DATASHEET - S811+N37N3S



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



Part no. \$811+N37N3\$ Catalog No. 168976

Alternate Catalog S811PLUSN37N3S

No.

EL-Nummer 4137460

(Norway)

Delivery program

- 1			
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	l _e	Α	37
AC-53, In-Delta	l _e	Α	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 Approvals Approv	delleral			
Approvals Approvals Climatic proofing Degreation Degree of Protection Integrated Degree of Protection Integrated Overvoltage category/pollution degree Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Little CSA c CCC Damp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 As - 50 - +50 - 50 - +70 - 50 - +70 As required Ar required Protection paints IPO0) Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof I//3 Shock resistance Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent Pvs W JU Samp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 As required Protection paints IPO0) Finger- and back-of-hand proof I//3 A A Static heat dissipation, non-current-dependent	Standards			UL 508 CSA22.2-14-1995
Cimatic proofing Climatic proofing Climatic proofing Ambient temperature Operation Storage Altitude Mounting position Degree of protection Integrated Protection against direct contact Overvoltage category/pollution degree Shock resistance Radio interference level (IEC/EN 55011) Storage Ambient temperature CSA C-Tick CCCC CCCC Damp heat, constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 As required PO - 30 - +50 M	Approvals			CE
Ambient temperature Operation Storage Altitude Mounting position Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Shock resistance Radio interference level (IEC/EN 55011) Day be a contact Damp heat, cyclic, to IEC 60068-2-10	Approvals			CSA C-Tick
Operation Storage 8 °C -30 - +50 Altitude Mounting position Degree of protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Storage 8 °C -50 - +70 m 0 - 2000 m, above that each 100 m 0.5% Derating As required Protection (1920 (terminals IP00)) Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof 11/3 A Static heat dissipation, non-current-dependent Pvs W 30	Climatic proofing			
Storage 8 °C -50 - +70 Altitude m 0 - 2000 m, above that each 100 m 0.5% Derating Mounting position Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent P - 2000 m, above that each 100 m 0.5% Derating As required Protection my pel P40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof II/3 A Static heat dissipation, non-current-dependent Pvs W 30	Ambient temperature			
Altitude m 0 - 2000 m, above that each 100 m 0.5% Derating Mounting position Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent m 0 - 2000 m, above that each 100 m 0.5% Derating As required Protection (Protection apolicy) A protection (Protection type IP40) Finger- and back-of-hand proof II/3 A Static heat dissipation, non-current-dependent Pvs W 30	Operation	9	°C	-30 - +50
Mounting position Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent As required Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof II/3 A Static heat dissipation, non-current-dependent Pvs W 30	Storage	8	°C	-50 - +70
Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Degree of Protection IP20 (terminals IP00) Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof II/3 15 g Radio interference level (IEC/EN 55011) A Static heat dissipation, non-current-dependent Pvs W 30	Altitude		m	0 - 2000 m, above that each 100 m 0.5% Derating
Degree of Protection Integrated Protection against direct contact Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Protection against direct contact IP20 (terminals IP00) Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof II/3 Shock resistance 15 g A Static heat dissipation, non-current-dependent Pvs W 30	Mounting position			As required
Integrated Protection against direct contact Overvoltage category/pollution degree Shock resistance Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent Protection type IP40 can be achieved on all sides with covers SS-IP20-N. Finger- and back-of-hand proof II/3 15 g A Static heat dissipation, non-current-dependent Pvs W 30	Degree of protection			
Protection against direct contact Overvoltage category/pollution degree Shock resistance Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent Finger- and back-of-hand proof II/3 15 g A Static heat dissipation, non-current-dependent P _{vs} W 30	Degree of Protection			IP20 (terminals IP00)
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	Integrated			Protection type IP40 can be achieved on all sides with covers SS-IP20-N.
Shock resistance 15 g Radio interference level (IEC/EN 55011) A Static heat dissipation, non-current-dependent P _{vs} W 30	Protection against direct contact			Finger- and back-of-hand proof
Radio interference level (IEC/EN 55011) Static heat dissipation, non-current-dependent P _{vs} W 30	Overvoltage category/pollution degree			11/3
Static heat dissipation, non-current-dependent P _{vs} W 30	Shock resistance			15 g
	Radio interference level (IEC/EN 55011)			Α
Weight kg 2.6	Static heat dissipation, non-current-dependent	P_{vs}	W	30
	Weight		kg	2.6

Main conducting paths

Main conducting paths			
Rated operating voltage	U _e	V AC	200 - 600
Supply frequency	f_{LN}	Hz	50/60
Rated operational current	l _e	Α	
AC-53, In-Delta	I _e	Α	65
AC-53	I _e	Α	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	Р	HP	30
Assigned motor rating (delta connection)			
at 230 V, 50 Hz	Р	kW	18.5
at 400 V, 50 Hz	Р	kW	30
at 500 V, 50 Hz	Р	kW	45
at 230 V, 60 Hz		HP	20
at 480 V, 60 Hz	_	HP	50
at 600 V, 60 Hz	Р	HP	60
Overload cycle to IEC/EN 60947-4-2			27.4.40.50.40.00.00.0
AC-53a			37 A: AC-53a: 4.0 - 32: 99 - 3
Internal bypass contacts			/
Short-circuit rating			N7MM14 C40
Type "1" coordination Terminal capacities			NZMN1-S40
Cable lengths			
Solid		mm ²	1 x (2.5 - 35)
Flexible with ferrule		mm ²	1 x (2.5 - 35)
Stranded			1 x (2.5 - 35)
		mm ²	
Solid or stranded		AWG	1 x (14 - 2)
Tightening torque		Nm	4 (≤ 6 mm²); 4.5 (≤ 10 mm²); 5 (≤ 25 mm²); 5.6 (> 25 mm²)
Screwdriver (PZ: Pozidriv) Control cables		mm	1,5 x 6 mm
Solid		2	1 x (2.5 - 4)
Sullu		mm ²	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		V 50	
DC operated		ms	100
Drop-out time		1113	
DC operated		ms	100
Regulator supply		1110	
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			10/150
	I _{Peak}	A/ms	
Notes			External supply voltage
Analog inputs			
Number of current inputs			1
Current input		mA	4 - 20
Relay outputs			
Number			2
of which programmable		V 40	2
Voltage range		V AC	120 V AC/DC
AC-11 current range Soft start function		Α	3 A, AC-11
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	In	Α	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 switch gear must be observed. $\label{eq:constraint}$
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switch gear must be observed. $\label{eq:constraint}$
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. $\label{eq:continuous}$

