

Fail-safe direct starter, 3RM1, 500 V, 0 - 0.12 kW, 0.1 - 0.5 A, 110-230 V AC, screw terminals



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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

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| Trip class | CLASS 10A |
| Product function | |
| • Intrinsic device 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 |
| 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 | Yes No |
| 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 domestic, business and commercial environments; Class A for industrial environments at 110 V DC |
| Field-bound HF-interference emission acc. to CISPR11 | Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC |

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 | 90 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 | 0.1 ... 0.5 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 | 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 three-phase motors at 400 V at 50 Hz | 0 ... 0.12 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 • with signal <0> at DC • for signal <1> at DC | 110 V 0 ... 40 V 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"> • with signal <0> typical • for signal <1> typical | 0.0004 A 0.002 A |
| 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 |
| 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 | AC/DC |
| 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 |
| Control supply voltage 1 <ul style="list-style-type: none"> • 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 |

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| Operating range factor control supply voltage rated value at AC at 60 Hz | |
| • initial value | 1.1 |
| • Full-scale value | 0.85 |
| Control current at AC | |
| • at 110 V in standby mode | 8 mA |
| • at 230 V in standby mode | 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 | 4 mA |
| • when switching on | 13 mA |
| • during operation | 30 mA |

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| Response times | |
| Switch-on delay time | 90 ... 120 ms |
| Off-delay time | 60 ... 90 ms |

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| Installation/ mounting/ dimensions | |
| 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 | |
| • 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 |

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| Ambient conditions | |
| Installation altitude at height above sea level | |
| • maximum | 2 000 m |
| Ambient temperature | |

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| <ul style="list-style-type: none"> • during operation • during storage • during transport | -25 ... +60 °C |
| | -40 ... +70 °C |
| | -40 ... +70 °C |
| Relative humidity during operation | 10 ... 95 % |
| Air pressure | |
| <ul style="list-style-type: none"> • 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 |
| <ul style="list-style-type: none"> • for main current circuit • for auxiliary and control current circuit | <p>screw-type terminals</p> <p>screw-type terminals</p> |
| 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 conductors for main contacts | <p>1x (0,5 ... 4 mm²), 2x (0,5 ... 2,5 mm²)</p> <p>1x (0,5 ... 4 mm²), 2x (0,5 ... 1,5 mm²)</p> <p>1x (20 ... 12), 2x (20 ... 14)</p> |
| Connectable conductor cross-section for main contacts | |
| <ul style="list-style-type: none"> • single or multi-stranded • finely stranded with core end processing | <p>0.5 ... 4 mm²</p> <p>0.5 ... 4 mm²</p> |
| Connectable conductor cross-section for auxiliary contacts | |
| <ul style="list-style-type: none"> • single or multi-stranded • finely stranded with core end processing | <p>0.5 ... 2.5 mm²</p> <p>0.5 ... 2.5 mm²</p> |
| 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 • at AWG conductors for auxiliary contacts | <p>1x (0,5 ... 2,5 mm²), 2x (1,0 ... 1,5 mm²)</p> <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1 mm²)</p> <p>1x (20 ... 14), 2x (18 ... 16)</p> |
| AWG number as coded connectable conductor cross section | |
| <ul style="list-style-type: none"> • for main contacts • for auxiliary contacts | <p>20 ... 12</p> <p>20 ... 14</p> |

