# **SIEMENS**



Data sheet 3RW5525-3HA04



SIRIUS soft starter 200-480 V 63 A, 24 V AC/DC spring-type terminals

product brand name	SIRIUS
product category	Hybrid switching devices
product designation	Soft starter
product type designation	3RW55
manufacturer's article number	
<ul> <li>of high feature HMI module usable</li> </ul>	3RW5980-0HF00
<ul> <li>of communication module PROFINET standard usable</li> </ul>	3RW5980-0CS00
<ul> <li>of communication module PROFINET high-feature usable</li> </ul>	3RW5950-0CH00
<ul> <li>of communication module PROFIBUS usable</li> </ul>	3RW5980-0CP00
<ul> <li>of communication module Modbus TCP usable</li> </ul>	3RW5980-0CT00
<ul> <li>of communication module Modbus RTU usable</li> </ul>	3RW5980-0CR00
<ul> <li>of communication module Ethernet/IP</li> </ul>	3RW5980-0CE00
<ul> <li>of circuit breaker usable at 400 V</li> </ul>	3VA2163-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
<ul> <li>of circuit breaker usable at 500 V</li> </ul>	3VA2163-7MN32-0AA0; Type of coordination 1, Iq = 20 kA, CLASS 10
<ul> <li>of circuit breaker usable at 400 V at inside-delta circuit</li> </ul>	3VA2110-7MN32-0AA0; Type of coordination 1, lq = 65 kA, CLASS 10
<ul> <li>of circuit breaker usable at 500 V at inside-delta circuit</li> </ul>	3VA2110-7MN32-0AA0; Type of coordination 1, Iq = 65 kA, CLASS 10
<ul> <li>of the gG fuse usable up to 690 V</li> </ul>	3NA3830-6; Type of coordination 1, Iq = 65 kA
<ul> <li>of the gG fuse usable at inside-delta circuit up to 500 V</li> </ul>	3NA3830-6; Type of coordination 1, Iq = 65 kA
<ul> <li>of full range R fuse link for semiconductor protection usable up to 690 V</li> </ul>	3NE1022-0; Type of coordination 2, Iq = 65 kA
<ul> <li>of back-up R fuse link for semiconductor protection usable up to 690 V</li> </ul>	3NE3227; Type of coordination 2, Iq = 65 kA

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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 Yes Yes
<ul> <li>UL approval</li> </ul>	Yes
CSA approval	Yes
product component	
<ul> <li>HMI-High Feature</li> </ul>	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)	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
<ul> <li>adjustable current limitation</li> </ul>	Yes
<ul> <li>creep speed in both directions of rotation</li> </ul>	Yes
pump ramp down	Yes
DC braking	Yes
motor heating	Yes
slave pointer function	Yes
trace function	Yes
intrinsic device protection	Yes
<ul> <li>motor overload protection</li> </ul>	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	Yes
remote reset	Yes
<ul> <li>communication function</li> </ul>	Yes
<ul> <li>operating measured value display</li> </ul>	Yes
<ul><li>event list</li></ul>	Yes
<ul><li>error logbook</li></ul>	Yes
• via software parameterizable	Yes
• via software configurable	Yes
screw terminal	No
spring-loaded terminal	Yes
PROFlenergy	Yes; in connection with the PROFINET Standard and PROFINET High- Feature communication modules
firmware update	Yes

