# SIEMENS

Figure similar

SIRIUS soft starter 200-480 V 570 A, 24 V AC/DC spring-type terminals
Fail-safe

| | |
|---|---|
| **product brand name** | SIRIUS |
| **product category** | Hybrid switching devices |
| **product designation** | Failsafe soft starters |
| **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 | 3VA2580-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of circuit breaker usable at 500 V | 3VA2580-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of circuit breaker usable at 400 V at inside-delta circuit | 3VA2510-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of circuit breaker usable at 500 V at inside-delta circuit | 3VA2510-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10 |
| ● of the gG fuse usable up to 690 V | 2x3NA3365-6; Type of coordination 1, Iq = 65 kA |
| ● of the gG fuse usable at inside-delta circuit up to 500 V | 2x3NA3365-6; Type of coordination 1, Iq = 65 kA |
| ● of full range R fuse link for semiconductor protection usable up to 690 V | 3NE1437-2; Type of coordination 2, Iq = 65 kA |
| ● of back-up R fuse link for semiconductor protection usable up to 690 V | 3NC3342-1U; 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 according to IEC 61557-12** | 5 % |
| **certificate of suitability** | |
| ● CE marking | Yes |

| | |
|---|---|
| ● 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 |
| **trip class** | CLASS 10A / 10E (default) / 20E / 30E; acc. to IEC 60947-4-2 |
| **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** | 1 400 V |
| **service factor** | 1.15 |
| **surge voltage resistance rated value** | 6 kV |
| **maximum permissible voltage for safe isolation** | |
| ● 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 (Date)** | 11/22/2019 |
| **product function** | |
| ● ramp-up (soft starting) | Yes |
| ● ramp-down (soft stop) | Yes |
| ● breakaway pulse | Yes |
| ● adjustable current limitation | Yes |
| ● creep speed in both directions of rotation | Yes |
| ● pump ramp down | Yes |
| ● DC braking | Yes |
| ● motor heating | Yes |
| ● slave pointer function | 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 |
| ● screw terminal | No |
| ● spring-loaded terminal | Yes |
| ● **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 run-down | Yes |
| ● emergency operation mode | Yes |
| ● reversing operation | Yes |
| ● soft starting at heavy starting conditions | Yes |

## Power Electronics

| | |
|---|---|
| **operational current** | |
| ● at 40 °C rated value | 570 A |
| ● at 40 °C rated value minimum | 114 A |
| ● at 50 °C rated value | 504 A |
| ● at 60 °C rated value | 460 A |
| **operational current at inside-delta circuit** | |
| ● at 40 °C rated value | 987 A |
| ● at 50 °C rated value | 873 A |
| ● at 60 °C rated value | 796 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 | 160 kW |
| ● at 230 V at inside-delta circuit at 40 °C rated value | 315 kW |
| ● at 400 V at 40 °C rated value | 315 kW |
| ● at 400 V at inside-delta circuit at 40 °C rated value | 560 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 | 171 W |
| ● at 50 °C after startup | 151 W |
| ● at 60 °C after startup | 141 W |
| **power loss [W] at AC at current limitation 350 %** | |
| ● at 40 °C during startup | 10 229 W |
| ● at 50 °C during startup | 8 488 W |
| ● at 60 °C during startup | 7 651 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/DC |
| **control supply voltage at AC** | |
| ● at 50 Hz rated value | 24 V |
| ● at 60 Hz rated value | 24 V |
| **relative negative tolerance of the control supply voltage at AC at 50 Hz** | -20 % |
| **relative positive tolerance of the control supply voltage at AC at 50 Hz** | 20 % |
| **relative negative tolerance of the control supply voltage at AC at 60 Hz** | -20 % |
| **relative positive tolerance of the control supply voltage at AC at 60 Hz** | 20 % |
| **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 voltage** | |

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| | |
|---|---|
| ● at DC rated value | 24 V |
| **relative negative tolerance of the control supply voltage at DC** | -20 % |
| **relative positive tolerance of the control supply voltage at DC** | 20 % |
| **control supply current in standby mode rated value** | 440 mA |
| **holding current in bypass operation rated value** | 720 mA |
| **inrush current by closing the bypass contacts maximum** | 6.7 A |
| inrush current peak at application of control supply voltage maximum | 7.5 A |
| duration of inrush current peak at application of control supply voltage | 20 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 |
| ● with fail-safe | 1 |
| ● parameterizable | 4 |
| **● number of digital outputs** | 3 |
| ● Number of digital outputs with fail-safe | 1 |
| ● number of digital outputs parameterizable | 2 |
| ● number of digital outputs not parameterizable | 1 |
| **digital output version** | 2 normally-open contacts (NO) / 1 normally-closed contact (NC) / 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 |

## Response times

| | |
|---|---|
| OFF-delay time with safety-related request when switched off via control inputs maximum | 100 ms |

## Installation/ mounting/ dimensions

| | |
|---|---|
| **mounting position** | Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°) |
| **fastening method** | screw fixing |
| **height** | 393 mm |
| **width** | 210 mm |
| **depth** | 203 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** | 10.9 kg |

