

Reversing starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 110-230 V AC, screw/spring-type terminals



Product brand name	SIRIUS
Product category	Motor starter
Product designation	Reversing 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	No
• reverse starting	Yes
<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

#### Response times

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

#### Installation/ mounting/ dimensions

<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, spring-loaded terminals (push-in) for control circuit
• for main current circuit	screw-type terminals
• for auxiliary and control current circuit	spring-loaded terminals (push-in)
<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 ... 1.5 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 1 mm <sup>2</sup>
• finely stranded without core end processing	0.5 ... 1.5 mm <sup>2</sup>
<b>Type of connectable conductor cross-sections</b>	
• for auxiliary contacts	
— solid	1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0,5 ... 1,0 mm <sup>2</sup> ), 2x (0,5 ... 1,0 mm <sup>2</sup> )

— finely stranded without core end processing	1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> )
• at AWG conductors for auxiliary contacts	1x (20 ... 16), 2x (20 ... 16)
<b>AWG number as coded connectable conductor cross section</b>	
• for main contacts	20 ... 12
• for auxiliary contacts	20 ... 16

#### UL/CSA ratings

<b>Yielded mechanical performance [hp]</b>	
• 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	other
 CCC		 RCM <a href="#">Confirmation</a>
 CSA		
 UL		

#### 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=3RM1202-3AA14>

**Cax online generator**

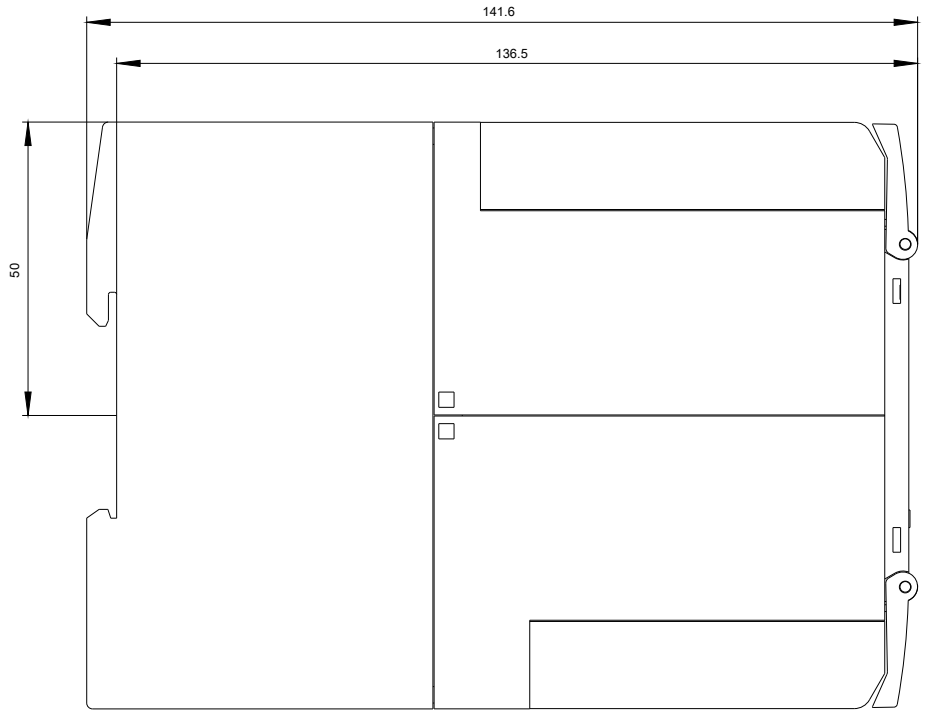
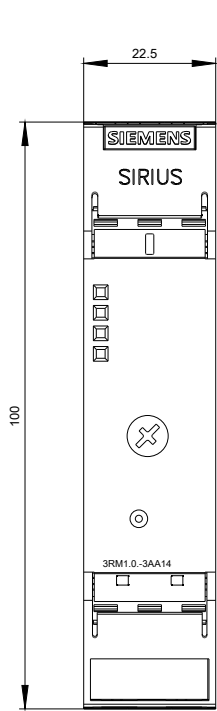
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1202-3AA14>

