SIEMENS

## Data sheet 3RM1307-1AA04



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** | |
| **equipment version according to IEC 60947-4-2** | 3 |
| **product function** | fail-safe reversing starter |
| ● intrinsic device protection | Yes |
| ● for power supply reverse polarity protection | Yes |
| **suitability for operation device connector 3ZY12** | Yes |
| **power loss [W] for rated value of the current** | |
| ● at AC in hot operating state per pole | 1.13 W |
| ● without load current share typical | 1.37 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** | 6 g / 11 ms |
| **vibration resistance** | 1 ... 6 Hz, 15 mm; 20 m/s², 500 Hz |
| **operating frequency maximum** | 1 1/s |
| **reference code according to IEC 81346-2** | Q |
| **Substance Prohibitance (day/month/year)** | 03/01/2017 |
| **SVHC substance name** | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8<br>2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5<br>Melamine CAS-No. 108-78-1<br>6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol CAS-No. 119-47-1 |
| **Net Weight** | 0.289 kg |
| **product function** | |
| ● direct start | No |
| ● 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** | |


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| | |
|---|---|
| ● 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 |
| **field-bound HF interference emission according to CISPR11** | Class B for the domestic, business and commercial environments |
| **Safety related data** | |
| **product function suitable for safety function** | Yes |
| **suitability for use** | |
| **● safety-related switching on** | No |
| **● safety-related switching OFF** | Yes |
| **safe state** | Load circuit open |
| **test wear-related service life necessary** | Yes |
| **function test interval maximum** | 1 a |
| **diagnostics test interval by internal test function maximum** | 600 s |
| **stop category according to IEC 60204-1** | 0 |
| **proportion of dangerous failures** | |
| **● with low demand rate according to SN 31920** | 0.6 % |
| **● with high demand rate according to SN 31920** | 40 % |
| **B10 value with high demand rate according to SN 31920** | 1 000 000 |
| **failure rate [FIT] with low demand rate according to SN 31920** | 16 FIT |
| IEC 62061 | |
| **Safety Integrity Level (SIL) according to IEC 62061** | SIL 3 |
| ISO 13849 | |
| **category according to EN ISO 13849-1** | 4 |
| **performance level (PL) according to ISO 13849-1** | PL e |
| **category according to ISO 13849-1** | 4 |
| **device type according to ISO 13849-1** | 1 |
| **overdimensioning according to ISO 13849-2 necessary** | No |
| IEC 61508 | |
| **Safety Integrity Level (SIL)** | |
| **● according to IEC 61508** | 3 |
| **safety device type according to IEC 61508-2** | Type B |
| **PFHD with high demand rate according to IEC 61508** | 2E-8 1/h |
| **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** | |


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| | |
|---|---|
| **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 |
| **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 |
| **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 24 V | 0.28 A; values at 25 °C |
| ● at DC at 24 V | 300 mA |
| ● at DC at 24 V at switching on of motor | 140 mA |
| **duration of inrush current peak** | |
| ● at 24 V | 85 ms |
| ● at DC at 24 V | 80 ms |
| ● at DC at 24 V at switching on of motor | 80 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** | |


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| | |
|---|---|
| **operational current** | |
| ● at 40 °C rated value | 7 A |
| ● at 50 °C rated value | 6.1 A |
| ● at 55 °C rated value | 5.2 A |
| ● 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** | 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 |
| **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** | |
| **type of electrical connection** | screw-type terminals for main circuit, screw-type terminals for control circuit |
| ● for main current circuit | screw-type terminals |
| ● for auxiliary and control circuit | screw-type terminals |
| **wire length for motor unshielded maximum** | 100 m |
| type of connectable conductor cross-sections for main contacts | |
| ● solid | 1x (0,5 ... 4 mm²), 2x (0,5 ... 2,5 mm²) |
| ● finely stranded with core end processing | 1x (0,5 ... 4 mm²), 2x (0,5 ... 1,5 mm²) |
| **connectable conductor cross-section for main contacts** | |
| ● solid or stranded | 0.5 ... 4 mm² |
| ● finely stranded with core end processing | 0.5 ... 4 mm² |
| **connectable conductor cross-section for auxiliary contacts** | |
| ● solid or stranded | 0.5 ... 2.5 mm² |
| ● finely stranded with core end processing | 0.5 ... 2.5 mm² |
| **type of connectable conductor cross-sections** | |
| ● for auxiliary contacts | |
| — solid | 1x (0,5 ... 2,5 mm²), 2x (1,0 ... 1,5 mm²) |
| — finely stranded with core end processing | 1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²) |
| ● for AWG cables for auxiliary contacts | 1x (20 ... 14), 2x (18 ... 16) |


