

## Data sheet

## 3RW5546-6HF04



Figure similar

SIRIUS soft starter 200-480 V 370 A, 24 V AC/DC Screw terminals Fail-safe

<b>product brand name</b>	SIRIUS
<b>product category</b>	Hybrid switching devices
<b>product designation</b>	Failsafe soft starters
<b>product type designation</b>	3RW55
<b>manufacturer's article number</b>	<ul style="list-style-type: none"> <li>• of high feature HMI module usable <a href="#">3RW5980-0HF00</a></li> <li>• of communication module PROFINET standard usable <a href="#">3RW5980-0CS00</a></li> <li>• of communication module PROFINET high-feature usable <a href="#">3RW5950-0CH00</a></li> <li>• of communication module PROFIBUS usable <a href="#">3RW5980-0CP00</a></li> <li>• of communication module Modbus TCP usable <a href="#">3RW5980-0CT00</a></li> <li>• of communication module Modbus RTU usable <a href="#">3RW5980-0CR00</a></li> <li>• of communication module Ethernet/IP <a href="#">3RW5980-0CE00</a></li> <li>• of circuit breaker usable at 400 V <a href="#">3VA2440-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 500 V <a href="#">3VA2440-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 400 V at inside-delta circuit <a href="#">3VA2580-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 500 V at inside-delta circuit <a href="#">3VA2580-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10</a></li> <li>• of the gG fuse usable up to 690 V 2x3NA3365-6; Type of coordination 1, Iq = 65 kA</li> <li>• of the gG fuse usable at inside-delta circuit up to 500 V 2x3NA3365-6; Type of coordination 1, Iq = 65 kA</li> <li>• of full range R fuse link for semiconductor protection usable up to 690 V <a href="#">3NE1334-2; Type of coordination 2, Iq = 65 kA</a></li> <li>• of the redundant contactor for applications &gt; SIL 1 according to EN 62061 3TF68</li> <li>• of the redundant contactor for applications &gt; SIL 1 at inside-delta circuit according to EN 62061 3TF68</li> <li>• of the redundant contactor for applications &gt; SIL 1 according to EN ISO 13849-1 3TF69</li> <li>• of the redundant contactor for applications &gt; SIL 1 at inside-delta circuit according to EN ISO 13849-1 3TF69</li> </ul>
<b>General technical data</b>	
<b>starting voltage [%]</b>	20 ... 100 %
<b>stopping voltage [%]</b>	50 %; non-adjustable
<b>start-up ramp time of soft starter</b>	0 ... 360 s
<b>ramp-down time of soft starter</b>	0 ... 360 s
<b>start torque [%]</b>	10 ... 100 %
<b>stopping torque [%]</b>	10 ... 100 %
<b>torque limitation [%]</b>	20 ... 200 %



<b>current limiting value [%] adjustable</b>	125 ... 800 %
<b>breakaway voltage [%] adjustable</b>	40 ... 100 %
<b>breakaway time adjustable</b>	0 ... 2 s
<b>number of parameter sets</b>	3
<b>accuracy class according to IEC 61557-12</b>	5 %
<b>certificate of suitability</b>	
• CE marking	Yes
• UL approval	Yes
• CSA approval	Yes
<b>product component</b>	
• HMI-High Feature	Yes
• is supported HMI-High Feature	Yes
<b>product feature integrated bypass contact system</b>	Yes
<b>number of controlled phases</b>	3
<b>trip class</b>	CLASS 10A / 10E (default) / 20E / 30E; acc. to IEC 60947-4-2
<b>current unbalance limiting value [%]</b>	10 ... 60 %
<b>ground-fault monitoring limiting value [%]</b>	10 ... 95 %
<b>buffering time in the event of power failure</b>	
• for main current circuit	100 ms
• for control circuit	100 ms
<b>idle time adjustable</b>	0 ... 255 s
<b>insulation voltage rated value</b>	480 V
<b>degree of pollution</b>	3, acc. to IEC 60947-4-2
<b>impulse voltage rated value</b>	6 kV
<b>blocking voltage of the thyristor maximum</b>	1 400 V
<b>service factor</b>	1.15
<b>surge voltage resistance rated value</b>	6 kV
<b>maximum permissible voltage for safe isolation</b>	
• between main and auxiliary circuit	480 V; does not apply for thermistor connection
<b>shock resistance</b>	15 g / 11 ms, from 6 g / 11 ms with potential contact lifting
<b>vibration resistance</b>	15 mm up to 6 Hz; 2 g up to 500 Hz
<b>recovery time after overload trip adjustable</b>	60 ... 1 800 s
<b>utilization category according to IEC 60947-4-2</b>	AC 53a
<b>reference code according to IEC 81346-2</b>	Q
<b>Substance Prohibitance (Date)</b>	11/22/2019
<b>product function</b>	
• 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
- screw terminal
- spring-loaded terminal
- **PROFenergy**

