



\*\*\*phase-out type\*\*\* solid-state contactor 3-phase 3RF2 AC 51 / 20 A / 40 °C 48-600 V / 230 V AC 3-phase controlled screw terminal blocking voltage 1200 V

|                                                           |                                                                                                                                      |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| product brand name                                        | SIRIUS                                                                                                                               |
| product designation                                       | solid-state contactor                                                                                                                |
| design of the product                                     | 3-pole controlled                                                                                                                    |
| product type designation                                  | 3RF24                                                                                                                                |
| <b>General technical data</b>                             |                                                                                                                                      |
| product function                                          | zero-point switching                                                                                                                 |
| power loss [W] for rated value of the current             |                                                                                                                                      |
| • at AC in hot operating state                            | 66 W                                                                                                                                 |
| • at AC in hot operating state per pole                   | 22 W                                                                                                                                 |
| • without load current share typical                      | 3.5 W                                                                                                                                |
| insulation voltage rated value                            | 600 V                                                                                                                                |
| degree of pollution                                       | 3                                                                                                                                    |
| 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)                   | 07/01/2006                                                                                                                           |
| SVHC substance name                                       | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8<br>Dibutylbis(pentane-2,4-dionato-O,O')tin CAS-No. 22673-19-4 |
| Net Weight                                                | 0.428 kg                                                                                                                             |
| <b>Main circuit</b>                                       |                                                                                                                                      |
| number of poles for main current circuit                  | 3                                                                                                                                    |
| number of NO contacts for main contacts                   | 3                                                                                                                                    |
| number of NC contacts for main contacts                   | 0                                                                                                                                    |
| type of voltage of the operating voltage                  | AC                                                                                                                                   |
| operating voltage                                         |                                                                                                                                      |
| • at AC                                                   |                                                                                                                                      |
| — at 50 Hz rated value                                    | 48 ... 600 V                                                                                                                         |
| — at 60 Hz rated value                                    | 48 ... 600 V                                                                                                                         |
| operating frequency rated value                           | 50 ... 60 Hz                                                                                                                         |
| relative symmetrical tolerance of the operating frequency | 10 %                                                                                                                                 |
| operating range relative to the operating voltage at AC   |                                                                                                                                      |
| • at 50 Hz                                                | 40 ... 660 V                                                                                                                         |
| • at 60 Hz                                                | 40 ... 660 V                                                                                                                         |
| operational current                                       |                                                                                                                                      |
| • at AC-1 at 400 V rated value                            | 22 A                                                                                                                                 |
| • at AC-51 rated value                                    | 22 A                                                                                                                                 |

|                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• at AC-51 according to IEC 60947-4-3</li> <li>• according to UL 508 rated value</li> </ul>                                                                                                                                                                                                                                            | 15 A<br>15 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>                                                                                                                                                                                                                                                                                                                          | AC                                                                                                                                                                                                                               |
| <b>control supply voltage 1 at AC</b> <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>                                                                                                                                                                                                                                                        | 180 ... 230 V<br>180 ... 230 V                                                                                                                                                                                                   |
| <b>control supply voltage at AC</b> <ul style="list-style-type: none"> <li>• at 50 Hz full-scale value for signal&lt;0&gt; recognition</li> <li>• at 60 Hz full-scale value for signal&lt;0&gt; recognition</li> <li>• initial value for signal &lt;1&gt; detection</li> </ul>                                                                                                | 40 V<br>180 V<br>180 V                                                                                                                                                                                                           |
| <b>control supply voltage frequency</b> <ul style="list-style-type: none"> <li>• 1 rated value</li> <li>• 2 rated value</li> </ul>                                                                                                                                                                                                                                            | 45 Hz<br>66 Hz                                                                                                                                                                                                                   |
| <b>symmetrical line frequency tolerance</b>                                                                                                                                                                                                                                                                                                                                   | 5 Hz                                                                                                                                                                                                                             |
| <b>control current at minimum control supply voltage</b> <ul style="list-style-type: none"> <li>• at AC</li> </ul>                                                                                                                                                                                                                                                            | 2 mA                                                                                                                                                                                                                             |
| control current at AC rated value                                                                                                                                                                                                                                                                                                                                             | 15 mA                                                                                                                                                                                                                            |
| <b>ON-delay time</b>                                                                                                                                                                                                                                                                                                                                                          | 40 ms; additionally max. one half-wave                                                                                                                                                                                           |
| <b>Installation/ mounting/ dimensions</b>                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                  |
| fastening method side-by-side mounting                                                                                                                                                                                                                                                                                                                                        | Yes                                                                                                                                                                                                                              |
| <b>fastening method</b>                                                                                                                                                                                                                                                                                                                                                       | screw fixing and snap-on mounting on standard mounting rail 35 mm according to IEC 60715                                                                                                                                         |
| <b>design of the thread of the screw for securing the equipment</b>                                                                                                                                                                                                                                                                                                           | M4                                                                                                                                                                                                                               |
| <b>height</b>                                                                                                                                                                                                                                                                                                                                                                 | 100 mm                                                                                                                                                                                                                           |
| <b>width</b>                                                                                                                                                                                                                                                                                                                                                                  | 74.5 mm                                                                                                                                                                                                                          |
| <b>depth</b>                                                                                                                                                                                                                                                                                                                                                                  | 119.5 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> <li>• finely stranded without core end processing</li> </ul>                                                                                                                                 | 0.5 ... 2.5 mm <sup>2</sup><br>0.5 ... 1.5 mm <sup>2</sup><br>0.5 ... 2.5 mm <sup>2</sup>                                                                                                                                        |
| <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> | 18 ... 22 lbf·in<br>7.5 ... 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                          |

