



Failsafe reversing starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 110-230 V AC, screw/spring-loaded terminals

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| 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 |
| • intrinsic device protection | Yes |
| • for power supply reverse polarity protection | Yes |
| suitability for operation device connector 3ZY12 | No |
| insulation voltage rated value | 500 V |
| overvoltage category | III |
| surge voltage resistance rated value | 6 kV |
| maximum permissible voltage for safe isolation | |
| • 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 |
| 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 | |
| • 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 | |
| • 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 |

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| 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 | |
| safety device type according to IEC 61508-2 | Type B |
| 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) | 99.4 % |
| 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 | 0.000018 |
| 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 | 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 | 110 V |
| • with signal <0> at DC | 0 ... 40 V |

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| <ul style="list-style-type: none"> • for signal <1> at DC | 79 ... 121 |
| input voltage at digital input <ul style="list-style-type: none"> • at AC rated value • with signal <0> at AC • for signal <1> at AC | 110 V 0 ... 40 V 93 ... 253 V |
| input current at digital input <ul style="list-style-type: none"> • for signal <1> at DC • with signal <0> at DC | 1.5 mA 0.25 mA |
| input current at digital input with signal <0> at AC <ul style="list-style-type: none"> • at 110 V • at 230 V | 0.2 mA 0.4 mA |
| input current at digital input for signal <1> at AC <ul style="list-style-type: none"> • at 110 V • at 230 V | 1.1 mA 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 <ul style="list-style-type: none"> • at 50 Hz rated value • at 60 Hz rated value | 110 ... 230 V 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 <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 110 ... 230 V 110 ... 230 V |
| control supply voltage frequency <ul style="list-style-type: none"> • 1 rated value • 2 rated value | 50 Hz 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 <ul style="list-style-type: none"> • initial value • full-scale value | 0.85 1.1 |
| operating range factor control supply voltage rated value at AC at 50 Hz <ul style="list-style-type: none"> • initial value • full-scale value | 0.85 1.1 |
| operating range factor control supply voltage rated value at AC at 60 Hz <ul style="list-style-type: none"> • initial value • full-scale value | 0.85 1.1 |
| control current at AC <ul style="list-style-type: none"> • at 110 V in standby mode of operation • at 230 V in standby mode of operation • at 110 V when switching on • at 230 V when switching on • at 110 V during operation • at 230 V during operation | 8 mA 6 mA 40 mA 25 mA 25 mA 14 mA |
| control current at DC <ul style="list-style-type: none"> • in standby mode of operation • when switching on • during operation | 4 mA 13 mA 30 mA |

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| inrush current peak | |
| <ul style="list-style-type: none"> ● at AC at 110 V ● at AC at 230 V | <p>1 200 mA 2 900 mA</p> |
| duration of inrush current peak | |
| <ul style="list-style-type: none"> ● at AC at 110 V ● at AC at 230 V | <p>1 ms 1 ms</p> |
| 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 ● in switching state ON <ul style="list-style-type: none"> — with bypass circuit | <p>1.4 W 3.22 W</p> |
| Response times | |
| ON-delay time | 90 ... 120 ms |
| OFF-delay time | 60 ... 90 ms |
| Power Electronics | |
| operational current | |
| <ul style="list-style-type: none"> ● at 40 °C rated value ● at 50 °C rated value ● at 55 °C rated value ● at 60 °C rated value | <p>2 A 2 A 2 A 2 A</p> |
| Installation/ mounting/ dimensions | |
| mounting position | vertical, horizontal, standing (observe derating) |
| fastening method | screw and snap-on mounting onto 35 mm standard mounting rail |
| height | 100 mm |
| width | 22.5 mm |
| depth | 141.6 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 ● for grounded parts <ul style="list-style-type: none"> — forwards — backwards — upwards — at the side — downwards | <p>0 mm 0 mm 50 mm 50 mm 0 mm 0 mm 0 mm 50 mm 50 mm 3.5 mm 50 mm</p> |
| Ambient conditions | |
| installation altitude at height above sea level maximum | 4 000 m; For derating see manual |
| ambient temperature | |
| <ul style="list-style-type: none"> ● during operation ● during storage ● during transport | <p>-25 ... +60 °C -40 ... +70 °C -40 ... +70 °C</p> |
| 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 | |
| <ul style="list-style-type: none"> ● PROFINET IO protocol ● PROFIsafe protocol | <p>No No</p> |
| product function bus communication | No |
| protocol is supported AS-Interface protocol | No |
| Connections/ Terminals | |
| type of electrical connection | screw-type terminals for main circuit, spring-loaded terminals (push-in) for control circuit |
| <ul style="list-style-type: none"> ● for main current circuit ● for auxiliary and control circuit | <p>screw-type terminals spring-loaded terminals (push-in)</p> |

