

Direct starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 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
Product function	
• Intrinsic device protection	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	0.1 W
Insulation voltage	
• rated value	500 V
Surge voltage resistance rated value	6 kV
maximum permissible voltage for safe isolation	
• between main and auxiliary circuit	500 V
• between control and auxiliary circuit	250 V
Protection class IP	IP20

<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)</b>	
• typical	30 000 000
<b>Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750</b>	Q
<b>Reference code acc. to DIN EN 81346-2</b>	Q
<b>Reference code acc. to DIN EN 61346-2</b>	Q
<b>Product function</b>	
• direct start	Yes
• reverse starting	No
<b>Product function Short circuit protection</b>	No

### Electromagnetic compatibility

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

### Safety related data

<b>Protection against electrical shock</b>	finger-safe
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### Main circuit

<b>Number of poles for main current circuit</b>	3
<b>Design of the switching contact as NO contact for signaling function</b>	OUT, electronic, 24 V DC, 15 mA
<b>Adjustable pick-up value current of the current-dependent overload release</b>	0.4 ... 2 A
<b>Minimum load [%]</b>	20 %
<b>Type of the motor protection</b>	solid-state
<b>Operating voltage</b>	
• rated value	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>Operating current</b>	
<ul style="list-style-type: none"> <li>• at AC at 400 V rated value</li> </ul>	2 A
<ul style="list-style-type: none"> <li>• at AC-53a at 400 V at ambient temperature 40 °C rated value</li> </ul>	2 A
<b>Ampacity when starting maximum</b>	16 A
Operating power for three-phase motors at 400 V at 50 Hz	0.09 ... 0.75 kW

### 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
<b>Input voltage at digital input</b>	
<ul style="list-style-type: none"> <li>• at AC rated value</li> </ul>	110 V
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at AC</li> </ul>	0 ... 40 V
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at AC</li> </ul>	93 ... 253 V
<b>Input current at digital input</b>	
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; typical</li> </ul>	0.0004 A
<ul style="list-style-type: none"> <li>• 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>	0.85 1.1
<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>	0.85 1.1
<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>	1.1 0.85
<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>	16 mA 9 mA 55 mA 33 mA 36 mA 22 mA
<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>	6 mA 15 mA 30 mA

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

<b>Installation/ mounting/ dimensions</b>	
<b>Mounting position</b>	vertical, horizontal, standing (observe derating)
<b>Mounting type</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> </ul>	0 mm 0 mm 50 mm 50 mm 0 mm

• for grounded parts	
— forwards	0 mm
— Backwards	0 mm
— upwards	50 mm
— at the side	3.5 mm
— downwards	50 mm

### Ambient conditions

<b>Installation altitude at height above sea level</b>	
• maximum	4 000 m
<b>Ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity during operation	10 ... 95 %
<b>Air pressure</b>	
• acc. to SN 31205	900 ... 1 060 hPa

### Communication/ Protocol

<b>Product function Bus communication</b>	No
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### Connections/ Terminals

<b>Type of electrical connection</b>	screw-type terminals for main circuit, screw-type terminals for control circuit
• for main current circuit	screw-type terminals
• for auxiliary and control current circuit	screw-type terminals
<b>Type of connectable conductor cross-sections</b>	
• for main contacts	
— solid	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 2,5 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )
• at AWG conductors for main contacts	1x (20 ... 12), 2x (20 ... 14)
<b>Connectable conductor cross-section for main contacts</b>	
• single or multi-stranded	0.5 ... 4 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 4 mm <sup>2</sup>
<b>Connectable conductor cross-section for auxiliary contacts</b>	
• single or multi-stranded	0.5 ... 2.5 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 2.5 mm <sup>2</sup>
<b>Type of connectable conductor cross-sections</b>	
• for auxiliary contacts	
— solid	1x (0,5 ... 2,5 mm <sup>2</sup> ), 2x (1,0 ... 1,5 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• at AWG conductors for auxiliary contacts	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 230 V rated value 0.125 hp
- for three-phase AC motor
  - at 200/208 V rated value 0.333 hp
  - at 220/230 V rated value 0.333 hp
  - at 460/480 V rated value 0.75 hp

**Certificates/ approvals**

General Product Approval			EMC	Declaration of Conformity	
					
CCC	CSA	UL		RCM	EG-Konf.

