

SIRIUS SC 3RF21... Solid-State Relays**Main Characteristics:**

Space saving thanks to a width of only 22.5 mm.
LED display.
Various connection systems.
Plug-in control terminal.
Degree of protection IP 20.
Zero switching.

**General Data:****Standards / Approvals**

DIN EN 60947-4-3
UL 508 / CSA
CE
CCC

Ambient temperature		
during operation	°C	-25 ... 60
during storage	°C	-55 ... 80
Installation altitude	m	0 ... 1000; derating starting at 1000
Impact resistance in acc. with DIN IEC 68	g/ms	15/11
Vibration performance	g	2
Degree of protection		IP20
Electromagnetic compatibility (EMC)		
Emitted interference		
o Conducted interference voltage IEC 60 947-4-3		Class A for industrial applications
o Radiated, radio-frequency interference voltage IEC 60 947-4-3		Class A for industrial applications
Interference resistance		
o Electrostatic discharge in acc. with IEC 61 000-4-2 (equivalent to severity 3)	kV	Contact discharge 4; air discharge 8; performance criteria 2
o Induced HF fields in acc. with IEC 61 000-4-6	MHz	0.15 ... 80; 140 dBµV; performance criteria 1
o Burst in acc. with IEC 61 000-4-4	kV	2/5.0 kHz; performance criteria 1
o Surge in acc. with IEC 61 000-4-5	kV	Phase-to-ground 2; phase-to-phase 1; performance criteria 2

Type		3RF21??-1....	3RF21??-2....	3RF21??-3....
Connection, main contacts		Screw	Spring-loaded Ring-type cable lug	
Conductor cross-section				
o Solid	mm ²	2 x (1.5 ... 2.5), 2 x (2.5 ... 6)	2x (0.5 ... 2.5)	
o Stranded with connector sleeve	mm ²	2 x (1 ... 2.5), 2 x (2.5 ... 6), 1 x 10	2x (0.5 ... 1.5)	
o Stranded w/o connector sleeve	mm ²		2x (0.5 ... 2.5)	
o Solid or stranded	AWG	2 x (14 ... 10)	2 x (18 ... 14)	
Stripping length	mm	10	10	
Terminal screw		M 4	-	M 5
o Tightening torque	Nm	2 ... 2.5	-	2.5 ... 2
	lb.in	18 ... 22	-	18 ... 22
Cable lug	DIN	-	-	DIN 46234
	JIS	-	-	-5-2.5, -5-6, -5-10, -5-16, -5-25
				JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5
Connection, auxil. / control contacts				
Conductor cross-section	mm ²	0.5 ... 2.5	0.5 ... 1.5	0.5 ... 2.5
	AWG	20 ... 12	20 ... 12	20 ... 12
Stripping length	mm	7	10	7
Terminal screw		M 3	-	M 3
o Tightening torque	Nm	0.5 ... 0.6	-	0.5 ... 0.6
	lb.in	4.5 ... 5.3	-	4.5 ... 5.3

