

SIRIUS soft starter 200-690 V 25 A, 24 V AC/DC Screw terminals



Product brand name	SIRIUS
Product category	Hybrid switching devices
Product designation	Soft starter
Product type designation	3RW55
Manufacturer's article number	
<ul style="list-style-type: none"> • of HMI-Modul high-feature 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 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 3NE1817-0; Type of coordination 2, Iq = 65 kA 	

- of back-up R fuse link for semiconductor protection usable up to 690 V

[3NE8021-1; Type of coordination 2, Iq = 65 kA](#)

General technical data

Starting voltage [%]	20 ... 100 %
Stopping voltage [%]	50 ... 50 %
Start-up ramp time of soft starter	0 ... 360 s
Stopping time of soft starter	0 ... 360 s
Start torque [%]	10 ... 100 %
Stopping torque [%]	10 ... 100 %
Torque limit [%]	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 acc. 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 %
Recovery time after overload trip adjustable	60 ... 1 800 s
Insulation voltage	
• rated value	690 V
Degree of pollution	3, acc. to IEC 60947-4-2
Impulse voltage rated value	8 kV
Blocking voltage of the thyristor maximum	1 800 V
Service factor	1.15
Surge voltage resistance rated value	8 kV
maximum permissible voltage for safe isolation	
• between main and auxiliary circuit	690 V; does not apply for thermistor connection
Protection class IP	IP00
Usage category acc. to IEC 60947-4-2	AC 53a
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
Reference code acc. to DIN EN 81346-2	Q
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)
• Evaluation of thermistor motor protection	Yes; Type A PTC or Klixon / Thermoclick
• inside-delta circuit	Yes; Only up to 600 V operating voltage
• 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	Yes
• spring-type terminal	No
• PROFINET	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

Operating current	
• at 40 °C rated value	25 A
• at 40 °C rated value minimum	5 A
• at 50 °C rated value	22.3 A
• at 60 °C rated value	19.6 A
Operating current at inside-delta circuit	
• at 40 °C rated value	43.3 A
• at 50 °C rated value	39 A
• at 60 °C rated value	33.9 A
Operating voltage	
• rated value	200 ... 690 V
• at inside-delta circuit rated value	200 ... 600 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 three-phase motors	
• at 230 V at 40 °C rated value	5.5 kW
• at 230 V at inside-delta circuit at 40 °C rated value	11 kW
• at 400 V at 40 °C rated value	11 kW
• at 400 V at inside-delta circuit at 40 °C rated value	18.5 kW
• at 500 V at 40 °C rated value	15 kW
• at 500 V at inside-delta circuit at 40 °C rated value	22 kW
• at 690 V 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 I _e
Power loss [W] for rated value of the current at AC	
• at 40 °C to power-up	8 W
• at 50 °C to power-up	7 W
• at 60 °C to power-up	6 W
Power loss [W] at AC at AC	
• at 40 °C during startup	332 W

<ul style="list-style-type: none"> • at 50 °C during startup 	283 W
<ul style="list-style-type: none"> • at 60 °C during startup 	239 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	
<ul style="list-style-type: none"> • at 50 Hz rated value 	24 V
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • 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 the by-pass mode operating rated value	870 mA
Starting current at close of by-pass contact maximum	6.3 A
Inrush current peak at connect of control supply voltage maximum	7.5 A
Duration of inrush current peak at connect of control supply voltage	20 ms
Design of the overvoltage protection	Varistor
Design of short-circuit protection for control circuit	4 A gG fuse (I _{cu} =1 kA), 6 A quick-acting fuse (I _{cu} =1 kA), C1 miniature circuit breaker (I _{cu} = 600 A), C6 miniature circuit breaker (I _{cu} = 300 A); Is not part of scope of supply

Inputs/ Outputs

Number of digital inputs	4
<ul style="list-style-type: none"> • parameterizable 	4
Number of inputs for thermistor connection	1; Type A PTC or Klixon / Thermoclick
Number of digital outputs	4

