



Direct starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 24 V DC, screw terminals

|   |   |
|---|---|
| <b>product brand name</b>                                     | SIRIUS  |
| <b>product category</b>                                       | Motor starter                                   |
| <b>product designation</b>                                    | Direct-on-line starter                          |
| <b>design of the product</b>                                  | with electronic overload protection             |
| <b>product type designation</b>                               | 3RM1  |
| <b>General technical data</b>                                 |   |
| <b>trip class</b>   | CLASS 10A                                       |
| <b>equipment variant according to IEC 60947-4-2</b>           | 3   |
| <b>product function</b>                                       | Direct-on-line starter                          |
| • intrinsic device protection                                 | Yes   |
| • for power supply reverse polarity protection                | No  |
| <b>suitability for operation device connector 3ZY12</b>       | Yes   |
| <b>insulation voltage rated value</b>                         | 500 V   |
| <b>overvoltage category</b>                                   | III   |
| <b>surge voltage resistance rated value</b>                   | 6 kV  |
| <b>maximum permissible voltage for safe isolation</b>         |   |
| • between main and auxiliary circuit                          | 500 V   |
| • between control and auxiliary circuit                       | 250 V   |
| <b>shock resistance</b>                                       | 6g / 11 ms                                      |
| <b>vibration resistance</b>                                   | 1 ... 6 Hz, 15 mm; 20 m/s <sup>2</sup> , 500 Hz |
| <b>operating frequency maximum</b>                            | 1 1/s   |
| <b>mechanical service life (switching cycles) typical</b>     | 30 000 000                                      |
| <b>reference code according to IEC 81346-2</b>                | Q   |
| <b>Substance Prohibitance (Date)</b>                          | 03/01/2017                                      |
| <b>product function</b>                                       |   |
| • direct start  | Yes   |
| • reverse starting  | No  |
| <b>product function short circuit protection</b>              | No  |
| <b>Electromagnetic compatibility</b>                          |   |
| EMC emitted interference according to IEC 60947-1             | class A   |
| EMC immunity according to IEC 60947-1                         | Class A   |
| <b>conducted interference</b>                                 |   |
| • due to burst according to IEC 61000-4-4                     | 3 kV / 5 kHz                                    |
| • due to conductor-earth surge according to IEC 61000-4-5     | 2 kV  |
| • due to conductor-conductor surge according to IEC 61000-4-5 | 1 kV  |
| • due to high-frequency radiation according to IEC 61000-4-6  | 10 V  |
| <b>field-based interference according to IEC 61000-4-3</b>    | 10 V/m  |