## Connections/ Terminals

| | |
|---|---|
| **type of electrical connection** | |
| ● for main current circuit | busbar connection |
| ● for control circuit | spring-loaded terminals |
| **width of connection bar maximum** | 45 mm |
| **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 DIN cable lug for main contacts stranded | 2x (50 ... 240 mm²) |
| ● for DIN cable lug for main contacts finely stranded | 2x (70 ... 240 mm²) |
| **type of connectable conductor cross-sections** | |
| ● for control circuit solid | 2x (0.25 ... 1.5 mm²) |
| ● for control circuit finely stranded with core end processing | 2x (0.25 ... 1.5 mm²) |
| ● at AWG cables for control circuit solid | 2x (24 ... 16) |
| ● at AWG cables for control circuit finely stranded with | 2x (24 ... 16) |

| | |
|---|---|
| core end processing | |
| **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 | 14 ... 24 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 | 124 ... 210 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 | 2 000 m; Derating as of 1000 m, see catalog |
| **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) |
| **EMC emitted interference** | acc. to IEC 60947-4-2: Class A |

## 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 the fuse** | |
| — usable for Standard Faults up to 575/600 V according to UL | Type: Class J / L, max. 1600 A; Iq = 30 kA |
| — usable for High Faults up to 575/600 V according to UL | Type: Class J / L, max. 1200 A; Iq = 100 kA |
| — usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL | Type: Class J / L, max. 1600 A; Iq = 30 kA |
| — usable for High Faults at inside-delta circuit up to 575/600 V according to UL | Type: Class J / L, max. 1200 A; Iq = 100 kA |
| **operating power [hp] for 3-phase motors** | |
| ● at 200/208 V at 50 °C rated value | 150 hp |
| ● at 220/230 V at 50 °C rated value | 200 hp |
| ● at 460/480 V at 50 °C rated value | 400 hp |
| ● at 200/208 V at inside-delta circuit at 50 °C rated value | 300 hp |
| ● at 220/230 V at inside-delta circuit at 50 °C rated value | 350 hp |
| ● at 460/480 V at inside-delta circuit at 50 °C rated value | 750 hp |
| **contact rating of auxiliary contacts according to UL** | R300-B300 |

## Safety related data

| | |
|---|---|
| **safety device type according to IEC 61508-2** | Type B |
| **B10d value** | 648 000 |
| **Safety Integrity Level (SIL)** | |
| ● according to IEC 61508 | SIL1 |
| **SIL Claim Limit (subsystem) according to EN 62061** | SIL 1 |
| performance level (PL) according to EN ISO 13849-1 | c |
| category according to EN ISO 13849-1 | 2 |
| **stop category according to EN 60204-1** | 0 |
| **Safe failure fraction (SFF)** | 60 % |

| | |
|---|---|
| **average diagnostic coverage level (DCavg)** | 90 % |
| **diagnostics test interval by internal test function maximum** | 1 000 s |
| PFHD with high demand rate according to EN 62061 | 1E-6 1/h |
| **PFDavg with low demand rate according to IEC 61508** | 0.09 |
| **hardware fault tolerance according to IEC 61508** | 0 |
| T1 value for proof test interval or service life according to IEC 61508 | 20 a |
| **safe state** | Open load circuit |
| **protection class IP on the front according to IEC 60529** | IP00; IP20 with cover |
| **touch protection on the front according to IEC 60529** | finger-safe, for vertical contact from the front with cover |
| **electromagnetic compatibility** | acc. to IEC 60947-4-2 |

## ATEX

| | |
|---|---|
| **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] |
| **hardware fault tolerance according to IEC 61508 relating to ATEX** | 0 |
| **PFDavg with low demand rate according to IEC 61508 relating to ATEX** | 0.008 |
| **PFHD with high demand rate according to EN 62061 relating to ATEX** | 5E-7 1/h |
| **Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX** | SIL1 |
| **T1 value for proof test interval or service life according to IEC 61508 relating to ATEX** | 3 a |

## Certificates/ approvals

### General Product Approval



CSA   CCC   [Confirmation](#)   TÜV   UL   EAC

| EMC | For use in hazardous locations | Declaration of Conformity | Test Certificates | Marine / Shipping |
|---|---|---|---|---|
| RCM | IECEx / ATEX | CE / EG-Konf. | [Type Test Certificates/Test Report](#) | ABS |

| Marine / Shipping | | | other |
|---|---|---|---|
| BUREAU VERITAS | Lloyd's Register LRS | PRS | [Confirmation](#) |

## Further information

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875
**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=3RW5548-2HF04
**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5548-2HF04

