Introduction

Overview

Type		3RV10	3RV11	3RV13	3RV14	3RV16	3RV16	3RV17
SIRIUS 3RV1 motor starter protectors/circuit breakers up to 100 A								
Applications								
System protection		✓[1]	✓[1]	--	--	--	--	✓
Motor protection		✓	--	--	--	--	--	--
Motor protection with overload relay function		--	✓	--	--	--	--	--
Starter combinations		--	--	✓	--	--	--	--
Transformer protection		--	--	--	✓	--	--	--
Fuse monitoring		--	--	--	--	✓	--	--
Voltage transformer circuit breakers for distance protection		--	--	--	--	--	✓	--
Size		S00, S0, S2, S3	S0, S2, S3	S0, S2, S3	S0, S2	S00	S00	S3
Rated current I_n								
• Size S00	A	Up to 12	--	--	--	0.2	Up to 3	--
• Size S0	A	Up to 25	Up to 25	Up to 25	Up to 20	--	--	--
• Size S2	A	Up to 50	Up to 50	Up to 50	Up to 40	--	--	--
• Size S3	A	Up to 100	Up to 100	Up to 100	--	--	--	Up to 70
Rated operational voltage U_e according to IEC	V	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	400 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	$16^2/_3$ ... 60	50/60
Trip class		CLASS 10, 20	CLASS 10	--	CLASS 10	--	--	--
Thermal overload releases	A	0.11 ... 0.16 up to	0.11 ... 0.16 up to	Without[3]	0.11 ... 0.16 up to	0.2	1.4 ... 3	10 ... 70 Non-adjustable
	A	80 ... 100	80 ... 100		28 ... 40			
Electronic release A multiple of the rated current		13 times	13 times	13 times	20 times	6 times	4 ... 7 times	13 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	50/100	50/100	50/100	50/100	100	50	[4]
Pages		7/8 up to 7/10	7/11	7/12	7/13	7/14, 7/16	7/16	7/15

Accessories														
For sizes	S00	S0	S2	S3	S0	S2	S3	S0	S2	S3	S0	S2	S00	S00	S3
Auxiliary switches	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓[5]
Signaling switches	--	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--
Undervoltage releases	✓	✓	✓	✓	--	--	--	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases	✓	✓	✓	✓	--	--	--	✓	✓	✓	✓	✓	✓	✓	✓
Isolator modules	--	✓	✓	--	✓	✓	--	✓	✓	--	✓	✓	--	--	--
Insulated three-phase busbar system	✓	✓	✓	--	--	✓	--	✓	✓	--	✓	✓	✓	✓	--
Busbar adapters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
Door-coupling rotary operating mechanisms	--	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	✓
Remote motorized operating mechanisms	--	--	✓	✓	--	✓	✓	--	✓	✓	--	✓	--	--	--
Link modules	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
Enclosures for surface mounting	✓	✓	✓	--	✓	✓	--	✓	✓	--	✓	✓	✓	✓	--
Enclosures for flush mounting	✓	✓	--	--	✓	--	--	✓	--	--	✓	--	✓	✓	--
Front plates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
Infeed system	✓	✓	--	--	--	--	--	✓	--	--	✓	--	--	--	--
Pages	7/17 ... 7/35														

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) For symmetrical loading of the three phases.

2) With molded-plastic enclosure 500 V AC. DC applications, see Reference Manual "Protection Equipment – Motor Starter Protectors · Molded Case Circuit Breakers", → "Technical Specifications" → "DC Short-Circuit Breaking Capacity".

3) For overload protection of the motors, appropriate overload relays must be used.

4) According to UL 489
- at 480 Y/277 V AC: 65 kA;
- at 480 V AC: 65 kA.

5) Only lateral auxiliary switches can be fitted.