|  |  |
|--|--|
| <b>electrostatic discharge according to IEC 61000-4-2</b>                                  | 4 kV contact discharge / 8 kV air discharge                    |
| <b>conducted HF interference emissions according to CISPR11</b>                            | Class B for the domestic, business and commercial environments |
| <b>field-bound HF interference emission according to CISPR11</b>                           | Class B for the domestic, business and commercial environments |
| <b>Safety related data</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  |
| <b>Main circuit</b>  |  |
| <b>number of poles for main current circuit</b>  | 3  |
| <b>design of the switching contact</b>   | Hybrid   |
| <b>design of the switching contact as NO contact for signaling function</b>                | OUT, electronic, 24 V DC, 15 mA                                |
| <b>adjustable current response value current of the current-dependent overload release</b> | 0.4 ... 2 A  |
| <b>minimum load [%]</b>  | 20 %; from set rated current                                   |
| <b>type of the motor protection</b>  | solid-state  |
| <b>operating voltage rated value</b>   | 48 ... 500 V   |
| <b>relative symmetrical tolerance of the operating voltage</b>                             | 10 %   |
| <b>operating frequency 1 rated value</b>   | 50 Hz  |
| <b>operating frequency 2 rated value</b>   | 60 Hz  |
| <b>relative symmetrical tolerance of the operating frequency</b>                           | 10 %   |
| <b>operational current</b>   |  |
| • at AC at 400 V rated value   | 2 A  |
| • at AC-3 at 400 V rated value   | 2 A  |
| • at AC-53a at 400 V at ambient temperature 40 °C rated value                              | 2 A  |
| <b>ampacity when starting maximum</b>  | 16 A   |
| <b>operating power for 3-phase motors at 400 V at 50 Hz</b>                                | 0.09 ... 0.75 kW   |
| <b>Inputs/ Outputs</b>   |  |
| <b>input voltage at digital input</b>  |  |
| • at DC rated value  | 24 V   |
| • with signal <0> at DC  | 0 ... 5 V  |
| • for signal <1> at DC   | 15 ... 30  |
| <b>input current at digital input</b>  |  |
| • for signal <1> at DC   | 11 mA  |
| • with signal <0> at DC  | 1 mA   |
| <b>number of CO contacts for auxiliary contacts</b>  | 1  |
| <b>operational current of auxiliary contacts at AC-15 at 230 V maximum</b>                 | 3 A  |
| <b>operational current of auxiliary contacts at DC-13 at 24 V maximum</b>                  | 1 A  |
| <b>Control circuit/ Control</b>  |  |
| <b>type of voltage of the control supply voltage</b>                                       | DC   |
| <b>control supply voltage at DC rated value</b>  | 19.2 ... 30 V  |
| <b>relative negative tolerance of the control supply voltage at DC</b>                     | 20 %   |
| <b>relative positive tolerance of the control supply voltage at DC</b>                     | 25 %   |
| <b>control supply voltage 1 at DC rated value</b>  | 24 V   |
| <b>operating range factor control supply voltage rated value at DC</b>                     |  |
| • initial value  | 0.8  |
| • full-scale value   | 1.25   |
| <b>control current at DC</b>   |  |
| • in standby mode of operation   | 25 mA  |
| • when switching on  | 150 mA   |
| • during operation   | 70 mA  |
| <b>inrush current peak</b>   |  |
| • at DC at 24 V  | 300 mA   |

|   |        |
|---|--------|
| <ul style="list-style-type: none"> <li>• at DC at 24 V at switching on of motor</li> </ul>  | 130 mA |
| <b>duration of inrush current peak</b>  |        |
| <ul style="list-style-type: none"> <li>• at DC at 24 V</li> </ul>   | 80 ms  |
| <ul style="list-style-type: none"> <li>• at DC at 24 V at switching on of motor</li> </ul>  | 20 ms  |
| <b>power loss [W] in auxiliary and control circuit</b>  |        |
| <ul style="list-style-type: none"> <li>• in switching state OFF <ul style="list-style-type: none"> <li>— with bypass circuit</li> </ul> </li> </ul> | 0.6 W  |
| <ul style="list-style-type: none"> <li>• in switching state ON <ul style="list-style-type: none"> <li>— with bypass circuit</li> </ul> </li> </ul>  | 1.68 W |

#### Response times

|                       |              |
|-----------------------|--------------|
| <b>ON-delay time</b>  | 60 ... 90 ms |
| <b>OFF-delay time</b> | 60 ... 90 ms |

#### Power Electronics

|  |     |
|--|-----|
| <b>operational current</b>   |     |
| <ul style="list-style-type: none"> <li>• at 40 °C rated value</li> </ul> | 2 A |
| <ul style="list-style-type: none"> <li>• at 50 °C rated value</li> </ul> | 2 A |
| <ul style="list-style-type: none"> <li>• at 55 °C rated value</li> </ul> | 2 A |
| <ul style="list-style-type: none"> <li>• at 60 °C rated value</li> </ul> | 2 A |

#### Installation/ mounting/ dimensions

|  |  |
|--|--|
| <b>mounting position</b>   | vertical, horizontal, standing (observe derating)                                      |
| <b>fastening method</b>  | screw and snap-on mounting onto 35 mm standard mounting rail                           |
| <b>height</b>  | 100 mm   |
| <b>width</b>   | 22.5 mm  |
| <b>depth</b>   | 141.6 mm   |
| <b>required spacing</b>  |  |
| <ul style="list-style-type: none"> <li>• with side-by-side mounting <ul style="list-style-type: none"> <li>— forwards</li> <li>— backwards</li> <li>— upwards</li> <li>— downwards</li> <li>— at the side</li> </ul> </li> <li>• for grounded parts <ul style="list-style-type: none"> <li>— forwards</li> <li>— backwards</li> <li>— upwards</li> <li>— at the side</li> <li>— downwards</li> </ul> </li> </ul> | 0 mm<br>0 mm<br>50 mm<br>50 mm<br>0 mm<br><br>0 mm<br>0 mm<br>50 mm<br>3.5 mm<br>50 mm |

