



Soft starter, 240 A, 200 - 600 V AC,  $U_s = 24$  V DC, with control unit and pump algorithm, Frame size T

Part no. **S811+T24P3S**  
 Catalog No. **168988**  
 Alternate Catalog No. **S811PLUST24P3S**  
 EL-Nummer (Norway) **4137472**

## Delivery program

Description			With internal bypass contacts
Function			Soft starter for three-phase loads, with control unit and pump algorithm
Mains supply voltage (50/60 Hz)	$U_{LN}$	V AC	200 - 600
Supply voltage	$U_s$		24 V DC
Control voltage	$U_c$		24 V DC
<b>Assigned motor rating (Standard connection, In-Line)</b>			
at 400 V, 50 Hz	P	kW	132
at 460 V, 60 Hz	P	HP	200
<b>Rated operational current</b>			
AC-53	$I_e$	A	240
AC-53, In-Delta	$I_e$	A	415
Startup class			CLASS 10 (star-delta replacement) CLASS 20 (heavy starting duty $3 \times I_e$ for 45 s) CLASS 30 ( $6 \times I_e$ for 30 s)
Rated operational voltage	$U_e$		200 V 230 V 400 V 480 V 600 V
Connection to SmartWire-DT			no
Frame size			T
Ordering information			Terminal blocks for the terminals are required for frame sizes T, U, and V -> Accessories

## Technical data

<b>General</b>			
Standards			IEC/EN 60947-4-2 UL 508 CSA22.2-14-1995 GB14048
Approvals			CE
Approvals			UL CSA C-Tick CCC
Climatic proofing			Damp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10
<b>Ambient temperature</b>			
Operation	$\theta$	°C	-30 - +50
Storage	$\theta$	°C	-50 - +70
Altitude		m	0 - 2000 m, above that each 100 m 0.5% Derating
Mounting position			As required
<b>Degree of protection</b>			
Degree of Protection			IP20 (terminals IP00)
Integrated			An IP20 degree of protection can be achieved on all sides by using optional terminal covers SS-IP20-TU.
Protection against direct contact			Finger- and back-of-hand proof
Overvoltage category/pollution degree			II/3
Shock resistance			15 g
Radio interference level (IEC/EN 55011)			A

Static heat dissipation, non-current-dependent	P <sub>Vs</sub>	W	40
Weight		kg	18.6
<b>Main conducting paths</b>			
Rated operating voltage	U <sub>e</sub>	V AC	200 - 600
Supply frequency	f <sub>LN</sub>	Hz	50/60
Rated operational current	I <sub>e</sub>	A	
AC-53, In-Delta	I <sub>e</sub>	A	415
AC-53	I <sub>e</sub>	A	240
Assigned motor rating (Standard connection, In-Line)			
at 230 V, 50 Hz	P	kW	75
at 400 V, 50 Hz	P	kW	132
at 500 V, 50 Hz	P	kW	160
at 200 V, 60 Hz	P	HP	75
at 230 V, 60 Hz	P	HP	75
at 460 V, 60 Hz	P	HP	200
at 600 V, 60 Hz	P	HP	200
Assigned motor rating (delta connection)			
at 230 V, 50 Hz	P	kW	132
at 400 V, 50 Hz	P	kW	200
at 500 V, 50 Hz	P	kW	250
at 230 V, 60 Hz		HP	150
at 480 V, 60 Hz		HP	350
at 600 V, 60 Hz	P	HP	450
Overload cycle to IEC/EN 60947-4-2			
AC-53a			240 A: AC-53a: 4.0 - 32: 99 - 3
Internal bypass contacts			✓
Short-circuit rating			
Type "1" coordination			NZMN3-S250

### Terminal capacities

Cable lengths			
Solid		mm <sup>2</sup>	1 x (70 - 240) 2 x (25 - 240)
Flexible with ferrule		mm <sup>2</sup>	1 x (70 - 240) 2 x (25 - 240)
Stranded		mm <sup>2</sup>	1 x (70 - 240) 2 x (25 - 240)
Solid or stranded		AWG	1 x (4 - 500 kcmil) 2 x (4 - 500 kcmil)
Tightening torque		Nm	25.5 (≤ 150 mm <sup>2</sup> ); 28.3 (> 150 mm <sup>2</sup> )
Screwdriver (PZ: Pozidriv)		mm	4 mm Innensechskant
Control cables			
Solid		mm <sup>2</sup>	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Stranded		mm <sup>2</sup>	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Solid or stranded		AWG	13 x (12 - 14) 2 x (12 - 14)
Tightening torque		Nm	0.4
Screwdriver		mm	0,6 x 3,5

