

Direct starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 110-230 V AC, spring-type 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	1.13 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

Shock resistance	6g / 11 ms
Vibration resistance	1 ... 6 Hz, 15 mm; 20 m/s ² , 500 Hz
Operating frequency maximum	1 1/s
Mechanical service life (switching cycles)	
• typical	30 000 000
Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750	Q
Reference code acc. to DIN EN 81346-2	Q
Reference code acc. to DIN EN 61346-2	Q
Product function	
• direct start	Yes
• 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
• 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
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
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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
• 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	110 V
• with signal <0> at DC	0 ... 40 V
• for signal <1> at DC	79 ... 121
Input voltage at digital input	
• at AC rated value	110 V
• with signal <0> at AC	0 ... 40 V
• for signal <1> at AC	93 ... 253 V
Input current at digital input	
• with signal <0> typical	0.0004 A
• for signal <1> typical	0.002 A
Input current at digital input	
• for signal <1> at DC	1.5 mA
• with signal <0> at DC	0.25 mA
Input current at digital input with signal <0> at AC	
• at 110 V	0.2 mA
• at 230 V	0.4 mA
Input current at digital input for signal <1> at AC	
• at 110 V	1.1 mA
• at 230 V	2.3 mA
Number of CO contacts for auxiliary contacts	1
Operating current of auxiliary contacts at AC-15 at 230 V maximum	3 A
Operating current of auxiliary contacts at DC-13 at 24 V maximum	1 A

Control circuit/ Control

Type of voltage of the control supply voltage	AC/DC
Control supply voltage 1 at AC	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
Control supply voltage frequency	

<ul style="list-style-type: none"> • 1 rated value 	50 Hz
<ul style="list-style-type: none"> • 2 rated value 	60 Hz
Control supply voltage 1	
<ul style="list-style-type: none"> • at DC rated value 	110 V
Operating range factor control supply voltage rated value at DC	
<ul style="list-style-type: none"> • initial value 	0.85
<ul style="list-style-type: none"> • Full-scale value 	1.1
Operating range factor control supply voltage rated value at AC at 50 Hz	
<ul style="list-style-type: none"> • initial value 	0.85
<ul style="list-style-type: none"> • Full-scale value 	1.1
Operating range factor control supply voltage rated value at AC at 60 Hz	
<ul style="list-style-type: none"> • initial value 	1.1
<ul style="list-style-type: none"> • Full-scale value 	0.85
Control current at AC	
<ul style="list-style-type: none"> • at 110 V in standby mode 	16 mA
<ul style="list-style-type: none"> • at 230 V in standby mode 	9 mA
<ul style="list-style-type: none"> • at 110 V when switching on 	55 mA
<ul style="list-style-type: none"> • at 230 V when switching on 	33 mA
<ul style="list-style-type: none"> • at 110 V during operation 	36 mA
<ul style="list-style-type: none"> • at 230 V during operation 	22 mA
Control current at DC	
<ul style="list-style-type: none"> • in standby mode 	6 mA
<ul style="list-style-type: none"> • when switching on 	15 mA
<ul style="list-style-type: none"> • during operation 	30 mA

Response times

Switch-on delay time	60 ... 90 ms
Off-delay time	60 ... 90 ms

Installation/ mounting/ dimensions

Mounting position	vertical, horizontal, standing (observe derating)
Mounting type	screw and snap-on mounting onto 35 mm standard mounting rail
Height	100 mm
Width	22.5 mm
Depth	141.6 mm
Required spacing	
<ul style="list-style-type: none"> • with side-by-side mounting <ul style="list-style-type: none"> — forwards — Backwards — upwards — downwards 	0 mm 0 mm 50 mm 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

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

Communication/ Protocol

Product function Bus communication	No
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Connections/ Terminals







Type of electrical connection	PUSH-IN connection (spring-loaded connection) for main circuit, spring-loaded terminals (push-in) for control circuit
• for main current circuit	PUSH-IN connection (spring-loaded connection)
• for auxiliary and control current circuit	spring-loaded terminals (push-in)
Type of connectable conductor cross-sections	
• for main contacts	
— solid	1x (0.5 ... 4 mm ²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm ²)
— finely stranded without core end processing	1x (0.5 ... 4 mm ²)
• at AWG conductors for main contacts	1x (20 ... 12)
Connectable conductor cross-section for main contacts	
• single or multi-stranded	0.5 ... 4 mm ²
• finely stranded with core end processing	0.5 ... 2.5 mm ²
• finely stranded without core end processing	0.5 ... 4 mm ²
Connectable conductor cross-section for auxiliary contacts	
• single or multi-stranded	0.5 ... 1.5 mm ²
• finely stranded with core end processing	0.5 ... 1 mm ²
• finely stranded without core end processing	0.5 ... 1.5 mm ²