- **firmware update**
- **removable terminal for control circuit**
- voltage ramp
- torque control
- combined braking
- analog output
- programmable control inputs/outputs
- condition monitoring
- automatic parameterisation
- application wizards
- alternative run-down
- emergency operation mode
- reversing operation
- soft starting at heavy starting conditions

Yes
Yes
No
Yes; in connection with PROFINET Standard and PROFINET High-Feature communication modules
Yes
Yes
Yes
Yes
Yes
Yes; 4 ... 20 mA (default) / 0 ... 10 V
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes
Yes

### Power Electronics

<b>operational current</b>	
• at 40 °C rated value	370 A
• at 40 °C rated value minimum	74 A
• at 50 °C rated value	328 A
• at 60 °C rated value	300 A
<b>operational current at inside-delta circuit</b>	
• at 40 °C rated value	641 A
• at 50 °C rated value	568 A
• at 60 °C rated value	519 A
<b>operating voltage</b>	
• rated value	200 ... 480 V
• at inside-delta circuit rated value	200 ... 480 V
<b>relative negative tolerance of the operating voltage</b>	-15 %
<b>relative positive tolerance of the operating voltage</b>	10 %
<b>relative negative tolerance of the operating voltage at inside-delta circuit</b>	-15 %
<b>relative positive tolerance of the operating voltage at inside-delta circuit</b>	10 %
<b>operating power for 3-phase motors</b>	
• at 230 V at 40 °C rated value	110 kW
• at 230 V at inside-delta circuit at 40 °C rated value	200 kW
• at 400 V at 40 °C rated value	200 kW
• at 400 V at inside-delta circuit at 40 °C rated value	355 kW
<b>Operating frequency 1 rated value</b>	50 Hz
<b>Operating frequency 2 rated value</b>	60 Hz
<b>relative negative tolerance of the operating frequency</b>	-10 %
<b>relative positive tolerance of the operating frequency</b>	10 %
<b>minimum load [%]</b>	10 %; Relative to set le
<b>power loss [W] for rated value of the current at AC</b>	
• at 40 °C after startup	111 W
• at 50 °C after startup	98 W
• at 60 °C after startup	90 W
<b>power loss [W] at AC at current limitation 350 %</b>	
• at 40 °C during startup	5 563 W
• at 50 °C during startup	4 694 W
• at 60 °C during startup	4 145 W
<b>type of the motor protection</b>	Electronic, tripping in the event of thermal overload of the motor
<b>Control circuit/ Control</b>	
<b>type of voltage of the control supply voltage</b>	AC/DC
<b>control supply voltage at AC</b>	
• at 50 Hz rated value	24 V



<ul style="list-style-type: none"> <li>at 60 Hz rated value</li> </ul>	24 V
<b>relative negative tolerance of the control supply voltage at AC at 50 Hz</b>	-20 %
<b>relative positive tolerance of the control supply voltage at AC at 50 Hz</b>	20 %
<b>relative negative tolerance of the control supply voltage at AC at 60 Hz</b>	-20 %
<b>relative positive tolerance of the control supply voltage at AC at 60 Hz</b>	20 %
<b>control supply voltage frequency</b>	50 ... 60 Hz
<b>relative negative tolerance of the control supply voltage frequency</b>	-10 %
<b>relative positive tolerance of the control supply voltage frequency</b>	10 %
<b>control supply voltage</b>	
<ul style="list-style-type: none"> <li>at DC rated value</li> </ul>	24 V
<b>relative negative tolerance of the control supply voltage at DC</b>	-20 %
<b>relative positive tolerance of the control supply voltage at DC</b>	20 %
<b>control supply current in standby mode rated value</b>	440 mA
<b>holding current in bypass operation rated value</b>	720 mA
<b>locked-rotor current at close of bypass contact maximum</b>	6.7 A
<b>inrush current peak at application of control supply voltage maximum</b>	7.5 A
<b>duration of inrush current peak at application of control supply voltage</b>	20 ms
<b>design of the overvoltage protection</b>	Varistor
<b>design of short-circuit protection for control circuit</b>	4 A gG fuse (I <sub>cu</sub> =1 kA), 6 A quick-acting fuse (I <sub>cu</sub> =1 kA), C1 miniature circuit breaker (I <sub>cu</sub> = 600 A), C6 miniature circuit breaker (I <sub>cu</sub> = 300 A); Is not part of scope of supply