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**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RW5548-2HF04
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5548-2HF04&lang=en
**Characteristic: Tripping characteristics, I²t, Let-through current**
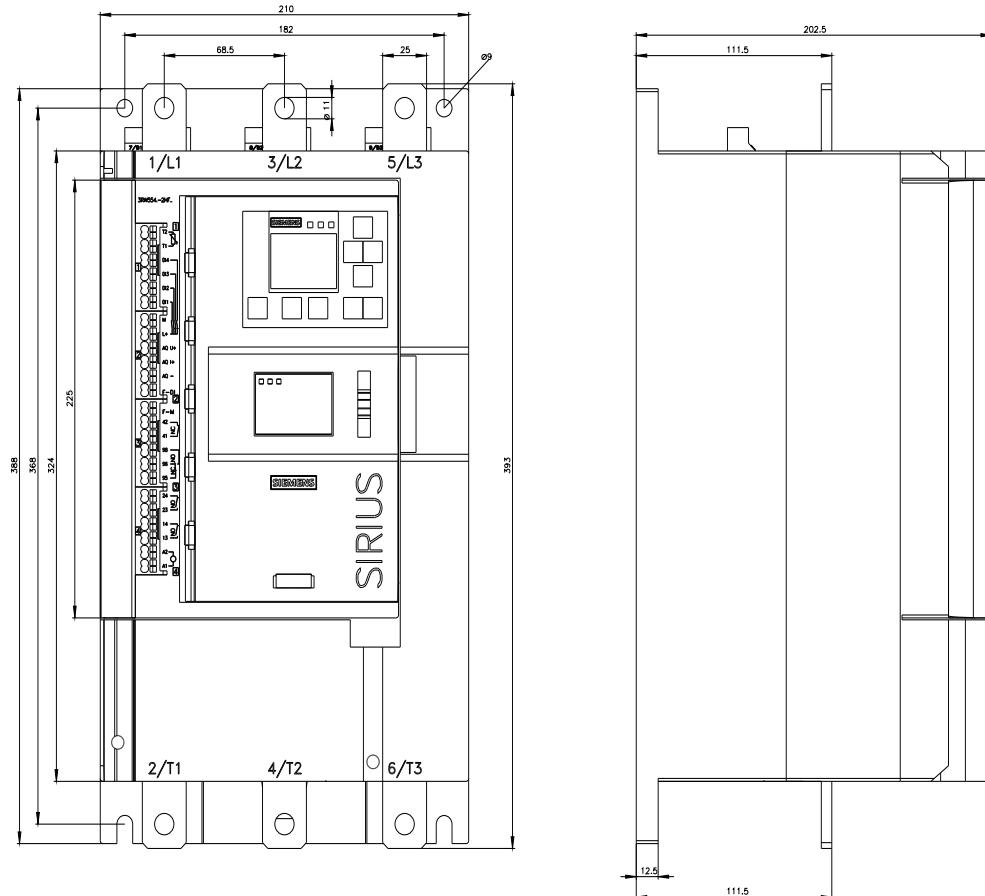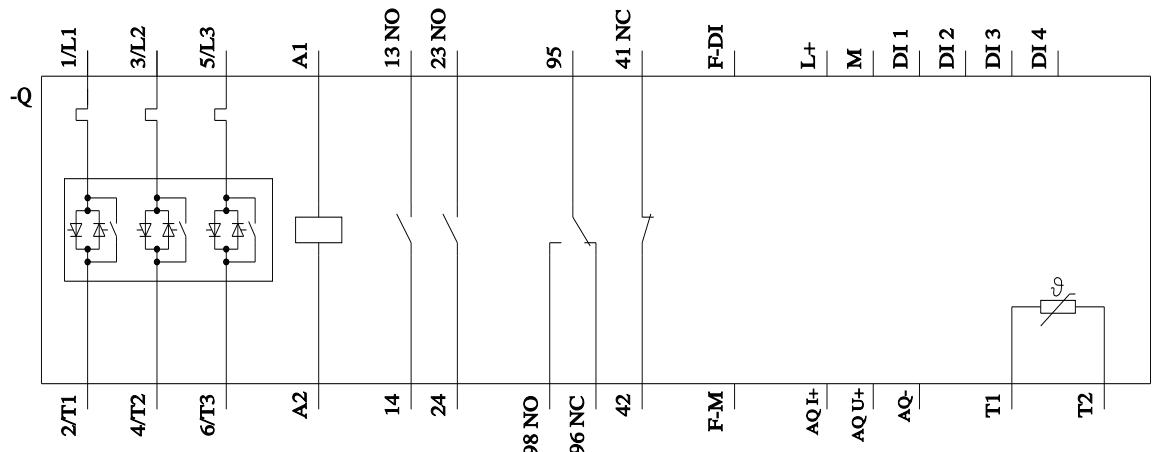https://support.industry.siemens.com/cs/ww/en/ps/3RW5548-2HF04/char
**Characteristic: Installation altitude**
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5548-2HF04&objecttype=14&gridview=view1
**Simulation Tool for Soft Starters (STS)**
https://support.industry.siemens.com/cs/ww/en/view/101494917

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1/L1  3/L2  5/L3  A1  13 NO  23 NO  95  41 NC  F-DI  L+  M  DI 1  DI 2  DI 3  DI 4



2/T1  4/T2  6/T3  A2  14  24  98 NO  96 NC  42  F-M  AQ I+  AQ U+  AQ-  T1  T2

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