



Fail-safe direct starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 110-230 V AC, screw 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	Yes
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> between main and auxiliary circuit between control and auxiliary circuit 	500 V 250 V
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 IEC 81346-2	Q
Substance Prohibitance (Date)	01.03.2017 00:00:00
product function	Yes
<ul style="list-style-type: none"> direct start reverse starting 	Yes No
product function short circuit protection	No
Electromagnetic compatibility	
conducted interference	
<ul style="list-style-type: none"> due to burst acc. to IEC 61000-4-4 due to conductor-earth surge acc. to IEC 61000-4-5 due to conductor-conductor surge acc. to IEC 61000-4-5 due to high-frequency radiation acc. to IEC 61000-4-6 	3 kV / 5 kHz 4 kV signal lines 2 kV 2 kV 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 (λ_{dd})	1 400 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
OFF delay time with safety-related request	
• when switched off via control inputs maximum	90 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 current response 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 %
operational 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 3-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	
<ul style="list-style-type: none"> • at AC rated value • with signal <0> at AC • for signal <1> at AC 	110 V 0 ... 40 V 93 ... 253 V
input current at digital input	
<ul style="list-style-type: none"> • for signal <1> at DC • with signal <0> at DC 	1.5 mA 0.25 mA
input current at digital input with signal <0> at AC	
<ul style="list-style-type: none"> • at 110 V • at 230 V 	0.2 mA 0.4 mA
input current at digital input for signal <1> at AC	
<ul style="list-style-type: none"> • at 110 V • at 230 V 	1.1 mA 2.3 mA
number of CO contacts for auxiliary contacts	1
operational current of auxiliary contacts at AC-15 at 230 V maximum	3 A
operational 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	
<ul style="list-style-type: none"> • at 50 Hz • at 60 Hz 	110 ... 230 V 110 ... 230 V
control supply voltage frequency	
<ul style="list-style-type: none"> • 1 rated value • 2 rated value 	50 Hz 60 Hz
<ul style="list-style-type: none"> • control supply voltage 1 at DC rated value 	110 V
operating range factor control supply voltage rated value at DC	
<ul style="list-style-type: none"> • initial value • full-scale value 	0.85 1.1
operating range factor control supply voltage rated value at AC at 50 Hz	
<ul style="list-style-type: none"> • initial value • full-scale value 	0.85 1.1
operating range factor control supply voltage rated value at AC at 60 Hz	
<ul style="list-style-type: none"> • initial value • full-scale value 	1.1 0.85
control current at AC	
<ul style="list-style-type: none"> • at 110 V in standby mode of operation • at 230 V in standby mode of operation • at 110 V when switching on • at 230 V when switching on • at 110 V during operation • at 230 V during operation 	8 mA 6 mA 40 mA 25 mA 25 mA 14 mA
control current at DC	
<ul style="list-style-type: none"> • in standby mode of operation • when switching on • during operation 	4 mA 13 mA 30 mA
Response times	
switch ON delay time	90 ... 120 ms
OFF delay time	60 ... 90 ms
Installation/ mounting/ dimensions	
mounting position	vertical, horizontal, standing (observe derating)
fastening method	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 — at the side ● for grounded parts <ul style="list-style-type: none"> — forwards — backwards — upwards — at the side — downwards 	0 mm 0 mm 50 mm 50 mm 0 mm 0 mm 0 mm 50 mm 3.5 mm 50 mm
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
relative humidity during operation	10 ... 95 %
<ul style="list-style-type: none"> ● air pressure acc. to SN 31205 	900 ... 1 060 hPa
Communication/ Protocol	
product function bus communication	No
Connections/ Terminals	
type of electrical connection	screw-type terminals for main circuit, screw-type terminals for control circuit
<ul style="list-style-type: none"> ● for main current circuit ● for auxiliary and control circuit 	screw-type terminals screw-type terminals
type of electrical wiring	
<ul style="list-style-type: none"> ● for main current circuit ● for auxiliary and control circuit 	1 or 2 conductors 1 or 2 conductors
type of connectable conductor cross-sections	
<ul style="list-style-type: none"> ● for main contacts <ul style="list-style-type: none"> — solid — finely stranded with core end processing ● at AWG cables for main contacts 	1x (0,5 ... 4 mm ²), 2x (0,5 ... 2,5 mm ²) 1x (0,5 ... 4 mm ²), 2x (0,5 ... 1,5 mm ²) 1x (20 ... 12), 2x (20 ... 14)
connectable conductor cross-section for main contacts	
<ul style="list-style-type: none"> ● solid or stranded ● finely stranded with core end processing 	0.5 ... 4 mm ² 0.5 ... 4 mm ²
connectable conductor cross-section for auxiliary contacts	
<ul style="list-style-type: none"> ● solid or stranded ● finely stranded with core end processing 	0.5 ... 2.5 mm ² 0.5 ... 2.5 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 ● at AWG cables for auxiliary contacts 	1x (0,5 ... 2,5 mm ²), 2x (1,0 ... 1,5 mm ²) 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) 1x (20 ... 14), 2x (18 ... 16)
<ul style="list-style-type: none"> ● AWG number as coded connectable conductor cross section for main contacts ● AWG number as coded connectable conductor cross section for auxiliary contacts 	20 ... 12 20 ... 14
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 3-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 	0.25 hp 0.5 hp 1 hp 1.5 hp 3 hp