#### Ambient conditions

|  |   |
|--|---|
| installation altitude at height above sea level maximum              | 4 000 m; For derating see manual  |
| <b>ambient temperature</b>   |   |
| <ul style="list-style-type: none"> <li>• during operation</li> </ul> | -25 ... +60 °C  |
| <ul style="list-style-type: none"> <li>• during storage</li> </ul>   | -40 ... +70 °C  |
| <ul style="list-style-type: none"> <li>• during transport</li> </ul> | -40 ... +70 °C  |
| environmental category during operation according to IEC 60721       | 3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 |
| relative humidity during operation                                   | 10 ... 95 %   |
| air pressure according to SN 31205                                   | 900 ... 1 060 hPa   |

#### Communication/ Protocol

|  |    |
|--|----|
| <b>protocol is supported</b>   |    |
| <ul style="list-style-type: none"> <li>• PROFINET IO protocol</li> </ul> | No |
| <ul style="list-style-type: none"> <li>• PROFI-safe protocol</li> </ul>  | No |
| <b>product function bus communication</b>                                | No |
| protocol is supported AS-Interface protocol                              | No |

#### Connections/ Terminals

|   |   |
|---|---|
| <b>type of electrical connection</b>  | screw-type terminals for main circuit, screw-type terminals for control circuit |
| <ul style="list-style-type: none"> <li>• for main current circuit</li> </ul>          | screw-type terminals  |
| <ul style="list-style-type: none"> <li>• for auxiliary and control circuit</li> </ul> | screw-type terminals  |
| <b>wire length for motor unshielded maximum</b>                                       | 100 m   |
| <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>• at AWG cables for main contacts</li> </ul>   | 1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 2,5 mm <sup>2</sup> )<br>1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )<br>1x (20 ... 12), 2x (20 ... 14)   |
| <b>connectable conductor cross-section for main contacts</b> <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> </ul>  | 0.5 ... 4 mm <sup>2</sup><br>0.5 ... 4 mm <sup>2</sup>   |
| <b>connectable conductor cross-section for auxiliary contacts</b> <ul style="list-style-type: none"> <li>• solid or stranded</li> <li>• finely stranded with core end processing</li> </ul>   | 0.5 ... 2.5 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 contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> </ul> </li> <li>• at AWG cables for auxiliary contacts</li> </ul> | 1x (0,5 ... 2,5 mm <sup>2</sup> ), 2x (1,0 ... 1,5 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 ... 14), 2x (18 ... 16) |
| <b>AWG number as coded connectable conductor cross section</b> <ul style="list-style-type: none"> <li>• for main contacts</li> <li>• for auxiliary contacts</li> </ul>  | 20 ... 12<br>20 ... 14   |

### UL/CSA ratings

|  |   |
|--|---|
| <b>yielded mechanical performance [hp]</b> <ul style="list-style-type: none"> <li>• for single-phase AC motor <ul style="list-style-type: none"> <li>— at 230 V rated value</li> </ul> </li> <li>• for 3-phase AC motor <ul style="list-style-type: none"> <li>— at 200/208 V rated value</li> <li>— at 220/230 V rated value</li> <li>— at 460/480 V rated value</li> </ul> </li> </ul> | 0.125 hp<br>0.333 hp<br>0.333 hp<br>0.75 hp |
| <b>operating voltage at AC</b> <ul style="list-style-type: none"> <li>• according to UL rated value</li> <li>• according to CSA rated value</li> </ul>   | 480 V<br>400 V                              |

### Certificates/ approvals

|                          |     |
|--------------------------|-----|
| General Product Approval | EMC |
|--------------------------|-----|



[Confirmation](#)



|                           |                   |       |         |
|---------------------------|-------------------|-------|---------|
| Declaration of Conformity | Test Certificates | other | Railway |
|---------------------------|-------------------|-------|---------|



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### Further information

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=3RM1002-1AA04>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1002-1AA04>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1002-1AA04>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1002-1AA04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1002-1AA04&lang=en)

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