Type		3RV10			3RV13					
SIRIUS 3RV1 molded case motor starter protectors up to 800 A[1)]										
Applications										
Motor protection		✓			--					
Starter combinations		--			✓					
Switching capacity		Standard switching capacity			Standard switching capacity				Increased switching capacity	
Size		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
Rated current I_n	A	100 ... 200	400	630	1 ... 32	100 ... 250	400, 630	630, 800	100 ... 250	400
Rated operational voltage U_e according to IEC	V	690 AC			690 AC					
Rated frequency	Hz	50/60			50/60					
Trip class		CLASS 10A, 10, 20, 30			--[1)]					
Thermal overload releases	A A	40 ... 100 up to 252 ... 630			Without[1)]					
Electronic release A multiple of the rated current		Adjustable, 6 ... 13 times			Non-adjustable 1 ... 12.5 A: 13 times; Adjustable 20 A, 32 A: 6 ... 12 times	1 ... 10 times				
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	120	120	100	85	120	120	100	200	200
Trip unit (release)		TU 4			TU 1: 1 ... 12.5 A; TU 2: 20 A, 32 A	TU 3				

Accessories[1)]										
For molded case motor starter protectors		3RV1063	3RV1073	3RV1083	3RV1353	3RV1363	3RV1373	3RV1383	3RV1364	3RV1374
Auxiliary switches		✓	✓	✓	✓	✓	✓	✓	✓	✓
Undervoltage releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotary operating mechanisms		✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection methods • Extended terminals on the front • Cable terminals on the front • Rear terminals		✓ ✓ ✓	✓ ✓ ✓	-- ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	-- ✓ ✓	✓ ✓ ✓	✓ ✓ ✓

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) For more information, see Catalog IC 10, Chapter 7 "Protection Equipment" → "SIRIUS 3RV1 molded case motor starter protectors up to 800 A".

2) For overload protection of the motors, appropriate overload relays must be used.

Introduction




Type		3RU11	3RB20	3RB21	3RB22, 3RB23
SIRIUS overload relays up to 630 A					
Applications					
System protection		✓[1]	✓[1]	✓[1]	✓[1]
Motor protection		✓	✓	✓	✓
Alternating current, three-phase		✓	✓	✓	✓
Alternating current, single-phase		✓	--	--	✓
Direct current		✓	--	--	--
Size contactor		S00, S0, S2, S3	S00 ... S12	S00 ... S12	S00 ... S12
Rated operational current I_e					
• Size S00	A	Up to 12	Up to 12	Up to 12	Up to 25
• Size S0	A	Up to 25	Up to 25	Up to 25	Up to 25
• Size S2	A	Up to 50	Up to 50	Up to 50	Up to 100
• Size S3	A	Up to 100	Up to 100	Up to 100	Up to 100
• Size S6	A	--	Up to 200	Up to 200	Up to 200
• Size S10/S12, size 14 (3TF68/3TF69)	A	--	Up to 630	Up to 630	Up to 630
Rated operational voltage U_e	V	690/1 000 AC[2]	690/1 000 AC[3]	690/1 000 AC[3]	690/1 000 AC[4]
Rated frequency	Hz	50/60	50/60	50/60	50/60
Trip class		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 Adjustable	CLASS 5, 10, 20, 30 Adjustable
Thermal overload releases	A	0.11 ... 0.16 up to	--	--	--
	A	80 ... 100			
Electronic overload releases	A	--	0.1 ... 0.4 up to	0.1 ... 0.4 up to	0.3 ... 3 up to
	A		160 ... 630	160 ... 630	63 ... 630
Rating for three-phase motor at 400 V AC	kW	0.04 up to	0.04 ... 0.09 up to	0.04 ... 0.09 up to	0.09 ... 1.1 up to
	kW	45	90 ... 450	90 ... 450	37 ... 450
Pages		7/42 ... 7/44	7/49, 7/50	7/51	7/56 ... 7/59