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 (pc)@ss10.01-27-37-09-07 [AC0300011])

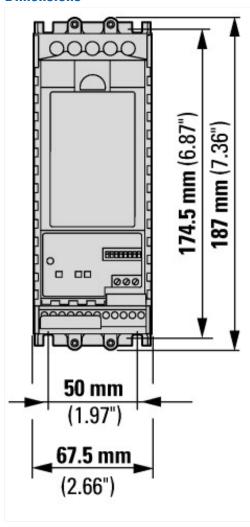
Rated operating voltage Ue Rated power three-phase motor, inline, at 230 V Rated power three-phase motor, inline, at 400 V Rated power three-phase motor, inside delta, at 230 V Rated power three-phase motor, inside delta, at 230 V Rated power three-phase motor, inside delta, at 230 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 400 V Rated power three-phase motor, inside delta, at 200 V Rated power three-phase motor, in	(ecl@ss10.0.1-27-37-09-07 [AC0300011])	rtecimology / Load break	Add, motor breakout/ Semiconductor motor controller or soft starter
Rated power three-phase motor, inline, at 230 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 230 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 200 V 80 Rated power three-phase motor, inside delta, at 400 V per solution which is a simple delta at 400 V per solution which is a simple delta, at 400 V per solution which is a simple delt	Rated operation current le at 40 °C Tu	А	37
Rated power three-phase motor, inside delta, at 230 V kW 18.5 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 230 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rated power three-phase motor, inside delta, at 400 V kW 30 Rate	Rated operating voltage Ue	V	200 - 600
Rated power three-phase motor, inside delta, at 230 V kW 30 Function Single direction The remaining pass Single direction Yes With display Yes Torque control Supply voltage Us at AC 50HZ V 0 - 0 Rated control supply voltage Us at DC Wolfage type for actuating C 24 - 24 Wolfage type for actuating C 30 C 3	Rated power three-phase motor, inline, at 230 V	kW	7.5
Rated power three-phase motor, inside delta, at 400 V Function Single direction Yes With display Yes Forque control Rated surrounding temperature without derating Rated control supply voltage Us at AC 50HZ Rated control supply voltage Us at AC 60HZ V V O-0 Rated control supply voltage Us at DC V V V V V V V V V V V V V	Rated power three-phase motor, inline, at 400 V	kW	18.5
Function Internal bypass With display Forque control Rated surrounding temperature without derating Rated control supply voltage Us at AC 50HZ Rated control supply voltage Us at AC 60HZ Rated control supply voltage Us at DC Rated control supply voltage Us at DC V 24 - 24 Voltage type for actuating Single direction Yes Yes No 0 0 0 0 0 0 0 0 0 0 0 0 0	Rated power three-phase motor, inside delta, at 230 V	kW	18.5
Nith display Forque control Rated surrounding temperature without derating Rated control supply voltage Us at AC 50HZ Rated control supply voltage Us at AC 60HZ Rated control supply voltage Us at AC 60HZ Rated control supply voltage Us at Con	Rated power three-phase motor, inside delta, at 400 V	kW	30
Vith display Ves Forque control Rated surrounding temperature without derating Rated control supply voltage Us at AC 50HZ V O - 0 Rated control supply voltage Us at AC 60HZ V O - 0 Rated control supply voltage Us at DC V V V V V V V V V V V V V	Function		Single direction
Forque control Rated surrounding temperature without derating CC 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	Internal bypass		Yes
Rated surrounding temperature without derating CC 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	With display		Yes
Rated control supply voltage Us at AC 50HZ V 0 - 0 Rated control supply voltage Us at AC 60HZ V 0 - 0 V 24 - 24 Voltage type for actuating DC	Torque control		No
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	Rated surrounding temperature without derating	°C	50
Rated control supply voltage Us at DC V 24 - 24 Voltage type for actuating DC	Rated control supply voltage Us at AC 50HZ	V	0 - 0
/oltage type for actuating DC	Rated control supply voltage Us at AC 60HZ	V	0 - 0
	Rated control supply voltage Us at DC	V	24 - 24
ntegrated motor overload protection Yes	Voltage type for actuating		DC
	Integrated motor overload protection		Yes

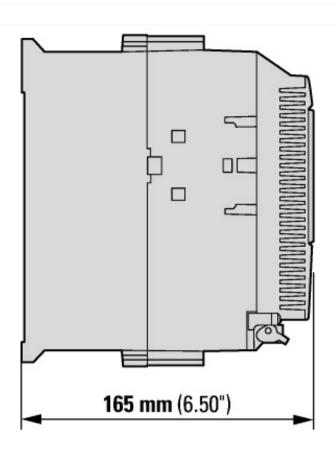
Release class	Adjustable
Degree of protection (IP)	IP00
Degree of protection (NEMA)	Other

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