



\*\*\*phase-out type\*\*\* semiconductor relay, 1-phase 3RF2 width 22.5 mm, 20 A 24-230 V / 24 V DC screw terminal for mounting on available cooling surfaces

|                                                         |                                                                                                                                                                                    |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                      | SIRIUS                                                                                                                                                                             |
| product designation                                     | solid-state relay                                                                                                                                                                  |
| design of the product                                   | 1-pole                                                                                                                                                                             |
| product type designation                                | 3RF21                                                                                                                                                                              |
| manufacturer's article number                           |                                                                                                                                                                                    |
| • _1 of the accessories that can be ordered             | <a href="#">3RF2900-3PA88</a>                                                                                                                                                      |
| • _2 of the accessories that can be ordered             | <a href="#">3RF2920-0HA13</a>                                                                                                                                                      |
| • _3 of the accessories that can be ordered             | <a href="#">3RF2900-0EA18</a>                                                                                                                                                      |
| • _4 of the accessories that can be ordered             | <a href="#">3RF2920-0GA13</a>                                                                                                                                                      |
| • _5 of the accessories that can be ordered             | <a href="#">3RF2920-0FA08</a>                                                                                                                                                      |
| product designation                                     |                                                                                                                                                                                    |
| • _1 of the accessories that can be ordered             | terminal cover                                                                                                                                                                     |
| • _2 of the accessories that can be ordered             | power regulator                                                                                                                                                                    |
| • _3 of the accessories that can be ordered             | converter                                                                                                                                                                          |
| • _4 of the accessories that can be ordered             | load monitoring                                                                                                                                                                    |
| • _5 of the accessories that can be ordered             | load monitoring, basis                                                                                                                                                             |
| <b>General technical data</b>                           |                                                                                                                                                                                    |
| product function                                        | zero-point switching                                                                                                                                                               |
| power loss [V·A] maximum                                | 28.6 VA                                                                                                                                                                            |
| power loss [W] for rated value of the current           |                                                                                                                                                                                    |
| • at AC in hot operating state                          | 28.6 W                                                                                                                                                                             |
| • at AC in hot operating state per pole                 | 28.6 W                                                                                                                                                                             |
| • without load current share typical                    | 0.4 W                                                                                                                                                                              |
| 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 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                                              | 0.071 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 <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>                                                                                       | 24 ... 230 V<br>24 ... 230 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 <ul style="list-style-type: none"> <li>at 50 Hz</li> <li>at 60 Hz</li> </ul>                                                                                                                                  | 20 ... 253 V<br>20 ... 253 V                                                                                                                                                    |
| operational current rated value maximum                                                                                                                                                                                                                               | 20 A                                                                                                                                                                            |
| operational current <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>                                                                                             | 20 A<br>20 A<br>20 A                                                                                                                                                            |
| ampacity maximum                                                                                                                                                                                                                                                      | 20 A                                                                                                                                                                            |
| operational current minimum                                                                                                                                                                                                                                           | 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                                                                                                                                                           |
| <b>Control circuit/ Control</b>                                                                                                                                                                                                                                       |                                                                                                                                                                                 |
| type of voltage of the control supply voltage                                                                                                                                                                                                                         | DC                                                                                                                                                                              |
| control supply voltage 1 at DC rated value maximum permissible                                                                                                                                                                                                        | 30 V                                                                                                                                                                            |
| control supply voltage 1 at DC                                                                                                                                                                                                                                        | 15 ... 24 V                                                                                                                                                                     |
| control supply voltage at DC <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                                                                                                                                                                     |
| control current at minimum control supply voltage <ul style="list-style-type: none"> <li>at DC</li> </ul>                                                                                                                                                             | 13 mA                                                                                                                                                                           |
| control current at DC rated value                                                                                                                                                                                                                                     | 15 mA                                                                                                                                                                           |
| ON-delay time                                                                                                                                                                                                                                                         | 1 ms; additionally max. one half-wave                                                                                                                                           |
| OFF-delay time                                                                                                                                                                                                                                                        | 1 ms; additionally max. one half-wave                                                                                                                                           |
| <b>Installation/ mounting/ dimensions</b>                                                                                                                                                                                                                             |                                                                                                                                                                                 |
| fastening method side-by-side mounting                                                                                                                                                                                                                                | Yes                                                                                                                                                                             |
| fastening method                                                                                                                                                                                                                                                      | screw fixing                                                                                                                                                                    |
| design of the thread of the screw for securing the equipment                                                                                                                                                                                                          | M4                                                                                                                                                                              |
| 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                                                                                                                                                                           |
| <b>Connections/ Terminals</b>                                                                                                                                                                                                                                         |                                                                                                                                                                                 |
| product component removable terminal for auxiliary and control circuit                                                                                                                                                                                                | Yes                                                                                                                                                                             |
| type of electrical connection <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                                                                                                                                    |
| type of connectable conductor cross-sections <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>                                  |                                                                       |
| • solid or stranded                                                                           | 1.5 ... 6 mm <sup>2</sup>                                             |
| • finely stranded with core end processing                                                    | 1 ... 10 mm <sup>2</sup>                                              |
| <b>type of connectable conductor cross-sections</b>                                           |                                                                       |
| • for auxiliary and control contacts                                                          |                                                                       |
| — solid                                                                                       | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )    |
| — finely stranded with core end processing                                                    | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )    |
| — finely stranded without core end processing                                                 | 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )    |
| • for AWG cables for auxiliary and control contacts                                           | 1x (20 ... 12)                                                        |
| <b>AWG number as coded connectable conductor cross section for main contacts</b>              | 14 ... 10                                                             |
| <b>tightening torque</b>                                                                      |                                                                       |
| • 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>                                                             |                                                                       |
| • for main contacts with screw-type terminals                                                 | 7 ... 10.3 lbf·in                                                     |
| • for auxiliary and control contacts with screw-type terminals                                | 4.5 ... 5.3 lbf·in                                                    |
| <b>design of the thread of the connection screw</b>                                           |                                                                       |
| • for main contacts                                                                           | M4                                                                    |
| • of the auxiliary and control contacts                                                       | M3                                                                    |
| <b>stripped length of the cable</b>                                                           |                                                                       |
| • for main contacts                                                                           | 10 mm                                                                 |
| • for auxiliary and control contacts                                                          | 7 mm                                                                  |
| <b>UL/CSA ratings</b>                                                                         |                                                                       |
| <b>operational current according to UL 508 rated value</b>                                    | 20 A                                                                  |
| <b>Electrical Safety</b>                                                                      |                                                                       |
| <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>                                                                    |                                                                       |
| • during operation                                                                            | -25 ... +60 °C                                                        |
| • during storage                                                                              | -55 ... +80 °C                                                        |
| <b>Electromagnetic compatibility</b>                                                          |                                                                       |
| <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        |
| <b>Short-circuit protection, design of the fuse link</b>                                      |                                                                       |
| manufacturer's article number                                                                 |                                                                       |
| • of gS fuse for semiconductor protection at NH design usable                                 | <a href="#">3NE1814-0</a>                                             |
| • of full range R fuse link for semiconductor protection at cylindrical design usable         | <a href="#">5SE1325</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="#">3NC1032</a>                                               |
| • of back-up R fuse link for semiconductor protection at cylindrical design 14 x 51 mm usable | <a href="#">3NC1430</a>                                               |
| • of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable | <a href="#">3NC2225</a>                                               |
| manufacturer's article number of the gG fuse                                                  |                                                                       |