#### Inputs/ Outputs

<b>number of digital inputs</b>	4
<ul style="list-style-type: none"> <li>with fail-safe</li> <li>parameterizable</li> </ul>	1 4
<ul style="list-style-type: none"> <li><b>number of digital outputs</b></li> <li>Number of digital outputs with fail-safe</li> <li>number of digital outputs parameterizable</li> <li>number of digital outputs not parameterizable</li> </ul>	3 1 2 1
<b>digital output version</b>	2 normally-open contacts (NO) / 1 normally-closed contact (NC) / 1 changeover contact (CO)
<b>number of analog outputs</b>	1
<b>switching capacity current of the relay outputs</b>	
<ul style="list-style-type: none"> <li>at AC-15 at 250 V rated value</li> <li>at DC-13 at 24 V rated value</li> </ul>	3 A 1 A

#### Response times

OFF-delay time with safety-related request when switched off via control inputs maximum	100 ms
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#### Installation/ mounting/ dimensions

<b>mounting position</b>	Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°)
<b>fastening method</b>	screw fixing
<b>height</b>	393 mm
<b>width</b>	210 mm
<b>depth</b>	203 mm
required spacing with side-by-side mounting	
<ul style="list-style-type: none"> <li>forwards</li> <li>backwards</li> <li>upwards</li> <li>downwards</li> <li>at the side</li> </ul>	10 mm 0 mm 100 mm 75 mm 5 mm
<b>weight without packaging</b>	10.9 kg

#### Connections/ Terminals



<b>type of electrical connection</b> <ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for control circuit</li> </ul>	busbar connection screw-type terminal
<b>width of connection bar maximum</b>	45 mm
<b>wire length for thermistor connection</b> <ul style="list-style-type: none"> <li>• with conductor cross-section = 0.5 mm<sup>2</sup> maximum</li> <li>• with conductor cross-section = 1.5 mm<sup>2</sup> maximum</li> <li>• with conductor cross-section = 2.5 mm<sup>2</sup> maximum</li> </ul>	50 m 150 m 250 m
<b>type of connectable conductor cross-sections</b> <ul style="list-style-type: none"> <li>• for DIN cable lug for main contacts stranded</li> <li>• for DIN cable lug for main contacts finely stranded</li> </ul>	2x (50 ... 240 mm <sup>2</sup> ) 2x (70 ... 240 mm <sup>2</sup> )
<b>type of connectable conductor cross-sections</b> <ul style="list-style-type: none"> <li>• for control circuit solid</li> <li>• for control circuit finely stranded with core end processing</li> <li>• at AWG cables for control circuit solid</li> </ul>	1x (0.5 ... 4.0 mm <sup>2</sup> ), 2x (0.5 ... 2.5 mm <sup>2</sup> ) 1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1.5 mm <sup>2</sup> ) 1x (20 ... 12), 2x (20 ... 14)
<b>wire length</b> <ul style="list-style-type: none"> <li>• between soft starter and motor maximum</li> <li>• at the digital inputs at DC maximum</li> </ul>	800 m 1 000 m
<b>tightening torque</b> <ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>	14 ... 24 N·m 0.8 ... 1.2 N·m
<b>tightening torque [lbf·in]</b> <ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>	124 ... 210 lbf·in 7 ... 10.3 lbf·in
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m; Derating as of 1000 m, see catalog
<b>ambient temperature</b> <ul style="list-style-type: none"> <li>• during operation</li> <li>• during storage and transport</li> </ul>	-25 ... +60 °C; Please observe derating at temperatures of 40 °C or above -40 ... +80 °C
<b>environmental category</b> <ul style="list-style-type: none"> <li>• during operation according to IEC 60721</li> <li>• during storage according to IEC 60721</li> <li>• during transport according to IEC 60721</li> </ul>	3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not get inside the devices), 1M4 2K2, 2C1, 2S1, 2M2 (max. fall height 0.3 m)
<b>EMC emitted interference</b>	acc. to IEC 60947-4-2: Class A
<b>Communication/ Protocol</b>	
<b>communication module is supported</b> <ul style="list-style-type: none"> <li>• PROFINET standard</li> <li>• PROFINET high-feature</li> <li>• EtherNet/IP</li> <li>• Modbus RTU</li> <li>• Modbus TCP</li> <li>• PROFIBUS</li> </ul>	Yes Yes Yes Yes Yes Yes
<b>UL/CSA ratings</b>	
<b>manufacturer's article number</b> <ul style="list-style-type: none"> <li>• of the fuse <ul style="list-style-type: none"> <li>— usable for Standard Faults up to 575/600 V according to UL</li> <li>— usable for High Faults up to 575/600 V according to UL</li> <li>— usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL</li> <li>— usable for High Faults at inside-delta circuit up to 575/600 V according to UL</li> </ul> </li> </ul>	Type: Class J / L, max. 1200 A; Iq = 18 kA Type: Class J / L, max. 1200 A; Iq = 100 kA Type: Class J / L, max. 1200 A; Iq = 18 kA Type: Class J / L, max. 1200 A; Iq = 100 kA
<b>operating power [hp] for 3-phase motors</b> <ul style="list-style-type: none"> <li>• at 200/208 V at 50 °C rated value</li> <li>• at 220/230 V at 50 °C rated value</li> </ul>	100 hp 125 hp



