SIEMENS



Data sheet 3RW5544-6HA16



SIRIUS soft starter 200-690 V 250 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 	3VA2440-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
 of circuit breaker usable at 500 V 	3VA2440-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
 of circuit breaker usable at 400 V at inside-delta circuit 	3VA2450-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
 of circuit breaker usable at 500 V at inside-delta circuit 	3VA2450-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
 of the gG fuse usable up to 690 V 	2x3NA3354-6; Type of coordination 1, Iq = 65 kA
 of the gG fuse usable at inside-delta circuit up to 500 V 	2x3NA3354-6; Type of coordination 1, Iq = 65 kA
 of full range R fuse link for semiconductor protection usable up to 690 V 	3NE1331-0; Type of coordination 2, Iq = 65 kA
 of back-up R fuse link for semiconductor protection usable up to 690 V 	3NE3335; 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 Yes Yes 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	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	O IVV
	600 V: doos not apply for thermister connection
between main and auxiliary circuit shock resistance	690 V; does not apply for thermistor connection 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 60 1 800 s
recovery time after overload trip adjustable	
utilization category according to IEC 60947-4-2	AC 53a
reference code according to IEC 81346-2	Q 00/45/2040
Substance Prohibitance (Date)	02/15/2018
product function	V
• 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-loaded terminal	No
PROFlenergy	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 Yes Yes; 4 20 mA (de Pr 10 Valential Only)
 combined braking 	Yes
analog output	Yes; 4 20 mA (de) 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 	250 A
 at 40 °C rated value minimum 	50 A
 at 50 °C rated value 	220 A
at 60 °C rated value	200 A
operational current at inside-delta circuit	
 at 40 °C rated value 	433 A
 at 50 °C rated value 	381 A
at 60 °C rated value	346 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	10 %
inside-delta circuit	
operating power for 3-phase motors	
• at 230 V at 40 °C rated value	75 kW
at 230 V at inside-delta circuit at 40 °C rated value	132 kW
• at 400 V at 40 °C rated value	132 kW
at 400 V at inside-delta circuit at 40 °C rated value	250 kW
• at 500 V at 40 °C rated value	160 kW
at 500 V at inside-delta circuit at 40 °C rated value	315 kW
at 690 V at 40 °C rated value	250 kW
Operating frequency 1 rated value	50 Hz 60 Hz
Operating frequency 2 rated value	-10 %
relative negative tolerance of the operating frequency	
relative positive tolerance of the operating frequency	10 %
minimum load [%] power loss [W] for rated value of the current at AC	10 %; Relative to set le
at 40 °C after startup	75 W
at 40 C after startup at 50 °C after startup	75 W 66 W
at 50 °C after startup at 60 °C after startup	60 W
power loss [W] at AC at current limitation 350 %	00 11
• at 40 °C during startup	3 806 W
- at -o o daming startup	
at 50 °C during startup	3 1/D VV
at 50 °C during startup at 60 °C during startup	3 176 W 2 787 W
at 60 °C during startup	2 787 W
at 60 °C during startup type of the motor protection	
at 60 °C during startup type of the motor protection Control circuit/ Control	2 787 W Electronic, tripping in the event of thermal overload of the motor
at 60 °C during startup type of the motor protection Control circuit/ Control type of voltage of the control supply voltage	2 787 W
at 60 °C during startup type of the motor protection Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC	2 787 W Electronic, tripping in the event of thermal overload of the motor AC
at 60 °C during startup type of the motor protection Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC at 50 Hz	2 787 W Electronic, tripping in the event of thermal overload of the motor AC 110 250 V
at 60 °C during startup type of the motor protection Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC	2 787 W Electronic, tripping in the event of thermal overload of the motor AC
at 60 °C during startup type of the motor protection Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC at 50 Hz at 60 Hz relative negative tolerance of the control supply	2 787 W Electronic, tripping in the event of thermal overload of the motor AC 110 250 V 110 250 V

relative negative tolerance of the control supply voltage at AC at 60 Hz	objection dientidong
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	150 mA
locked-rotor current at close of bypass contact maximum	0.87 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	1
• at AC-15 at 250 V rated value	3 A
at DC-13 at 250 V rated value at DC-13 at 24 V rated value	1 A
	T A
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	
required spacing with side-by-side mounting • forwards	10 mm
required spacing with side-by-side mounting	10 mm 0 mm
required spacing with side-by-side mounting • forwards	10 mm
required spacing with side-by-side mounting	10 mm 0 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging	10 mm 0 mm 100 mm 75 mm 5 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm
required spacing with side-by-side mounting	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum type of connectable conductor cross-sections • for DIN cable lug for main contacts stranded	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum type of connectable conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum type of connectable conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded type of connectable conductor cross-sections	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m 2x (50 240 mm²) 2x (70 240 mm²)
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum type of connectable conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded type of connectable conductor cross-sections • for control circuit solid	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m 2x (50 240 mm²) 2x (70 240 mm²) 1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
required spacing with side-by-side mounting • forwards • backwards • upwards • downwards • at the side weight without packaging Connections/ Terminals type of electrical connection • for main current circuit • for control circuit width of connection bar maximum wire length for thermistor connection • with conductor cross-section = 0.5 mm² maximum • with conductor cross-section = 1.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum • with conductor cross-section = 2.5 mm² maximum type of connectable conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded type of connectable conductor cross-sections	10 mm 0 mm 100 mm 75 mm 5 mm 10.2 kg busbar connection screw-type terminals 45 mm 50 m 150 m 250 m 2x (50 240 mm²) 2x (70 240 mm²)

