



semiconductor relay, 1-phase 3RF2 width 22.5 mm, 90 A 48-600 V / 110-230 V AC
ring cable 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	
• _1 of the accessories that can be ordered	3RF2900-3PA88
• _4 of the accessories that can be ordered	3RF2990-0GA36
product designation	
• _1 of the accessories that can be ordered	terminal cover
• _4 of the accessories that can be ordered	load monitoring
General technical data	
product function	zero-point switching
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	3.5 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP00
protection class IP on the front according to IEC 60529	IP00
shock resistance according to IEC 60068-2-27	15g / 11 ms
vibration resistance according to IEC 60068-2-6	2g
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	05/28/2009
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Weight	0.072 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 ... 600 V
— at 60 Hz rated value	48 ... 600 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	40 ... 660 V

• at 60 Hz	40 ... 660 V
operational current rated value maximum	88 A
operational current	
• at AC-51 rated value	88 A
• according to UL 508 rated value	80 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	1 600 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	AC
control supply voltage 1 at AC	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
control supply voltage frequency	
• 1 rated value	50 Hz
• 2 rated value	60 Hz
control supply voltage at AC	
• at 50 Hz full-scale value for signal<0> recognition	40 V
• at 60 Hz full-scale value for signal<0> recognition	40 V
control supply voltage	
• at AC initial value for signal <1> detection	90 V
symmetrical line frequency tolerance	5 Hz
control current at minimum control supply voltage	
• at AC	2 mA
control current at AC rated value	15 mA
ON-delay time	40 ms; additionally max. one half-wave
OFF-delay time	40 ms; additionally max. one half-wave
Auxiliary circuit	
type of switching contact	normally open contact (NO)
number of NC contacts for auxiliary contacts	0
number of NO contacts for auxiliary contacts	0
number of CO contacts for auxiliary contacts	0
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	Ring cable lug connection
• for auxiliary and control circuit	ring terminal lug connection
type of connectable conductor cross-sections	
• for main contacts for JIS cable lug	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5
• for DIN cable lug for main contacts	DIN 46234 -5-2,5, -5-6, -5-10, -5-16, -5-25
type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)
— finely stranded without core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²)

• for AWG cables for auxiliary and control contacts	1x (20 ... 12)		
tightening torque			
• for main contacts with screw-type terminals	2 ... 2.5 N·m		
• for auxiliary and control contacts with screw-type terminals	0.5 ... 0.6 N·m		
tightening torque [lbf·in]			
• for main contacts with screw-type terminals	7 ... 10.3 lbf·in		
• for auxiliary and control contacts with screw-type terminals	4.5 ... 5.3 lbf·in		
design of the thread of the connection screw			
• for main contacts	M5		
• of the auxiliary and control contacts	M3		
stripped length of the cable			
• for main contacts	10 mm		
• for auxiliary and control contacts	7 mm		
Electrical Safety			
protection class IP on the front according to IEC 60529	IP00; IP20 with cover		
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front with cover		
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 gS fuse for semiconductor protection at NH design usable	3NE1817-0: These fuses have a smaller rated current than the semiconductor relays		
• 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	3NA6812-6: These fuses have a smaller rated current than the semiconductor relays		
Approvals Certificates			
<table> <tr> <td>General Product Approval</td><td>EMV</td></tr> </table>		General Product Approval	EMV
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Test Certificates	other	Environment
Type Test Certificates/Test Report		Confirmation
		Environmental Confirmations

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=3RF2190-3AA26>

Cax online generator

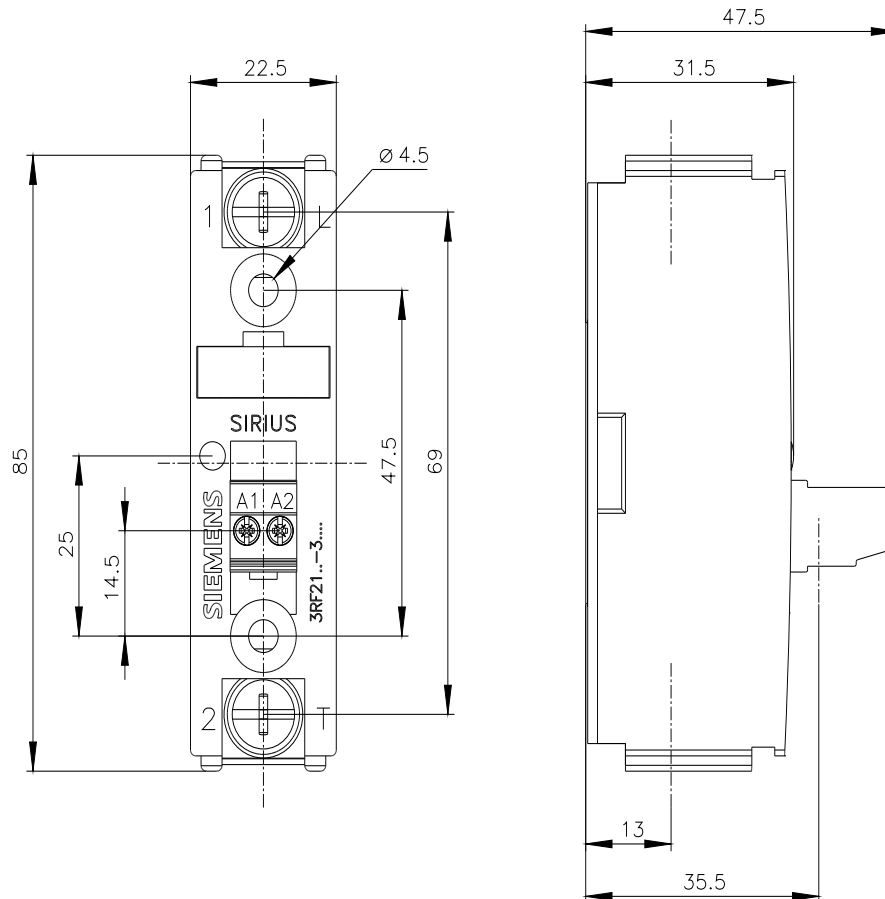
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-3AA26>

