

Direct starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 110-230 V AC, screw terminals



product brand name	SIRIUS
product category	Motor starter
product designation	Direct-on-line starter
design of the product	with electronic overload protection
product type designation	3RM1

General technical data	
trip class	CLASS 10A
<ul style="list-style-type: none"> <li>product function intrinsic device protection</li> </ul>	Yes
Suitability for operation Device connector 3ZY12	No
power loss [W] for rated value of the current at AC in hot operating state per pole	1.13 W
insulation voltage	
<ul style="list-style-type: none"> <li>rated value</li> </ul>	500 V
surge voltage resistance rated value	6 kV
maximum permissible voltage for safe isolation	
<ul style="list-style-type: none"> <li>between main and auxiliary circuit</li> <li>between control and auxiliary circuit</li> </ul>	500 V 250 V
<ul style="list-style-type: none"> <li>protection class IP</li> </ul>	IP20
<ul style="list-style-type: none"> <li>shock resistance</li> </ul>	6g / 11 ms

• vibration resistance	1 ... 6 Hz, 15 mm; 20 m/s <sup>2</sup> , 500 Hz
operating frequency maximum	1 1/s
• mechanical service life (switching cycles) typical	30 000 000
reference code acc. to DIN EN 81346-2	Q
• Product function direct start	Yes
• Product function reverse starting	No
product function short circuit protection	No

Electromagnetic compatibility	
• conducted interference due to burst acc. to IEC 61000-4-4	3 kV / 5 kHz
• Conducted interference due to conductor-earth surge acc. to IEC 61000-4-5	2 kV
• Conducted interference due to conductor-conductor surge acc. to IEC 61000-4-5	1 kV
• conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V
electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge
Conducted HF-interference emissions acc. to CISPR11	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC
Field-bound HF-interference emission acc. to CISPR11	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC

Safety related data	
protection against electrical shock	finger-safe

Main circuit	
number of poles for main current circuit	3
Design of the switching contact as NO contact for signaling function	OUT, electronic, 24 V DC, 15 mA
adjustable pick-up value current of the current-dependent overload release	1.6 ... 7 A
Minimum load [%]	20 %
Type of the motor protection	solid-state
• operating voltage rated value	48 ... 500 V
Relative symmetrical tolerance of the operating voltage	10 %
operating frequency 1 rated value	50 Hz
operating frequency 2 rated value	60 Hz
Relative symmetrical tolerance of the operating frequency	10 %
• Operating current at AC at 400 V rated value	7 A
• Operating current at AC-53a at 400 V at ambient temperature 40 °C rated value	7 A
Ampacity when starting maximum	56 A

Operating power for three-phase motors at 400 V at 50 Hz	0.55 ... 3 kW
<b>Derating temperature</b>	40 °C

### Inputs/ Outputs

<b>input voltage at digital input</b>	
<ul style="list-style-type: none"> <li>• at DC rated value</li> </ul>	110 V
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>	0 ... 40 V
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>	79 ... 121
<ul style="list-style-type: none"> <li>• input voltage at digital input at AC rated value</li> </ul>	110 V
<ul style="list-style-type: none"> <li>• Input voltage at digital input with signal &lt;0&gt; at AC</li> </ul>	0 ... 40 V
<ul style="list-style-type: none"> <li>• Input voltage at digital input for signal &lt;1&gt; at AC</li> </ul>	93 ... 253 V
<ul style="list-style-type: none"> <li>• Input current at digital input with signal &lt;0&gt; typical</li> </ul>	0.0004 A
<ul style="list-style-type: none"> <li>• input current at digital input for signal &lt;1&gt; typical</li> </ul>	0.002 A
<b>Input current at digital input</b>	
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>	1.5 mA
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>	0.25 mA
<b>Input current at digital input with signal &lt;0&gt; at AC</b>	
<ul style="list-style-type: none"> <li>• at 110 V</li> </ul>	0.2 mA
<ul style="list-style-type: none"> <li>• at 230 V</li> </ul>	0.4 mA
<b>Input current at digital input for signal &lt;1&gt; at AC</b>	
<ul style="list-style-type: none"> <li>• at 110 V</li> </ul>	1.1 mA
<ul style="list-style-type: none"> <li>• at 230 V</li> </ul>	2.3 mA
number of CO contacts for auxiliary contacts	1
<b>Operating current of auxiliary contacts at AC-15 at 230 V maximum</b>	3 A
<b>Operating current of auxiliary contacts at DC-13 at 24 V maximum</b>	1 A

