



solid-state contactor 1-pole 3RF3 AC-1 / 20 A / 40 °C 24-230 V / 110-230 V AC  
short-circuit-proof with B miniature circuit breaker spring-loaded terminal

|                                                           |                                                                                                                    |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| product brand name                                        | SIRIUS                                                                                                             |
| product designation                                       | solid-state contactor                                                                                              |
| product type designation                                  | 3RF33                                                                                                              |
| <b>General technical data</b>                             |                                                                                                                    |
| product function                                          | zero-point switching                                                                                               |
| product feature                                           | short-circuit-proof with B miniature circuit breaker                                                               |
| power loss [W] for rated value of the current             |                                                                                                                    |
| • at AC in hot operating state                            | 18.5 W                                                                                                             |
| • at AC in hot operating state per pole                   | 18.5 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              | 15g / 11 ms                                                                                                        |
| vibration resistance according to IEC 60068-2-6           | 2g                                                                                                                 |
| reference code according to IEC 81346-2                   | Q                                                                                                                  |
| Substance Prohibittance (Date)                            | 01/15/2024                                                                                                         |
| SVHC substance name                                       | Lead - 7439-92-1<br>Lead monoxide (lead oxide) - 1317-36-8<br>Dibutylbis(pentane-2,4-dionato-O,O')tin - 22673-19-4 |
| Net Weight                                                | 0.18 kg                                                                                                            |
| <b>Main circuit</b>                                       |                                                                                                                    |
| number of poles for main current circuit                  | 1                                                                                                                  |
| number of NO contacts for main contacts                   | 1                                                                                                                  |
| number of NC contacts for main contacts                   | 0                                                                                                                  |
| type of voltage of the operating voltage                  | AC                                                                                                                 |
| operating voltage                                         |                                                                                                                    |
| • at AC                                                   |                                                                                                                    |
| — at 50 Hz rated value                                    | 24 ... 230 V                                                                                                       |
| — at 60 Hz rated value                                    | 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   |                                                                                                                    |
| • at 50 Hz                                                | 20 ... 253 V                                                                                                       |
| • at 60 Hz                                                | 20 ... 253 V                                                                                                       |
| operational current rated value maximum                   | 20 A                                                                                                               |
| operational current                                       |                                                                                                                    |
| • at AC-1 at 400 V rated value                            | 20 A                                                                                                               |

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| <ul style="list-style-type: none"> <li>• at AC-51 rated value</li> <li>• at AC-51 according to IEC 60947-4-3</li> <li>• according to UL 508 rated value</li> </ul>                                                                       | 20 A<br>20 A<br>16 A                                                                     |
| <b>operational current of the MCB at AC rated value</b>                                                                                                                                                                                  | 20 A                                                                                     |
| <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>                                                                                                                                                           | 800 V                                                                                    |
| <b>reverse current of the thyristor</b>                                                                                                                                                                                                  | 10 mA                                                                                    |
| <b>derating temperature</b>                                                                                                                                                                                                              | 40 °C                                                                                    |
| <b>surge current resistance rated value</b>                                                                                                                                                                                              | 1 300 A                                                                                  |
| <b>I<sup>2</sup>t value maximum</b>                                                                                                                                                                                                      | 8 000 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 at AC</b> <ul style="list-style-type: none"> <li>• at 50 Hz</li> <li>• at 60 Hz</li> </ul>                                                                                                                     | 110 ... 230 V<br>110 ... 230 V                                                           |
| <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>                                                                                                                   | 110 ... 230 V<br>110 ... 230 V                                                           |
| <b>control supply voltage frequency</b> <ul style="list-style-type: none"> <li>• 1 rated value</li> <li>• 2 rated value</li> </ul>                                                                                                       | 50 Hz<br>60 Hz                                                                           |
| <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> </ul>                   | 40 V<br>40 V                                                                             |
| <b>control supply voltage</b> <ul style="list-style-type: none"> <li>• at AC initial value for signal &lt;1&gt; detection</li> </ul>                                                                                                     | 90 V                                                                                     |
| <b>symmetrical line frequency tolerance</b>                                                                                                                                                                                              | 5 Hz                                                                                     |
| <b>operating range factor control supply voltage rated value at AC at 50 Hz</b> <ul style="list-style-type: none"> <li>• initial value</li> </ul>                                                                                        | 0.82                                                                                     |
| <b>operating range factor control supply voltage rated value at AC at 60 Hz</b> <ul style="list-style-type: none"> <li>• initial value</li> </ul>                                                                                        | 0.82                                                                                     |
| <b>control current at minimum control supply voltage</b> <ul style="list-style-type: none"> <li>• at AC</li> </ul>                                                                                                                       | 2 mA                                                                                     |
| <b>control current at AC rated value</b>                                                                                                                                                                                                 | 15 mA                                                                                    |
| <b>ON-delay time</b>                                                                                                                                                                                                                     | 40 ms; additionally max. one half-wave                                                   |
| <b>OFF-delay time</b>                                                                                                                                                                                                                    | 40 ms; additionally max. one half-wave                                                   |
| <b>Auxiliary circuit</b>                                                                                                                                                                                                                 |                                                                                          |
| <b>number of CO contacts for auxiliary contacts</b>                                                                                                                                                                                      | 0                                                                                        |
| <b>Installation/ mounting/ dimensions</b>                                                                                                                                                                                                |                                                                                          |
| <b>fastening method side-by-side mounting</b>                                                                                                                                                                                            | 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>                                                                                                                                                                                                                            | 95 mm                                                                                    |
| <b>width</b>                                                                                                                                                                                                                             | 22.5 mm                                                                                  |
| <b>depth</b>                                                                                                                                                                                                                             | 121 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>                                                                           | spring-loaded terminals<br>spring-loaded 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> </ul> | 2x (0.5 ... 2.5 mm <sup>2</sup> )<br>2x (0.5 ... 1.5 mm <sup>2</sup> )                   |

