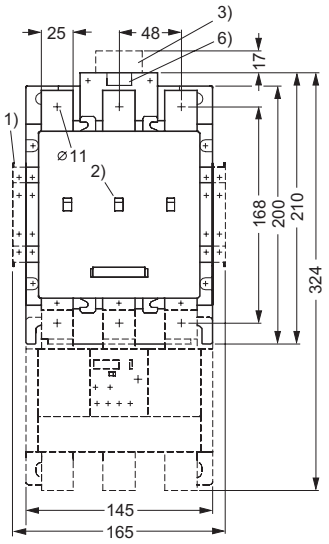
For sizes S10 and S12:

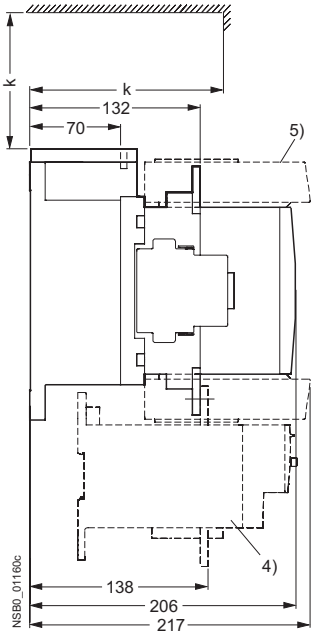
k = 150 mm (minimum clearance for removing the withdrawable coil)

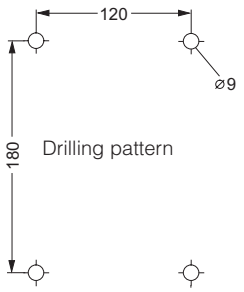
1) 2nd auxiliary switch block, lateral
2) Auxiliary switch block, mountable on the front
3) RC element
4) 3RB10 overload relay, mounted
5) Box terminal block (hexagon socket 6 mm)
6) PLC connection DC 24 V and changeover switch (at 3RT1…-.N)
7) Solid-state module with remaining lifetime indication (auxiliary switch block not mountable on right-hand side)

3RT12 vacuum contactors, 3-pole

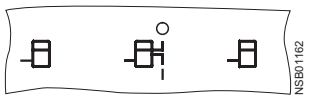
3RT12 6 vacuum contactors, size S10
with lateral auxiliary switch block,
mounted overload relay and box terminals



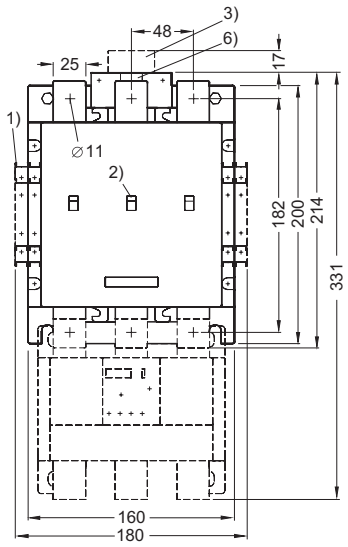


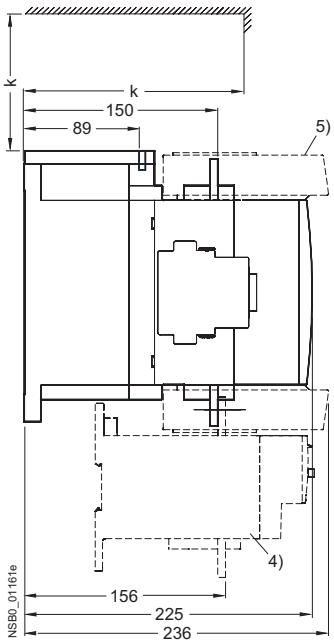


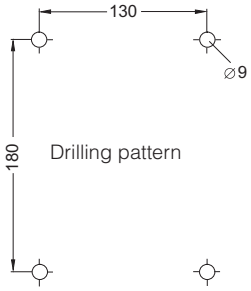
Detail
Contact erosion indicator for vacuum tubes



3RT12 7 vacuum contactors, size S12
with lateral auxiliary switch block,
mounted overload relay and box terminals







For sizes S10 and S12:

k = 150 mm (minimum clearance for removing the withdrawable coil)

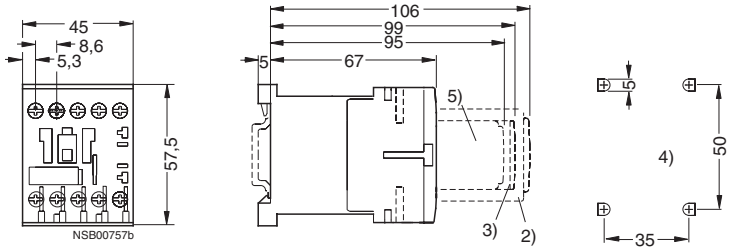
1) 2nd auxiliary switch block, lateral
2) Position and contact erosion indicator
3) RC element
4) 3RB10 overload relay, mounted
5) Box terminal block (hexagon socket 6 mm)
6) PLC connection DC 24 V and changeover switch (at 3RT1…-.N)

2

Project planning aids

3RT13 and 3RT15 contactors, 4-pole

3RT13 1 and 3RT15 1 contactors, size S00,
Screw terminal
with surge suppressor and auxiliary switch block

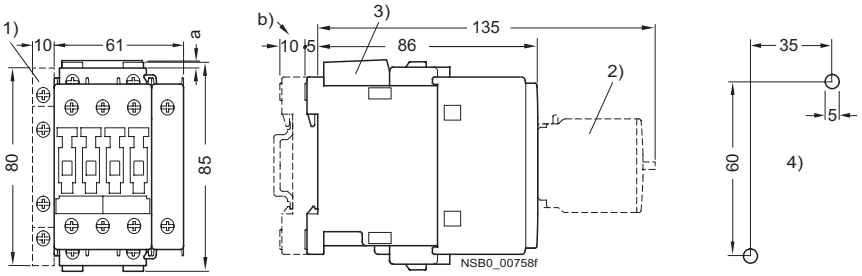


Lateral clearance from grounded parts = 6 mm

For size S00:
Deviating dimensions for contactors with Cage Clamp terminals:
Height: 60 mm
Mounting depth with auxiliary switch block: 110 mm

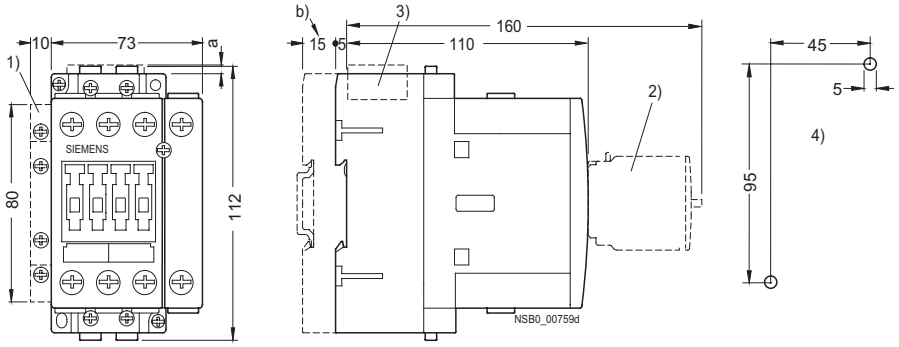
2) Auxiliary switch block (also 3RH19 11-.N... solid-state compatible design)
3) Surge suppressor (also 3RT19 16-1GA00 additional load module)
4) Drilling pattern
5) Auxiliary switch block, 1-pole

3RT13 2 and 3RT15 2 contactors, size S0
with surge suppressor and auxiliary switch block



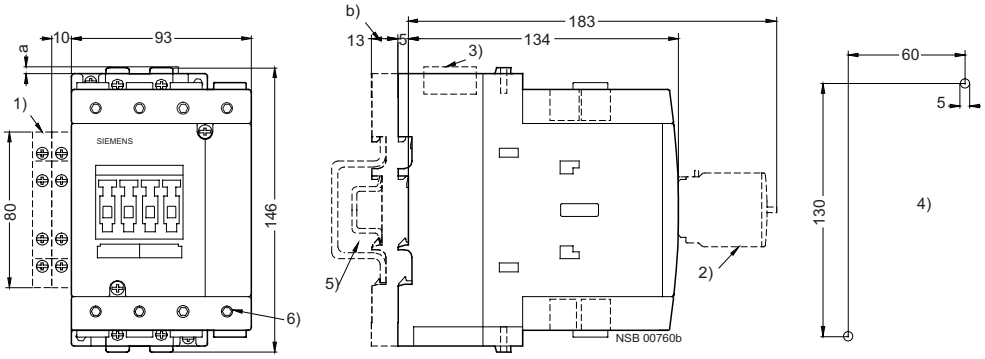
For size S0:
a = 3 mm at < 250 V and surge suppressor mounted
a = 7 mm at > 250 V and surge suppressor mounted
b = DC 10 mm deeper than AC
1) Auxiliary switch block, laterally mountable (left)
2) Auxiliary switch block, mountable on the front, (max. two single-pole auxiliary switch blocks)
3) Surge suppressor
4) Drilling pattern

3RT13 3 and 3RT15 3 contactors, size S2
with surge suppressor and auxiliary switch block



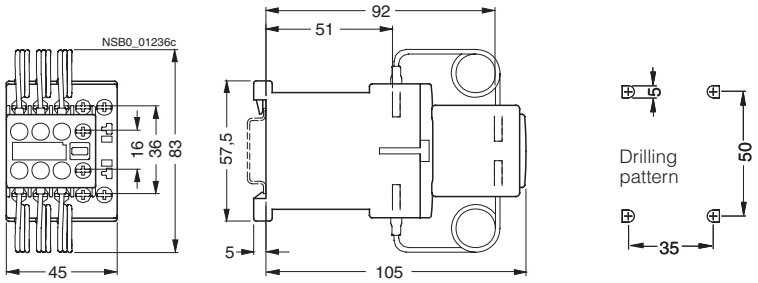
For sizes S2 and S3:
a = 0 mm with varistor < 240 V
a = 3.5 mm with varistor > 240 V
a = 17 mm with RC element and diode assembly
b = S2: DC 15 mm deeper than AC
S3: DC 13 mm deeper than AC
1) Auxiliary switch block, laterally mountable (right or left)
2) Auxiliary switch block, mountable on the front, (1, 2 and 4-pole, also 3RH19 21-1FE22 solid-state compatible design)
3) Surge suppressor
4) Drilling pattern
5) For mounting on 35 mm standard mounting rail (15 mm deep) acc. to EN 50022 or, in the case of size S3, 75 mm standard mounting rail acc. to EN 50023
6) Hexagon socket screw 4 mm

