



\*\*\*phase-out type\*\*\* semiconductor relay, 1-phase 3RF2 width 45 mm, 70 A 48-460 V / 24 V DC screw terminal for mounting on available cooling surfaces

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| product brand name  | SIRIUS   |
| product designation                                       | solid-state relay  |
| design of the product                                     | 1-pole   |
| product type designation                                  | 3RF20  |
| <b>General technical data</b>                             |  |
| product function  | zero-point switching   |
| power loss [W] for rated value of the current             |  |
| • at AC in hot operating state                            | 94 W   |
| • at AC in hot operating state per pole                   | 94 W   |
| • without load current share typical                      | 0.4 W  |
| insulation voltage rated value                            | 600 V  |
| protection class IP                                       | IP20   |
| protection class IP on the front according to IEC 60529   | IP20   |
| shock resistance according to IEC 60068-2-27              | 15 g / 11 ms   |
| vibration resistance according to IEC 60068-2-6           | 2 g  |
| reference code according to IEC 81346-2                   | Q  |
| Substance Prohibitance (day/month/year)                   | 05/28/2009   |
| SVHC substance name                                       | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8<br>2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5<br>Melamine CAS-No. 108-78-1 |
| Net Weight  | 0.085 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                                    | 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                   | 70 A   |
| operational current                                       |  |
| • at AC-1 at 400 V rated value                            | 70 A   |

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| <ul style="list-style-type: none"> <li>• at AC-51 rated value</li> </ul>   | 50 A  |
| <ul style="list-style-type: none"> <li>• according to UL 508 rated value</li> </ul>                              | 50 A  |
| <b>ampacity maximum</b>  | 70 A  |
| <b>operational current minimum</b>   | 500 mA  |
| <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>  | 1 200 A   |
| <b>I<sup>2</sup>t value maximum</b>  | 7 200 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 at DC</b>  |   |
| <ul style="list-style-type: none"> <li>• initial value for signal &lt;1&gt; detection</li> </ul>                 | 15 V  |
| <ul style="list-style-type: none"> <li>• full-scale value for signal&lt;0&gt; recognition</li> </ul>             | 5 V   |
| <b>control current at minimum control supply voltage</b>   |   |
| <ul style="list-style-type: none"> <li>• at DC</li> </ul>  | 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>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>  | 58 mm   |
| <b>width</b>   | 45 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>   |   |
| <ul style="list-style-type: none"> <li>• for main current circuit</li> </ul>                                     | screw-type terminals  |
| <ul style="list-style-type: none"> <li>• for auxiliary and control circuit</li> </ul>                            | screw-type terminals  |
| <b>type of connectable conductor cross-sections</b>  |   |
| <ul style="list-style-type: none"> <li>• for main contacts</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>— solid</li> </ul>  | 2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )                      |
| <ul style="list-style-type: none"> <li>— finely stranded with core end processing</li> </ul>                     | 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup> |
| <ul style="list-style-type: none"> <li>• for AWG cables for main contacts</li> </ul>                             | 2x (14 ... 10)  |
| <b>connectable conductor cross-section for main contacts</b>   |   |
| <ul style="list-style-type: none"> <li>• solid or stranded</li> </ul>  | 1.5 ... 6 mm <sup>2</sup>   |
| <ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>                     | 1 ... 10 mm <sup>2</sup>  |
| <b>type of connectable conductor cross-sections</b>  |   |
| <ul style="list-style-type: none"> <li>• for auxiliary and control contacts</li> </ul>                           |   |
| <ul style="list-style-type: none"> <li>— solid</li> </ul>  | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| <ul style="list-style-type: none"> <li>— finely stranded with core end processing</li> </ul>                     | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| <ul style="list-style-type: none"> <li>— finely stranded without core end processing</li> </ul>                  | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )                      |
| <ul style="list-style-type: none"> <li>• for AWG cables for auxiliary and control contacts</li> </ul>            | 1x (20 ... 12)  |
| <b>AWG number as coded connectable conductor cross section for main contacts</b>                                 | 14 ... 10   |
| <b>tightening torque</b>   |   |
| <ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> </ul>                  | 2 ... 2.5 N·m   |
| <ul style="list-style-type: none"> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul> | 0.5 ... 0.6 N·m   |

