SIEMENS

## Data sheet 3RW5516-1HA14

Siemens EcoTech

SIRIUS soft starter 200-480 V 32 A, 110-250 V AC Screw terminals



| | |
|---|---|
| **product brand name** | SIRIUS |
| **product category** | Hybrid switching devices |
| **product designation** | Soft starter |
| **product type designation** | 3RW55 |
| **manufacturer's article number** | |
| ● of high feature HMI module usable | 3RW5980-0HF00 |
| ● of communication module PROFINET standard usable | 3RW5980-0CS00 |
| ● of communication module PROFINET high-feature usable | 3RW5950-0CH00 |
| ● of communication module PROFIBUS usable | 3RW5980-0CP00 |
| ● of communication module Modbus TCP usable | 3RW5980-0CT00 |
| ● of communication module Modbus RTU usable | 3RW5980-0CR00 |
| ● of communication module Ethernet/IP | 3RW5980-0CE00 |
| ● of circuit breaker usable at 400 V | 3RV2032-4VA10; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of circuit breaker usable at 500 V | 3RV2032-4VA10; Type of coordination 1, Iq = 10 kA, CLASS 10 |
| ● of circuit breaker usable at 400 V at inside-delta circuit | 3RV2032-4JA10; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of circuit breaker usable at 500 V at inside-delta circuit | 3RV2032-4JA10; Type of coordination 1, Iq = 10 kA, CLASS 10 |
| ● of the gG fuse usable up to 690 V | 3NA3824-6; Type of coordination 1, Iq = 65 kA |
| ● of the gG fuse usable at inside-delta circuit up to 500 V | 3NA3824-6; Type of coordination 1, Iq = 65 kA |
| ● of full range R fuse link for semiconductor protection usable up to 690 V | 3NE1818-0; Type of coordination 2, Iq = 65 kA |
| ● of back-up R fuse link for semiconductor protection usable up to 690 V | 3NE8022-1; Type of coordination 2, Iq = 65 kA |
| **General technical data** | |
| **starting voltage [%]** | 20 ... 100 % |
| **stopping voltage [%]** | 50 %; non-adjustable |
| **start-up ramp time of soft starter** | 0 ... 360 s |
| **ramp-down time of soft starter** | 0 ... 360 s |
| **start torque [%]** | 10 ... 100 % |
| **stopping torque [%]** | 10 ... 100 % |
| **torque limitation [%]** | 20 ... 200 % |
| **current limiting value [%] adjustable** | 125 ... 800 % |
| **breakaway voltage [%] adjustable** | 40 ... 100 % |
| **breakaway time adjustable** | 0 ... 2 s |
| **number of parameter sets** | 3 |
| **accuracy class** | 5 (based on IEC 61557-12) |
| **certificate of suitability** | |
| ● CE marking | Yes |


