

Solid State Relays, 3-phase

Zero-point switching, without heatsink



Main Characteristics:

- 3-phase control
- Space-saving, width of only 45 mm
- LED display
- Various connection technologies
- Plug-in control terminal
- Degree of protection IP 20

Standards / Approvals:

- DIN EN 60947-4-3
- UL 508 / CSA¹
- CE / C-Tick

Ordering Key:

3RF22	30	- 1	A	C	4	5
Solid state relay without heat sink	Max. load current 30 = 30 A 55 = 55 A	Connection technology 1 = Screw connection 2 = Spring-loaded 3 = Ring cable connection M5	Switching function A = Zero-point switching	Controlled phases C = 3-phase	Control voltage 4 = 4 - 30 VDC	Operating voltage 5 = 48 - 600 V

Not all possible versions are available ex stock.

Main Circuit²:

Type	I _{max}		I _e IEC 947-4-3		I _e UL/CSA		Power loss With I _{max} W	Min. load current A	Max. leakage current mA
	A	With R _{thha} / 40 °C	A	With R _{thha} / 40 °C	A	With R _{thha} / 50 °C			
3RF2230-	30	0,33 K/W	30	0,33 K/W	30	0,25 K/W	122	0,5	10
3RF2230-2.			20	0,86 K/W	20	0,72 K/W			
3RF2255-	55	0,09 K/W	55	0,09 K/W	55	0,05 K/W	226		
3RF2255-2.			20	1,19 K/W	20	1,02 K/W			

Type	3RF22... AC 5	
Rated operating voltage U _e	V	48 ... 600
• Voltage range	V	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
Slew rate	V/µs	1000

Type	Rated impulse withstand strength I _{tsm}	I ² t value
	A	A ² s
3RF2230- .	300	450
3RF2255-.	600	1800

Control Circuit A1-A2:

Type	3RF22... AC 4.	
Control voltage U _s	V	DC 4 ... 30
Max. control voltage U _s	V	30
Typical operating current	mA	30
Response voltage	V	4
Drop-out voltage	V	1
Switching times ON delay	ms	1 + max. one half-wave
OFF delay	ms	1 + max. one half-wave

¹ Use overvoltage protection device; max cut-off-voltage 6.000 V; min energy handling capability 100 J

² The current I_{max} provides information about the performance of the solid-state relays. The actual permitted rated operating current I_e can be smaller depending on the connection method and cooling conditions. The spring-loaded terminals version can be used for a rated current of up to approx. 20 A with one conductor and up to approx. 40 A with two conductor on each terminal.



General Data:		
Ambient temperature		
During operation, derating as of 40 °C	°C	-25 ... 60
During storage	°C	-55 ... 80
Mounting altitude	m	0 ... 1000; at > 1000 m, please contact our Technical Assistance
Impact resistance acc. to DIN IEC 68	g/ms	15/11
Vibration resistance	g	2
Degree of protection		IP20
Electromagnetic compatibility (
Interference emission		
○ Conducted interference voltage IEC 60 947-4-3		Class A for industrial applications ³
○ Radiated, high-frequency interference voltage IEC 60 947-4-3		Class A for industrial applications
Interference resistance		
○ Electrostatic discharge acc. to IEC 61 000-4-2 (corresponds to severity 3)	kV	Contact discharge 4; air discharge 8; performance criterion 2
○ Induced HF fields acc. to IEC 61 000-4-6	MHz	0.15 ... 80; 140 dBµV; performance criterion 1
○ Burst acc. to IEC 61 000-4-4	kV	2/5.0 kHz; performance criterion 1
○ Surge acc. to IEC 61 000-4-5	kV	Phase-to-ground 2; phase-to-phase 1; performance criterion 2
Dielectric Strength 50/60 Hz (Input, Output / Base)	V rms	4000

Type		3RF22...-1.	3RF22...-2.	3RF22...-3.
Connection, main contacts		Screw connection	Spring-loaded connection	Ring cable connection
Conductor cross-section				
○ Solid	mm ²	2 x (1,5 ... 2,5), 2 x (2,5 ... 6)	2x (0,5 ... 2,5)	
○ Finely stranded with end sleeve	mm ²	2 x (1,5 ... 2,5), 2 x (2,5 ... 6), 1 x 10	2x (0,5 ... 1,5)	
○ Finely stranded w/o end sleeve	mm ²		2x (0,5 ... 2,5)	
○ Solid or stranded	AWG	2 x (14 ... 10)	2 x (18 ... 14)	
Stripping length	mm	10	10	
Terminal screw		M 4	-	M 5
○ Tightening torque	Nm	2 ... 2,5	-	2 ... 2,5
D 5...6 mm / PZ 2	lb.in	18 ... 22	-	18 ... 22
Cable lug DIN		-	-	DIN 46234 5-2,5 ... 5-25
JIS		-	-	JIS C 2805 R 2-5 ... 14-5
Connection, auxiliary/control contacts				
Conductor cross-section with or without end sleeve	mm ²	1 x (0,5 ... 2,5)	0,5 ... 2,5	1 x (0,5 ... 2,5)
	mm ²	2 x (0,5 ... 1,0)		2 x (0,5 ... 1,0)
	AWG	20 ... 12	20 ... 12	20 ... 12
Stripping length	mm	7	10	7
Terminal screw		M 3	-	M 3
○ Tightening torque	Nm	0,5 ... 0,6	-	0,5 ... 0,6
D 3.5 / PZ 1	lb.in	4,5 ... 5,3	-	4,5 ... 5,3

³ Attention!

