

Solid-State Switching Devices for Resistive/Inductive Loads

Solid-State Contactors

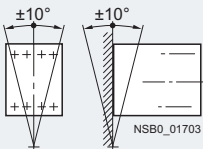
SIRIUS 3RF24 solid-state contactors, three-phase

Technical specifications

More information

System Manual and Manual, see
<https://support.industry.siemens.com/cs/ww/en/view/60311318>
<https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16230/faq>

Type		3RF24...-1....	3RF24...-2....	3RF24...-3....
Dimensions (W x H x D)		See page 6/85		
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
Installation altitude		m	0 ... 1 000; derating from 1 000	
Shock resistance acc. to IEC 60068-2-27		g/ms	15/11	
Vibration resistance acc. to IEC 60068-2-6		g	2	
Degree of protection		IP20	IP00	
Insulation strength at 50/60 Hz (main/control circuit to ground)		V rms	4000	
Electromagnetic compatibility (EMC)				
• Emitted interference according to IEC 60947-4-3		Class A for industrial applications ¹⁾		
- Conducted interference voltage				
• Interference immunity		Contact discharge 4; air discharge 8; behavior criterion 2		
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV			
- Induced RF fields acc. to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Connection type		 Screw terminals	 Spring-type terminals	 Ring terminal lug connection
Connection, main contacts				
• Conductor cross-section				
- Solid	mm ²	2 x (1.5 ... 2.5) ²⁾ , 2 x (2.5 ... 6) ²⁾	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm ²	2 x (1 ... 2.5) ²⁾ ; 2 x (2.5 ... 6) ²⁾	2 x (0.5 ... 1.5)	--
		1 x 10		
- Finely stranded without end sleeve	mm ²	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Stripped length	mm	10	10	--
• Terminal screws		M4	--	M5
- Tightening torque	Nm	2 ... 2.5		2 ... 2.5
	lb.in	18 ... 22		18 ... 22
• Cable lugs		--	--	
- According to DIN 46234				5-2.5 ... 5-25
- According to JIS C 2805				R 2-5 ... R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-section	mm	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)	0.5 ... 2.5	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)
	AWG	AWG 20 ... 12	AWG 20 ... 12	AWG 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
- Tightening torque,	Nm	0.5 ... 0.6		0.5 ... 0.6
∅ 3.5, PZ 1	lb.in	4.5 ... 5.3		4.5 ... 5.3
Grounding stud (not included in the scope of supply)				
• Size (standard screw)		M5		
Permissible mounting position				

¹⁾ These products were built as Class A devices. The use of these devices in residential areas could result in lead in radio interference. In this case these may be required to introduce additional interference suppression measures. The versions 3RF24...-1AC55 comply with Class B for residential, business and commercial applications.

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

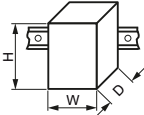
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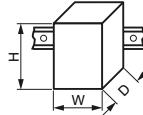
SIRIUS 3RF24 solid-state contactors, three-phase

Type	Type current/ performance capacity ¹⁾ I_{AC-51} at 40 °C	Rated operational current I_e Acc. to IEC 60947-4-3 at 40 °C Acc. to UL/CSA at 50 °C		Power loss at I_{AC-51}	Minimum load current	Max. off-state current	Rated peak withstand current I_{tsm}	I^2t value
	A	A	A	W	A	mA	A	A²s
Main circuit								
3RF2410-AB.5	10.5	7		23	0.1	10	200	200
3RF2420-AB.5	22	15		44	0.5	10	600	1800
3RF2430-AB.5	30	22		61	0.5	10	1200	7200
3RF2440-AB.5	40	30		80	0.5	10	1150	6600
3RF2450-AB.5	50	38		107	0.5	10	1150	6600
3RF2410-AC.5	10.5	7		31	0.5	10	300	450
3RF2420-AC.5	22	15		66	0.5	10	600	1800
3RF2430-AC.5	30	22		91	0.5	10	1200	7200
3RF2440-AC.5	40	30		121	0.5	10	1150	6600
3RF2450-AC.5	50	38		160	0.5	10	1150	6600

¹⁾ The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and installation conditions.

Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
		

Main circuit		
3RF2410-AB..	10.5	45 x 100 x 105
3RF2410-AC..		
3RF2420-AB..	22	67 x 100 x 112.5
3RF2420-AC..	22	89.5 x 100 x 112.5
3RF2430-AB..	30	

Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
		

Main circuit		
3RF2430-AC..	30	113.5 x 100 x 121
3RF2440-AB..	40	
3RF2440-AC..	40	157.5 x 100 x 121
3RF2450-AB..	50	
3RF2450-AC..	50	157.5 x 180 x 121

Type	3RF24...-AB.5	3RF24...-AC.5
Main circuit		
Controlled phases	2-phase	3-phase
Rated operational voltage U_e	V AC 48 ... 600	
• Operating range	V AC 40 ... 660	
• Rated frequency	Hz 50/60 ± 10 %	
Rated insulation voltage U_i	V 600	
Rated impulse withstand voltage U_{imp}	kV 6	
Blocking voltage	V 1200	
Rate of voltage rise	V/μs 1000	

