



fail-safe direct-on-line starter, 3RM1, 500 V, 0 - 0.12 kW, 0.1 - 0.5 A, 110-230 V AC, screw/spring-loaded terminals (push-in)

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| 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 | |
| equipment version according to IEC 60947-4-2 | 3 |
| product function | fail-safe direct starter |
| • intrinsic device protection | Yes |
| • for power supply reverse polarity 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 | 0.01 W |
| • without load current share typical | 3.22 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 ² , 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 | 0.313 kg |
| product function | |
| • direct start | Yes |
| • reverse starting | No |
| 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 | |
| • due to burst according to IEC 61000-4-4 | 3 kV / 5 kHz |
| • due to conductor-earth surge according to IEC 61000-4-5 | 4 kV signal lines 2 kV |
| • due to conductor-conductor surge according to IEC | 2 kV |

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| 61000-4-5 • 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 CISPR11 | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| field-bound HF interference emission according to CISPR11 | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| Safety related data | |
| safe state | Load circuit open |
| function test interval maximum | 1 a |
| diagnostics test interval by internal test function maximum | 600 s |
| stop category according to IEC 60204-1 | 0 |
| B10d value | 1 300 000 |
| failure rate [FIT] at rate of recognizable hazardous failures (λdd) | 1 400 FIT |
| failure rate [FIT] at rate of non-recognizable hazardous failures (λdu) | 16 FIT |
| average diagnostic coverage level (DCavg) | 99 % |
| MTTFd | 75 a |
| IEC 62061 | |
| Safety Integrity Level (SIL) according to IEC 62061 | SIL 3 |
| PFHD with high demand rate according to IEC 62061 | 2E-8 1/h |
| ISO 13849 | |
| performance level (PL) according to ISO 13849-1 | PL e |
| IEC 61508 | |
| Safety Integrity Level (SIL) | |
| • according to IEC 61508 | 3 |
| safety device type according to IEC 61508-2 | Type B |
| PFDAvg with low demand rate according to IEC 61508 | 1.75E-5 |
| Safe failure fraction (SFF) | 99.4 % |
| hardware fault tolerance according to IEC 61508 | 1 |
| T1 value for proof test interval or service life according to IEC 61508 | 20 a |
| Electrical Safety | |
| protection class IP on the front according to IEC 60529 | IP20 |
| touch protection on the front according to IEC 60529 | finger-safe |
| ATEX | |
| Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX | SIL 2 |
| PFHD with high demand rate according to IEC 61508 relating to ATEX | 5E-8 1/h |
| PFDAvg with low demand rate according to IEC 61508 relating to ATEX | 0.0005 |
| hardware fault tolerance according to IEC 61508 relating to ATEX | 0 |
| T1 value for proof test interval or service life according to IEC 61508 relating to ATEX | 3 a |
| certificate of suitability according to ATEX directive 2014/34/EU | BVS 12 ATEX F 002 X |
| type of protection according to ATEX directive 2014/34/EU | II (2)G [Ex e] [Ex d] [Ex px], II (2)D [Ex t] [Ex p], I (M2) [Ex d] |
| 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 | 0.1 ... 0.5 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 | |

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| • at AC at 400 V rated value | 0.5 A |
| • at AC-3 at 400 V rated value | 0.5 A |
| • at AC-53a at 400 V at ambient temperature 40 °C rated value | 0.5 A |
| ampacity when starting maximum | 4 A |
| operating power for 3-phase motors at 400 V at 50 Hz | 0 ... 0.12 kW |
| Inputs/ Outputs | |
| input voltage at digital input at DC rated value | 110 V |
| input voltage at digital input at AC rated value | 110 V |
| 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 |
| 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 at AC | |
| • at 50 Hz rated value | 110 ... 230 V |
| • at 60 Hz rated value | 110 ... 230 V |
| relative negative tolerance of the control supply voltage at AC at 60 Hz | 15 % |
| relative positive tolerance of the control supply voltage at AC at 60 Hz | 10 % |
| 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 |
| 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 | 8 mA |
| • at 230 V in standby mode of operation | 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 of operation | 4 mA |

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| • 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 | 1.4 W |
| • in switching state ON | |
| — with bypass circuit | 3.22 W |
| Response times | |
| ON-delay time | 90 ... 120 ms |
| OFF-delay time | 60 ... 90 ms |
| Power Electronics | |
| operational current | |
| • at 40 °C rated value | 0.5 A |
| • at 50 °C rated value | 0.5 A |
| • at 55 °C rated value | 0.5 A |
| • at 60 °C rated value | 0.5 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 | 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 | 4 000 m; For derating see manual |
| ambient temperature | |
| • 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 |
| Communication/ Protocol | |
| protocol is supported | |
| • PROFINET IO protocol | No |
| • PROFIsafe protocol | No |
| product function bus communication | No |
| protocol is supported AS-Interface protocol | No |
| Connections/ Terminals | |