Type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for auxiliary contacts <ul style="list-style-type: none"> — solid — finely stranded with core end processing — finely stranded without core end processing • at AWG conductors for auxiliary contacts 	<p>1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)</p> <p>1x (0,5 ... 1,0 mm²), 2x (0,5 ... 1,0 mm²)</p> <p>1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)</p> <p>1x (20 ... 16), 2x (20 ... 16)</p>
AWG number as coded connectable conductor cross section	
<ul style="list-style-type: none"> • for main contacts • for auxiliary contacts 	<p>20 ... 12</p> <p>20 ... 16</p>

UL/CSA ratings

Yielded mechanical performance [hp]	
<ul style="list-style-type: none"> • for single-phase AC motor <ul style="list-style-type: none"> — at 110/120 V rated value — at 230 V rated value • for three-phase AC motor <ul style="list-style-type: none"> — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value 	<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

General Product Approval			EMC	Declaration of Conformity	
 CCC	 CSA	 UL		 RCM	 EG-Konf.
Declaration of Conformity	Test Certificates	other	Railway		
Miscellaneous	Type Test Certificates/Test Report	Confirmation	Special Test Certificate		

Further information

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

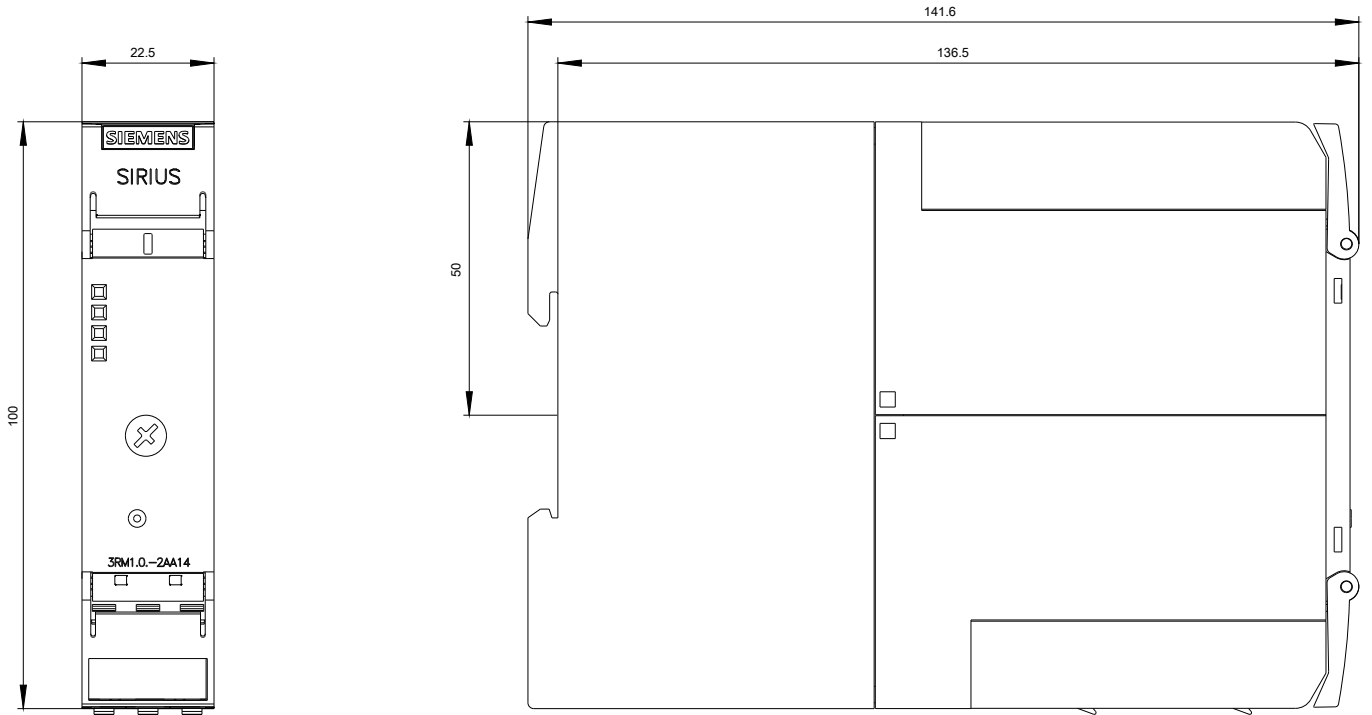
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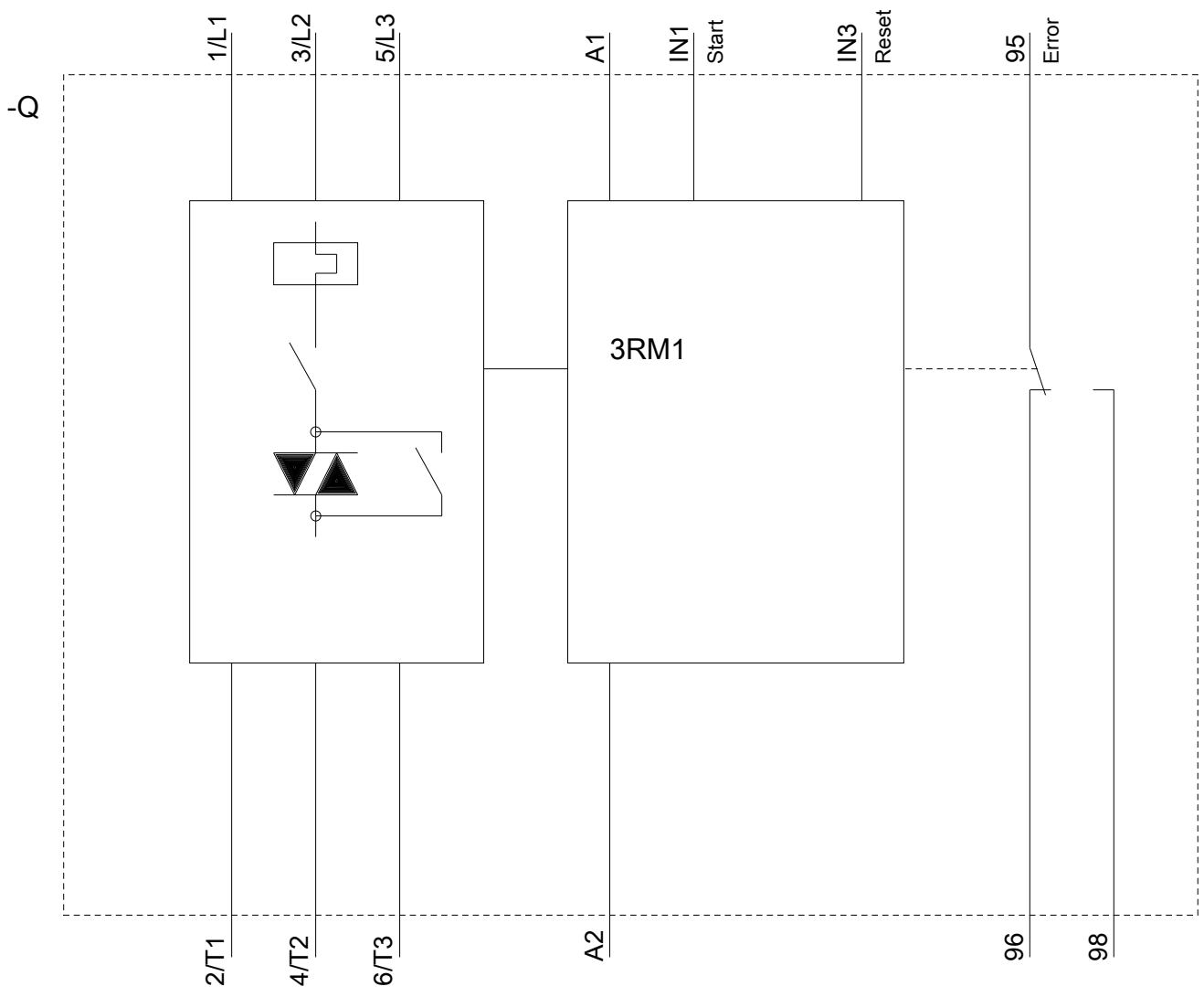
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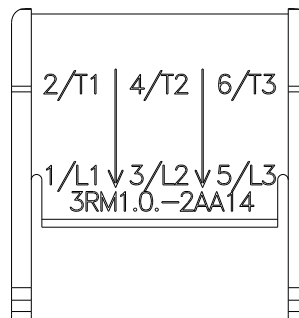
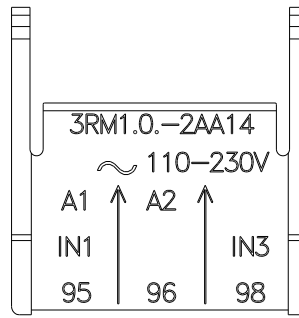
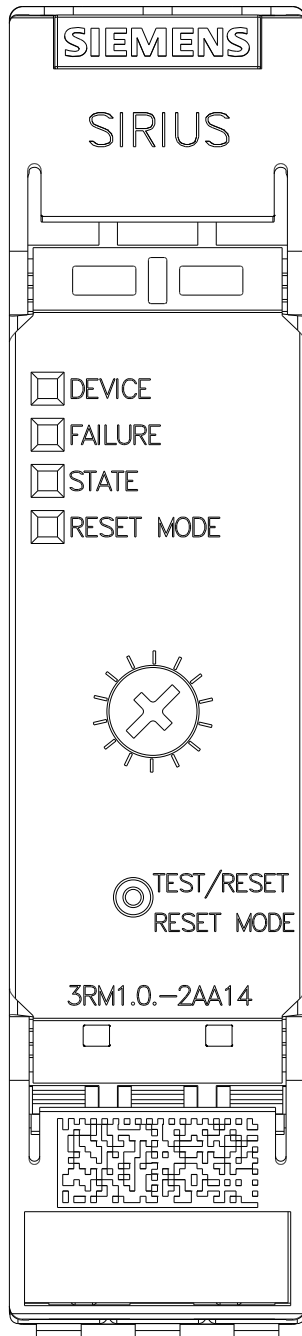
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