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| wire length for motor unshielded maximum | 100 m |
| type of connectable conductor cross-sections | |
| <ul style="list-style-type: none"> • for main contacts <ul style="list-style-type: none"> — solid — finely stranded with core end processing • at AWG cables for main contacts | 1x (0,5 ... 4 mm ²), 2x (0,5 ... 2,5 mm ²) 1x (0,5 ... 4 mm ²), 2x (0,5 ... 1,5 mm ²) 1x (20 ... 12), 2x (20 ... 14) |
| connectable conductor cross-section for main contacts | |
| <ul style="list-style-type: none"> • solid or stranded • finely stranded with core end processing | 0.5 ... 4 mm ² 0.5 ... 4 mm ² |
| connectable conductor cross-section for auxiliary contacts | |
| <ul style="list-style-type: none"> • solid or stranded • finely stranded with core end processing • finely stranded without core end processing | 0.5 ... 1.5 mm ² 0.5 ... 1 mm ² 0.5 ... 1.5 mm ² |
| type of connectable conductor cross-sections | |
| <ul style="list-style-type: none"> • for auxiliary contacts <ul style="list-style-type: none"> — solid — finely stranded with core end processing — finely stranded without core end processing • at AWG cables for auxiliary contacts | 1x (0.5 ... 1.5 mm ²), 2x (0.5 ... 1.5 mm ²) 1x (0,5 ... 1,0 mm ²), 2x (0,5 ... 1,0 mm ²) 1x (0.5 ... 1.5 mm ²), 2x (0.5 ... 1.5 mm ²) 1x (20 ... 16), 2x (20 ... 16) |
| AWG number as coded connectable conductor cross section | |
| <ul style="list-style-type: none"> • for main contacts • for auxiliary contacts | 20 ... 12 20 ... 16 |

UL/CSA ratings

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|---|---|
| yielded mechanical performance [hp] | |
| <ul style="list-style-type: none"> • for single-phase AC motor <ul style="list-style-type: none"> — at 230 V rated value • for 3-phase AC motor <ul style="list-style-type: none"> — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value | 0.125 hp 0.333 hp 0.333 hp 0.75 hp |
| operating voltage at AC | |
| <ul style="list-style-type: none"> • according to UL rated value • according to CSA rated value | 480 V 400 V |

Certificates/ approvals

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|---------------------------------|------------|
| General Product Approval | EMC |
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[Confirmation](#)



| | | | |
|---------------------------------------|--|----------------------------------|--------------|
| For use in hazardous locations | Functional Safety/Safety of Machinery | Declaration of Conformity | other |
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[Type Examination Certificate](#)



EG-Konf.

[Confirmation](#)

Further information

Information- and Downloadcenter (Catalogs, Brochures,...)

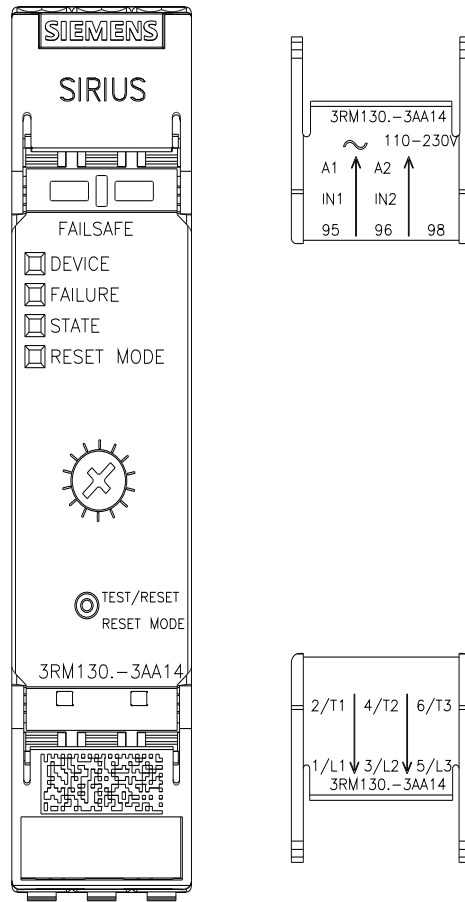
<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mfb=3RM1302-3AA14>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mfb=3RM1302-3AA14>



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