

Semiconductor relay, 1-phase 3RF2 Overall width 45 mm, 50 A 48-460 V / 4-30 V DC screw terminal



Product brand name	SIRIUS
Product designation	solid-state relay
Product type designation	3RF20

### General technical data

Product function	zero-point switching
Power loss [W] / for rated value of the current / at AC / in hot operating state	66 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 40719 extended according to IEC 204-2 / acc. to IEC 750	K
Reference code / acc. to DIN EN 81346-2	Q
Reference code / acc. to DIN EN 61346-2	Q

### Main circuit

Number of poles / for main current circuit	1
Number of NO contacts / for main contacts	1

<b>Number of NC contacts / for main contacts</b>	0
Operating voltage / at AC	
• at 50 Hz / rated value	48 ... 460 V
• at 60 Hz / rated value	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>	
• at 50 Hz	40 ... 506 V
• at 60 Hz	40 ... 506 V
<b>Operating current / minimum</b>	500 mA
<b>Operating current</b>	
• at AC-1 / at 400 V / rated value	50 A
• at AC-51 / rated value	50 A
<b>Rate of voltage rise / at the thyristor / for main contacts / maximum permissible</b>	1 000 V/ $\mu$ s
<b>Blocking voltage / at the thyristor / for main contacts / maximum permissible</b>	1 200 V
<b>Reverse current / of the thyristor</b>	10 mA
<b>Derating temperature</b>	40 °C
<b>Surge current resistance / rated value</b>	600 A
<b>I<sup>2</sup>t value / maximum</b>	1 800 A <sup>2</sup> ·s

#### Control circuit/ Control

<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	4 ... 30 V
<b>Control supply voltage</b>	
• at DC / initial value for signal <1> detection	4 V
• at DC / Full-scale value for signal <0> recognition	1 V
<b>Control current / at minimum control supply voltage</b>	
• at DC	3 mA
Control current / at DC / rated value	15 mA
<b>Switch-on delay time</b>	1 ms; additionally max. one half-wave
<b>Off-delay time</b>	1 ms; additionally max. one half-wave
<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

#### Installation/ mounting/ dimensions

<b>Mounting type</b>	screw fixing
• Side-by-side mounting	Yes

Height	58 mm
Width	45 mm
Depth	48 mm
Installation altitude / at height above sea level / maximum	1 000 m

### Connections/ Terminals

<b>Type of connectable conductor cross-sections</b> <ul style="list-style-type: none"> <li>• for main contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded / with core end processing</li> </ul> </li> <li>• at AWG conductors / for main contacts</li> </ul>	2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ) 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup> 2x (14 ... 10)
<b>Type of connectable conductor cross-sections</b> <ul style="list-style-type: none"> <li>• for auxiliary and control contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded / with core end processing</li> <li>— finely stranded / without core end processing</li> </ul> </li> <li>• at AWG conductors / for auxiliary and control contacts</li> </ul>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> ) 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> ) 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.0 mm <sup>2</sup> )  1x (AWG 20 ... 12)
Tightening torque / for main contacts / with screw-type terminals	2 ... 2.5 N·m
<b>Tightening torque / for auxiliary and control contacts / with screw-type terminals</b>	0.5 ... 0.6 N·m
<b>Tightening torque [lbf·in]</b> <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>	7 ... 10.3 lbf·in 4.5 ... 5.3 lbf·in
<b>Design of the thread / of the connection screw</b> <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• of the auxiliary and control contacts</li> </ul>	M4 M3
<b>Wire stripping length / of the cable</b> <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• for auxiliary and control contacts</li> </ul>	10 mm 7 mm

### Ambient conditions

<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
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### Electromagnetic compatibility

<b>Conducted interference</b> <ul style="list-style-type: none"> <li>• due to burst / acc. to IEC 61000-4-4</li> <li>• due to conductor-earth surge / acc. to IEC 61000-4-5</li> </ul>	2 kV / 5 kHz behavior criterion 2 2 kV behavior criterion 2
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<ul style="list-style-type: none"> <li>• due to conductor-conductor surge / acc. to IEC 61000-4-5</li> <li>• due to high-frequency radiation / acc. to IEC 61000-4-6</li> </ul>	<p>1 kV behavior criterion 2</p> <p>140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1</p>
<b>Electrostatic discharge / acc. to IEC 61000-4-2</b>	4 kV contact discharging / 8 kV air discharging, behavior criterion 2
<b>Conducted HF-interference emissions / acc. to CISPR11</b>	Class A for industrial environment
<b>Field-bound HF-interference emission / acc. to CISPR11</b>	Class B for the domestic, business and commercial environments

#### Further information

##### Information- and Downloadcenter (Catalogs, Brochures,...)

[www.siemens.com/sirius/catalogs](http://www.siemens.com/sirius/catalogs)

##### Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2050-1AA44>

##### Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2050-1AA44>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2050-1AA44>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2050-1AA44&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2050-1AA44&lang=en)

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

[https://www.automation.siemens.com/cd-static/material/info/3RF20\\_eng.pdf](https://www.automation.siemens.com/cd-static/material/info/3RF20_eng.pdf)

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