SIEMENS

product brand name

Data sheet 3RW5224-1AC04

SIRIUS



SIRIUS soft starter 200-480 V 47 A, 24 V AC/DC Screw terminals Analog output

product brand name	311103
product category	Hybrid switching devices
product designation	Soft starter
product type designation	3RW52
manufacturer's article number	
 of standard HMI module usable 	3RW5980-0HS00
 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 	3RV2032-4JA10; Type of coordination 1, Iq = 65 kA, CLASS 10
 of circuit breaker usable at 500 V 	3RV2032-4JA10; Type of coordination 1, Iq = 10 kA, CLASS 10
 of circuit breaker usable at 400 V at inside-delta circuit 	3RV2032-4RA10; Type of coordination 1, Iq = 65 kA, CLASS 10
 of circuit breaker usable at 500 V at inside-delta circuit 	3RV2032-4RA10; Type of coordination 1, Iq = 10 kA, CLASS 10
 of the gG fuse usable up to 690 V 	3NA3824-6; Type of coordination 1, Iq = 65 kA
 of the gG fuse usable at inside-delta circuit up to 500 V 	3NA3824-6; Type of coordination 1, Iq = 65 kA
 of full range R fuse link for semiconductor protection usable up to 690 V 	3NE1021-2; Type of coordination 2, Iq = 65 kA
 of back-up R fuse link for semiconductor protection usable up to 690 V 	3NE8024-1; Type of coordination 2, Iq = 65 kA
General 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

product feature integrated bypass contact system

Yes

Yes

number of controlled phases	2
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	400
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	1 400 V
service factor	_ 1
surge voltage resistance rated value	_ 6 kV
maximum permissible voltage for safe isolation	
 between main and auxiliary circuit 	600 V
utilization category acc. to IEC 60947-4-2	AC 53a
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
reference code acc. to IEC 81346-2	Q
product function	
• ramp-up (soft starting)	Yes
• ramp-down (soft stop)	Yes
Soft Torque	Yes
adjustable current limitation	Yes
pump ramp down	Yes
intrinsic device protection	Yes
motor overload protection	Yes; Electronic motor overload protection
evaluation of thermistor motor protection	No
inside-delta circuit	Yes
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 Ver
via software configurable	Yes
PROFlenergy	Yes; in connection with the PROFINET Standard communication module
• firmware update	Yes
 removable terminal for control circuit 	Yes
• torque control	No
analog output	Yes; 4 20 mA (default) / 0 10 V (parameterizable with High Feature HMI)
Power Electronics	
operational current	
 at 40 °C rated value 	47 A
• at 50 °C rated value	41.6 A
• at 60 °C rated value	36.2 A
operational current at inside-delta circuit	
• at 40 °C rated value	81.4 A
at 50 °C rated value	72 A
at 60 °C rated value	62.7 A
operating voltage	
• rated value	200 480 V
at inside-delta circuit rated value	200 480 V
relative negative tolerance of the operating voltage	200 480 V
relative negative tolerance of the operating voltage	10 %
relative positive tolerance of the operating voltage	10 % -15 %
inside-delta circuit relative positive tolerance of the operating voltage at	
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inside-delta circuit	
operating power for 3-phase motors	
at 230 V at 40 °C rated value	11 kW
• at 230 V at inside-delta circuit at 40 °C rated value	22 kW
• at 400 V at 40 °C rated value	22 kW
• at 400 V at inside-delta circuit at 40 °C rated value	45 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 	20 A
 at rotary coding switch on switch position 2 	21.8 A
 at rotary coding switch on switch position 3 	23.6 A
 at rotary coding switch on switch position 4 	25.4 A
 at rotary coding switch on switch position 5 	27.2 A
 at rotary coding switch on switch position 6 	29 A
 at rotary coding switch on switch position 7 	30.8 A
 at rotary coding switch on switch position 8 	32.6 A
 at rotary coding switch on switch position 9 	34.4 A
 at rotary coding switch on switch position 10 	36.2 A
 at rotary coding switch on switch position 11 	38 A
 at rotary coding switch on switch position 12 	39.8 A
 at rotary coding switch on switch position 13 	41.6 A
 at rotary coding switch on switch position 14 	43.4 A
 at rotary coding switch on switch position 15 	45.2 A
 at rotary coding switch on switch position 16 	47 A
minimum	20 A
adjustable motor current	
 for inside-delta circuit at rotary coding switch on switch position 1 	34.6 A
 for inside-delta circuit at rotary coding switch on switch position 2 	37.8 A
 for inside-delta circuit at rotary coding switch on switch position 3 	40.9 A
 for inside-delta circuit at rotary coding switch on switch position 4 	44 A
 for inside-delta circuit at rotary coding switch on switch position 5 	47.1 A
 for inside-delta circuit at rotary coding switch on switch position 6 	50.2 A
 for inside-delta circuit at rotary coding switch on switch position 7 	53.3 A
 for inside-delta circuit at rotary coding switch on switch position 8 	56.5 A
for inside-delta circuit at rotary coding switch on switch position 9	59.6 A
for inside-delta circuit at rotary coding switch on switch position 10	62.7 A
 for inside-delta circuit at rotary coding switch on switch position 11 	65.8 A
 for inside-delta circuit at rotary coding switch on switch position 12 	68.9 A
 for inside-delta circuit at rotary coding switch on switch position 13 	72.1 A
for inside-delta circuit at rotary coding switch on switch position 14	75.2 A
 for inside-delta circuit at rotary coding switch on switch position 15 	78.3 A
 for inside-delta circuit at rotary coding switch on switch position 16 	81.4 A
at inside-delta circuit minimum	34.6 A

