








semiconductor relay, 1-phase 3RF2 width 22.5 mm, 20 A 48-460 V / 110-230 V AC spring-loaded terminal for mounting on available cooling surfaces

product brand name	SIRIUS
product designation	solid-state relay
design of the product	1-pole
product type designation	3RF21
General technical data	
product function	zero-point switching
power loss [W] for rated value of the current	
• at AC in hot operating state	28.6 W
• at AC in hot operating state per pole	28.6 W
• without load current share typical	3.5 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP20
protection class IP on the front according to IEC 60529	IP20
shock resistance according to IEC 60068-2-27	15g / 11 ms
vibration resistance according to IEC 60068-2-6	2g
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	05/28/2009
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Weight	0.071 kg
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
type of voltage of the operating voltage	AC
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
operational current rated value maximum	20 A
operational current	
• at AC-51 rated value	20 A
• according to UL 508 rated value	20 A
operational 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
I ² t 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 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 at 60 Hz full-scale value for signal<0> recognition 	40 V 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
ON-delay time	40 ms; additionally max. one half-wave
OFF-delay time	40 ms; additionally max. one half-wave
Auxiliary circuit	
type of switching contact	normally open contact (NO)
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 side-by-side mounting	Yes
fastening method	screw fixing
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	
product component removable terminal for auxiliary and control circuit	Yes
type of electrical connection <ul style="list-style-type: none"> for main current circuit for auxiliary and control circuit 	spring-loaded terminals spring-loaded 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 finely stranded without core end processing for AWG cables for main contacts 	2x (0.5 ... 2.5 mm ²) 2x (0.5 ... 1.5 mm ²) 2x (0.5 ... 2.5 mm ²) 2x (18 ... 14)
connectable conductor cross-section for main contacts <ul style="list-style-type: none"> solid or stranded finely stranded with core end processing finely stranded without core end processing 	0.5 ... 2.5 mm ² 0.5 ... 1.5 mm ² 0.5 ... 2.5 mm ²
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 	0.5 ... 1.5 mm ² 0.5 ... 2.5 mm ²

— finely stranded without core end processing	0.5 ... 2.5 mm ²	
• for AWG cables for auxiliary and control contacts	1x (20 ... 12)	
AWG number as coded connectable conductor cross section for main contacts	14 ... 10	
tightening torque		
• for main contacts with screw-type terminals	2 ... 2.5 N·m	
stripped length of the cable		
• for main contacts	10 mm	
• for auxiliary and control contacts	10 mm	
Electrical Safety		
protection class IP on the front according to IEC 60529	IP20	
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front	
Ambient conditions		
installation altitude at height above sea level maximum	1 000 m	
ambient temperature		
• during operation	-25 ... +60 °C	
• during storage	-55 ... +80 °C	
Electromagnetic compatibility		
conducted interference		
• due to burst according to IEC 61000-4-4	2 kV / 5 kHz behavior criterion 2	
• due to conductor-earth surge according to IEC 61000-4-5	2 kV behavior criterion 2	
• due to conductor-conductor surge according to IEC 61000-4-5	1 kV behavior criterion 2	
• 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		
• of gS fuse for semiconductor protection at NH design usable	3NE1813-0: These fuses have a smaller rated current than the semiconductor relays	
• of full range R fuse link for semiconductor protection at cylindrical design usable	5SE1320	
• of back-up R fuse link for semiconductor protection at NH design usable	3NE8015-1	
• of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable	3NC1016: These fuses have a smaller rated current than the semiconductor relays	
• of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable	3NC1425	
• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	3NC2220	
manufacturer's article number of the gG fuse		
• at NH design usable	3NA6801: These fuses have a smaller rated current than the semiconductor relays	
• at cylindrical design 14 x 51 mm usable	3NW6101-1: These fuses have a smaller rated current than the semiconductor relays	
manufacturer's article number		
• of NEOZED fuse usable	5SE2306: These fuses have a smaller rated current than the semiconductor relays	
Approvals Certificates		
General Product Approval	EMV	Test Certificates
 EG-Konf.		
		Special Test Certificate
Test Certificates	other	Railway
		Environment



Further information

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

Information for data generation and storage

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

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

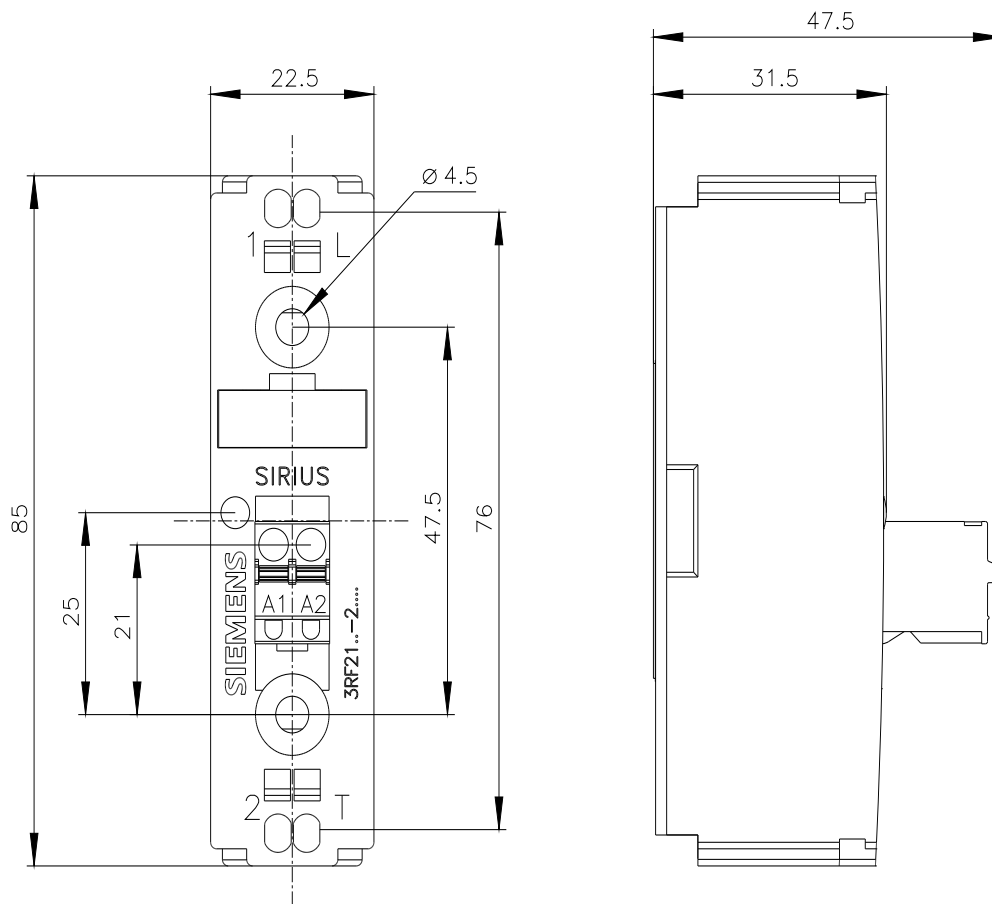
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-2AA24>

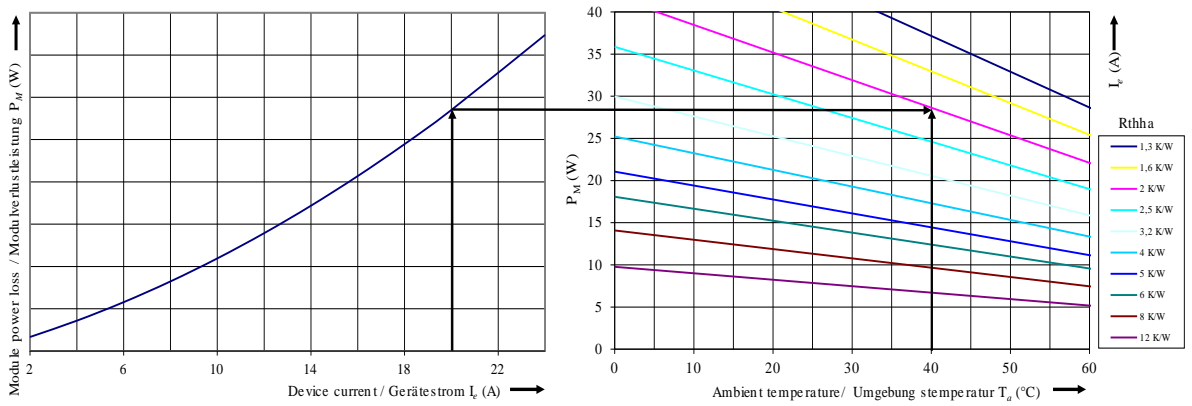
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<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, ...)

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





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