Declaration of Conformity	Test Certificates	other	Railway
<a href="#">Miscellaneous</a>	<a href="#">Type Test Certificates/Test Report</a>	<a href="#">Confirmation</a>	<a href="#">Special Test Certificate</a>

**Further information**

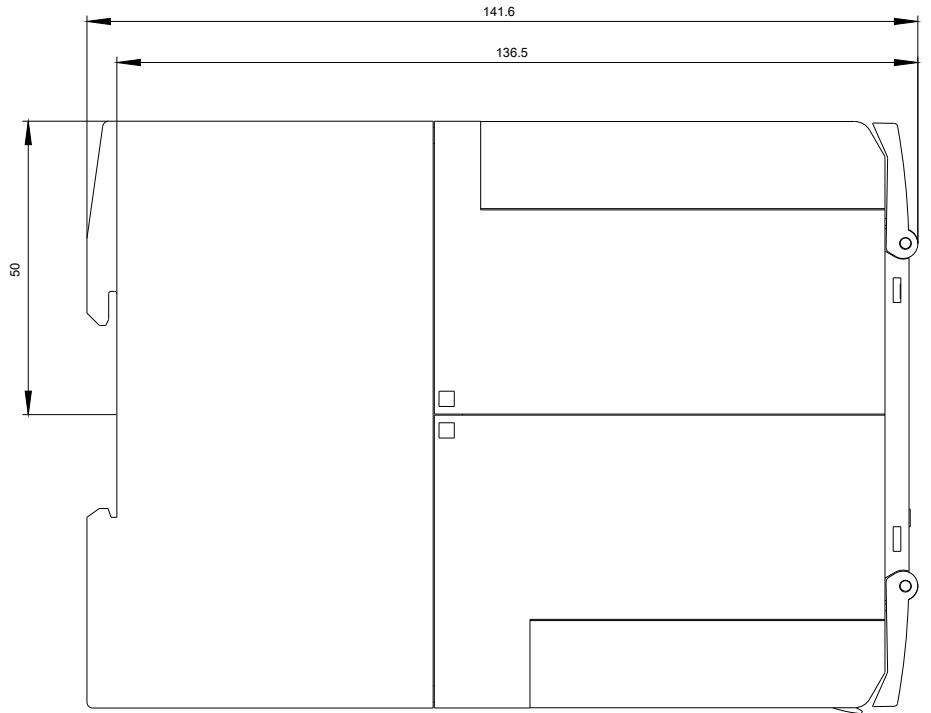
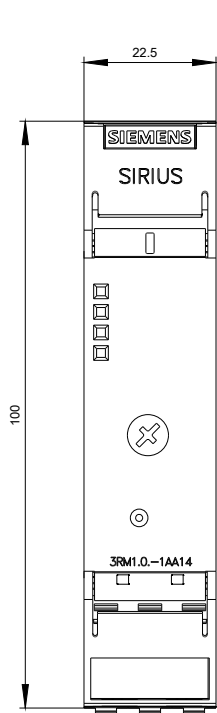
**Information- and Downloadcenter (Catalogs, Brochures,...)**  
[www.siemens.com/ic10](http://www.siemens.com/ic10)

