## **SIEMENS**

Data sheet 3RW5546-6HA14



SIRIUS soft starter 200-480 V 370 A, 110-250 V AC Screw terminals

product brand name product category product designation product type designation manufacturer's article number

- of high feature HMI module usable
- of communication module PROFINET standard usable
- of communication module PROFINET high-feature usable
- of communication module PROFIBUS usable
- of communication module Modbus TCP usable
- of communication module Modbus RTU usable
- of communication module Ethernet/IP
- of circuit breaker usable at 400 V
- of circuit breaker usable at 500 V
- of circuit breaker usable at 400 V at inside-delta circuit
- of circuit breaker usable at 500 V at inside-delta circuit
- of the gG fuse usable up to 690 V
- of the gG fuse usable at inside-delta circuit up to 500 V
- of full range R fuse link for semiconductor protection usable up to 690 V

**SIRIUS** 

Hybrid switching devices

Soft starter

3RW55

3RW5980-0HF00

3RW5980-0CS00

3RW5950-0CH00

3RW5980-0CP00

3RW5980-0CT00

3RW5980-0CR00

3RW5980-0CE00

<u>3VA2440-7MN32-0AA0</u>; Type of coordination 1, Iq = 65 kA, CLASS 10 <u>3VA2440-7MN32-0AA0</u>; Type of coordination 1, Iq = 65 kA, CLASS 10

3VA2580-6HN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10

<u>3VA2580-6HN32-0AA0</u>; Type of coordination 1, Iq = 65 kA, CLASS 10

2x3NA3365-6; Type of coordination 1, Iq = 65 kA

2x3NA3365-6; Type of coordination 1, Iq = 65 kA

3NE1334-2; Type of coordination 2, Iq = 65 kA

## General technical data

starting voltage [%]

stopping voltage [%]

start-up ramp time of soft starter

ramp-down time of soft starter

start torque [%]

stopping torque [%]

torque limitation [%]

current limiting value [%] adjustable

breakaway voltage [%] adjustable

breakaway time adjustable

number of parameter sets

accuracy class according to IEC 61557-12

certificate of suitability

- CE marking
- UL approval
- CSA approval

product component

20 ... 100 %

50 %; non-adjustable

0 ... 360 s

0 ... 360 s

10 ... 100 %

10 ... 100 %

20 ... 200 %

125 ... 800 %

40 ... 100 %

0 ... 2 s

3

5 %

Yes

Yes

Yes

HMI-High Feature	Yes
is supported HMI-High Feature  And the street into protect by the street and	Yes
product feature integrated bypass contact system	Yes 3
number of controlled phases 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	10 m 60 /6
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	490 V. dogg not apply for thermister connection
between main and auxiliary circuit     shock resistance	480 V; does not apply for thermistor connection 15 g / 11 ms, from 6 g / 11 ms with potential contact lifting
vibration resistance	15 g / 11 ms, from 6 g / 11 ms with potential contact litting  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)	02/15/2018
product function	
<ul><li>ramp-up (soft starting)</li></ul>	Yes
<ul><li>ramp-down (soft stop)</li></ul>	Yes
<ul><li>breakaway pulse</li></ul>	Yes
adjustable current limitation	Yes
creep speed in both directions of rotation	Yes
pump ramp down     DC broking	Yes Yes
<ul><li>DC braking</li><li>motor heating</li></ul>	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.
<ul> <li>evaluation of thermistor motor protection</li> </ul>	Yes; Type A PTC or Klixon / Thermoclick
• inside-delta circuit	Yes
• auto-RESET	Yes
manual RESET     remote reset	Yes Yes
communication function	Yes
operating measured value display	Yes
event list	Yes
• error logbook	Yes
via software parameterizable	Yes
<ul> <li>via software configurable</li> </ul>	Yes
<ul><li>screw terminal</li></ul>	Yes
<ul> <li>spring-loaded terminal</li> </ul>	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     torque control	Yes
<ul><li>torque control</li><li>combined braking</li></ul>	Yes 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
<ul><li>application wizards</li><li>alternative run-down</li></ul>	Yes
emergency operation mode	Yes
reversing operation	Yes
soft starting at heavy starting conditions	Yes
Power Electronics	
operational current	
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
operational current at inside-delta circuit	
at 40 °C rated value	641 A
<ul> <li>at 50 °C rated value</li> </ul>	568 A
<ul> <li>at 60 °C rated value</li> </ul>	519 A
operating voltage	
rated value	200 480 V
<ul> <li>at inside-delta circuit rated value</li> </ul>	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	110 kW
at 230 V at inside-delta circuit at 40 °C rated value	200 kW
<ul> <li>at 400 V at 40 °C rated value</li> </ul>	200 kW
<ul> <li>at 400 V at inside-delta circuit at 40 °C rated value</li> </ul>	355 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 le
power loss [W] for rated value of the current at AC	
<ul> <li>at 40 °C after startup</li> </ul>	111 W
at 50 °C after startup	98 W
• at 60 °C after startup	90 W
power loss [W] at AC at current limitation 350 %	5 500 W
• at 40 °C during startup	5 563 W
• at 50 °C during startup	4 694 W
at 60 °C during startup  tune of the mater protection	4 145 W
type of the motor protection	Electronic, tripping in the event of thermal overload of the motor
Control circuit/ Control	AC
type of voltage of the control supply voltage control supply voltage at AC	AC
• at 50 Hz	110 250 V
• 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	150 mA
locked-rotor current at close of bypass contact	0.87 A
maximum	

