



Direct starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 110-230 V AC, spring-type 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>       | No  |
| <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  |

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| <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 domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| <b>field-bound HF interference emission according to CISPR11</b>                           | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| <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> | 1.6 ... 7 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   | 7 A   |
| • at AC-3 at 400 V rated value   | 7 A   |
| • at AC-53a at 400 V at ambient temperature 40 °C rated value                              | 7 A   |
| <b>ampacity when starting maximum</b>  | 56 A  |
| <b>operating power for 3-phase motors at 400 V at 50 Hz</b>                                | 0.55 ... 3 kW   |
| <b>derating temperature</b>  | 40 °C   |
| <b>Inputs/ Outputs</b>   |   |
| <b>input voltage at digital input</b>  |   |
| • at DC rated value  | 110 V   |
| • with signal <0> at DC  | 0 ... 40 V  |
| • for signal <1> at DC   | 79 ... 121  |
| <b>input voltage at digital input</b>  |   |
| • at AC rated value  | 110 V   |
| • with signal <0> at AC  | 0 ... 40 V  |
| • for signal <1> at AC   | 93 ... 253 V  |
| <b>input current at digital input</b>  |   |
| • for signal <1> at DC   | 1.5 mA  |
| • with signal <0> at DC  | 0.25 mA   |
| <b>input current at digital input with signal &lt;0&gt; at AC</b>                          |   |
| • at 110 V   | 0.2 mA  |
| • at 230 V   | 0.4 mA  |
| <b>input current at digital input for signal &lt;1&gt; at AC</b>                           |   |
| • at 110 V   | 1.1 mA  |
| • at 230 V   | 2.3 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>                                       | AC/DC   |
| <b>control supply voltage at AC</b>  |   |
| • at 50 Hz rated value   | 110 ... 230 V   |
| • at 60 Hz rated value   | 110 ... 230 V   |
| <b>relative negative tolerance of the control supply</b>                                   | 15 %  |

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|---|--|
| <b>voltage at AC at 60 Hz</b>   |  |
| <b>relative positive tolerance of the control supply voltage at AC at 60 Hz</b> | 10 %   |
| <b>control supply voltage 1 at AC</b>   |  |
| • at 50 Hz  | 110 ... 230 V  |
| • at 60 Hz  | 110 ... 230 V  |
| <b>control supply voltage frequency</b>   |  |
| • 1 rated value   | 50 Hz  |
| • 2 rated value   | 60 Hz  |
| <b>relative negative tolerance of the control supply voltage at DC</b>          | 15 %   |
| <b>relative positive tolerance of the control supply voltage at DC</b>          | 10 %   |
| control supply voltage 1 at DC rated value                                      | 110 V  |
| <b>operating range factor control supply voltage rated value at DC</b>          |  |
| • initial value   | 0.85   |
| • full-scale value  | 1.1  |
| <b>operating range factor control supply voltage rated value at AC at 50 Hz</b> |  |
| • initial value   | 0.85   |
| • full-scale value  | 1.1  |
| <b>operating range factor control supply voltage rated value at AC at 60 Hz</b> |  |
| • initial value   | 0.85   |
| • full-scale value  | 1.1  |
| <b>control current at AC</b>  |  |
| • at 110 V in standby mode of operation   | 16 mA  |
| • at 230 V in standby mode of operation   | 9 mA   |
| • at 110 V when switching on  | 55 mA  |
| • at 230 V when switching on  | 33 mA  |
| • at 110 V during operation   | 36 mA  |
| • at 230 V during operation   | 22 mA  |
| <b>control current at DC</b>  |  |
| • in standby mode of operation  | 6 mA   |
| • when switching on   | 15 mA  |
| • during operation  | 30 mA  |
| <b>inrush current peak</b>  |  |
| • at AC at 110 V  | 1 200 mA   |
| • at AC at 230 V  | 2 900 mA   |
| <b>duration of inrush current peak</b>  |  |
| • at AC at 110 V  | 1 ms   |
| • at AC at 230 V  | 1 ms   |
| <b>power loss [W] in auxiliary and control circuit</b>                          |  |
| • in switching state OFF  |  |
| — with bypass circuit   | 2.1 W  |
| • in switching state ON   |  |
| — with bypass circuit   | 5.06 W   |
| <b>Response times</b>   |  |
| <b>ON-delay time</b>  | 60 ... 90 ms   |
| <b>OFF-delay time</b>   | 60 ... 90 ms   |
| <b>Power Electronics</b>  |  |
| <b>operational current</b>  |  |
| • at 40 °C rated value  | 7 A  |
| • at 50 °C rated value  | 6.1 A  |
| • at 55 °C rated value  | 5.2 A  |
| • at 60 °C rated value  | 4.6 A  |
| <b>Installation/ mounting/ dimensions</b>                                       |  |
| <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 0 mm</li> <li>— backwards 0 mm</li> <li>— upwards 50 mm</li> <li>— downwards 50 mm</li> <li>— at the side 0 mm</li> </ul> </li> <li>● for grounded parts <ul style="list-style-type: none"> <li>— forwards 0 mm</li> <li>— backwards 0 mm</li> <li>— upwards 50 mm</li> <li>— at the side 3.5 mm</li> <li>— downwards 50 mm</li> </ul> </li> </ul>   |   |
| <b>Ambient conditions</b>  |   |
| 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 -25 ... +60 °C</li> <li>● during storage -40 ... +70 °C</li> <li>● during transport -40 ... +70 °C</li> </ul>  |   |
| 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   |
| <b>Communication/ Protocol</b>   |   |
| <b>protocol is supported</b>   |   |
| <ul style="list-style-type: none"> <li>● PROFINET IO protocol No</li> <li>● PROFIsafe protocol No</li> </ul>   |   |
| <b>product function bus communication</b>  | No  |
| protocol is supported AS-Interface protocol  | No  |
| <b>Connections/ Terminals</b>  |   |
| <b>type of electrical connection</b>   | spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit               |
| <ul style="list-style-type: none"> <li>● for main current circuit spring-loaded terminals (push-in)</li> <li>● for auxiliary and control circuit spring-loaded terminals (push-in)</li> </ul>  |   |
| <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 1x (0.5 ... 4 mm<sup>2</sup>)</li> <li>— finely stranded with core end processing 1x (0.5 ... 2.5 mm<sup>2</sup>)</li> <li>— finely stranded without core end processing 1x (0.5 ... 4 mm<sup>2</sup>)</li> </ul> </li> <li>● at AWG cables for main contacts 1x (20 ... 12)</li> </ul>  |   |
| <b>connectable conductor cross-section for main contacts</b>   |   |
| <ul style="list-style-type: none"> <li>● solid or stranded 0.5 ... 4 mm<sup>2</sup></li> <li>● finely stranded with core end processing 0.5 ... 2.5 mm<sup>2</sup></li> <li>● finely stranded without core end processing 0.5 ... 4 mm<sup>2</sup></li> </ul>  |   |
| <b>connectable conductor cross-section for auxiliary contacts</b>  |   |
| <ul style="list-style-type: none"> <li>● solid or stranded 0.5 ... 1.5 mm<sup>2</sup></li> <li>● finely stranded with core end processing 0.5 ... 1 mm<sup>2</sup></li> <li>● finely stranded without core end processing 0.5 ... 1.5 mm<sup>2</sup></li> </ul>  |   |
| <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 1x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.5 ... 1.5 mm<sup>2</sup>)</li> <li>— finely stranded with core end processing 1x (0.5 ... 1.0 mm<sup>2</sup>), 2x (0.5 ... 1.0 mm<sup>2</sup>)</li> <li>— finely stranded without core end processing 1x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.5 ... 1.5 mm<sup>2</sup>)</li> </ul> </li> <li>● at AWG cables for auxiliary contacts 1x (20 ... 16), 2x (20 ... 16)</li> </ul> |   |
| <b>AWG number as coded connectable conductor cross section</b>   |   |