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|---|---|
| ● UL approval | Yes |
| ● CSA approval | Yes |
| **product component** | |
| ● HMI-High Feature | Yes |
| ● is supported HMI-High Feature | Yes |
| **product feature integrated bypass contact system** | Yes |
| **number of controlled phases** | 3 |
| **current unbalance limiting value [%]** | 10 ... 60 % |
| **ground-fault monitoring limiting value [%]** | 10 ... 95 % |
| **buffering time in the event of power failure** | |
| ● for main current circuit | 100 ms |
| ● for control circuit | 100 ms |
| **idle time adjustable** | 0 ... 255 s |
| **insulation voltage rated value** | 480 V |
| **degree of pollution** | 3, acc. to IEC 60947-4-2 |
| **impulse voltage rated value** | 6 kV |
| **blocking voltage of the thyristor maximum** | 1 600 V |
| **service factor** | 1.15 |
| **surge voltage resistance rated value** | 6 kV |
| **maximum permissible voltage for protective separation** | |
| ● between main and auxiliary circuit | 480 V; does not apply for thermistor connection |
| **shock resistance** | 15 g / 11 ms, from 6 g / 11 ms with potential contact lifting |
| **vibration resistance** | 15 mm up to 6 Hz; 2 g up to 500 Hz |
| **recovery time after overload trip adjustable** | 60 ... 1 800 s |
| utilization category according to IEC 60947-4-2 | AC 53a |
| **reference code according to IEC 81346-2** | Q |
| **Substance Prohibitance (day/month/year)** | 02/15/2018 |
| **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<br>Dibutylbis(pentane-2,4-dionato-O,O')tin CAS-No. 22673-19-4<br>Diboron trioxide CAS-No. 1303-86-2 |
| **Net Weight** | 2.212 kg |
| **product function** | |
| ● ramp-up (soft starting) | Yes |
| ● soft stopping | Yes |
| ● breakaway pulse | Yes |
| ● adjustable current limitation | Yes |
| ● creep speed in both directions of rotation | Yes |
| ● pump stop | Yes |
| ● DC braking | Yes |
| ● motor heating | Yes |
| ● min/max pointer | Yes |
| ● trace function | Yes |
| ● intrinsic device protection | Yes |
| ● motor overload protection | Yes; Full motor protection (thermistor motor protection and electronic motor overload protection) / When using the motor overload protection according to ATEX, an upstream contactor is required in inside-delta circuit. |
| ● evaluation of thermistor motor protection | Yes; Type A PTC or Klixon / Thermoclick |
| ● inside-delta circuit | Yes |
| ● auto-RESET | Yes |
| ● manual RESET | Yes |
| ● remote reset | Yes |
| ● communication function | Yes |
| ● operating measured value display | Yes |
| ● event list | Yes |
| ● error logbook | Yes |
| ● via software parameterizable | Yes |
| ● via software configurable | Yes |


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|---|---|
| ● screw terminal | Yes |
| ● spring-loaded terminal | No |
| ● **PROFIenergy** | Yes; in connection with the PROFINET Standard and PROFINET High-Feature communication modules |
| ● **firmware update** | Yes |
| ● **removable terminal for control circuit** | Yes |
| ● voltage ramp | Yes |
| ● torque control | Yes |
| ● combined braking | Yes |
| ● analog output | Yes; 4 ... 20 mA (default) / 0 ... 10 V |
| ● programmable control inputs/outputs | Yes |
| ● condition monitoring | Yes |
| ● automatic parameterisation | Yes |
| ● application wizards | Yes |
| ● alternative stopping mode | Yes |
| ● emergency operation mode | Yes |
| ● reversing operation | Yes |
| ● soft starting at heavy starting conditions | Yes |
| **Power Electronics** | |
| **operational current** | |
| ● at 40 °C rated value | 32 A |
| ● at 40 °C rated value minimum | 6.5 A |
| ● at 50 °C rated value | 28.4 A |
| ● at 60 °C rated value | 26 A |
| **operational current at inside-delta circuit** | |
| ● at 40 °C rated value | 55.4 A |
| ● at 50 °C rated value | 49 A |
| ● at 60 °C rated value | 45 A |
| **operating voltage** | |
| ● rated value | 200 ... 480 V |
| ● at inside-delta circuit rated value | 200 ... 480 V |
| **relative negative tolerance of the operating voltage** | -15 % |
| **relative positive tolerance of the operating voltage** | 10 % |
| **relative negative tolerance of the operating voltage at inside-delta circuit** | -15 % |
| **relative positive tolerance of the operating voltage at inside-delta circuit** | 10 % |
| **operating power for 3-phase motors** | |
| ● at 230 V at 40 °C rated value | 7.5 kW |
| ● at 230 V at inside-delta circuit at 40 °C rated value | 15 kW |
| ● at 400 V at 40 °C rated value | 15 kW |
| ● at 400 V at inside-delta circuit at 40 °C rated value | 22 kW |
| **Operating frequency 1 rated value** | 50 Hz |
| **Operating frequency 2 rated value** | 60 Hz |
| **relative negative tolerance of the operating frequency** | -10 % |
| **relative positive tolerance of the operating frequency** | 10 % |
| **minimum load [%]** | 10 %; Relative to set Ie |
| **power loss [W] for rated value of the current at AC** | |
| ● at 40 °C after startup | 10 W |
| ● at 50 °C after startup | 9 W |
| ● at 60 °C after startup | 8 W |
| **power loss [W] at AC at current limitation 350%** | |
| ● at 40 °C during startup | 519 W |
| ● at 50 °C during startup | 437 W |
| ● at 60 °C during startup | 386 W |
| **type of the motor protection** | Electronic, tripping in the event of thermal overload of the motor |
| **Control circuit/ Control** | |
| **type of voltage of the control supply voltage** | AC |
| **control supply voltage at AC** | |
| ● at 50 Hz | 110 ... 250 V |


