

Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 70 A 48-600 V / 4-30 V DC screw terminal Blocking voltage 1200 V



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 • _2 / of the accessories that can be ordered • _3 / of the accessories that can be ordered • _4 / of the accessories that can be ordered • _5 / of the accessories that can be ordered 	<ul style="list-style-type: none"> 3RF2900-3PA88 3RF2990-0HA16 3RF2900-0EA18 3RF2990-0GA16 3RF2920-0FA08
product designation	
<ul style="list-style-type: none"> • _1 / of the accessories that can be ordered • _2 / of the accessories that can be ordered • _3 / of the accessories that can be ordered • _4 / of the accessories that can be ordered • _5 / of the accessories that can be ordered 	<ul style="list-style-type: none"> terminal cover power regulator converter load monitoring load monitoring, basis
General technical data	
product function	zero-point switching
power loss [V·A] / maximum	94 V·A

power loss [W] / for rated value of the current / at AC / in hot operating state	94 W
insulation voltage	
• 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 ... 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
operating current	
• at AC-51 / rated value	50 A
• acc. to UL 508 / rated value	50 A
ampacity / maximum	70 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	1 200 A
I²t value / maximum	7 200 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

<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
switch-on delay time	1 ms; additionally max. one half-wave
Off-delay time	1 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

<ul style="list-style-type: none"> • mounting type 	screw fixing
<ul style="list-style-type: none"> • fastening method / side-by-side mounting 	Yes
tightening torque / of fastening bolt / maximum	1.5 N·m
tightening torque [lbf-in] / of fastening bolt / 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 	screw-type terminals
<ul style="list-style-type: none"> • for auxiliary and control circuit 	screw-type terminals
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for main contacts <ul style="list-style-type: none"> — solid 	2x (1.5 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²)
<ul style="list-style-type: none"> — finely stranded / with core end processing 	2x (1 ... 2.5 mm ²), 2x (2.5 ... 6 mm ²), 1x 10 mm ²
<ul style="list-style-type: none"> • at AWG conductors / for main contacts 	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 	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"> • at AWG conductors / 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 • 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

installation altitude / at height above sea level / maximum	1 000 m
ambient temperature <ul style="list-style-type: none"> • during operation • during storage 	-25 ... +60 °C -55 ... +80 °C

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 	3NE1020-2 3NE8020-1 3NC2280
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	

- of NEOZED fuse

[5SE2335; These fuses have a smaller rated current than the semiconductor relays](#)

Certificates/ approvals

General Product Approval



CSA



UR



RCM



EG-Konf.

[Miscellaneous](#)

Test Certificates

[Type Test Certificates/Test Report](#)

other

[Confirmation](#)



VDE

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=3RF2170-1AA45>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2170-1AA45>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2170-1AA45>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2170-1AA45&lang=en