Certificates/ approvals

General Product Approval	EMC	For use in hazardous locations
--------------------------	-----	--------------------------------



Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates	other	Railway
---------------------------------------	---------------------------	-------------------	-------	---------

[Type Examination Certificate](#)



EG-Konf.

[Miscellaneous](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Special Test Certificate](#)

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?mfb=3RM1107-1AA14>

Cax online generator

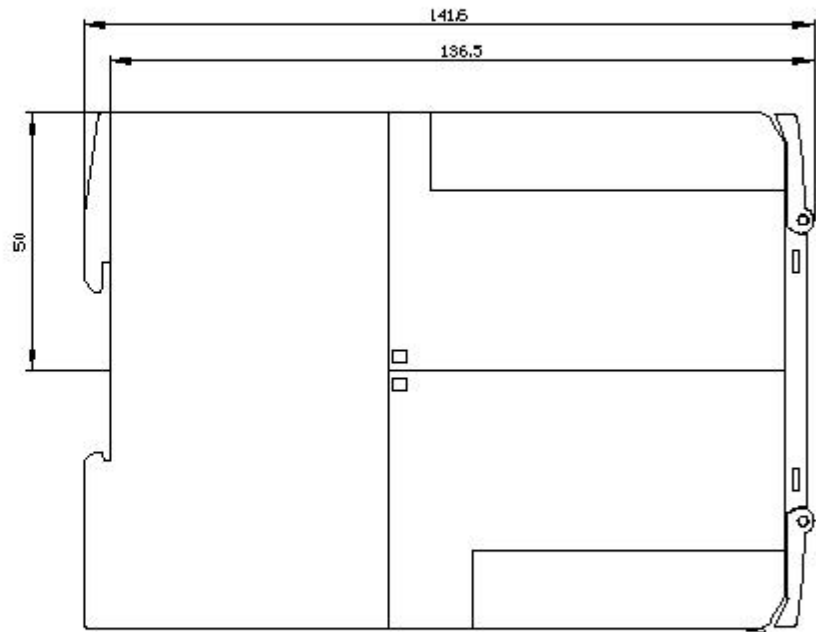
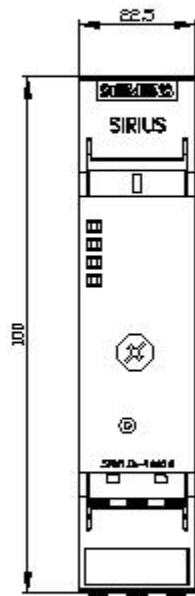
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mfb=3RM1107-1AA14>