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| ● at 60 Hz | 110 ... 250 V |
| **relative negative tolerance of the control supply voltage at AC at 50 Hz** | -15 % |
| **relative positive tolerance of the control supply voltage at AC at 50 Hz** | 10 % |
| **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 frequency** | 50 ... 60 Hz |
| **relative negative tolerance of the control supply voltage frequency** | -10 % |
| **relative positive tolerance of the control supply voltage frequency** | 10 % |
| **control supply current in standby mode rated value** | 100 mA |
| **holding current in bypass operation rated value** | 165 mA |
| **inrush current by closing the bypass contacts maximum** | 0.2 A |
| inrush current peak at application of control supply voltage maximum | 43 A |
| duration of inrush current peak at application of control supply voltage | 1.6 ms |
| **design of the overvoltage protection** | Varistor |
| **design of short-circuit protection for control circuit** | 4 A gG fuse (Icu=1 kA), 6 A quick-acting fuse (Icu=1 kA), C1 miniature circuit breaker (Icu= 600 A), C6 miniature circuit breaker (Icu= 300 A); Is not part of scope of supply |
| **Inputs/ Outputs** | |
| **number of digital inputs** | 4 |
| ● parameterizable | 4 |
| | |
| ● **number of digital outputs** | 4 |
| ● number of digital outputs parameterizable | 3 |
| ● number of digital outputs not parameterizable | 1 |
| **digital output version** | 3 normally-open contacts (NO) / 1 changeover contact (CO) |
| **number of analog outputs** | 1 |
| **switching capacity current of the relay outputs** | |
| ● at AC-15 at 250 V rated value | 3 A |
| ● at DC-13 at 24 V rated value | 1 A |
| **Installation/ mounting/ dimensions** | |
| **mounting position** | Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°) |
| **fastening method** | screw fixing |
| **height** | 275 mm |
| **width** | 170 mm |
| **depth** | 152 mm |
| required spacing with side-by-side mounting | |
| ● forwards | 10 mm |
| ● backwards | 0 mm |
| ● upwards | 100 mm |
| ● downwards | 75 mm |
| ● at the side | 5 mm |
| **weight without packaging** | 2.6 kg |
| **Connections/ Terminals** | |
| **type of electrical connection** | |
| ● for main current circuit | screw-type terminals |
| ● for control circuit | screw-type terminals |
| **wire length for thermistor connection** | |
| ● with conductor cross-section = 0.5 mm² maximum | 50 m |
| ● with conductor cross-section = 1.5 mm² maximum | 150 m |
| ● with conductor cross-section = 2.5 mm² maximum | 250 m |
| **type of connectable conductor cross-sections** | |
| ● for main contacts | |
| — solid | 2x (1.0 ... 2.5 mm²), 2x (2.5 ... 10 mm²) |
| — finely stranded with core end processing | 2x (1.0 ... 2.5 mm²), 2x (2.5 ... 6.0 mm²) |


