



Semiconductor relay, 1-phase 3RF2 Width 22.5 mm, 20 A 24-230 V / 110-230 V AC screw terminal

**product brand name**  
**product designation**  
**design of the product**  
**product type designation**  
**manufacturer's article number**

- \_1 of the accessories that can be ordered
- \_2 of the accessories that can be ordered
- \_4 of the accessories that can be ordered

**product designation**

- \_1 of the accessories that can be ordered
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SIRIUS  
 solid-state relay  
 single-phase  
 3RF21

- [3RF2900-3PA88](#)
- [3RF2920-0HA33](#)
- [3RF2920-0GA33](#)

terminal cover  
 power regulator  
 load monitoring

### General technical data

<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 without load current share typical</b>	3.5 W
insulation voltage rated value	600 V
type of voltage of the control supply voltage	AC
surge voltage resistance of main circuit rated value	6 kV
shock resistance according to IEC 60068-2-27	15g / 11 ms
vibration resistance according to IEC 60068-2-6	2g
<b>reference code according to IEC 81346-2</b>	Q
Substance Prohibitance (Date)	05/28/2009

### Main circuit

<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
operating voltage at AC	
• at 50 Hz rated value	24 ... 230 V
• at 60 Hz rated value	24 ... 230 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>	
• at 50 Hz	20 ... 253 V
• at 60 Hz	20 ... 253 V
<b>operational current</b>	
• at AC-51 rated value	20 A
• according to UL 508 rated value	20 A
<b>ampacity maximum</b>	20 A
<b>operational current minimum</b>	100 mA

rate of voltage rise at the thyristor for main contacts maximum permissible	500 V/μs
blocking voltage at the thyristor for main contacts maximum permissible	800 V
reverse current of the thyristor	10 mA
derating temperature	40 °C
surge current resistance rated value	200 A
I <sup>2</sup> t value maximum	200 A <sup>2</sup> ·s

#### Control circuit/ Control

type of voltage of the control supply voltage	AC
control supply voltage 1 at AC	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
control supply voltage frequency	
• 1 rated value	50 Hz
• 2 rated value	60 Hz
control supply voltage at AC	
• at 50 Hz full-scale value for signal<0> recognition	40 V
• at 60 Hz full-scale value for signal<0> recognition	40 V
control supply voltage	
• at AC initial value for signal <1> detection	90 V
symmetrical line frequency tolerance	5 Hz
control current at minimum control supply voltage	
• 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

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	screw fixing
• side-by-side mounting	Yes
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

type of electrical connection	
• for main current circuit	screw-type terminals
• for auxiliary and control circuit	screw-type terminals
type of connectable conductor cross-sections	
• for main contacts	
— solid	2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )
— finely stranded with core end processing	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup>
• at AWG cables for main contacts	2x (14 ... 10)
connectable conductor cross-section for main contacts	
• solid or stranded	1.5 ... 6 mm <sup>2</sup>
• finely stranded with core end processing	1 ... 10 mm <sup>2</sup>
type of connectable conductor cross-sections	
• for auxiliary and control contacts	
— solid	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )
— finely stranded without core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 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
tightening torque	
• for main contacts with screw-type terminals	2 ... 2.5 N·m
• for auxiliary and control contacts with screw-type terminals	0.5 ... 0.6 N·m