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| <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>  | <p>7 ... 10.3 lbf-in</p> <p>4.5 ... 5.3 lbf-in</p>  |
| <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>   | <p>M4</p> <p>M3</p>   |
| <b>stripped length of the cable</b>  |   |
| <ul style="list-style-type: none"> <li>for main contacts</li> <li>for auxiliary and control contacts</li> </ul>  | <p>10 mm</p> <p>7 mm</p>  |
| <b>UL/CSA ratings</b>  |   |
| <b>operational current according to UL 508 rated value</b>   | 50 A  |
| Electrical Safety  |   |
| <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>   | <p>-25 ... +60 °C</p> <p>-55 ... +80 °C</p>   |
| <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>  | <p>2 kV / 5 kHz, behavior criterion 2</p> <p>2 kV, behavior criterion 2</p> <p>1 kV, behavior criterion 2</p> <p>140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1</p>  |
| <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>   |   |
| <p>manufacturer's article number</p> <ul style="list-style-type: none"> <li>of full range R fuse link 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 22 x 58 mm usable</li> </ul> | <p><a href="#">3NE1020-2</a></p> <p><a href="#">5SE1363; These fuses have a smaller rated current than the semiconductor relays</a></p> <p><a href="#">3NE8020-1</a></p> <p><a href="#">3NC2280</a></p>   |
| <p>manufacturer's article number of the gG fuse</p> <ul style="list-style-type: none"> <li>at NH design usable</li> <li>at NH design usable note</li> <li>at cylindrical design 22 x 58 mm usable</li> <li>at cylindrical design 22 x 58 mm usable note</li> </ul>   | <p><a href="#">3NA6812; These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">3NW6212-1; These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> |
| <p>manufacturer's article number</p> <ul style="list-style-type: none"> <li>of DIAZED fuse usable</li> <li>of DIAZED fuse usable note</li> <li>of NEOZED fuse usable</li> </ul>  | <p><a href="#">5SB4111; These fuses have a smaller rated current than the semiconductor relays</a></p> <p>These fuses have a smaller rated current than the semiconductor relays</p> <p><a href="#">5SE2335; These fuses have a smaller rated current than the semiconductor relays</a></p>   |
| <b>Approvals Certificates</b>  |   |
| <b>Environment</b>   | <b>General Product Approval</b>   |

[Environmental Conformations](#)





[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Confirmation](#)



#### 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=3RF2070-1AA04>

##### Cax online generator

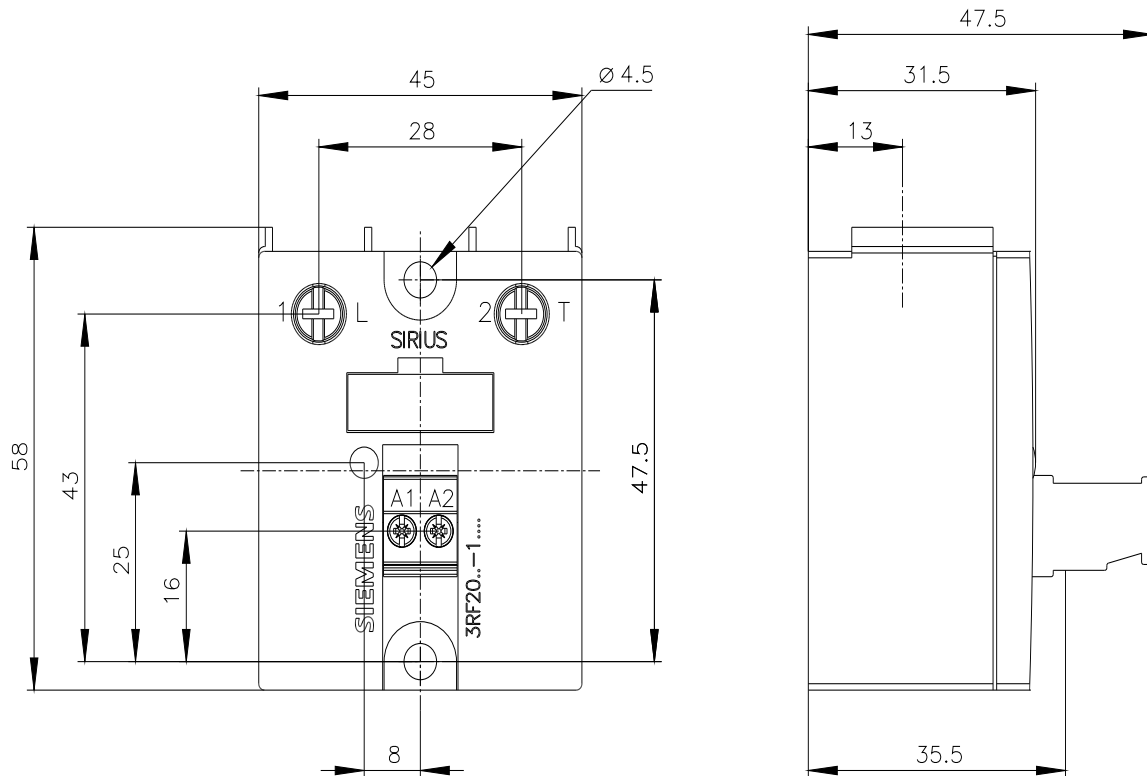
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2070-1AA04>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2070-1AA04>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2070-1AA04&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2070-1AA04&lang=en)





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