#### UL/CSA ratings

|                                                            |      |
|------------------------------------------------------------|------|
| <b>operational current according to UL 508 rated value</b> | 15 A |
|------------------------------------------------------------|------|

|                   |  |
|-------------------|--|
| Electrical Safety |  |
|-------------------|--|

|                                                             |                                                  |
|-------------------------------------------------------------|--------------------------------------------------|
| <b>touch protection on the front according to IEC 60529</b> | finger-safe, for vertical contact from the front |
|-------------------------------------------------------------|--------------------------------------------------|

#### Ambient conditions

|                                                         |         |
|---------------------------------------------------------|---------|
| 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 |

#### Electromagnetic compatibility

|                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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><br>140 dBuV in the frequency range 0.15 ... 80 MHz, 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 A for industrial environment                                                                                                                                          |

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| manufacturer's article number <ul style="list-style-type: none"> <li>• of full range R fuse link for semiconductor protection at NH design usable</li> <li>• of full range R fuse link for semiconductor protection at cylindrical design usable</li> <li>• of back-up R fuse link for semiconductor protection at NH design usable</li> <li>• of back-up R fuse link for semiconductor protection at cylindrical design 10 x 38 mm 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="#">3NE1814-0</a><br><a href="#">5SE1320; Maximum operating voltage 400 V!</a><br><a href="#">3NE8015-1</a><br><a href="#">3NC1032</a><br><a href="#">3NC1450</a><br><a href="#">3NC2250</a> |
| manufacturer's article number of the gG fuse at NH design usable <ul style="list-style-type: none"> <li>• up to 460 V</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <a href="#">3NA3805; These fuses have a smaller rated current than the semiconductor relays</a>                                                                                                      |

#### Approvals Certificates

|                    |                                 |
|--------------------|---------------------------------|
| <b>Environment</b> | <b>General Product Approval</b> |
|--------------------|---------------------------------|

[Environmental Conformations](#)



|     |                   |       |
|-----|-------------------|-------|
| EMV | Test Certificates | other |
|-----|-------------------|-------|



#### 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=3RF2420-1AC55>

##### Cax online generator

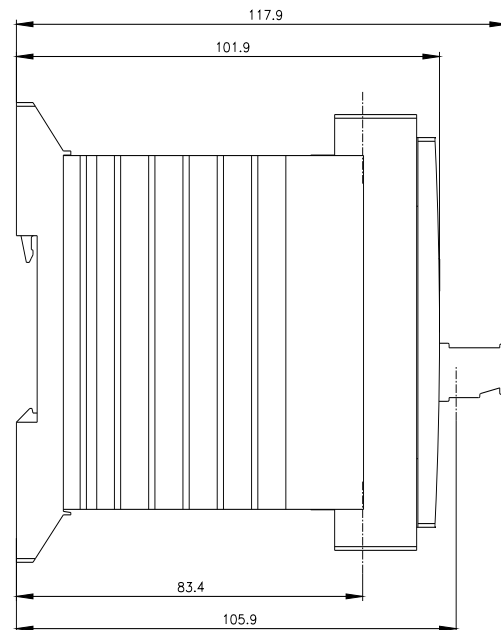
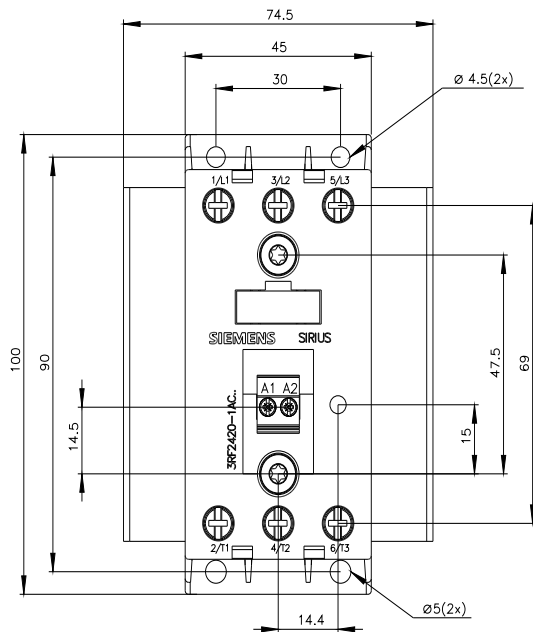
<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2420-1AC55>

