SIEMENS

Data sheet 3RM1302-2AA14

Motor starter SIRIUS 3RM1 Reversing starter SAFETY 500 V; 0.4-2.0 A; 110-230 V AC Push-in connection method

Figure similar

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	No
Power loss [W] typical	0.3 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/s², 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	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 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

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 (λdd)	1 400 FIT

• at rate of non-recognizable hazardous failures (λdu)	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	65 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

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

Response times	
Switch-on delay time	90 ... 120 ms
Off-delay time	60 ... 90 ms

Main circuit	
Number of poles for main current circuit	3
Adjustable pick-up value current of the current-dependent overload release	0.4 ... 2 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	2 A
• at AC-53a at 400 V at ambient temperature 40 °C rated value	2 A
Ampacity when starting maximum	16 A
Operating power for three-phase motors at 400 V at 50 Hz	0.09 ... 0.75 kW

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	
• **1 rated value**	50 Hz
• **2 rated value**	60 Hz
Control supply voltage 1	
• at DC rated value	110 V
Operating range factor control supply voltage rated value at DC	
• initial value	0.85
• Full-scale value	1.1
Operating range factor control supply voltage rated value at AC at 50 Hz	
• initial value	0.85

• Full-scale value	1.1
Operating range factor control supply voltage rated value at AC at 60 Hz	
• initial value	1.1
• Full-scale value	0.85
Control current at AC	
• at 110 V in standby mode	8 mA
• at 230 V in standby mode	6 mA
• at 110 V when switching on	40 mA
• at 230 V when switching on	25 mA
• at 110 V during operation	25 mA
• at 230 V during operation	14 mA
Control current at DC	
• in standby mode	4 mA
• when switching on	13 mA
• during operation	30 mA
Switch-on delay time	90 ... 120 ms
Off-delay time	60 ... 90 ms
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

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	
• with side-by-side mounting	
— 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	
Installation altitude at height above sea level	
• maximum	2 000 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

Connections/Terminals	
Type of electrical connection	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)
Type of connectable conductor cross-sections	
• for main contacts	
— solid	1x (0.5 ... 4 mm²)
— finely stranded with core end processing	1x (0.5 ... 2.5 mm²)
— finely stranded without core end processing	1x (0.5 ... 4 mm²)
• at AWG conductors for main contacts	1x (20 ... 12)
Connectable conductor cross-section for main contacts	
• single or multi-stranded	0.5 ... 4 mm²
• finely stranded with core end processing	0.5 ... 2.5 mm²
• finely stranded without core end processing	0.5 ... 4 mm²
Connectable conductor cross-section for auxiliary contacts	
• single or multi-stranded	0.5 ... 1.5 mm²
• finely stranded with core end processing	0.5 ... 1 mm²
• finely stranded without core end processing	0.5 ... 1.5 mm²
Type of connectable conductor cross-sections	
• for auxiliary contacts	
— solid	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)
— finely stranded with core end processing	1x (0,5 ... 1,0 mm²), 2x (0,5 ... 1,0 mm²)
— finely stranded without core end processing	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²)
• at AWG conductors for auxiliary contacts	1x (20 ... 16), 2x (20 ... 16)

AWG number as coded connectable conductor cross section	
• for main contacts	20 ... 12
• for auxiliary contacts	20 ... 16

UL/CSA ratings

Full-load current (FLA) for three-phase AC motor	
• at 480 V rated value	2 A
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				For use in hazardous locations	Functional Safety/Safety of Machinery
CCC	CSA	UL	EAC	ATEX	Type Examination

Declaration of Conformity	Test Certificates		other
EG-Konf.	Type Test Certificates/Test Report	Special Test Certificate	Confirmation