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?mfb=3RM1101-1AA14>

Cax online generator

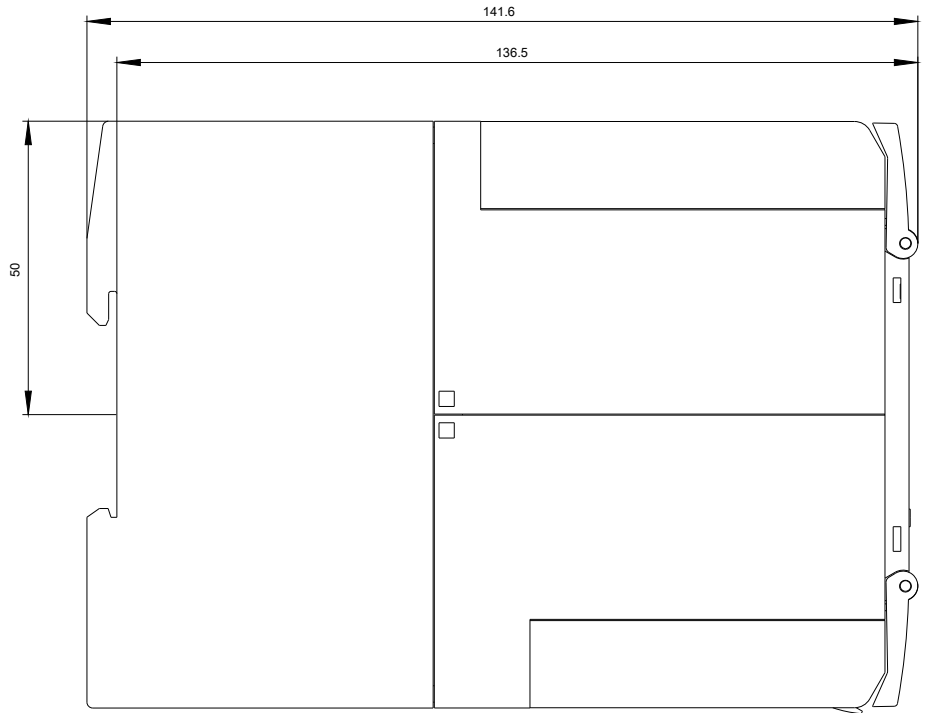
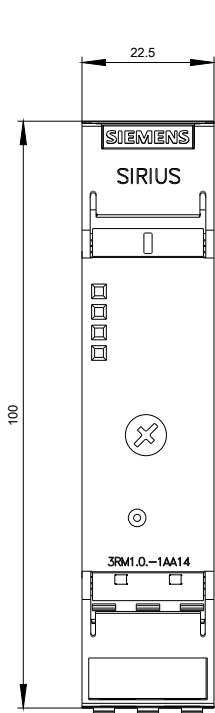
<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mfb=3RM1101-1AA14>

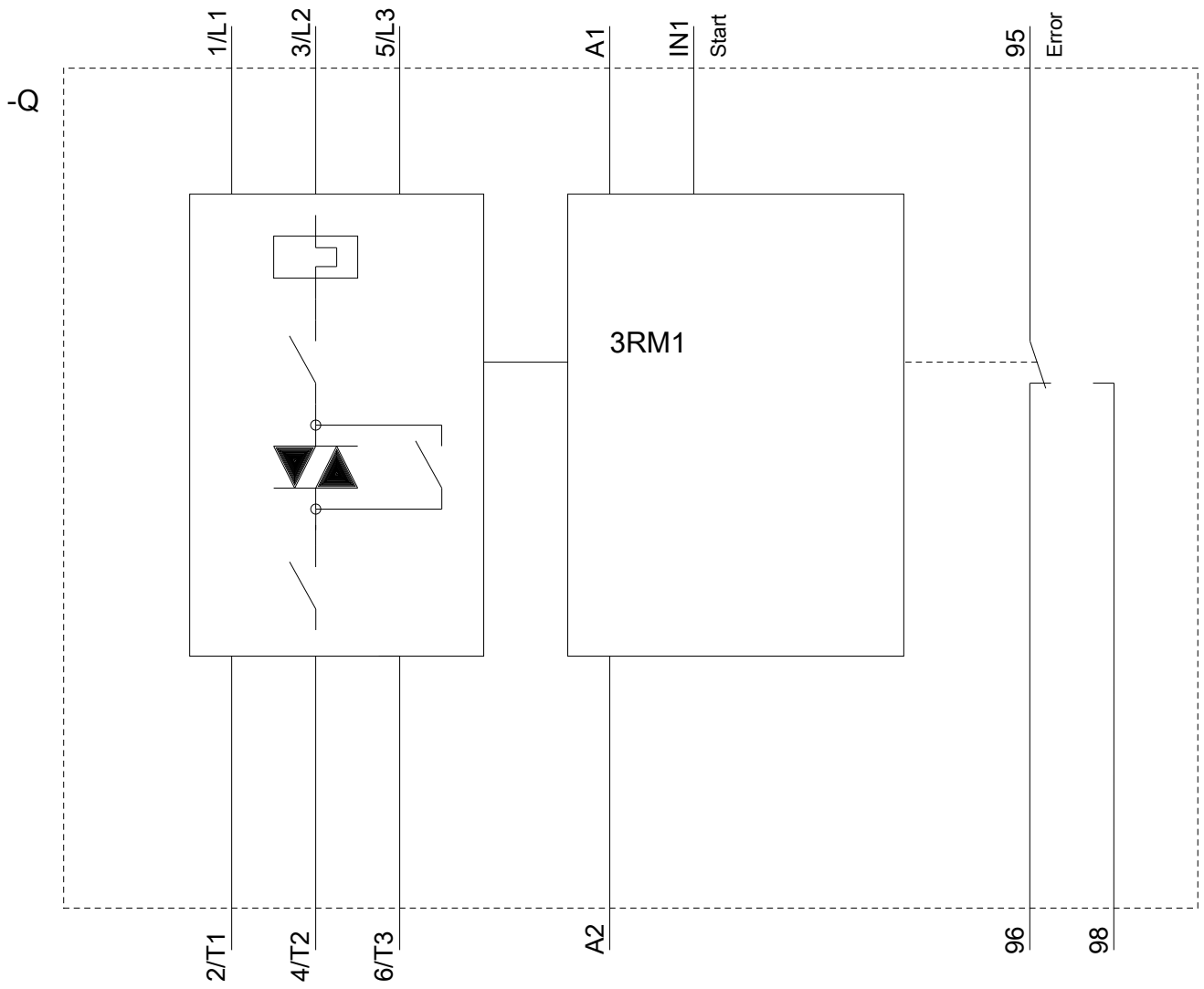
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