|                                                                                               |                                                                       |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| — finely stranded without core end processing                                                 | 2x (0.5 ... 2.5 mm²)                                                  |
| • for AWG cables for main contacts                                                            | 2x (18 ... 14)                                                        |
| <b>connectable conductor cross-section for main contacts</b>                                  |                                                                       |
| • solid or stranded                                                                           | 0.5 ... 2.5 mm²                                                       |
| • finely stranded with core end processing                                                    | 0.5 ... 1.5 mm²                                                       |
| • finely stranded without core end processing                                                 | 0.5 ... 2.5 mm²                                                       |
| <b>type of connectable conductor cross-sections</b>                                           |                                                                       |
| • for auxiliary and control contacts                                                          |                                                                       |
| — solid                                                                                       | 0.5 ... 1.5 mm²                                                       |
| — finely stranded with core end processing                                                    | 0.5 ... 2.5 mm²                                                       |
| — finely stranded without core end processing                                                 | 0.5 ... 2.5 mm²                                                       |
| • for AWG cables for auxiliary and control contacts                                           | 1x (20 ... 12)                                                        |
| <b>AWG number as coded connectable conductor cross section for main contacts</b>              | 18 ... 14                                                             |
| <b>stripped length of the cable</b>                                                           |                                                                       |
| • for main contacts                                                                           | 10 mm                                                                 |
| • for auxiliary and control contacts                                                          | 10 mm                                                                 |
| <b>Electrical Safety</b>                                                                      |                                                                       |
| <b>protection class IP on the front according to IEC 60529</b>                                | IP20                                                                  |
| <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="#">3NE8814-0MK</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="#">3NC1450</a>                                               |
| • of back-up R fuse link for semiconductor protection at cylindrical design 22 x 58 mm usable | <a href="#">3NC2263</a>                                               |
| manufacturer's article number of the gG fuse                                                  |                                                                       |
| • at NH design usable                                                                         | <a href="#">3NA6807</a>                                               |
| • at cylindrical design 10 x 38 mm usable                                                     | <a href="#">3NW6012-1</a>                                             |
| • at cylindrical design 14 x 51 mm usable                                                     | <a href="#">3NW6107-1</a>                                             |
| • at cylindrical design 22 x 58 mm usable                                                     | <a href="#">3NW6207-1</a>                                             |
| manufacturer's article number                                                                 |                                                                       |
| • of DIAZED fuse usable                                                                       | <a href="#">5SB2711</a>                                               |
| • of NEOZED fuse usable                                                                       | <a href="#">5SE2320</a>                                               |

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