

Motor starter SIRIUS 3RM1 Reversing starter SAFETY 500 V; 1.6 - 7.0 A; 24 V DC Push-in connection method



Product brand name	SIRIUS
Product category	Motor starter
Product designation	Failsafe reversing starters
Design of the product	With electronic overload protection and safety-related disconnection
Product type designation	3RM1

General technical data	
Trip class	CLASS 10A
Product function	
• Intrinsic device protection	Yes
Suitability for operation Device connector 3ZY12	Yes
Power loss [W] typical	3.4 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>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	4 kV signal lines 2 kV
• due to conductor-conductor surge acc. to IEC 61000-4-5	2 kV
• due to high-frequency radiation acc. to IEC 61000-4-6	10 V
<b>Electrostatic discharge acc. to IEC 61000-4-2</b>	6 kV contact discharge / 8 kV air discharge
<b>Conducted HF-interference emissions acc. to CISPR11</b>	Class B for the domestic, business and commercial environments
<b>Field-bound HF-interference emission acc. to CISPR11</b>	Class B for the domestic, business and commercial environments

### Safety related data

<b>Safety device type acc. to IEC 61508-2</b>	Type B
<b>Safety Integrity Level (SIL) acc. to IEC 61508</b>	3
<b>Performance level (PL) acc. to EN ISO 13849-1</b>	e
<b>Category acc. to EN ISO 13849-1</b>	4
<b>Stop category acc. to DIN EN 60204-1</b>	0
<b>Safe failure fraction (SFF)</b>	99.4 %
<b>Average diagnostic coverage level (DCavg)</b>	99 %
<b>Diagnostics test interval by internal test function maximum</b>	600 s
<b>Function test interval maximum</b>	1 y
<b>Failure rate [FIT]</b>	
• at rate of recognizable hazardous failures ( $\lambda_{dd}$ )	1 400 FIT
• at rate of non-recognizable hazardous failures ( $\lambda_{du}$ )	16 FIT
<b>PFHD with high demand rate acc. to EN 62061</b>	0.00000002 1/h
<b>PFDavg with low demand rate acc. to IEC 61508</b>	0.000018

MTTFd	75 y
Hardware fault tolerance acc. to IEC 61508	1
T1 value for proof test interval or service life acc. to IEC 61508	20 y
Safe state	Load circuit open
Protection against electrical shock	finger-safe
Off-delay time with safety-related request when switched off via control inputs maximum	43 ms
Off-delay time with safety-related request when switched off via supply voltage maximum	120 ms
Hardware fault tolerance acc. to IEC 61508 relating to ATEX	0
PFDavg with low demand rate acc. to IEC 61508 relating to ATEX	0.0005
PFHD with high demand rate acc. to EN 62061 relating to ATEX	0.00000005 1/h
Safety Integrity Level (SIL) acc. to IEC 61508 relating to ATEX	SIL2
T1 value for proof test interval or service life acc. to IEC 61508 relating to ATEX	3 y

#### Main circuit

Number of poles for main current circuit	3
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 <ul style="list-style-type: none"> <li>• rated value</li> </ul>	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 <ul style="list-style-type: none"> <li>• at AC at 400 V rated value</li> <li>• at AC-53a at 400 V at ambient temperature 40 °C rated value</li> </ul>	7 A 7 A
Ampacity when starting maximum	56 A
Operating power for three-phase motors at 400 V at 50 Hz	0.55 ... 3 kW
Derating temperature	40 °C

#### Inputs/ Outputs

Input voltage at digital input	
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<ul style="list-style-type: none"> <li>• at DC rated value</li> </ul>	24 V
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>	0 ... 5 V
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>	15 ... 30
<b>Input current at digital input</b>	
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; typical</li> </ul>	0.001 A
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; typical</li> </ul>	0.008 A
<b>Input current at digital input</b>	
<ul style="list-style-type: none"> <li>• for signal &lt;1&gt; at DC</li> </ul>	8 mA
<ul style="list-style-type: none"> <li>• with signal &lt;0&gt; at DC</li> </ul>	1 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>	DC
<b>Control supply voltage 1</b>	
<ul style="list-style-type: none"> <li>• at DC rated value</li> </ul>	24 V
<b>Operating range factor control supply voltage rated value at DC</b>	
<ul style="list-style-type: none"> <li>• initial value</li> </ul>	0.8
<ul style="list-style-type: none"> <li>• Full-scale value</li> </ul>	1.25
<b>Control current at DC</b>	
<ul style="list-style-type: none"> <li>• in standby mode</li> </ul>	13 mA
<ul style="list-style-type: none"> <li>• when switching on</li> </ul>	150 mA
<ul style="list-style-type: none"> <li>• during operation</li> </ul>	57 mA