SIRIUS SC 3RF21... Solid-State Relays**Main Circuit:**

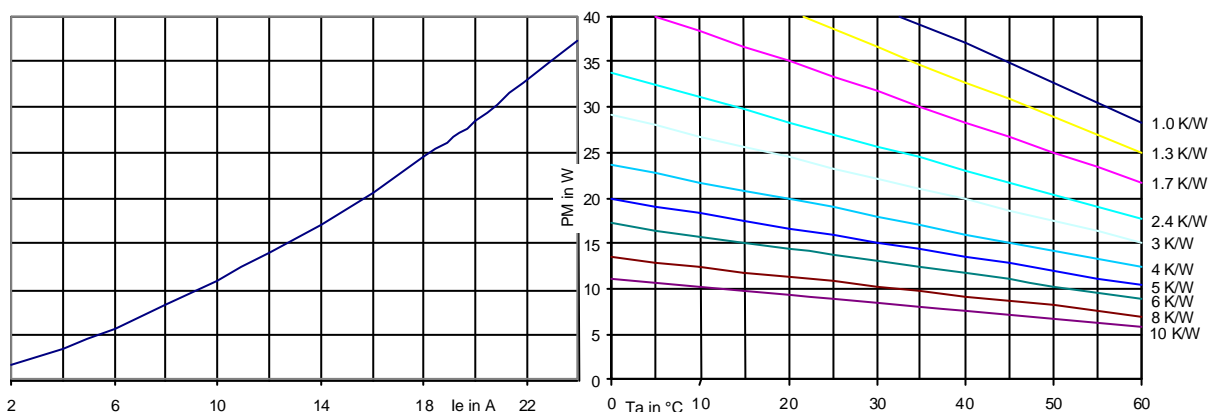
Type		3RF21??-?AA? 2	3RF21??-?AA? 4	3RF21??-?AA? 6
Rated operating voltage U_e	V	24 ... 230	230 ... 460	400 ... 600
	%	-15/+10		
	Hz	50/60		
Rated insulation voltage U_i	V	600		
Blocking voltage	V	800	1200	1600
Slew rate	V/ μ s	1000		

Type	I_{max}		I_e IEC 947-4-3		I_e UL/CSA		Power loss at I_{max} W	Min. load current A	Leakage current A
	A	at R_{thha} / 40 °C	A	at R_{thha} / 40 °C	A	at R_{thha} / 50 °C			
3RF2120-	20	1.7 K/W	20	1.7 K/W	20	1.3 K/W	28.5	0.5	0.01
3RF2130-1.	30	0.79 K/W	30	0.79 K/W	30	0.56 K/W	44	0.5	0.01
3RF2150-1.	50	0.48 K/W	50	0.48 K/W	50	0.33 K/W	66	0.5	0.01
3RF2150-2.			20	2.6 K/W	20	2.9 K/W			
3RF2150-3.			50	0.48 K/W	50	0.33 K/W			
3RF2170-1.	70	0.25 K/W	50	0.77 K/W	50	0.6 K/W	94	0.5	0.01
3RF2190-1.	90	0.2 K/W	50	0.94 K/W	50	0.85 K/W	118	0.5	0.01
3RF2190-2.			20	2.8 K/W	20	3.5 K/W			
3RF2190-3.			88	0.22 K/W	83	0.19 K/W			

Type	Rated peak withstand current I_{tsm} A	I^2t value A^2s
3RF2120-	200	200
3RF2130-? AA? 2	300	450
3RF2130-? AA? 4		
3RF2130-? AA? 6	400	800
3RF2150-	600	1800
3RF2170-? AA? 2	1200	7200
3RF2170-? AA? 4		
3RF2170-? AA? 6	1150	6600
3RF2190-	1150	6600