### Control circuit/ Control

<b>Type of voltage of the control supply voltage</b>	AC/DC
<b>Control supply voltage 1 at AC</b>	
<ul style="list-style-type: none"> <li>• at 50 Hz</li> </ul>	110 ... 230 V
<ul style="list-style-type: none"> <li>• at 60 Hz</li> </ul>	110 ... 230 V
<b>control supply voltage frequency</b>	
<ul style="list-style-type: none"> <li>• 1 rated value</li> </ul>	50 Hz
<ul style="list-style-type: none"> <li>• 2 rated value</li> </ul>	60 Hz
<b>Control supply voltage 1</b>	
<ul style="list-style-type: none"> <li>• at DC rated value</li> </ul>	110 V
<b>operating range factor control supply voltage rated value at DC</b>	

<ul style="list-style-type: none"> <li>• initial value</li> <li>• full-scale value</li> </ul>	<p>0.85</p> <p>1.1</p>
<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> <li>• full-scale value</li> </ul>	<p>0.85</p> <p>1.1</p>
<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> <li>• full-scale value</li> </ul>	<p>1.1</p> <p>0.85</p>
<b>Control current at AC</b> <ul style="list-style-type: none"> <li>• at 110 V in standby mode</li> <li>• at 230 V in standby mode</li> <li>• at 110 V when switching on</li> <li>• at 230 V when switching on</li> <li>• at 110 V during operation</li> <li>• at 230 V during operation</li> </ul>	<p>16 mA</p> <p>9 mA</p> <p>55 mA</p> <p>33 mA</p> <p>36 mA</p> <p>22 mA</p>
<b>Control current at DC</b> <ul style="list-style-type: none"> <li>• in standby mode</li> <li>• when switching on</li> <li>• during operation</li> </ul>	<p>6 mA</p> <p>15 mA</p> <p>30 mA</p>

#### Response times

<b>Switch-on delay time</b>	60 ... 90 ms
<b>Off-delay time</b>	60 ... 90 ms

#### Installation/ mounting/ dimensions

<ul style="list-style-type: none"> <li>• <b>mounting position</b></li> </ul>	vertical, horizontal, standing (observe derating)
<ul style="list-style-type: none"> <li>• <b>mounting type</b></li> </ul>	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> </ul> </li> </ul>	<p>0 mm</p> <p>0 mm</p> <p>50 mm</p> <p>50 mm</p> <p>0 mm</p> <p>0 mm</p> <p>0 mm</p> <p>50 mm</p>

- at the side
- downwards

3.5 mm

50 mm

### Ambient conditions

<ul style="list-style-type: none"> <li>• installation altitude at height above sea level maximum</li> </ul>	4 000 m
relative humidity during operation	10 ... 95 %
<b>Air pressure</b>	
<ul style="list-style-type: none"> <li>• acc. to SN 31205</li> </ul>	900 ... 1 060 hPa

### Communication/ Protocol

<b>product function bus communication</b>	No
---	----

### Connections/ Terminals

<ul style="list-style-type: none"> <li>• <b>type of electrical connection</b></li> </ul>	screw-type terminals for main circuit, screw-type terminals for control circuit
<ul style="list-style-type: none"> <li>• type of electrical connection for main current circuit</li> </ul>	screw-type terminals
<ul style="list-style-type: none"> <li>• type of electrical connection for auxiliary and control current circuit</li> </ul>	screw-type terminals
<b>Type of electrical wiring</b>	
<ul style="list-style-type: none"> <li>• for main current circuit</li> </ul>	1 or 2 conductors
<ul style="list-style-type: none"> <li>• for auxiliary and control current circuit</li> </ul>	1 or 2 conductors
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for main contacts solid</li> </ul>	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 2,5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for main contacts finely stranded with core end processing</li> </ul>	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections at AWG conductors for main contacts</li> </ul>	1x (20 ... 12), 2x (20 ... 14)
<b>connectable conductor cross-section for main contacts</b>	
<ul style="list-style-type: none"> <li>• single or multi-stranded</li> </ul>	0.5 ... 4 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>	0.5 ... 4 mm <sup>2</sup>
<b>connectable conductor cross-section for auxiliary contacts</b>	
<ul style="list-style-type: none"> <li>• single or multi-stranded</li> </ul>	0.5 ... 2.5 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>• finely stranded with core end processing</li> </ul>	0.5 ... 2.5 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for auxiliary contacts solid</li> </ul>	1x (0,5 ... 2,5 mm <sup>2</sup> ), 2x (1,0 ... 1,5 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for auxiliary contacts finely stranded with core end processing</li> </ul>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections at AWG conductors for auxiliary contacts</li> </ul>	1x (20 ... 14), 2x (18 ... 16)