minimum load [%]	15 %; Relative to smallest settable le
power loss [W] for rated value of the current at AC	
 at 40 °C after startup 	26 W
 at 50 °C after startup 	24 W
at 60 °C after startup	23 W
power loss [W] at AC at current limitation 350 %	
at 40 °C during startup	606 W
at 50 °C during startup	522 W
at 60 °C during startup	438 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
control supply voltage at AC 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	-20 %
voltage at AC at 60 Hz	
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	380 mA
locked-rotor current at close of bypass contact 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 inputs for thermistor connection	0
number of digital outputs	3
• not parameterizable	2
digital output version	2 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 250 V rated value	1A
	.,,
Installation/ mounting/ dimensions	1/ 40° retation receible and can be titled forward as be always
mounting position	+/- 10° rotation possible and can be tilted forward or backward on vertical mounting surface
fastening method	screw fixing
height	306 mm
width	185 mm
depth	203 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	5.2 kg
Connections/ Terminals	
type of electrical connection	
for main current circuit	box terminal
for control circuit	screw-type terminals
width of connection bar maximum	25 mm
type of connectable conductor cross-sections	
 for main contacts for box terminal using the front clamping point solid 	1x (2.5 16 mm²)
 for main contacts for box terminal using the front clamping point finely stranded with core end processing 	1x (2.5 50 mm²)
 for main contacts for box terminal using the front clamping point stranded 	1x (10 70 mm²)
 at AWG cables for main contacts for box terminal using the front clamping point 	1x (10 2/0)
 for main contacts for box terminal using the back clamping point solid 	1x (2.5 16 mm²)
 at AWG cables for main contacts for box terminal using the back clamping point 	1x (10 2/0)
 for main contacts for box terminal using both clamping points solid 	2x (2.5 16 mm²)
 for main contacts for box terminal using both clamping points finely stranded with core end processing 	2x (2.5 35 mm²)
 for main contacts for box terminal using both clamping points stranded 	2x (6 16 mm²), 2x (10 50 mm²)
 for main contacts for box terminal using the back clamping point finely stranded with core end processing 	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	
 for control circuit solid 	1x (0.5 4.0 mm²), 2x (0.5 2.5 mm²)
 for control circuit finely stranded with core end processing 	1x (0.5 2.5 mm²), 2x (0.5 1.5 mm²)
at AWG cables for control circuit solid	1x (20 12), 2x (20 14)
wire length	
 between soft starter and motor maximum 	800 m
at the digital inputs at AC maximum	100 m
at the digital inputs at DC maximum	1 000 m
tightening torque	
 for main contacts with screw-type terminals for auxiliary and control contacts with screw-type 	4.5 6 N·m 0.8 1.2 N·m
terminals	
tightening torque [lbf·in]	
 for main contacts with screw-type terminals 	40 53 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; Derating as of 1000 m, see catalog
ambient temperature during operation	-25 +60 °C; Please observe derating at temperatures of 40 °C or
ambient temperature during storage and transport	above -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

