

Fail-safe reversing starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 24 V DC, spring-type terminals



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	
<ul style="list-style-type: none"> <li>intrinsic device protection</li> </ul>	Yes
suitability for operation device connector 3ZY12	Yes
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

protection class IP	IP20
shock resistance	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	15 000 000
reference code acc. to DIN EN 81346-2	Q
product function	
• direct start	No
• reverse starting	Yes
product function short circuit protection	No

### Electromagnetic compatibility

conducted interference	
• 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
electrostatic discharge acc. to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
conducted HF-interference emissions acc. to CISPR11	Class B for the domestic, business and commercial environments
field-bound HF-interference emission acc. to CISPR11	Class B for the domestic, business and commercial environments

### Safety related data

safety device type acc. to IEC 61508-2	Type B
Safety Integrity Level (SIL) acc. to IEC 61508	3
performance level (PL) acc. to EN ISO 13849-1	e
category acc. to EN ISO 13849-1	4
stop category acc. to DIN EN 60204-1	0
Safe failure fraction (SFF)	99.4 %
average diagnostic coverage level (DCavg)	99 %
diagnostics test interval by internal test function maximum	600 s
function test interval maximum	1 y
failure rate [FIT]	
• at rate of recognizable hazardous failures ( $\lambda_{dd}$ )	1 400 FIT
• at rate of non-recognizable hazardous failures ( $\lambda_{du}$ )	16 FIT
PFHD with high demand rate acc. to EN 62061	0.00000002 1/h
PFDavg with low demand rate acc. to IEC 61508	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
• 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	
• 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
• 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
derating temperature	40 °C

#### Inputs/ Outputs

input voltage at digital input	
• at DC rated value	24 V
• with signal <0> at DC	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)
<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> <li>• for grounded parts</li> </ul>	0 mm 0 mm 50 mm 50 mm 0 mm

— forwards	0 mm
— backwards	0 mm
— upwards	50 mm
— at the side	3.5 mm
— downwards	50 mm

### Ambient conditions

<ul style="list-style-type: none"> <li>• installation altitude at height above sea level maximum</li> </ul>	2 000 m
relative humidity during operation	10 ... 95 %
<ul style="list-style-type: none"> <li>• air pressure acc. to SN 31205</li> </ul>	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> <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control current circuit</li> </ul>	spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit spring-loaded terminals (push-in) spring-loaded terminals (push-in)
<b>type of electrical wiring</b> <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for auxiliary and control current circuit</li> </ul>	1 or 2 conductors 1 or 2 conductors
<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</li> <li>— finely stranded with core end processing</li> <li>— finely stranded without core end processing</li> </ul> </li> <li>• at AWG conductors for main contacts</li> </ul>	1x (0.5 ... 4 mm <sup>2</sup> ) 1x (0.5 ... 2.5 mm <sup>2</sup> ) 1x (0.5 ... 4 mm <sup>2</sup> ) 1x (20 ... 12)
<b>connectable conductor cross-section for main contacts</b> <ul style="list-style-type: none"> <li>• single or multi-stranded</li> <li>• finely stranded with core end processing</li> <li>• finely stranded without core end processing</li> </ul>	0.5 ... 4 mm <sup>2</sup> 0.5 ... 2.5 mm <sup>2</sup> 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> <li>• finely stranded with core end processing</li> <li>• finely stranded without core end processing</li> </ul>	0.5 ... 1.5 mm <sup>2</sup> 0.5 ... 1 mm <sup>2</sup> 0.5 ... 1.5 mm <sup>2</sup>
<ul style="list-style-type: none"> <li>• type of connectable conductor cross-sections for auxiliary contacts <ul style="list-style-type: none"> <li>— solid</li> <li>— finely stranded with core end processing</li> </ul> </li> </ul>	1x (0.5 ... 1.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> ) 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> )
• type of connectable conductor cross-sections 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 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

<b>General Product Approval</b>	<b>EMC</b>	<b>For use in hazardous locations</b>
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<b>Functional Safety/Safety of Machinery</b>	<b>Declaration of Conformity</b>	<b>Test Certificates</b>	<b>other</b>	<b>Railway</b>
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[Type Examination Certificate](#)



[Miscellaneous](#)

[Type Test Certificates/Test Report](#)

