

Fail-safe reversing starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 24 V DC, screw 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 |
| Product function | |
| • Intrinsic device 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 | 0.1 W |
| Insulation voltage | |
| • rated value | 500 V |
| 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 |

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|---|---|
| Protection class IP | IP20 |
| 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) <ul style="list-style-type: none"> • typical | 30 000 000 |
| Reference code acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 | Q |
| Reference code acc. to DIN EN 81346-2 | Q |
| Reference code acc. to DIN EN 61346-2 | Q |
| Product function <ul style="list-style-type: none"> • direct start • reverse starting | No Yes |
| Product function Short circuit protection | No |

Electromagnetic compatibility

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| Conducted interference <ul style="list-style-type: none"> • due to burst acc. to IEC 61000-4-4 • due to conductor-earth surge acc. to IEC 61000-4-5 • due to conductor-conductor surge acc. to IEC 61000-4-5 • due to high-frequency radiation acc. to IEC 61000-4-6 | 3 kV / 5 kHz 4 kV signal lines 2 kV 2 kV 10 V |
| Electrostatic discharge acc. to IEC 61000-4-2 | 6 kV contact discharge / 8 kV air discharge |
| Conducted HF-interference emissions acc. to CISPR11 | Class B for the domestic, business and commercial environments |
| Field-bound HF-interference emission acc. to CISPR11 | Class B for the domestic, business and commercial environments |

Safety related data

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| Safety device type acc. to IEC 61508-2 | Type B |
| Safety Integrity Level (SIL) acc. to IEC 61508 | 3 |
| Performance level (PL) acc. to EN ISO 13849-1 | e |
| Category acc. to EN ISO 13849-1 | 4 |
| Stop category acc. to DIN 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] <ul style="list-style-type: none"> • at rate of recognizable hazardous failures (λ_{dd}) • at rate of non-recognizable hazardous failures (λ_{du}) | 1 400 FIT 16 FIT |

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|---|-------------------|
| PFHD with high demand rate acc. to EN 62061 | 0.00000002 1/h |
| PFDavg with low demand rate acc. to IEC 61508 | 0.000018 |
| MTTFd | 75 y |
| Hardware fault tolerance acc. to IEC 61508 | 1 |
| T1 value for proof test interval or service life acc. to IEC 61508 | 20 y |
| Safe state | Load circuit open |
| Protection against electrical shock | finger-safe |
| Off-delay time with safety-related request | |
| • when switched off via control inputs maximum | 43 ms |
| • when switched off via supply voltage maximum | 120 ms |
| Hardware fault tolerance acc. to IEC 61508 relating to ATEX | 0 |
| PFDavg with low demand rate acc. to IEC 61508 relating to ATEX | 0.0005 |
| PFHD with high demand rate acc. to EN 62061 relating to ATEX | 0.00000005 1/h |
| Safety Integrity Level (SIL) acc. to IEC 61508 relating to ATEX | SIL2 |
| T1 value for proof test interval or service life acc. to IEC 61508 relating to ATEX | 3 y |

Main circuit

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| Number of poles for main current circuit | 3 |
| Adjustable pick-up value current of the current-dependent overload release | 0.4 ... 2 A |
| Minimum load [%] | 20 % |
| 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 % |
| Operating current | |
| • at AC 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 three-phase motors at 400 V at 50 Hz | 0.09 ... 0.75 kW |

Inputs/ Outputs

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| Input voltage at digital input | |
|--------------------------------|--|

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|---|-----------|
| <ul style="list-style-type: none"> • at DC rated value | 24 V |
| <ul style="list-style-type: none"> • with signal <0> at DC | 0 ... 5 V |
| <ul style="list-style-type: none"> • for signal <1> at DC | 15 ... 30 |
| Input current at digital input | |
| <ul style="list-style-type: none"> • with signal <0> typical | 0.001 A |
| <ul style="list-style-type: none"> • for signal <1> typical | 0.008 A |
| Input current at digital input | |
| <ul style="list-style-type: none"> • for signal <1> at DC | 8 mA |
| <ul style="list-style-type: none"> • with signal <0> at DC | 1 mA |
| Number of CO contacts for auxiliary contacts | 1 |
| Operating current of auxiliary contacts at AC-15 at 230 V maximum | 3 A |
| Operating current of auxiliary contacts at DC-13 at 24 V maximum | 1 A |

