



Fail-safe reversing starter, 3RM1, 500 V, 0.55 - 3 kW, 1.6 - 7 A, 24 V DC, screw 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
equipment variant according to IEC 60947-4-2	3
product function	fail-safe reversing starter
<ul style="list-style-type: none"> intrinsic device protection 	Yes
<ul style="list-style-type: none"> for power supply reverse polarity protection 	Yes
suitability for operation device connector 3ZY12	Yes
insulation voltage rated value	500 V
overvoltage category	III
surge voltage resistance rated value	6 kV
maximum permissible voltage for safe isolation	
<ul style="list-style-type: none"> between main and auxiliary circuit 	500 V
<ul style="list-style-type: none"> between control and auxiliary circuit 	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 according to IEC 81346-2	Q
Substance Prohibitance (Date)	03/01/2017
product function	
<ul style="list-style-type: none"> direct start 	No
<ul style="list-style-type: none"> reverse starting 	Yes
product function short circuit protection	No

Electromagnetic compatibility

EMC emitted interference according to IEC 60947-1	class A
EMC immunity according to IEC 60947-1	Class A
conducted interference	
<ul style="list-style-type: none"> due to burst according to IEC 61000-4-4 	3 kV / 5 kHz
<ul style="list-style-type: none"> due to conductor-earth surge according to IEC 61000-4-5 	4 kV signal lines 2 kV
<ul style="list-style-type: none"> due to conductor-conductor surge according to IEC 61000-4-5 	2 kV
<ul style="list-style-type: none"> due to high-frequency radiation according to IEC 61000-4-6 	10 V
field-based interference according to IEC 61000-4-3	10 V/m
electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
conducted HF interference emissions according to	Class B for the domestic, business and commercial environments

CISPR11

field-bound HF interference emission according to CISPR11

Class B for the domestic, business and commercial environments

Safety related data

safety device type according to IEC 61508-2	Type B
B10d value	2 500 000
Safety Integrity Level (SIL) according to IEC 61508	3
SIL Claim Limit (subsystem) according to EN 62061	SILCL 3
performance level (PL) according to EN ISO 13849-1	e
category according to EN ISO 13849-1	4
stop category according to EN 60204-1	0
Safe failure fraction (SFF)	99 %
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 according to EN 62061	0.00000002 1/h
PFDavg with low demand rate according to IEC 61508	0
MTTFd	75 y
hardware fault tolerance according to IEC 61508	1
safe state	Load circuit open
protection class IP on the front according to IEC 60529	IP20
touch protection on the front according to IEC 60529	finger-safe
hardware fault tolerance according to IEC 61508 relating to ATEX	0
PFDavg with low demand rate according to IEC 61508 relating to ATEX	0.0005
PFHD with high demand rate according to EN 62061 relating to ATEX	0.00000005 1/h
Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX	SIL2
T1 value for proof test interval or service life according to IEC 61508 relating to ATEX	3 y

Main circuit

number of poles for main current circuit	3
design of the switching contact	Hybrid
adjustable current response value current of the current-dependent overload release	1.6 ... 7 A
minimum load [%]	20 %; from set rated current
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-3 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	24 V
• with signal <0> at DC	0 ... 5 V
• for signal <1> at DC	15 ... 30
input current at digital input	

<ul style="list-style-type: none"> • for signal <1> at DC 	8 mA
<ul style="list-style-type: none"> • with signal <0> at DC 	1 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	DC
control supply voltage at DC rated value	19.2 ... 30 V
relative negative tolerance of the control supply voltage at DC	20 %
relative positive tolerance of the control supply voltage at DC	25 %
control supply voltage 1 at DC rated value	24 V
operating range factor control supply voltage rated value at DC	
<ul style="list-style-type: none"> • initial value 	0.8
<ul style="list-style-type: none"> • full-scale value 	1.25
control current at DC	
<ul style="list-style-type: none"> • in standby mode of operation 	13 mA
<ul style="list-style-type: none"> • during operation 	57 mA
inrush current peak	
<ul style="list-style-type: none"> • at DC at 24 V 	300 mA
<ul style="list-style-type: none"> • at DC at 24 V at switching on of motor 	140 mA
duration of inrush current peak	
<ul style="list-style-type: none"> • at DC at 24 V 	80 ms
<ul style="list-style-type: none"> • at DC at 24 V at switching on of motor 	80 ms
power loss [W] in auxiliary and control circuit	
<ul style="list-style-type: none"> • in switching state OFF <ul style="list-style-type: none"> — with bypass circuit 	0.35 W
<ul style="list-style-type: none"> • in switching state ON <ul style="list-style-type: none"> — with bypass circuit 	1.37 W

