



Semiconductor relay, 1-phase 3RF2 Width 22.5 mm, 20 A 48-460 V / 24 V  
DC Spring-type terminal

<b>product brand name</b>	SIRIUS
<b>product designation</b>	solid-state relay
<b>design of the product</b>	single-phase
<b>product type designation</b>	3RF21
<b>manufacturer's article number</b>	
<ul style="list-style-type: none"><li>• _3 of the accessories that can be ordered</li></ul>	<a href="#">3RF2900-0EA18</a>
<b>product designation</b>	
<ul style="list-style-type: none"><li>• _3 of the accessories that can be ordered</li></ul>	converter
<b>General technical data</b>	
<b>product function</b>	zero-point switching
<b>power loss [V·A] maximum</b>	28.6 VA
<b>power loss [W] for rated value of the current</b>	
<ul style="list-style-type: none"><li>• at AC in hot operating state</li></ul>	28.6 W
<ul style="list-style-type: none"><li>• at AC in hot operating state per pole</li></ul>	28.6 W
<ul style="list-style-type: none"><li>• without load current share typical</li></ul>	0.4 W
<b>insulation voltage rated value</b>	600 V
<b>type of voltage of the control supply voltage</b>	DC
<b>surge voltage resistance of main circuit rated value</b>	6 kV
<b>shock resistance according to IEC 60068-2-27</b>	15g / 11 ms
<b>vibration resistance according to IEC 60068-2-6</b>	2g
<b>reference code according to IEC 81346-2</b>	Q
<b>Substance Prohibitance (Date)</b>	05/28/2009
<b>Main circuit</b>	
<b>number of poles for main current circuit</b>	1
<b>number of NO contacts for main contacts</b>	1
<b>number of NC contacts for main contacts</b>	0
<b>operating voltage at AC</b>	
<ul style="list-style-type: none"><li>• at 50 Hz rated value</li></ul>	48 ... 460 V
<ul style="list-style-type: none"><li>• at 60 Hz rated value</li></ul>	48 ... 460 V
<b>operating frequency rated value</b>	50 ... 60 Hz
<b>relative symmetrical tolerance of the operating frequency</b>	10 %
<b>operating range relative to the operating voltage at AC</b>	
<ul style="list-style-type: none"><li>• at 50 Hz</li></ul>	40 ... 506 V
<ul style="list-style-type: none"><li>• at 60 Hz</li></ul>	40 ... 506 V
<b>operational current</b>	
<ul style="list-style-type: none"><li>• at AC-51 rated value</li></ul>	20 A
<ul style="list-style-type: none"><li>• according to UL 508 rated value</li></ul>	20 A
<b>ampacity maximum</b>	20 A
<b>operational current minimum</b>	100 mA
<b>rate of voltage rise at the thyristor for main contacts</b>	500 V/μs
<b>maximum permissible</b>	

<b>blocking voltage at the thyristor for main contacts</b>	1 200 V
<b>maximum permissible 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<sup>2</sup>t 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</b>	
• at DC rated value	30 V
• at DC	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>	
<b>number of NC contacts for auxiliary contacts</b>	0
<b>number of NO contacts for auxiliary contacts</b>	0
<b>number of CO contacts for auxiliary contacts</b>	0
<b>Installation/ mounting/ dimensions</b>	
<b>fastening method</b>	screw fixing
• side-by-side mounting	Yes
<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>type of electrical connection</b>	
• for main current circuit	spring-loaded terminals
• for auxiliary and control circuit	spring-loaded terminals
<b>type of connectable conductor cross-sections</b>	
• for main contacts	
— solid	2x (0.5 ... 2.5 mm <sup>2</sup> )
— finely stranded with core end processing	2x (0.5 ... 1.5 mm <sup>2</sup> )
— finely stranded without core end processing	2x (0.5 ... 2.5 mm <sup>2</sup> )
• at AWG cables for main contacts	2x (18 ... 14)
<b>connectable conductor cross-section for main contacts</b>	
• solid or stranded	0.5 ... 2.5 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 1.5 mm <sup>2</sup>
• finely stranded without core end processing	0.5 ... 2.5 mm <sup>2</sup>
<b>type of connectable conductor cross-sections</b>	
• for auxiliary and control contacts	
— solid	0.5 ... 1.5 mm <sup>2</sup>
— finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
— finely stranded without core end processing	0.5 ... 2.5 mm <sup>2</sup>
• at AWG cables for auxiliary and control contacts	1x (AWG 20 ... 12)
AWG number as coded connectable conductor cross section for main contacts	14 ... 10
<b>tightening torque</b>	
• for main contacts with screw-type terminals	2 ... 2.5 N·m
<b>stripped length of the cable</b>	
• for main contacts	10 mm
• for auxiliary and control contacts	10 mm
<b>Safety related data</b>	
<b>protection class IP on the front according to IEC 60529</b>	IP20

touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front
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#### Ambient conditions