3RT10 4 contactors, size S3
with surge suppressor and auxiliary switch block

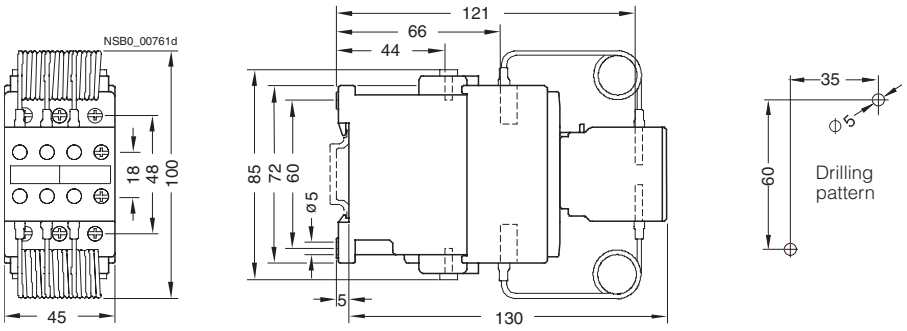


3RT16 capacitor contactors

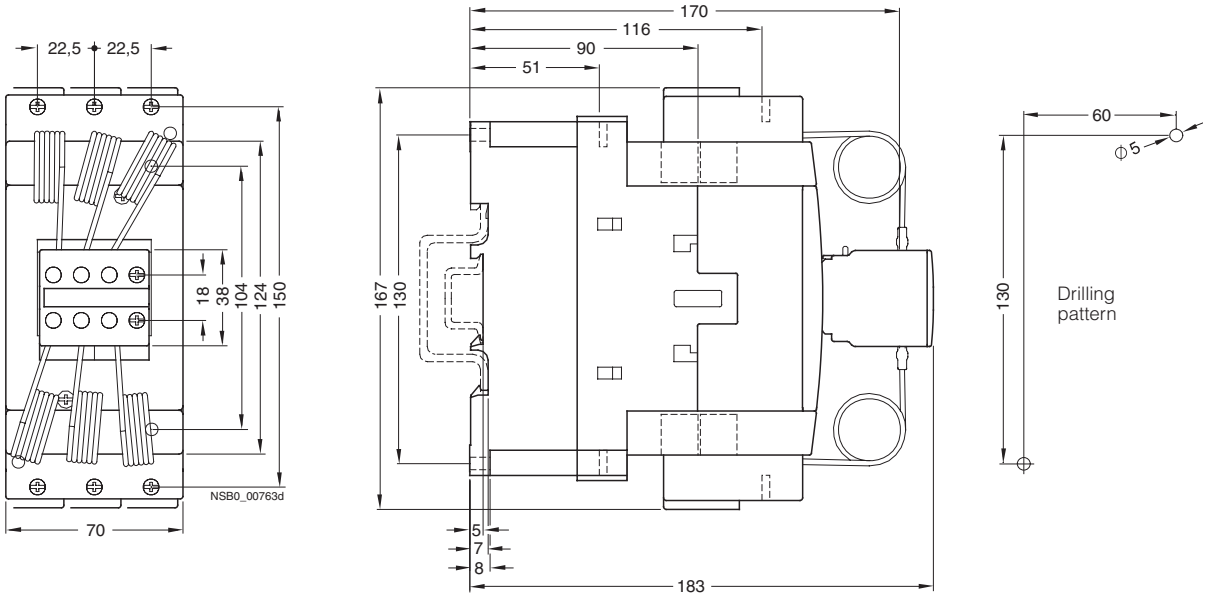
3RT16 17 capacitor contactors, size S00



3RT16 27 capacitor contactors, size S00



3RT16 47 capacitor contactors, size S00

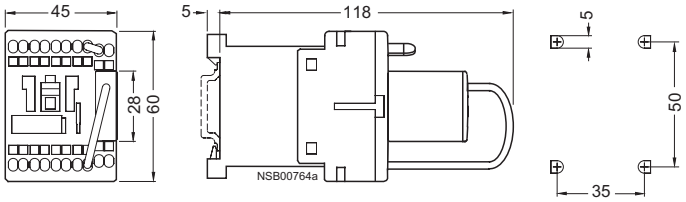


2

Project planning aids

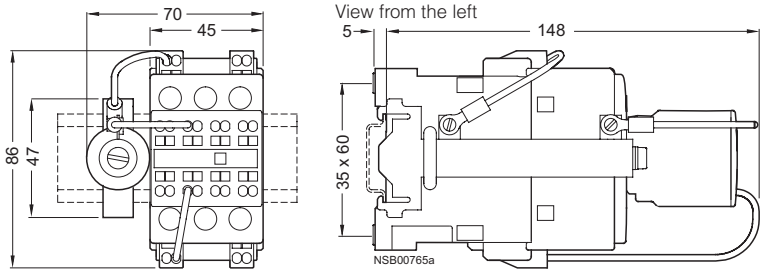
Contactors with extended operating range 0.7 to 1.25 U_s

Size S00



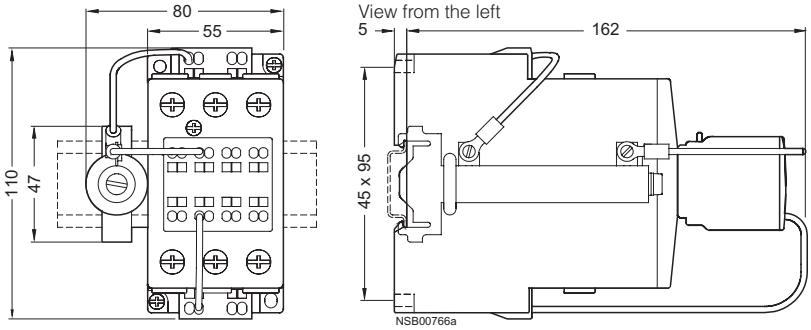
Without series resistor:
3RH11 22-2KB40
-2KF40
3RT10 17-2KB41
-2KF41
-2KB42
-2KF42
For dimensions see Page 2/227 (size S00)

Size S0 [1)]

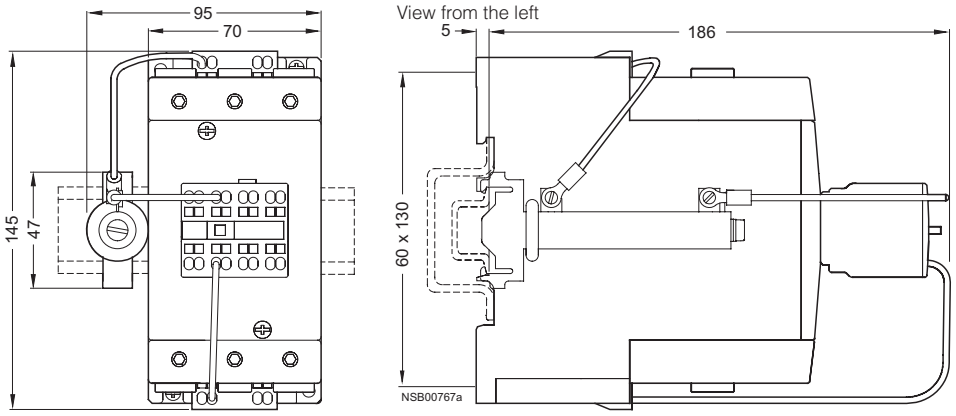


Without series resistor:
3RT10 25-3KB40
-3KF40
3RT10 26-3KB40
-3KF40
For dimensions see Page 2/228 (size S0)

Size S2 [1)]



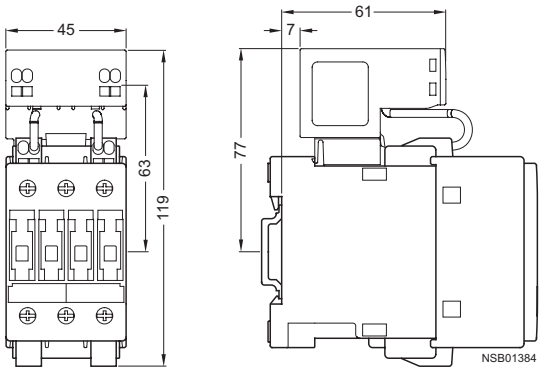
Size S3 [1)]



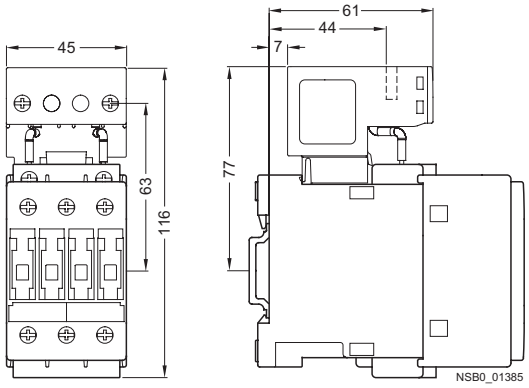
1) Sizes S0 to S3: Contactor series-resistor must be connected by customer.
The series resistor is equipped with the necessary connecting leads.

Contactors with extended operating range 0.7 to 1.25 U_s

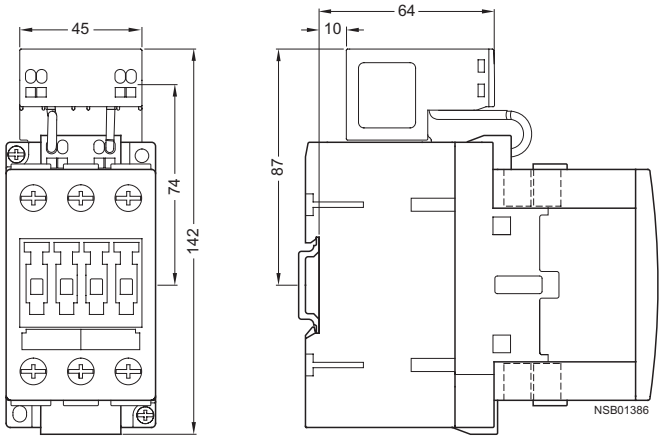
3RT10 2. -3X . 40-0LA2 contactors, size S0
Cage Clamp terminal



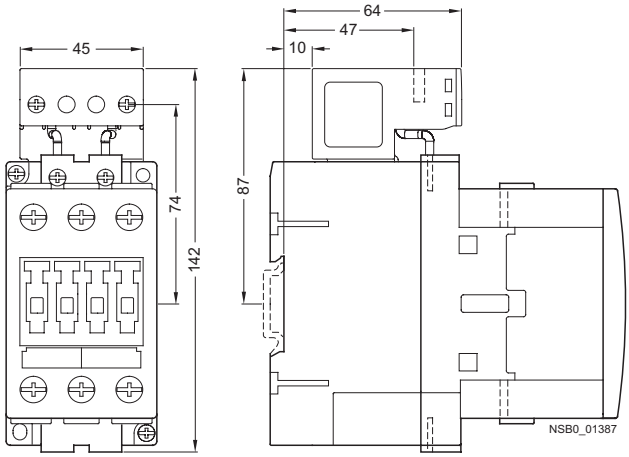
3RT10 2. -1X . 40-0LA2 contactors, size S0
Screw terminal



3RT10 3. -3X . 40-0LA2 contactors, size S2
Cage Clamp terminal



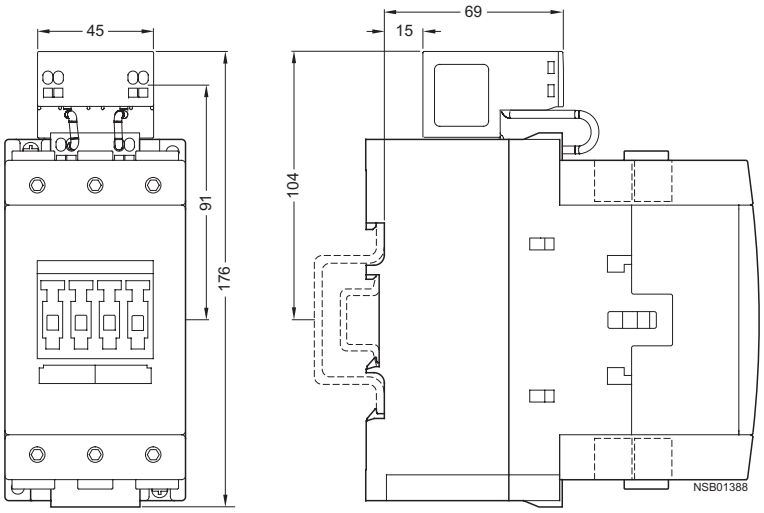
3RT10 3. -1X . 40-0LA2 contactors, size S2
Screw terminal



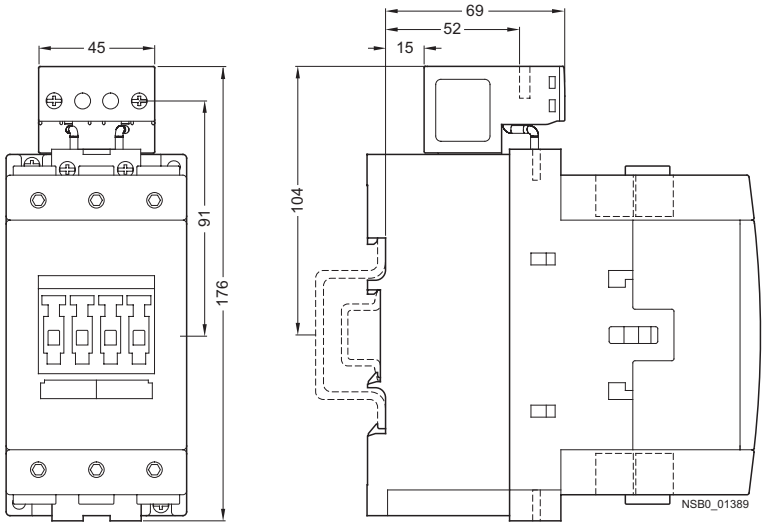
Project planning aids

Contactors with extended operating range 0.7 to 1.25 U_s

3RT10 4. -3X . 40-0LA2 contactors, size S3
Cage Clamp terminal



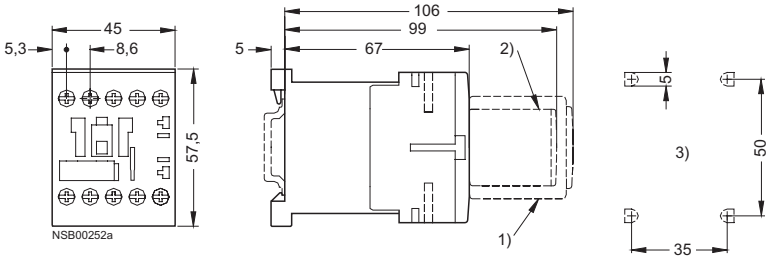
3RT10 4. -1X . 40-0LA2 contactors, size S3
Screw terminal