Response times

ON-delay time	65 ... 76 ms
OFF-delay time	30 ... 43 ms

Power Electronics

operational current	
<ul style="list-style-type: none"> • at 40 °C rated value 	7 A
<ul style="list-style-type: none"> • at 50 °C rated value 	6.1 A
<ul style="list-style-type: none"> • at 55 °C rated value 	5.2 A
<ul style="list-style-type: none"> • at 60 °C rated value 	4.6 A

Installation/ mounting/ dimensions

mounting position	vertical, horizontal, standing (observe derating)
fastening method	screw and snap-on mounting onto 35 mm DIN rail
height	100 mm
width	23 mm
depth	142 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 	0 mm 0 mm 50 mm 50 mm 0 mm
<ul style="list-style-type: none"> • for grounded parts <ul style="list-style-type: none"> — forwards — backwards — upwards — at the side — downwards 	0 mm 0 mm 50 mm 4 mm 50 mm

Ambient conditions

installation altitude at height above sea level maximum	4 000 m; For derating see manual
ambient temperature	



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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=3RM1307-1AA04>

Cax online generator

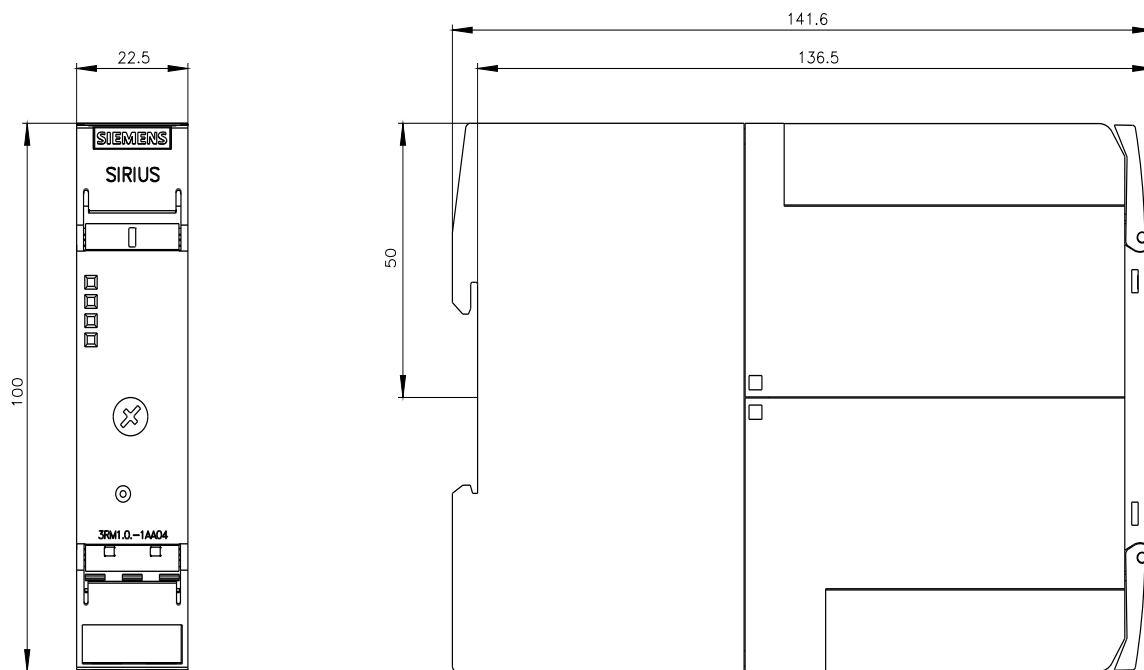
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1307-1AA04>

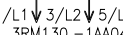
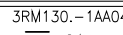
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1307-1AA04>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1307-1AA04&lang=en



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