SIEMENS

## Data sheet 3RM1102-2AA04

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** | |
| **equipment variant 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** | Yes |
| **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/s², 500 Hz |
| **operating frequency maximum** | 1 1/s |
| **mechanical service life (operating cycles) typical** | 15 000 000 |
| **reference code according to IEC 81346-2** | Q |
| **Substance Prohibitance (Date)** | 03/01/2017 |
| **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 61000-4-5 | 2 kV |
| ● 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 the domestic, business and commercial environments |

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| **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 a |
| **failure rate [FIT]** | |
| ● at rate of recognizable hazardous failures (λdd) | 1 400 FIT |
| ● at rate of non-recognizable hazardous failures (λdu) | 16 FIT |
| PFHD with high demand rate according to EN 62061 | 2E-8 1/h |
| **PFDavg with low demand rate according to IEC 61508** | 0 |
| **MTTFd** | 75 a |
| **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** | 5E-8 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 a |
| **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** | 0.4 ... 2 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 | 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 |
| **ampacity when starting maximum** | 16 A |
| operating power for 3-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** | |
| ● for signal <1> at DC | 8 mA |
| ● 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 |

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| **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** | |
| ● initial value | 0.8 |
| ● full-scale value | 1.25 |
| **control current at DC** | |
| ● in standby mode of operation | 13 mA |
| ● during operation | 57 mA |
| **inrush current peak** | |
| ● at DC at 24 V | 300 mA |
| ● at DC at 24 V at switching on of motor | 130 mA |
| **duration of inrush current peak** | |
| ● at DC at 24 V | 80 ms |
| ● at DC at 24 V at switching on of motor | 20 ms |
| **power loss [W] in auxiliary and control circuit** | |
| ● **in switching state OFF** | |
| — with bypass circuit | 0.35 W |
| ● **in switching state ON** | |
| — with bypass circuit | 1.37 W |
| **Response times** | |
| **ON-delay time** | 65 ... 76 ms |
| **OFF-delay time** | 30 ... 43 ms |
| **Power Electronics** | |
| **operational current** | |
| ● 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 |
| **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** | |
| ● 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 | 4 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 |

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| 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** | |
| **type of electrical connection** | spring-loaded terminals (push-in) for main circuit, spring-loaded terminals (push-in) for control circuit |
| ● for main current circuit | spring-loaded terminals (push-in) |
| ● 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 mm²) |
| ● finely stranded with core end processing | 1x (0.5 ... 2.5 mm²) |
| ● finely stranded without core end processing | 1x (0.5 ... 4 mm²) |
| **connectable conductor cross-section for main contacts** | |
| ● solid or stranded | 0.5 ... 4 mm² |
| ● finely stranded with core end processing | 0.5 ... 2.5 mm² |
| ● finely stranded without core end processing | 0.5 ... 4 mm² |
| **connectable conductor cross-section for auxiliary contacts** | |
| ● solid or stranded | 0.5 ... 1.5 mm² |
| ● finely stranded with core end processing | 0.5 ... 1 mm² |
| ● finely stranded without core end processing | 0.5 ... 1.5 mm² |
| **type of connectable conductor cross-sections** | |
| ● for auxiliary contacts | |
| — solid | 1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²) |
| — finely stranded with core end processing | 1x (0,5 ... 1,0 mm²), 2x (0,5 ... 1,0 mm²) |
| — finely stranded without core end processing | 1x (0.5 ... 1.5 mm²), 2x (0.5 ... 1.5 mm²) |
| ● 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** | |
| **yielded mechanical performance [hp]** | |
| ● for single-phase AC motor | |
| — at 230 V rated value | 0.125 hp |
| ● for 3-phase AC motor | |
| — at 200/208 V rated value | 0.33 hp |
| — at 220/230 V rated value | 0.33 hp |
| — at 460/480 V rated value | 0.75 hp |
| operating voltage at AC rated value | 480 V |
| **operational current at AC at 480 V according to UL 508** | 2 A |

**Certificates/ approvals**

| General Product Approval | | | | | EMC |
|---|---|---|---|---|---|
| CSA | CCC | Confirmation | UL | EAC | RCM |

| For use in hazardous locations | Functional Safety/Safety of Machinery | Declaration of Conformity | Test Certificates | other |
|---|---|---|---|---|

