

Switching Devices – Contactors and Contactor Assemblies

Power Contactors for Switching Motors

Introduction

Overview



Size
Type

S00
3RT201

S0
3RT202

3RT20 contactors

Type	3RT2015	3RT2016	3RT2017	3RT2018	3RT2023	3RT2024	3RT2025	3RT2026	3RT2027	3RT2028
AC, DC operation	(p. 3/37, 3/38, 3/42 ... 3/45)				(p. 3/39, 3/40, 3/46 ... 3/48, 3/50)					

AC-3

I_e /AC-3/400 V	A	7	9	12	16	9	12	17	25	32	38
400 V	kW	3	4	5.5	7.5	4	5.5	7.5	11	15	18.5
230 V	kW	1.5	2.2	3	4	2.2	3	4	5.5	7.5	11
690 V	kW	4	5.5	5.5	7.5	7.5	7.5	11	11	18.5	18.5
1 000 V	kW	--	--	--	--	--	--	--	--	--	--

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

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

AC-1 (40 °C, ≤ 690 V)

I_e	3RT20	A	18	22	22	22	40	40	40	40	50	50
-------	-------	---	----	----	----	----	----	----	----	----	----	----

Accessories for contactors

Auxiliary switch blocks

• On front	3RH29, 3RA28	(p. 3/70 ... 3/75)	3RH29, 3RA28	(p. 3/70 ... 3/75)
• Lateral	3RH29	(p. 3/73)	3RH29	(p. 3/73)

Function modules

• Direct-on-line start/star-delta (wye-delta) starting	3RA281.	(p. 3/80)	3RA281.	(p. 3/80)
• IO-Link/AS-Interface	3RA271.-.AA00	(p. 3/82, 3/83)	3RA271.-.AA00	(p. 3/82, 3/83)

Surge suppressors

	3RT2916	(p. 3/77, 3/78)	3RT2926	(p. 3/77, 3/78)
--	----------------	-----------------	----------------	-----------------

3RU2 and 3RB3 overload relays

3RU thermal overload relays	3RU2116	0.11 ... 16 A (p. 7/101)	3RU2126	1.8 ... 40 A (p. 7/101)
------------------------------------	----------------	--------------------------	----------------	-------------------------

3RB solid-state overload relays

• for standard applications	3RB3016 3RB3113	0.1 ... 16 A (p. 7/121 ... 7/123)	3RB3026 3RB3123	0.1 ... 40 A (p. 7/121 ... 7/123)
• for High-Feature applications	3RB22, 3RB23 and 3RB24 with 3RB2906-2.G1 current measuring module	(p. 7/145) (p. 7/153) (p. 7/156) 0.3 ... 25 A	3RB22, 3RB23 and 3RB24 with 3RB2906-2.G1 current measuring module	(p. 7/145) (p. 7/153) (p. 7/156) 0.3 ... 25 A

3RV20 motor starter protectors

Motor starter protectors	3RV2011	0.11 ... 16 A (p. 7/22, 7/24)	3RV2021	0.45 ... 40 A (p. 7/22, 7/24)
Link modules	3RA2911	(p. 7/41, 7/43)	3RA2921	(p. 7/41, 7/43)

3RA23 reversing contactor assemblies

Complete units	Type	3RA2315	3RA2316	3RA2317	3RA2318	--	3RA2324	3RA2325	3RA2326	3RA2327	3RA2328
		(p. 3/182)					(p. 3/183)				
400 V	kW	3	4	5.5	7.5		5.5	7.5	11	15	18.5
Assembly kits, etc.		3RA2913-2AA. (p. 3/85)				--	3RA2923-2AA. (p. 3/85)				
Function modules		3RA271.-.BA00 (p. 3/82)				--	3RA271.-.BA00 (p. 3/82)				

3RA24 contactor assemblies for wye-delta starting

Complete units	Type	3RA2415	3RA2416	3RA2417	3RA2423	3RA2425	3RA2426
		(p. 3/195)			(p. 3/196)		
400 V	kW	5.5	7.5	11	11	15/18.5	22
Assembly kits/wiring modules		3RA2913-2BB. (p. 3/86)			3RA2923-2BB. (p. 3/86)		
Function modules		3RA271.-.CA00 (p. 3/82)			3RA271.-.CA00 (p. 3/82)		

Note:

For safety characteristics for contactors see "Standards and Approvals", from page 16/10 onwards.

