

Siemens  
EcoTech



SIRIUS soft starter 200-480 V 93 A, 24 V AC/DC spring-type terminals Fail-safe



<b>product brand name</b>	SIRIUS
<b>product category</b>	Hybrid switching devices
<b>product designation</b>	Failsafe soft starters
<b>product type designation</b>	3RW55
<b>manufacturer's article number</b>	<ul style="list-style-type: none"> <li>• of high feature HMI module usable <a href="#">3RW5980-0HF00</a></li> <li>• of communication module PROFINET standard usable <a href="#">3RW5980-0CS00</a></li> <li>• of communication module PROFINET high-feature usable <a href="#">3RW5950-0CH00</a></li> <li>• of communication module PROFIBUS usable <a href="#">3RW5980-0CP00</a></li> <li>• of communication module Modbus TCP usable <a href="#">3RW5980-0CT00</a></li> <li>• of communication module Modbus RTU usable <a href="#">3RW5980-0CR00</a></li> <li>• of communication module Ethernet/IP <a href="#">3RW5980-0CE00</a></li> <li>• of circuit breaker usable at 400 V <a href="#">3VA2216-7MN32-0AA0; Type of coordination 1, Iq = 15 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 500 V <a href="#">3VA2216-7MN32-0AA0; Type of coordination 1, Iq = 10 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 400 V at inside-delta circuit <a href="#">3VA2220-7MN32-0AA0; Type of coordination 1, Iq = 15 kA, CLASS 10</a></li> <li>• of circuit breaker usable at 500 V at inside-delta circuit <a href="#">3VA2220-7MN32-0AA0; Type of coordination 1, Iq = 10 kA, CLASS 10</a></li> <li>• of the gG fuse usable up to 690 V <a href="#">3NA3136-6; Type of coordination 1, Iq = 65 kA</a></li> <li>• of the gG fuse usable at inside-delta circuit up to 500 V <a href="#">3NA3136-6; Type of coordination 1, Iq = 65 kA</a></li> <li>• of full range R fuse link for semiconductor protection usable up to 690 V <a href="#">3NE1224-0; Type of coordination 2, Iq = 65 kA</a></li> <li>• of back-up R fuse link for semiconductor protection usable up to 690 V <a href="#">3NE3227; Type of coordination 2, Iq = 65 kA</a></li> <li>• of the redundant contactor for applications &gt; SIL 1 according to EN 62061 <a href="#">3RT1055</a></li> <li>• of the redundant contactor for applications &gt; SIL 1 at inside-delta circuit according to EN 62061 <a href="#">3RT1055</a></li> <li>• of the redundant contactor for applications &gt; SIL 1 according to EN ISO 13849-1 <a href="#">3RT1064</a></li> <li>• of the redundant contactor for applications &gt; SIL 1 at inside-delta circuit according to EN ISO 13849-1 <a href="#">3RT1064</a></li> </ul>
<b>General technical data</b>	
<b>starting voltage [%]</b>	20 ... 100 %
<b>stopping voltage [%]</b>	50 %; non-adjustable
<b>start-up ramp time of soft starter</b>	0 ... 360 s
<b>ramp-down time of soft starter</b>	0 ... 360 s
<b>start torque [%]</b>	10 ... 100 %
<b>stopping torque [%]</b>	10 ... 100 %
<b>torque limitation [%]</b>	20 ... 200 %
<b>current limiting value [%] adjustable</b>	125 ... 800 %