Type Examination Certificate

Type Test Certificates/Test Report

Confirmation

## Railway

Special Test Certificate

## Further information

**Siemens has decided to exit the Russian market (see here).**
https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business

**Siemens is working on the renewal of the current EAC certificates.**
Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875

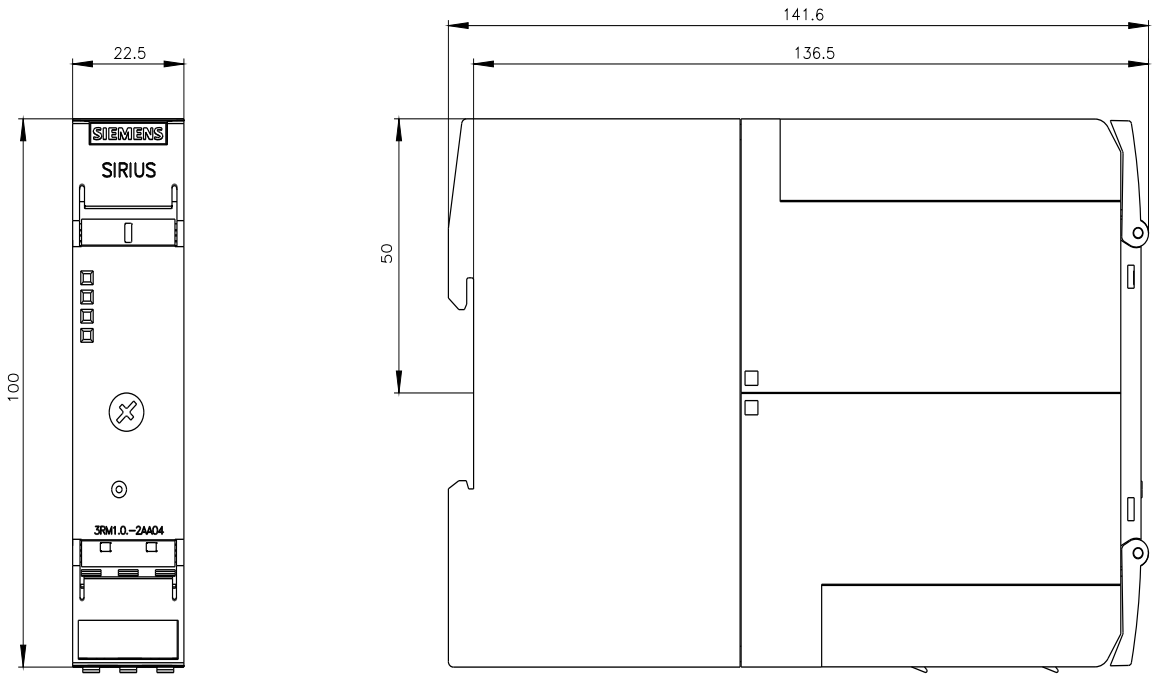
**Information- and Downloadcenter (Catalogs, Brochures,…)**
https://www.siemens.com/ic10

