



Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 90 A 48-460 V / 4-30 V DC Ring cable connection

product brand name	SIRIUS
product designation	solid-state relay
design of the product	single-phase
product type designation	3RF21
manufacturer's article number	
<ul style="list-style-type: none">• _1 of the accessories that can be ordered• _3 of the accessories that can be ordered• _4 of the accessories that can be ordered	3RF2900-3PA88 3RF2900-0EA18 3RF2990-0GA16
product designation	
<ul style="list-style-type: none">• _1 of the accessories that can be ordered• _3 of the accessories that can be ordered• _4 of the accessories that can be ordered	terminal cover converter load monitoring

General technical data

product function	zero-point switching
power loss [V·A] maximum	118 VA
power loss [W] for rated value of the current	
<ul style="list-style-type: none">• at AC in hot operating state	118 W
<ul style="list-style-type: none">• at AC in hot operating state per pole	118 W
<ul style="list-style-type: none">• without load current share typical	0.5 W
insulation voltage rated value	600 V
type of voltage of the control supply voltage	DC
surge voltage resistance of main circuit rated value	6 kV
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

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
operating voltage at AC	
<ul style="list-style-type: none">• at 50 Hz rated value	48 ... 460 V
<ul style="list-style-type: none">• 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	
<ul style="list-style-type: none">• at 50 Hz	40 ... 506 V
<ul style="list-style-type: none">• at 60 Hz	40 ... 506 V
operational current	
<ul style="list-style-type: none">• at AC-51 rated value	88 A
<ul style="list-style-type: none">• according to UL 508 rated value	80 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	30 V
• at DC	4 ... 30 V
control supply voltage	
• at DC initial value for signal <1> detection	4 V
• at DC full-scale value for signal<0> recognition	1 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
Auxiliary circuit	
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	screw fixing
• side-by-side mounting	Yes
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	
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 ... 1.0 mm ²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
— finely stranded without core end processing	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
• at AWG cables for auxiliary and control contacts	1x (AWG 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	7 mm
• for auxiliary and control contacts	7 mm

Safety related data		
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 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 cylindrical design 22 x 58 mm usable	3NW6212-1 ; 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 NEOZED fuse usable	5SE2335 ; These fuses have a smaller rated current than the semiconductor relays	
Certificates/ approvals		
General Product Approval	EMC	Declaration of Conformity



[Confirmation](#)



Declaration of Conformity

Test Certificates

other



[Type Test Certificates/Test Report](#)

[Confirmation](#)



Further information

Information on the packaging

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

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=3RF2190-3AA44>

Cax online generator

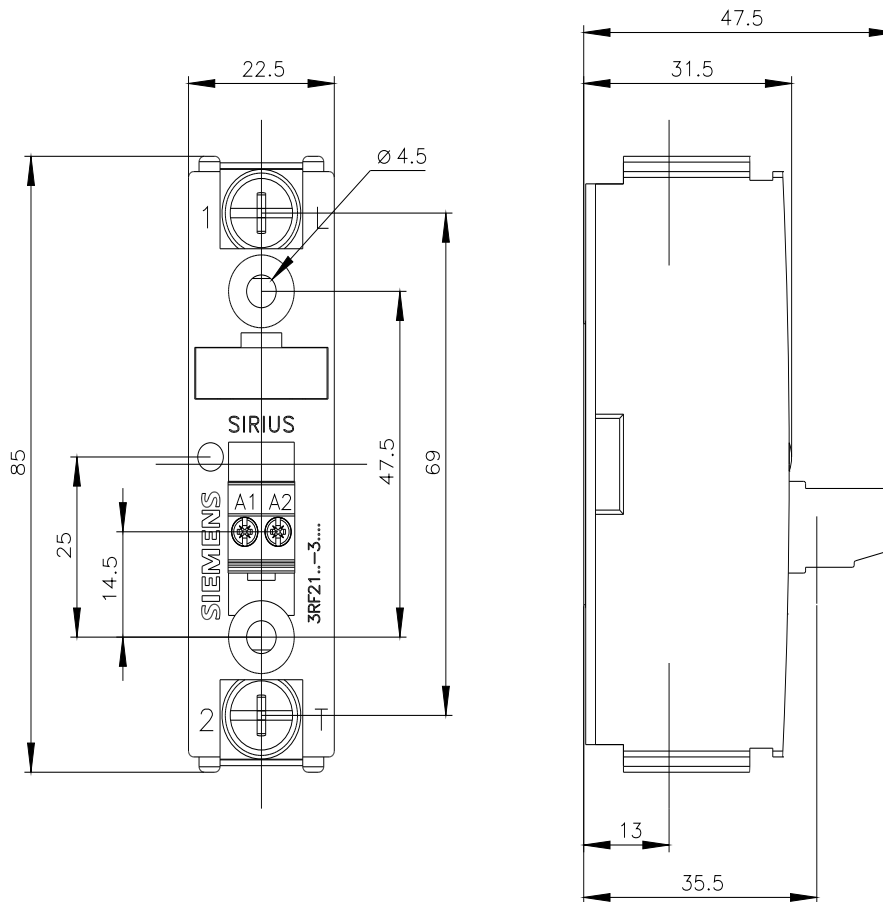
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-3AA44>