inrush current peak at application of control supply voltage maximum	43 A
duration of inrush current peak at application of control	1.6 ms
supply voltage	Variator
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     number of digital outputs parameterizable	3
number of digital outputs not parameterizable     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	
	Vertical (can be rotated ±/, 00° and tilted forward or backward ±/, 22.5°)
mounting position fastening method	Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°) screw fixing
height	393 mm
width	210 mm
depth	203 mm
required spacing with side-by-side mounting	200 111111
• 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
type of electrical connection	
type of electrical connection • for main current circuit	busbar connection screw-type terminals 45 mm
type of electrical connection	screw-type terminals
type of electrical connection	screw-type terminals
type of electrical connection  • for main current circuit  • for control circuit  width of connection bar maximum  wire length for thermistor connection	screw-type terminals 45 mm
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	screw-type terminals 45 mm
type of electrical connection	screw-type terminals 45 mm 50 m 150 m
type of electrical connection	screw-type terminals 45 mm  50 m 150 m 250 m  2x (50 240 mm²)
type of electrical connection	screw-type terminals 45 mm  50 m 150 m 250 m
type of electrical connection	screw-type terminals 45 mm  50 m 150 m 250 m  2x (50 240 mm²) 2x (70 240 mm²)
type of electrical 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)
type of electrical connection	screw-type terminals 45 mm  50 m 150 m 250 m  2x (50 240 mm²) 2x (70 240 mm²)
type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
type of electrical 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)
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type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m
type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)
type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m 1 000 m
type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m 1 000 m
type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m 1 000 m
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type of electrical 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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)  1x (20 12), 2x (20 14)  800 m 1 000 m  14 24 N·m 0.8 1.2 N·m
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• 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 • for control circuit solid • for control circuit finely stranded with core end processing • at AWG cables for control circuit solid  wire length • between soft starter and motor maximum • at the digital inputs at DC maximum  tightening torque • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals  tightening torque [lbf-in] • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals	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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)  1x (20 12), 2x (20 14)  800 m 1 000 m  14 24 N·m 0.8 1.2 N·m
• 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  • with conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded  • for DIN cable lug for main contacts finely stranded  type of connectable conductor cross-sections • for control circuit solid • for control circuit finely stranded with core end processing • at AWG cables for control circuit solid wire length • between soft starter and motor maximum • at the digital inputs at DC maximum tightening torque • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals  tightening torque [lbf·in] • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals	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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m 1 000 m  14 24 N·m 0.8 1.2 N·m  124 210 lbf·in 7 10.3 lbf·in
• 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  • with conductor cross-sections • for DIN cable lug for main contacts stranded • for DIN cable lug for main contacts finely stranded  • for DIN cable lug for main contacts finely stranded  type of connectable conductor cross-sections • for control circuit solid • for control circuit finely stranded with core end processing • at AWG cables for control circuit solid  wire length • between soft starter and motor maximum • at the digital inputs at DC maximum  tightening torque • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals  tightening torque [lbf·in] • for main contacts with screw-type terminals • for auxiliary and control contacts with screw-type terminals	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) 1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²) 1x (20 12), 2x (20 14)  800 m 1 000 m  14 24 N·m 0.8 1.2 N·m  124 210 lbf·in 7 10.3 lbf·in