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| type of electrical connection | screw-type terminals for main circuit, spring-loaded terminals (push-in) for control circuit |
| • for main current circuit | screw-type terminals |
| • for auxiliary and control circuit | spring-loaded terminals (push-in) |
| wire length for motor unshielded maximum | 100 m |
| type of connectable conductor cross-sections for main contacts | |
| • solid | 1x (0,5 ... 4 mm ²), 2x (0,5 ... 2,5 mm ²) |
| • finely stranded with core end processing | 1x (0,5 ... 4 mm ²), 2x (0,5 ... 1,5 mm ²) |
| connectable conductor cross-section for main contacts | |
| • solid or stranded | 0,5 ... 4 mm ² |
| • finely stranded with core end processing | 0,5 ... 4 mm ² |
| connectable conductor cross-section for auxiliary contacts | |
| • solid or 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) |
| — finely stranded with core end processing | 1x (0,5 ... 1,0 mm ²), 2x (0,5 ... 1,0 mm ²) |
| — finely stranded without core end processing | 1x (0,5 ... 1,5 mm ²), 2x (0,5 ... 1,5 mm ²) |
| • for AWG cables 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

operational current at AC at 480 V according to UL 508

0.5 A

Approvals Certificates

General Product Approval

EMV



| For use in hazardous locations | Functional Safety | other | Environment |
|--------------------------------|--|-------|--|
| | Type Examination Certificate | | 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=3RM1101-3AA14>