<ul style="list-style-type: none"> • parameterizable 	3
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • at AC-15 at 250 V rated value 	3 A
<ul style="list-style-type: none"> • 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°)
Mounting type	screw fixing
Height	306 mm
Width	185 mm
Depth	203 mm
Required spacing with side-by-side mounting	
<ul style="list-style-type: none"> • forwards 	10 mm
<ul style="list-style-type: none"> • Backwards 	0 mm
<ul style="list-style-type: none"> • upwards 	100 mm
<ul style="list-style-type: none"> • downwards 	75 mm
<ul style="list-style-type: none"> • at the side 	5 mm
Installation altitude at height above sea level maximum	2 000 m; Derating as of 1000 m, see catalog
Weight without packaging	5.5 kg

Connections/ Terminals

Type of electrical connection	
<ul style="list-style-type: none"> • for main current circuit 	box terminal
<ul style="list-style-type: none"> • for control circuit 	screw-type terminals
Width of connection bar maximum	25 mm
Type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for main contacts for box terminal using the front clamping point solid 	1x (2.5 ... 16 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using the front clamping point finely stranded with core end processing 	1x (2.5 ... 50 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using the front clamping point stranded 	1x (10 ... 70 mm ²)
<ul style="list-style-type: none"> • at AWG conductors for main contacts for box terminal using the front clamping point 	1x (10 ... 2/0)
<ul style="list-style-type: none"> • for main contacts for box terminal using the back clamping point solid 	1x (2.5 ... 16 mm ²)
<ul style="list-style-type: none"> • at AWG conductors for main contacts for box terminal using the back clamping point 	1x (10 ... 2/0)

<ul style="list-style-type: none"> • for main contacts for box terminal using both clamping points solid 	2x (2.5 ... 16 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using both clamping points finely stranded with core end processing 	2x (2.5 ... 35 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using both clamping points stranded 	2x (6 ... 16 mm ²), 2x (10 ... 50 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using the back clamping point finely stranded with core end processing 	1x (2.5 ... 50 mm ²)
<ul style="list-style-type: none"> • for main contacts for box terminal using the back clamping point stranded 	1x (10 ... 70 mm ²)
Type of connectable conductor cross-sections	
<ul style="list-style-type: none"> • for control circuit solid 	1x (0.5 ... 4.0 mm ²), 2x (0.5 ... 2.5 mm ²)
<ul style="list-style-type: none"> • for control circuit finely stranded with core end processing 	1x (0.5 ... 2.5 mm ²), 2x (0.5 ... 1.5 mm ²)
<ul style="list-style-type: none"> • at AWG conductors for control circuit solid 	1x (20 ... 12), 2x (20 ... 14)
Wire length	
<ul style="list-style-type: none"> • between soft starter and motor maximum 	800 m
<ul style="list-style-type: none"> • at the digital inputs at DC maximum 	1 000 m
Tightening torque	
<ul style="list-style-type: none"> • for main contacts with screw-type terminals 	4.5 ... 6 N·m
<ul style="list-style-type: none"> • for auxiliary and control contacts with screw-type terminals 	0.8 ... 1.2 N·m
Tightening torque [lbf·in]	
<ul style="list-style-type: none"> • for main contacts with screw-type terminals 	40 ... 53 lbf·in
<ul style="list-style-type: none"> • for auxiliary and control contacts with screw-type terminals 	7 ... 10.3 lbf·in

Ambient conditions	
Ambient temperature	
<ul style="list-style-type: none"> • during operation 	-25 ... +60 °C; Please observe derating at temperatures of 40 °C or above
<ul style="list-style-type: none"> • during storage and transport 	-40 ... +80 °C
Environmental category	
<ul style="list-style-type: none"> • during operation acc. to IEC 60721 	3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6
<ul style="list-style-type: none"> • during storage acc. to IEC 60721 	1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not get inside the devices), 1M4
<ul style="list-style-type: none"> • during transport acc. 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	
<ul style="list-style-type: none"> • PROFINET standard 	Yes

- PROFINET high-feature
- EtherNet/IP
- Modbus RTU
- Modbus TCP
- PROFIBUS

Yes
Yes
Yes
Yes
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. 70 A; I_q = 5 kA

— usable for High Faults at 460/480 V according to UL

Siemens type: 3VA51, max. 60 A; I_q max = 65 kA

— usable for Standard Faults at 460/480 V at inside-delta circuit according to UL