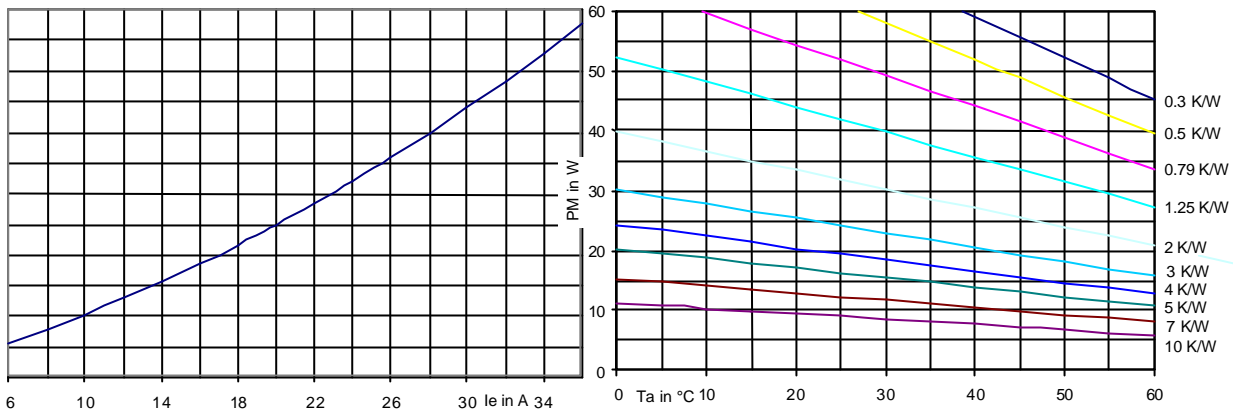
Characteristic Curves

3RF2120-

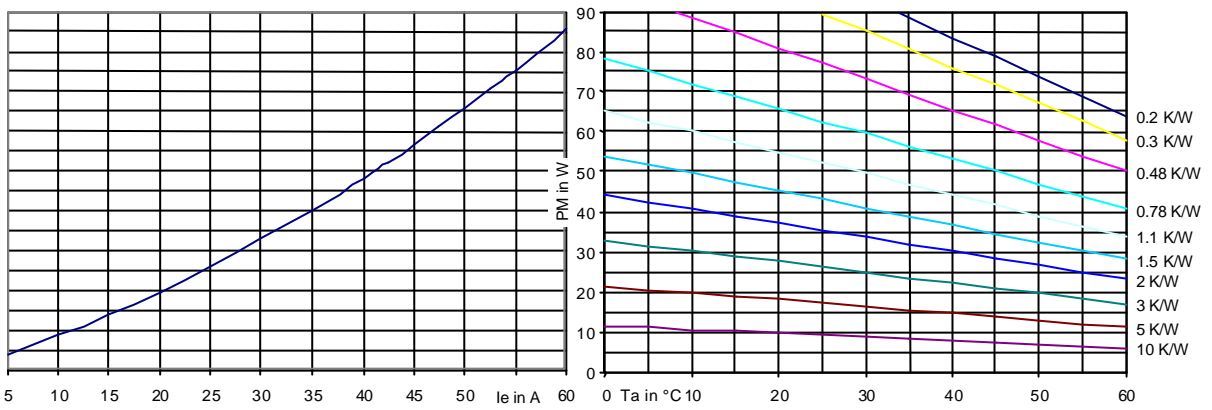


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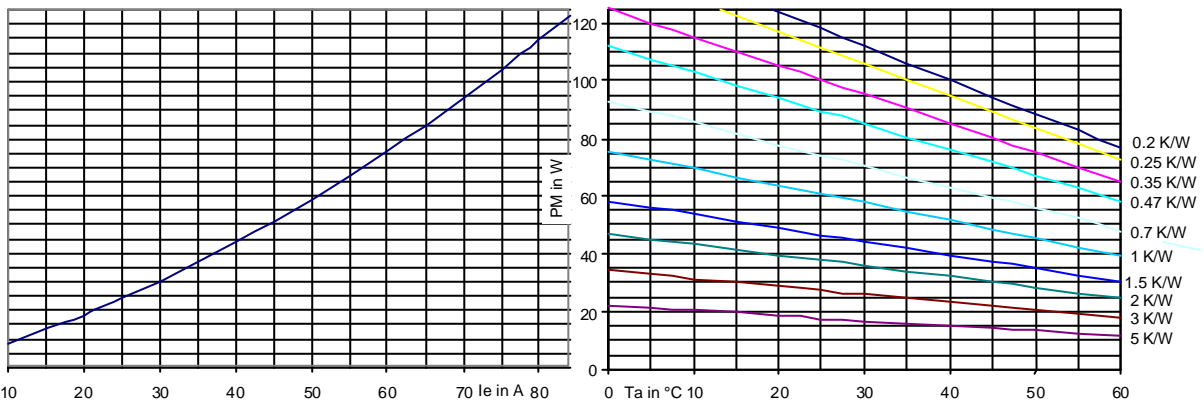
3RF2130-