3RH11 and 3RH14 contactor relays

3RH11 contactor relays, size S00

with screw terminals
with surge suppressor and auxiliary switch block



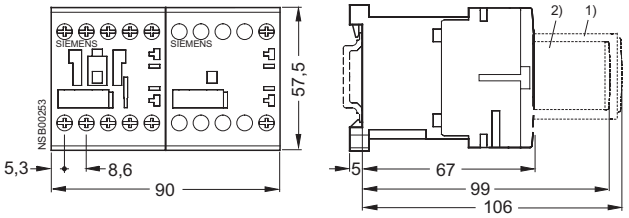
Lateral clearance from grounded parts = 6 mm

1) Auxiliary switch block
2) Surge suppressor
3) Drilling pattern

Deviating dimensions for contactor relays with Cage Clamp terminals:
Height: 60 mm
Mounting depth with auxiliary switch block: 110 mm

3RH14 latched contactor relays, size S00

with surge suppressor and auxiliary switch block



3RH11 coupling relays

3RH11 coupling relays, size S00

with screw terminals
with surge suppressor

1) Surge suppressor
2) Drilling pattern

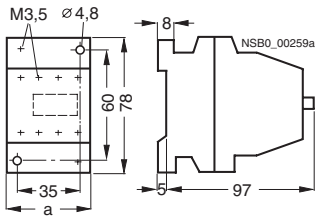
Deviating dimensions for coupling relays with Cage Clamp terminals:
Height: 60 mm

2

Project planning aids

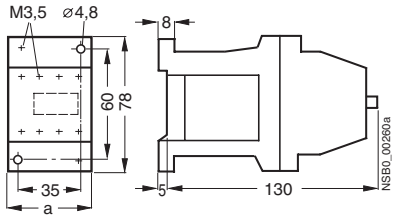
3TH42/3TH43

AC operation



Contactor Type	A
3TH42	45
3TH43	55

DC operation

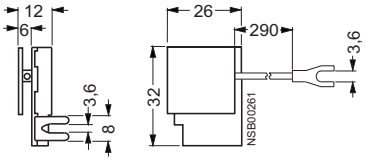


Contactor Type	A
3TH42	45
3TH43	55

Accessories for 3TH42/3TH43 contactor relays

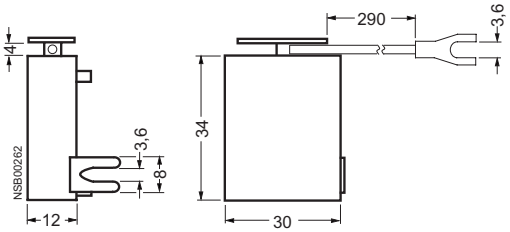
3TX7 402–3. varistors,
3TX7 402–3A suppression diode,
3TX7 402–3D diode assemblies

(for DC operation) for 3TH42/3TH43 contactor relays for mounting onto coil terminal



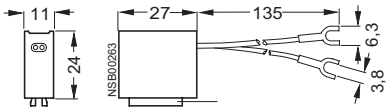
3TX7 402–3 RC elements

for 3TH42/3TH43 contactor relays for mounting onto the coil terminal



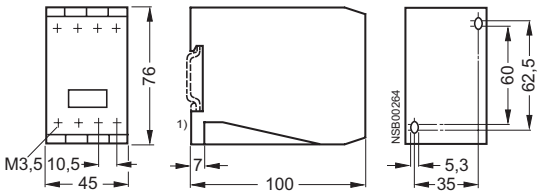
3TX4 180–0A ON-delay devices

for 3TH42/3TH43 contactor relays



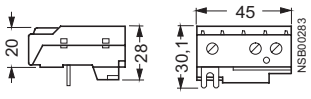
3TX4 701 OFF-delay devices

for 3TH42/3TH43 contactor relays



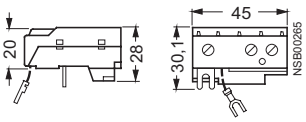
3TX4 090–0C interface

for mounting onto the contactor coil of 3TH42/3TH43 contactor relays without surge suppression



3TX4 090–0D interface

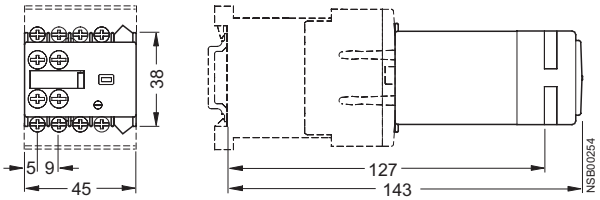
for mounting onto the contactor coil of 3TH42/3TH43 contactor relays with surge suppression



1) For 35 mm standard mounting rail

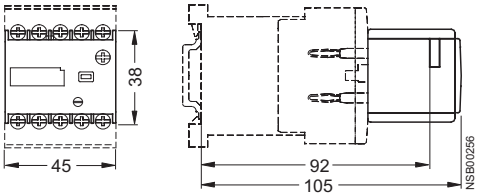
Accessories for 3RT1 contactors

3RT19 16-2E . . ., 3RT19 16-2F . . ., 3RT19 16-2G . . .
solid-state time-delay auxiliary switch blocks
for contactors, size S00



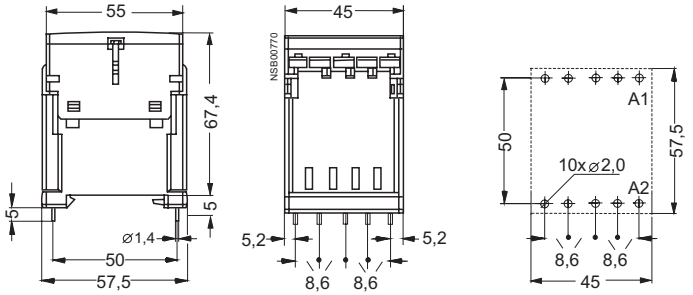
3RT19 16-2 . . . .
solid-state time-delay blocks, ON-delay
Size S00

for mounting at the front of the contactors
(the dimensions are also valid for time-delay blocks with an OFF-delay)

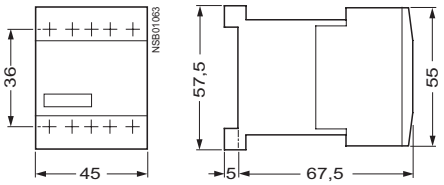


3RT19 16-4KA1
solder pin adapter
Size S00

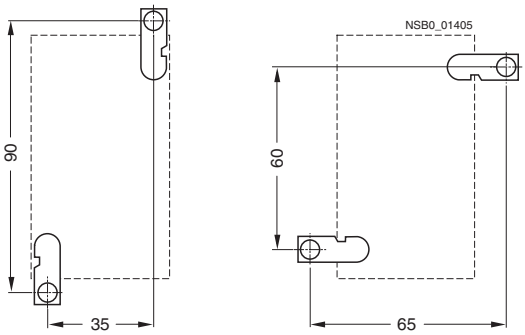
mounted onto 3RT10 1. contactors with 1 auxiliary contact in the basic unit



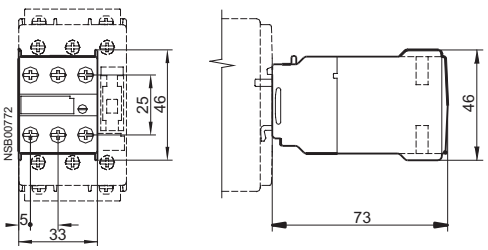
3RT19 16-2B.01
OFF-delay
for contactors, sizes S00 to S3



3RT19 26-4P
screw adapter
for contactors, size S0

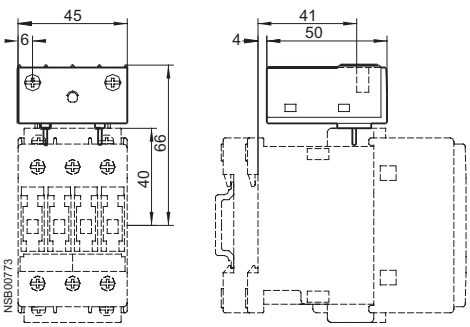


3RT19 26-2E . . ., 3RT19 26-2F . . ., 3RT19 26-2G . . .
solid-state time-delay auxiliary switch blocks
for contactors, sizes S0 to S3



3RT19 26-2 . . . .
solid-state time-delay blocks, ON-delay
Sizes S0 to S3

for mounting onto the top of the contactors
(the dimensions are also valid for time-delay blocks with an OFF-delay
and for 3RH19 24-1GP11 interfaces)



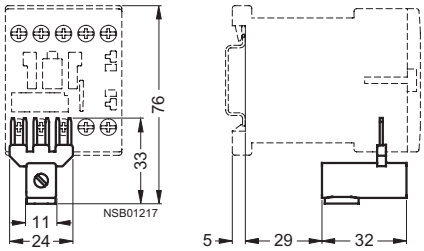
2

Project planning aids

Accessories for 3RT1 contactors

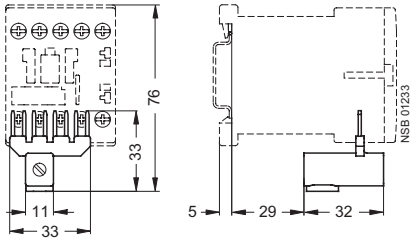
3RT19 16-4BB31
parallel connector
Size S00

3-pole, with terminal



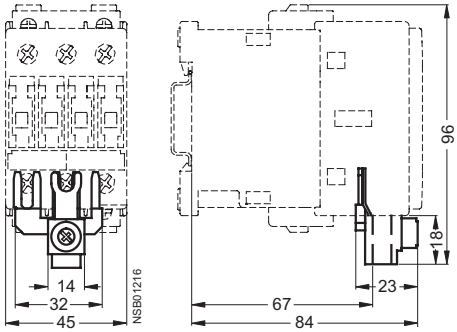
3RT19 16-4BB41
parallel connector
Size S00

4-pole, with terminal



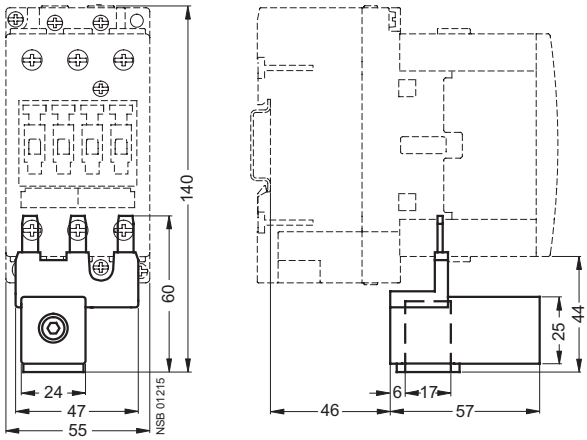
3RT19 26-4BB31
parallel connector
Size S0

3-pole, with terminal



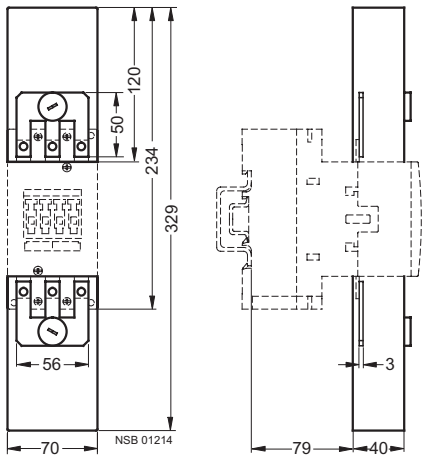
3RT19 36-4BB31
parallel connector
Size S2