 during storage acc. to IEC 60721 	1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must
	not get inside the devices), 1M4
during transport acc. 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
• EtherNet/IP	Yes
Modbus RTU	Yes
Modbus TCP	Yes
• PROFIBUS	Yes
UL/CSA ratings	
manufacturer's article number	
of circuit breaker	0
 usable for Standard Faults at 460/480 V according to UL 	Siemens type: 3RV2742, max. 70 A or 3VA51, max. 90 A; lq = 5 kA
 usable for High Faults at 460/480 V according to UL 	Siemens type: 3VA51, max. 60 A; Iq max = 65 kA
 usable for Standard Faults at 460/480 V at inside-delta circuit according to UL 	Siemens type: 3VA51, max. 90 A; Iq = 5 kA
 usable for High Faults at 460/480 V at inside- delta circuit according to UL 	Siemens type: 3VA51, max. 60 A; Iq max = 65 kA
 usable for Standard Faults at 575/600 V according to UL 	Siemens type: 3RV2742, max. 70 A or 3VA51, max. 90 A; Iq = 5 kA
 usable for Standard Faults at 575/600 V at inside-delta circuit according to UL 	Siemens type: 3VA51, max. 90 A; Iq = 5 kA
of the fuse	
 usable for Standard Faults up to 575/600 V according to UL 	Type: Class RK5 / K5, max. 175 A; lq = 5 kA
 usable for High Faults up to 575/600 V according to UL 	Type: Class J / L, max. 175 A; Iq = 100 kA
 usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL 	Type: Class RK5 / K5, max. 175 A; lq = 5 kA
 usable for High Faults at inside-delta circuit up to 575/600 V according to UL 	Type: Class J / L, max. 175 A; Iq = 100 kA
operating power [hp] for 3-phase motors	
at 200/208 V at 50 °C rated value	10 hp
 at 220/230 V at 50 °C rated value 	10 hp
 at 460/480 V at 50 °C rated value 	30 hp
 at 200/208 V at inside-delta circuit at 50 °C rated value 	20 hp
 at 220/230 V at inside-delta circuit at 50 °C rated value 	25 hp
at 460/480 V at inside-delta circuit at 50 °C rated value	50 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
Certificates/ approvals	
General Product Approval	EMC













Declaration of Conformity Test Certificates Marine / Shipping



Miscellaneous

Type Test
Certificates/Test
Report







Marine / Shipping

other



Confirmation

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=3RW5224-1AC04

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5224-1AC04

 ${\bf Service \& Support~(Manuals,~Certificates,~Characteristics,~FAQs,...)}$

https://support.industry.siemens.com/cs/ww/en/ps/3RW5224-1AC04

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

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5224-1AC04&lang=en

Characteristic: Tripping characteristics, I2t, Let-through current

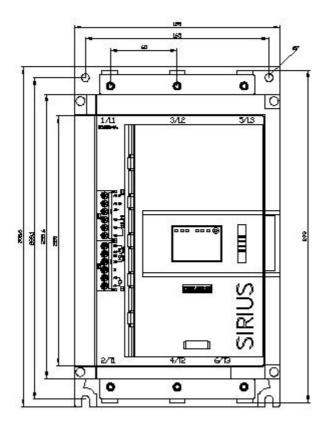
https://support.industry.siemens.com/cs/ww/en/ps/3RW5224-1AC04/char

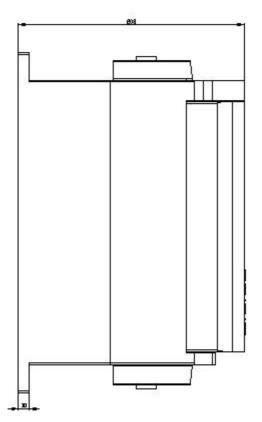
Characteristic: Installation altitude

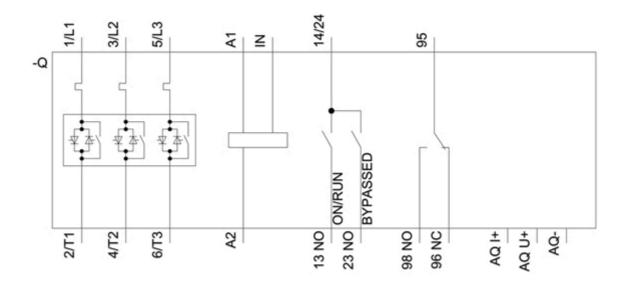
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5224-1AC04&objecttype=14&gridview=view1

Simulation Tool for Soft Starters (STS)

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







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