Switching Devices – Contactors and Contactor Assemblies

Power Contactors for Switching Motors

Introduction



Size	S2				S3			S6				
Type	3RT203				3RT104			3RT105				
3RT10 contactors												
Type AC, DC operation	3RT2035 3RT2036 3RT2037 3RT2038 (p. 3/41, 3/49, 3/51, 3/52)				3RT1044 3RT1045 3RT1046 (p. 3/111, 3/112)			3RT1054 3RT1055 3RT1056 (p. 3/113, 3/114)				
AC-3												
I_e /AC-3/400 V	A	40	50	65	80	65	80	95	115	150	185	
400 V	kW	18.5	22	30	37	30	37	45	55	75	90	
230 V	kW	11	15	18.5	22	18.5	22	22	37	45	55	
500 V	kW	22	30	37	37	37	45	55	75	90	110	
690 V	kW	22	22	37	45	45	55	55	110	132	160	
1 000 V	kW	--	--	--	--	30	37	37	75	90	90	
AC-4 (for $I_a = 6 \times I_e$)												
400 V	kW	18.5	22	30	37	30	37	45	55	75	90	
400 V (200 000 operating cycles)	kW	11.6	12.6	14.7	15.8	15.1	17.9	22	29	38	45	
AC-1 (40 °C, ≤ 690 V)												
I_e	A	60	70	80	90	100	120	120	160	185	215	
3RT14 AC-1 contactors												
Type	--					3RT1446 (p. 4/10)			3RT1456 (p. 4/11)			
I_e /AC-1/40 °C/≤ 690 V	A	--					140			275		
Accessories for contactors												
Auxiliary switch blocks	• On front • Lateral	3RH29, 3RA28 (p. 3/70 ... 3/75) 3RH29 (p. 3/73)				3RH19, 3RT1926 (p. 3/121 ... 3/125) 3RH19 (p. 3/123)			3RH19, 3RT1926 (p. 3/121 ... 3/125) 3RH19 (p. 3/123)			
Function modules	• Direct-on-line starting • IO-Link/AS-Interface	3RA283. 3RA271.-.AA00 (p. 3/82, 3/83)				-- --			-- --			
Surge suppressors		3RT2936 (p. 3/77, 3/78)				3RT1926, 3RT1936 (p. 3/126)			3RT1956-1C (RC element) (p. 3/126)			
Terminal covers		--				3RT1946-4EA. (p. 3/132)			3RT1956-4EA. (p. 3/132)			
Box terminal blocks		--				--			3RT1955-4G, 3RT1956-4G (p. 3/131)			
3RU and 3RB overload relays												
3RU thermal overload relays		3RU2136 11 ... 80 A (p. 7/102, 7/103)				3RU1146 18 ... 100 A (p. 7/112)			--			
3RB electronic overload relays	• for standard applications	3RB3036 12.5 ... 80 A 3RB3133 (p. 7/121 ... 7/123)				3RB2046 12.5 ... 100 A 3RB2143 (p. 7/133, 7/135)			3RB2056 50 ... 200 A 3RB2153 (p. 7/133, 7/135)			
	• for High-Feature applications	3RB22, 3RB23 and 3RB24 (p. 7/145) with 3RB2906-2JG1 current measuring module (p. 7/153) 10 ... 100 A (p. 7/156)				3RB22, 3RB23 and 3RB24 (p. 7/145) with 3RB2906-2JG1 current meas. module (p. 7/156) 10 ... 100 A (p. 7/156)			3RB22, 3RB23 and 3RB24 (p. 7/145) with 3RB2956-2TH2 current meas. module (p. 7/153) 20 ... 200 A (p. 7/156)			
3RV motor starter protectors/circuit breakers												
Motor starter protectors molded case circuit breakers		3RV2032 9.5 ... 80 A (p. 7/23)				3RV1041 28 ... 100 A (p. 7/64)			-- 3RV1063 40 ... 200 A (p. 7/84)			
Link modules		3RA2931 (p. 7/41)				3RA1941 (p. 7/77)			--			
3RA.3 reversing contactor assemblies												
Complete units	Type	3RA2335 (p. 3/184)	3RA2336	3RA2337	3RA2338	3RA1344 (p. 3/186)	3RA1345	3RA1346	--			
400 V	kW	18.5	22	30	37	30	37	45	55	75	90	
Assembly kits/wiring modules		3RA2933-2AA. (p. 3/85)				3RA1943-2A (p. 3/128)			3RA1953-2A (p. 3/128)			
Function modules		3RA271.-.BA00 (p. 3/82)				--			--			
Mechanical interlocks		3RA2934-2B (p. 3/87)				3RA1924-1A/-2B (p. 3/130)			3RA1954-2A (p. 3/130)			
3RA.4 contactor assemblies for wye-delta starting												
Complete units	Type	3RA2434 (p. 3/197)	3RA2435	3RA2436	3RA2437	3RA1444 (p. 3/202)	3RA14.5	--				
400 V	kW	22/30	37	45	55	55	75	--				
Assembly kits/wiring modules		3RA2933-2BB.-/2C (p. 3/86)				3RA1943-2B/-2C (p. 3/128)			3RA1953-2B (p. 3/128)			
Function modules		3RA271.-.CA00 (p. 3/82)				--			--			