Control circuit/ Control

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| Type of voltage of the control supply voltage | DC |
| Control supply voltage 1 | |
| <ul style="list-style-type: none"> • at DC rated value | 24 V |
| Operating range factor control supply voltage rated value at DC | |
| <ul style="list-style-type: none"> • initial value | 0.8 |
| <ul style="list-style-type: none"> • Full-scale value | 1.25 |
| Control current at DC | |
| <ul style="list-style-type: none"> • in standby mode | 13 mA |
| <ul style="list-style-type: none"> • when switching on | 150 mA |
| <ul style="list-style-type: none"> • during operation | 57 mA |

Response times

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| Switch-on delay time | 65 ... 76 ms |
| Off-delay time | 30 ... 43 ms |

Installation/ mounting/ dimensions

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| Mounting position | vertical, horizontal, standing (observe derating) |
| Mounting type | 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 | 0 mm 0 mm 50 mm 50 mm |

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| — 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

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| Installation altitude at height above sea level | |
| • maximum | 2 000 m |
| Ambient temperature | |
| • during operation | -25 ... +60 °C |
| • during storage | -40 ... +70 °C |
| • during transport | -40 ... +70 °C |
| Relative humidity during operation | 10 ... 95 % |
| Air pressure | |
| • acc. to SN 31205 | 900 ... 1 060 hPa |

Communication/ Protocol

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|---|----|
| Product function Bus communication | No |
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Connections/ Terminals

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| 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 current circuit | screw-type terminals |
| 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) |
| • at AWG conductors for main contacts | 1x (20 ... 12), 2x (20 ... 14) |
| Connectable conductor cross-section for main contacts | |
| • single or multi-stranded | 0.5 ... 4 mm ² |
| • finely stranded with core end processing | 0.5 ... 4 mm ² |
| Connectable conductor cross-section for auxiliary contacts | |
| • single or multi-stranded | 0.5 ... 2.5 mm ² |
| • finely stranded with core end processing | 0.5 ... 2.5 mm ² |
| Type of connectable conductor cross-sections | |
| • for auxiliary contacts | |
| — solid | 1x (0,5 ... 2,5 mm ²), 2x (1,0 ... 1,5 mm ²) |
| — finely stranded with core end processing | 1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1 mm ²) |

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| • at AWG conductors for auxiliary contacts | 1x (20 ... 14), 2x (18 ... 16) |
| AWG number as coded connectable conductor cross section | |
| • for main contacts | 20 ... 12 |
| • for auxiliary contacts | 20 ... 14 |

UL/CSA ratings

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|--|----------|
| Yielded mechanical performance [hp] | |
| • for single-phase AC motor | |
| — at 230 V rated value | 0.125 hp |
| • for three-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 |

Certificates/ approvals

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|---------------------------------|------------|---------------------------------------|
| General Product Approval | EMC | For use in hazardous locations |
|---------------------------------|------------|---------------------------------------|



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|--|----------------------------------|--------------------------|--------------|----------------|
| Functional Safety/Safety of Machinery | Declaration of Conformity | Test Certificates | other | Railway |
|--|----------------------------------|--------------------------|--------------|----------------|

[Type Examination Certificate](#)



[Miscellaneous](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Special Test Certificate](#)