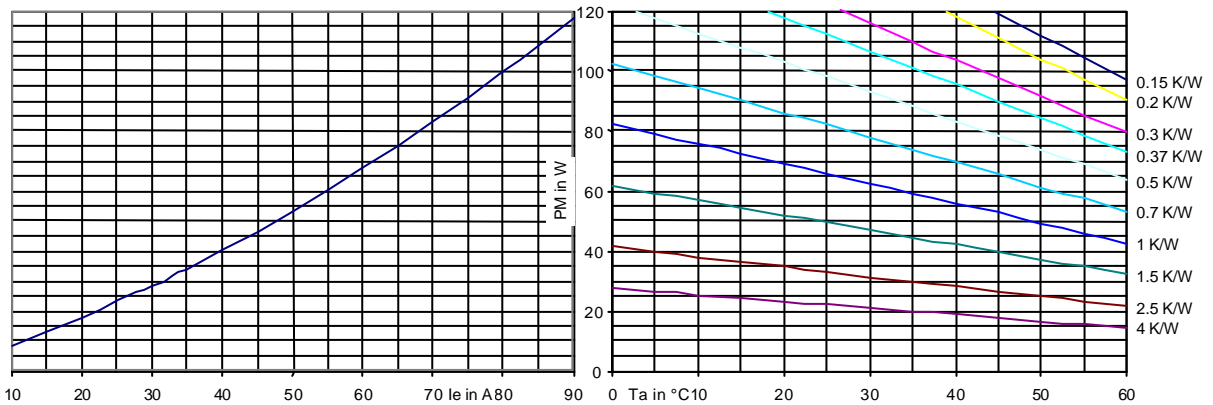
3RF2150-



3RF2170-



3RF2190-

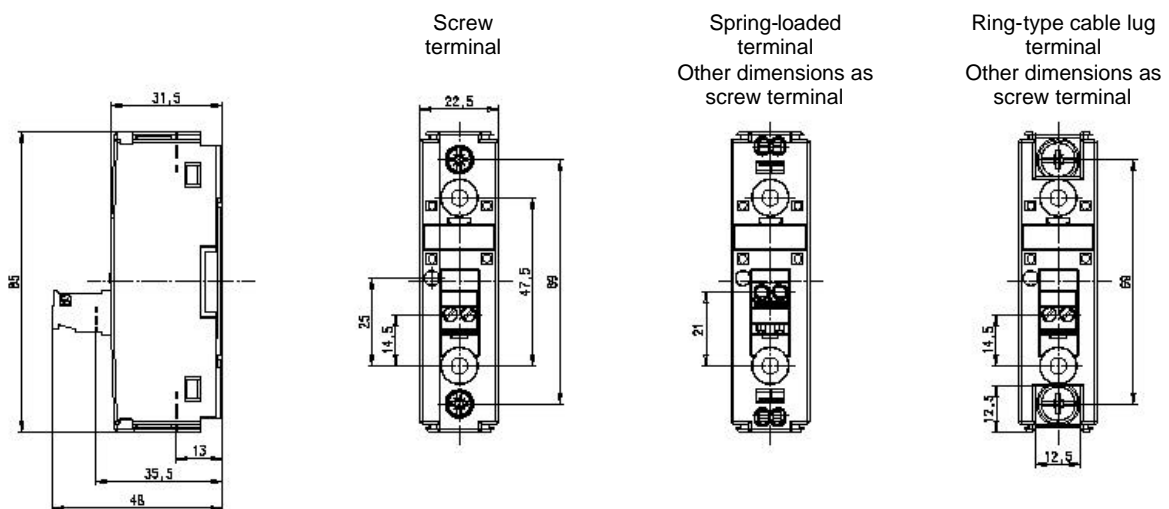


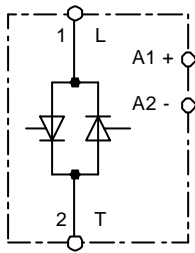
SIRIUS SC 3RF21... Solid-State Relays**Fused Design with Semiconductor Protection**