Accessories																					
For sizes	S00	S0	S2	S3	S00	S0	S2	S3	S6	S10/S12	S00	S0	S2	S3	S6	S10/S12	S00	S0	S2	S3	S6	S10/S12
Terminal supports for stand-alone installation	✓	✓	✓	✓	✓	✓	5)	5)	5)	5)	✓	✓	5)	5)	5)	5)	5)	5)	5)	5)	5)	5)
Mechanical RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Cable releases for RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Electrical remote RESET	✓	✓	✓	✓	--	--	--	--	--	--	Integrated in the unit						Integrated in the unit					
Terminal covers	--	--	✓	✓	--	--	--	✓	✓	✓	--	--	--	✓	✓	✓	--	--	--	✓	✓	✓
Sealable covers for setting knobs	Integrated in the unit				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pages	7/45, 7/46				7/52, 7/53						7/52, 7/53						7/60, 7/61					

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) The units are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable, and other switching and protection devices in the respective load feeder.

2) Size S3 up to 1 000 V AC.

3) Size S2 (only with straight-through transformer), S3, S6, S10, S12 up to 1 000 V AC.

4) With reference to the 3RB29.6 current measuring modules.

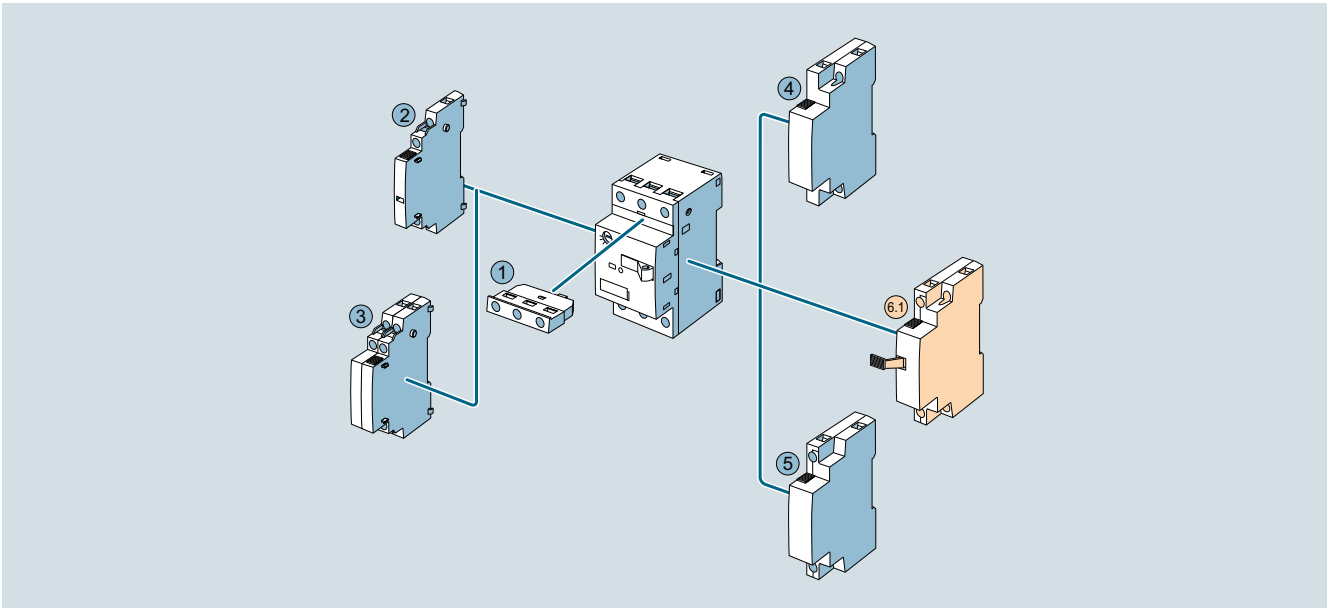
5) Stand-alone installation without accessories is possible.