<b>tightening torque [lbf-in]</b>	7 ... 10.3 lbf-in 4.5 ... 5.3 lbf-in	
<ul style="list-style-type: none"> <li>for main contacts with screw-type terminals</li> <li>for auxiliary and control contacts with screw-type terminals</li> </ul>		
<b>design of the thread of the connection screw</b>	M4 M3	
<ul style="list-style-type: none"> <li>for main contacts</li> <li>of the auxiliary and control contacts</li> </ul>		
<b>stripped length of the cable</b>	7 mm 7 mm	
<ul style="list-style-type: none"> <li>for main contacts</li> <li>for auxiliary and control contacts</li> </ul>		
<b>Safety related data</b>		
<b>protection class IP on the front according to IEC 60529</b>	IP20	
<b>touch protection on the front according to IEC 60529</b>	finger-safe, for vertical contact from the front	
<b>Ambient conditions</b>		
installation altitude at height above sea level maximum	1 000 m	
<b>ambient temperature</b>		
<ul style="list-style-type: none"> <li>during operation</li> <li>during storage</li> </ul>	-25 ... +60 °C -55 ... +80 °C	
<b>Electromagnetic compatibility</b>		
<b>conducted interference</b>		
<ul style="list-style-type: none"> <li>due to burst according to IEC 61000-4-4</li> <li>due to conductor-earth surge according to IEC 61000-4-5</li> <li>due to conductor-conductor surge according to IEC 61000-4-5</li> <li>due to high-frequency radiation according to IEC 61000-4-6</li> </ul>	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	
<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		
<ul style="list-style-type: none"> <li>of gS fuse for semiconductor protection at NH design usable</li> <li>of full range R fuse link for semiconductor protection at cylindrical design usable</li> <li>of back-up R fuse link for semiconductor protection at NH design usable</li> <li>of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm usable</li> <li>of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable</li> <li>of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable</li> </ul>	<a href="#">3NE1814-0</a> <a href="#">5SE1325</a> <a href="#">3NE8015-1</a> <a href="#">3NC1032</a> <a href="#">3NC1430</a> <a href="#">3NC2225</a>	
manufacturer's article number of the gG fuse		
<ul style="list-style-type: none"> <li>at NH design usable</li> <li>at cylindrical design 10 x 38 mm usable</li> <li>at cylindrical design 14 x 51 mm usable</li> </ul>	<a href="#">3NA6803: These fuses have a smaller rated current than the semiconductor relays</a> <a href="#">3NW6001-1: These fuses have a smaller rated current than the semiconductor relays</a> <a href="#">3NW6101-1: These fuses have a smaller rated current than the semiconductor relays</a>	
manufacturer's article number		
<ul style="list-style-type: none"> <li>of NEOZED fuse usable</li> </ul>	<a href="#">5SE2306: These fuses have a smaller rated current than the semiconductor relays</a>	
<b>Certificates/ approvals</b>		
<b>General Product Approval</b>	<b>EMC</b>	<b>Declaration of Conformity</b>



[Confirmation](#)



EG-Konf.

Declaration of Conformity	Test Certificates	other	Railway
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[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)



[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=3RF2120-1AA22>

Cax online generator

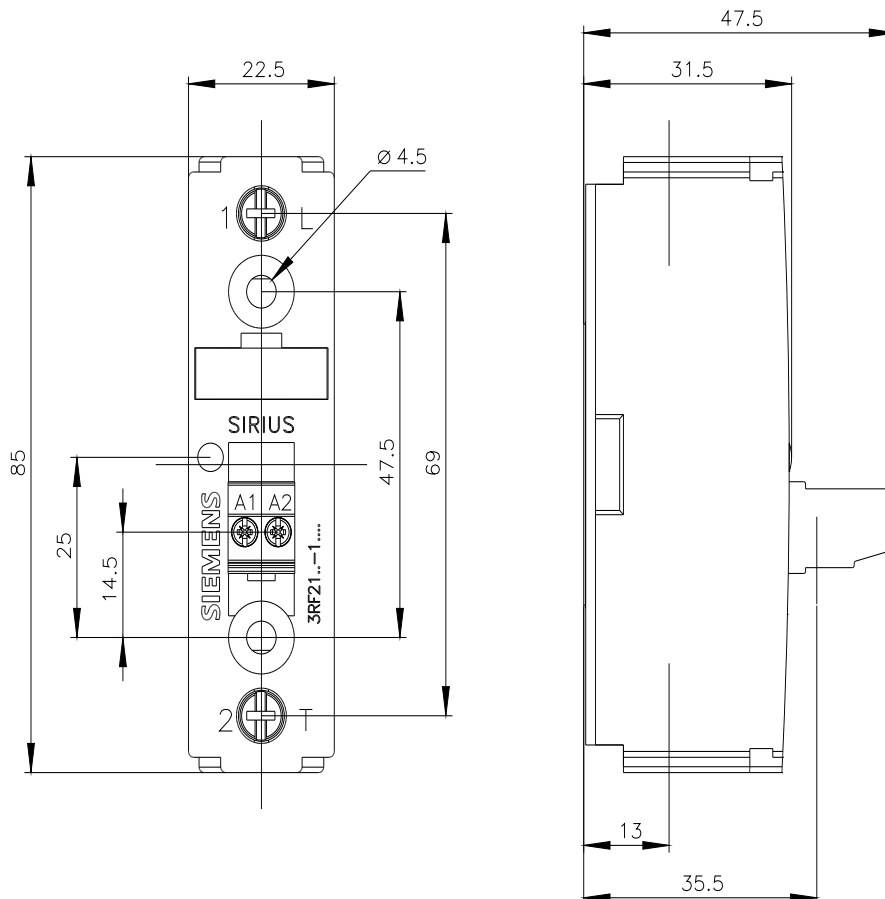
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-1AA22>