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

#### Electromagnetic compatibility

<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

#### Short-circuit protection, design of the fuse link

manufacturer's article number	
• of gS fuse for semiconductor protection at NH design usable	<a href="#">3NE1813-0</a> ; These fuses have a smaller rated current than the semiconductor relays
• of full range R fuse link for semiconductor protection at cylindrical design usable	<a href="#">5SE1320</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="#">3NC1016</a> ; 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	<a href="#">3NC1425</a>
• of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable	<a href="#">3NC2220</a>
manufacturer's article number of the gG fuse	
• at NH design usable	<a href="#">3NA6801</a> ; These fuses have a smaller rated current than the semiconductor relays
• at cylindrical design 14 x 51 mm usable	<a href="#">3NW6101-1</a> ; These fuses have a smaller rated current than the semiconductor relays
manufacturer's article number	
• of NEOZED fuse usable	<a href="#">5SE2306</a> ; These fuses have a smaller rated current than the semiconductor relays

#### Certificates/ approvals

General Product Approval	EMC	Declaration of Conformity
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[Confirmation](#)



Declaration of Conformity	Test Certificates	other	Railway
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[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)

[Confirmation](#)



[Vibration and Shock](#)

#### Further information

Information on the packaging <a href="https://support.industry.siemens.com/cs/ww/en/view/109813875">https://support.industry.siemens.com/cs/ww/en/view/109813875</a>
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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=3RF2120-2AA04>

Cax online generator

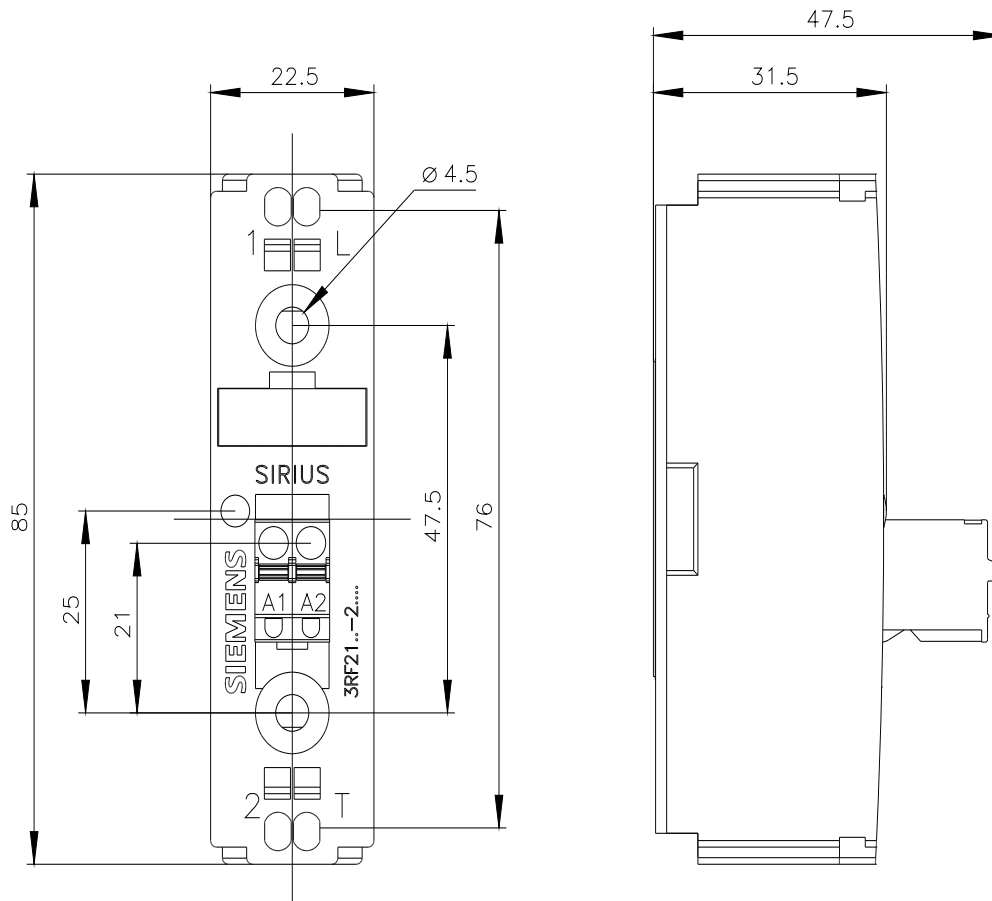
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-2AA04>