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| ● for AWG cables for main current circuit solid | 2x (16 ... 12), 2x (14 ... 8) |
| **type of connectable conductor cross-sections** | |
| ● for control circuit solid | 1x (0.5 ... 4.0 mm²), 2x (0.5 ... 2.5 mm²) |
| ● for control circuit finely stranded with core end processing | 1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.5 mm²) |
| ● for AWG cables for control circuit solid | 1x (20 ... 12), 2x (20 ... 14) |
| **wire length** | |
| ● between soft starter and motor maximum | 800 m |
| ● at the digital inputs at DC maximum | 1 000 m |
| **tightening torque** | |
| ● for main contacts with screw-type terminals | 2 ... 2.5 N·m |
| ● for auxiliary and control contacts with screw-type terminals | 0.8 ... 1.2 N·m |
| **tightening torque [lbf·in]** | |
| ● for main contacts with screw-type terminals | 18 ... 22 lbf·in |
| ● for auxiliary and control contacts with screw-type terminals | 7 ... 10.3 lbf·in |
| **Ambient conditions** | |
| installation altitude at height above sea level maximum | 5 000 m |
| **ambient temperature** | |
| ● during operation | -25 ... +60 °C; Please observe derating at temperatures of 40 °C or above |
| ● during storage and transport | -40 ... +80 °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 |
| ● during storage according to IEC 60721 | 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not get inside the devices), 1M4 |
| ● during transport according to IEC 60721 | 2K2, 2C1, 2S1, 2M2 (max. fall height 0.3 m) |
| **Electromagnetic compatibility** | |
| **EMC emitted interference** | acc. to IEC 60947-4-2: Class A, Class B on request |
| **Communication/ Protocol** | |
| **communication module is supported** | |
| ● PROFINET standard | Yes |
| ● PROFINET high-feature | Yes |
| ● EtherNet/IP | Yes |
| ● Modbus RTU | Yes |
| ● Modbus TCP | Yes |
| ● PROFIBUS | Yes |
| **UL/CSA ratings** | |
| **manufacturer's article number** | |
| **● of circuit breaker usable for Standard Faults** | |
| — at 460/480 V according to UL | Siemens type: 3RV2742, max. 70 A or 3VA51, max. 100 A; Iq = 5 kA |
| — 60/480 V according to UL | Siemens type: 3RV2742, max.40 A or 3VA51, max. 60 A; Iq max = 65 kA |
| — at 460/480 V at inside-delta circuit according to UL | Siemens type: 3RV2742, max. 70 A or 3VA51, max. 100 A; Iq = 5 kA |
| — 60/480 V at inside-delta circuit according to UL | Siemens type: 3VA51, max. 60 A; Iq max = 65 kA |
| — at 575/600 V according to UL | Siemens type: 3RV2742, max. 70 A or 3VA51, max. 100 A; Iq = 5 kA |
| — 75/600 V at inside-delta circuit according to UL | Siemens type: 3VA51, max. 60 A; Iq max = 65 kA |
| — at 575/600 V at inside-delta circuit according to UL | Siemens type: 3RV2742, max. 70 A or 3VA51, max. 100 A; Iq = 5 kA |
| **● of the fuse** | |
| — usable for Standard Faults up to 575/600 V according to UL | Type: Class RK5 / K5, max. 125 A; Iq = 5 kA |
| — usable for High Faults up to 575/600 V according to UL | Type: Class J / L, max. 125 A; Iq = 100 kA |
| — usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL | Type: Class RK5 / K5, max. 125 A; Iq = 5 kA |
| — usable for High Faults at inside-delta circuit up to 575/600 V according to UL | Type: Class J / L, max. 125 A; Iq = 100 kA |
| **operating power [hp] for 3-phase motors** | |
| ● at 200/208 V at 50 °C rated value | 7.5 hp |
| ● at 220/230 V at 50 °C rated value | 10 hp |
| ● at 460/480 V at 50 °C rated value | 20 hp |
| ● at 200/208 V at inside-delta circuit at 50 °C rated value | 15 hp |


