



phase-out type semiconductor relay, 1-phase 3RF2 width 22.5 mm, 90 A 48-460 V / 24 V DC spring-loaded terminal for mounting on available cooling surfaces

product brand name	SIRIUS
product designation	solid-state relay
design of the product	1-pole
product type designation	3RF21
manufacturer's article number	
• _3 of the accessories that can be ordered	3RF2900-0EA18
product designation	
• _3 of the accessories that can be ordered	converter
General technical data	
product function	zero-point switching
power loss [V·A] maximum	118 VA
power loss [W] for rated value of the current	
• at AC in hot operating state	118 W
• at AC in hot operating state per pole	118 W
• without load current share typical	0.4 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP20
protection class IP on the front according to IEC 60529	IP20
shock resistance according to IEC 60068-2-27	15 g / 11 ms
vibration resistance according to IEC 60068-2-6	2 g
reference code according to IEC 81346-2	Q
Substance Prohibitance (day/month/year)	05/28/2009
SVHC substance name	Lead monoxide (lead oxide) CAS-No. 1317-36-8 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5 Melamine CAS-No. 108-78-1
Net Weight	0.07 kg
Main circuit	
number of poles for main current circuit	1
number of NO contacts for main contacts	1
number of NC contacts for main contacts	0
type of voltage of the operating voltage	AC
operating voltage	
• at AC	
— at 50 Hz rated value	48 ... 460 V
— at 60 Hz rated value	48 ... 460 V
operating frequency rated value	50 ... 60 Hz
relative symmetrical tolerance of the operating frequency	10 %
operating range relative to the operating voltage at AC	

• at 50 Hz • at 60 Hz	40 ... 506 V
operational current rated value maximum	88 A
operational current • at AC-1 at 400 V rated value • at AC-51 rated value • according to UL 508 rated value	90 A 20 A 20 A
ampacity maximum	90 A
operational current minimum	500 mA
rate of voltage rise at the thyristor for main contacts maximum permissible	1 000 V/μs
blocking voltage at the thyristor for main contacts maximum permissible	1 200 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	1 150 A
I²t value maximum	6 600 A ² ·s
Control circuit/ Control	
type of voltage of the control supply voltage	DC
control supply voltage 1 at DC rated value maximum permissible	30 V
control supply voltage 1 at DC	15 ... 24 V
control supply voltage at DC • initial value for signal <1> detection • full-scale value for signal<0> recognition	15 V 5 V
control current at minimum control supply voltage • at DC	13 mA
control current at DC rated value	15 mA
ON-delay time	1 ms; additionally max. one half-wave
OFF-delay time	1 ms; additionally max. one half-wave
Installation/ mounting/ dimensions	
fastening method side-by-side mounting	Yes
fastening method	screw fixing
design of the thread of the screw for securing the equipment	M4
tightening torque of fixing screw maximum	1.5 N·m
tightening torque [lbf·in] of fixing screw maximum	13 lbf·in
height	85 mm
width	22.5 mm
depth	48 mm
Connections/ Terminals	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection • for main current circuit • for auxiliary and control circuit	spring-loaded terminals spring-loaded terminals
type of connectable conductor cross-sections • for main contacts — solid — finely stranded with core end processing — finely stranded without core end processing • for AWG cables for main contacts	2x (0.5 ... 2.5 mm ²) 2x (0.5 ... 1.5 mm ²) 2x (0.5 ... 2.5 mm ²) 2x (18 ... 14)
connectable conductor cross-section for main contacts • solid or stranded • finely stranded with core end processing • finely stranded without core end processing	0.5 ... 2.5 mm ² 0.5 ... 1.5 mm ² 0.5 ... 2.5 mm ²
type of connectable conductor cross-sections • for auxiliary and control contacts — solid — finely stranded with core end processing	0.5 ... 1.5 mm ² 0.5 ... 2.5 mm ²

— finely stranded without core end processing	0.5 ... 2.5 mm ²
• for AWG cables for auxiliary and control contacts	1x (20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	18 ... 14
tightening torque	
• for main contacts with screw-type terminals	2 ... 2.5 N·m
stripped length of the cable	
• for main contacts	10 mm
• for auxiliary and control contacts	10 mm
UL/CSA ratings	
operational current according to UL 508 rated value	20 A
Electrical Safety	
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
Ambient conditions	
installation altitude at height above sea level maximum	1 000 m
ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C
Electromagnetic compatibility	
conducted interference	
• due to burst according to IEC 61000-4-4	2 kV / 5 kHz, behavior criterion 2
• due to conductor-earth surge according to IEC 61000-4-5	2 kV, behavior criterion 2
• due to conductor-conductor surge according to IEC 61000-4-5	1 kV, behavior criterion 2
• due to high-frequency radiation according to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
field-based interference according to IEC 61000-4-3	80 MHz ... 1 GHz 10 V/m, behavior criterion 1
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
conducted HF interference emissions according to CISPR11	Class A for industrial environment
field-bound HF interference emission according to CISPR11	Class B for the domestic, business and commercial environments
Short-circuit protection, design of the fuse link	
manufacturer's article number	
• of full range R fuse link for semiconductor protection at NH design usable	3NE1021-2
• of back-up R fuse link for semiconductor protection at NH design usable	3NE8021-1
• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NC2280 ; These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number of the gG fuse	
• at NH design usable	3NA6812 ; These fuses have a smaller rated current than the semiconductor relays
• at NH design usable note	These fuses have a smaller rated current than the semiconductor relays
• at cylindrical design 22 x 58 mm usable	3NW6212-1 ; These fuses have a smaller rated current than the semiconductor relays
• at cylindrical design 22 x 58 mm usable note	These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number	
• of DIAZED fuse usable	5SB4111 ; These fuses have a smaller rated current than the semiconductor relays
• of DIAZED fuse usable note	These fuses have a smaller rated current than the semiconductor relays
• of NEOZED fuse usable	5SE2335 ; These fuses have a smaller rated current than the semiconductor relays
Approvals Certificates	
Environment	General Product Approval
Environmental Conformations	    
EMV	Test Certificates
	other



