

Semiconductor relay, 1-phase 3RF2 Width 22.5 mm, 20 A 48-460 V / 110-230 V AC Spring-type terminal



Product brand name	SIRIUS
Product designation	solid-state relay
Product type designation	3RF21

General technical data

Product function	zero-point switching
Power loss [V·A] / maximum	28.6 V·A
Power loss [W] / for rated value of the current / at AC / in hot operating state	28.6 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	

<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
Operating current	
<ul style="list-style-type: none"> • at AC-51 / rated value 	20 A
<ul style="list-style-type: none"> • acc. to UL 508 / rated value 	20 A
Ampacity / maximum	20 A
Operating current / minimum	100 mA
Rate of voltage rise / at the thyristor / for main contacts / maximum permissible	500 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	200 A
I²t value / maximum	200 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 	110 ... 230 V
<ul style="list-style-type: none"> • at 60 Hz 	110 ... 230 V
Control supply voltage frequency	
<ul style="list-style-type: none"> • 1 / rated value 	50 Hz
<ul style="list-style-type: none"> • 2 / rated value 	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
• 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 (0.5 ... 2.5 mm ²)
— finely stranded / with core end processing	2x (0.5 ... 1.5 mm ²)
— finely stranded / without core end processing	2x (0.5 ... 2.5 mm ²)
• at AWG conductors / for main contacts	2x (18 ... 14)
Type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	0.5 ... 1.5 mm ²
— finely stranded / with core end processing	0.5 ... 2.5 mm ²
— finely stranded / without core end processing	0.5 ... 2.5 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
Wire stripping length / of the cable	
• for main contacts	10 mm
• for auxiliary and control contacts	10 mm

Ambient conditions

Ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C

Electromagnetic compatibility

Conducted interference	
• due to burst / acc. to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2
• 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 • due to high-frequency radiation / acc. to IEC 61000-4-6 	<p>1 kV behavior criterion 2</p> <p>140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1</p>
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

<p>Manufacturer's article number</p> <ul style="list-style-type: none"> • of gS fuse for semiconductor protection / at NH design • of full range R fuse link for semiconductor protection / at cylindrical 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 10 x 38 mm • of back-up R fuse link for semiconductor protection / at cylindrical design 14 x 51 mm • of back-up R fuse link for semiconductor protection / at cylindrical design 22 x 58 mm 	<p>3NE1813-0; These fuses have a smaller rated current than the semiconductor relays</p> <p>5SE1320</p> <p>3NE8015-1</p> <p>3NC1016; These fuses have a smaller rated current than the semiconductor relays</p> <p>3NC1425</p> <p>3NC2220</p>
<p>Manufacturer's article number / of the gG fuse</p> <ul style="list-style-type: none"> • at NH design • at cylindrical design 14 x 51 mm 	<p>3NA6801; These fuses have a smaller rated current than the semiconductor relays</p> <p>3NW6101-1; These fuses have a smaller rated current than the semiconductor relays</p>
<p>Manufacturer's article number</p> <ul style="list-style-type: none"> • of DIAZED fuse • of NEOZED fuse 	<p>5SB141; These fuses have a smaller rated current than the semiconductor relays</p> <p>5SE2306; These fuses have a smaller rated current than the semiconductor relays</p>

Certificates/ approvals

General Product Approval	EMC	Declaration of Conformity
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CSA



UR



RCM



EG-Konf.

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Test Certificates	other	Railway
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VDE

[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=3RF2120-2AA24>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-2AA24>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-2AA24>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-2AA24&lang=en