This product was constructed as an EMC Class A device. The use of this product in residential applications could lead to radio interferences. In such an application, additional filtering may be required.

Fused Design with Semiconductor Protection:

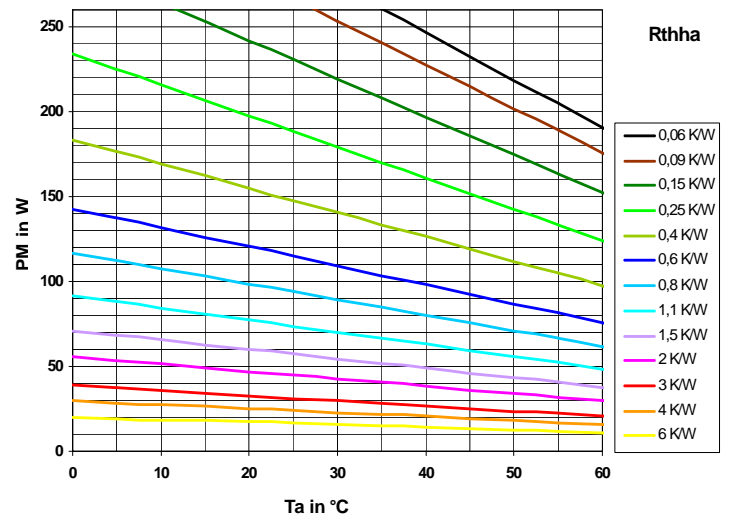
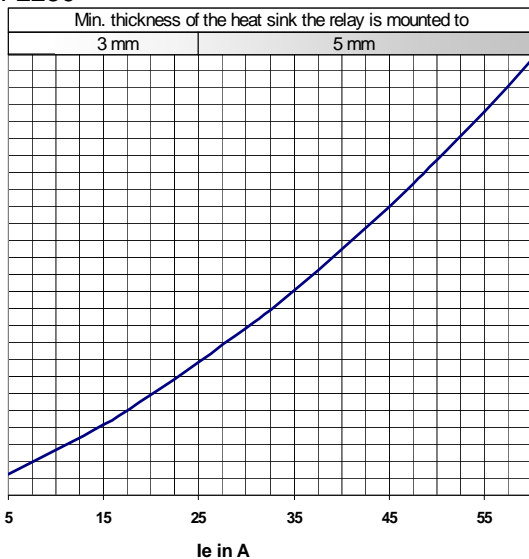
Type	Full-range fuse LV HBC design gR/SITOR	Semiconductor protection fuse, cylindrical design		
		10 x 38 mm aR / SITOR	14 x 51 mm aR / SITOR	22 x 58 mm aR / SITOR
3RF2230- up to 506 V	3NE1814-0	3NC1032	3NC1430	3NC2232
3RF2230- up to 660 V		3NC1025		
3RF2255- up to 506 V	3NE1802-0	-	3NC1450	3NC2263
3RF2255- up to 660 V	3NE1803-0	-		3NC2250

Accessories:

