



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 • at AC in hot operating state per pole • without load current share typical 	118 W 118 W 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 EN 61346-2	Q
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 • at 60 Hz rated value 	48 ... 460 V 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 • at 60 Hz 	40 ... 506 V 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/ μ s
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	
<ul style="list-style-type: none"> at DC rated value 	30 V
<ul style="list-style-type: none"> at DC 	4 ... 30 V
control supply voltage	
<ul style="list-style-type: none"> at DC initial value for signal <1> detection 	4 V
<ul style="list-style-type: none"> at DC full-scale value for signal<0> recognition 	1 V
control current at minimum control supply voltage	
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> for main current circuit 	Ring cable lug connection
<ul style="list-style-type: none"> for auxiliary and control circuit 	ring terminal lug connection
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> for main contacts for JIS cable lug 	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> for auxiliary and control contacts 	
<ul style="list-style-type: none"> — solid 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
<ul style="list-style-type: none"> — finely stranded with core end processing 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
<ul style="list-style-type: none"> — finely stranded without core end processing 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²)
<ul style="list-style-type: none"> for AWG cables for auxiliary and control contacts 	1x (AWG 20 ... 12)
tightening torque	
<ul style="list-style-type: none"> for main contacts with screw-type terminals 	2 ... 2.5 N·m
<ul style="list-style-type: none"> for auxiliary and control contacts with screw-type terminals 	0.5 ... 0.6 N·m
tightening torque [lbf·in]	
<ul style="list-style-type: none"> for main contacts with screw-type terminals 	7 ... 10.3 lbf·in
<ul style="list-style-type: none"> for auxiliary and control contacts with screw-type terminals 	4.5 ... 5.3 lbf·in
design of the thread of the connection screw	
<ul style="list-style-type: none"> for main contacts 	M5

<ul style="list-style-type: none"> of the auxiliary and control contacts 	M3
stripped length of the cable	
<ul style="list-style-type: none"> for main contacts 	7 mm
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> during operation 	-25 ... +60 °C
<ul style="list-style-type: none"> during storage 	-55 ... +80 °C

Electromagnetic compatibility

conducted interference	
<ul style="list-style-type: none"> due to burst according to IEC 61000-4-4 	2 kV / 5 kHz behavior criterion 2
<ul style="list-style-type: none"> due to conductor-earth surge according to IEC 61000-4-5 	2 kV behavior criterion 2
<ul style="list-style-type: none"> due to conductor-conductor surge according to IEC 61000-4-5 	1 kV behavior criterion 2
<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> of full range R fuse link for semiconductor protection at NH design usable of back-up R fuse link for semiconductor protection at NH design usable of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable 	3NE1021-2 3NE8021-1 3NC2280: These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number of the gG fuse <ul style="list-style-type: none"> at NH design usable at cylindrical design 22 x 58 mm usable 	3NA6812: These fuses have a smaller rated current than the semiconductor relays 3NW6212-1: These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number <ul style="list-style-type: none"> of DIAZED fuse usable of NEOZED fuse usable 	5SB4111: These fuses have a smaller rated current than the semiconductor relays 5SE2335: These fuses have a smaller rated current than the semiconductor relays

Certificates/ approvals

General Product Approval	EMC	Declaration of Con- formity
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[Confirmation](#)



Declaration of Con- formity	Test Certificates	other
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[Type Test Certificates/Test Report](#)

[Confirmation](#)



Further information

Siemens has decided to exit the Russian market (see here).
<https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business>
 Siemens is working on the renewal of the current EAC certificates.

Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

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

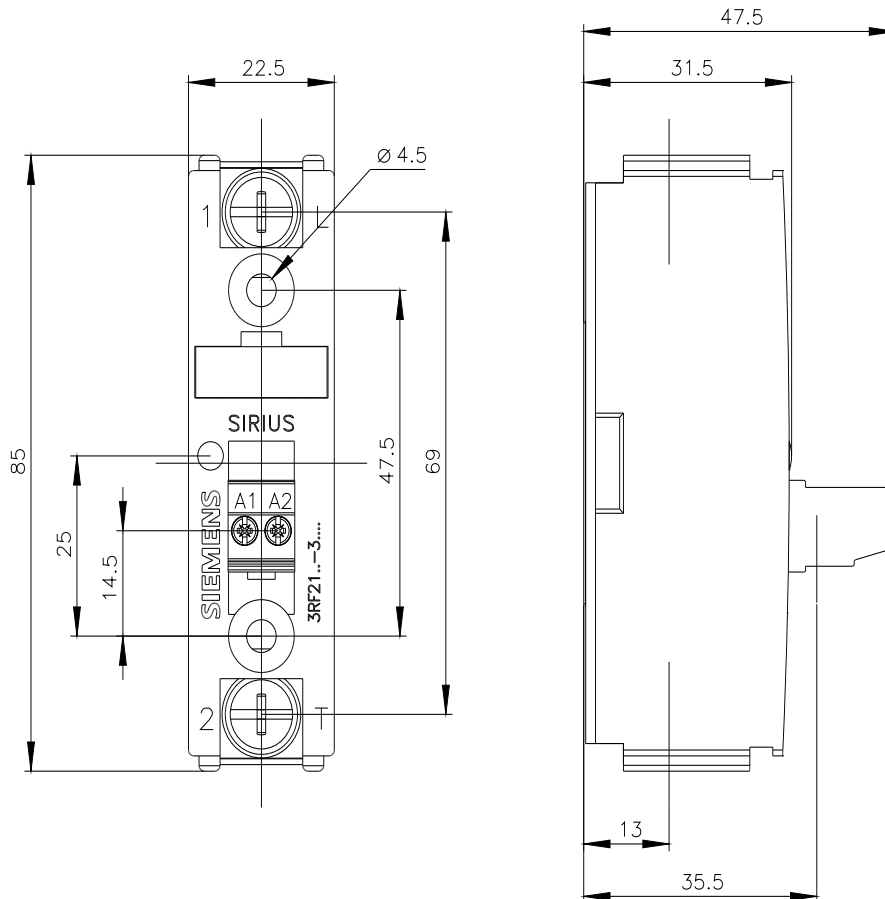
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-3AA44>