	above
<ul> <li>during storage and transport</li> </ul>	-40 +80 °C
environmental category	
<ul> <li>during operation 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
<ul> <li>during storage according to IEC 60721</li> </ul>	1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not get inside the devices), 1M4
<ul> <li>during transport according to IEC 60721</li> </ul>	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> <li>PROFINET standard</li> </ul>	Yes
<ul> <li>PROFINET high-feature</li> </ul>	Yes
<ul><li>EtherNet/IP</li></ul>	Yes
<ul> <li>Modbus RTU</li> </ul>	Yes
<ul> <li>Modbus TCP</li> </ul>	Yes
<ul><li>PROFIBUS</li></ul>	Yes
UL/CSA ratings	
manufacturer's article number	
of the fuse	
<ul> <li>usable for Standard Faults up to 575/600 V according to UL</li> </ul>	Type: Class J / L, max. 1200 A; Iq = 18 kA
<ul> <li>usable for High Faults up to 575/600 V according to UL</li> </ul>	Type: Class J / L, max. 1200 A; Iq = 100 kA
<ul> <li>usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL</li> </ul>	Type: Class J / L, max. 1200 A; Iq = 18 kA
<ul> <li>usable for High Faults at inside-delta circuit up to 575/600 V according to UL</li> </ul>	Type: Class J / L, max. 1200 A; Iq = 100 kA
operating power [hp] for 3-phase motors	
<ul> <li>at 200/208 V at 50 °C rated value</li> </ul>	100 hp
<ul> <li>at 220/230 V at 50 °C rated value</li> </ul>	125 hp
<ul> <li>at 460/480 V at 50 °C rated value</li> </ul>	250 hp
<ul> <li>at 200/208 V at inside-delta circuit at 50 °C rated value</li> </ul>	200 hp
<ul> <li>at 220/230 V at inside-delta circuit at 50 °C rated value</li> </ul>	200 hp
<ul> <li>at 460/480 V at inside-delta circuit at 50 °C rated value</li> </ul>	450 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 acc. to IEC 60947-4-2
electromagnetic compatibility  ATEX	aud. to ILO 00347-4-2
certificate of suitability	V
• ATEX	Yes
• IECEX	Yes
according to ATEX directive 2014/34/EU  ATEX directive 2014/34/EU  ATEX directive	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	EMC





Confirmation







For use in hazardous locations

Declaration of Conformity

**Test Certificates** 

Marine / Shipping







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=3RW5546-6HA14

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5546-6HA14

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

https://support.industry.siemens.com/cs/ww/en/ps/3RW5546-6HA14

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

http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RW5546-6HA14&lang=en

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

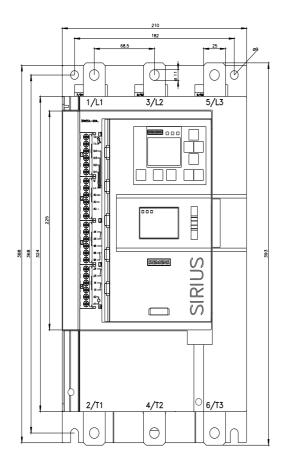
https://support.industry.siemens.com/cs/ww/en/ps/3RW5546-6HA14/char

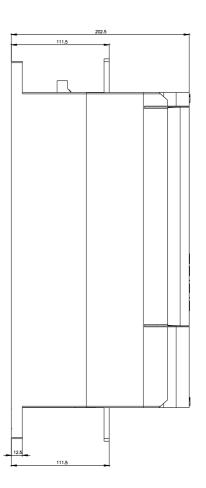
Characteristic: Installation altitude

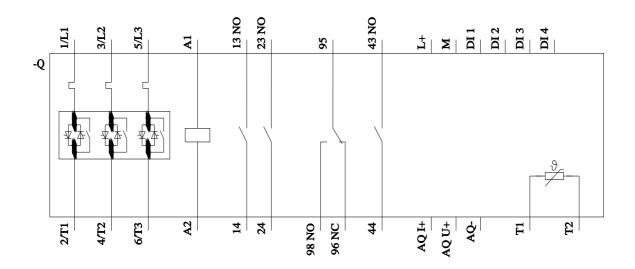
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5546-6HA14&objecttype=14&gridview=view1

Simulation Tool for Soft Starters (STS)

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







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