Overview

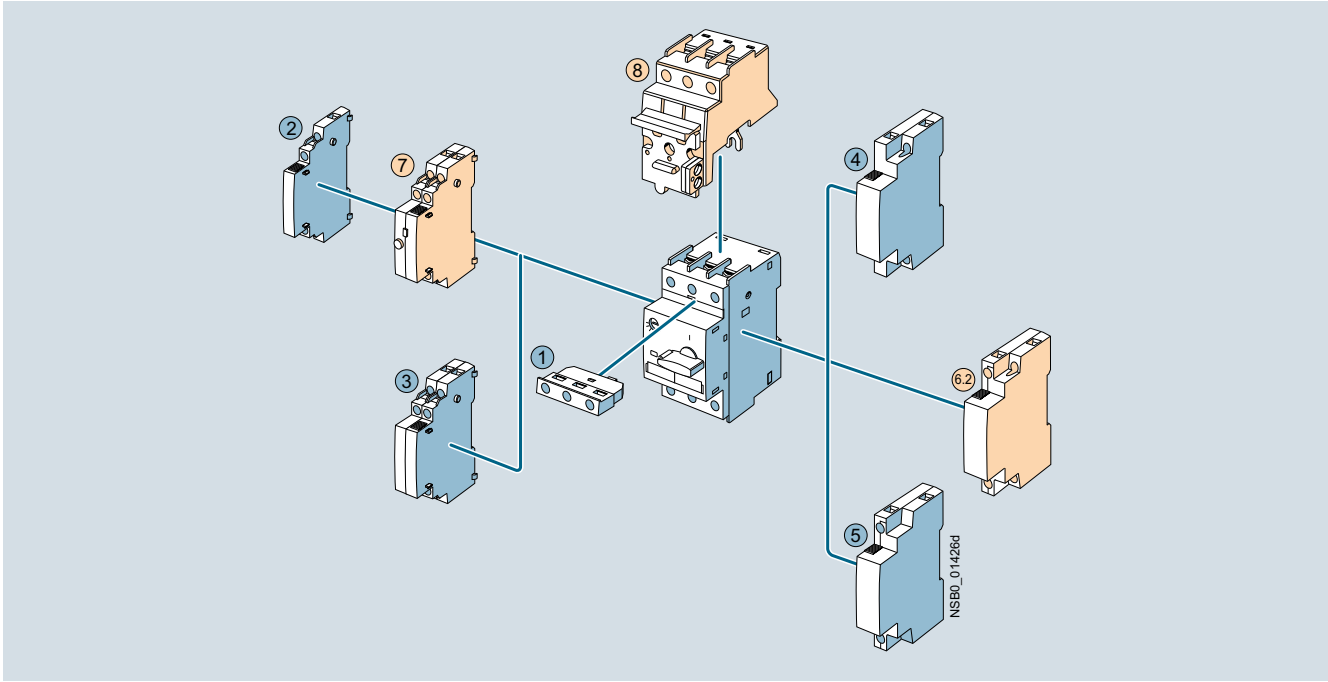
The following illustration shows our 3RV1 motor starter protectors/circuit breakers with the accessories which can be mounted for the various sizes, see also "Introduction" → "Overview" on page 7/2.

For "Accessories", see page 7/17 onwards.

Motor starter protectors/circuit breakers, size S00, with mountable accessories



Motor starter protectors/circuit breakers, sizes S0, S2 or S3, with mountable accessories



Mountable accessories for all sizes S00 ... S3		Mountable accessories		For sizes
1	Transverse auxiliary switch (can not be used with 3RV1742 circuit breaker)	6.1	Undervoltage release with leading auxiliary contacts	S00
2	Lateral auxiliary switch with 2 contacts	6.2	Undervoltage release with leading auxiliary contacts	S0 ... S3
3	Lateral auxiliary switch with 4 contacts	7	Alarm switch	S0 ... S3
4	Shunt release	8	Isolator module	S0, S2
5	Undervoltage release			

General data

Size S0 motor starter protector

3RV1 motor starter protectors/circuit breakers are compact, current limiting motor starter protectors/circuit breakers which are optimized for load feeders. The motor starter protectors/ circuit breakers are used according to IEC for switching and protecting three-phase motors of up to 45 kW at 400 V AC and for other loads with rated currents of up to 100 A.