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| ● at 220/230 V at inside-delta circuit at 50 °C rated value | 15 hp |
| ● at 460/480 V at inside-delta circuit at 50 °C rated value | 30 hp |
| **contact rating of auxiliary contacts according to UL** | R300-B300 |
| Electrical Safety | |
| **protection class IP on the front according to IEC 60529** | IP20 |
| **touch protection on the front according to IEC 60529** | finger-safe, for vertical contact from the front |
| **ATEX** | |
| **Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX** | SIL 1 |
| **PFHD with high demand rate according to IEC 61508 relating to ATEX** | 5E-7 1/h |
| **PFDavg with low demand rate according to IEC 61508 relating to ATEX** | 0.008 |
| **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** | |
| ● ATEX | Yes |
| ● IECEx | Yes |
| ● according to ATEX directive 2014/34/EU | BVS 18 ATEX F 003 X |
| **type of protection according to ATEX directive 2014/34/EU** | II (2)G [Ex eb Gb] [Ex db Gb] [Ex pxb Gb], II (2)D [Ex tb Db] [Ex pxb Db], I (M2) [Ex db Mb] |
| **Approvals Certificates** | |
| Environmental Product Declaration | |
| ● global warming potential [CO2 eq] / during manufacturing | 50.8 kg |
| ● global warming potential [CO2 eq] / during sales | 0.827 kg |
| ● global warming potential [CO2 eq] / during operation | 240 kg |
| ● global warming potential [CO2 eq] / after end of life | -7.11 kg |
| ● global warming potential [CO2 eq] / total | 285 kg |

**Environment**

**General Product Approval**

Environmental Confirmations

**General Product Approval**

**EMV**

**For use in hazardous locations**

**Test Certificates**

**Maritime application**

Type Test Certificates/Test Report

**other**

Confirmation

**Further information**

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875
**Information for data generation and storage**


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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=3RW5516-1HA14

**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RW5516-1HA14

**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5516-1HA14&lang=en

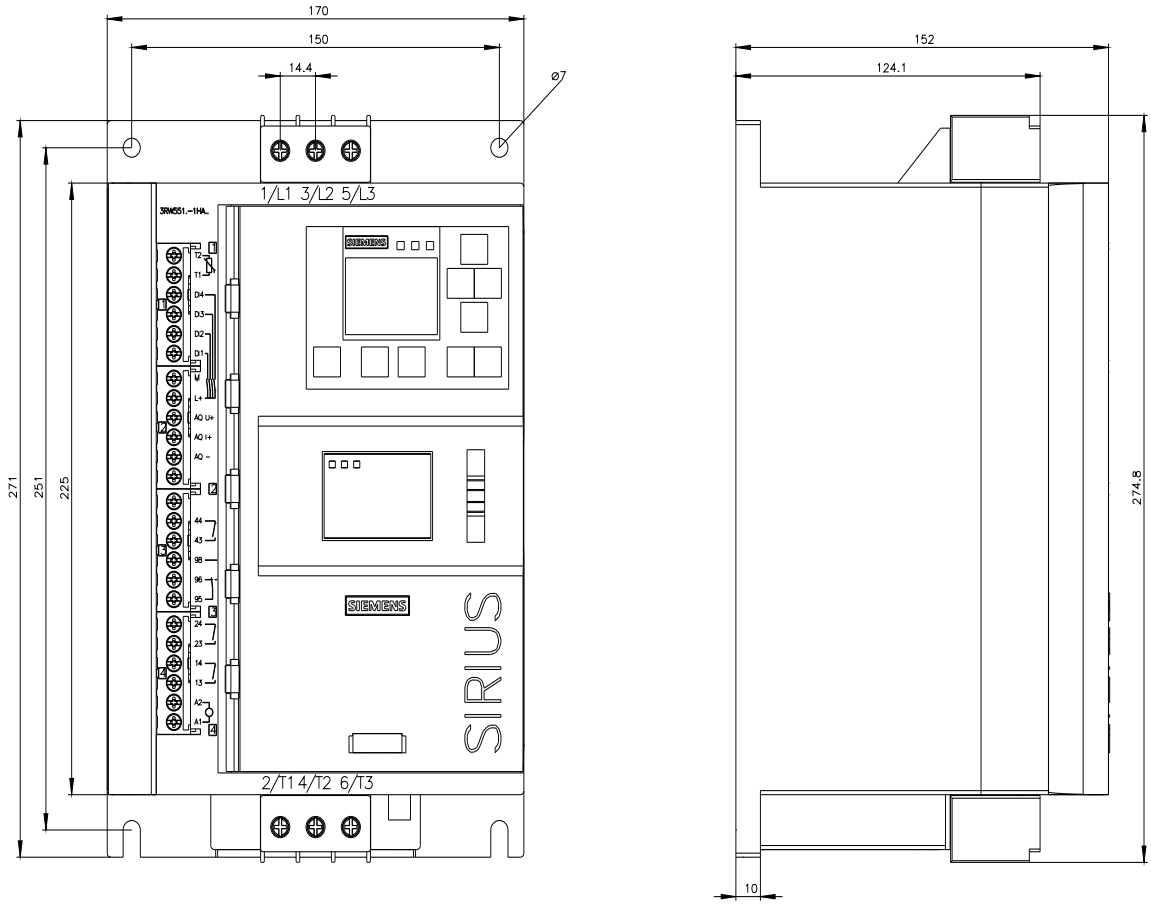
**Cax online generator**
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5516-1HA14