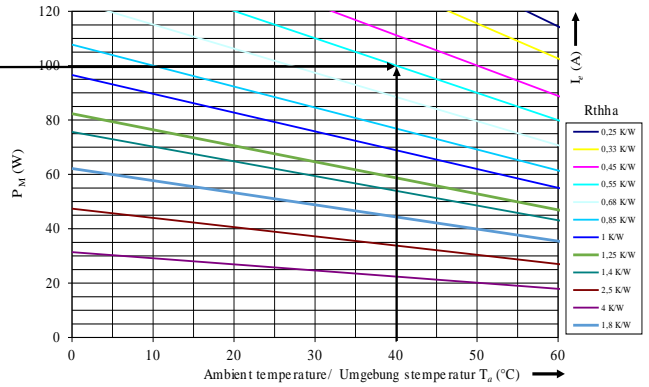
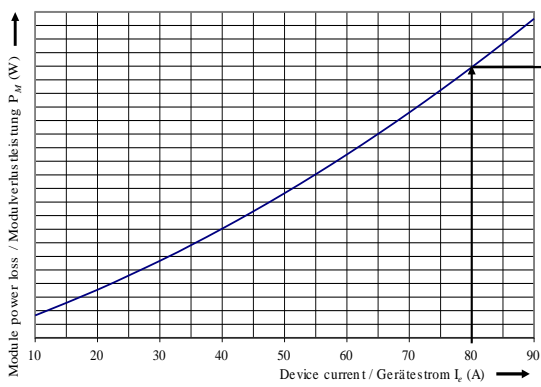
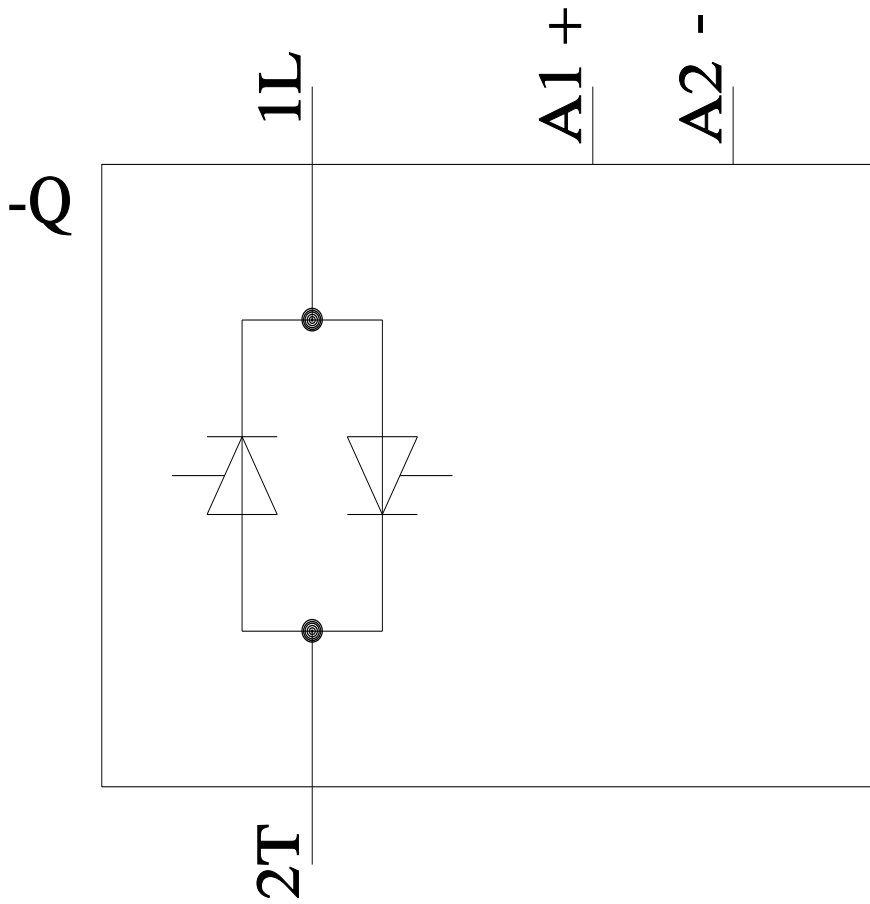
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<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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