## SIEMENS

## Data sheet

## 3RW5227-1TC05



SIRIUS soft starter 200-600 V 93 A, 24 V AC/DC Screw terminals Thermistor input

product brand name	SIRIUS
product category	Hybrid switching devices
product designation	Soft starter
product type designation	3RW52
manufacturer's article number	
<ul> <li>of standard HMI module usable</li> </ul>	<u>3RW5980-0HS00</u>
<ul> <li>of high feature HMI module usable</li> </ul>	<u>3RW5980-0HF00</u>
<ul> <li>of communication module PROFINET standard usable</li> </ul>	<u>3RW5980-0CS00</u>
<ul> <li>of communication module PROFIBUS usable</li> </ul>	<u>3RW5980-0CP00</u>
<ul> <li>of communication module Modbus TCP usable</li> </ul>	<u>3RW5980-0CT00</u>
<ul> <li>of communication module Modbus RTU usable</li> </ul>	<u>3RW5980-0CR00</u>
<ul> <li>of communication module Ethernet/IP</li> </ul>	<u>3RW5980-0CE00</u>
<ul> <li>of circuit breaker usable at 400 V</li> </ul>	3VA2216-7MN32-0AA0; Type of coordination 1, Iq = 15 kA, CLASS 10
<ul> <li>of circuit breaker usable at 500 V</li> </ul>	3VA2216-7MN32-0AA0; Type of coordination 1, Iq = 10 kA, CLASS 10
<ul> <li>of circuit breaker usable at 400 V at inside-delta circuit</li> </ul>	3VA2220-7MN32-0AA0: Type of coordination 1. Iq = 15 kA. CLASS 10
<ul> <li>of circuit breaker usable at 500 V at inside-delta circuit</li> </ul>	3VA2220-7MN32-0AA0; Type of coordination 1, Iq = 10 kA, CLASS 10
<ul> <li>of the gG fuse usable up to 690 V</li> </ul>	<u>3NA3136-6; Type of coordination 1, Iq = 65 kA</u>
$\bullet$ of the gG fuse usable at inside-delta circuit up to 500 V	<u>3NA3136-6; Type of coordination 1, Iq = 65 kA</u>
<ul> <li>of full range R fuse link for semiconductor protection usable up to 690 V</li> </ul>	<u>3NE1224-0: Type of coordination 2. Iq = 65 kA</u>
<ul> <li>of back-up R fuse link for semiconductor protection usable up to 690 V</li> </ul>	<u>3NE4124; Type of coordination 2, Iq = 65 kA</u>
eneral technical data	
starting voltage [%]	30 100 %
stopping voltage [%]	50 50 %
start-up ramp time of soft starter	0 20 s
current limiting value [%] adjustable	130 700 %
certificate of suitability	
CE marking	Yes
UL approval	Yes
CSA approval	Yes
product component is supported	
HMI-Standard	Yes
HMI-High Feature	Yes
product feature integrated bypass contact system	Yes