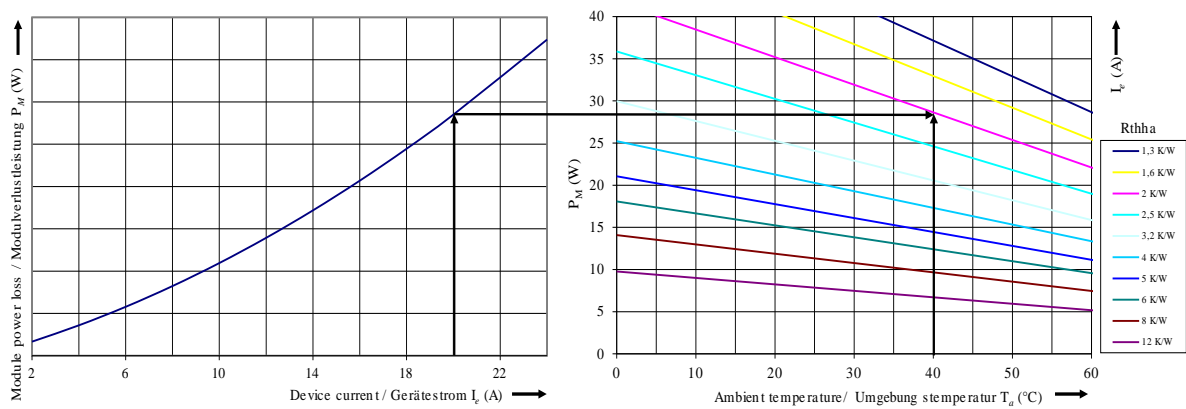
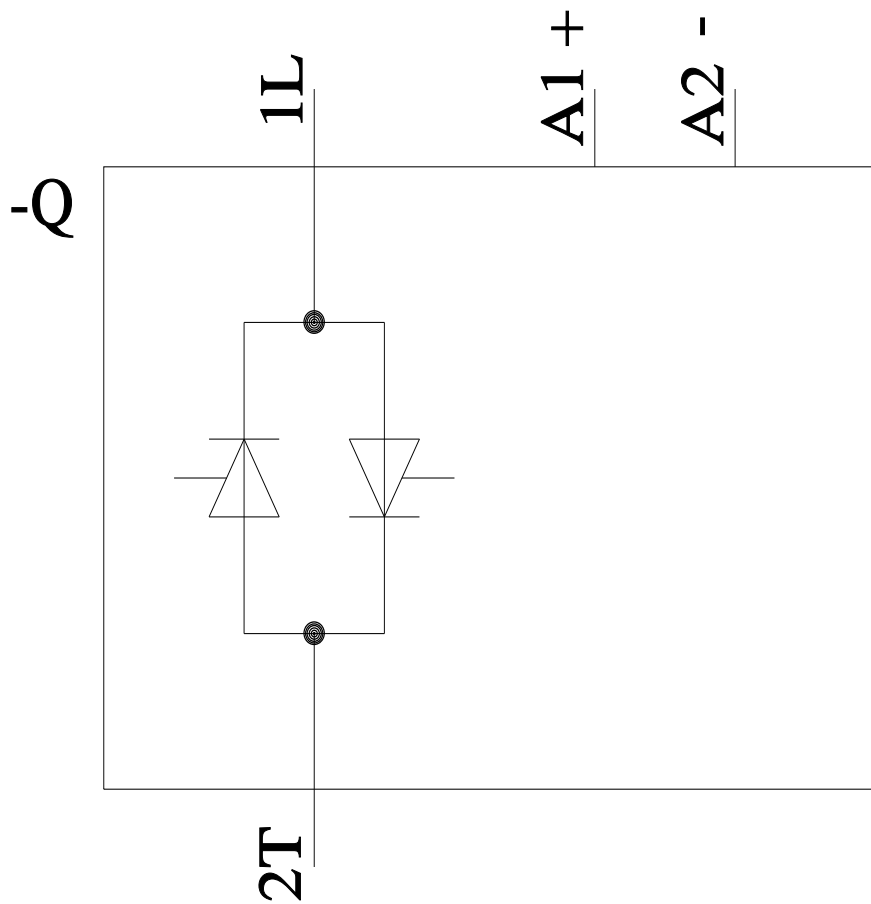
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-2AA04>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2120-2AA04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-2AA04&lang=en)





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