<ul> <li>removable terminal for control circuit</li> </ul>	Yes
<ul> <li>voltage ramp</li> </ul>	Yes Yes Yes
<ul> <li>torque control</li> </ul>	
<ul><li>combined braking</li></ul>	Yes
<ul><li>analog output</li></ul>	Yes; 4 20 mA (default) / 0 10 V
<ul> <li>programmable control inputs/outputs</li> </ul>	Yes
<ul> <li>condition monitoring</li> </ul>	Yes
<ul> <li>automatic parameterisation</li> </ul>	Yes
application wizards	Yes
<ul> <li>alternative run-down</li> </ul>	Yes
<ul> <li>emergency operation mode</li> </ul>	Yes
<ul> <li>reversing operation</li> </ul>	Yes
soft starting at heavy starting conditions	Yes
Power Electronics	
operational current	
• at 40 °C rated value	63 A
• at 40 °C rated value minimum	13 A
• at 50 °C rated value	55.5 A
at 60 °C rated value	50.5 A
operational current at inside-delta circuit	400 A
• at 40 °C rated value	109 A
• at 50 °C rated value	96 A
• at 60 °C rated value	87.5 A
operating voltage	000 400 1/
• rated value	200 480 V
at inside-delta circuit rated value  valetive pagetive televance of the expecting valtege	200 480 V -15 %
relative negative tolerance of the operating voltage relative positive tolerance of the operating voltage	10 %
relative positive tolerance of the operating voltage at	-15 %
inside-delta circuit	10 /0
relative positive tolerance of the operating voltage at inside-delta circuit	10 %
operating power for 3-phase motors	
<ul> <li>at 230 V at 40 °C rated value</li> </ul>	18.5 kW
<ul> <li>at 230 V at inside-delta circuit at 40 °C rated value</li> </ul>	30 kW
<ul> <li>at 400 V at 40 °C rated value</li> </ul>	30 kW
at 400 V at inside-delta circuit at 40 °C rated value	55 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	19 W
at 40 °C after startup      at 50 °C after startup	
<ul> <li>at 50 °C after startup</li> <li>at 60 °C after startup</li> </ul>	17 W 15 W
power loss [W] at AC at current limitation 350 %	10 44
• at 40 °C during startup	1 056 W
at 50 °C during startup	732 W
at 60 °C during startup      at 60 °C during startup	647 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 50 Hz fated value	
at 60 Hz rated value     at 60 Hz rated value	24 V
at 60 Hz rated value  relative negative tolerance of the control supply	24 V -20 %
at 60 Hz rated value  relative negative tolerance of the control supply voltage at AC at 50 Hz  relative positive tolerance of the control supply	
at 60 Hz rated value  relative negative tolerance of the control supply voltage at AC at 50 Hz	-20 %

voltage at AC at 60 Hz	dientudena
relative positive tolerance of the control supply voltage at AC at 60 Hz	<sup>20</sup> % dientudong
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	
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	870 mA
locked-rotor current at close of bypass contact maximum	6.3 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
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	
at AC-15 at 250 V rated value	3 A
<ul> <li>at DC-13 at 24 V rated value</li> </ul>	1 A
Installation/ mounting/ dimensions	
mounting position	Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°)
fastening method	screw fixing
height	306 mm
width	185 mm
depth	203 mm
required spacing with side-by-side mounting	
<ul><li>forwards</li></ul>	10 mm
<ul><li>backwards</li></ul>	0 mm
• upwards	100 mm
• downwards	75 mm
• at the side	5 mm
weight without packaging	5.9 kg
Connections/ Terminals	
type of electrical connection	
for main current circuit	box terminal
• for control circuit	spring-loaded terminals
width of connection bar maximum	25 mm
wire length for thermistor connection	50
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
<ul> <li>type of connectable conductor cross-sections</li> <li>for main contacts for box terminal using the front clamping point solid</li> </ul>	1x (2.5 16 mm²)

<ul> <li>for main contacts for box terminal using the front clamping point finely stranded with core end processing</li> </ul>	1x (2.5 50 mm²) dientudong
<ul> <li>for main contacts for box terminal using the front clamping point stranded</li> </ul>	1x (10 70 mm²)
<ul> <li>at AWG cables for main contacts for box terminal using the front clamping point</li> </ul>	1x (10 2/0)
<ul> <li>for main contacts for box terminal using the back clamping point solid</li> </ul>	1x (2.5 16 mm²)
<ul> <li>at AWG cables for main contacts for box terminal using the back clamping point</li> </ul>	1x (10 2/0)
<ul> <li>for main contacts for box terminal using both clamping points solid</li> </ul>	2x (2.5 16 mm²)
<ul> <li>for main contacts for box terminal using both clamping points finely stranded with core end processing</li> </ul>	2x (2.5 35 mm²)
<ul> <li>for main contacts for box terminal using both clamping points stranded</li> </ul>	2x (6 16 mm²), 2x (10 50 mm²)
<ul> <li>for main contacts for box terminal using the back clamping point finely stranded with core end processing</li> </ul>	1x (2.5 50 mm²)
for main contacts for box terminal using the back clamping point stranded	1x (10 70 mm²)
type of connectable conductor cross-sections	
<ul> <li>for control circuit solid</li> </ul>	2x (0.25 1.5 mm²)
<ul> <li>for control circuit finely stranded with core end processing</li> </ul>	2x (0.25 1.5 mm²)
<ul> <li>at AWG cables for control circuit solid</li> </ul>	2x (24 16)
at AWG cables for control circuit finely stranded with core end processing	2x (24 16)
wire length	
<ul> <li>between soft starter and motor maximum</li> </ul>	800 m
at the digital inputs at DC maximum	1 000 m
tightening torque	
<ul> <li>for main contacts with screw-type terminals</li> </ul>	4.5 6 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	40 53 lbf·in
<ul> <li>for auxiliary and control contacts with screw-type terminals</li> </ul>	7 10.3 lbf·in
Ambient conditions	
	5.000 m. Danetin and 4.000 m. and anti-lan
installation altitude at height above sea level maximum	5 000 m; Derating as of 1000 m, see catalog
ambient temperature	OF 100 °C. Places shown a densiting at temporatures of 40 °C or
during operation	-25 +60 °C; Please observe derating at temperatures of 40 °C or 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
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	
<ul> <li>PROFINET standard</li> </ul>	Yes
<ul> <li>PROFINET high-feature</li> </ul>	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

