

Fail-safe direct starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 24 V DC, spring-type terminals



product brand name	SIRIUS
product category	Motor starter
product designation	Fail-safe direct starter
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] 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 - between control and auxiliary circuit	500 V 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	15 000 000
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
• Product function 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
• Conducted interference due to conductor-earth surge acc. to IEC 61000-4-5	4 kV signal lines 2 kV
• Conducted interference due to conductor-conductor surge acc. to IEC 61000-4-5	2 kV
• conducted interference 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 (λ_{dd})	1 400 FIT
• Failure rate [FIT] at rate of non-recognizable hazardous failures (λ_{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	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
• Operating current 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

Inputs/ Outputs	
input voltage at digital input	
• at DC rated value	24 V
• with signal <0> at DC	0 ... 5 V
• for signal <1> at DC	15 ... 30
• Input current at digital input with signal <0> typical	0.001 A

input current at digital input for signal <1> typical	0.008 A
Input current at digital input	
for signal <1> at DC	8 mA
with signal <0> at DC	1 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	DC
Control supply voltage 1	
at DC rated value	24 V
operating range factor control supply voltage rated value at DC	
initial value	0.8
full-scale value	1.25
Control current at DC	
in standby mode	13 mA
when switching on	150 mA
during operation	57 mA

Response times

Switch-on delay time	65 ... 76 ms
Off-delay time	30 ... 43 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	
- with side-by-side mounting — forwards — backwards — upwards — downwards — at the side - for grounded parts — forwards — backwards	0 mm 0 mm 50 mm 50 mm 0 mm 0 mm 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
• ambient temperature during storage	-40 ... +70 °C
• ambient temperature 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
• type of electrical connection for main current circuit	PUSH-IN connection (spring-loaded connection)
• type of electrical connection for auxiliary and control current circuit	spring-loaded terminals (push-in)
Type of electrical wiring	
• for main current circuit	1 or 2 conductors
• for auxiliary and control current circuit	1 or 2 conductors
• type of connectable conductor cross-sections for main contacts solid	1x (0.5 ... 4 mm ²)
• type of connectable conductor cross-sections for main contacts finely stranded with core end processing	1x (0.5 ... 2.5 mm ²)
• type of connectable conductor cross-sections for main contacts finely stranded without core end processing	1x (0.5 ... 4 mm ²)
• type of connectable conductor cross-sections 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 for auxiliary contacts solid	1x (0.5 ... 1.5 mm ²), 2x (0.5 ... 1.5 mm ²)
type of connectable conductor cross-sections for auxiliary contacts finely stranded with core end processing	1x (0.5 ... 1.0 mm ²), 2x (0.5 ... 1.0 mm ²)
type of connectable conductor cross-sections for auxiliary contacts finely stranded without core end processing	1x (0.5 ... 1.5 mm ²), 2x (0.5 ... 1.5 mm ²)
type of connectable conductor cross-sections 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

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 - at 220/230 V rated value - at 460/480 V rated value	0.333 hp 0.333 hp 0.75 hp

Certificates/ approvals

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



[Miscellaneous](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Special Test Certificate](#)