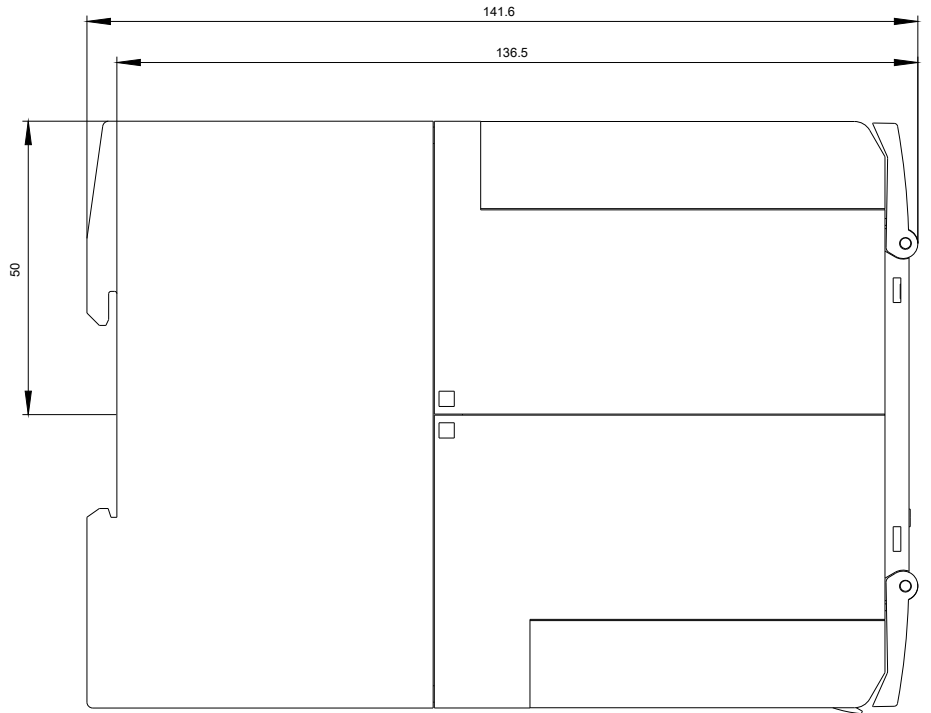
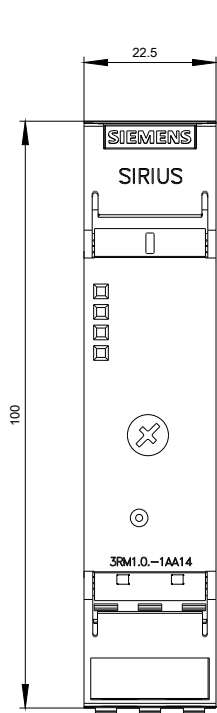
**AWG number as coded connectable conductor cross section**

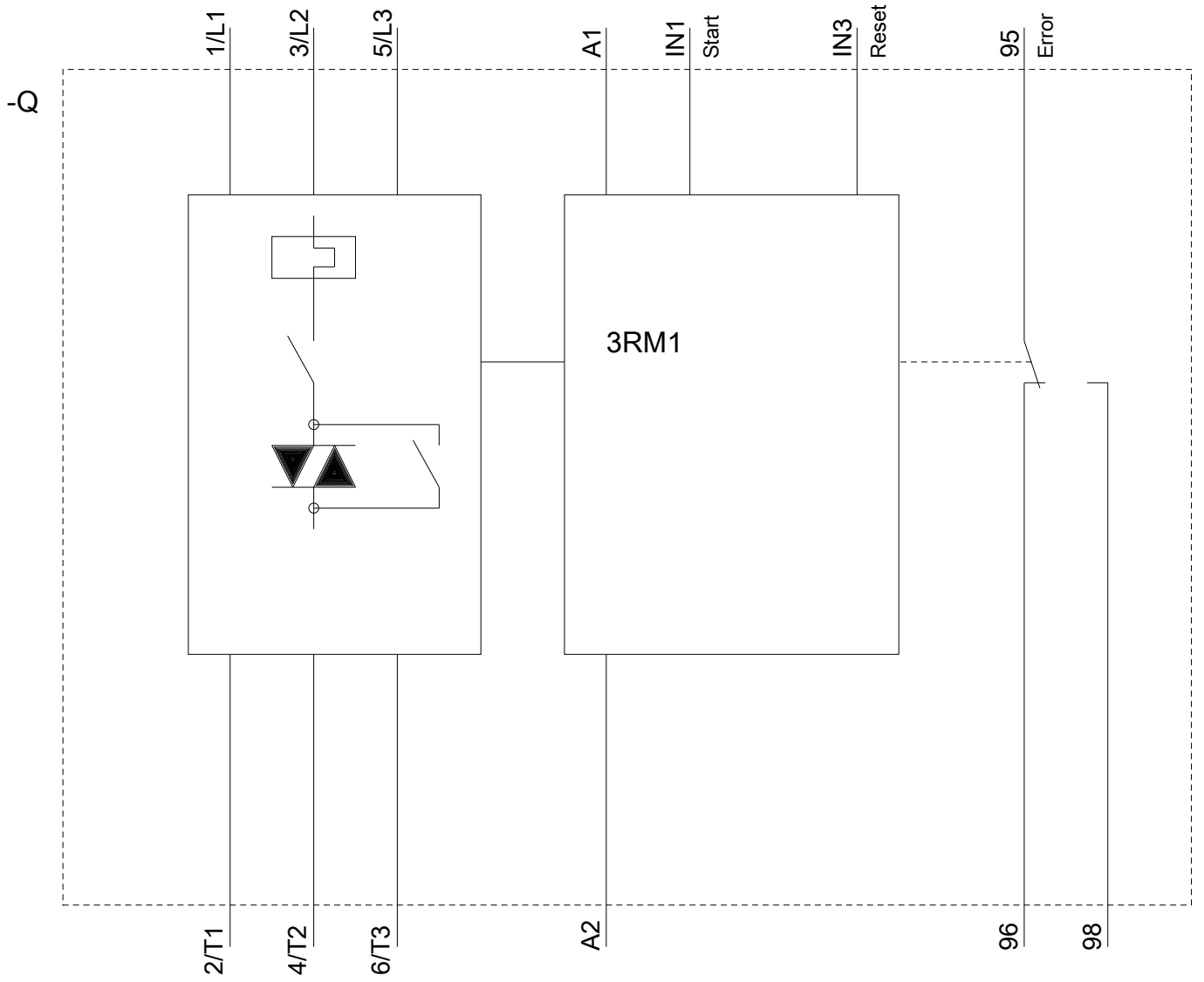
- for main contacts 20 ... 12
- for auxiliary contacts 20 ... 14