3-pole, with terminal

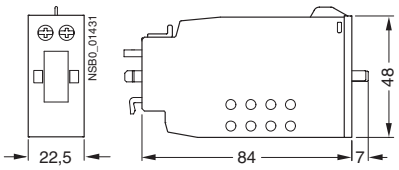


3RT19 46-4BB31
parallel connector
Size S3

3-pole, with through hole and cover for shock protection

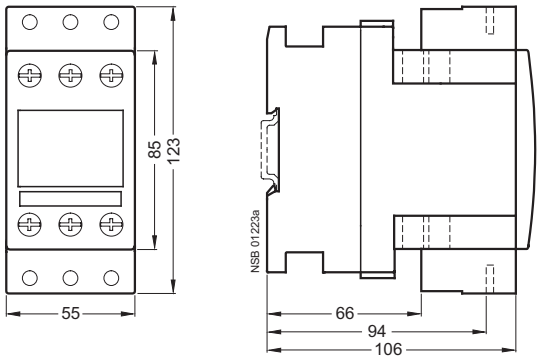


3RT19 26-3A .
mechanical latching block

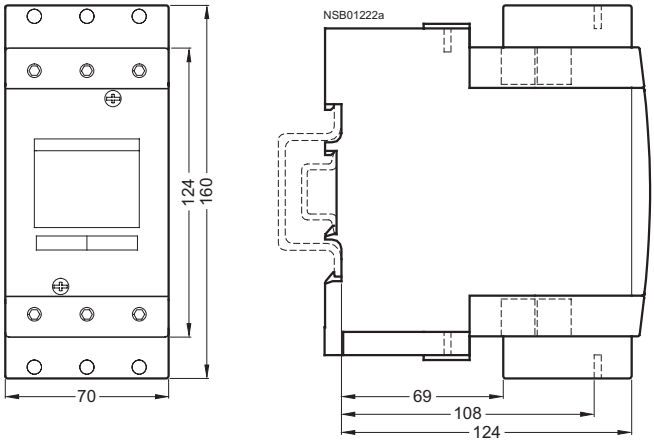


Accessories for 3RT1 contactors

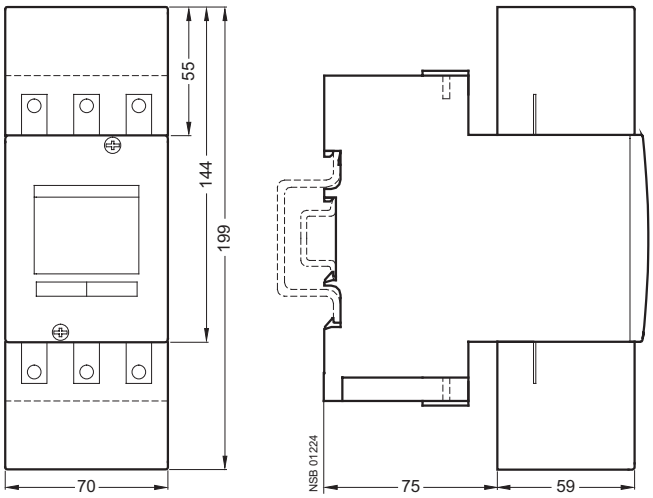
3RT19 36-4EA2 terminal cover for box terminals
for size S2



3RT19 46-4EA2 terminal cover for box terminals
for size S3



3RT19 46-4EA1 terminal cover for cable lug and bar connection
for size S3



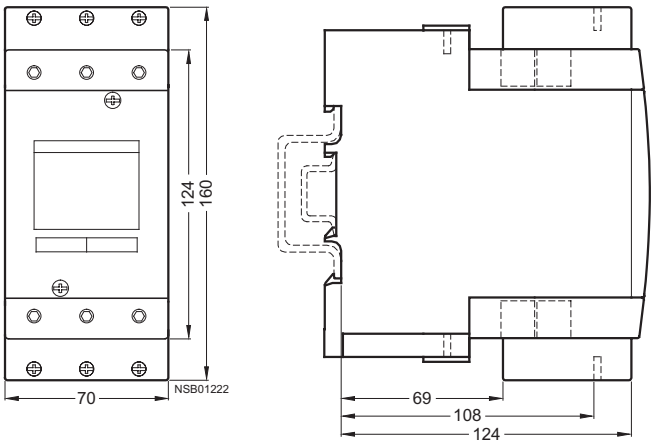
2

Project planning aids

Accessories for 3RT1 contactors

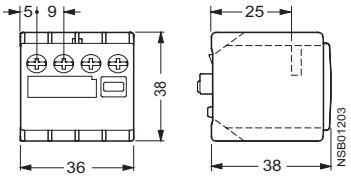
3RT19 46-4F auxiliary conductor terminal, 3-pole
Size S3

mounted on contactor



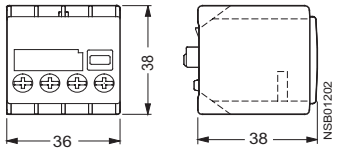
3RH19 11-1AA . ., 3RH19 11-1LA . .
auxiliary switch block
for size S00

Screw terminal,
2-pole
Cable entry from above



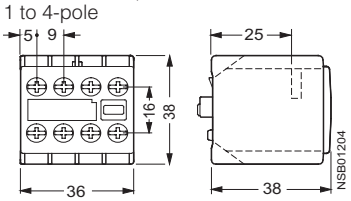
3RH19 11-1BA . ., 3RH19 11-1MA . .
auxiliary switch block
for size S00

Screw terminal,
2-pole
Cable entry from below



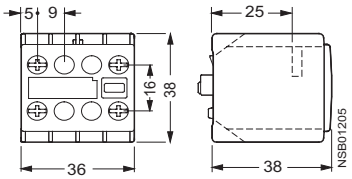
3RH19 11-1F . ., 3RH19 11-1H . .
auxiliary switch block acc. to EN 50012 and EN 50005
for size S00

Screw terminal,
1 to 4-pole



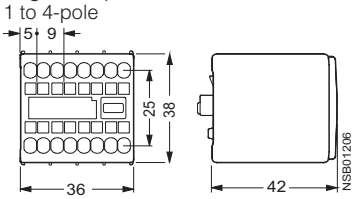
3RH19 11-. NF . .
solid-state compatible auxiliary switch block acc. to EN 50005
for size S00

Screw terminal [1)]



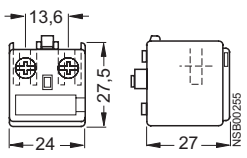
3RH19 11-2F . . ., 3RH19 11-2H . . .
auxiliary switch block acc. to EN 50012 and EN 50005
for size S00

Cage Clamp terminal
1 to 4-pole



3RH19 11-1AA.., 3RH19 11-1BA..
auxiliary switch block, 1-pole
Size S00

cable entry from one side

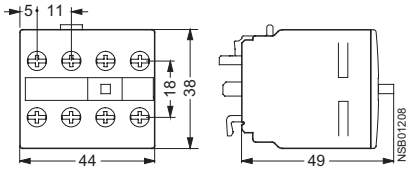


1) Deviating dimension for auxiliary switch block with Cage Clamp terminal: mounting depth 42 mm.

Accessories for 3RT1 contactors

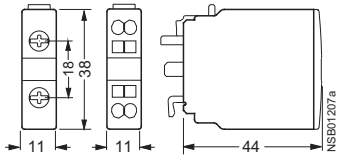
3RH19 21- . HA . ., 3RH19 21- . F . . .
auxiliary switch block acc. to EN 50005 and EN 50012
For sizes S0 to S3:

Screw terminal [1)]
4-pole



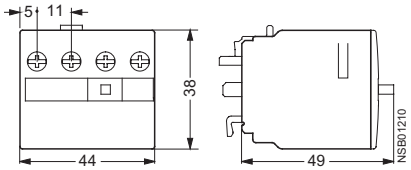
3RH19 21- . C . . .
auxiliary switch block acc. to EN 50005 and EN 50012
for sizes S0 to S12

Screw and Cage Clamp terminal
1-pole



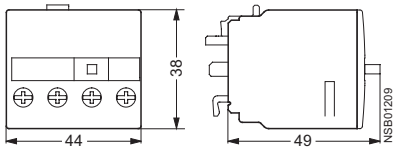
3RH19 21-1LA . .
auxiliary switch block acc. to EN 50005
for sizes S0 to S12

Screw terminal,
2-pole
Cable entry from above



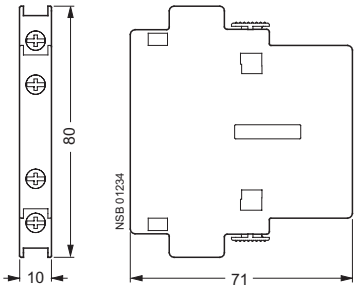
3RH19 21-1MA . .
auxiliary switch block acc. to EN 50005
for sizes S0 to S12

Screw terminal,
2-pole
Cable entry from below



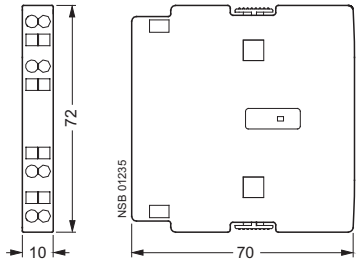
3RH19 21-1D . . ., 3RH19 21-1J . . ., 3RH19 21-1E . . ., 3RH19 21-1K . . .
auxiliary switch block, laterally mountable,
for sizes S0 to S12

Screw terminal,
2-pole



3RH19 21-2D . . ., 3RH19 21-2J . . ., 3RH19 21-2E . . ., 3RH19 21-2K . . .
auxiliary switch block, laterally mountable,
for sizes S0 to S12

Cage Clamp terminal
2-pole



1) External dimensions for screw and Cage Clamp terminals are identical.

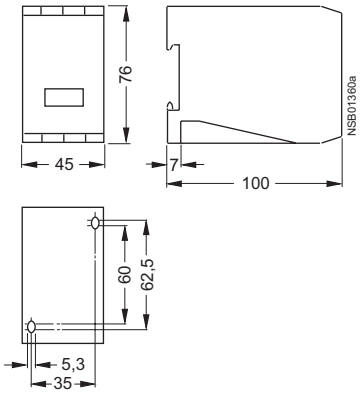
2

Project planning aids

Accessories for 3RT1 contactors

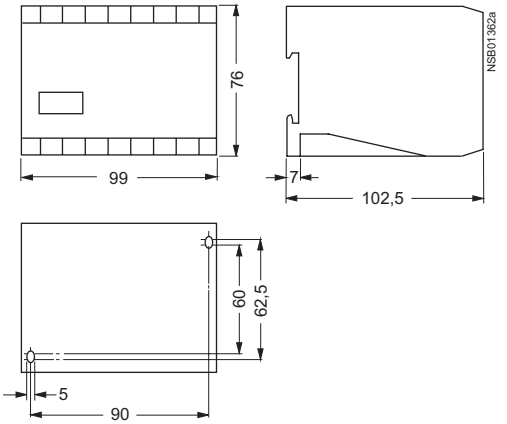
3RT19 66-1PV3
main conducting path damping module
for 3RT12 vacuum contactors, sizes S10 and S12

Connected to outgoing side of contactor (2-T1/4-T2/6-T3)
over approx. 350 mm long, molded cable



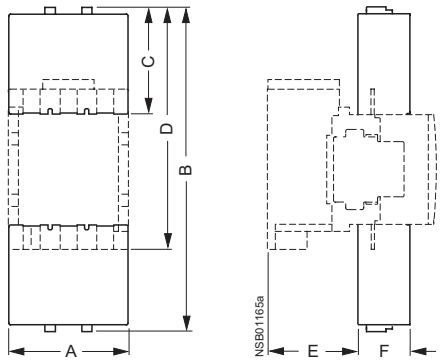
3RT19 66-1PV4
main circuit damping module
for 3RT12 vacuum contactors, sizes S10 and S12

Connected to outgoing side of contactor (2-T1/4-T2/6-T3)
over approx. 350 mm long, molded cable