Note:

For safety characteristics for contactors see
"Standards and Approvals", from page 16/10 onwards.

Reversing Contactor Assemblies

SIRIUS 3RA23 reversing contactor assemblies

Overview

The 3RA23 reversing contactor assemblies can be ordered as follows:

Sizes S00 to S2

- Fully wired and tested, with mechanical and electrical interlock
- For all individual parts for customer assembly, see [Accessories for 3RT2 contactors, from page 3/54 onwards](#). Contactors, overload relays and – with momentary-contact operation of size S00 – auxiliary switches (NO contacts) for self-locking must be ordered separately (for S0 and S2, the NO contacts integrated into the basic unit can be used).

The 3RA23 reversing contactor assemblies have screw or spring-type terminals (main and control circuits) and are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Complete reversing contactor assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to IEC 60529.



The reversing contactor assemblies of size S00 to S2 each consist of two contactors with the same power, with one NC contact (S00) or one NO contact and one NC contact (S0, S2) in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

3RU2 overload relays (see from page 7/101 onwards) or 3RB3 overload relays (see from page 7/121 onwards) for contactor mounting or stand-alone installation, or 3RN1 thermistor motor protection evaluation units (see from page 10/179 onwards) must be ordered separately.

Reversing contactor assemblies with voltage tap-off

The reversing contactor assemblies with voltage tap-off (see pages 3/182 to 3/184) are required for mounting the function modules for connection to the controller via the IO-Link or AS-Interface communication systems. The 3RA27 function modules must be ordered separately, see page 3/82.

For more information on IO-Link and AS-Interface, see "Industrial Communication", from page 2/1 onwards.

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Type		
Rating kW	Operational current I_e A		Contactor (See from page 3/37 onwards)	Assembly kit (See from page 3/85 onwards)	Fully wired and tested reversing contactor assemblies
Screw terminals 					
3	7	S00	3RT2015-1...2	3RA2913-2AA1 ¹⁾	3RA2315-8XB30-1...
4	9		3RT2016-1...2		3RA2316-8XB30-1...
5.5	12		3RT2017-1...2		3RA2317-8XB30-1...
7.5	16		3RT2018-1...2		3RA2318-8XB30-1...
5.5	12	S0	3RT2024-1...0	3RA2923-2AA1 ¹⁾	3RA2324-8XB30-1...
7.5	16		3RT2025-1...0		3RA2325-8XB30-1...
11	25		3RT2026-1...0		3RA2326-8XB30-1...
15	32		3RT2027-1...0		3RA2327-8XB30-1...
18.5	38		3RT2028-1...0		3RA2328-8XB30-1...
18.5	40	S2	3RT2035-1...0	3RA2933-2AA1 ²⁾	3RA2335-8XB30-1...
22	55		3RT2036-1...0		3RA2336-8XB30-1...
30	65		3RT2037-1...0		3RA2337-8XB30-1...
37	80		3RT2038-1...0		3RA2338-8XB30-1...
Spring-type terminals 					
3	7	S00	3RT2015-2...2	3RA2913-2AA2 ¹⁾	3RA2315-8XB30-2...
4	9		3RT2016-2...2		3RA2316-8XB30-2...
5.5	12		3RT2017-2...2		3RA2317-8XB30-2...
7.5	16		3RT2018-2...2		3RA2318-8XB30-2...
5.5	12	S0	3RT2024-2...0	3RA2923-2AA2 ³⁾	3RA2324-8XB30-2...
7.5	16		3RT2025-2...0		3RA2325-8XB30-2...
11	25		3RT2026-2...0		3RA2326-8XB30-2...
15	32		3RT2027-2...0		3RA2327-8XB30-2...
18.5	38		3RT2028-2...0		3RA2328-8XB30-2...