Type	3RF24...-...3.	3RF24...-...4.	3RF24...-...5.
Control circuit			
Method of operation	AC operation	DC operation	AC operation
Rated control supply voltage U_s	V 110	4 ... 30	190 ... 230
Rated frequency of the control supply voltage	Hz 50/60 ± 10 %	--	50/60 ± 10 %
Actuating voltage, max.	V 121	30	253
Typical actuating current	mA 15	30	15
Response voltage	V 90	4	180
Drop-out voltage	V < 40	< 1	< 40
Operating times			
• ON-delay	ms 40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave
• OFF-delay	ms 40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave

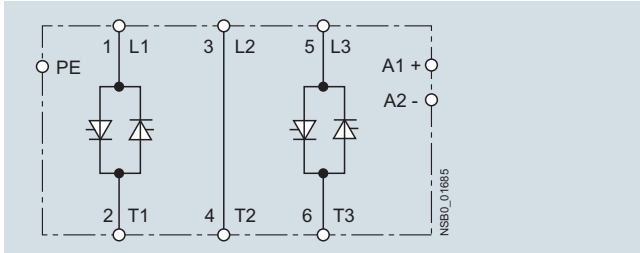
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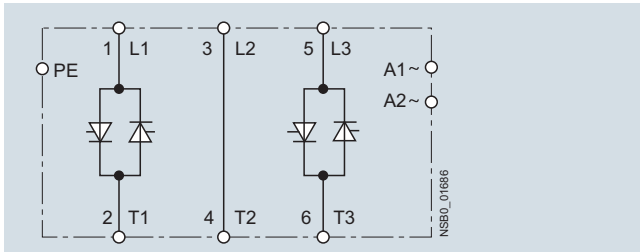
SIRIUS 3RF24 solid-state contactors, three-phase

Circuit diagrams

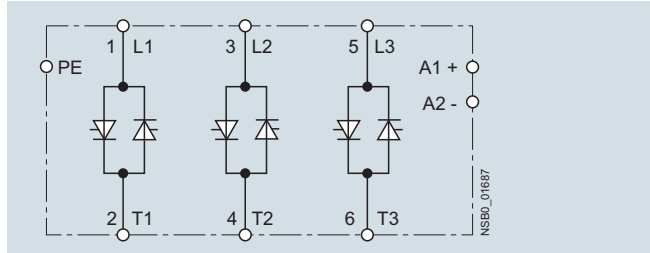
Two-phase controlled,
DC control supply voltage



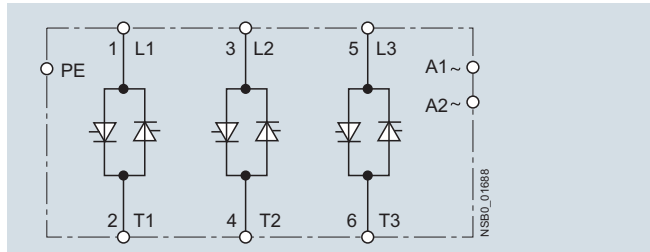
Two-phase controlled,
AC control supply voltage



Three-phase controlled,
DC control supply voltage



Three-phase controlled,
AC control supply voltage



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Selection and ordering data

Type current/ performance capacity ¹⁾ I_{max}	Rated control supply voltage U_s	SD	Screw terminals		PU (UNIT, SET, M)	PS*	PG
A	V	d	Article No.		Price per PU		
Zero-point switching · Integrated heat sink, rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
 3RF2420-1AB45	4 ... 30 DC	2	3RF2410-1AB45		1	1 unit	41C
		2	3RF2420-1AB45		1	1 unit	41C
		2	3RF2430-1AB45		1	1 unit	41C
		5	3RF2440-1AB45		1	1 unit	41C
		2	3RF2450-1AB45		1	1 unit	41C
	110 AC	5	3RF2410-1AB35		1	1 unit	41C
		5	3RF2420-1AB35		1	1 unit	41C
		5	3RF2430-1AB35		1	1 unit	41C
		5	3RF2440-1AB35		1	1 unit	41C
		5	3RF2450-1AB35		1	1 unit	41C
230 AC	5	3RF2410-1AB55		1	1 unit	41C	
	5	3RF2420-1AB55		1	1 unit	41C	
	2	3RF2430-1AB55		1	1 unit	41C	
	5	3RF2440-1AB55		1	1 unit	41C	
	5	3RF2450-1AB55		1	1 unit	41C	
Three-phase controlled							
 3RF2410-1AC45	4 ... 30 DC	2	3RF2410-1AC45		1	1 unit	41C
		2	3RF2420-1AC45		1	1 unit	41C
		2	3RF2430-1AC45		1	1 unit	41C
		2	3RF2440-1AC45		1	1 unit	41C
		2	3RF2450-1AC45		1	1 unit	41C
	110 AC	5	3RF2410-1AC35		1	1 unit	41C
		5	3RF2420-1AC35		1	1 unit	41C
		5	3RF2430-1AC35		1	1 unit	41C
		5	3RF2440-1AC35		1	1 unit	41C
		5	3RF2450-1AC35		1	1 unit	41C
230 AC	5	3RF2410-1AC55		1	1 unit	41C	
	5	3RF2420-1AC55		1	1 unit	41C	
	5	3RF2430-1AC55		1	1 unit	41C	
	5	3RF2440-1AC55		1	1 unit	41C	
	5	3RF2450-1AC55		1	1 unit	41C	

¹⁾ The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_o can be smaller depending on the connection method and installation conditions. For derating characteristic curves, see page 6/59, "More information".