### Response times

<b>Switch-on delay time</b>	65 ... 76 ms
<b>Off-delay time</b>	30 ... 43 ms

### Installation/ mounting/ dimensions

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

— at the side	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	2 000 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>	PUSH-IN connection (spring-loaded connection) for main circuit, PUSH-IN connection (spring-loaded connection) for control circuit
• for main current circuit	PUSH-IN connection (spring-loaded connection)
• for auxiliary and control current circuit	PUSH-IN connection (spring-loaded connection)
<b>Type of connectable conductor cross-sections</b>	
• for main contacts	
— solid	1x (0.5 ... 4 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0.5 ... 2.5 mm <sup>2</sup> )
— finely stranded without core end processing	1x (0.5 ... 4 mm <sup>2</sup> )
• at AWG conductors for main contacts	1x (20 ... 12)
<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 ... 2.5 mm <sup>2</sup>
• finely stranded without 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>	
<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> <li>— finely stranded without core end processing</li> </ul> </li> <li>• at AWG conductors for auxiliary contacts</li> </ul>	<p>1x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.5 ... 1.5 mm<sup>2</sup>)</p> <p>1x (0,5 ... 1,0 mm<sup>2</sup>), 2x (0,5 ... 1,0 mm<sup>2</sup>)</p> <p>1x (0.5 ... 1.5 mm<sup>2</sup>), 2x (0.5 ... 1.5 mm<sup>2</sup>)</p> <p>1x (20 ... 16), 2x (20 ... 16)</p>
<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>	<p>20 ... 12</p> <p>20 ... 16</p>

### UL/CSA ratings

<b>Full-load current (FLA) for three-phase AC motor</b>	
<ul style="list-style-type: none"> <li>• at 480 V rated value</li> </ul>	6.1 A
<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 110/120 V rated value</li> <li>— at 230 V rated value</li> </ul> </li> <li>• for three-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>	<p>0.25 hp</p> <p>0.5 hp</p> <p>1 hp</p> <p>1.5 hp</p> <p>3 hp</p>

### Certificates/approvals

<b>General Product Approval</b>		<b>For use in hazardous locations</b>	<b>Functional Safety/Safety of Machinery</b>
			
CCC	CSA	UL	ATEX
			<a href="#">Type Examination Certificate</a>
<b>Declaration of Conformity</b>	<b>Test Certificates</b>	<b>other</b>	
	<a href="#">Miscellaneous</a>	<a href="#">Type Test Certificates/Test Report</a>	<a href="#">Special Test Certificate</a>
EG-Konf.			<a href="#">Confirmation</a>