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#### Further information

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

<https://www.siemens.com/ic10>

**Industry Mall (Online ordering system)**

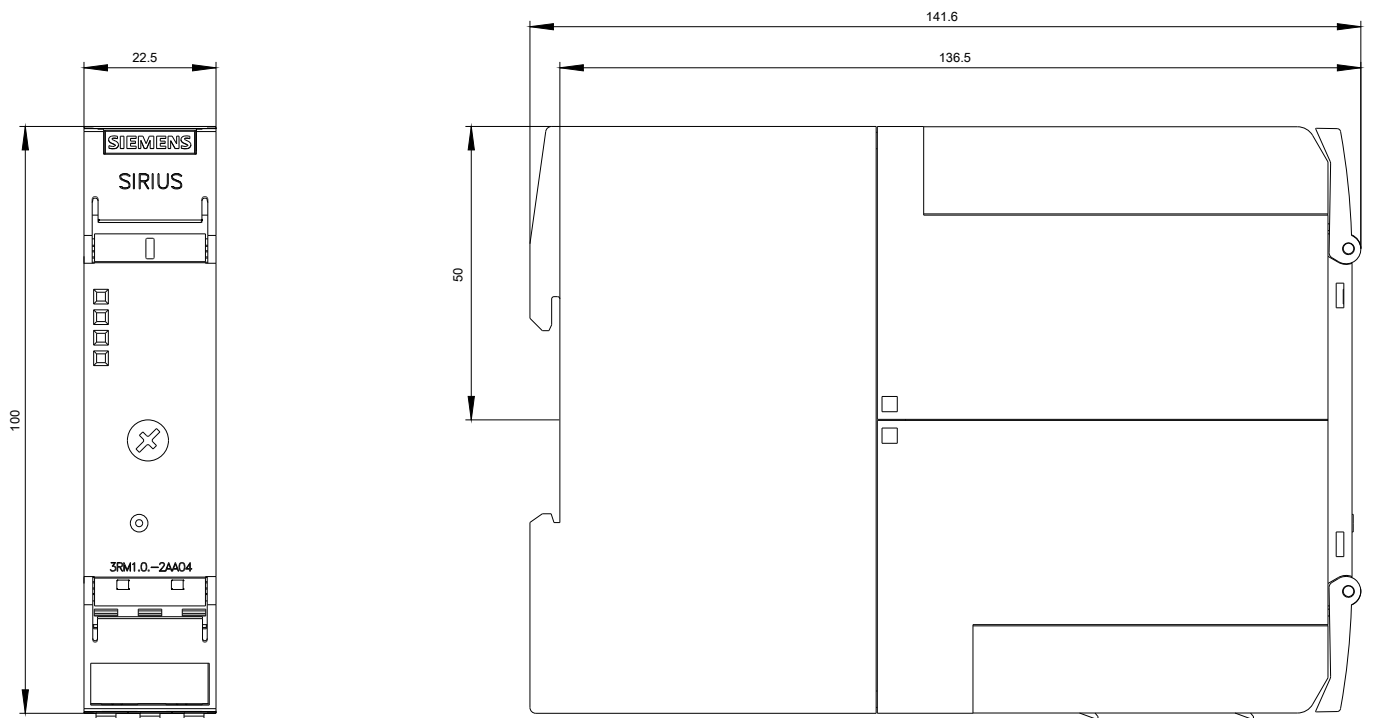
<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1307-2AA04>