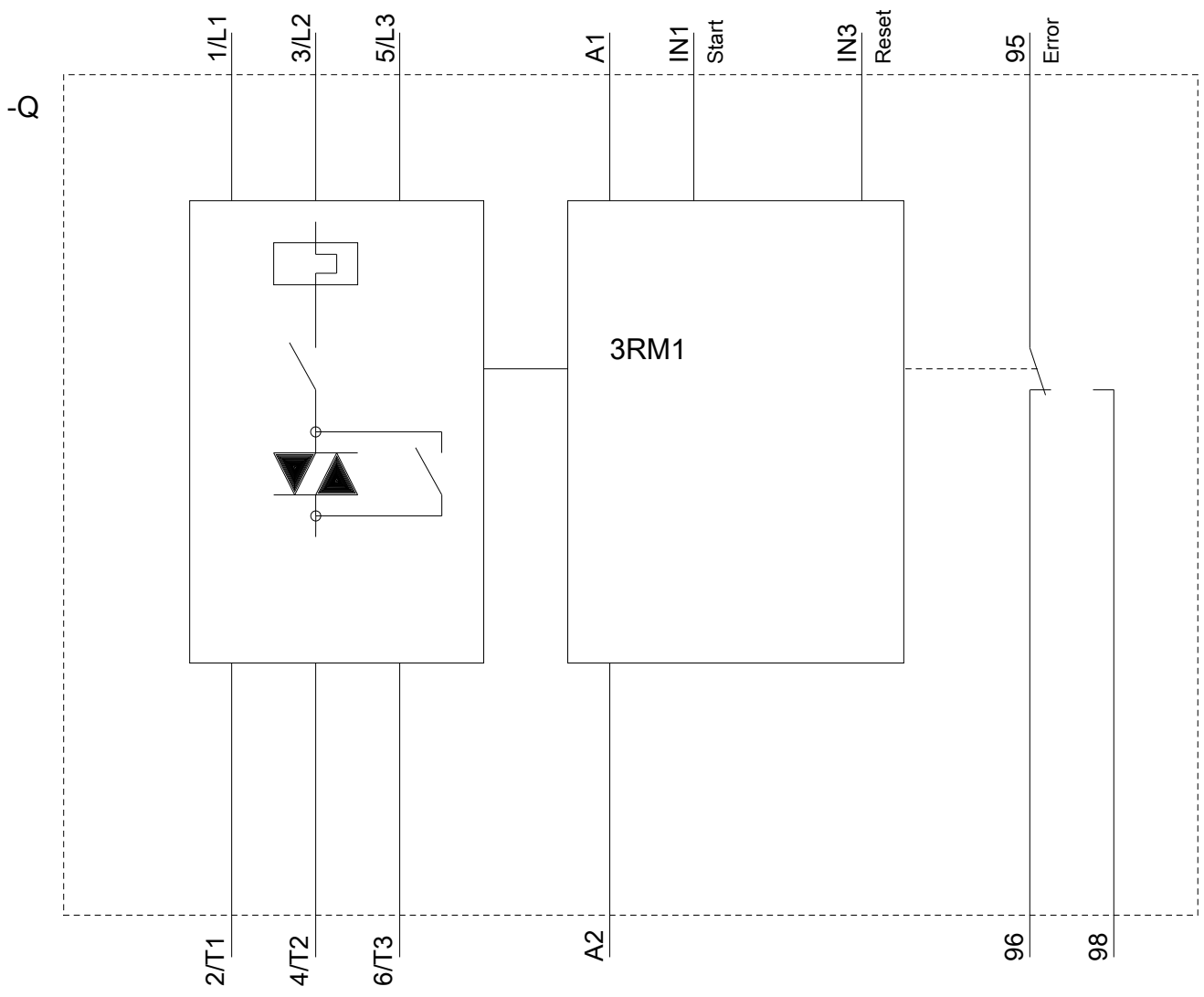
**Industry Mall (Online ordering system)**  
<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1002-1AA14>

**Cax online generator**  
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1002-1AA14>

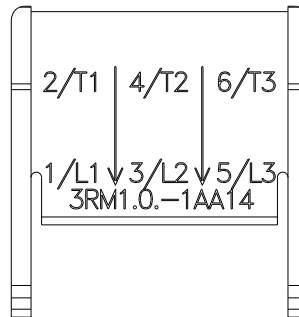
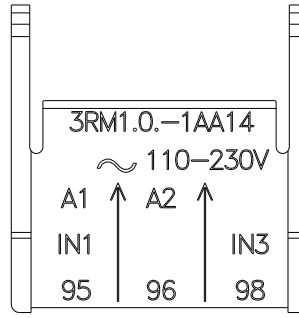
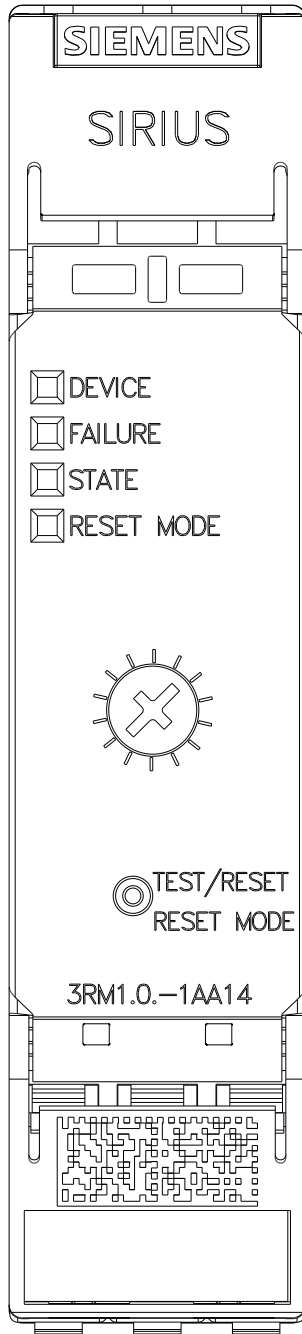
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**  
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1002-1AA14>

**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**  
[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1002-1AA14&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1002-1AA14&lang=en)









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