3RT19 .6-4EA1
terminal cover for rail connection
sizes S6 to S12

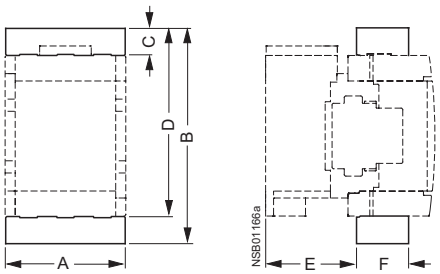
for mounting onto the contactor enclosure



	A	B	C	D	E	F
S6	119	324	107	241	91	52
S10	145	385	128	289	106	66
S12	145	399	128	303	124	66

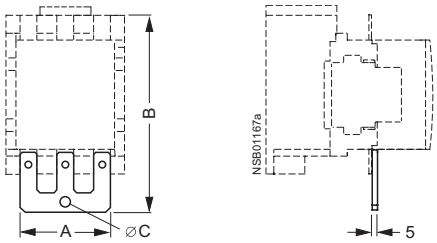
3RT19 .6-4EA1
terminal cover for rail connection
sizes S6 to S12

for mounting onto box terminal



	A	B	C	D	E	F
S6	119	215	27	190	91	52
S10	145	265	30	235	106	66
S12	145	279	30	249	124	66

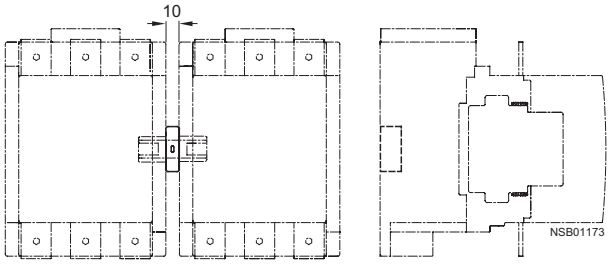
3RT19 .6-4BA31
links for paralleling
Sizes S6 to S12



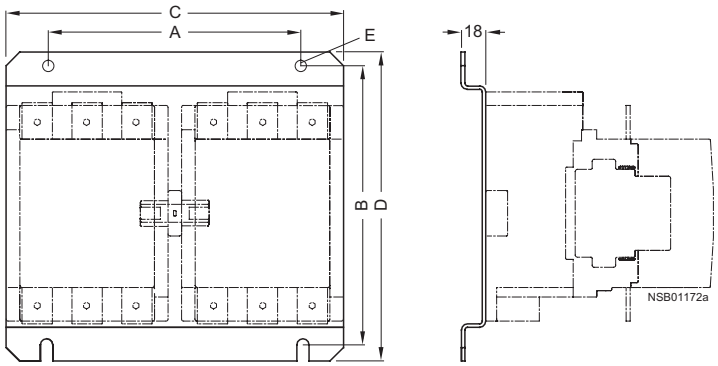
	A	B	⌀C
S6	91	199	10.5
S10	121	244	12.5
S12	121	258	12.5

Accessories for 3RA1 contactor assemblies

3RA19 54-2A
mechanical interlock
Sizes S6 to S12

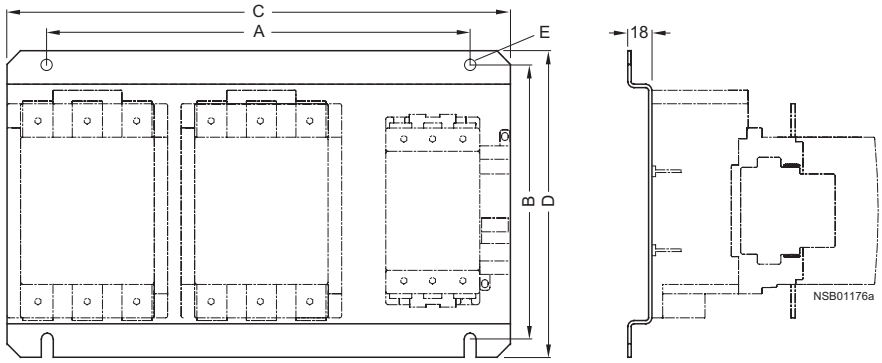


3RA19.2-2A base plates for reversing contactor assemblies



	A	B	C	D	E
S6	190	205	250	229	9
S10	240	249	300	275	11
S12	280	249	330	275	11

3RA19.2-2E, 3RA19.2-2F
base plates for star-delta assemblies



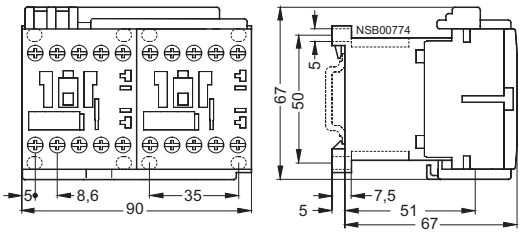
	A	B	C	D	E
S6-S6-S3	316	205	376	229	9
S6-S6-S6	343	205	403	229	9
S10-S10-S6	393	250	453	275	11
S10-S10-S10	423	250	483	275	11
S12-S12-S10	450	250	510	275	11
S12-S12-S12	465	250	525	275	11

2

Project planning aids

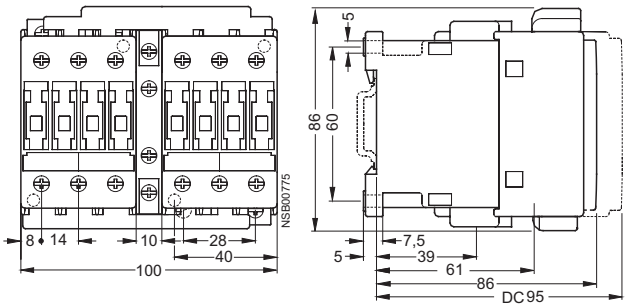
3RA13 reversing contactor assemblies

Size S00



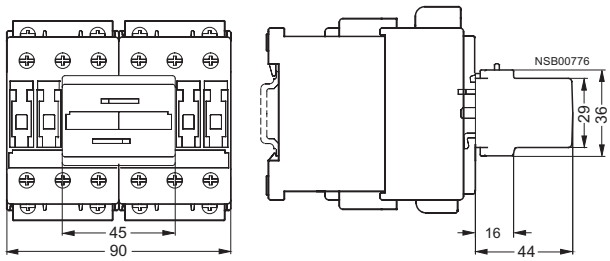
Size S0
With 3RA19 24-2B mechanical interlock