¹⁾ The assembly kit contains: Mechanical interlock; two connecting clips for two contactors, wiring modules on the top and bottom (for main, auxiliary and control circuits); see page 3/85.

²⁾ The assembly kit contains: Two connectors for two contactors, wiring modules on the top and bottom (for main and auxiliary circuits); see page 3/85. The 3RA2934-2B mechanical interlock must be ordered separately, see page 3/87.

³⁾ The assembly kit contains: Mechanical interlock; two connecting clips for two contactors, wiring modules on the top and bottom (for main circuit only); see page 3/85.

SIRIUS 3RA23 reversing contactor assemblies

Operating times

The operating times of the individual 3RT20 contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked by way of their auxiliary switches (NC contact interlock) and the mechanical interlock.

For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.

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

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th		
SIRIUS reversing contactor assembly	□□□	□	□	□	□	-	□	□	□	□	-	□	□	□		
SIRIUS reversing contactor assembly	3 R A															
2nd generation		2														
Device type (3 = reversing contactor assembly)			3													
Contactor size (1 = S00, 2 = S0, 3 = S2)				□												
Power dependent on size (e.g. 7 = 15 kW for S0)					□											
Type of overload relay (8X = without)							□	□								
Assembly (B = ready-assembled, E = ready-assembled with communication)								□								
Interlock (3 = mechanical and electrical)									□							
Free auxiliary switches (e.g. S00: 0 = none; S0, S2: 0 = 2 NO total)										□						
Connection type (1 = screw, 2 = spring)											□					
Operating range / solenoid coil circuit (e.g. A = AC standard / without coil circuit)												□				
Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)													□	□		
Example	3 R A	2	3	2	7	-	8	X	B	3	0	-	1	A	L	2

Note:

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

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

Benefits

Using wiring kits for reversing contactor assemblies has the following advantages:

- Notable reduction of wiring in the control circuit
- Integrated mechanical interlock for sizes S00 and S0
- Prevention of wiring errors in the main circuit

Connecting combs for screw terminals also result in:

- Prevention of wiring errors in the control circuit
- Reduction of testing costs
- Ready-jumpered actuation of the auxiliary switches and the frame (A2)
- Integrated electrical interlocking

Accessories

Selecting the auxiliary switches

The following points should be noted:

Size S00

- For maintained-contact operation:
Use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation:
Use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

Sizes S0 and S2

- For maintained-contact operation:
The contactors have two integrated auxiliary contacts (1 NO + 1 NC); the NC contact can be used for electrical interlocking.
- For momentary-contact operation:
Electrical interlock as for maintained-contact operation; the NO contact in the basic unit can be used for the latching.

Surge suppression

Sizes S00 to S2

All reversing contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or be plugged into the front of the contactors (S0 and S2).