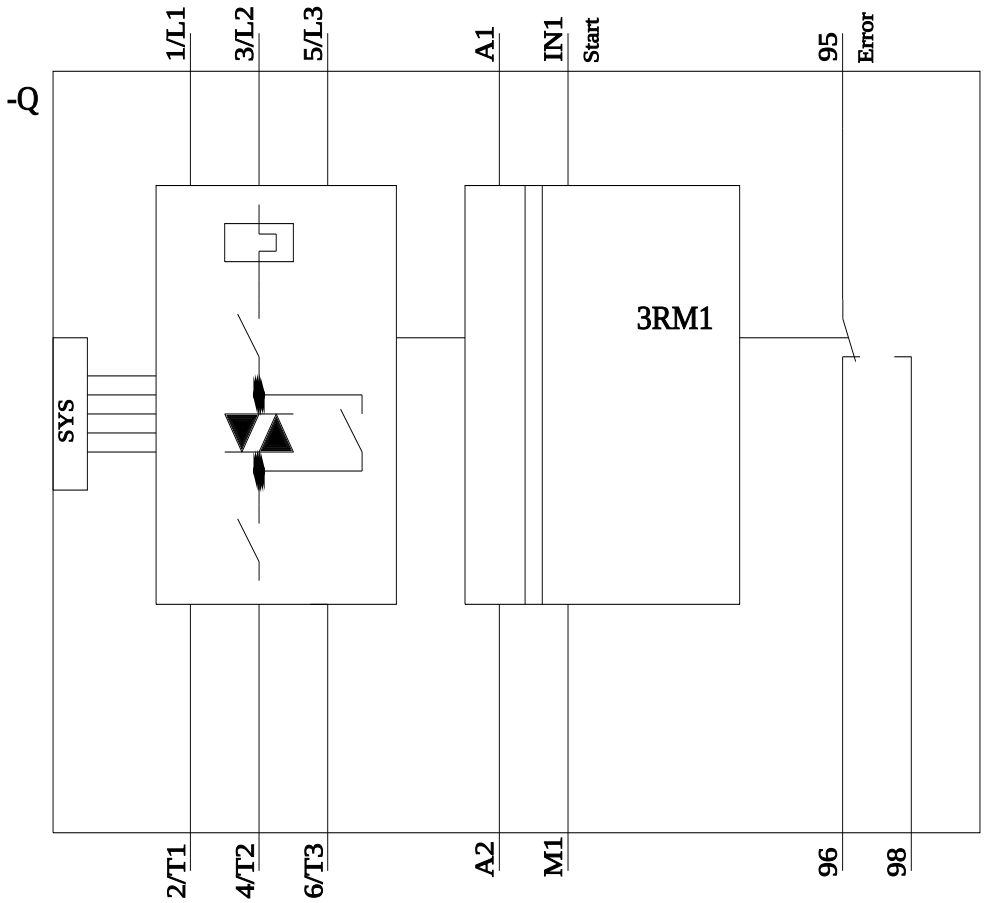
**Industry Mall (Online ordering system)**
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1102-2AA04

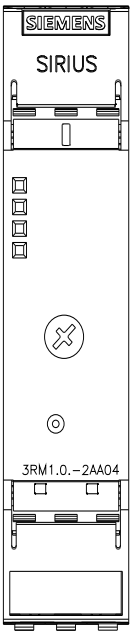
**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1102-2AA04

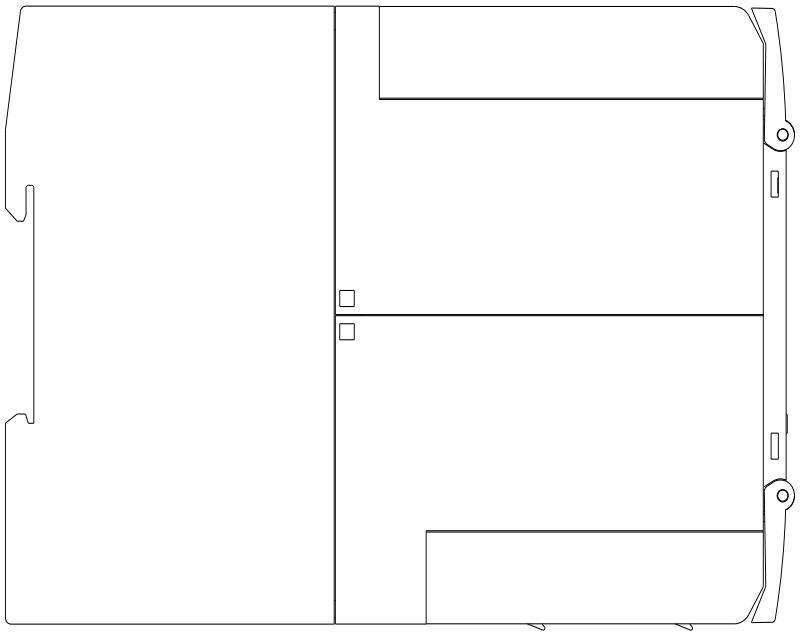
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RM1102-2AA04

**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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