

Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 90 A 48-460 V / 110-230 V AC screw terminal



Product brand name	SIRIUS
Product designation	solid-state relay
Product type designation	3RF21
Manufacturer's article number	
<ul style="list-style-type: none"> • _1 / of the accessories that can be ordered • _2 / of the accessories that can be ordered • _4 / of the accessories that can be ordered 	3RF2900-3PA88 3RF2990-0HA36 3RF2990-0GA36
Product designation	
<ul style="list-style-type: none"> • _1 / of the accessories that can be ordered • _2 / of the accessories that can be ordered • _4 / of the accessories that can be ordered 	terminal cover power regulator load monitoring
General technical data	
Product function	zero-point switching
Power loss [V·A] / maximum	118 V·A
Power loss [W] / for rated value of the current / at AC / in hot operating state	118 W
Insulation voltage	
<ul style="list-style-type: none"> • rated value 	600 V
Protection class IP	IP20

Shock resistance / acc. to IEC 60068-2-27	15g / 11 ms
Vibration resistance / acc. to IEC 60068-2-6	2g
Reference code / acc. to DIN EN 81346-2	Q

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	
• 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	40 ... 506 V
• at 60 Hz	40 ... 506 V
Operating current	
• at AC-51 / rated value	50 A
• acc. to UL 508 / rated value	50 A
Ampacity / maximum	90 A
Operating 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
I ² t 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
Switch-on delay time	40 ms; additionally max. one half-wave
Off-delay time	40 ms; additionally max. one half-wave
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	
Mounting type	screw fixing
• Side-by-side mounting	Yes
Height	85 mm
Width	22.5 mm
Depth	48 mm
Installation altitude / at height above sea level / maximum	1 000 m

Connections/ Terminals	
Type of connectable conductor cross-sections	
• for main contacts	
— solid	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²)
— finely stranded / with core end processing	2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ²
• at AWG conductors / for main contacts	2x (14 ... 10)
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 conductors / 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	

<ul style="list-style-type: none"> • for main contacts 	M4
<ul style="list-style-type: none"> • of the auxiliary and control contacts 	M3
Wire stripping 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

Ambient conditions

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 / acc. to IEC 61000-4-4 	2 kV / 5 kHz behavior criterion 2
<ul style="list-style-type: none"> • due to conductor-earth surge / acc. to IEC 61000-4-5 	2 kV behavior criterion 2
<ul style="list-style-type: none"> • due to conductor-conductor surge / acc. to IEC 61000-4-5 	1 kV behavior criterion 2
<ul style="list-style-type: none"> • due to high-frequency radiation / acc. to IEC 61000-4-6 	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
Electrostatic discharge / acc. to IEC 61000-4-2	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
Conducted HF-interference emissions / acc. to CISPR11	Class A for industrial environment
Field-bound HF-interference emission / acc. 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 	3NE1021-2
<ul style="list-style-type: none"> • of back-up R fuse link for semiconductor protection / at NH design 	3NE8021-1
<ul style="list-style-type: none"> • of back-up R fuse link for semiconductor protection / at cylindrical design 22 x 58 mm 	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 	3NA6812; These fuses have a smaller rated current than the semiconductor relays
<ul style="list-style-type: none"> • at cylindrical design 22 x 58 mm 	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 	5SB4111; These fuses have a smaller rated current than the semiconductor relays
<ul style="list-style-type: none"> • of NEOZED fuse 	5SE2335; These fuses have a smaller rated current than the semiconductor relays

Certificates/ approvals

General Product Approval	EMC	Declaration of Conformity
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[Miscellaneous](#)

Test Certificates	other	Railway
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[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)

[Confirmation](#)



[Vibration and Shock](#)

Further information

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=3RF2190-1AA24>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-1AA24>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-1AA24>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-1AA24&lang=en