The 3RV1 motor starter protectors/circuit breakers are generally approved according to IEC and UL/CSA.

According to UL 508 the 3RV1 motor starter protectors/circuit breakers in sizes S00 to S3 are approved as

- "Manual Motor Controllers"
- "Manual Motor Controllers" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controller (Type E)" This approval does not apply to size S00. Furthermore, the 3RV10 motor starter protectors in sizes S0 and S3 must be equipped with additional infeed terminals.

For 3RV2 motor starter protectors/circuit breakers sizes S00 to S2 up to 80 A, see Catalog IC 10.

The 3RV1742 are approved as circuit breakers according to UL 489; they are a special variant of the 3RV1 motor starter protectors.

Type of construction

The 3RV1 motor starter protectors/circuit breakers are available in four sizes:

- Size S00 – width 45 mm, max. rated current 12 A, at 400 V AC suitable for three-phase motors up to 5.5 kW
- Size S0 – width 45 mm, max. rated current 25 A, at 400 V AC suitable for three-phase motors up to 11 kW
- Size S2 – width 55 mm, max. rated current 50 A, at 400 V AC suitable for three-phase motors up to 22 kW
- Size S3 – width 70 mm, max. rated current 100 A, at 400 V AC suitable for three-phase motors up to 45 kW

For sizes S00 to S2 of the 3RV2 motor starter protectors/circuit breakers up to 80 A, see Catalog IC 10.

Circuit breakers acc. to UL 489

The 3RV1742 circuit breakers are available in size S3 (width 70 mm):

- Maximum rated current 70 A at 480 Y/277 V AC
- Maximum rated current 10 A to 30 A at 480 V AC

For sizes S00 and S0 of the 3RV27 and 3RV28 circuit breakers up to 22 A, see Catalog IC 10.

Connection methods

The SIRIUS 3RV1 motor starter protectors/circuit breakers can be supplied with screw terminals and spring-type terminals.

	Screw terminals
	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV10 motor starter protectors are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e.

Article No. scheme

Digit of the Article No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Motor starter protectors/ circuit breakers	**3 R V**															
SIRIUS 1st generation		**1**														
Type of motor starter protector/ circuit breaker			□													
Size				□												
Switching capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**1**	**0**	**3**	**1**	**–**	**4**	**A**	**A**	**1**	**0**					

Note:

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

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

Application

Operating conditions

3RV1 motor starter protectors/circuit breakers are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV1 motor starter protectors/circuit breakers can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers".

3RV1 motor starter protectors/circuit breakers are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and startup data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector/circuit breaker. This also applies to motor starter protectors for transformer protection.

Note:

For the use of 3RV1 motor starter protectors in size S3 in conjunction with highly energy-efficient IE3 motors, please observe the information on dimensioning and configuring, see "Configuration Manual for SIRIUS Controls with IE3 Motors", http://support.automation.siemens.com/WW/view/en/94770820.

The 3RV1 motor starter protectors/circuit breakers in size S00 to S2 have not been specially optimized for use with IE3 motors. In this case please use the new motor starter protectors/circuit breakers of series 3RV2, see Catalog IC 10, Chapter 7 "Protection Equipment" → "SIRIUS 3RV2 Motor Starter Protectors/Circuit Breakers up to 80 A".

Possible uses

The 3RV1 motor starter protectors/circuit breakers can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For fuse monitoring
- For operation in IT systems (IT networks)
- For switching of DC current
- As voltage transformer circuit breakers
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV1742)

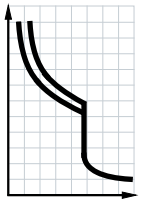
For more information, see Reference Manual "Protection Equipment – Circuit Breakers · Molded Case Circuit Breakers".