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| | |
|---|---|
| **AWG number as coded connectable conductor cross section for main contacts** | 20 ... 12 |
| **AWG number as coded connectable conductor cross section for auxiliary contacts** | 20 ... 14 |

## UL/CSA ratings

| | |
|---|---|
| **yielded mechanical performance [hp]** | |
| ● for single-phase AC motor | |
| — at 110/120 V rated value | 0.25 hp |
| — at 230 V rated value | 0.5 hp |
| ● for 3-phase AC motor | |
| — at 200/208 V rated value | 1 hp |
| — at 220/230 V rated value | 1.5 hp |
| — at 460/480 V rated value | 3 hp |
| **operational current at AC at 480 V according to UL 508** | 6.1 A |

## Approvals Certificates

**General Product Approval** | **EMV**

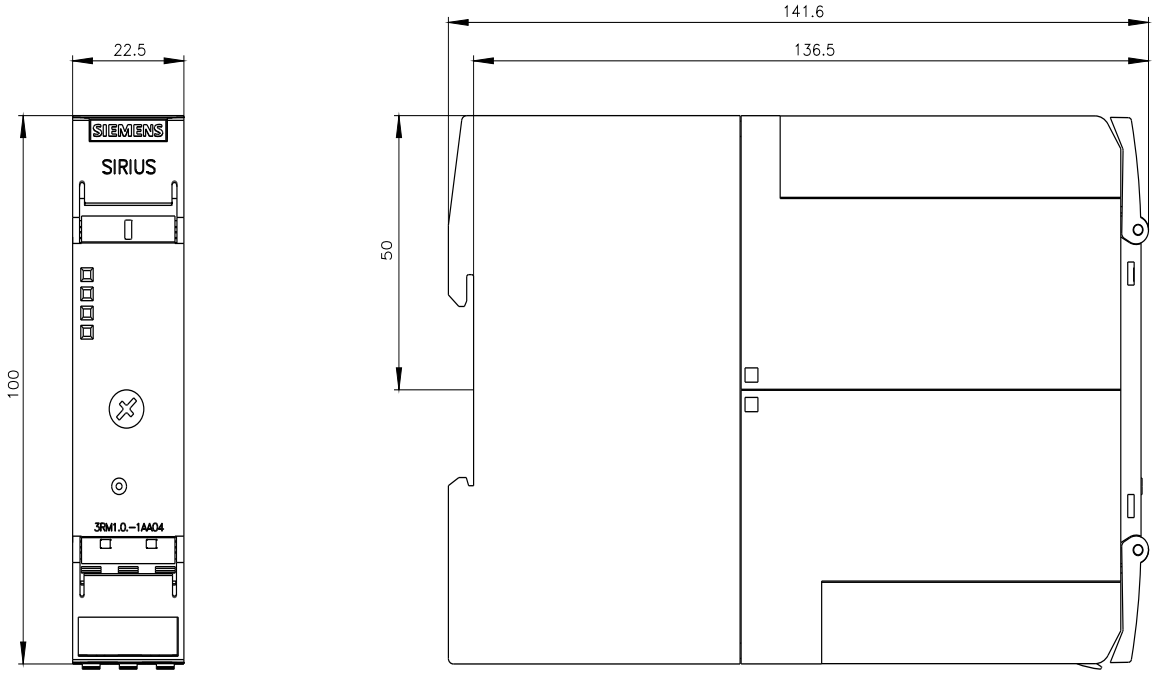
| EMV | For use in hazardous locations | Functional Saftey | Test Certificates | other | |
|---|---|---|---|---|---|
| RCM | ATEX | Type Examination Certificate | Type Test Certificates/Test Report | Confirmation | 产品合格 QC PASS |