<ul style="list-style-type: none"> <li>at 460/480 V at 50 °C rated value</li> <li>at 200/208 V at inside-delta circuit at 50 °C rated value</li> <li>at 220/230 V at inside-delta circuit at 50 °C rated value</li> <li>at 460/480 V at inside-delta circuit at 50 °C rated value</li> </ul>	250 hp 200 hp 200 hp 450 hp
<b>contact rating of auxiliary contacts according to UL</b>	R300-B300
<b>Safety related data</b>	
<b>safety device type according to IEC 61508-2</b>	Type B
<b>B10d value</b>	648 000
<b>Safety Integrity Level (SIL)</b>	SIL 1
<ul style="list-style-type: none"> <li>according to IEC 61508</li> </ul>	SIL 1
<b>SIL Claim Limit (subsystem) according to EN 62061</b>	SIL 1
performance level (PL) according to EN ISO 13849-1	c
category according to EN ISO 13849-1	2
<b>stop category according to EN 60204-1</b>	0
<b>Safe failure fraction (SFF)</b>	60 %
<b>average diagnostic coverage level (DCavg)</b>	90 %
<b>diagnostics test interval by internal test function maximum</b>	1 000 s
PFHD with high demand rate according to EN 62061	1E-6 1/h
<b>PFDAvg with low demand rate according to IEC 61508</b>	0.09
<b>hardware fault tolerance according to IEC 61508</b>	0
T1 value for proof test interval or service life according to IEC 61508	20 y
<b>safe state</b>	Open load circuit
<b>protection class IP on the front according to IEC 60529</b>	IP00; IP20 with cover
<b>touch protection on the front according to IEC 60529</b>	finger-safe, for vertical contact from the front with cover
<b>electromagnetic compatibility</b>	acc. to IEC 60947-4-2
<b>ATEX</b>	
<b>certificate of suitability</b>	Yes
<ul style="list-style-type: none"> <li>ATEX</li> <li>IECEX</li> <li>according to ATEX directive 2014/34/EU</li> </ul>	Yes
<b>type of protection according to ATEX directive 2014/34/EU</b>	BVS 18 ATEX F 003 X
<b>type of protection according to ATEX directive 2014/34/EU</b>	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]
<b>hardware fault tolerance according to IEC 61508 relating to ATEX</b>	0
<b>PFDAvg with low demand rate according to IEC 61508 relating to ATEX</b>	0.008
<b>PFHD with high demand rate according to EN 62061 relating to ATEX</b>	5E-7 1/h
<b>Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX</b>	SIL 1
<b>T1 value for proof test interval or service life according to IEC 61508 relating to ATEX</b>	3 s
<b>Certificates/ approvals</b>	
General Product Approval	


[Confirmation](#)


EMC	For use in hazardous locations	Declaration of Conformity	Test Certificates	Marine / Shipping
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Marine / Shipping other



[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?mlfb=3RW5546-6HF04>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5546-6HF04>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RW5546-6HF04>

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

[http://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RW5546-6HF04&lang=en](http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5546-6HF04&lang=en)