Cax online generator

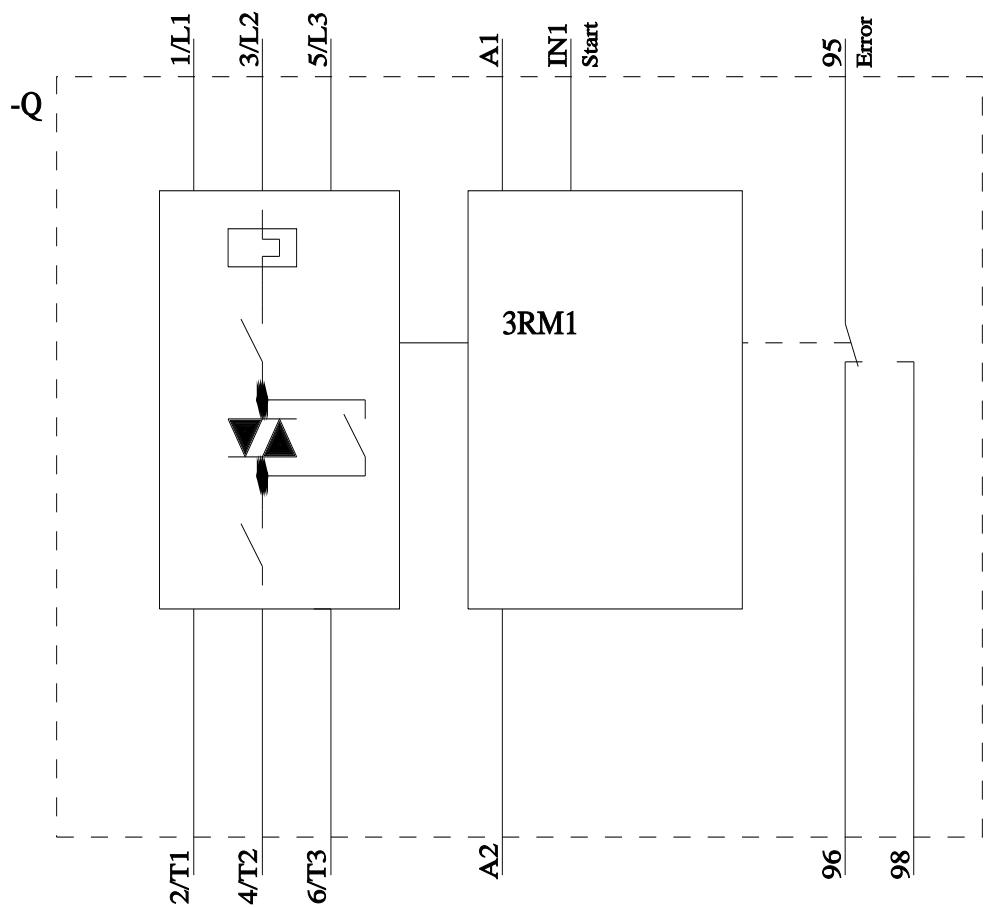
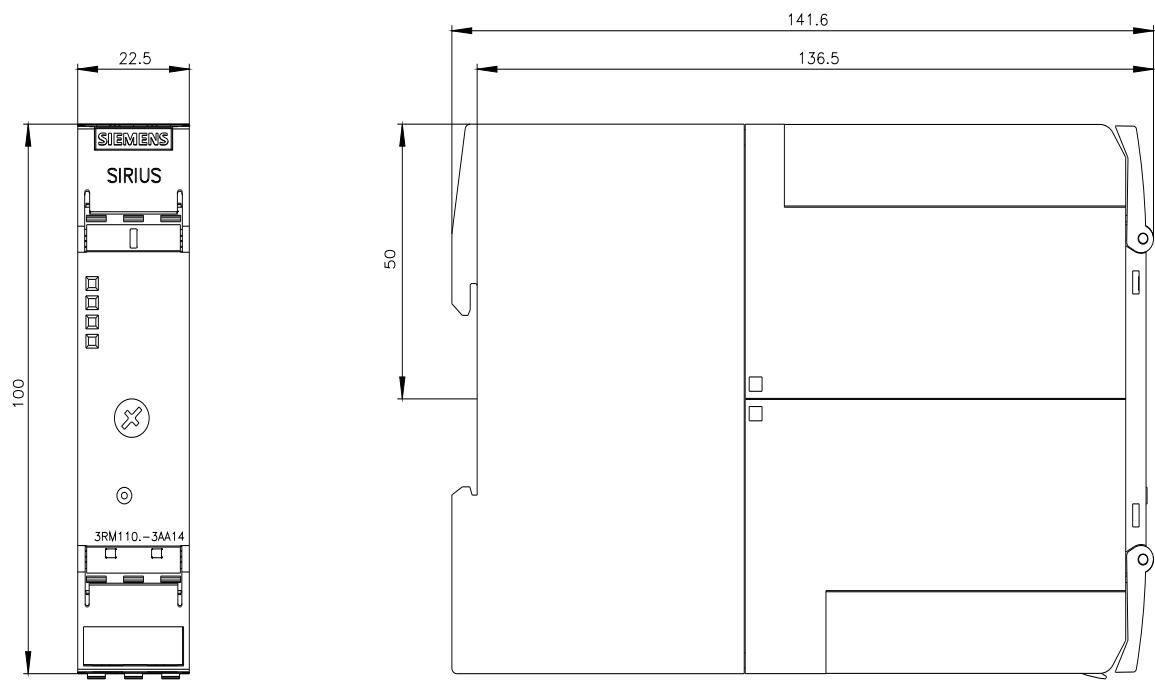
<http://support.automation.siemens.com/WW/CAxorder/default.aspx?lang=en&mlfb=3RM1101-3AA14>

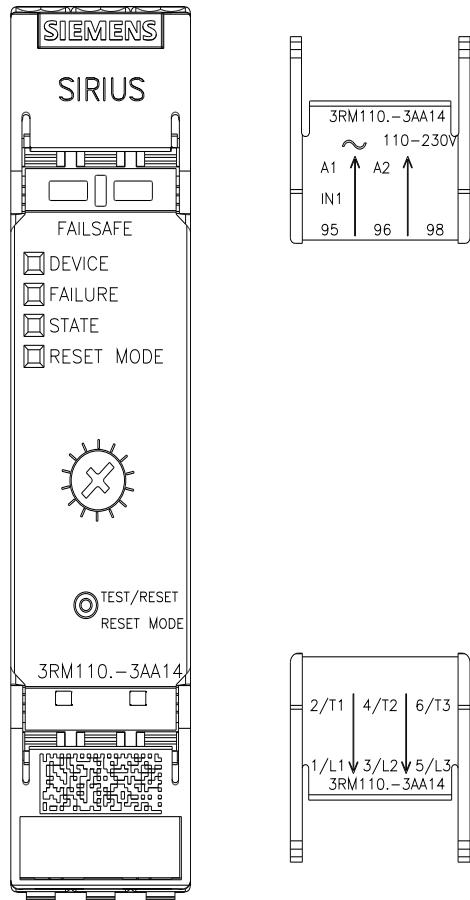
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RM1101-3AA14>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1101-3AA14&lang=en





last modified:

9/5/2025 