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

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

- usable for High Faults at 460/480 V at insidedelta circuit according to UL

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

 usable for High Faults at 575/600 V at insidedelta circuit according to UL

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

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

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

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

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

Siemens type: 3R\

Siemens type: 3VA5



Siemens type: 3VA51, max. 125 A; Iq = 10 kA

Siemens type: 3VA51, max. 125 A; Iq max = 65 kA

Siemens type: 3RV2742, max. 70 A or 3VA51, max. 125 A; Iq = 10 kA

Siemens type: 3VA51, max. 125 A; Iq max = 65 kA

Siemens type: 3VA51, max. 125 A; Iq = 10 kA

Type: Class RK5 / K5, max. 200 A; Iq = 10 kA

Type: Class J / L, max. 225 A; Iq = 100 kA

Type: Class RK5 / K5, max. 200 A; Iq = 10 kA

Type: Class J / L, max. 225 A; Iq = 100 kA

# operating power [hp] for 3-phase motors

• at 200/208 V at 50 °C rated value

• at 220/230 V at 50 °C rated value

• at 460/480 V at 50 °C rated value

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

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

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

15 hp

20 hp

40 hp 30 hp

30 hp

75 hp

contact rating of auxiliary contacts according to UL

R300-B300

# protection class IP on the front according to IEC

touch protection on the front according to IEC 60529

electromagnetic compatibility

IP00; IP20 with cover

finger-safe, for vertical contact from the front with cover

acc. to IEC 60947-4-2

# **ATEX**

# certificate of suitability

ATEX

IECEx

Safety related data

Yes

Yes

BVS 18 ATEX F 003 X

I (M2) [Ex db Mb]

type of protection according to ATEX directive 2014/34/EU

 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],

hardware fault tolerance according to IEC 61508 relating to ATEX

PFDavg with low demand rate according to IEC 61508

relating to ATEX PFHD with high demand rate according to EN 62061

relating to ATEX Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX

T1 value for proof test interval or service life according to IEC 61508 relating to ATEX

0.008

5E-7 1/h

SIL<sub>1</sub>

3s

## Certificates/ approvals

**General Product Approval** 

**EMC** 



Confirmation









Test Certifi Marine Shipping tuding

### For use in hazardous locations

Declaration of Conformity







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=3RW5525-3HA04

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5525-3HA04

Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3RW5525-3HA04

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

http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RW5525-3HA04&lang=en

Characteristic: Tripping characteristics, I²t, Let-through current

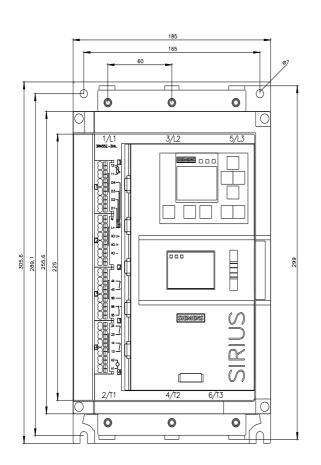
https://support.industry.siemens.com/cs/ww/en/ps/3RW5525-3HA04/char

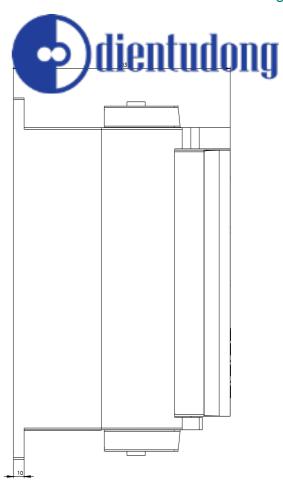
Characteristic: Installation altitude

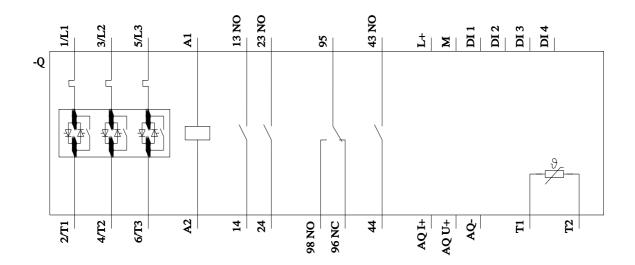
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5525-3HA04&objecttype=14&gridview=view1

Simulation Tool for Soft Starters (STS)

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







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