Further information

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

www.siemens.com/ic10

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1302-1AA04>

Cax online generator

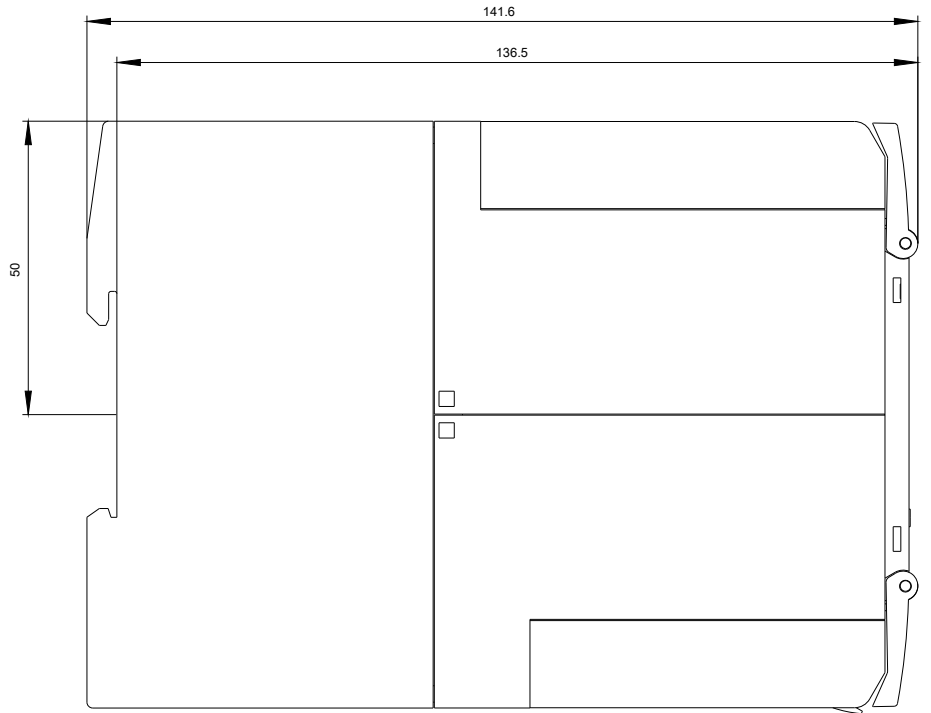
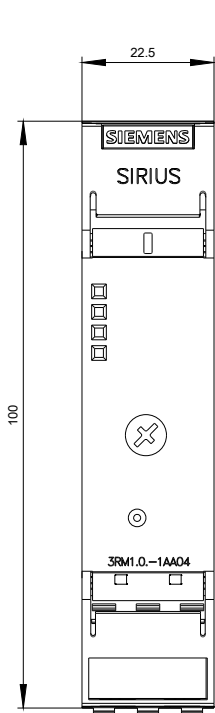
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RM1302-1AA04>