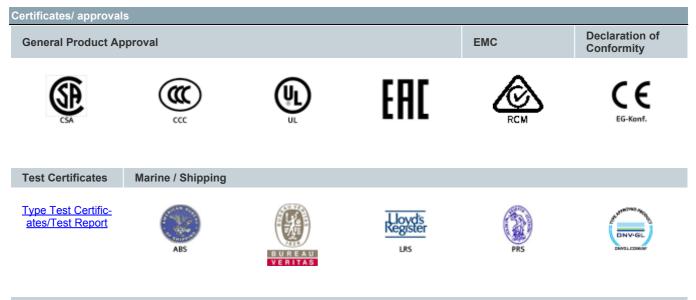
number of controlled phases	3
trip class	 CLASS 10A (default) / 10E / 20E; acc. to IEC 60947-4-2
buffering time in the event of power failure	
for main current circuit	100 ms
for control circuit	100 ms
insulation voltage rated value	600 V
degree of pollution	3, acc. to IEC 60947-4-2
impulse voltage rated value	6 kV
blocking voltage of the thyristor maximum	1 800 V
service factor	1
surge voltage resistance rated value	6 kV
maximum permissible voltage for safe isolation	
between main and auxiliary circuit	600 V
shock resistance	15 g / 11 ms, from 12 g / 11 ms with potential contact lifting
vibration resistance	15 mm to 6 Hz; 2g to 500 Hz
utilization category acc. to IEC 60947-4-2	AC 53a
reference code acc. to IEC 81346-2	Q
Substance Prohibitance (Date)	15.02.2018 00:00:00
product function	
ramp-up (soft starting)	Yes
<ul> <li>ramp-up (soft starting)</li> <li>ramp-down (soft stop)</li> </ul>	Yes
Soft Torque	Yes
adjustable current limitation	Yes
pump ramp down	Yes
	Yes
intrinsic device protection	Yes; Full motor protection (thermistor motor protection and electronic
<ul> <li>motor overload protection</li> </ul>	motor overload protection)
<ul> <li>evaluation of thermistor motor protection</li> </ul>	Yes; Type A PTC or Klixon / Thermoclick
<ul> <li>inside-delta circuit</li> </ul>	Yes
● auto-RESET	Yes
manual RESET	Yes
<ul> <li>remote reset</li> </ul>	Yes; By turning off the control supply voltage
<ul> <li>communication function</li> </ul>	Yes
<ul> <li>operating measured value display</li> </ul>	Yes; Only in conjunction with special accessories
<ul> <li>error logbook</li> </ul>	Yes; Only in conjunction with special accessories
<ul> <li>via software parameterizable</li> </ul>	No
<ul> <li>via software configurable</li> </ul>	Yes
PROFlenergy	Yes; in connection with the PROFINET Standard communication module
firmware update	Yes
<ul> <li>removable terminal for control circuit</li> </ul>	Yes
torque control	No
<ul> <li>analog output</li> </ul>	No
Power Electronics	
operational current	
• at 40 °C rated value	93 A
• at 50 °C rated value	83 A
• at 60 °C rated value	76 A
operational current at inside-delta circuit	
• at 40 °C rated value	161 A
• at 50 °C rated value	143 A
• at 60 °C rated value	131 A
operating voltage	
rated value	200 600 V
<ul> <li>at inside-delta circuit rated value</li> </ul>	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	-15 %
inside-delta circuit	

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>	22 kW
<ul> <li>at 230 V at inside-delta circuit at 40 °C rated value</li> </ul>	45 kW
<ul> <li>at 400 V at 40 °C rated value</li> </ul>	45 kW
<ul> <li>at 400 V at inside-delta circuit at 40 °C rated value</li> </ul>	90 kW
<ul> <li>at 500 V at 40 °C rated value</li> </ul>	55 kW
<ul> <li>at 500 V at inside-delta circuit at 40 °C rated value</li> </ul>	110 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 %
adjustable motor current	
<ul> <li>at rotary coding switch on switch position 1</li> </ul>	40.5 A
<ul> <li>at rotary coding switch on switch position 2</li> </ul>	44 A
<ul> <li>at rotary coding switch on switch position 3</li> </ul>	47.5 A
<ul> <li>at rotary coding switch on switch position 4</li> </ul>	51 A
<ul> <li>at rotary coding switch on switch position 5</li> </ul>	54.5 A
<ul> <li>at rotary coding switch on switch position 6</li> </ul>	58 A
• at rotary coding switch on switch position 7	61.5 A
<ul> <li>at rotary coding switch on switch position 8</li> </ul>	65 A
<ul> <li>at rotary coding switch on switch position 9</li> </ul>	68.5 A
<ul> <li>at rotary coding switch on switch position 10</li> </ul>	72 A
<ul> <li>at rotary coding switch on switch position 11</li> </ul>	75.5 A
<ul> <li>at rotary coding switch on switch position 12</li> </ul>	79 A
<ul> <li>at rotary coding switch on switch position 13</li> </ul>	82.5 A
<ul> <li>at rotary coding switch on switch position 14</li> </ul>	86 A
• at rotary coding switch on switch position 15	89.5 A
<ul> <li>at rotary coding switch on switch position 16</li> </ul>	93 A
• minimum	40.5 A
adjustable motor current	
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 1</li> </ul>	70.1 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 2</li> </ul>	76.2 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 3</li> </ul>	82.3 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 4</li> </ul>	88.3 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 5</li> </ul>	94.4 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 6</li> </ul>	100 A
• for inside-delta circuit at rotary coding switch on switch position 7	107 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 8</li> </ul>	113 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 9</li> <li>for inside delta circuit at rotary coding switch on</li> </ul>	119 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 10</li> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	125 A 131 A
<ul> <li>for inside-delta circuit at rotary coding switch on switch position 11</li> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	137 A
<ul> <li>for inside-delta circuit at rotary coding switch on</li> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	137 A 143 A
<ul> <li>for inside-delta circuit at rotary coding switch on</li> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	149 A
<ul> <li>for inside-delta circuit at rotary coding switch on</li> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	149 A 155 A
switch position 15	