Further information

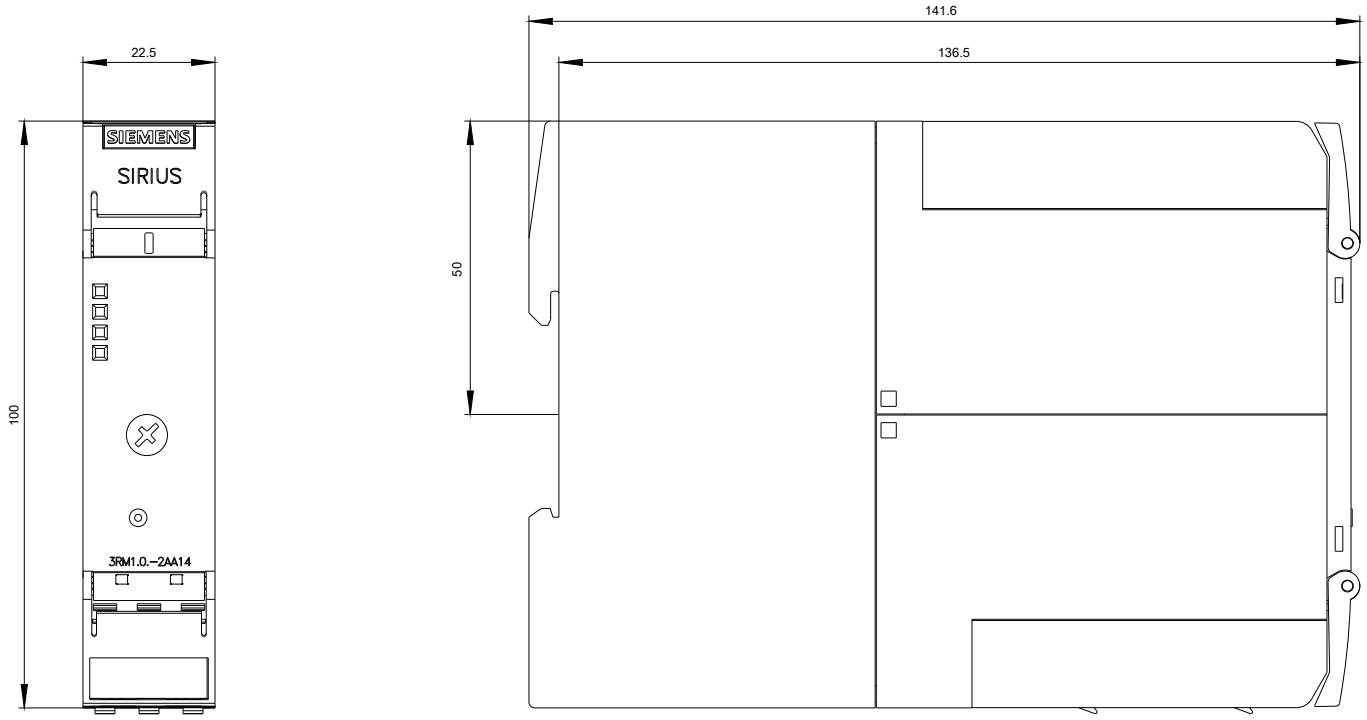
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