Laterally mountable

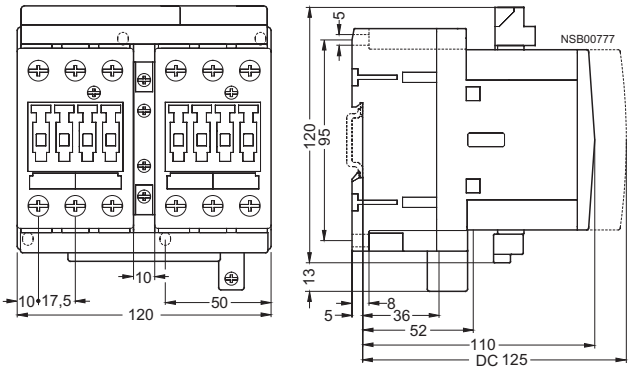


With 3RA19 24-1A mechanical interlock

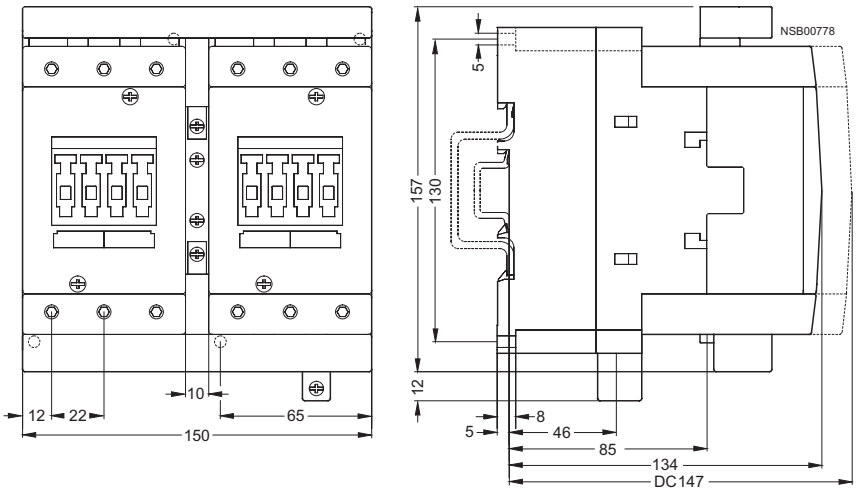
Mountable on front



Size S2

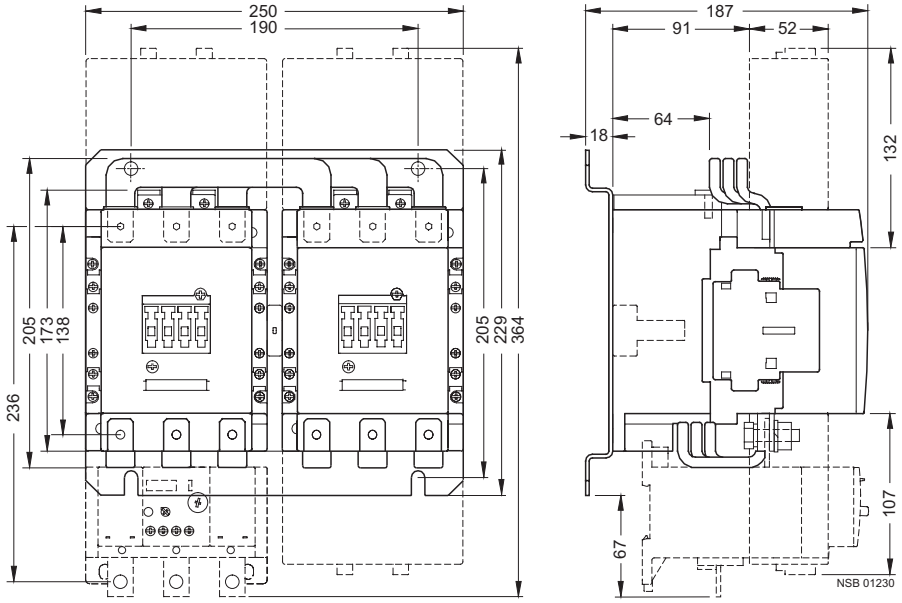


Size S3

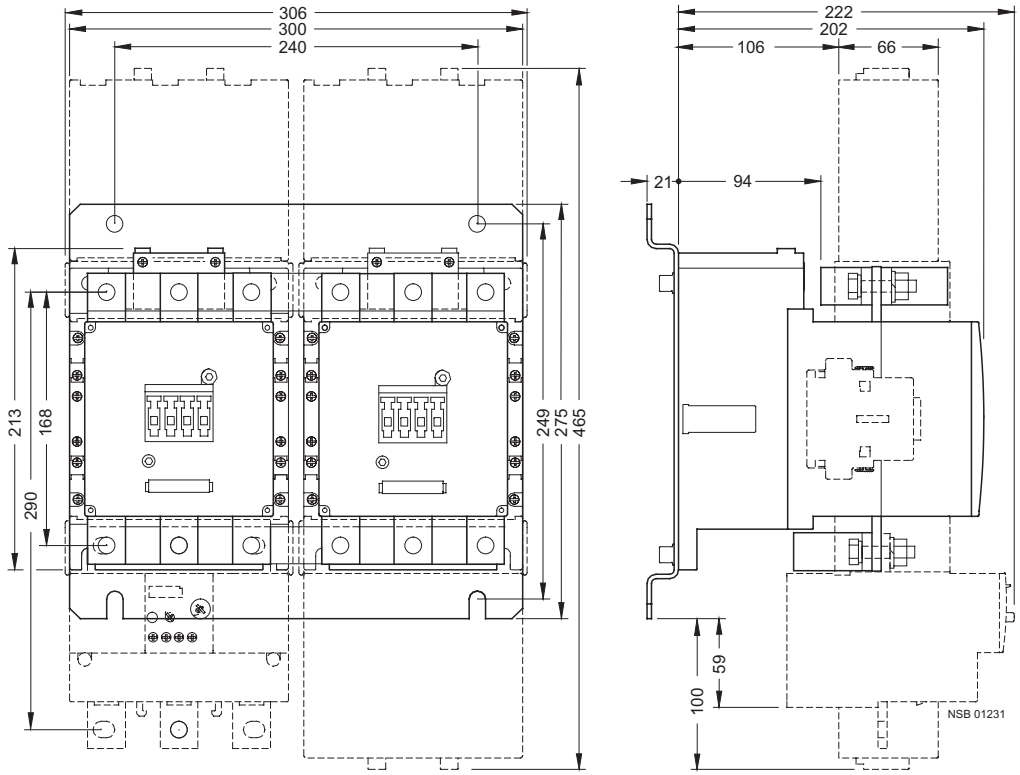


3RA13 reversing contactor assemblies

Size S6



Size S10

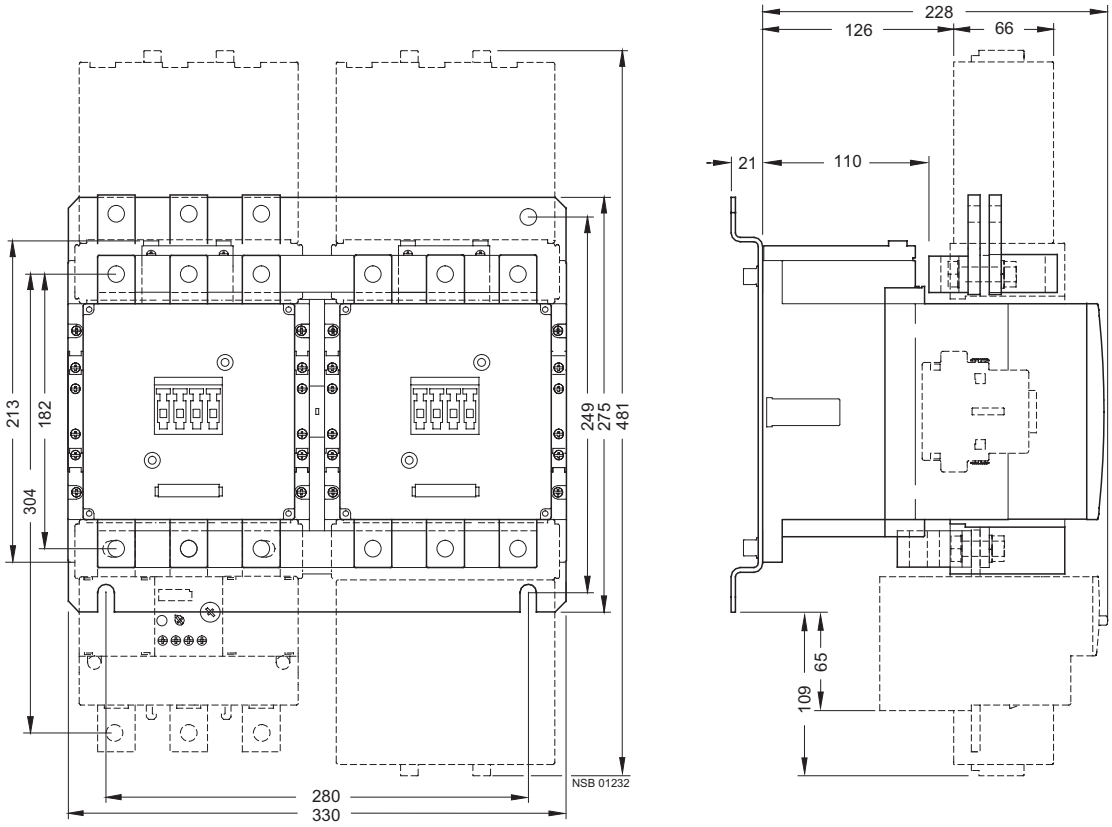


2

Project planning aids

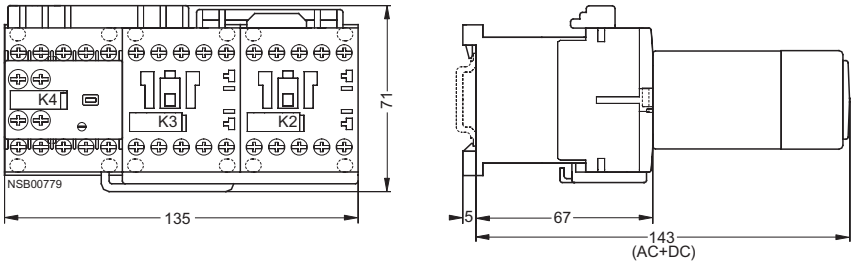
3RA13 reversing contactor assemblies

Size S12

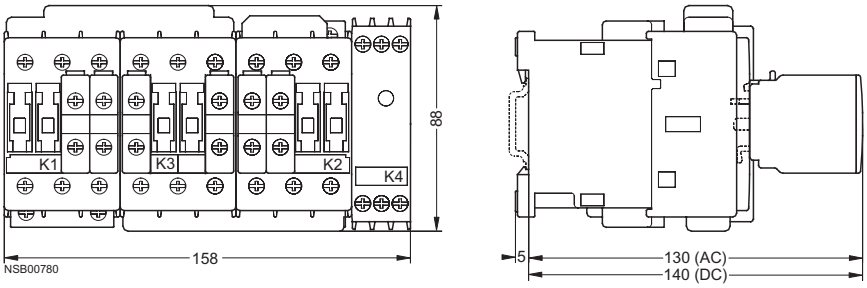


3RA14 contactor assemblies for star-delta starting

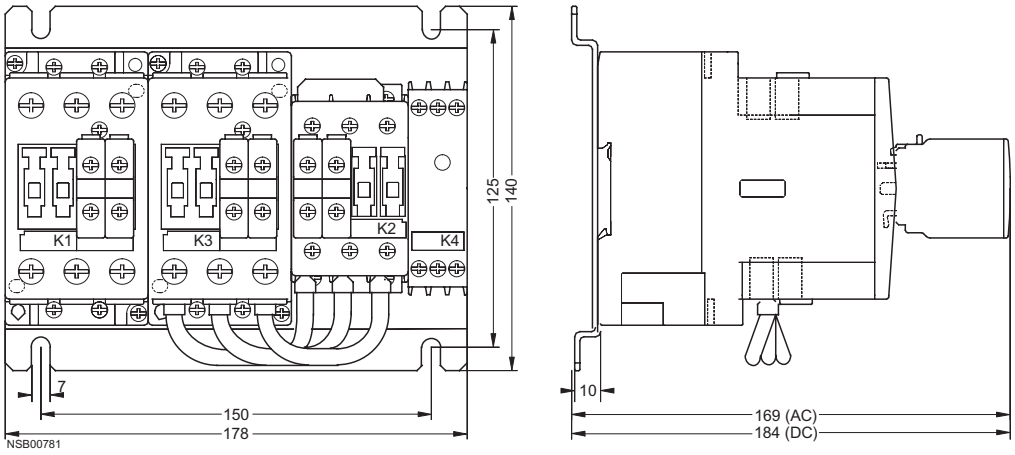
Sizes S00 – S00 – S00



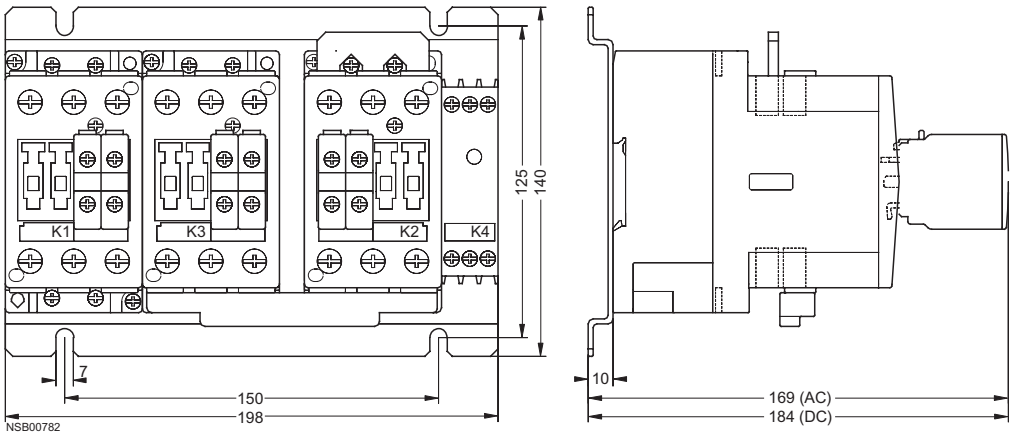
Sizes S0 – S0 – S0



Sizes S2 – S2 – S0



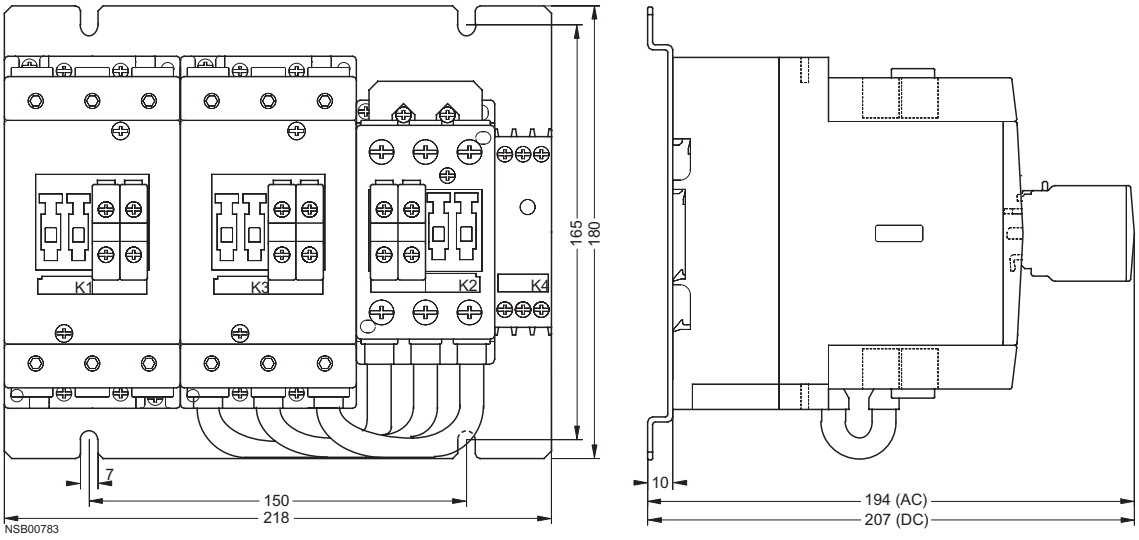
Sizes S2 – S2 – S2



Project planning aids

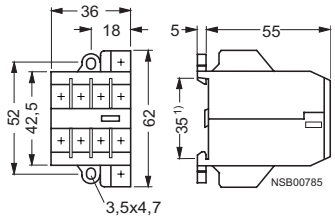
3RA14 contactor assemblies for star-delta starting

Sizes S3 – S3 – S2

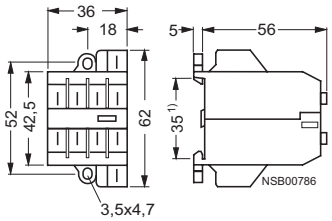


3TG10 miniature contactors

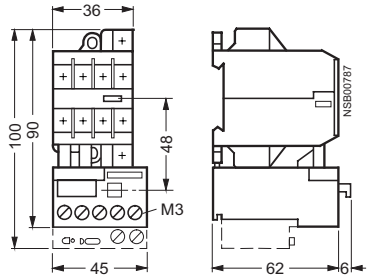
3TG10..-0.. contactors
with screw terminals



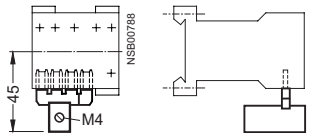
3TG10..-1.. contactors
with flat connectors



3TG10 contactors
with 3UA7 overload relay



Links for paralleling, 4-pole, with
3RT19 16-4BB41 terminal for 3TG10 contactors

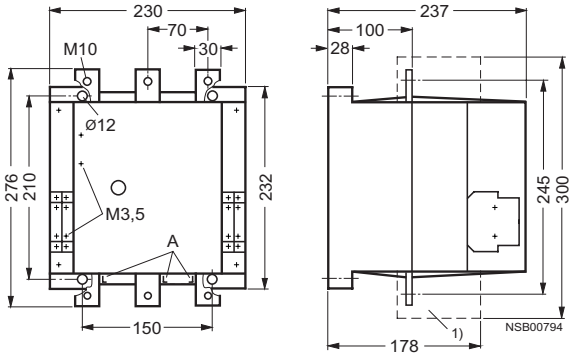


The links for paralleling can be reduced by one pole.