- at NH design usable
- at NH design usable note
- at cylindrical design 10 x 38 mm usable
- at cylindrical design 10 x 38 mm usable note
- at cylindrical design 14 x 51 mm usable
- at cylindrical design 14 x 51 mm usable note

manufacturer's article number

- of NEOZED fuse usable

[3NA6803: These fuses have a smaller rated current than the semiconductor relays](#)

These fuses have a smaller rated current than the semiconductor relays

[3NW6001-1: These fuses have a smaller rated current than the semiconductor relays](#)

These fuses have a smaller rated current than the semiconductor relays

[3NW6101-1: These fuses have a smaller rated current than the semiconductor relays](#)

These fuses have a smaller rated current than the semiconductor relays

[5SE2306: These fuses have a smaller rated current than the semiconductor relays](#)

#### Approvals Certificates

| Environment                                                                         |                                                                                   | General Product Approval                                                          |                                                                                   |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <a href="#">Environmental Confirmations</a>                                         |  |  |  |  |  |
| EMV                                                                                 | Test Certificates                                                                 |                                                                                   | other                                                                             |                                                                                     |                                                                                     |
|    | <a href="#">Special Test Certificate</a>                                          | <a href="#">Type Test Certificates/Test Report</a>                                | <a href="#">Confirmation</a>                                                      | <a href="#">Miscellaneous</a>                                                       | <a href="#">Confirmation</a>                                                        |
| other                                                                               | Railway                                                                           |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|  | <a href="#">Special Test Certificate</a>                                          |                                                                                   |                                                                                   |                                                                                     |                                                                                     |

#### 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>

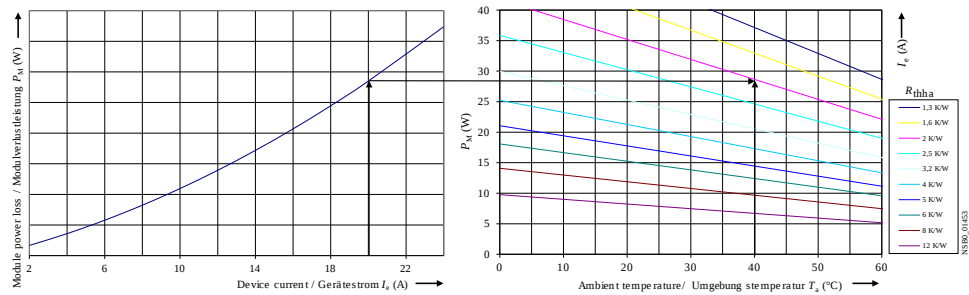
Industry Mall (Online ordering system)  
<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2120-1AA02>

Cax online generator  
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-1AA02>

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)  
<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-1AA02>

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)  
[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2120-1AA02&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-1AA02&lang=en)





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