**UL/CSA ratings****yielded mechanical performance [hp]**

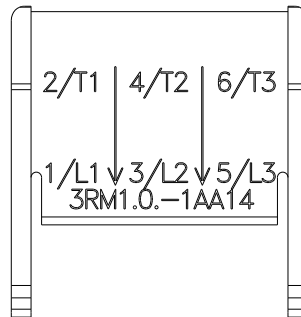
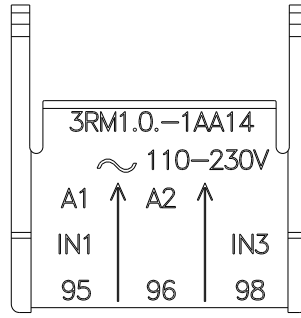
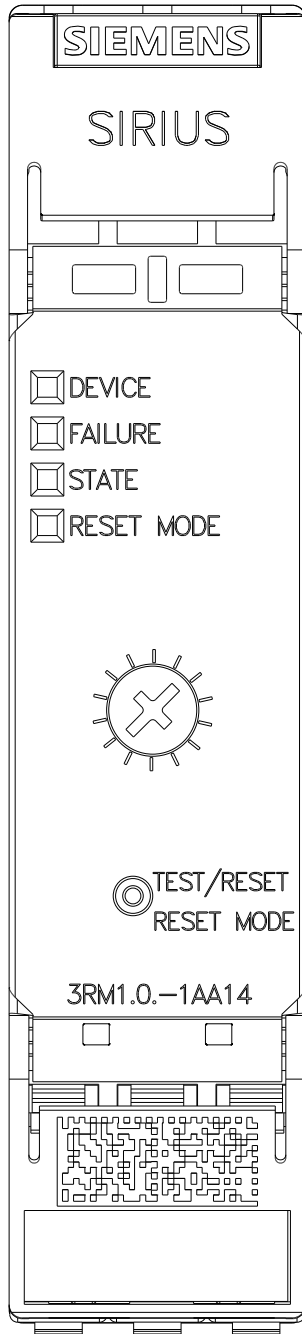
- for single-phase AC motor
  - at 110/120 V rated value 0.25 hp
  - at 230 V rated value 0.5 hp
- for three-phase AC motor
  - at 200/208 V rated value 1 hp
  - at 220/230 V rated value 1.5 hp
  - at 460/480 V rated value 3 hp

**Certificates/ approvals****General Product Approval****EMC****Declaration of Conformity****Declaration of Conformity****Test Certificates****other****Railway**[Miscellaneous](#)[Type Test Certificates/Test Report](#)[Confirmation](#)[Special Test Certificate](#)**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?mfb=3RM1007-1AA14>**Cax online generator**<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mfb=3RM1007-1AA14>**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**<https://support.industry.siemens.com/cs/ww/en/ps/3RM1007-1AA14>**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mfb=3RM1007-1AA14&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mfb=3RM1007-1AA14&lang=en)









last modified:

08/07/2020