Siemens type: 3RV2742, max. 70 A or 3VA51, max. 70 A; I_q = 5 kA

— usable for High Faults at 460/480 V at inside-delta circuit according to UL

Siemens type: 3VA51, max. 60 A; I_q max = 65 kA

— usable for Standard Faults at 575/600 V according to UL

Siemens type: 3RV2742, max. 70 A or 3VA51, max. 70 A; I_q = 5 kA

— usable for High Faults at 575/600 V at inside-delta circuit according to UL

Siemens type: 3VA51, max. 60 A; I_q max = 65 kA

— usable for Standard Faults at 575/600 V at inside-delta circuit according to UL

Siemens type: 3RV2742, max. 70 A or 3VA51, max. 70 A; I_q = 5 kA

• of the fuse

— usable for Standard Faults up to 575/600 V according to UL

Type: Class RK5 / K5, max. 100 A; I_q = 5 kA

— usable for High Faults up to 575/600 V according to UL

Type: Class J / L, max. 100 A; I_q = 100 kA

— usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL

Type: Class RK5 / K5, max. 100 A; I_q = 5 kA

— usable for High Faults at inside-delta circuit up to 575/600 V according to UL

Type: Class J / L, max. 100 A; I_q = 100 kA

Operating power [hp] for three-phase motors

• at 200/208 V at 50 °C rated value

5 hp

• at 220/230 V at 50 °C rated value

7.5 hp

• at 460/480 V at 50 °C rated value

15 hp

• at 575/600 V at 50 °C rated value

20 hp

• at 200/208 V at inside-delta circuit at 50 °C rated value

10 hp

• at 220/230 V at inside-delta circuit at 50 °C rated value

10 hp

• at 460/480 V at inside-delta circuit at 50 °C rated value

25 hp

• at 575/600 V at inside-delta circuit at 50 °C rated value

30 hp

Contact rating of auxiliary contacts according to UL	R300-B300
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Safety related data

Electromagnetic compatibility	acc. to IEC 60947-4-2
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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 acc. to IEC 61508 relating to ATEX	0
PFDAvg with low demand rate acc. to IEC 61508 relating to ATEX	0.008
PFHD with high demand rate acc. to EN 62061 relating to ATEX	0.0000005 1/h
Safety Integrity Level (SIL) acc. to IEC 61508 relating to ATEX	SIL1
T1 value for proof test interval or service life acc. to IEC 61508 relating to ATEX	3 y

Certificates/ approvals

General Product Approval	EMC	For use in hazardous locations	Declaration of Conformity
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CCC



RCM



ATEX



EG-Konf.

[Miscellaneous](#)

Test Certificates	Marine / Shipping	other
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[Type Test Certificates/Test Report](#)



ABS

[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=3RW5521-1HA06>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5521-1HA06>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RW5521-1HA06>

