

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	3RF2900-3PA88
<ul style="list-style-type: none">_2 / of the accessories that can be ordered	3RF2990-0HA36
<ul style="list-style-type: none">_4 / of the accessories that can be ordered	3RF2990-0GA36
Product designation	
<ul style="list-style-type: none">_1 / of the accessories that can be ordered	terminal cover
<ul style="list-style-type: none">_2 / of the accessories that can be ordered	power regulator
<ul style="list-style-type: none">_4 / of the accessories that can be ordered	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 40719 extended according to IEC 204-2 / acc. to IEC 750	K
Reference code / acc. to DIN EN 81346-2	Q
Reference code / acc. to DIN EN 61346-2	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 <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
Operating current <ul style="list-style-type: none"> • at AC-51 / 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/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
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 <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	110 ... 230 V 110 ... 230 V
Control supply voltage frequency <ul style="list-style-type: none"> • 1 / rated value • 2 / rated value 	50 Hz 60 Hz
Control supply voltage / at AC <ul style="list-style-type: none"> • at 50 Hz / Full-scale value for signal<0> recognition 	40 V

<ul style="list-style-type: none"> • at 60 Hz / Full-scale value for signal<0> recognition 	40 V
Control supply voltage	
<ul style="list-style-type: none"> • at AC / initial value for signal <1> detection 	90 V
Symmetrical line frequency tolerance	5 Hz
Control current / at minimum control supply voltage	
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • for main contacts <ul style="list-style-type: none"> — solid — finely stranded / with core end processing • at AWG conductors / for main contacts 	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²) 2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ² 2x (14 ... 10)
Type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for auxiliary and control contacts <ul style="list-style-type: none"> — solid — finely stranded / with core end processing — finely stranded / without core end processing • at AWG conductors / for auxiliary and control contacts 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.0 mm ²) 1x (AWG 20 ... 12)
Tightening torque	
<ul style="list-style-type: none"> • for main contacts / with screw-type terminals • for auxiliary and control contacts / with screw-type terminals 	2 ... 2.5 N·m 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 • of the auxiliary and control contacts 	M4 M3
Wire stripping length / of the cable <ul style="list-style-type: none"> • for main contacts • for auxiliary and control contacts 	7 mm 7 mm

Ambient conditions

Ambient temperature <ul style="list-style-type: none"> • during operation • during storage 	-25 ... +60 °C -55 ... +80 °C
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Electromagnetic compatibility

Conducted interference <ul style="list-style-type: none"> • due to burst / acc. to IEC 61000-4-4 • due to conductor-earth surge / acc. to IEC 61000-4-5 • due to conductor-conductor surge / acc. to IEC 61000-4-5 • due to high-frequency radiation / acc. to IEC 61000-4-6 	2 kV / 5 kHz behavior criterion 2 2 kV behavior criterion 2 1 kV behavior criterion 2 140 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 • of back-up R fuse link for semiconductor protection / at NH design • of back-up R fuse link for semiconductor protection / at cylindrical design 22 x 58 mm 	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 • at cylindrical design 22 x 58 mm 	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 	5SB4111; These fuses have a smaller rated current than the semiconductor relays

- of NEOZED fuse

5SE2335; These fuses have a smaller rated current than the semiconductor relays

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