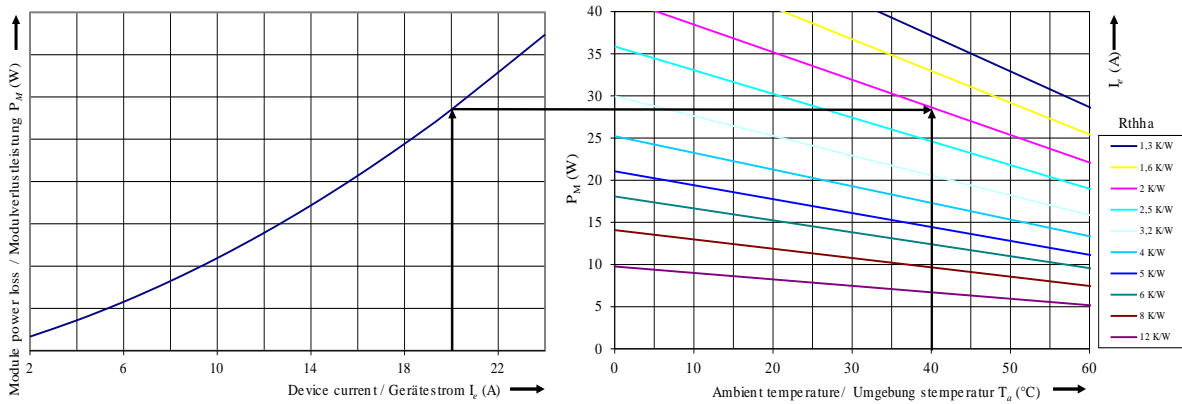
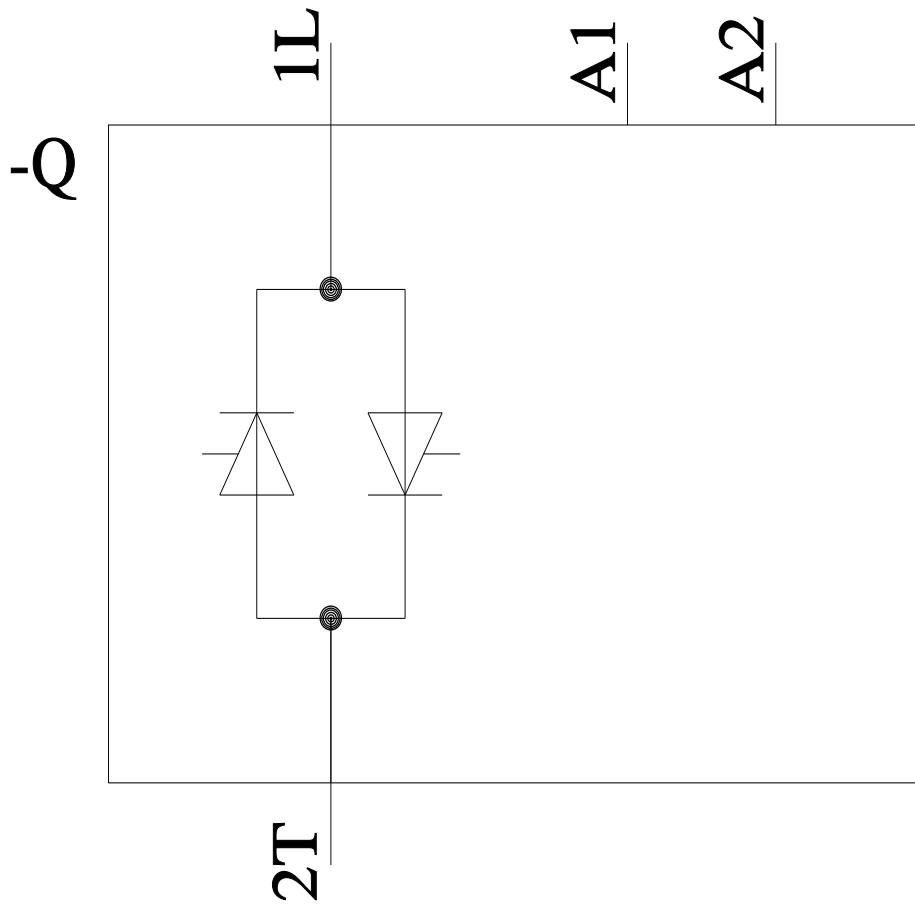
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-1AA22>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2120-1AA22&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-1AA22&lang=en)





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