Further information

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

www.siemens.com/ic10

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1102-2AA04>

Cax online generator

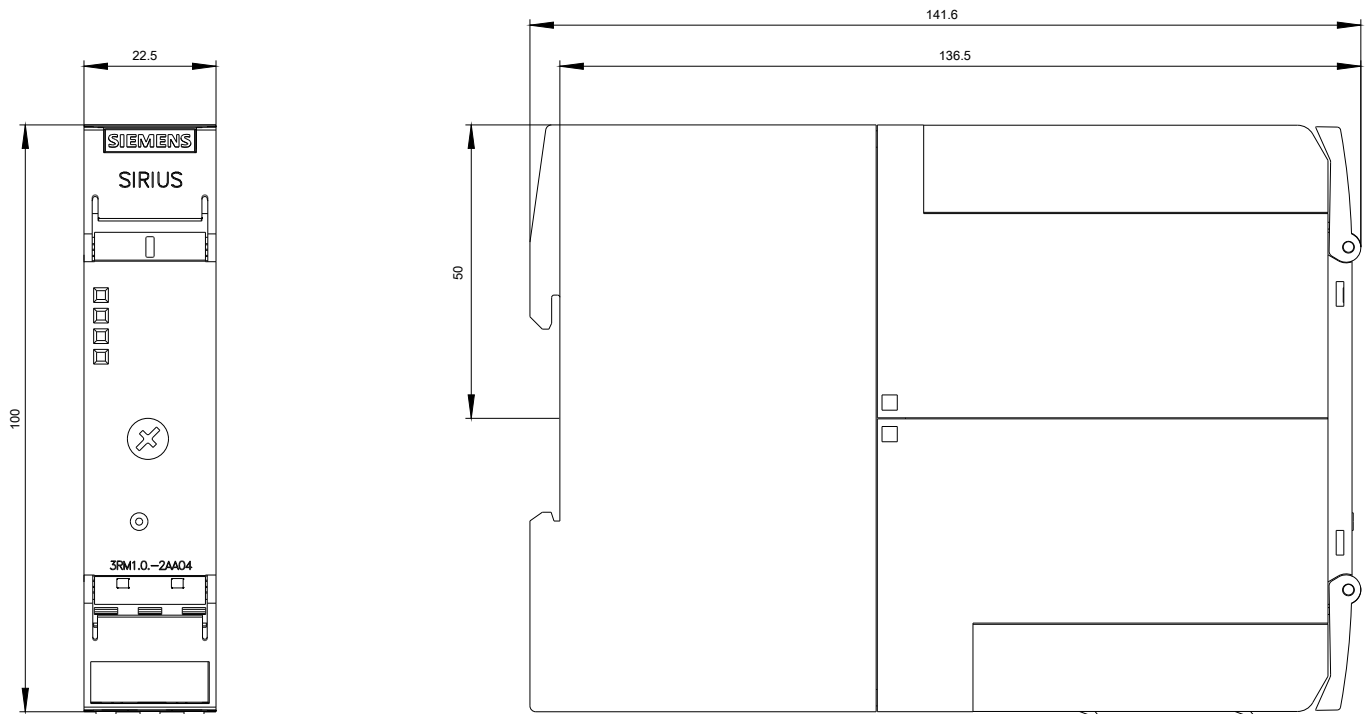
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1102-2AA04>

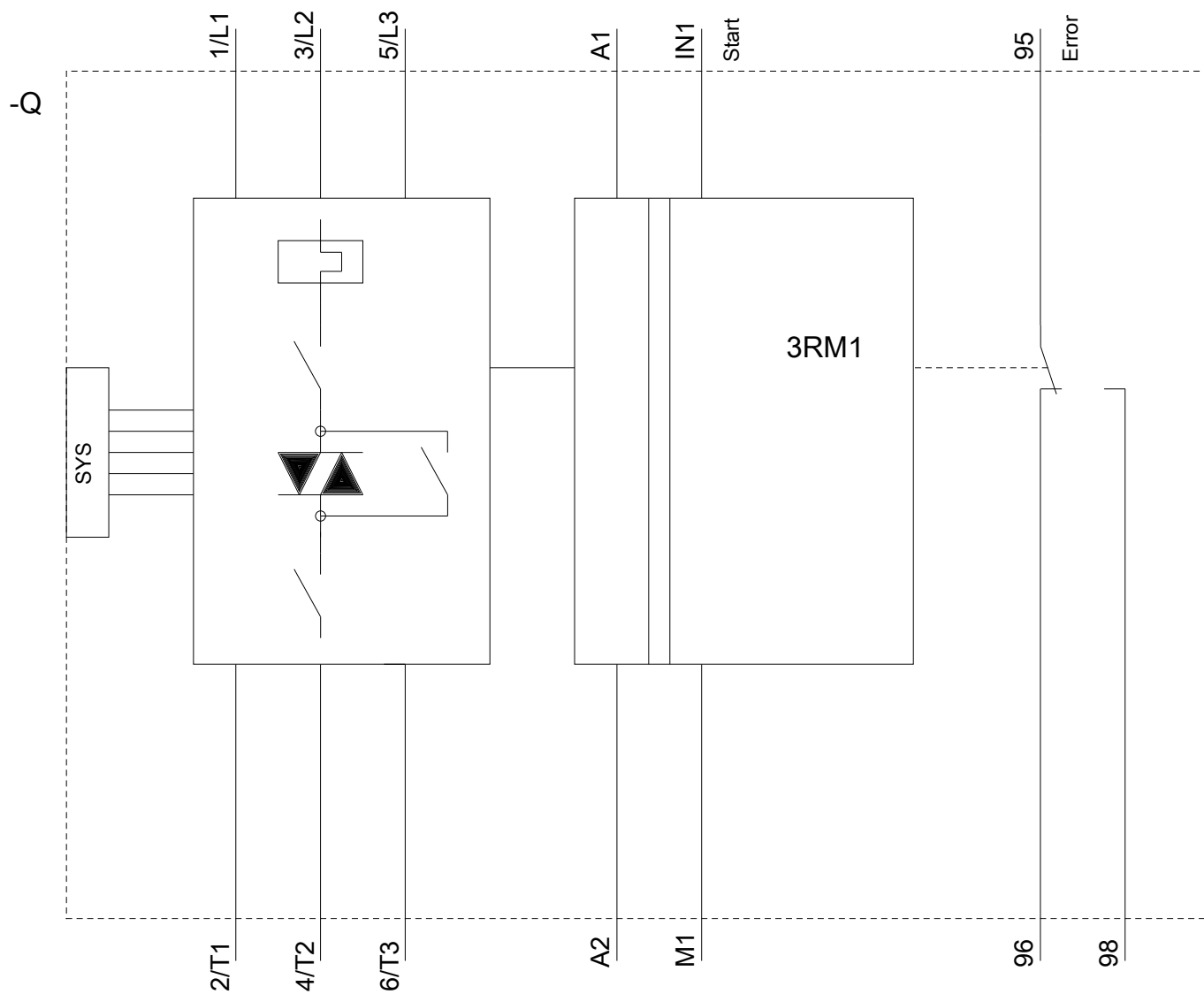
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

