



direct-on-line starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 110-230 V AC, screw/spring-loaded terminals (push-in)

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
<b>General technical data</b>	
equipment version according to IEC 60947-4-2	3
product function	Direct-on-line starter
• intrinsic device protection	Yes
• for power supply reverse polarity protection	No
suitability for operation device connector 3ZY12	No
power loss [W] for rated value of the current	
• at AC in hot operating state per pole	0.1 W
• without load current share typical	5.06 W
insulation voltage rated value	500 V
overvoltage category	III
surge voltage resistance rated value	6 kV
maximum permissible voltage for protective separation	
• between main and auxiliary circuit	500 V
• between control and auxiliary circuit	250 V
shock resistance	6g / 11 ms
vibration resistance	1 ... 6 Hz, 15 mm; 20 m/s <sup>2</sup> , 500 Hz
operating frequency maximum	1 1/s
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	03/01/2017
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol - 79-94-7 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1
Weight	0.312 kg
product function	
• direct start	Yes
• reverse starting	No
product function short circuit protection	No
<b>Electromagnetic compatibility</b>	
EMC emitted interference according to IEC 60947-1	class A
EMC immunity according to IEC 60947-1	Class A
conducted interference	
• due to burst according to IEC 61000-4-4	3 kV / 5 kHz
• due to conductor-earth surge according to IEC 61000-4-5	2 kV
• due to conductor-conductor surge according to IEC	1 kV

61000-4-5	10 V
• due to high-frequency radiation according to IEC 61000-4-6	
<b>field-based interference according to IEC 61000-4-3</b>	10 V/m
<b>electrostatic discharge according to IEC 61000-4-2</b>	4 kV contact discharge / 8 kV air discharge
<b>conducted HF interference emissions according to CISPR11</b>	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC
<b>field-bound HF interference emission according to CISPR11</b>	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC
<b>Electrical Safety</b>	
<b>protection class IP on the front according to IEC 60529</b>	IP20
<b>touch protection on the front according to IEC 60529</b>	finger-safe
<b>Main circuit</b>	
<b>number of poles for main current circuit</b>	3
<b>design of the switching contact</b>	Hybrid
<b>design of the switching contact as NO contact for signaling function</b>	OUT, electronic, 24 V DC, 15 mA
<b>adjustable current response value current of the current-dependent overload release</b>	0.4 ... 2 A
<b>minimum load [%]</b>	20 %; from set rated current
<b>type of the motor protection</b>	solid-state
operating voltage rated value	48 ... 500 V
<b>relative symmetrical tolerance of the operating voltage</b>	10 %
<b>operating frequency 1 rated value</b>	50 Hz
<b>operating frequency 2 rated value</b>	60 Hz
<b>relative symmetrical tolerance of the operating frequency</b>	10 %
<b>operational current</b>	
• at AC at 400 V rated value	2 A
• at AC-3 at 400 V rated value	2 A
• at AC-53a at 400 V at ambient temperature 40 °C rated value	2 A
<b>ampacity when starting maximum</b>	16 A
operating power for 3-phase motors at 400 V at 50 Hz	0.09 ... 0.75 kW
<b>Inputs/ Outputs</b>	
input voltage at digital input at DC rated value	110 V
input voltage at digital input at AC rated value	110 V
<b>input current at digital input</b>	
• for signal <1> at DC	1.5 mA
• with signal <0> at DC	0.25 mA
<b>input current at digital input with signal &lt;0&gt; at AC</b>	
• at 110 V	0.2 mA
• at 230 V	0.4 mA
<b>input current at digital input for signal &lt;1&gt; at AC</b>	
• at 110 V	1.1 mA
• at 230 V	2.3 mA
number of CO contacts for auxiliary contacts	1
<b>operational current of auxiliary contacts at AC-15 at 230 V maximum</b>	3 A
<b>operational current of auxiliary contacts at DC-13 at 24 V maximum</b>	1 A
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	AC/DC
<b>control supply voltage at AC</b>	
• at 50 Hz rated value	110 ... 230 V
• at 60 Hz rated value	110 ... 230 V
<b>relative negative tolerance of the control supply voltage at AC at 60 Hz</b>	15 %
<b>relative positive tolerance of the control supply voltage at AC at 60 Hz</b>	10 %
<b>control supply voltage 1 at AC</b>	
• at 50 Hz	110 ... 230 V
• at 60 Hz	110 ... 230 V
<b>control supply voltage frequency</b>	
• <b>1 rated value</b>	50 Hz