Reversing Contactor Assemblies

SIRIUS 3RA23 reversing contactor assemblies **IE3 ready**

Selection and ordering data

Fully wired and tested reversing contactor assemblies¹⁾ · Size S00 · Up to 7.5 kW

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





3RA231.-8XB30-1A.0



3RA231.-8XB30-2A.0



3RA231.-8XE30-1BB4

Rated data AC-2 and AC-3					Rated control supply voltage U_s ²⁾	DT	Screw terminals 		DT	Spring-type terminals 	
Operational current I_e up to	Ratings of three-phase motors at 50 Hz and			V	DT	Article No.	Price per PU	DT	Article No.	Price per PU	
	400 V	230 V	690 V								
A	kW	kW	kW								
AC operation, 50/60 Hz											
7	2.2	3	4	24 AC	B	3RA2315-8XB30-1AB0	B	3RA2315-8XB30-2AB0	B	3RA2315-8XB30-2AF0	
				110 AC	B	3RA2315-8XB30-1AF0	B	3RA2315-8XB30-2AF0	B	3RA2315-8XB30-2AF0	
				230 AC	A	3RA2315-8XB30-1AP0	A	3RA2315-8XB30-2AP0	A	3RA2315-8XB30-2AP0	
9	3	4	5.5	24 AC	B	3RA2316-8XB30-1AB0	B	3RA2316-8XB30-2AB0	B	3RA2316-8XB30-2AF0	
				110 AC	B	3RA2316-8XB30-1AF0	B	3RA2316-8XB30-2AF0	B	3RA2316-8XB30-2AF0	
				230 AC	A	3RA2316-8XB30-1AP0	A	3RA2316-8XB30-2AP0	A	3RA2316-8XB30-2AP0	
12	3	5.5	5.5	24 AC	B	3RA2317-8XB30-1AB0	B	3RA2317-8XB30-2AB0	B	3RA2317-8XB30-2AF0	
				110 AC	B	3RA2317-8XB30-1AF0	B	3RA2317-8XB30-2AF0	B	3RA2317-8XB30-2AF0	
				230 AC	A	3RA2317-8XB30-1AP0	A	3RA2317-8XB30-2AP0	A	3RA2317-8XB30-2AP0	
16	4	7.5	7.5	24 AC	B	3RA2318-8XB30-1AB0	B	3RA2318-8XB30-2AB0	B	3RA2318-8XB30-2AF0	
				110 AC	B	3RA2318-8XB30-1AF0	B	3RA2318-8XB30-2AF0	B	3RA2318-8XB30-2AF0	
				230 AC	A	3RA2318-8XB30-1AP0	A	3RA2318-8XB30-2AP0	A	3RA2318-8XB30-2AP0	
DC operation											
7	2.2	3	4	24 DC	A	3RA2315-8XB30-1BB4	A	3RA2315-8XB30-2BB4	A	3RA2315-8XB30-2BB4	
9	3	4	5.5	24 DC	A	3RA2316-8XB30-1BB4	A	3RA2316-8XB30-2BB4	A	3RA2316-8XB30-2BB4	
12	3	5.5	5.5	24 DC	A	3RA2317-8XB30-1BB4	A	3RA2317-8XB30-2BB4	A	3RA2317-8XB30-2BB4	
16	4	7.5	7.5	24 DC	A	3RA2318-8XB30-1BB4	A	3RA2318-8XB30-2BB4	A	3RA2318-8XB30-2BB4	
With voltage tap-off											
7	2.2	3	4	24 DC	A	3RA2315-8XE30-1BB4	B	3RA2315-8XE30-2BB4	B	3RA2315-8XE30-2BB4	
9	3	4	5.5	24 DC	A	3RA2316-8XE30-1BB4	B	3RA2316-8XE30-2BB4	B	3RA2316-8XE30-2BB4	
12	3	5.5	5.5	24 DC	A	3RA2317-8XE30-1BB4	A	3RA2317-8XE30-2BB4	A	3RA2317-8XE30-2BB4	
16	4	7.5	7.5	24 DC	A	3RA2318-8XE30-1BB4	A	3RA2318-8XE30-2BB4	A	3RA2318-8XE30-2BB4	

¹⁾ The contactors integrated in the reversing contactor assemblies have no unassigned auxiliary contacts. When used with a voltage tap-off and function module, the auxiliary contacts are unassigned.

²⁾ Coil operating range
 - at 50 Hz: 0.8 to $1.1 \times U_s$
 - at 60 Hz: 0.85 to $1.1 \times U_s$.

Representation of the complete reversing contactor assemblies with optionally mountable accessories, see page 3/178.