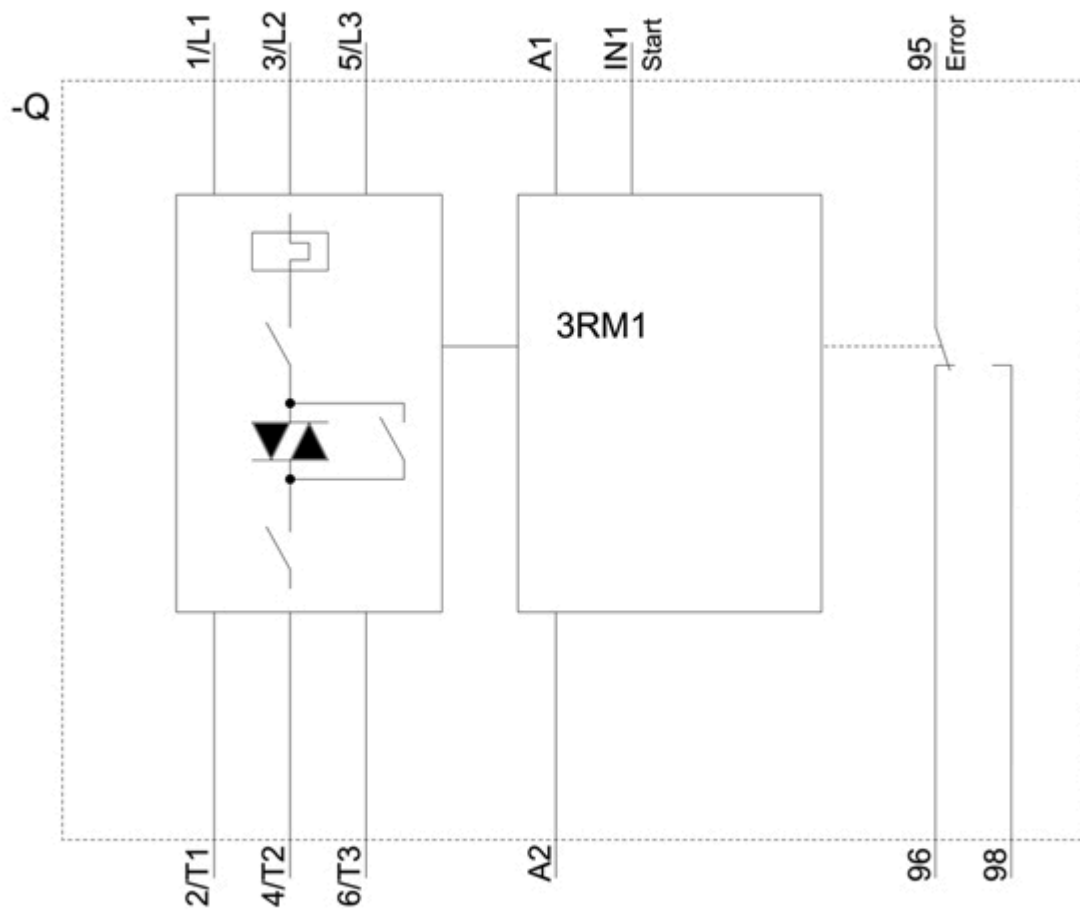
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

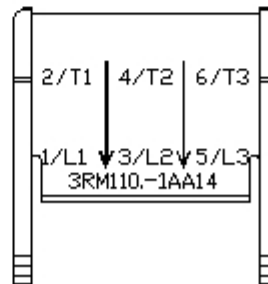
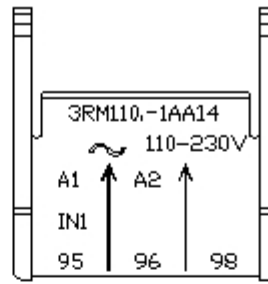
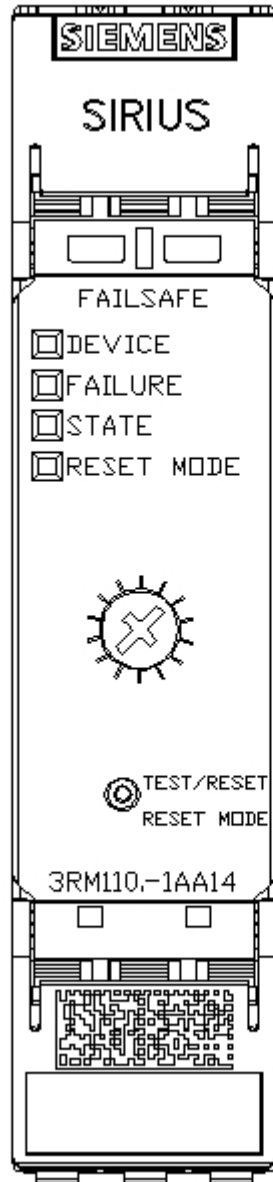
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1107-1AA14>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mfb=3RM1107-1AA14&lang=en







last modified:

12/23/2020