• 2 rated value	60 Hz
relative negative tolerance of the control supply voltage at DC	15 %
relative positive tolerance of the control supply voltage at DC	10 %
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	0.85
• full-scale value	1.1
control current at AC	
• at 110 V in standby mode of operation	16 mA
• at 230 V in standby mode of operation	9 mA
• at 110 V when switching on	55 mA
• at 230 V when switching on	33 mA
• at 110 V during operation	36 mA
• at 230 V during operation	22 mA
control current at DC	
• in standby mode of operation	6 mA
• during operation	30 mA
inrush current peak	
• at AC at 110 V	1 200 mA
• at AC at 230 V	2 900 mA
• at AC at 110 V at switching on of motor	1 200 mA
• at AC at 230 V at switching on of motor	2 900 mA
duration of inrush current peak	
• at AC at 110 V	1 ms
• at AC at 230 V	1 ms
• at AC at 110 V at switching on of motor	1 ms
• at AC at 230 V at switching on of motor	1 ms
power loss [W] in auxiliary and control circuit	
• in switching state OFF	
— with bypass circuit	2.1 W
• in switching state ON	
— with bypass circuit	5.06 W
<b>Response times</b>	
ON-delay time	60 ... 90 ms
OFF-delay time	60 ... 90 ms
<b>Power Electronics</b>	
<b>operational current</b>	
• at 40 °C rated value	2 A
• at 50 °C rated value	2 A
• at 55 °C rated value	2 A
• at 60 °C rated value	2 A
<b>Installation/ mounting/ dimensions</b>	
mounting position	vertical, horizontal, standing (observe derating)
fastening method	screw and snap-on mounting onto 35 mm DIN 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
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	4 000 m; For derating see manual
<b>ambient temperature</b>	
• during operation	-25 ... +60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
environmental category during operation according to IEC 60721	3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6
relative humidity during operation	10 ... 95 %
air pressure according to SN 31205	900 ... 1 060 hPa
<b>Communication/ Protocol</b>	
<b>protocol is supported</b>	
• PROFINET IO protocol	No
• PROFIsafe protocol	No
<b>product function bus communication</b>	
protocol is supported AS-Interface protocol	No
<b>Connections/ Terminals</b>	
<b>type of electrical connection</b>	
• for main current circuit	screw-type terminals for main circuit, spring-loaded terminals (push-in) for control circuit
• for auxiliary and control circuit	screw-type terminals spring-loaded terminals (push-in)
<b>wire length for motor unshielded maximum</b>	
type of connectable conductor cross-sections for main contacts	100 m
• solid	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 2,5 mm <sup>2</sup> )
• finely stranded with core end processing	1x (0,5 ... 4 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )
<b>connectable conductor cross-section for main contacts</b>	
• solid or stranded	0.5 ... 4 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 4 mm <sup>2</sup>
<b>connectable conductor cross-section for auxiliary contacts</b>	
• solid or stranded	0.5 ... 1.5 mm <sup>2</sup>
• finely stranded with core end processing	0.5 ... 1 mm <sup>2</sup>
• finely stranded without core end processing	0.5 ... 1.5 mm <sup>2</sup>
<b>type of connectable conductor cross-sections</b>	
• for auxiliary contacts	
— solid	1x (0,5 ... 1,5 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )
— finely stranded with core end processing	1x (0,5 ... 1,0 mm <sup>2</sup> ), 2x (0,5 ... 1,0 mm <sup>2</sup> )
— finely stranded without core end processing	1x (0,5 ... 1,5 mm <sup>2</sup> ), 2x (0,5 ... 1,5 mm <sup>2</sup> )
• for AWG cables for auxiliary contacts	1x (20 ... 16), 2x (20 ... 16)
<b>AWG number as coded connectable conductor cross section</b>	
• for main contacts	20 ... 12
• for auxiliary contacts	20 ... 16
<b>UL/CSA ratings</b>	
<b>yielded mechanical performance [hp]</b>	
• for single-phase AC motor	
— at 230 V rated value	0.125 hp
• for 3-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
<b>operational current at AC at 480 V according to UL 508</b>	
<b>Approvals Certificates</b>	



other

Environment

[Confirmation](#)[Environmental Confirmations](#)**Further information**

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

Information for data generation and storage

<https://support.industry.siemens.com/cs/ww/en/view/109995012>

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=3RM1002-3AA14>

Cax online generator

<http://support.automation.siemens.com/WW/CAxorder/default.aspx?lang=en&mlfb=3RM1002-3AA14>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1002-3AA14>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RM1002-3AA14&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1002-3AA14&lang=en)