### Further information

#### Information- and Downloadcenter (Catalogs, Brochures,...)

<http://www.siemens.com/industrial-controls/catalogs>

#### Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1307-2AA04>

**Cax online generator**

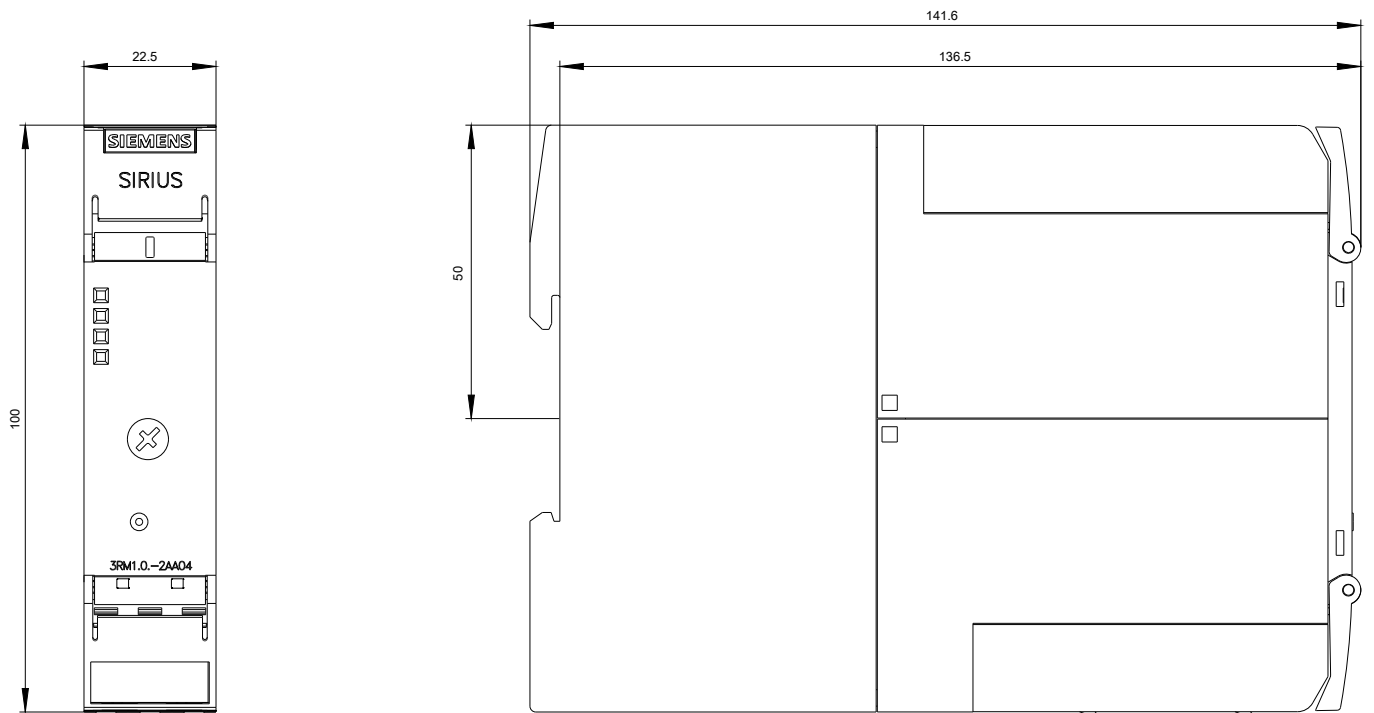
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1307-2AA04>