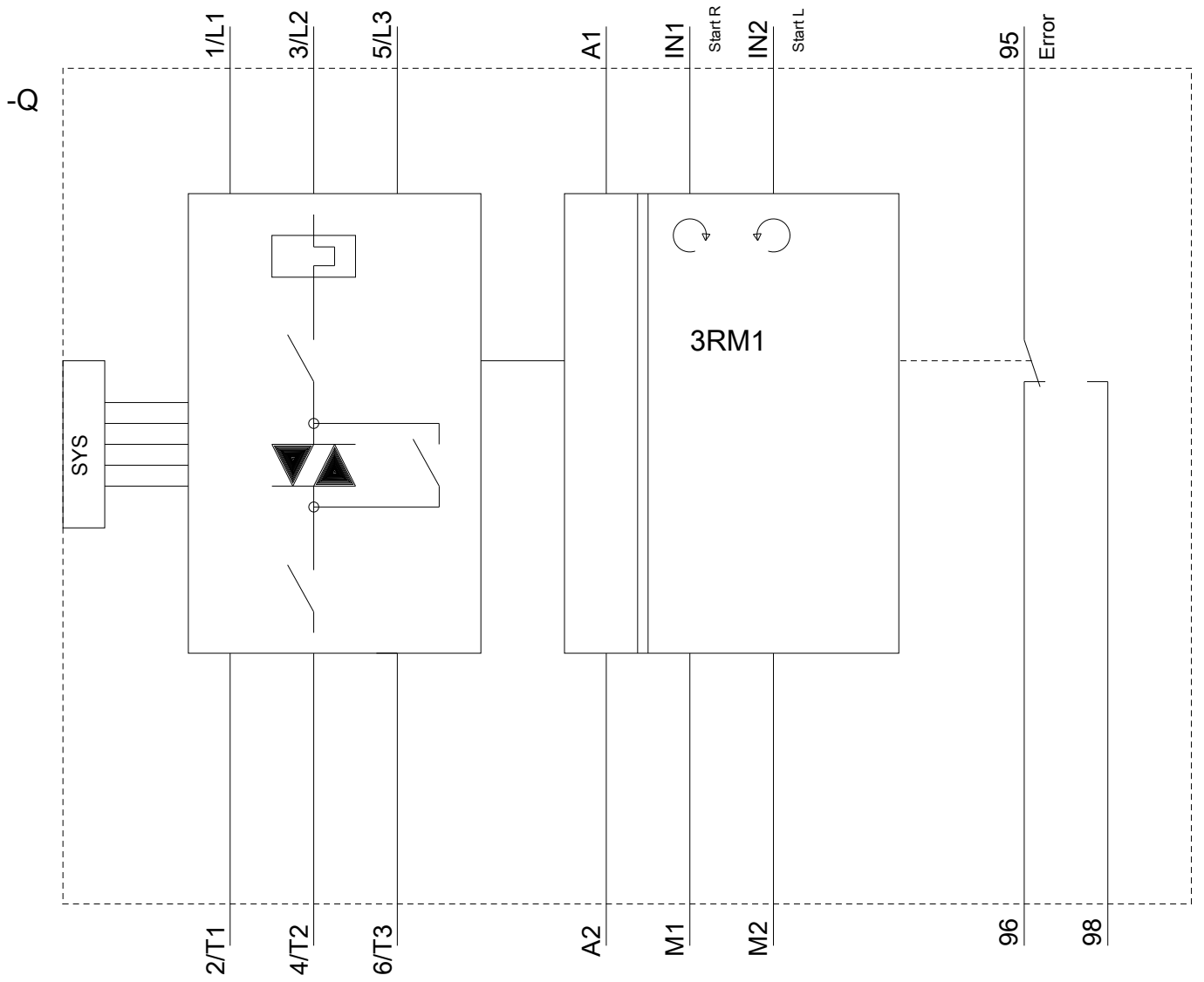
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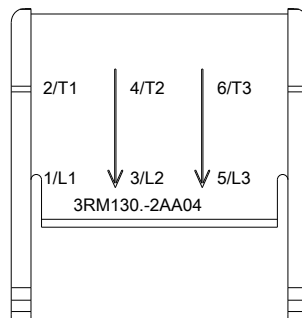
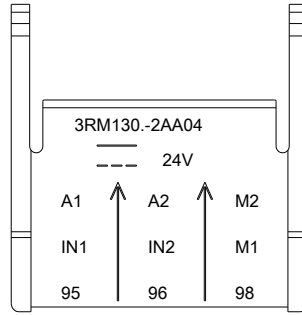
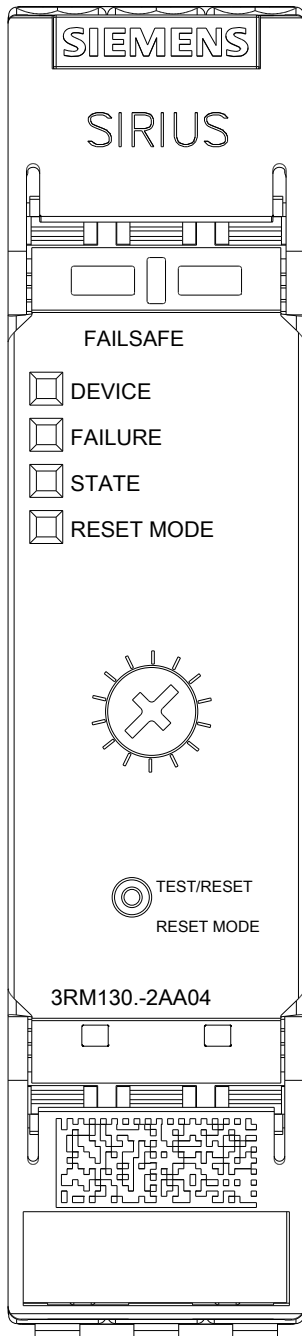
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1307-2AA04>

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

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







last modified:

09/24/2020