SIEMENS

Data sheet 3RW5077-2TB05

SIRIUS soft starter 200-600 V 570 A, 24 V AC/DC Spring-loaded terminals
Thermistor input

product brand name	SIRIUS
product category	Hybrid switching devices
product designation	Soft starter
product type designation	3RW50
manufacturer's article number	
● of standard HMI module usable	3RW5980-0HS01
● of high feature HMI module usable	3RW5980-0HF00
● of communication module PROFINET standard usable	3RW5980-0CS00
● 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	3VA2580-6HN32-0AA0; Type of assignment 1, Iq = 65 kA
● of circuit breaker usable at 500 V	3VA2580-6HN32-0AA0; Type of assignment 1, Iq = 65 kA
● of the gG fuse usable up to 690 V	2x3NA3365-6; Type of coordination 1, Iq = 65 kA
● of full range R fuse link for semiconductor protection usable up to 690 V	3NE1 437-2; Type of coordination 2, Iq = 65 kA
● of back-up R fuse link for semiconductor protection usable up to 690 V	3NE3 340-8; Type of coordination 2, Iq = 65 kA
● of line contactor usable up to 480 V	3TF68
● of line contactor usable up to 690 V	3TF68
General technical data	
starting voltage [%]	30 ... 100 %
stopping voltage [%]	50 %; non-adjustable
start-up ramp time of soft starter	0 ... 20 s
ramp-down 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	
● HMI-High Feature	No
● is supported HMI-Standard	Yes
● is supported HMI-High Feature	Yes
product feature integrated bypass contact system	Yes
number of controlled phases	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	1 600 V
service factor	1
surge voltage resistance rated value	6 kV
maximum permissible voltage for protective separation	
● 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; 2 g to 500 Hz
utilization category according to IEC 60947-4-2	AC-53a
reference code according to IEC 81346-2	Q
Substance Prohibitance (day/month/year)	09/23/2019
SVHC substance name	Lead CAS-No. 7439-92-1 Lead monoxide (lead oxide) CAS-No. 1317-36-8 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol CAS-No. 79-94-7 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one CAS-No. 71868-10-5 Melamine CAS-No. 108-78-1 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol CAS-No. 119-47-1
Net Weight	8.4 kg
product function	
● ramp-up (soft starting)	Yes
● soft stopping	Yes
● Soft Torque	Yes
● adjustable current limitation	Yes
● pump stop	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
● auto-RESET	Yes
● manual RESET	Yes
● remote reset	Yes; By turning off the control supply voltage
● communication function	Yes
● operating measured value display	Yes; Only in conjunction with special accessories
● error logbook	Yes; Only in conjunction with special accessories
● via software parameterizable	No
● via software configurable	Yes
● **PROFIenergy**	Yes; in connection with the PROFINET Standard communication module
● voltage ramp	Yes
● torque control	No
● analog output	No
Power Electronics	
operational current	
● at 40 °C rated value	570 A
● at 50 °C rated value	504 A
● at 60 °C rated value	460 A
operating voltage	
● rated value	200 ... 600 V
relative negative tolerance of the operating voltage	-15 %
relative positive tolerance of the operating voltage	10 %
operating power for 3-phase motors	
● at 230 V at 40 °C rated value	160 kW
● at 400 V at 40 °C rated value	315 kW
● at 500 V at 40 °C rated value	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 %
adjustable motor current	
● at rotary coding switch on switch position 1	240 A
● at rotary coding switch on switch position 2	262 A
● at rotary coding switch on switch position 3	284 A
● at rotary coding switch on switch position 4	306 A
● at rotary coding switch on switch position 5	328 A
● at rotary coding switch on switch position 6	350 A
● at rotary coding switch on switch position 7	372 A
● at rotary coding switch on switch position 8	394 A
● at rotary coding switch on switch position 9	416 A
● at rotary coding switch on switch position 10	438 A
● at rotary coding switch on switch position 11	460 A
● at rotary coding switch on switch position 12	482 A
● at rotary coding switch on switch position 13	504 A
● at rotary coding switch on switch position 14	526 A
● at rotary coding switch on switch position 15	548 A
● at rotary coding switch on switch position 16	570 A
● minimum	240 A
minimum load [%]	15 %; Relative to smallest settable Ie
power loss [W] for rated value of the current at AC	
● at 40 °C after startup	73 W
● at 50 °C after startup	57 W
● at 60 °C after startup	47 W
power loss [W] at AC at current limitation 350 %	
● at 40 °C during startup	7 019 W
● at 50 °C during startup	5 801 W
● at 60 °C during startup	5 048 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 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 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	490 mA
inrush current by closing the bypass contacts maximum	7.6 A
inrush current peak at application of control supply voltage maximum	3.3 A
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 digital outputs	3
● not parameterizable	2
digital output version	2 normally-open contacts (NO) / 1 changeover contact (CO)
number of analog outputs	0
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	
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	230 mm
width	160 mm
depth	282 mm
required spacing with side-by-side mounting	
● forwards	10 mm
● backwards	0 mm
● upwards	100 mm
● downwards	75 mm
● at the side	5 mm
weight without packaging	7.3 kg
Connections/ Terminals	
type of electrical connection	
● for main current circuit	busbar connection
● for control circuit	spring-loaded terminals
width of connection bar maximum	35 mm; with connection cover 3RT1966-4EA1 maximum length 45 mm
wire length for thermistor connection	
● 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
type of connectable conductor cross-sections for main contacts for box terminal	
● using the front clamping point solid	95 ... 300 mm²
● using the front clamping point finely stranded with core end processing	70 ... 240 mm²
● using the front clamping point finely stranded without core end processing	70 ... 240 mm²
● using the front clamping point stranded	95 ... 300 mm²
● using the back clamping point solid	120 ... 240 mm²
● r box terminal using the back clamping point	250 ... 500 kcmil
● using both clamping points solid	min. 2x 70 mm², max. 2x 240 mm²
● using both clamping points finely stranded with core end processing	min. 2x 50 mm², max. 2x 185 mm²
● using both clamping points finely stranded without core end processing	min. 2x 50 mm², max. 2x 185 mm²
● using both clamping points stranded	min. 2x 70 mm², max. 2x 240 mm²
● using the back clamping point finely stranded with core end processing	120 ... 185 mm²
● using the back clamping point finely stranded without core end processing	120 ... 185 mm²
● using the back clamping point stranded	120 ... 240 mm²
type of connectable conductor cross-sections	
● for AWG cables for main current circuit solid	2/0 ... 500 kcmil
● for DIN cable lug for main contacts stranded	50 ... 240 mm²
● for DIN cable lug for main contacts finely stranded	70 ... 240 mm²
type of connectable conductor cross-sections	
● for control circuit solid	2x (0.25 ... 1.5 mm²)

