DATASHEET - S811+N37N3S

Soft starter, 37 A, 200 - 600 V AC, Us= 24 V DC, with control unit, Frame size N

Part no.	**S811+N37N3S**
Catalog No.	**168976**
Alternate Catalog No.	**S811PLUSN37N3S**
EL-Nummer (Norway)	**4137460**

Delivery program

Description			With internal bypass contacts
Function			Soft starter for three-phase loads, with control unit
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
Assigned motor rating (Standard connection, In-Line)			
at 400 V, 50 Hz	P	kW	18.5
at 460 V, 60 Hz	P	HP	25
Rated operational current			
AC-53	I_e	A	37
AC-53, In-Delta	I_e	A	65
Startup class			CLASS 10 (star-delta replacement) CLASS 20 (heavy starting duty 3 x I_e for 45 s) CLASS 30 (6 x 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			N

Technical data

General

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
Ambient temperature			
Operation	ϑ	°C	-30 - +50
Storage	ϑ	°C	-50 - +70
Altitude		m	0 - 2000 m, above that each 100 m 0.5% Derating
Mounting position			As required
Degree of protection			
Degree of Protection			IP20 (terminals IP00)
Integrated			Protection type IP40 can be achieved on all sides with covers SS-IP20-N.
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_{vs}	W	30
Weight		kg	2.6

Main conducting paths

Rated operating voltage	U_e	V AC	200 - 600
Supply frequency	f_{LN}	Hz	50/60
Rated operational current	I_e	A	
AC-53, In-Delta	I_e	A	65
AC-53	I_e	A	37
Assigned motor rating (Standard connection, In-Line)			
at 230 V, 50 Hz	P	kW	7.5
at 400 V, 50 Hz	P	kW	18.5
at 500 V, 50 Hz	P	kW	22
at 200 V, 60 Hz	P	HP	10
at 230 V, 60 Hz	P	HP	10
at 460 V, 60 Hz	P	HP	25
at 600 V, 60 Hz	P	HP	30
Assigned motor rating (delta connection)			
at 230 V, 50 Hz	P	kW	18.5
at 400 V, 50 Hz	P	kW	30
at 500 V, 50 Hz	P	kW	45
at 230 V, 60 Hz		HP	20
at 480 V, 60 Hz		HP	50
at 600 V, 60 Hz	P	HP	60
Overload cycle to IEC/EN 60947-4-2			
AC-53a			37 A: AC-53a: 4.0 - 32: 99 - 3
Internal bypass contacts			✓
Short-circuit rating			
Type “1” coordination			NZMN1-S40

Terminal capacities

Cable lengths			
Solid		mm^2	1 x (2.5 - 35)
Flexible with ferrule		mm^2	1 x (2.5 - 35)
Stranded		mm^2	1 x (2.5 - 35)
Solid or stranded		AWG	1 x (14 - 2)
Tightening torque		Nm	4 (≤ 6 mm^2); 4.5 (≤ 10 mm^2); 5 (≤ 25 mm^2); 5.6 (> 25 mm^2)
Screwdriver (PZ: Pozidriv)		mm	1,5 x 6 mm
Control cables			
Solid		mm^2	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Flexible with ferrule		mm^2	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Stranded		mm^2	1 x (2.5 - 4) 2 x (1.0 - 2.5)
Solid or stranded		AWG	1 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		mA	
External 24 V		mA	150
External 24 V (no-load)		mA	100
Pick-up voltage		x U_s	
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	180
Deceleration		s	0 - 60
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	37
Heat dissipation per pole, current-dependent	P_{vid}	W	0
Equipment heat dissipation, current-dependent	P_{vid}	W	30
Static heat dissipation, non-current-dependent	P_{vs}	W	30
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

