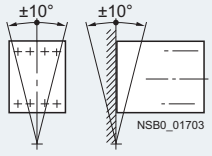
Technical specifications

Order No.		3RF24 ..-1....	3RF24 ..-2....	3RF24 ..-3....
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
Installation altitude	m	0 ... 1000; derating from 1000		
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		
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000		
Electromagnetic compatibility (EMC)				
• Emitted interference acc. to IEC 60947-4-3				
- Conducted interference voltage		Class A for industrial applications[1]		
- Emitted, high-frequency interference voltage		Class A for industrial applications		
• Interference immunity				
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- 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 1		
- 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 connections**
Connection, main contacts				
• Conductor cross-section				
- Solid	mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	2x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6)[2], 1 x 10	2x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2x (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 screw		M4	--	M5
- Tightening torque	Nm	2 ... 2.5		2 ... 2.5
	lb.in	18 ... 22		18 ... 22
• Cable lug		--	--	
- Acc. to DIN 46234				5-2.5 ... 5-25
- Acc. to JIS C 2805				R 2-5 ,,, 14-5
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, ∅ 3.5, PZ 1	Nm	0.5 ... 0.6		0.5 ... 0.6
	lb.in	4.5 ... 5.3		4.5 ... 5.3
Permissible mounting positions				

[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.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

Solid-State Contactors

3RF24 solid-state contactors, three-phase

Order No.	Type current I_{AC-51} at 40 °C	Rated operational current I_e Acc. to IEC 60947-4-3 for 40 °C	Rated operational current I_e Acc. to UL/CSA for 50 °C	Power loss at I_{AC-51}	Minimum load current	Max. leakage current	Rated impulse withstand capacity I_{tsm}	I^2t value
	A	A	A	W	A	mA	A	A^2s
Main circuit								
3RF24 10-.AB.5	10.5	7	7	23	0.1	10	200	200
3RF24 20-.AB.5	22	15	15	44	0.5	10	600	1800
3RF24 30-.AB.5	30	22	22	61	0.5	10	1200	7200
3RF24 40-.AB.5	40	30	30	80	0.5	10	1150	6600
3RF24 50-.AB.5	50	38	38	107	0.5	10	1150	6600
3RF24 10-.AC.5	10.5	7	7	31	0.1	10	300	450
3RF24 20-.AC.5	22	15	15	66	0.5	10	600	1800
3RF24 30-.AC.5	30	22	22	91	0.5	10	1200	7200
3RF24 40-.AC.5	40	30	30	121	0.5	10	1150	6600
3RF24 50-.AC.5	50	38	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 start-up conditions.
For derating see the characteristic curves.

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

3RF24 solid-state contactors, three-phase

Fused version with semiconductor protection (similar to type of coordination "2")[1)]

The semiconductor protection for the 3RF24 controls can be used with different protective devices. Siemens recommends the use of special SITOR semiconductor fuses. The table below lists the maximum permissible fuses for each 3RF24 control.

If a fuse is used with a higher rated current than specified, semiconductor protection is no longer guaranteed. However, smaller fuses with a lower rated current for the load can be used without problems.

Order No.	All-range fuses		Semiconductor fuses/partial-range fuses			
	LV HRC design	Cylindrical design	LV HRC design	Cylindrical design		
	gR/SITOR	gR/NEOZED[2)]	aR/SITOR	aR/SITOR	aR/SITOR	aR/SITOR
		SILIZED		10 mm x 38 mm	14 mm x 51 mm	22 mm x 58 mm
	3NE1	5SE1	3NE8	3NC1 0	3NC1 4	3NC2 2
Operational voltage U_e up to 460 V (+10 %)						
3RF24 10-.A...	3NE1 813-0	5SE1 310	3NE8 015-1	3NC1 012	3NC1 415	3NC2 220
3RF24 20-.A...	3NE1 814-0	5SE1 320	3NE8 015-1	3NC1 025	3NC1 425	3NC2 225
3RF24 30-.A...	3NE1 803-0	5SE1 335	3NE8 003-1	3NC1 032	3NC1 432	3NC2 232
3RF24 40-.A...	3NE1 802-0	5SE1 350	3NE8 017-1	--	3NC1 450	3NC2 250
3RF24 50-.A...	3NE1 817-0	5SE1 350	3NE8 018-1	--	3NC1 450	3NC2 263
Operational voltage U_e up to 600 V (+10 %)						
3RF24 10-.A...	3NE1 813-0	--	3NE8 015-1	3NC1 012	3NC1 415	3NC2 220
3RF24 20-.A...	3NE1 814-0	--	3NE8 015-1	3NC1 025	3NC1 425	3NC2 225
3RF24 30-.A...	3NE1 803-0	--	3NE8 003-1	3NC1 032	3NC1 432	3NC2 232
3RF24 40-.A...	3NE1 802-0	--	3NE8 017-1	--	3NC1 450	3NC2 250
3RF24 50-.A...	3NE1 817-0	--	3NE8 018-1	--	3NC1 450	3NC2 263

Order No.	Cable and line protection fuses				
	LV HRC design	Cylindrical design			DIAZED
	gG	gG	gG	gG	quick
		10 mm x 38 mm	14 mm x 51 mm	22 mm x 58 mm	
	3NA6	3NW6 0	3NW6 1	3NW6 2	5SB
Operational voltage U_e up to 460 V (+10 %)					
3RF24 10-.AB..	3NA3 801[3)]	3NW6 001-1[3)]	3NW6 101-1[3)]	--	5SB1 31[3)]
3RF24 10-.AC..	3NA3 803	3NW6 001-1[3)]	3NW6 101-1[3)]	--	5SB1 61
3RF24 20-.A...	3NA3 805[3)]	3NW6 005-1[3)]	3NW6 105-1[3)]	3NW6 205-1[3)]	5SB1 81
3RF24 30-.A...	3NA3 812	--	3NW6 112-1	--	5SB3 11
3RF24 40-.A...	3NA3 812[3)]	--	3NW6 112-1[3)]	3NW6 210-1[3)]	5SB3 21
3RF24 50-.A...	3NA3 812[3)]	--	--	3NW6 210-1[3)]	5SB3 21[3)]

Suitable fuse holders, fuse bases and controls can be found in "BETA Low-Voltage Circuit Protection".

1) Type of coordination "2" according to EN 60947-4-1:
In the event of a short-circuit, the controls in the load feeder must not endanger persons or the installation. They must be suitable for further operation. For fused configurations, the protective device must be replaced.

2) For use only with operational voltage U_e up to 400 V.

3) These fuses have a smaller rated current than the solid-state contactors.