<ul> <li>for inside-delta circuit at rotary coding switch on</li> </ul>	161 A
switch position 16	
<ul> <li>at inside-delta circuit minimum</li> </ul>	70.1 A
minimum load [%]	15 %; Relative to smallest settable le
power loss [W] for rated value of the current at AC	
<ul> <li>at 40 °C after startup</li> </ul>	40 W
<ul> <li>at 50 °C after startup</li> </ul>	37 W
• at 60 °C after startup	35 W
power loss [W] at AC at current limitation 350 %	
• at 40 °C during startup	1 270 W
<ul> <li>at 50 °C during startup</li> </ul>	1 077 W
<ul> <li>at 60 °C during startup</li> </ul>	959 W
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 60 Hz rated value	24 V
relative negative tolerance of the control supply	-20 %
voltage at AC at 50 Hz	20.70
relative positive tolerance of the control supply	20 %
voltage at AC at 50 Hz	
relative negative tolerance of the control supply _voltage at AC at 60 Hz	-20 %
relative positive tolerance of the control supply	20 %
voltage at AC at 60 Hz	50 0011-
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	160 mA
holding current in bypass operation rated value	380 mA
locked-rotor current at close of bypass contact	7.6 A
maximum inrush current peak at application of control supply voltage	3.3 A
maximum	
duration of inrush current peak at application of control supply voltage	12.1 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	1
number of inputs for thermistor connection	1; Type A PTC or Klixon / Thermoclick
number of digital outputs	3
not parameterizable	2
digital output version	2 2 normally-open contacts (NO) / 1 changeover contact (CO)
number of analog outputs	
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>	1A
• at DC-13 at 24 V rated value	
	with vortical mounting outface 1/00° ratetable with vartical mounting
mounting position	with vertical mounting surface +/-90° rotatable, with vertical mounting surface +/- 22.5° tiltable to the front and back
fastening method	screw fixing

height	
width	185 mm
depth	203 mm
required spacing with side-by-side mounting	
• forwards	10 mm
<ul> <li>backwards</li> </ul>	0 mm
• upwards	100 mm
downwards	75 mm
• at the side	5 mm
weight without packaging	6.9 kg
Connections/ Terminals	
type of electrical connection	
for main current circuit	box terminal
<ul> <li>for control circuit</li> </ul>	screw-type terminals
width of connection bar maximum	25 mm
wire length for thermistor connection	
<ul> <li>with conductor cross-section = 0.5 mm<sup>2</sup> maximum</li> </ul>	50 m
<ul> <li>with conductor cross-section = 1.5 mm<sup>2</sup> maximum</li> </ul>	150 m
<ul> <li>with conductor cross-section = 2.5 mm<sup>2</sup> maximum</li> </ul>	250 m
type of connectable conductor cross-sections	
<ul> <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)
<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)
<ul> <li>for main contacts for box terminal using the back clamping point stranded</li> </ul>	1x (10 70 mm²)
type of connectable conductor cross-sections	
<ul> <li>for control circuit solid</li> </ul>	1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
<ul> <li>for control circuit finely stranded with core end processing</li> </ul>	1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
<ul> <li>at AWG cables for control circuit solid</li> </ul>	1x (20 12), 2x (20 14)
wire length	
<ul> <li>between soft starter and motor maximum</li> </ul>	800 m
<ul> <li>at the digital inputs at AC maximum</li> </ul>	100 m
<ul> <li>at the digital inputs at DC maximum</li> </ul>	1 000 m
tightening torque	
<ul> <li>for main contacts with screw-type terminals</li> </ul>	4.5 6 N·m
<ul> <li>for auxiliary and control contacts with screw-type terminals</li> </ul>	0.8 1.2 N·m
tightening torque [lbf⋅in]	
<ul> <li>for main contacts with screw-type terminals</li> </ul>	40 53 lbf·in
<ul> <li>for auxiliary and control contacts with screw-type terminals</li> </ul>	7 10.3 lbf·in

