

SEMICONDUCTOR RELAY 3RF2, 1-PH. WIDTH  
22.5MM, 20A 48-600V / 4-30V DC SCREW-TYPE  
TERMINAL BLOCKING VOLTAGE 1200V



| General technical data                                                  |  |                               |
|-------------------------------------------------------------------------|--|-------------------------------|
| product brandname                                                       |  | SIRIUS                        |
| Product designation                                                     |  | solid-state relay             |
| Product function                                                        |  | zero-point switching          |
| Number of poles for main current circuit                                |  | 1                             |
| Protection class IP                                                     |  | IP20                          |
| Product designation _1 of the accessories that can be ordered           |  | terminal cover                |
| Manufacturer's article number _1 of the accessories that can be ordered |  | <a href="#">3RF2900-3PA88</a> |
| Product designation _2 of the accessories that can be ordered           |  | power regulator               |
| Manufacturer's article number _2 of the accessories that can be ordered |  | <a href="#">3RF2920-0HA16</a> |
| Product designation _3 of the accessories that can be ordered           |  | converter                     |
| Manufacturer's article number _3 of the accessories that can be ordered |  | <a href="#">3RF2900-0EA18</a> |
| Product designation _4 of the accessories that can be ordered           |  | load monitoring               |

|                                                                                     |    |                               |
|-------------------------------------------------------------------------------------|----|-------------------------------|
| Manufacturer's article number _4 of the accessories that can be ordered             |    | <a href="#">3RF2920-0GA16</a> |
| Product designation _5 of the accessories that can be ordered                       |    | load monitoring, basis        |
| Manufacturer's article number _5 of the accessories that can be ordered             |    | <a href="#">3RF2920-0FA08</a> |
| Ambient temperature                                                                 |    |                               |
| • during operation                                                                  | °C | -25 ... +60                   |
| • during storage                                                                    | °C | -55 ... +80                   |
| Installation altitude at height above sea level maximum                             | m  | 1 000                         |
| Vibration resistance acc. to IEC 60068-2-6                                          |    | 2g                            |
| Shock resistance acc. to IEC 60068-2-27                                             |    | 15g / 11 ms                   |
| Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 |    | K                             |
| Equipment marking acc. to DIN EN 61346-2                                            |    | Q                             |
| Number of NC contacts for auxiliary contacts                                        |    | 0                             |
| Number of NO contacts for auxiliary contacts                                        |    | 0                             |
| Number of CO contacts for auxiliary contacts                                        |    | 0                             |

#### Main circuit

|                                                                             |      |            |
|-----------------------------------------------------------------------------|------|------------|
| Number of NO contacts for main contacts                                     |      | 1          |
| Number of NC contacts for main contacts                                     |      | 0          |
| Operating current                                                           |      |            |
| • rated value maximum                                                       | A    | 20         |
| • at AC-51 rated value                                                      | A    | 20         |
| • minimum                                                                   | mA   | 100        |
| Operating voltage at AC                                                     |      |            |
| • at 50 Hz rated value                                                      | V    | 48 ... 600 |
| • at 60 Hz rated value                                                      | V    | 48 ... 600 |
| Operating range relative to the operating voltage at AC                     |      |            |
| • at 50 Hz                                                                  | V    | 40 ... 660 |
| • at 60 Hz                                                                  | V    | 40 ... 660 |
| Operating frequency rated value                                             | Hz   | 50 ... 60  |
| Relative symmetrical tolerance of the operating frequency                   | %    | 10         |
| Insulation voltage rated value                                              | V    | 600        |
| Rate of voltage rise at the thyristor for main contacts maximum permissible | V/μs | 500        |
| Blocking voltage at the thyristor for main contacts maximum permissible     | V    | 1 200      |
| Reverse current of the thyristor                                            | mA   | 10         |
| Derating temperature                                                        | °C   | 40         |
| Power loss [W] total typical                                                | W    | 28.6       |

|                                                   |                   |      |
|---------------------------------------------------|-------------------|------|
| Power loss [V·A] maximum                          | V·A               | 28.6 |
| Surge current resistance rated value              | A                 | 200  |
| I <sup>2</sup> t value maximum                    | A <sup>2</sup> ·s | 200  |
| Short-circuit protection, design of the fuse link |                   |      |

#### Control circuit/ Control

|                                                    |    |    |
|----------------------------------------------------|----|----|
| Type of voltage of the control supply voltage      |    | DC |
| Control supply voltage 1                           |    |    |
| • at DC                                            |    |    |
| — Initial rated value                              | V  | 4  |
| — Final rated value                                | V  | 30 |
| — rated value maximum permissible                  | V  | 30 |
| Control supply voltage                             |    |    |
| • at DC initial value for signal <1> detection     | V  | 4  |
| • at DC Full-scale value for signal<0> recognition | V  | 1  |
| Control current                                    |    |    |
| • at minimum control supply voltage                |    |    |
| — at DC                                            | mA | 2  |
| • at DC rated value                                | mA | 15 |

#### Installation/ mounting/ dimensions

|                                                              |     |              |
|--------------------------------------------------------------|-----|--------------|
| Mounting type                                                |     | screw fixing |
| Mounting type Side-by-side mounting                          |     | Yes          |
| Design of the thread of the screw for securing the equipment |     | M4           |
| Tightening torque of the screw for securing the equipment    | N·m | 1.5          |
| Width                                                        | mm  | 22.5         |
| Height                                                       | mm  | 85           |
| Depth                                                        | mm  | 48           |

#### Connections/Terminals

|                                                                        |        |                                                                                         |
|------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------|
| Type of electrical connection for main current circuit                 |        | screw-type terminals                                                                    |
| Design of the thread of the connection screw for main contacts         |        | M4                                                                                      |
| Tightening torque for main contacts with screw-type terminals          | N·m    | 2 ... 2.5                                                                               |
| Tightening torque [lbf·in] for main contacts with screw-type terminals | lbf·in | 7 ... 10.3                                                                              |
| Type of connectable conductor cross-sections                           |        |                                                                                         |
| • for main contacts                                                    |        |                                                                                         |
| — solid                                                                |        | 2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )                      |
| — finely stranded                                                      |        |                                                                                         |
| — with core end processing                                             |        | 2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup> |
| • at AWG conductors                                                    |        |                                                                                         |

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

Certificates/approvals

| General Product Approval                                                          |                                                                                   |                                                                                   | EMC                                                                               | Declaration of<br>Conformity                                                        | Test<br>Certificates                                       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------|
|  |  |  |  |  | <a href="#">Type Test<br/>Certificates/Test<br/>Report</a> |
| CSA                                                                               | UR                                                                                |                                                                                   | C-Tick                                                                            | EG-Konf.                                                                            |                                                            |

| other                                       |                              | Railway                             |
|---------------------------------------------|------------------------------|-------------------------------------|
| <a href="#">Environmental Confirmations</a> | <a href="#">Confirmation</a> | <a href="#">Vibration and Shock</a> |

#### Further information

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

[https://www.automation.siemens.com/cd-static/material/info/3RF21\\_eng.pdf](https://www.automation.siemens.com/cd-static/material/info/3RF21_eng.pdf)

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

<http://www.siemens.com/industrial-controls/catalogs>

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

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2120-1AA45>

##### Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2120-1AA45>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2120-1AA45>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2120-1AA45&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2120-1AA45&lang=en)