Characteristic: Tripping characteristics, I<sup>2</sup>t, Let-through current

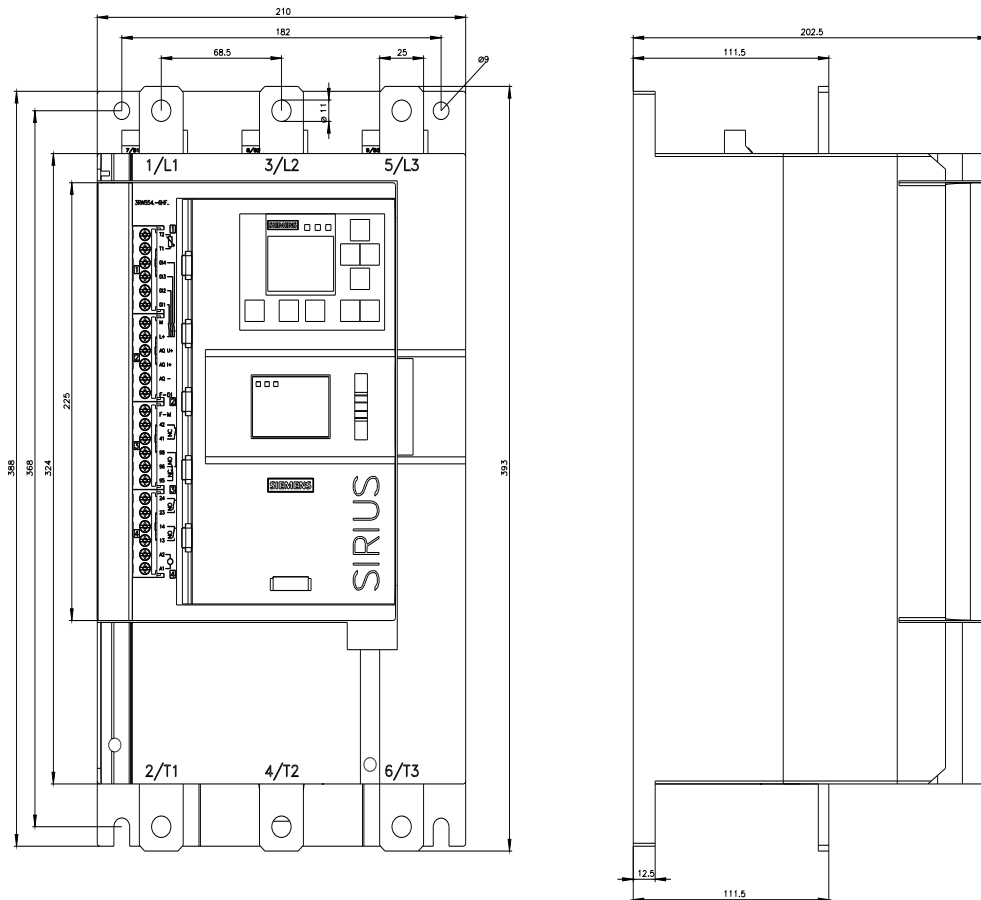
<https://support.industry.siemens.com/cs/ww/en/ps/3RW5546-6HF04/char>

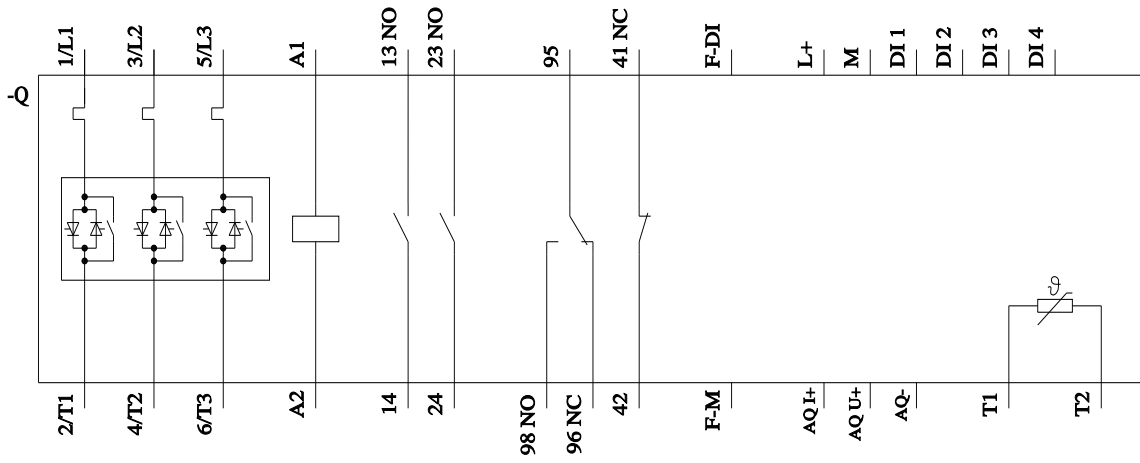
Characteristic: Installation altitude

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5546-6HF04&objecttype=14&gridview=view1>

Simulation Tool for Soft Starters (STS)

<https://support.industry.siemens.com/cs/ww/en/view/101494917>





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