Ambient conditions	
installation altitude at height above sea level maximum	5 000 m; Derating as of 1000 m, see catalog
ambient temperature	
<ul> <li>during operation</li> </ul>	-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	
• 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> <li>during storage acc. 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 acc. 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
EtherNet/IP	Yes
Modbus RTU	Yes
Modbus TCP	Yes
PROFIBUS	Yes
JL/CSA ratings	
manufacturer's article number	
<ul> <li>of circuit breaker         <ul> <li>usable for Standard Faults at 460/480 V</li> <li>according to UL</li> </ul> </li> </ul>	Siemens type: 3VA51, max. 125 A; lq = 10 kA
— usable for High Faults at 460/480 V according to UL	Siemens type: 3VA51, max. 125 A; lq max = 65 kA
<ul> <li>usable for Standard Faults at 460/480 V at inside-delta circuit according to UL</li> </ul>	Siemens type: 3VA51, max. 125 A; Iq = 10 kA
<ul> <li>— usable for High Faults at 460/480 V at inside- delta circuit according to UL</li> </ul>	Siemens type: 3VA51, max. 125 A; lq max = 65 kA
— usable for Standard Faults at 575/600 V according to UL	Siemens type: 3VA51, max. 125 A; lq = 10 kA
<ul> <li>— usable for Standard Faults at 575/600 V at inside-delta circuit according to UL</li> </ul>	Siemens type: 3VA51, max. 125 A; Iq = 10 kA
of the fuse	
<ul> <li>— usable for Standard Faults up to 575/600 V according to UL</li> </ul>	Type: Class RK5 / K5, max. 300 A; Iq = 10 kA
<ul> <li>— usable for High Faults up to 575/600 V according to UL</li> </ul>	Type: Class J / L, max. 250 A; lq = 100 kA
<ul> <li>— usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL</li> </ul>	Type: Class RK5 / K5, max. 300 A; lq = 10 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. 250 A; lq = 100 kA
operating power [hp] for 3-phase motors	
<ul> <li>at 200/208 V at 50 °C rated value</li> </ul>	25 hp
<ul> <li>at 220/230 V at 50 °C rated value</li> </ul>	30 hp
<ul> <li>at 460/480 V at 50 °C rated value</li> </ul>	60 hp
<ul> <li>at 575/600 V at 50 °C rated value</li> </ul>	75 hp
<ul> <li>at 200/208 V at inside-delta circuit at 50 °C rated value</li> </ul>	40 hp
<ul> <li>at 220/230 V at inside-delta circuit at 50 °C rated value</li> </ul>	50 hp
<ul> <li>at 460/480 V at inside-delta circuit at 50 °C rated value</li> </ul>	100 hp
<ul> <li>at 575/600 V at inside-delta circuit at 50 °C rated value</li> </ul>	125 hp
contact rating of auxiliary contacts according to UL	R300-B300
Safety related data	
protection class IP on the front acc. to IEC 60529	IP00; IP20 with cover
touch protection on the front acc. to IEC 60529	finger-safe, for vertical contact from the front with cover
electromagnetic compatibility	in accordance with IEC 60947-4-2



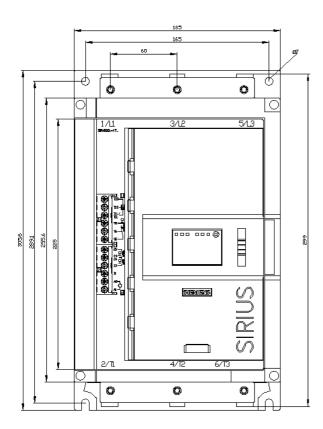
other

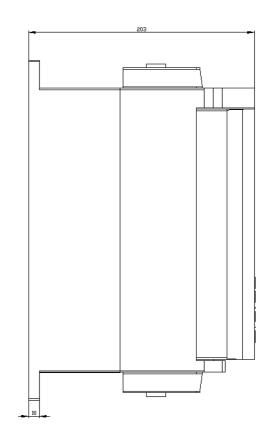
**Confirmation** 

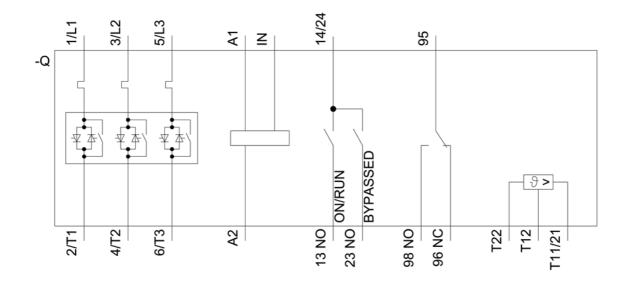
**Further information** 

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=3RW5227-1TC05 Cax online generator http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5227-1TC05 Service&Support (Manuals, Certificates, Characteristics, FAQs,...) https://support.industry.siemens.com/cs/ww/en/ps/3RW5227-1TC05 Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RW5227-1TC05&lang=en Characteristic: Tripping characteristics, I<sup>2</sup>t, Let-through current https://support.industry.siemens.com/cs/ww/en/ps/3RW5227-1TC05/char Characteristic: Installation altitude http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5227-1TC05&objecttype=14&gridview=view1 Simulation Tool for Soft Starters (STS)

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







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