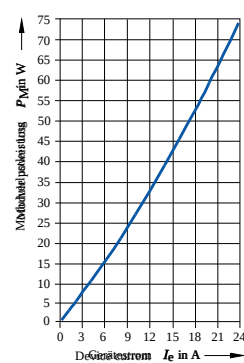
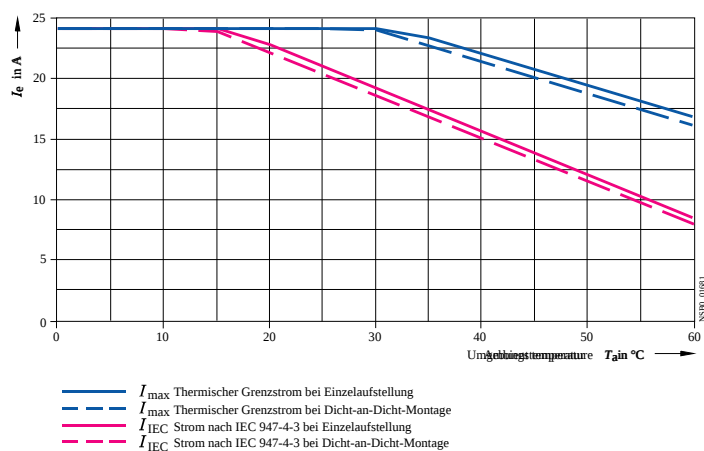
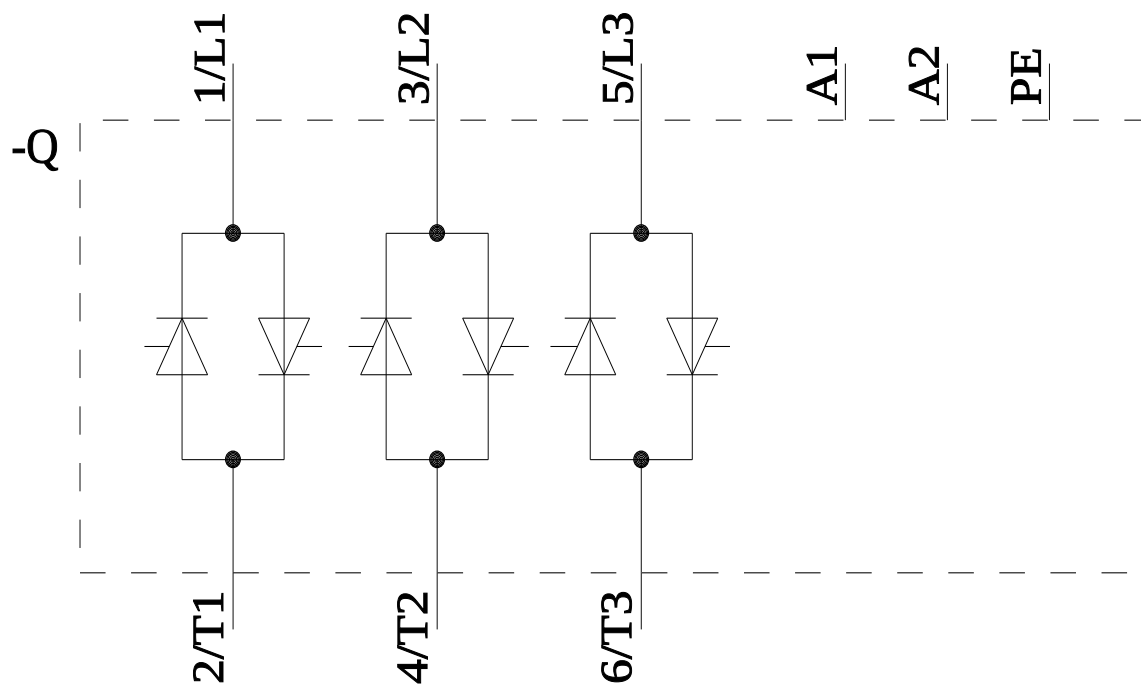
##### Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2420-1AC55>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RF2420-1AC55&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2420-1AC55&lang=en)





last modified:

4/4/2026