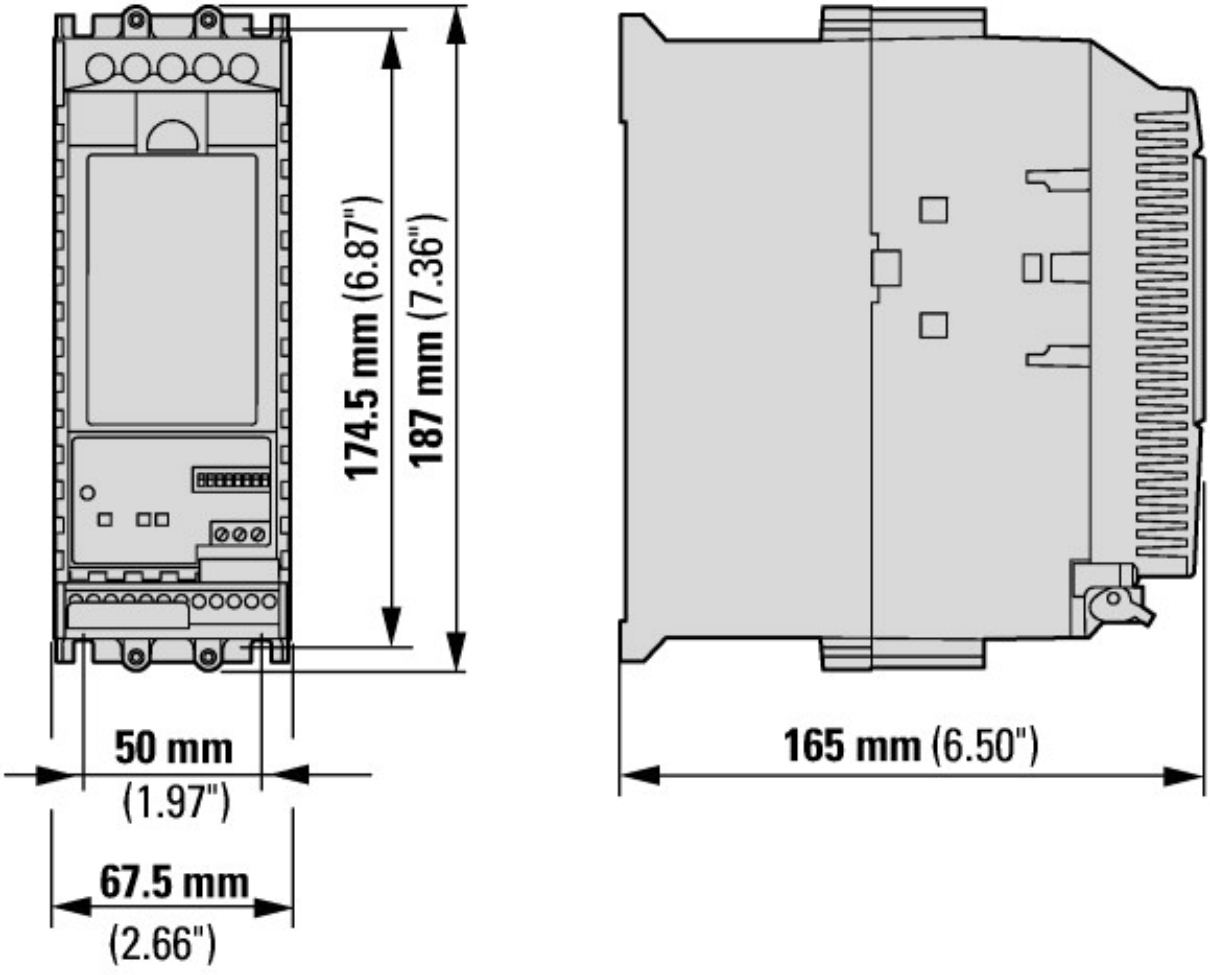
Low-voltage industrial components (EG000017) / Soft starter (EC000640)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecl@ss10.0.1-27-37-09-07 [ACO300011])			
Rated operation current Ie at 40 °C Tu		A	37
Rated operating voltage Ue		V	200 - 600
Rated power three-phase motor, inline, at 230 V		kW	7.5
Rated power three-phase motor, inline, at 400 V		kW	18.5
Rated power three-phase motor, inside delta, at 230 V		kW	18.5
Rated power three-phase motor, inside delta, at 400 V		kW	30
Function			Single direction
Internal bypass			Yes
With display			Yes
Torque control			No
Rated surrounding temperature without derating		°C	50
Rated control supply voltage Us at AC 50HZ		V	0 - 0
Rated control supply voltage Us at AC 60HZ		V	0 - 0
Rated control supply voltage Us 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	http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/SoftStarters/S811/index.htm#tabs-4