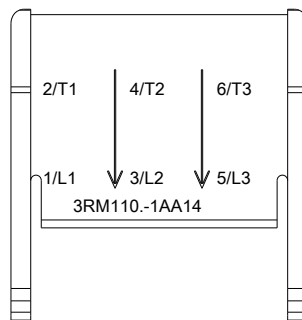
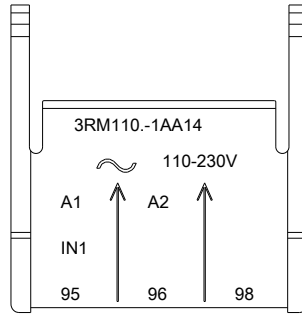
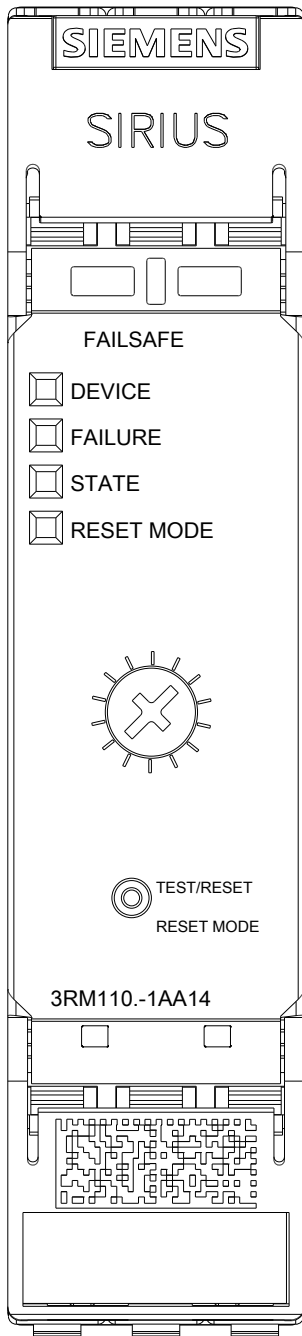
<https://support.industry.siemens.com/cs/ww/en/ps/3RM1101-1AA14>

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mfb=3RM1101-1AA14&lang=en







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