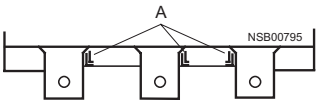
1) Can be snapped onto 35 mm standard mounting rails.

3TF68 and 3TF69 vacuum contactors, 3-pole

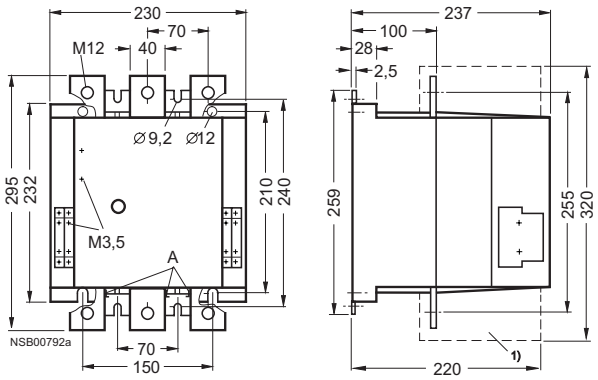
3TF68 vacuum contactors



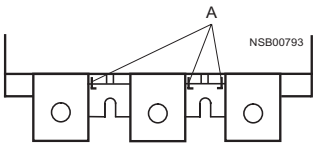
Detail
A = Contact erosion indicator for vacuum interrupter contacts



3TF69 vacuum contactors



Detail
A = Contact erosion indicator for vacuum interrupter contacts



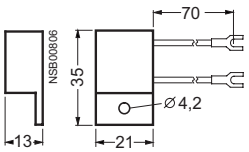
1) With box terminals for laminated copper bars (accessories).

2

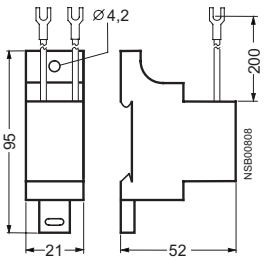
Project planning aids

Accessories for 3T contactors

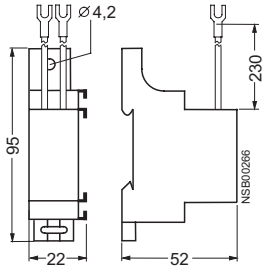
3TX7 462-3 . varistors



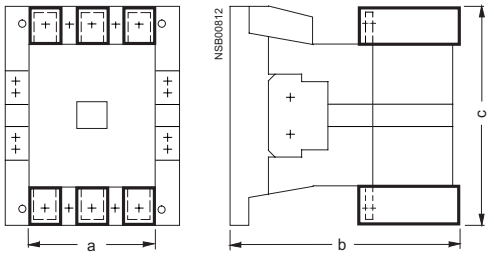
RC elements and varistors
3TX7 462-3., 3TX7 522-3.,
3TX7 572-3.



3TX7 090-0D coupling relay
for laterally snapping onto contactors

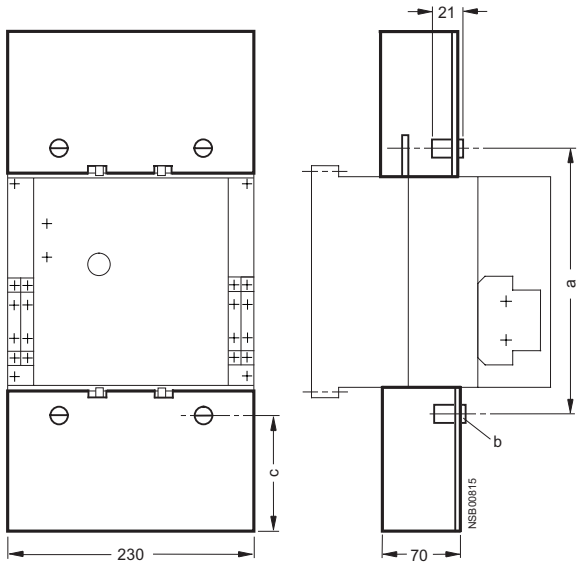


3TX7 box terminals for laminated copper bars
Box terminals with cover, mounted to contactor



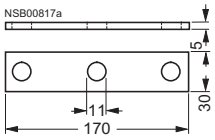
For contactor Type	Box terminal	a	b	c
3TF68	3TX7 570-1.	182	178	300
3TF69	3TX7 690-1F	200	219	320

3TX7 686-0A and 3TX7 696-0A extended terminal covers
for 3TF68 and 3TF69 contactors, size 14,
mountable to free screw end of the two outer conducting paths

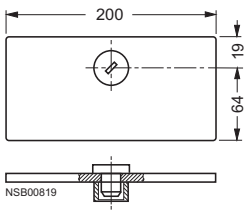


For contactor Type	Terminal cover	a	b	c
3TF68	3TX7 686-0A	245	M10	104
3TF69	3TX7 696-0A	255	M12	99

3TX7 680-0D parallel connection
for 3TF68 contactors

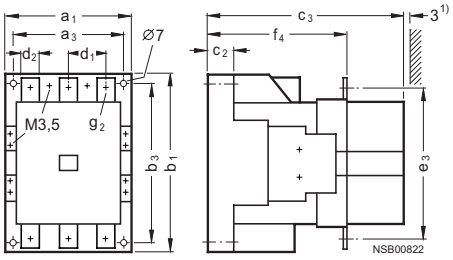


3TX7 680-0E cover plate
for 3TX7 680-0D parallel connection for 3TF68 contactor



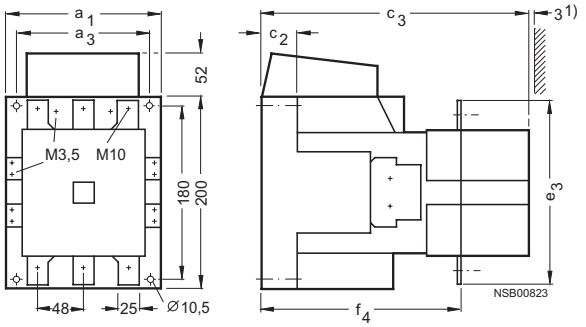
3TB5 contactors

3TB50 and 3TB52 contactors
Sizes 6 and 8



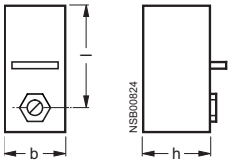
Type	a_1	a_3	b_1	b_3	c_2	c_3	d_1	d_2	e_3	f_4	g_2
3TB50	120	100	150	130	23	198	37	15	133	137.5	M6
3TB52	135	110	180	160	28	217	42	20	154	147	M8

3TB54 and 3TB56 contactors
Sizes 10 and 12



Type	a_1	a_3	c_2	c_3	e_3	f_4
3TB54	145	120	30.5	264	168	188
3TB56	160	130	39	282	178	200

3TX6 . . 6-3B terminal covers

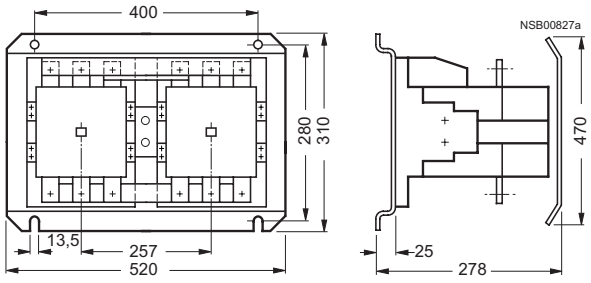


For contactor Size	Type	b	h	l
6	3TB50	27	33	58
8	3TB52	34	44	75
10 to 12	3TB54 to 3TB56	38	56	95

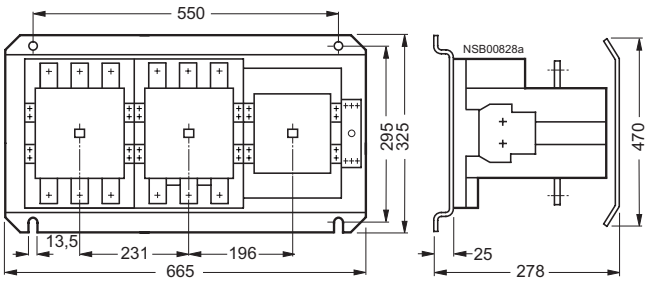
1) Minimum clearance for insulated parts: 3 mm.
Minimum clearance for grounded components: 10 mm.

3TD68, 3TE68 contactor assemblies

3TD68 contactor assemblies



3TE68 contactor assemblies



2

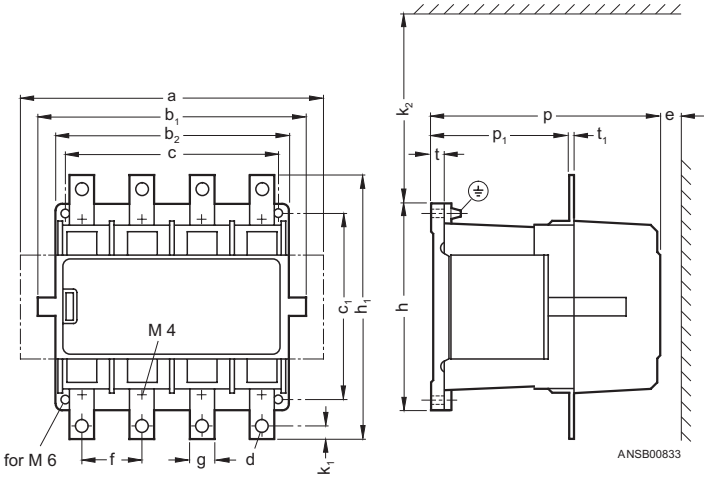
Project planning aids

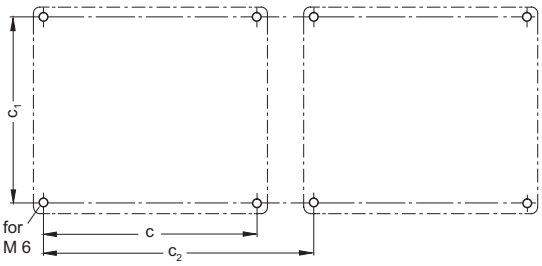
3TK10 to 3TK17 contactors

3TK10 to 3TK17 contactors

The scope of supply includes screws and rubber buffers.

⏚ M10 grounding screw for 3TK14 to 3TK17





Contactor Type	a	b_1	b_2	c	c_1	c_2 [1]	c_2 [2]	d [3]	e min.	f	g	h	h_1	k_1	k_2 [4]	p	p_1	t	t_1
3TK10	186	165	136	120	140	166	187	6.6	40	41	15	156	156	7.5	134	154.5	102.3	10	4
3TK11	186	165	136	120	140	168	187	11	40	42	20	156	172	10	134	154.5	102.3	10	4
3TK12	225	201	176	160	140	202	226	11	15	45	20	156	198	10	134	172	106.7	10	5
3TK13	225	201	176	160	140	202	226	11	15	45	20	156	198	10	134	172	106.7	10	5
3TK14	266	244	244	220	200	271	293	11	40	67	25	223	272	12.5	–	225.5	139.5	23 [5]	6
3TK15	266	244	244	220	200	271	293	11	40	67	25	223	273	12.5	–	225.5	139.5	23 [5]	6
3TK17	266	244	244	220	200	271	293	11	40	67	40	223	273	12.5	–	225.5	139.5	23 [5]	6

1) Clearance when 2 contactors, each with one auxiliary switch block opposite, are mounted.

2) Clearance when 2 contactors, each with two auxiliary switch blocks opposite, are mounted.