For motor protection

Selection and ordering data

CLASS 10, without auxiliary switches

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



3RV1011-0JA10

3RV1021-0JA10

3RV1011-1EA20

Rated current	Suitable for three-phase motors[1] with *P*	Setting range for thermal overload releases	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	DT	**Spring-type terminals**
						Article No. / Price per PU		Article No. / Price per PU
I_n			$I >$	I_{cu}				
A	kW	A	A	kA				
Size S00								
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV1011-0AA10**	▶	**3RV1011-0AA20**
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV1011-0BA10**	▶	**3RV1011-0BA20**
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV1011-0CA10**	▶	**3RV1011-0CA20**
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV1011-0DA10**	▶	**3RV1011-0DA20**
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV1011-0EA10**	▶	**3RV1011-0EA20**
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV1011-0FA10**	▶	**3RV1011-0FA20**
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV1011-0GA10**	▶	**3RV1011-0GA20**
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV1011-0HA10**	▶	**3RV1011-0HA20**
1	0.25	0.7 ... 1	13	100	▶	**3RV1011-0JA10**	▶	**3RV1011-0JA20**
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV1011-0KA10**	▶	**3RV1011-0KA20**
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV1011-1AA10**	▶	**3RV1011-1AA20**
2	0.75	1.4 ... 2	26	100	▶	**3RV1011-1BA10**	▶	**3RV1011-1BA20**
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV1011-1CA10**	▶	**3RV1011-1CA20**
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV1011-1DA10**	▶	**3RV1011-1DA20**
4	1.5	2.8 ... 4	52	100	▶	**3RV1011-1EA10**	▶	**3RV1011-1EA20**
5	1.5	3.5 ... 5	65	100	▶	**3RV1011-1FA10**	▶	**3RV1011-1FA20**
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV1011-1GA10**	▶	**3RV1011-1GA20**
8	3	5.5 ... 8	104	50	▶	**3RV1011-1HA10**	▶	**3RV1011-1HA20**
10	4	7 ... 10	130	50	▶	**3RV1011-1JA10**	▶	**3RV1011-1JA20**
12	5.5	9 ... 12	156	50	▶	**3RV1011-1KA10**	▶	**3RV1011-1KA20**
Size S0								
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV1021-0AA10**		--
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV1021-0BA10**		--
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV1021-0CA10**		--
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV1021-0DA10**		--
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV1021-0EA10**		--
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV1021-0FA10**		--
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV1021-0GA10**		--
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV1021-0HA10**		--
1	0.25	0.7 ... 1	13	100	▶	**3RV1021-0JA10**		--
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV1021-0KA10**		--
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV1021-1AA10**		--
2	0.75	1.4 ... 2	26	100	▶	**3RV1021-1BA10**		--
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV1021-1CA10**		--
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV1021-1DA10**		--
4	1.5	2.8 ... 4	52	100	▶	**3RV1021-1EA10**		--
5	1.5	3.5 ... 5	65	100	▶	**3RV1021-1FA10**		--
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV1021-1GA10**		--
8	3	5.5 ... 8	104	100	▶	**3RV1021-1HA10**		--
10	4	7 ... 10	130	100	▶	**3RV1021-1JA10**		--
12.5	5.5	9 ... 12.5	163	100	▶	**3RV1021-1KA10**		--
16	7.5	11 ... 16	208	50	▶	**3RV1021-4AA10**		--
20	7.5	14 ... 20	260	50	▶	**3RV1021-4BA10**		--
22	11	17 ... 22	286	50	▶	**3RV1021-4CA10**		--
25	11	20 ... 25	325	50	▶	**3RV1021-4DA10**		--

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" from page 7/17 onwards).

Multi-unit/reusable packaging available on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate