



semiconductor relay, 1-phase 3RF2 width 22.5 mm, 20 A 24-230 V / 24 V DC ring cable 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
manufacturer's article number	<ul style="list-style-type: none"> <li>• <a href="#">1</a> of the accessories that can be ordered</li> <li>• <a href="#">3</a> of the accessories that can be ordered</li> <li>• <a href="#">4</a> of the accessories that can be ordered</li> </ul>
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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	0.4 W
insulation voltage rated value	600 V
surge voltage resistance of main circuit rated value	6 kV
protection class IP	IP00
protection class IP on the front according to IEC 60529	IP00
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
Net Weight	0.07 kg
<b>Main circuit</b>	
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	24 ... 230 V
— at 60 Hz rated value	24 ... 230 V
operating frequency rated value	50 ... 60 Hz

<b>relative symmetrical tolerance of the operating frequency</b>	10 %
<b>operating range relative to the operating voltage at AC</b>	
• at 50 Hz	20 ... 253 V
• at 60 Hz	20 ... 253 V
<b>operational current rated value maximum</b>	20 A
<b>operational current</b>	
• at AC-1 at 400 V rated value	20 A
• at AC-51 rated value	20 A
• according to UL 508 rated value	20 A
<b>rate of voltage rise at the thyristor for main contacts maximum permissible</b>	500 V/μs
<b>blocking voltage at the thyristor for main contacts maximum permissible</b>	800 V
<b>reverse current of the thyristor</b>	10 mA
<b>derating temperature</b>	40 °C
<b>surge current resistance rated value</b>	200 A
<b>I<sub>2t</sub> value maximum</b>	200 A <sup>2</sup> ·s
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	DC
<b>control supply voltage 1 at DC rated value maximum permissible</b>	30 V
<b>control supply voltage 1 at DC</b>	15 ... 24 V
<b>control supply voltage</b>	
• at DC initial value for signal <1> detection	15 V
• at DC full-scale value for signal <0> recognition	5 V
<b>control current at minimum control supply voltage</b>	
• at DC	13 mA
control current at DC rated value	15 mA
<b>ON-delay time</b>	1 ms; additionally max. one half-wave
<b>OFF-delay time</b>	1 ms; additionally max. one half-wave
<b>Auxiliary circuit</b>	
number of CO contacts for auxiliary contacts	0
<b>Installation/ mounting/ dimensions</b>	
fastening method side-by-side mounting	Yes
<b>fastening method</b>	screw fixing
<b>design of the thread of the screw for securing the equipment</b>	M4
<b>tightening torque of fixing screw maximum</b>	1.5 N·m
<b>tightening torque [lbf-in] of fixing screw maximum</b>	13 lbf-in
<b>height</b>	85 mm
<b>width</b>	22.5 mm
<b>depth</b>	48 mm
<b>Connections/ Terminals</b>	
<b>product component removable terminal for auxiliary and control circuit</b>	Yes
<b>type of electrical connection</b>	
• for main current circuit	Ring cable lug connection
• for auxiliary and control circuit	ring terminal lug connection
<b>type of connectable conductor cross-sections</b>	
• for main contacts for JIS cable lug	JIS C 2805 R 2-5, 5,5-5, 8-5, 14-5
• for DIN cable lug for main contacts	DIN 46234 -5-2,5, -5-6, -5-10, -5-16, -5-25
<b>type of connectable conductor cross-sections</b>	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
— finely stranded without core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• for AWG cables for auxiliary and control contacts	1x (20 ... 12)
<b>tightening torque</b>	
• for main contacts with screw-type terminals	2 ... 2.5 N·m
• for auxiliary and control contacts with screw-type	0.5 ... 0.6 N·m

terminals	
<b>tightening torque [lbf·in]</b>	
• 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
<b>design of the thread of the connection screw</b>	
• for main contacts	M5
• of the auxiliary and control contacts	M3
<b>stripped length of the cable</b>	
• for main contacts	10 mm
• for auxiliary and control contacts	7 mm
<b>Electrical Safety</b>	
<b>protection class IP on the front according to IEC 60529</b>	IP00; IP20 with cover
<b>touch protection on the front according to IEC 60529</b>	finger-safe, for vertical contact from the front with cover
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	1 000 m
<b>ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-55 ... +80 °C
<b>Electromagnetic compatibility</b>	
<b>conducted interference</b>	
• 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
<b>field-based interference according to IEC 61000-4-3</b>	80 MHz ... 1 GHz 10 V/m, behavior criterion 1
<b>electrostatic discharge according to IEC 61000-4-2</b>	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
<b>conducted HF interference emissions according to CISPR11</b>	Class A for industrial environment
<b>field-bound HF interference emission according to CISPR11</b>	Class B for the domestic, business and commercial environments
<b>Short-circuit protection, design of the fuse link</b>	
manufacturer's article number	
• of gS fuse for semiconductor protection at NH design usable	<a href="#">3NE1814-0</a>
• of full range R fuse link for semiconductor protection at cylindrical design usable	<a href="#">5SE1325</a>
• of back-up R fuse link for semiconductor protection at NH design usable	<a href="#">3NE8015-1</a>
• of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable	<a href="#">3NC1032</a>
• of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable	<a href="#">3NC1430</a>
• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	<a href="#">3NC2225</a>
manufacturer's article number of the gG fuse	
• at NH design usable	<a href="#">3NA6803: These fuses have a smaller rated current than the semiconductor relays</a>
• at cylindrical design 10 x 38 mm usable	<a href="#">3NW6001-1: These fuses have a smaller rated current than the semiconductor relays</a>
• at cylindrical design 14 x 51 mm usable	<a href="#">3NW6101-1: These fuses have a smaller rated current than the semiconductor relays</a>
manufacturer's article number	
• of NEOZED fuse usable	<a href="#">5SE2313-2A: These fuses have a smaller rated current than the semiconductor relays</a>
<b>Approvals Certificates</b>	

General Product Approval	EMV	Test Certificates
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[Type Test Certificates/Test Report](#)

[Confirmation](#)[Environmental Confirmations](#)

#### 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=3RF2120-3AA02>

Cax online generator

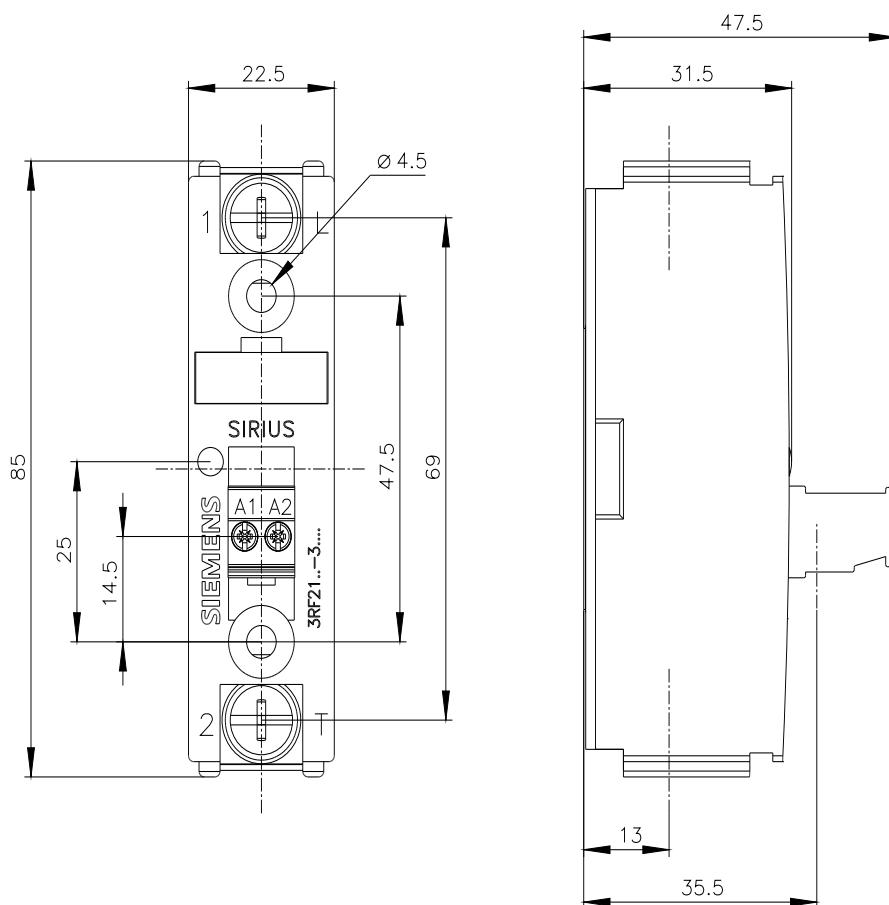
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-3AA02>

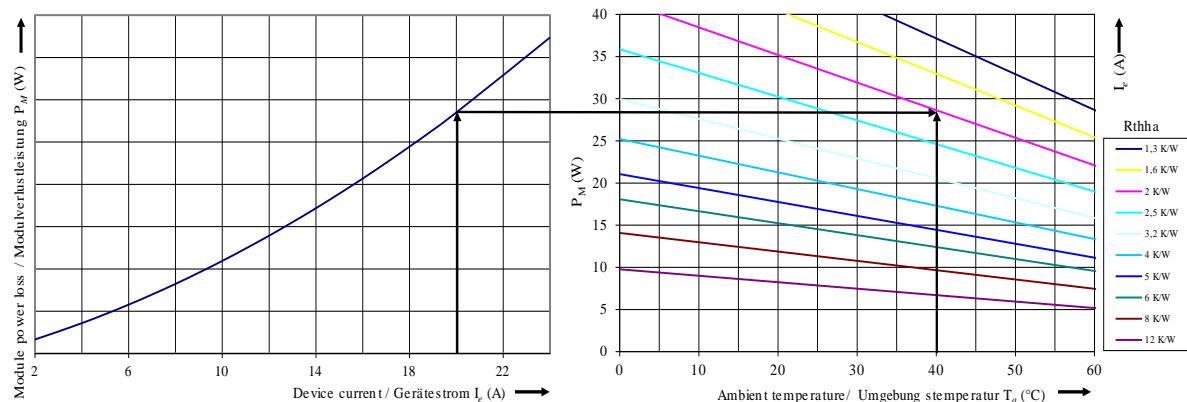
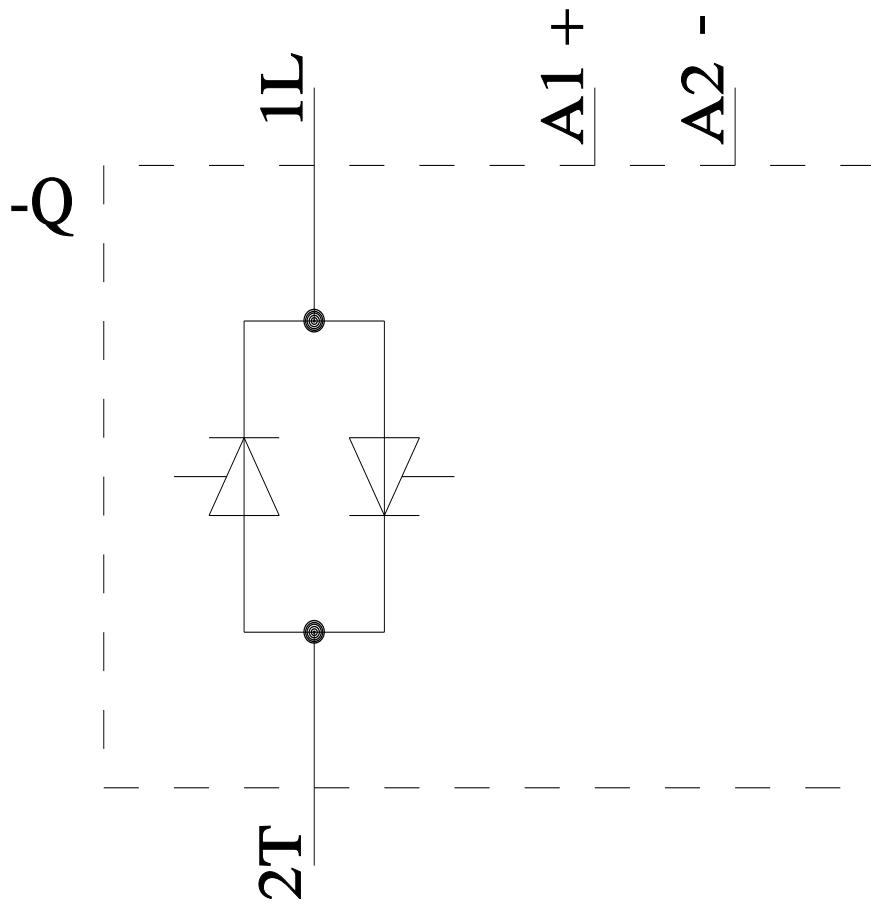
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-3AA02>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2120-3AA02&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-3AA02&lang=en)





last modified:

8/4/2025