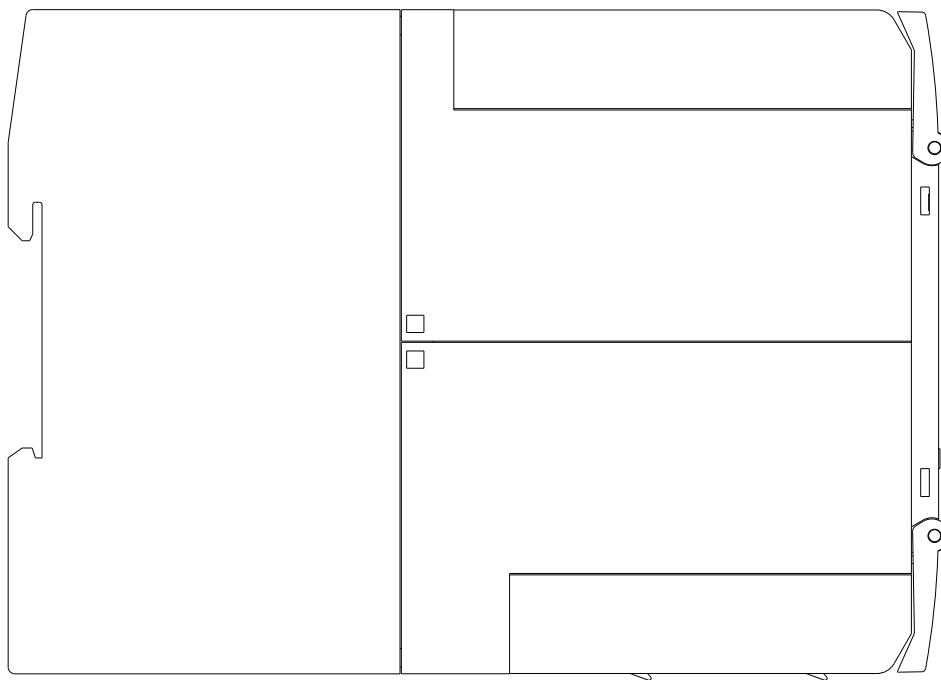
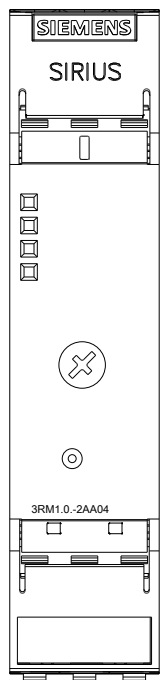
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1102-2AA04>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1102-2AA04&lang=en







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