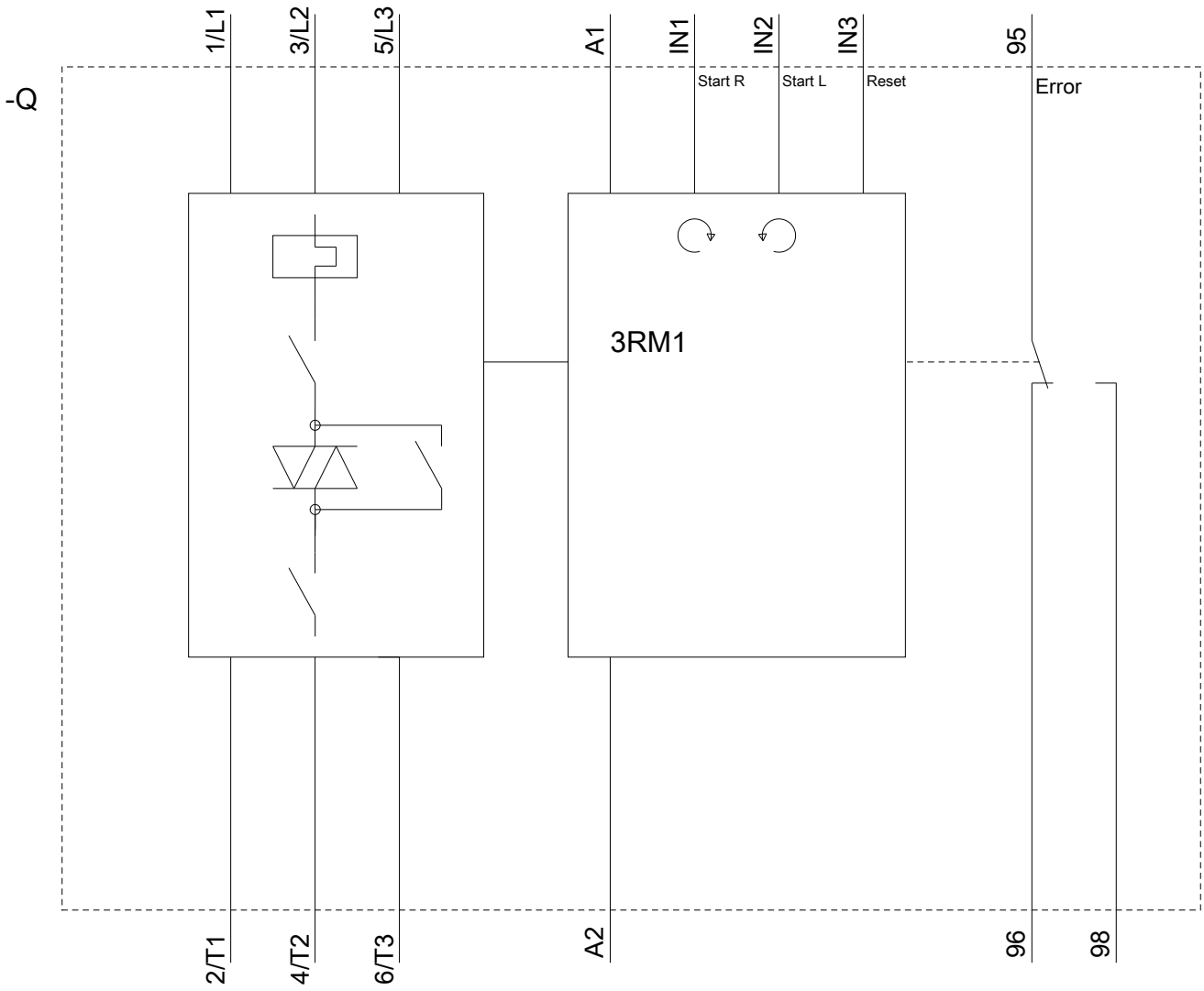
Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1302-2AA14

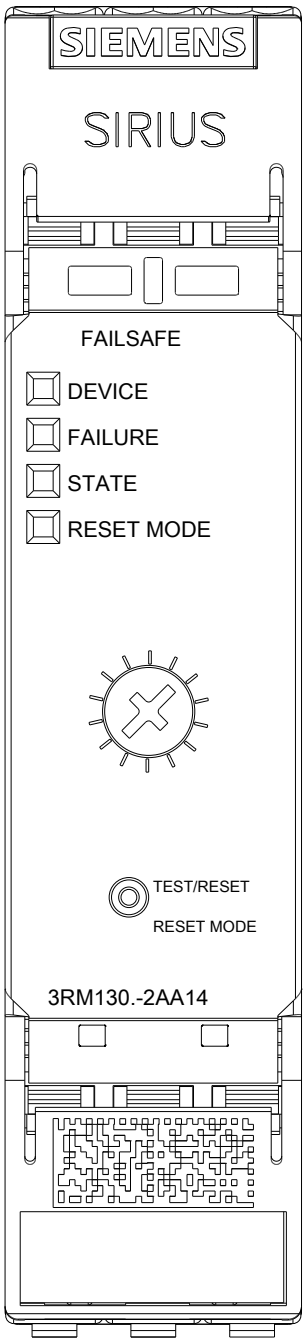
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1302-2AA14

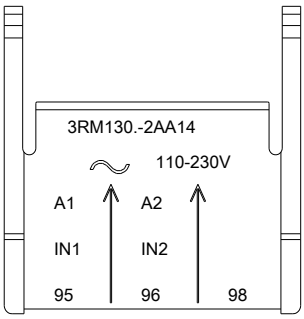
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RM1302-2AA14

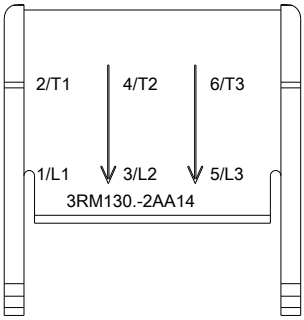
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1302-2AA14&lang=en











last modified: 09/16/2018