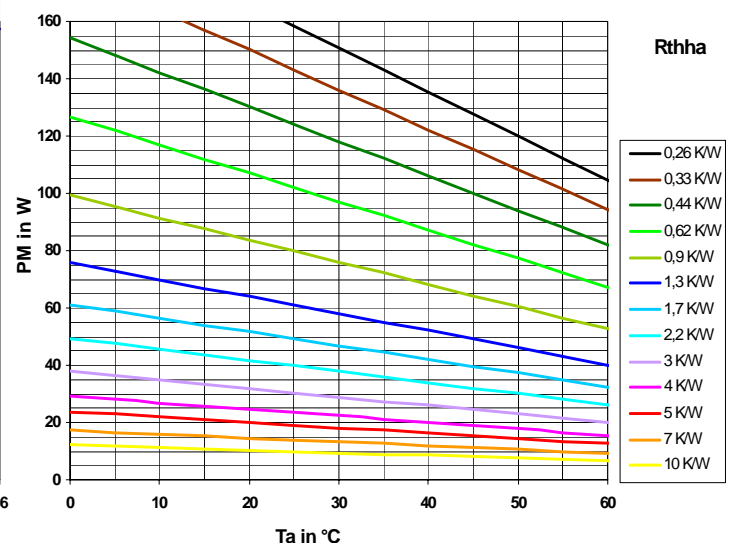
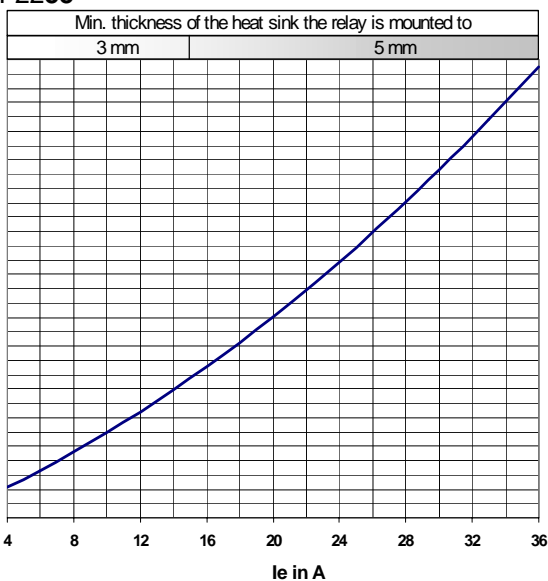
Function module	Order No.	Applicable for the following types	Versions
Converter	3RF2900-0EA18	3RF22...-A C 4 .	Us = AC/DC 24 V

Characteristic Curves:

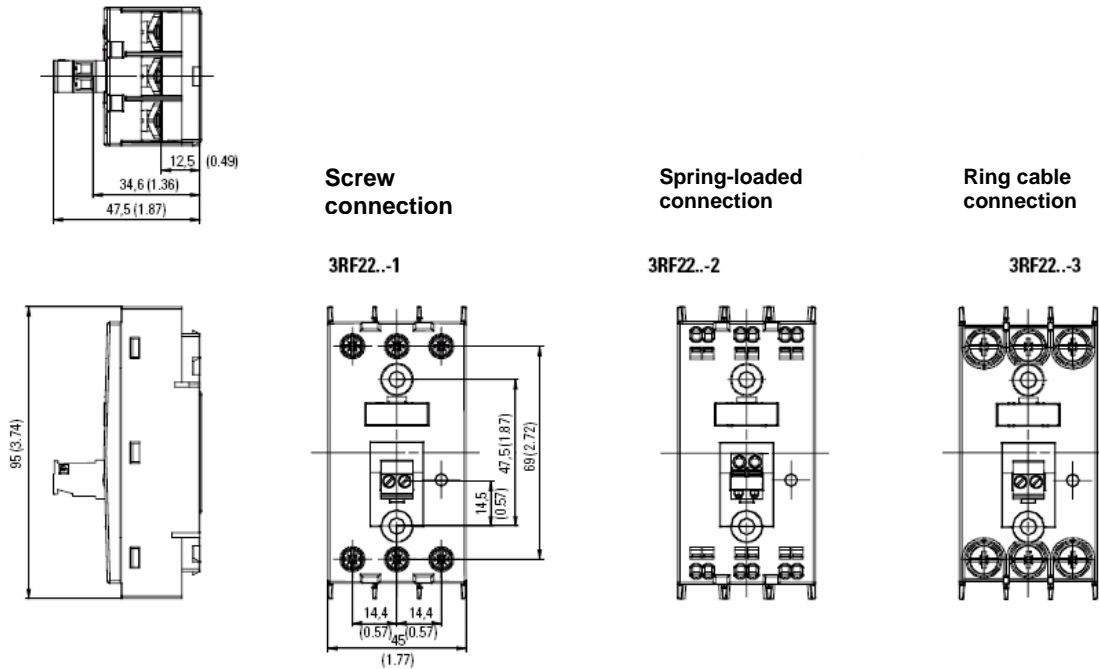
3RF2230-



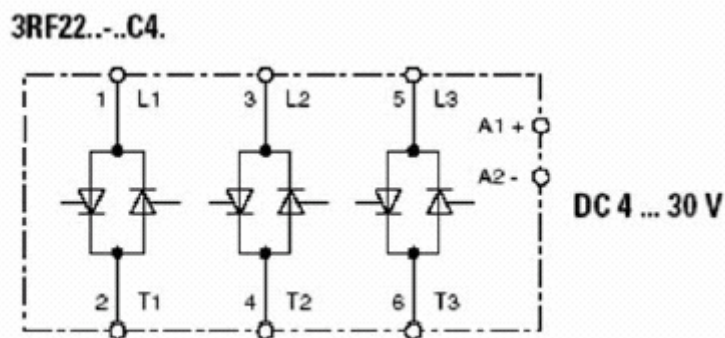
3RF2255-



Dimension Drawings⁴:



Device / Example Circuit Diagram:



⁴ Dimensions in mm (in)