<b>breakaway voltage [%] adjustable</b>	40 ... 100 %
<b>breakaway time adjustable</b>	0 ... 2 s
<b>number of parameter sets</b>	3
<b>accuracy class</b>	5 (based on IEC 61557-12)
<b>certificate of suitability</b>	
• CE marking	Yes
• UL approval	Yes
• CSA approval	Yes
<b>product component</b>	
• HMI-High Feature	Yes
• is supported HMI-High Feature	Yes
<b>product feature integrated bypass contact system</b>	Yes
<b>number of controlled phases</b>	3
<b>current unbalance limiting value [%]</b>	10 ... 60 %
<b>ground-fault monitoring limiting value [%]</b>	10 ... 95 %
<b>buffering time in the event of power failure</b>	
• for main current circuit	100 ms
• for control circuit	100 ms
<b>idle time adjustable</b>	0 ... 255 s
<b>insulation voltage rated value</b>	480 V
<b>degree of pollution</b>	3, acc. to IEC 60947-4-2
<b>impulse voltage rated value</b>	6 kV
<b>blocking voltage of the thyristor maximum</b>	1 400 V
<b>service factor</b>	1.15
<b>surge voltage resistance rated value</b>	6 kV
<b>maximum permissible voltage for protective separation</b>	
• between main and auxiliary circuit	480 V; does not apply for thermistor connection
<b>shock resistance</b>	15 g / 11 ms, from 6 g / 11 ms with potential contact lifting
<b>vibration resistance</b>	15 mm up to 6 Hz; 2 g up to 500 Hz
<b>recovery time after overload trip adjustable</b>	60 ... 1 800 s
utilization category according to IEC 60947-4-2	AC 53a
<b>reference code according to IEC 81346-2</b>	Q
<b>Substance Prohibitance (Date)</b>	11/22/2019
<b>SVHC substance name</b>	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol - 119-47-1 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one - 71868-10-5 Dibutylbis(pentane-2,4-dionato-O,O')tin - 22673-19-4 Lead titanium trioxide - 12060-00-3
<b>Weight</b>	8 kg
<b>product function</b>	
• ramp-up (soft starting)	Yes
• ramp-down (soft stop)	Yes
• breakaway pulse	Yes
• adjustable current limitation	Yes
• creep speed in both directions of rotation	Yes
• pump ramp down	Yes
• DC braking	Yes
• motor heating	Yes
• min/max pointer	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.
• evaluation of thermistor motor protection	Yes; Type A PTC or Klixon / Thermoclick
• inside-delta circuit	Yes
• auto-RESET	Yes
• manual RESET	Yes
• remote reset	Yes
• communication function	Yes
• operating measured value display	Yes
• event list	Yes

• error logbook	Yes
• via software parameterizable	Yes
• via software configurable	Yes
• screw terminal	No
• spring-loaded terminal	Yes
• <b>PROFInergy</b>	Yes; in connection with the PROFINET Standard and PROFINET High-Feature communication modules
• <b>firmware update</b>	Yes
• <b>removable terminal for control circuit</b>	Yes
• voltage ramp	Yes
• torque control	Yes
• combined braking	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
• alternative run-down	Yes
• emergency operation mode	Yes
• reversing operation	Yes
• soft starting at heavy starting conditions	Yes

### Power Electronics

<b>operational current</b>	
• at 40 °C rated value	93 A
• at 40 °C rated value minimum	19 A
• at 50 °C rated value	82.5 A
• at 60 °C rated value	75.5 A
<b>operational current at inside-delta circuit</b>	
• at 40 °C rated value	161 A
• at 50 °C rated value	143 A
• at 60 °C rated value	131 A
<b>operating voltage</b>	
• rated value	200 ... 480 V
• at inside-delta circuit rated value	200 ... 480 V
<b>relative negative tolerance of the operating voltage</b>	-15 %
<b>relative positive tolerance of the operating voltage</b>	10 %
<b>relative negative tolerance of the operating voltage at inside-delta circuit</b>	-15 %
<b>relative positive tolerance of the operating voltage at inside-delta circuit</b>	10 %
<b>operating power for 3-phase motors</b>	
• at 230 V at 40 °C rated value	22 kW
• at 230 V at inside-delta circuit at 40 °C rated value	45 kW
• at 400 V at 40 °C rated value	45 kW
• at 400 V at inside-delta circuit at 40 °C rated value	90 kW
<b>Operating frequency 1 rated value</b>	50 Hz
<b>Operating frequency 2 rated value</b>	60 Hz
<b>relative negative tolerance of the operating frequency</b>	-10 %
<b>relative positive tolerance of the operating frequency</b>	10 %
<b>minimum load [%]</b>	10 %; Relative to set le
<b>power loss [W] for rated value of the current at AC</b>	
• at 40 °C after startup	28 W
• at 50 °C after startup	25 W
• at 60 °C after startup	23 W
<b>power loss [W] at AC at current limitation 350 %</b>	
• at 40 °C during startup	1 258 W
• at 50 °C during startup	1 065 W
• at 60 °C during startup	948 W
<b>type of the motor protection</b>	Electronic, tripping in the event of thermal overload of the motor