● for control circuit finely stranded with core end processing	2x (0.25 ... 1.5 mm²)
● for AWG cables for control circuit solid	2x (24 ... 16)
● for AWG cables for control circuit finely stranded with core end processing	2x (24 ... 16)
wire length	
● between soft starter and motor maximum	800 m
● at the digital inputs at AC 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	5 000 m
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)
Electromagnetic compatibility	
EMC emitted interference	acc. to IEC 60947-4-2: Class A
Communication/ Protocol	
communication module is supported	
● PROFINET standard	Yes
● EtherNet/IP	Yes
● Modbus RTU	Yes
● Modbus TCP	Yes
● PROFIBUS	Yes
UL/CSA ratings	
manufacturer's article number	
● of the fuse	
— usable for Standard Faults up to 575/600 V according to UL	Type: Class L, max. 1600 A; Iq = 30 kA
— usable for High Faults up to 575/600 V according to UL	Type: Class L, max. 1200 A; Iq = 100 kA
operating power [hp] for 3-phase motors	
● at 200/208 V at 50 °C rated value	150 hp
● at 220/230 V at 50 °C rated value	200 hp
● at 460/480 V at 50 °C rated value	400 hp
● at 575/600 V at 50 °C rated value	500 hp
Electrical Safety	
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
ATEX	
Safety Integrity Level (SIL) according to IEC 61508 relating to ATEX	SIL 1
PFHD with high demand rate according to IEC 61508 relating to ATEX	9E-6 1/h
PFDavg with low demand rate according to IEC 61508 relating to ATEX	0.09
hardware fault tolerance according to IEC 61508 relating to ATEX	0
T1 value for proof test interval or service life according to IEC 61508 relating to ATEX	3 a
certificate of suitability	

• ATEX	Yes
• IECEx	Yes
• UKEX	Yes

Approvals Certificates

Environmental Product Declaration	
• global warming potential [CO2 eq] / during manufacturing	87.4 kg
• global warming potential [CO2 eq] / during sales	2.05 kg
• global warming potential [CO2 eq] / during operation	407 kg
• global warming potential [CO2 eq] / after end of life	-32.4 kg
• global warming potential [CO2 eq] / total	464 kg

Environment

Environmental Confirmations

General Product Approval

General Product Approval

EMV

For use in hazardous locations

Miscellaneous

Test Certificates

Type Test Certificates/Test Report

Maritime application

other

Confirmation

other

Confirmation

Further information

Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information for data generation and storage
https://support.industry.siemens.com/cs/ww/en/view/109995012
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=3RW5077-2TB05
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RW5077-2TB05
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5077-2TB05&lang=en
Cax online generator
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5077-2TB05
Characteristic curves
https://curves.simaris.siemens.com/curves/<mmp_prod_noCOMP="HAUPT"></mmp_prod__no>
Characteristic: Tripping characteristics, I²t, Let-through current
https://support.industry.siemens.com/cs/ww/en/ps/3RW5077-2TB05/char
Characteristic: Installation altitude
https://www.automation.siemens.com/bilddb/index.aspx?gridview=view2&objkey=G_NSB0_XX_01704&showdetail=true&view=Search
Simulation Tool for Soft Starters (STS)
https://support.industry.siemens.com/cs/ww/en/view/101494917