Type	General purpose fuse LV HRC design gR/SITOR	Semiconductor ferrule fuse		
		10 x 38 mm aR / SITOR	14 x 51 mm aR / SITOR	22 x 58 mm aR / SITOR
3RF21 20-?AA?2	3NE1814-0	3NC1020	3NC1420	3NC2220
3RF21 20-?AA?4	3NE1813-0	3NC1016	3NC1420	3NC2220
3RF21 30-?AA?2	3NE1815-0	3NC1032	3NC1430	3NC2232
3RF21 30-?AA?4	3NE1815-0	3NC1025	3NC1430	3NC2232
3RF21 30-?AA?6	3NE1815-0	3NC1032	3NC1430	3NC2232
3RF21 50-?AA?2	3NE1817-0	-	3NC1450	3NC2250
3RF21 50-?AA?4	3NE1802-0	-	3NC1450	3NC2250
3RF21 50-?AA?6	3NE1803-0	-	3NC1450	3NC2250
3RF21 70-?AA?2	3NE1820-0	-	-	3NC2280
3RF21 70-?AA?4	3NE1818-0	-	-	3NC2280
3RF21 70-?AA?6	3NE1817-0	-	-	3NC2280
3RF21 90-?AA?2	3NE1820-0	-	-	3NC2200
3RF21 90-?AA?4	3NE1021-2	-	-	3NC2280
3RF21 90-?AA?6	3NE1020-2	-	-	3NC2280

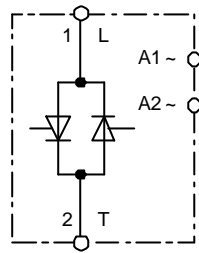
Control Circuit:

Type		3RF21?0-?AA0.	3RF21?0-?AA2.
Operating type		DC operation	AC operation
Rated control supply voltage U_s	V	24 in acc. with EN 61131-2	110 ... 230
Rated operating voltage U_c	V	30	253
Rated operating current	mA	15	6
Rated frequency of the control supply voltage	Hz		50/60
Threshold voltage	V	15	90
• At threshold current	mA	2	2
Drop-out voltage	V	5	40
Switching times ON delay	ms	1 + add. max. one half wave	40 + add. max. one half wave
OFF delay	ms	1 + add. max. one half wave	40 + add. max. one half wave

Dimension Drawing:

SIRIUS SC 3RF21... Solid-State Relays**Equipment Circuit Diagram:**

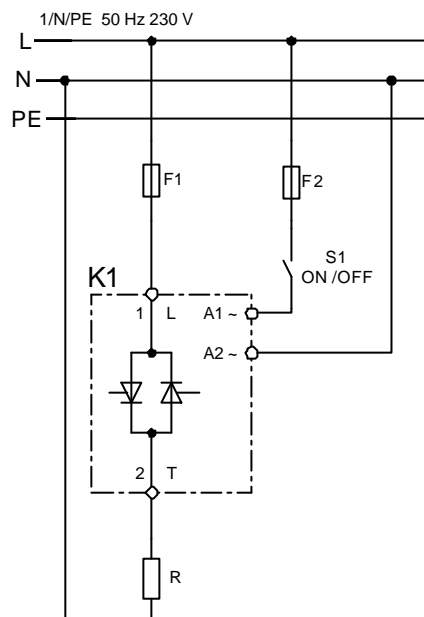
3RF21?0-?AA0.
Us = 24 V DC



3RF21?0-?AA2.
Us = 110 ... 230 V AC

Sample Circuit Diagram:

- F1 Main circuit fuse
(semiconductor protection
is recommended)
F2 Control circuit fuse
K1 3RF2 solid-state relay
R Load resistance

**Accessories:**

Function module	Order No.	Applicable with the following types	Versions
Converter	3RF2900-0EA18	3RF21?0-?AA0.	Us = 24 V DC
Basic load monitoring	3RF2920-0FA08	3RF21?0-1AA0.	Screw terminal, Us = 24 V DC
Extended load monitoring ¹	3RF29...0GA..	3RF21?0-1.	Screw connection
		3RF21?0-3.	Ring-type cable lug
Terminal cover ²	3RF2900-3PA88	3RF21?0-1.	Screw terminal
		3RF21?0-3.	Ring-type cable lug

¹ The exact assignment of function modules is available in the LV 10 catalog.

² The terminal cover can be easily adjusted for screw connection systems.