### Control circuit/ Control

<b>type of voltage of the control supply voltage</b>	AC/DC
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<b>control supply voltage at AC</b>	
• at 50 Hz rated value	24 V
• at 60 Hz rated value	24 V
<b>relative negative tolerance of the control supply voltage at AC at 50 Hz</b>	-20 %
<b>relative positive tolerance of the control supply voltage at AC at 50 Hz</b>	20 %
<b>relative negative tolerance of the control supply voltage at AC at 60 Hz</b>	-20 %
<b>relative positive tolerance of the control supply voltage at AC at 60 Hz</b>	20 %
<b>control supply voltage frequency</b>	50 ... 60 Hz
<b>relative negative tolerance of the control supply voltage frequency</b>	-10 %
<b>relative positive tolerance of the control supply voltage frequency</b>	10 %
<b>control supply voltage at DC rated value</b>	24 V
<b>relative negative tolerance of the control supply voltage at DC</b>	-20 %
<b>relative positive tolerance of the control supply voltage at DC</b>	20 %
<b>control supply current in standby mode rated value</b>	440 mA
<b>holding current in bypass operation rated value</b>	870 mA
<b>inrush current by closing the bypass contacts maximum</b>	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
<b>design of the overvoltage protection</b>	Varistor
<b>design of short-circuit protection for control circuit</b>	4 A gG fuse (I <sub>cu</sub> =1 kA), 6 A quick-acting fuse (I <sub>cu</sub> =1 kA), C1 miniature circuit breaker (I <sub>cu</sub> = 600 A), C6 miniature circuit breaker (I <sub>cu</sub> = 300 A); Is not part of scope of supply

#### Inputs/ Outputs

<b>number of digital inputs</b>	4
• with fail-safe	1
• parameterizable	4
• <b>number of digital outputs</b>	3
• Number of digital outputs with fail-safe	1
• number of digital outputs parameterizable	2
• number of digital outputs not parameterizable	1
<b>digital output version</b>	2 normally-open contacts (NO) / 1 normally-closed contact (NC) / 1 changeover contact (CO)
<b>number of analog outputs</b>	1
<b>switching capacity current of the relay outputs</b>	
• at AC-15 at 250 V rated value	3 A
• at DC-13 at 24 V rated value	1 A

#### Response times

OFF-delay time with safety-related request when switched off via control inputs maximum	100 ms
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#### Installation/ mounting/ dimensions

<b>mounting position</b>	Vertical (can be rotated +/- 90° and tilted forward or backward +/- 22.5°)
<b>fastening method</b>	screw fixing
<b>height</b>	306 mm
<b>width</b>	185 mm
<b>depth</b>	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
<b>weight without packaging</b>	7.15 kg