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

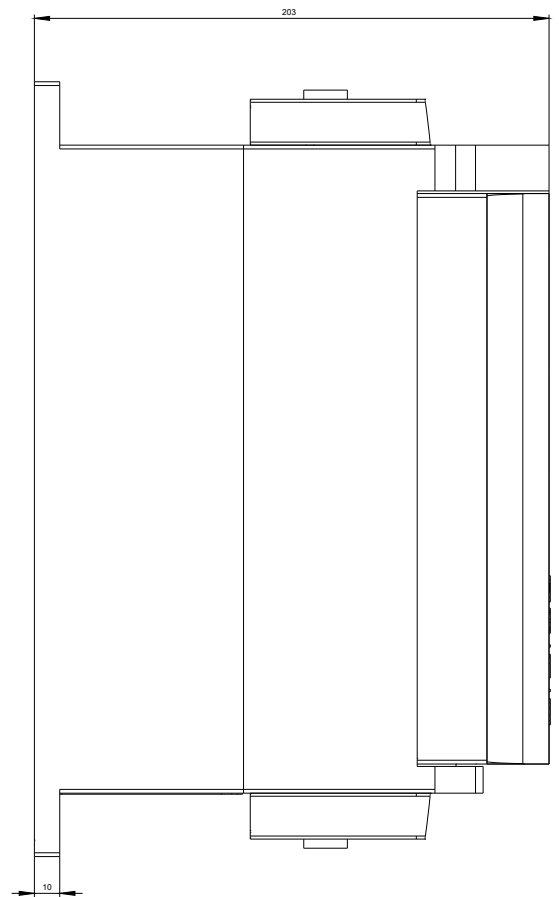
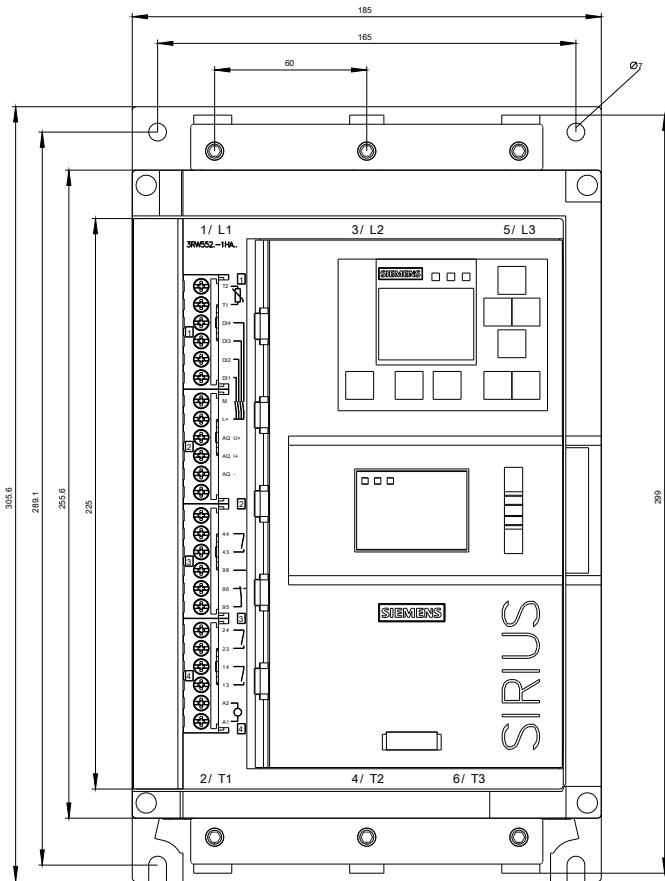
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5521-1HA06&lang=en

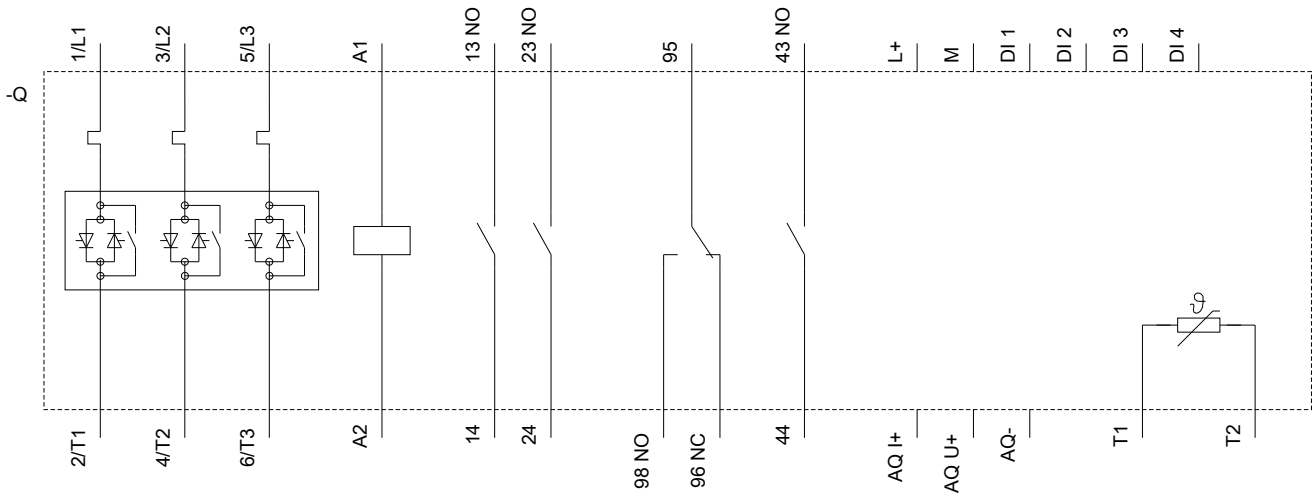
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RW5521-1HA06/char>

Characteristic: Installation altitude

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5521-1HA06&objecttype=14&gridview=view1>





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