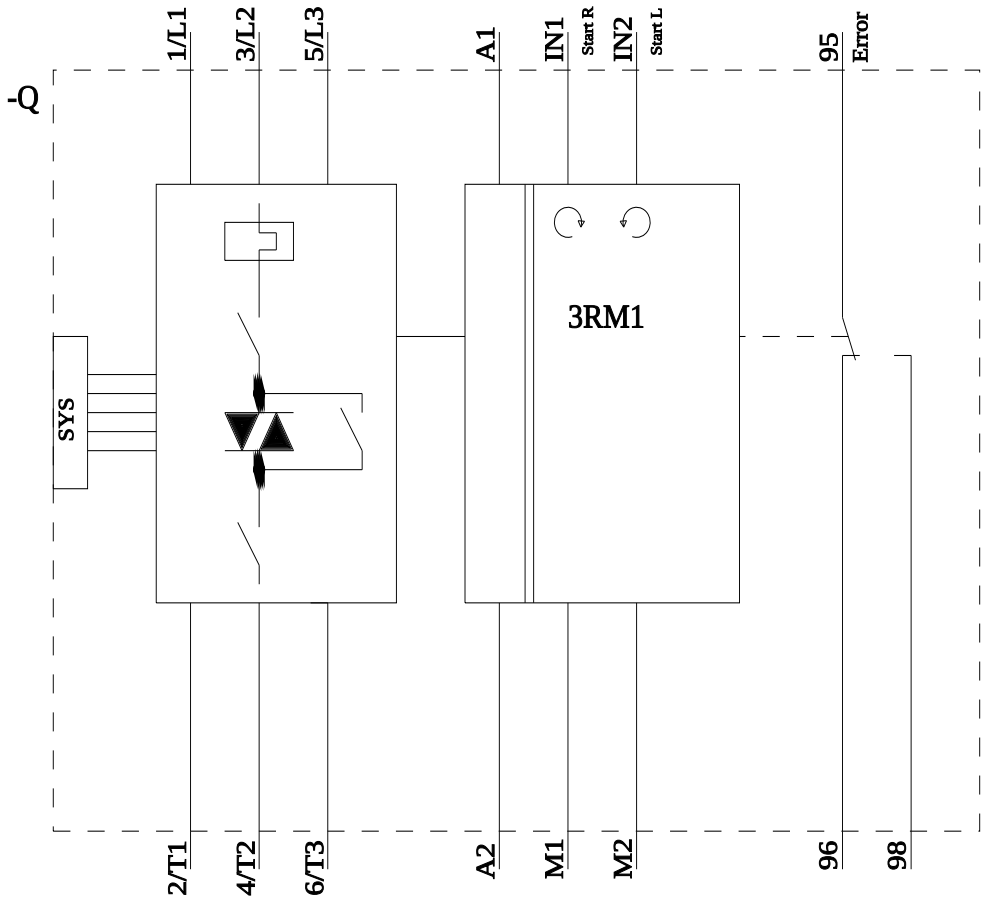
| Railway | Environment |
|---|---|
| Special Test Certificate | Environmental Confirmations |

## 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=3RM1307-1AA04
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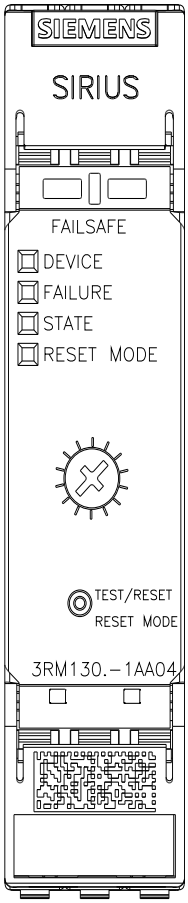

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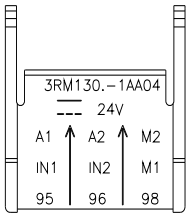


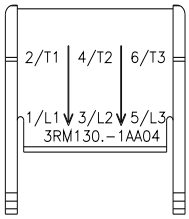





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