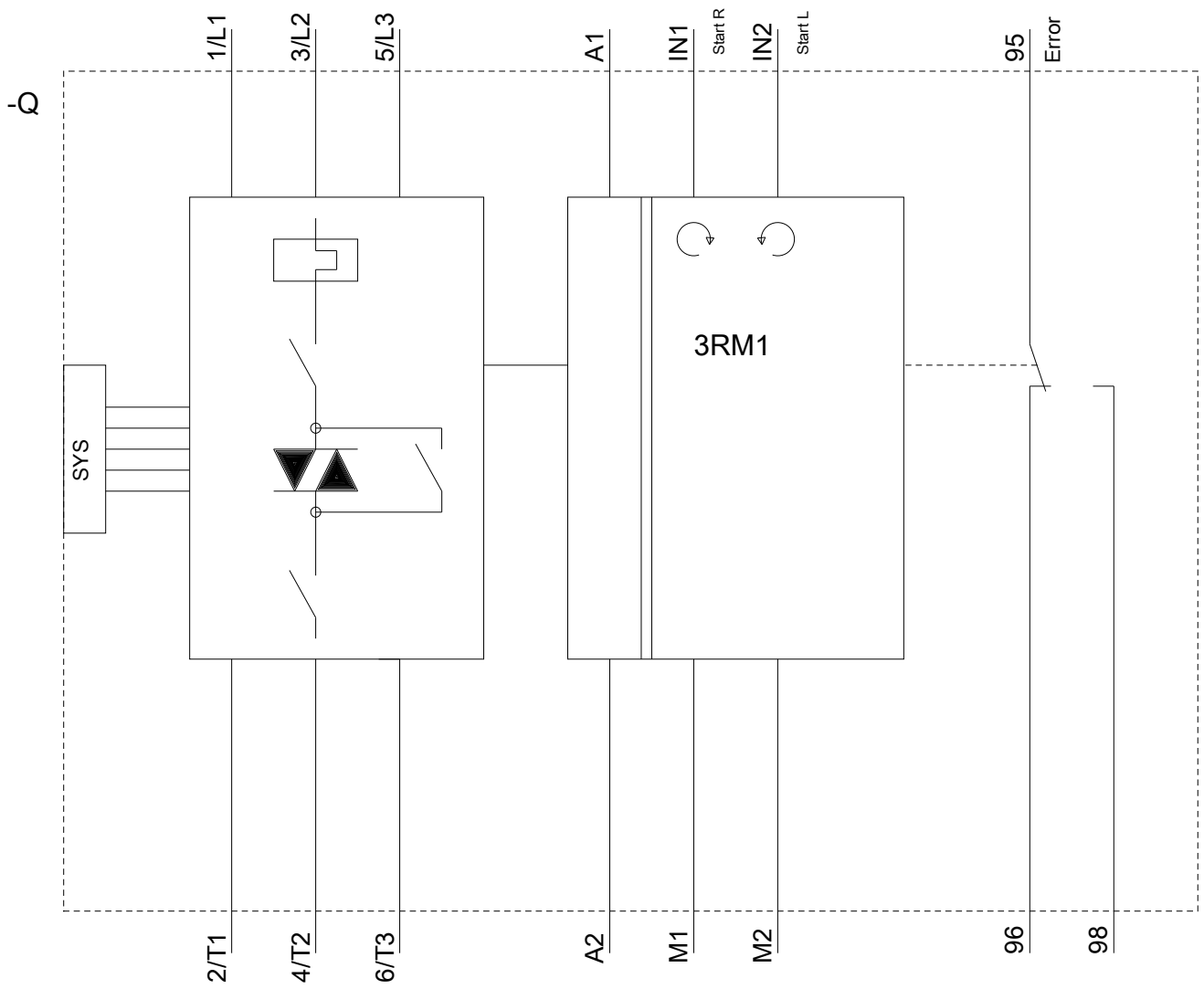
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1307-2AA04>

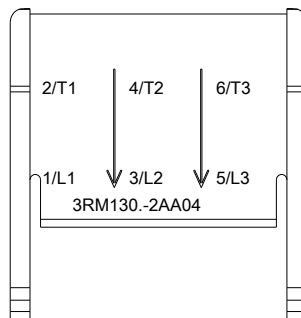
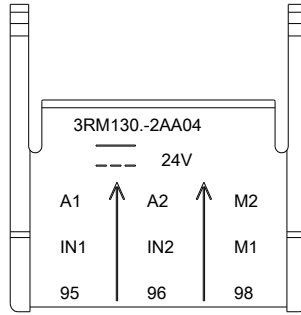
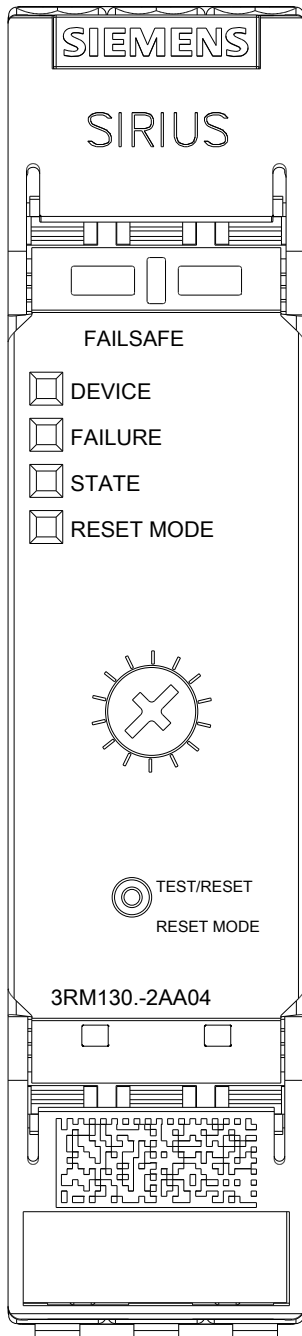
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1307-2AA04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1307-2AA04&lang=en)









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