**Kennlinien**
https://curves.simaris.siemens.com/curves/3RW5516-1HA14

**Characteristic: Tripping characteristics, I²t, Let-through current**
https://support.industry.siemens.com/cs/ww/en/ps/3RW5516-1HA14/char

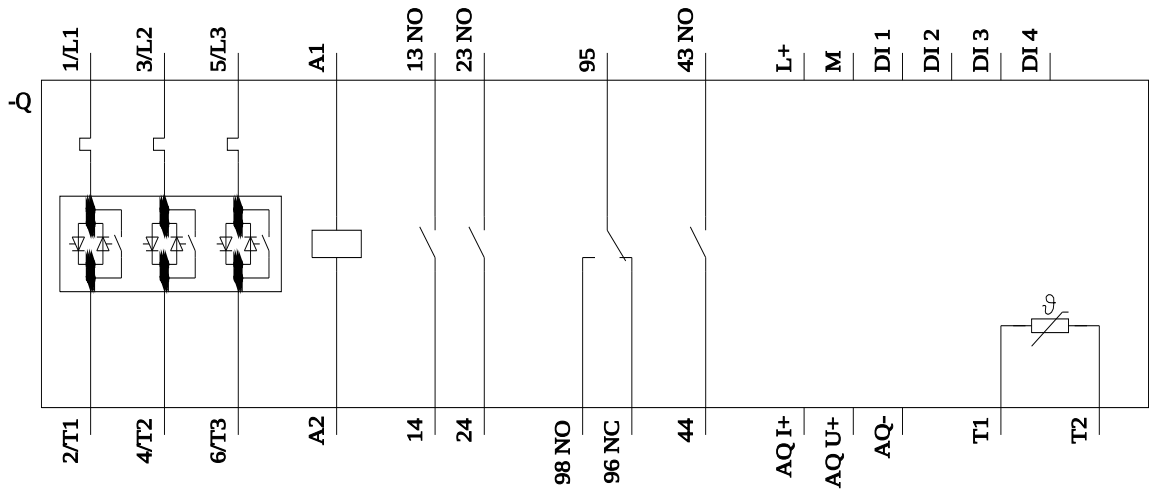
**Characteristic: Installation altitude**
https://www.automation.siemens.com/bilddb/index.aspx?gridview=view2&objkey=G_NSB0_XX_01704&showdetail=true&view=Search

**Simulation Tool for Soft Starters (STS)**
https://support.industry.siemens.com/cs/ww/en/view/101494917





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