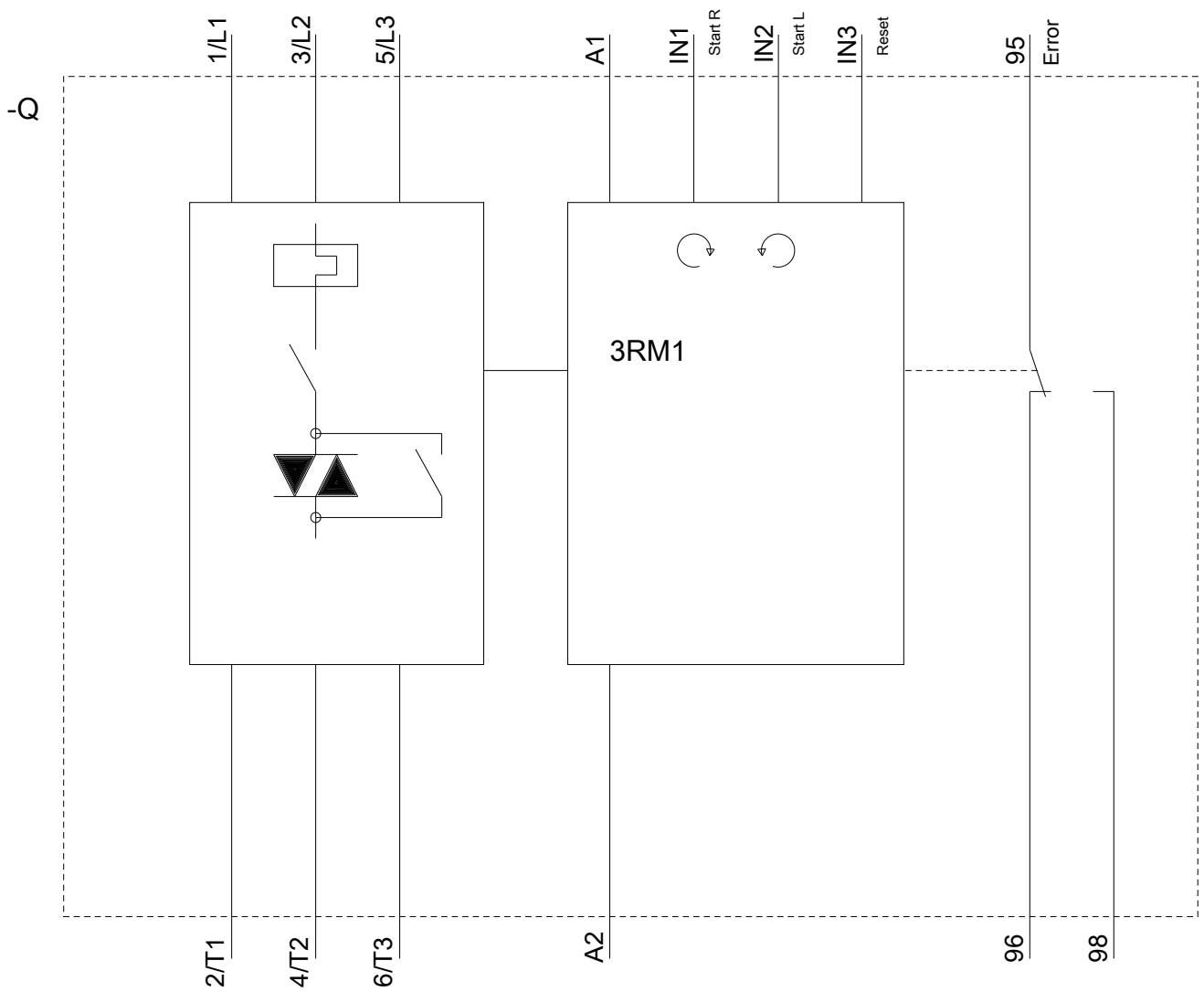
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1202-3AA14>

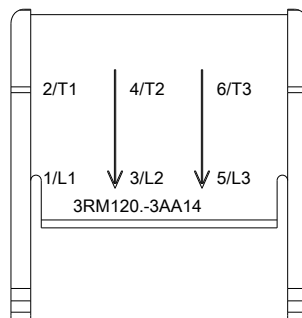
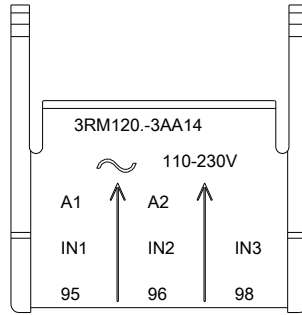
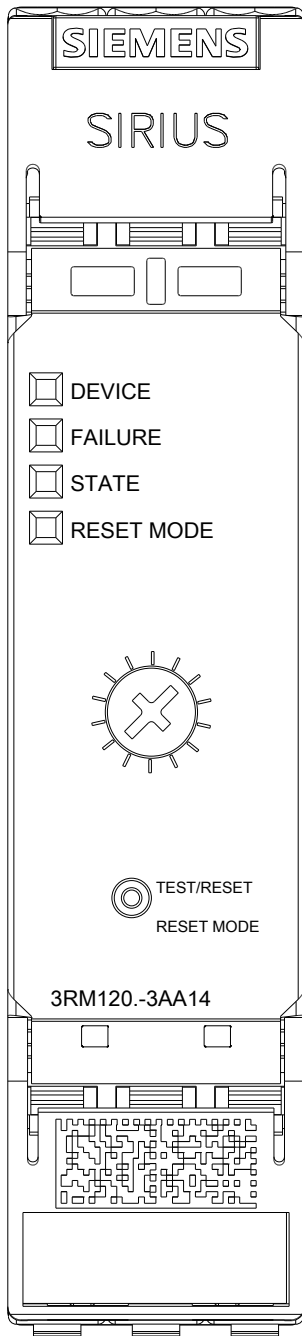
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1202-3AA14&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1202-3AA14&lang=en)









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