### Control circuit

Digital inputs			
Control voltage			
DC-operated		V DC	24 V DC +10 %/- 10 %
Current consumption 24 V			
External 24 V		mA	150
External 24 V (no-load)		mA	100
Pick-up voltage		x U <sub>s</sub>	

DC-operated		V DC	21.6 - 26.4
Drop-out voltage	$x U_s$		
DC operated		V DC	
Drop-out voltage, DC-operated, max.		V DC	3
Pick-up time			
DC operated		ms	100
Drop-out time			
DC operated		ms	100
Regulator supply			
Voltage	$U_s$	V	24 V DC +10 %/- 10 %
Current consumption	$I_e$	mA	1000
Current consumption at peak performance (close bypass) at 24 V DC	$I_{Peak}$	A/ms	10/150
Notes			External supply voltage
Analog inputs			
Number of current inputs			1
Current input		mA	4 - 20
Relay outputs			
Number			2
of which programmable			2
Voltage range		V AC	120 V AC/DC
AC-11 current range		A	3 A, AC-11

### Soft start function

Ramp times			
Acceleration		s	
Ramp time, max.		s	360
Deceleration		s	0 - 120
Start voltage (= turn-off voltage)		%	
Start voltage, max.		%	85
Start pedestal		%	
Start voltage, max.		%	85
Kickstart			
Voltage		%	
Kickstart voltage, max.		%	100
Duration			
50 Hz		ms	
Kickstart Duration 50 Hz max.		ms	2000
60 Hz		ms	
Kickstart Duration 60 Hz max.		ms	2000
Fields of application			
Fields of application			Soft starting of three-phase asynchronous motors
3-phase motors			✓

### Functions

Fast switching (semiconductor contactor)			- (minimum ramp time 1s)
Soft start function			✓
Reversing starter			External solution required (reversing contactor)
Suppression of closing transients			✓
Current limitation			✓
Overload monitoring			✓
Underload monitoring			✓
Fault memory		Faults	10
Suppression of DC components for motors			✓
Potential isolation between power and control sections			✓
Communication Interfaces			Modbus RTU

## Design verification as per IEC/EN 61439

Technical data for design verification				
Rated operational current for specified heat dissipation	$I_n$	A		240
Heat dissipation per pole, current-dependent	$P_{vid}$	W		0
Equipment heat dissipation, current-dependent	$P_{vid}$	W		40
Static heat dissipation, non-current-dependent	$P_{vs}$	W		40
Heat dissipation capacity	$P_{diss}$	W		0
Operating ambient temperature min.		°C		-30
Operating ambient temperature max.		°C		50
IEC/EN 61439 design verification				
10.2 Strength of materials and parts				
10.2.2 Corrosion resistance				
				Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures				
				Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat				
				Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects				
				Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation				
				Meets the product standard's requirements.
10.2.5 Lifting				
				Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact				
				Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions				
				Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES				
				Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances				
				Meets the product standard's requirements.
10.5 Protection against electric shock				
				Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components				
				Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections				
				Is the panel builder's responsibility.
10.8 Connections for external conductors				
				Is the panel builder's responsibility.
10.9 Insulation properties				
10.9.2 Power-frequency electric strength				
				Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage				
				Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material				
				Is the panel builder's responsibility.
10.10 Temperature rise				
				The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating				
				Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility				
				Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function				
				The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