- for main contacts 20 ... 12
- for auxiliary contacts 20 ... 16

#### UL/CSA ratings

| yielded mechanical performance [hp] |         |
|-------------------------------------|---------|
| • for single-phase AC motor         |         |
| — at 110/120 V rated value          | 0.25 hp |
| — at 230 V rated value              | 0.5 hp  |
| • for 3-phase AC motor              |         |
| — at 200/208 V rated value          | 1 hp    |
| — at 220/230 V rated value          | 1.5 hp  |
| — at 460/480 V rated value          | 3 hp    |
| operating voltage at AC             |         |
| • according to UL rated value       | 480 V   |
| • according to CSA rated value      | 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=3RM1007-2AA14>

Cax online generator

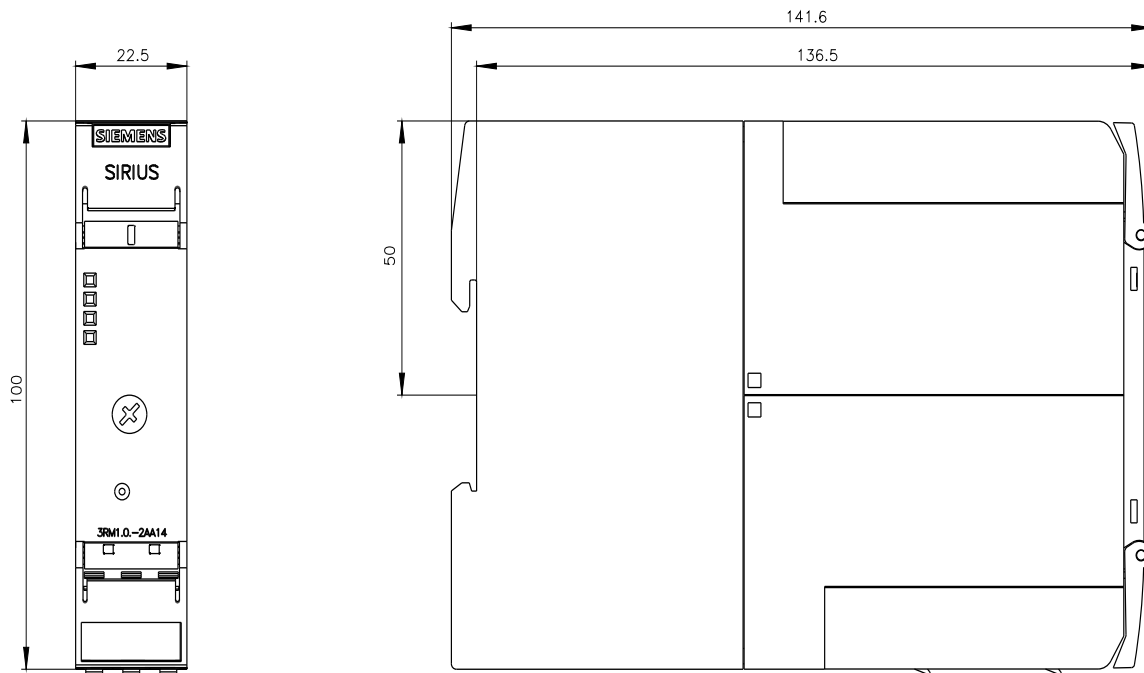
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1007-2AA14>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1007-2AA14>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1007-2AA14&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1007-2AA14&lang=en)



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