#### Connections/ Terminals

<b>type of electrical connection</b>	
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<ul style="list-style-type: none"> <li>• for main current circuit</li> <li>• for control circuit</li> </ul>	box terminal spring-loaded terminals
<b>width of connection bar maximum</b>	25 mm
<b>wire length for thermistor connection</b>	
<ul style="list-style-type: none"> <li>• with conductor cross-section = 0.5 mm<sup>2</sup> maximum</li> <li>• with conductor cross-section = 1.5 mm<sup>2</sup> maximum</li> <li>• with conductor cross-section = 2.5 mm<sup>2</sup> maximum</li> </ul>	50 m 150 m 250 m
<b>type of connectable conductor cross-sections for main contacts for box terminal</b>	
<ul style="list-style-type: none"> <li>• using the front clamping point solid</li> <li>• using the front clamping point finely stranded with core end processing</li> <li>• using the front clamping point stranded</li> <li>• using the back clamping point solid</li> <li>• r box terminal using the back clamping point</li> <li>• using both clamping points solid</li> <li>• using both clamping points finely stranded with core end processing</li> <li>• using both clamping points stranded</li> <li>• using the back clamping point finely stranded with core end processing</li> <li>• using the back clamping point stranded</li> </ul>	1x (2.5 ... 16 mm <sup>2</sup> ) 1x (2.5 ... 50 mm <sup>2</sup> ) 1x (10 ... 70 mm <sup>2</sup> ) 1x (2.5 ... 16 mm <sup>2</sup> ) 1x (10 ... 2/0) 2x (2.5 ... 16 mm <sup>2</sup> ) 2x (2.5 ... 35 mm <sup>2</sup> ) 2x (6 ... 16 mm <sup>2</sup> ), 2x (10 ... 50 mm <sup>2</sup> ) 1x (2.5 ... 50 mm <sup>2</sup> ) 1x (10 ... 70 mm <sup>2</sup> )
<b>type of connectable conductor cross-sections</b>	
<ul style="list-style-type: none"> <li>• for control circuit solid</li> <li>• for control circuit finely stranded with core end processing</li> <li>• for AWG cables for control circuit solid</li> <li>• for AWG cables for control circuit finely stranded with core end processing</li> </ul>	2x (0.25 ... 1.5 mm <sup>2</sup> ) 2x (0.25 ... 1.5 mm <sup>2</sup> ) 2x (24 ... 16) 2x (24 ... 16)
<b>wire length</b>	
<ul style="list-style-type: none"> <li>• between soft starter and motor maximum</li> <li>• at the digital inputs at DC maximum</li> </ul>	800 m 1 000 m
<b>tightening torque</b>	
<ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>	4.5 ... 6 N·m 0.8 ... 1.2 N·m
<b>tightening torque [lbf·in]</b>	
<ul style="list-style-type: none"> <li>• for main contacts with screw-type terminals</li> <li>• for auxiliary and control contacts with screw-type terminals</li> </ul>	40 ... 53 lbf·in 7 ... 10.3 lbf·in
<b>Ambient conditions</b>	
installation altitude at height above sea level maximum	2 000 m; Derating as of 1000 m, see catalog
<b>ambient temperature</b>	
<ul style="list-style-type: none"> <li>• during operation</li> <li>• during storage and transport</li> </ul>	-25 ... +60 °C; Please observe derating at temperatures of 40 °C or above -40 ... +80 °C
<b>environmental category</b>	
<ul style="list-style-type: none"> <li>• during operation according to IEC 60721</li> <li>• during storage according to IEC 60721</li> <li>• during transport 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 1K6 (only occasional condensation), 1C2 (no salt mist), 1S2 (sand must not get inside the devices), 1M4 2K2, 2C1, 2S1, 2M2 (max. fall height 0.3 m)
<b>Environmental footprint</b>	
global warming potential [CO <sub>2</sub> eq] total	399 kg
global warming potential [CO <sub>2</sub> eq] during manufacturing	92.6 kg
global warming potential [CO <sub>2</sub> eq] during sales	2.37 kg
global warming potential [CO <sub>2</sub> eq] during operation	324 kg
global warming potential [CO <sub>2</sub> eq] after end of life	-19.4 kg
Siemens Eco Profile (SEP)	Siemens EcoTech
<b>Electromagnetic compatibility</b>	
<b>EMC emitted interference</b>	acc. to IEC 60947-4-2: Class A
<b>Communication/ Protocol</b>	
<b>communication module is supported</b>	
<ul style="list-style-type: none"> <li>• PROFINET standard</li> <li>• PROFINET high-feature</li> </ul>	Yes Yes