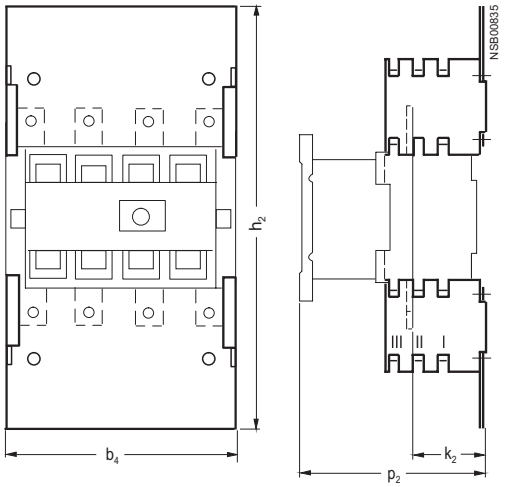
3) Nuts, bolts, screws and washers are supplied.

4) Minimum clearance for removing the withdrawable coil.

5) Damping elements are supplied.

Accessories for 3TK1 contactors

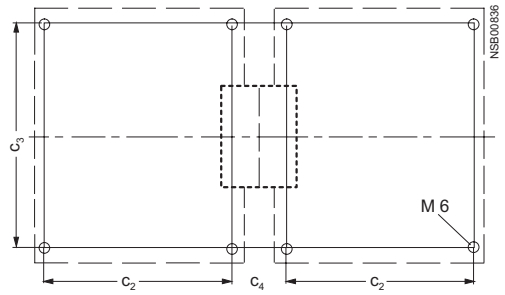
3TK19 4. terminal cover



Contactor Type	Terminal cover	h_2	p_2 for			k_2 for			b_4
			I	II	III	I	II	III	
3TK10, 3TK11	3TK19 40-0A	372	153	178	203	47	72	97	168
3TK12, 3TK13	3TK19 42-0A	399	158	183	208	47	72	97	202
3TK14, 3TK15	3TK19 44-0A	464	193	218	243	47	72	97	268
3TK17	3TK19 46-0A	464	193	218	243	47	72	97	268

3TK19 20 and 3TK19 22 locking devices

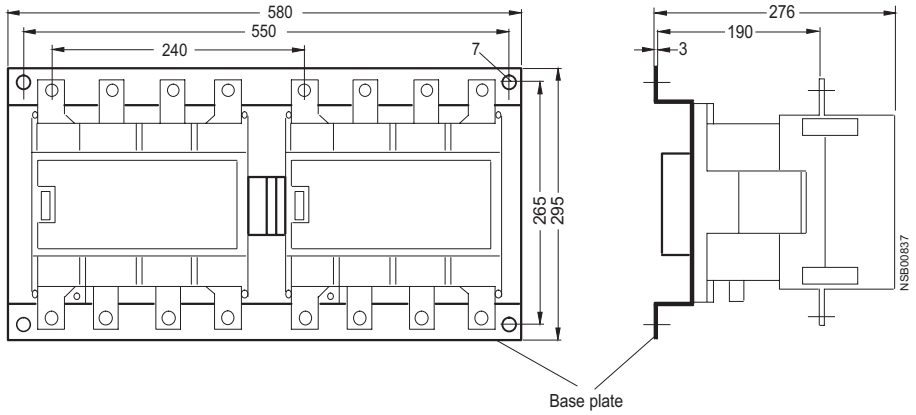
for mechanical locking of two identical 3TK10 to 3TK13 contactors mounted side by side on the mounting plate



Contactor Type	Locking device	c_2	c_3	c_4
3TK10, 3TK11	3TK19 20-0A	120	140	65
3TK12, 3TK13	3TK19 22-0A	160	140	63.5

3TK19 24 locking device

for mechanical locking of two identical 3TK14, 3TK15 or 3TK17 contactors mounted side by side on the mounting plate

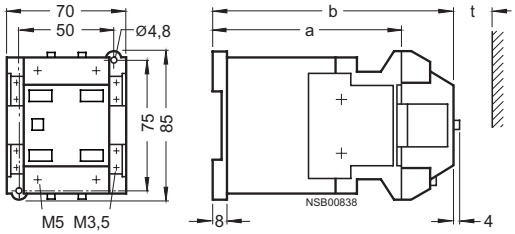


2

Project planning aids

3TC4 and TC5 contactors

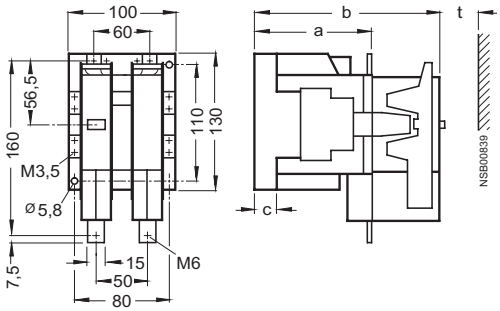
3TC44 contactors
Size 2, AC and DC operation



t = min. clearance from insulated compts.: 15 mm (600 V and 750 V)
from grounded compts.: 30 mm (600 V and 750 V)

	a	b
DC operation	109	141
AC operation	68	100

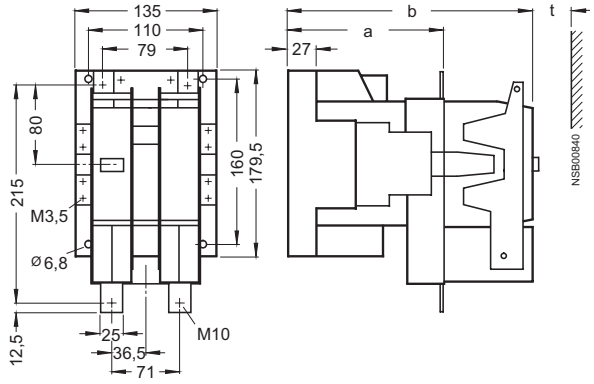
3TC48 contactors
Size 4, AC and DC operation



t = min. clearance from insulated compts.: 15 mm (600 V), 20 mm (750 V)
from grounded compts.: 35 mm (600 V), 55 mm (750 V)

	a	b	c
DC operation	112	180	21,5
AC operation	86	154	23,5

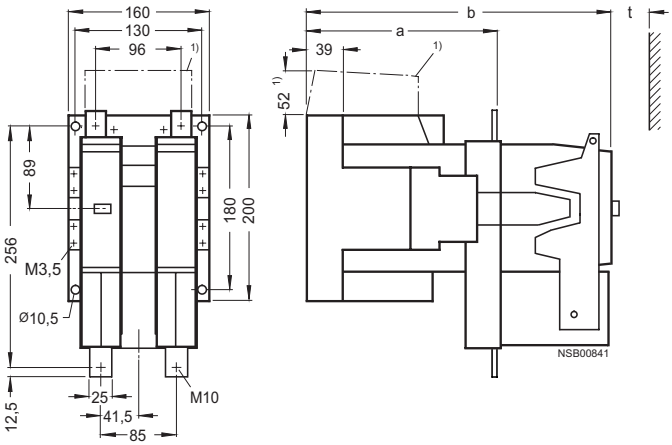
3TC52 contactors
Size 8, AC and DC operation



t = min. clearance from insulated compts.: 20 mm (600 V and 750 V)
from grounded compts.: 70 mm (600 V and 750 V)

	a	b
DC operation	147	232
AC operation	115	200

3TC56 contactors
Size 12, AC and DC operation



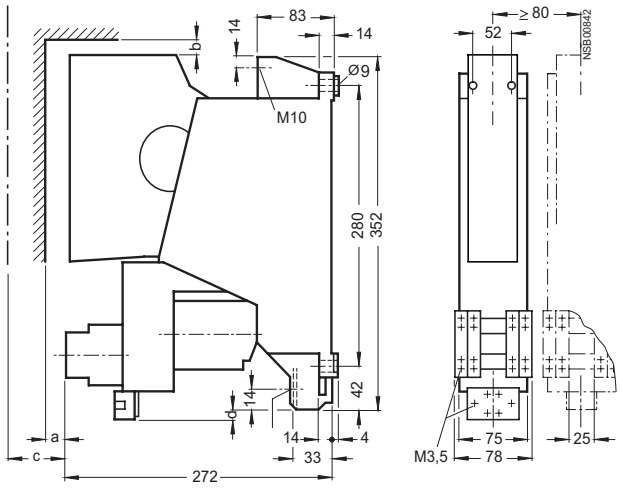
t = min. clearance from insulated compts.: 25 mm (600 V and 750 V)
from grounded compts.: 80 mm (600 V), 100 mm (750 V)

	a	b
DC operation	200	310
AC operation	141	251

1) DC operation only.

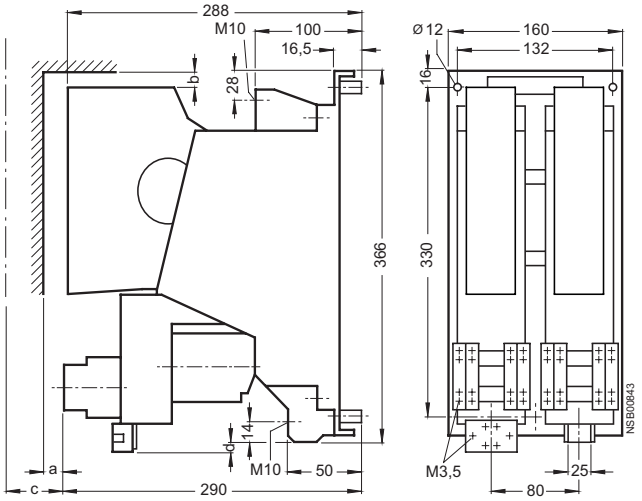
3TC7 contactors

3TC74 contactors
Size 12, DC and AC operation



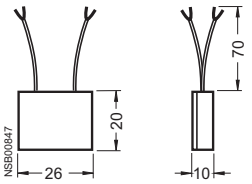
Dimension	Minimum clearance from insulated components	grounded components
A	≥ 20	≥ 50
b	≥ 10	≥ 25
c	≥ 180 (clearance for removing arc chute)	

3TC78 contactors
Size 12, DC and AC operation



Dimension	Minimum clearance from insulated components	grounded components
A	≥ 20	≥ 50
b	≥ 10	≥ 25
c	≥ 180 (clearance for removing arc chute)	
d	Coil connection 3TC78 14-0E: 8 mm 3TC78 14-1C: 16 mm	

3TX2 746-2. varistors
for 3TC74 and 3TC78 contactors

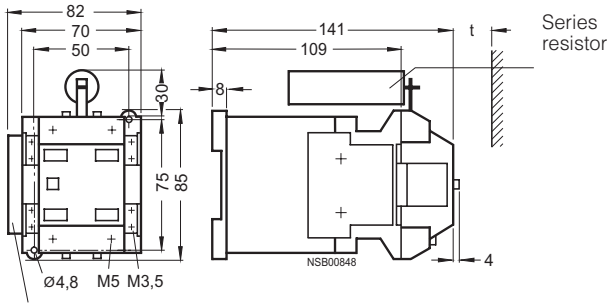


2

Project planning aids

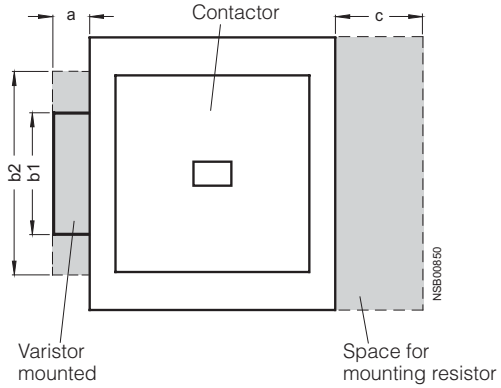
Contactors with extended operating range 0.7 to 1.25 U_s

3TC44 17-0L contactors, size 2, DC operation



t = min. clearance from insulated compts.: 15 mm (600 V and 750 V)
from grounded compts.: 30 mm (600 V and 750 V)

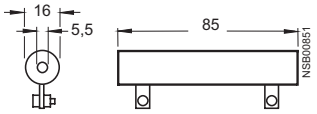
Additional space requirements for mounting resistors and varistors with 3TB50 to 3TB56, 3TC48 to 3TC56 contactors



For contactor	Additional space requirements for series resistor	for varistor		
	c	a	b_1	b_2*)
3TB50	30	13	70	110
3TB52, 3TB54, 3TB56	–	15	82	120
3TC48	30	13	70	110
3TC52, 3TC56	–	15	82	120

*) Terminal compartment

Separately mounted series resistor



For contactor	No. of series resistors
3TB52, 3TC52	1
3TB54, 3TB56	2
3TC56	2