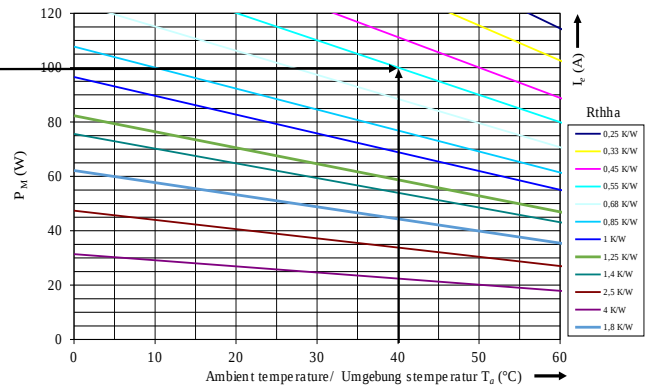
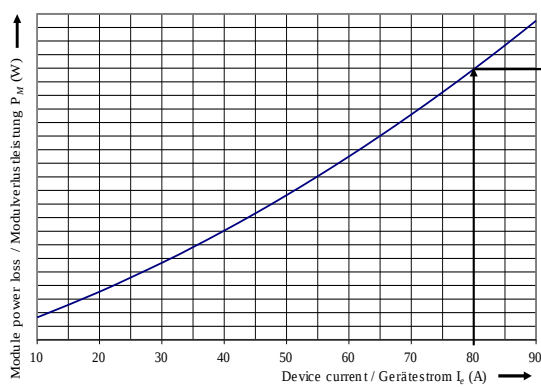
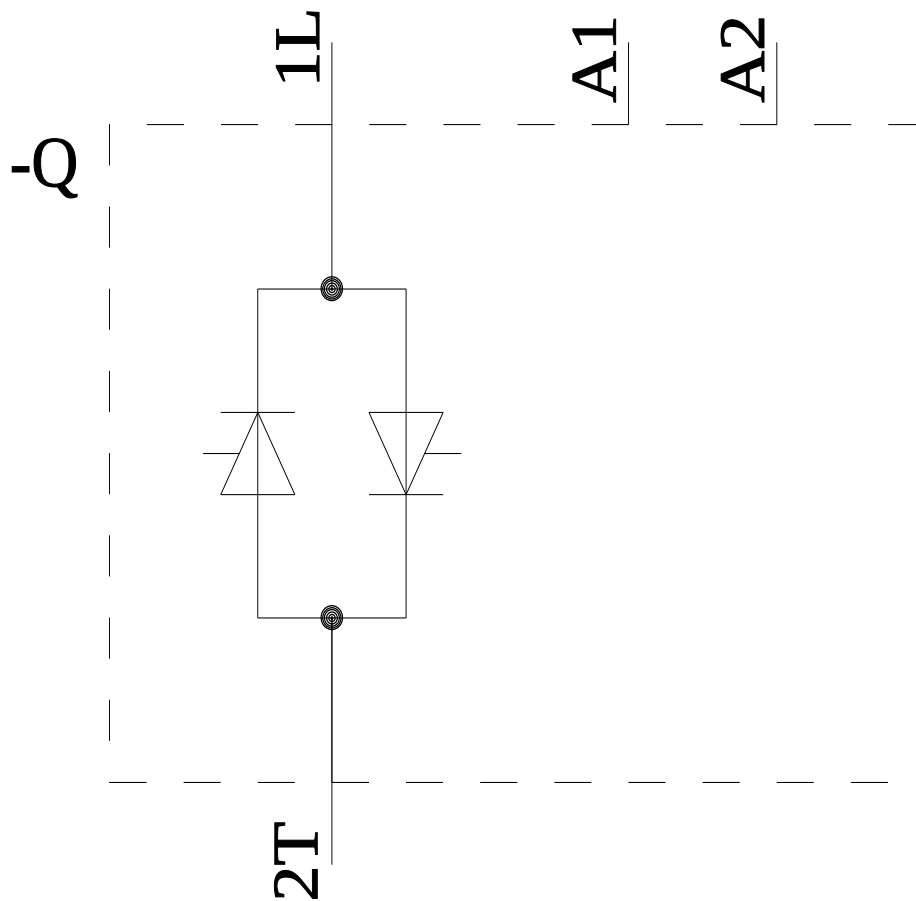
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-3AA26>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-3AA26&lang=en





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