<ul style="list-style-type: none"> <li>• EtherNet/IP</li> <li>• Modbus RTU</li> <li>• Modbus TCP</li> <li>• PROFIBUS</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>UL/CSA ratings</b>	
<b>manufacturer's article number</b>	
<ul style="list-style-type: none"> <li>• <b>of circuit breaker usable for Standard Faults</b> <ul style="list-style-type: none"> <li>— at 460/480 V according to UL</li> <li>— 60/480 V according to UL</li> <li>— at 460/480 V at inside-delta circuit according to UL</li> <li>— 60/480 V at inside-delta circuit according to UL</li> <li>— at 575/600 V according to UL</li> <li>— 75/600 V at inside-delta circuit according to UL</li> <li>— at 575/600 V at inside-delta circuit according to UL</li> </ul> </li> <li>• <b>of the fuse</b> <ul style="list-style-type: none"> <li>— usable for Standard Faults up to 575/600 V according to UL</li> <li>— usable for High Faults up to 575/600 V according to UL</li> <li>— usable for Standard Faults at inside-delta circuit up to 575/600 V according to UL</li> <li>— usable for High Faults at inside-delta circuit up to 575/600 V according to UL</li> </ul> </li> </ul>	<p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> = 10 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> max = 65 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> = 10 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> max = 65 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> = 10 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> max = 65 kA</p> <p>Siemens type: 3VA51, max. 125 A; I<sub>q</sub> = 10 kA</p> <p>Type: Class RK5 / K5, max. 300 A; I<sub>q</sub> = 10 kA</p> <p>Type: Class J / L, max. 250 A; I<sub>q</sub> = 100 kA</p> <p>Type: Class RK5 / K5, max. 300 A; I<sub>q</sub> = 10 kA</p> <p>Type: Class J / L, max. 250 A; I<sub>q</sub> = 100 kA</p>
<b>operating power [hp] for 3-phase motors</b>	
<ul style="list-style-type: none"> <li>• at 200/208 V at 50 °C rated value</li> <li>• at 220/230 V at 50 °C rated value</li> <li>• at 460/480 V at 50 °C rated value</li> <li>• at 200/208 V at inside-delta circuit at 50 °C rated value</li> <li>• at 220/230 V at inside-delta circuit at 50 °C rated value</li> <li>• at 460/480 V at inside-delta circuit at 50 °C rated value</li> </ul>	<p>25 hp</p> <p>30 hp</p> <p>60 hp</p> <p>40 hp</p> <p>50 hp</p> <p>100 hp</p>
<b>contact rating of auxiliary contacts according to UL</b>	R300-B300
<b>Safety related data</b>	
product function suitable for safety function	Yes
<b>suitability for use</b>	
<ul style="list-style-type: none"> <li>• safety-related switching on</li> <li>• safety-related switching OFF</li> </ul>	<p>No</p> <p>Yes</p>
<b>safe state</b>	Open load circuit
<b>function test interval maximum</b>	1 a
<b>diagnostics test interval by internal test function maximum</b>	1 000 s
<b>stop category according to IEC 60204-1</b>	0
<b>B10d value</b>	1 000 000
<b>average diagnostic coverage level (DCavg)</b>	90 %
<b>MTTFd</b>	39 a
<b>IEC 62061</b>	
<b>Safety Integrity Level (SIL) according to IEC 62061</b>	SIL 1
PFHD with high demand rate according to IEC 62061	1E-6 1/h
<b>ISO 13849</b>	
<b>performance level (PL) according to ISO 13849-1</b>	PL c
<b>category according to ISO 13849-1</b>	2
<b>IEC 61508</b>	
<b>Safety Integrity Level (SIL)</b>	
<ul style="list-style-type: none"> <li>• according to IEC 61508</li> </ul>	SIL 1
<b>safety device type according to IEC 61508-2</b>	Type B
<b>PFHD with high demand rate according to IEC 61508</b>	1E-6 1/h
PFDAvg with low demand rate according to IEC 61508	0.09
<b>Safe failure fraction (SFF)</b>	60 %
hardware fault tolerance according to IEC 61508	0
T1 value of service life according to IEC 61508	20 a
<b>Electrical Safety</b>	
<b>protection class IP on the front according to IEC 60529</b>	IP00; IP20 with cover
<b>touch protection on the front according to IEC 60529</b>	finger-safe, for vertical contact from the front with cover
<b>ATEX</b>	

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	5E-7 1/h
PFDavg with low demand rate according to IEC 61508 relating to ATEX	0.008
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 <ul style="list-style-type: none"> <li>• ATEX</li> <li>• IECEx</li> <li>• according to ATEX directive 2014/34/EU</li> </ul>	Yes Yes 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]

#### Approvals Certificates

General Product Approval	EMV
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EMV	For use in hazardous locations	Functional Safety	Test Certificates	Maritime application
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[KC](#)



[Type Examination Certificate](#)

[Type Test Certificates/Test Report](#)



Maritime application	other	Environment
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[Confirmation](#)



#### Environment

Siemens EcoTech



[Environmental Conformations](#)

#### 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=3RW5527-3HF04>

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RW5527-3HF04>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RW5527-3HF04>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RW5527-3HF04&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RW5527-3HF04&lang=en)

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RW5527-3HF04/char>

Characteristic: Installation altitude

<https://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RW5527-3HF04&objecttype=14&gridview=view1>

Simulation Tool for Soft Starters (STS)

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