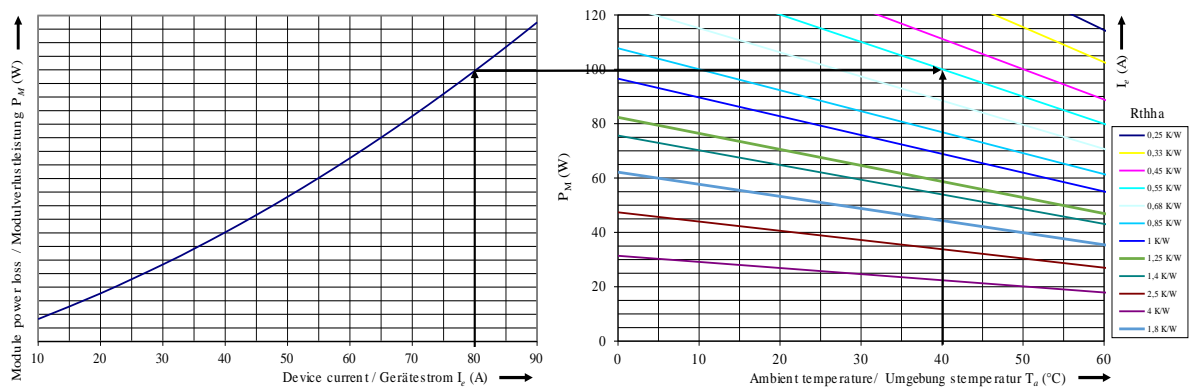
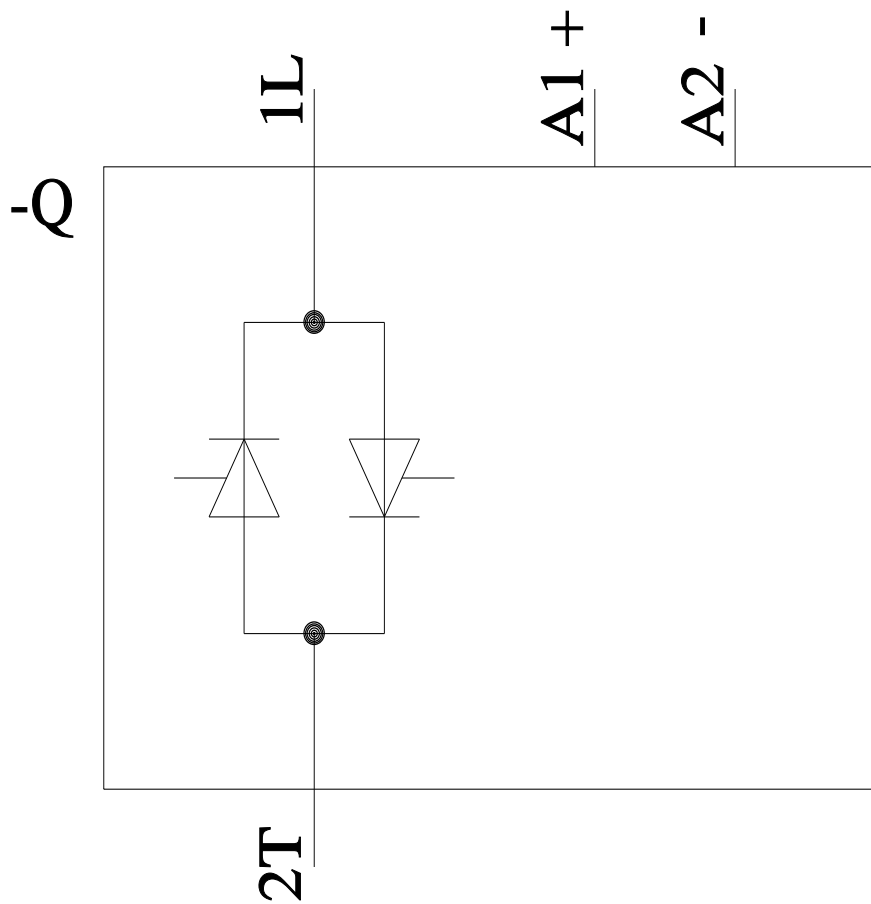
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-3AA44>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-3AA44&lang=en





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