## Technical data ETIM 7.0

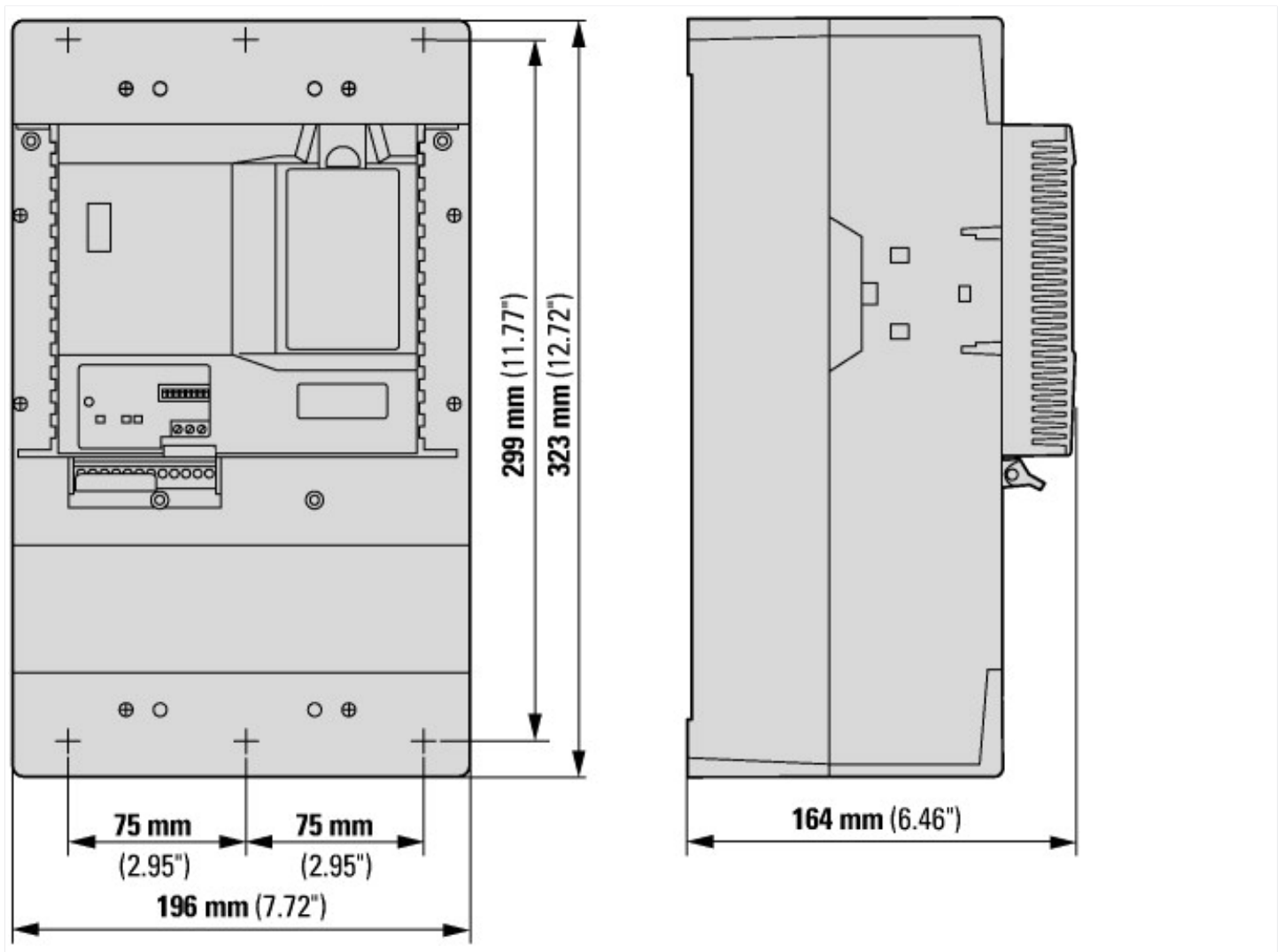
Low-voltage industrial components (EG000017) / Soft starter (EC000640)				
Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ec@ss10.0.1-27-37-09-07 [ACO300011])				
Rated operation current $I_e$ at 40 °C $T_u$		A		240
Rated operating voltage $U_e$		V		200 - 600
Rated power three-phase motor, inline, at 230 V		kW		75
Rated power three-phase motor, inline, at 400 V		kW		132
Rated power three-phase motor, inside delta, at 230 V		kW		132
Rated power three-phase motor, inside delta, at 400 V		kW		200
Function				Single direction
Internal bypass				Yes
With display				Yes
Torque control				No
Rated surrounding temperature without derating		°C		50
Rated control supply voltage $U_s$ at AC 50HZ		V		0 - 0
Rated control supply voltage $U_s$ at AC 60HZ		V		0 - 0
Rated control supply voltage $U_s$ at DC		V		24 - 24

Voltage type for actuating		DC
Integrated motor overload protection		Yes
Release class		Adjustable
Degree of protection (IP)		IP00
Degree of protection (NEMA)		Other

## Approvals

Product Standards		IEC/EN 60947-4-2; UL 508; CSA C22.2 No. 14; CE marking
UL File No.		E202571
UL Category Control No.		NMFT
CSA File No.		LR 353
CSA Class No.		3211-06, 2411-01
North America Certification		UL listed, CSA certified
Suitable for		Branch Circuits, not as BCPD
Max. Voltage Rating		600 Vac
Degree of Protection		IP20 with kit

## Dimensions



## Additional product information (links)

Documentation	<a href="http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/SoftStarters/S811/index.htm#tabs-4">http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/SoftStarters/S811/index.htm#tabs-4</a>
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