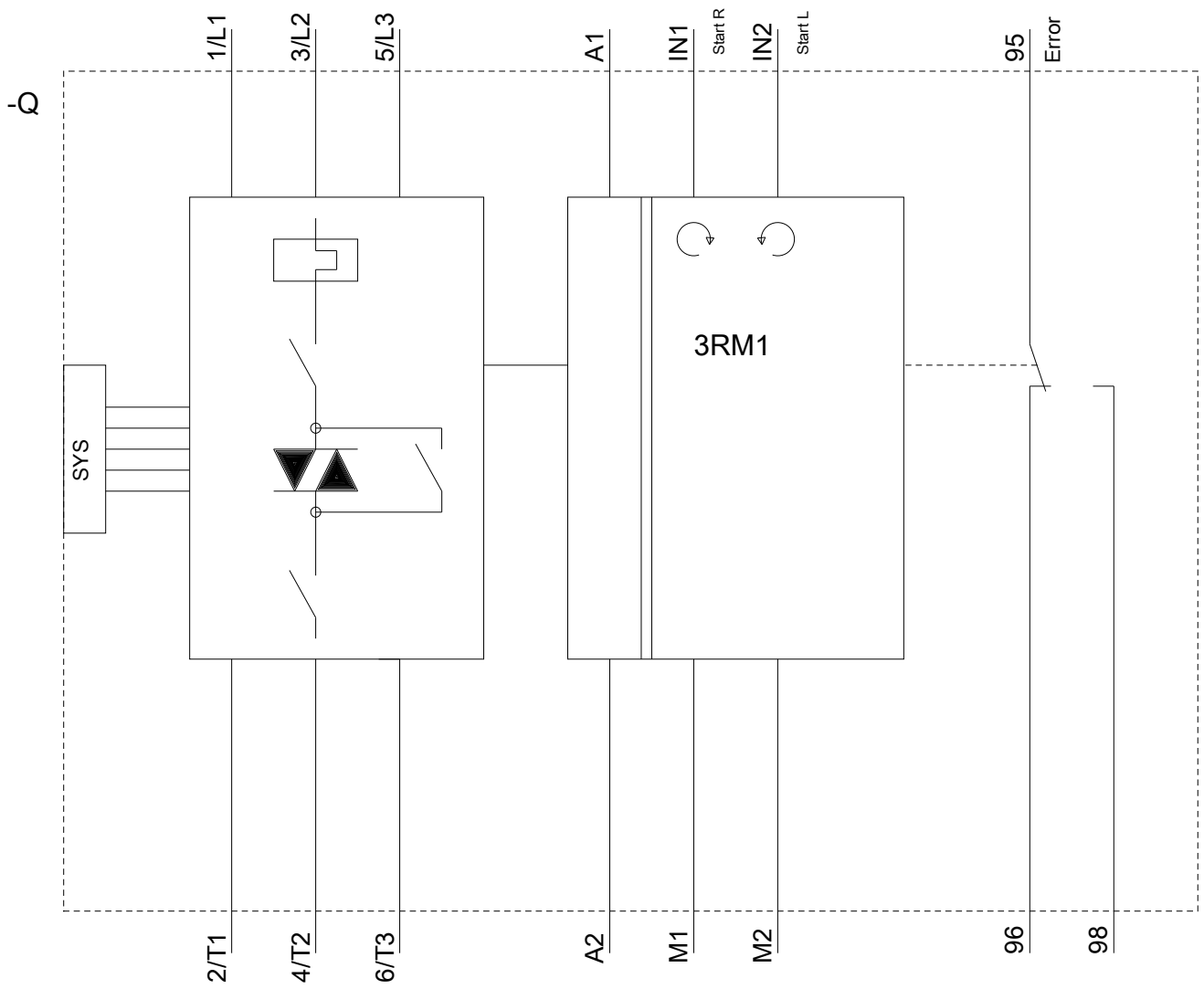
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

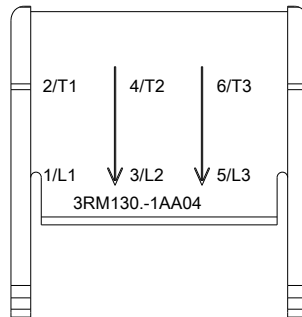
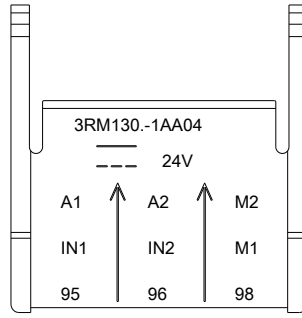
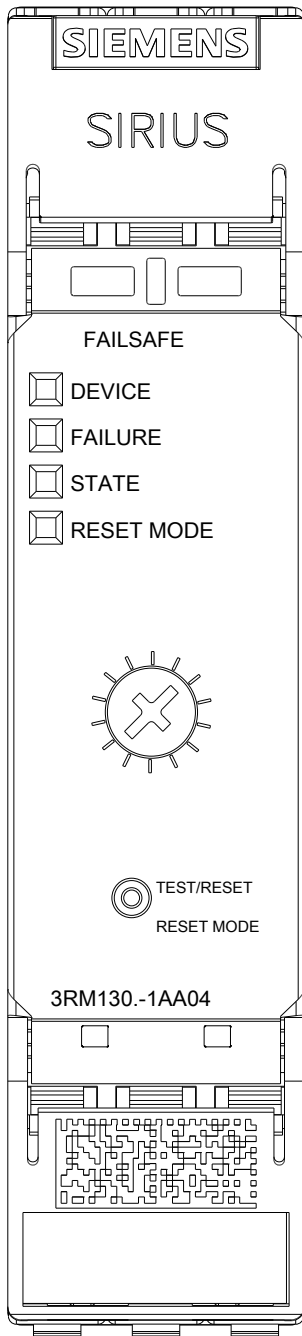
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1302-1AA04>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1302-1AA04&lang=en







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