[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)

[Confirmation](#)

[Miscellaneous](#)

[Confirmation](#)

other

Railway



[Special Test Certificate](#)

Further information

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

Information for data generation and storage

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

Information- and Downloadcenter (Catalogs, Brochures,...)

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2190-2AA04>

Cax online generator

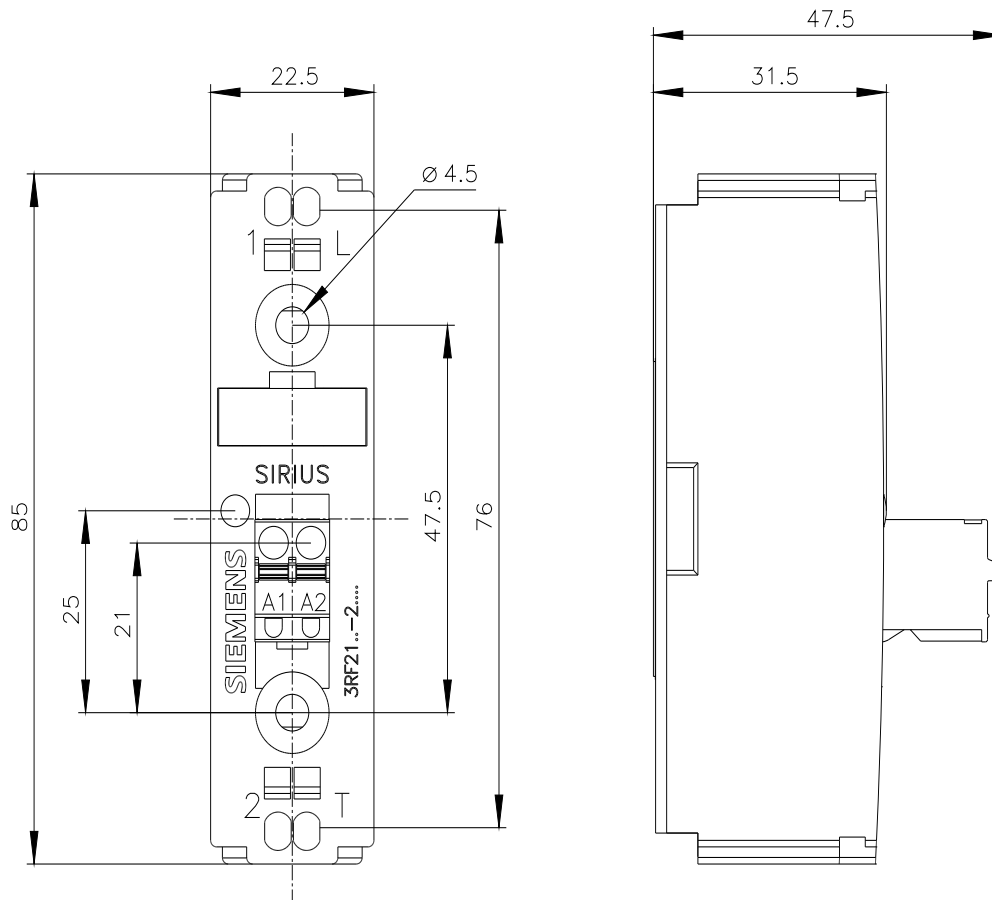
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-2AA04>

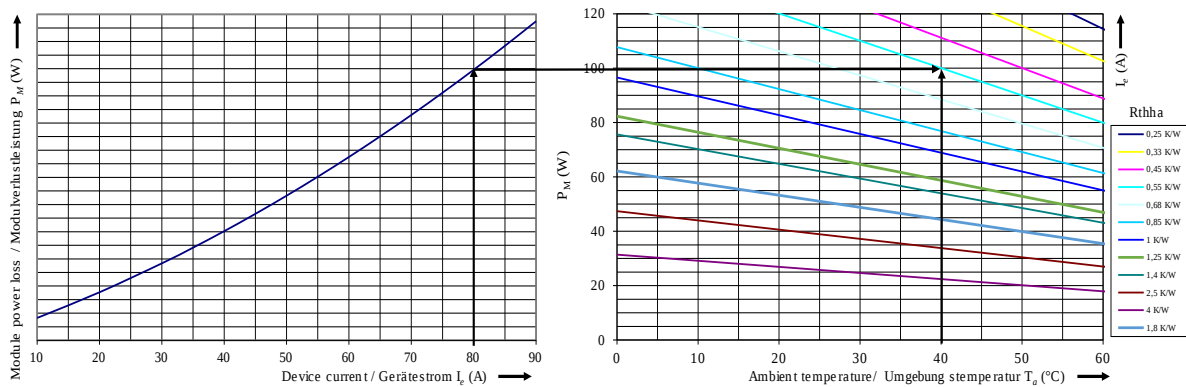
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-2AA04>

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-2AA04&lang=en





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