wire length	800 m dientudong
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 circuit breaker	
usable for Standard Faults at 460/480 V according to UL	Siemens type: 3VA53, max. 400 A or 3VA54, max. 600 A; lq = 18 kA
usable for High Faults at 460/480 V according to UL	Siemens type: 3VA53, max. 400 A or 3VA54, max. 600 A; lq max = 65 kA
usable for Standard Faults at 460/480 V at inside-delta circuit according to UL	Siemens type: 3VA54, max. 600 A; Iq = 18 kA
usable for High Faults at 460/480 V at insidedelta circuit according to UL	Siemens type: 3VA54, max. 600 A; Iq max = 65 kA
usable for Standard Faults at 575/600 V according to UL	Siemens type: 3VA53, max. 400 A or 3VA54, max. 600 A; lq = 18 kA
usable for High Faults at 575/600 V at insidedelta circuit according to UL	Siemens type: 3VA54, max. 600 A; Iq max = 65 kA
usable for Standard Faults at 575/600 V at inside-delta circuit according to UL	Siemens type: 3VA54, max. 600 A; Iq = 18 kA
• of the fuse	
usable for Standard Faults up to 575/600 V according to UL	Type: Class J / L, max. 800 A; Iq = 18 kA
 usable for High Faults up to 575/600 V according to UL 	Type: Class J / L, max. 800 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. 800 A; Iq = 18 kA
 usable for High Faults at inside-delta circuit up to 575/600 V according to UL 	Type: Class J / L, max. 800 A; Iq = 100 kA
operating power [hp] for 3-phase motors	
 at 200/208 V at 50 °C rated value 	60 hp
 at 220/230 V at 50 °C rated value 	75 hp
• at 460/480 V at 50 °C rated value	150 hp
• at 575/600 V at 50 °C rated value	200 hp

 at 200/208 V at inside-delta circuit at 50 °C rated value 	125 hp 150 hp dientudong
 at 220/230 V at inside-delta circuit at 50 °C rated value 	150 hp
 at 460/480 V at inside-delta circuit at 50 °C rated value 	300 hp
 at 575/600 V at inside-delta circuit at 50 °C rated value 	350 hp
contact rating of auxiliary contacts according to UL	R300-B300
Safety related data	
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 s
Certificates/ approvals	



General Product Approval



Confirmation







EMC

For use in hazardous locations

Declaration of Conformity

Test Certificates

Marine / Shipping





IECEx



Type Test Certificates/Test Report





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=3RW5544-6HA16

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5544-6HA16

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Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3RW5544-6HA16

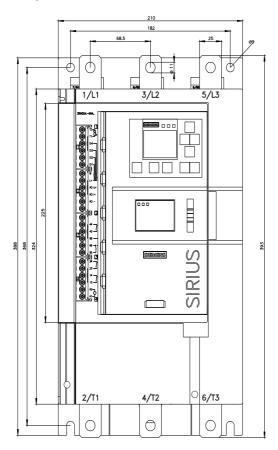
Image database (product images, 2D dimension drawings, 3D models, devic http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5544-6HA16&

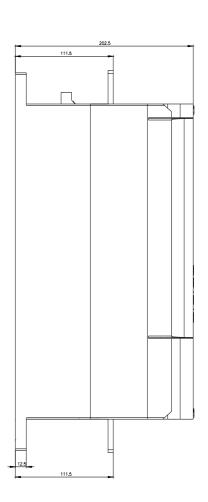
Characteristic: Tripping characteristics, I²t, Let-through current https://support.industry.siemens.com/cs/ww/en/ps/3RW5544-6HA16/char

Characteristic: Installation altitude

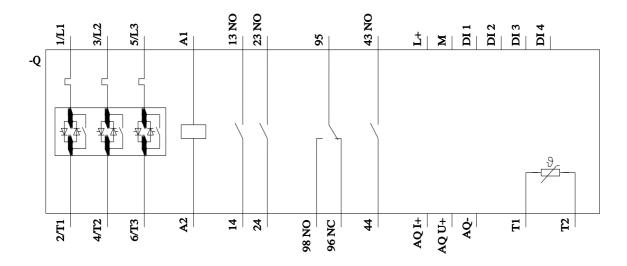
Simulation Tool for Soft Starters (STS)

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









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