



\*\*\*phase-out type\*\*\* semiconductor relay, 1-phase 3RF2 width 22.5 mm, 50 A 48-460 V / 24 V DC screw terminal without control connector 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                                | 3RF21                                                                                                                                                                                                                                                                                                                                                                        |
| manufacturer's article number                           | <ul style="list-style-type: none"> <li>_1 of the accessories that can be ordered <a href="#">3RF2900-3PA88</a></li> <li>_3 of the accessories that can be ordered <a href="#">3RF2900-0EA18</a></li> <li>_4 of the accessories that can be ordered <a href="#">3RF2950-0GA16</a></li> <li>_5 of the accessories that can be ordered <a href="#">3RF2920-0FA08</a></li> </ul> |
| product designation                                     | <ul style="list-style-type: none"> <li>_1 of the accessories that can be ordered terminal cover</li> <li>_3 of the accessories that can be ordered converter</li> <li>_4 of the accessories that can be ordered load monitoring</li> <li>_5 of the accessories that can be ordered load monitoring, basis</li> </ul>                                                         |
| <b>General technical data</b>                           |                                                                                                                                                                                                                                                                                                                                                                              |
| product function                                        | zero-point switching                                                                                                                                                                                                                                                                                                                                                         |
| power loss [V·A] maximum                                | 66 VA                                                                                                                                                                                                                                                                                                                                                                        |
| power loss [W] for rated value of the current           | <ul style="list-style-type: none"> <li>at AC in hot operating state 66 W</li> <li>at AC in hot operating state per pole 66 W</li> <li>without load current share typical 0.4 W</li> </ul>                                                                                                                                                                                    |
| insulation voltage rated value                          | 600 V                                                                                                                                                                                                                                                                                                                                                                        |
| surge voltage resistance of main circuit rated value    | 6 kV                                                                                                                                                                                                                                                                                                                                                                         |
| 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 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                                              | 0.071 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                                       |                                                                                                                                                                                                                                                                                                                                                                              |

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| <ul style="list-style-type: none"> <li>• at AC <ul style="list-style-type: none"> <li>— at 50 Hz rated value</li> <li>— at 60 Hz rated value</li> </ul> </li> </ul>                                                                                                                  | 48 ... 460 V<br>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> <li>• at 60 Hz</li> </ul>                                                                                                                                      | 40 ... 506 V<br>40 ... 506 V                                                                                                                                                    |
| <b>operational current rated value maximum</b>                                                                                                                                                                                                                                       | 50 A                                                                                                                                                                            |
| <b>operational current</b> <ul style="list-style-type: none"> <li>• at AC-1 at 400 V rated value</li> <li>• at AC-51 rated value</li> <li>• according to UL 508 rated value</li> </ul>                                                                                               | 50 A<br>50 A<br>50 A                                                                                                                                                            |
| <b>ampacity maximum</b>                                                                                                                                                                                                                                                              | 50 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/μs                                                                                                                                                                      |
| <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                                                                                                                                                         |
| <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> <li>• full-scale value for signal&lt;0&gt; recognition</li> </ul>                                                                                     | 15 V<br>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>                                                                                                                                                                                                                                                                        | 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> <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control circuit</li> </ul>                                                                                                                       | screw-type terminals<br>screw-type 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>• for AWG cables for main contacts</li> </ul> | 2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )<br>2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup><br>2x (14 ... 10) |
| <b>connectable conductor cross-section for main contacts</b> <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> </ul>                                                                                               | 1.5 ... 6 mm <sup>2</sup><br>1 ... 10 mm <sup>2</sup>                                                                                                                           |

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| <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>• for AWG cables for auxiliary and control contacts</li> </ul>                                                                                                                                                                 | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )<br>1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )<br>1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )<br>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> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>                                                                                                                                                                                                                                                                                                                                              | 2 ... 2.5 N·m<br>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<br>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<br>M3                                                                                                                                                                                                                                                                                        |
| <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>                                                                                                                                                                                                                                                                                                                                                                                       | 10 mm<br>7 mm                                                                                                                                                                                                                                                                                   |
| <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>                                                                                                                                                                                                                                                                                                                                                                                                                     | -25 ... +60 °C<br>-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<br>2 kV, behavior criterion 2<br>1 kV, behavior criterion 2<br>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 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="#">3NE1802-0: These fuses have a smaller rated current than the semiconductor relays</a><br><a href="#">5SE1335: These fuses have a smaller rated current than the semiconductor relays</a><br><a href="#">3NE8017-1</a><br><br><a href="#">3NC1450</a><br><br><a href="#">3NC2250</a> |
| manufacturer's article number of the gG fuse <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> </ul>                                                                                                                                                                                                                                                                                                                                   | <a href="#">3NA6807: These fuses have a smaller rated current than the semiconductor relays</a><br>These fuses have a smaller rated current than the semiconductor relays<br><a href="#">3NW6205-1: These fuses have a smaller rated current than the semiconductor relays</a>                  |

|                                                                                                                                                                                |                                                                                                                                                                                                                                                                              |
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| <ul style="list-style-type: none"> <li>• at cylindrical design 22 x 58 mm usable note</li> </ul>                                                                               | These fuses have a smaller rated current than the semiconductor relays                                                                                                                                                                                                       |
| manufacturer's article number <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> | <a href="#">5SB2711: These fuses have a smaller rated current than the semiconductor relays</a><br>These fuses have a smaller rated current than the semiconductor relays<br><a href="#">5SE2320: These fuses have a smaller rated current than the semiconductor relays</a> |

#### Approvals Certificates

| Environment | General Product Approval |
|-------------|--------------------------|
|-------------|--------------------------|

[Environmental Con-  
firmations](#)



| EMV | Test Certificates | other |
|-----|-------------------|-------|
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[Special Test Certificate](#)

[Confirmation](#)

[Miscellaneous](#)

[Confirmation](#)



| Railway |
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[Special Test Certificate](#)

#### 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=3RF2150-1AG04>

##### Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2150-1AG04>

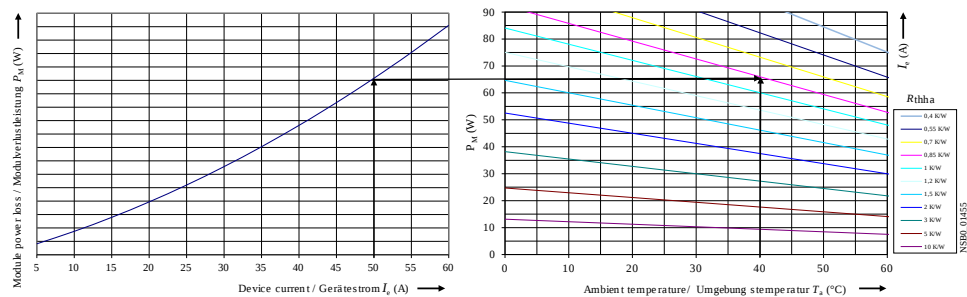
##### Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2150-1AG04>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2150-1AG04&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2150-1AG04&lang=en)





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