DATASHEET - S811+N66P3S



Soft starter, 66 A, 200 - 600 V AC, Us= 24 V DC, with control unit and pump algorithm, Frame size N $\,$



Part no. S811+N66P3S Catalog No. 168979

Alternate Catalog

S811PLUSN66P3S

No.

EL-Nummer 4137463

(Norway)

Delivery program

| Don'tory 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 |
| Assigned motor rating (Standard connection, In-Line) | | | |
| at 400 V, 50 Hz | P | kW | 30 |
| at 460 V, 60 Hz | P | HP | 50 |
| Rated operational current | | | |
| AC-53 | l _e | Α | 66 |
| AC-53, In-Delta | I _e | Α | 114 |
| 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

| Standard's Approvals Appro | delleral | | | |
|--|--|-----------------|----|--|
| Approvals Approvals Climatic proofing Ambient temperature Operation Storage Mounting position 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 Damp heat, cyclic, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 Damp heat, cyclic, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 Damp heat, cyclic, to IEC 6006-2-10 Damp heat, cyclic, to IEC 6 | Standards | | | UL 508 CSA22.2-14-1995 |
| Cimatic proofing Climatic proofing Degretion Degretion 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) Storage Protection spans to direct proofing Proofing Proofing CSA C-Tick constant, to IEC 60068-2-3 Damp heat, cyclic, to IEC 60068-2-10 Proofing Proof | Approvals | | | CE |
| Ambient temperature Operation Storage Altitude Mounting position Degree of protection Degree of Protection Integrated Protection against direct contact Overvoltage category/pollution degree Radio interference level (IEC/EN 55011) Storage Damp heat, cyclic, to IEC 60068-2-10 Pamb heat, cyclic, to IEC 60068-2-10 Damp heat, cyclic, to IEC 60068-2-10 Ambient temperature Damp heat, cyclic, to IEC 60068-2-10 Anitotal Edolose-2-10 Anitotal Protection B | 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 As required P-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 II/3 Stock resistance Radio interference level (IEC/EN 55011) Pvs W 33 | 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 o - 2000 m, above that each 100 m 0.5% Derating As required PPO (terminals IP00) 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 33 | 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 (1920 (terminals IP00)) 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 A Static heat dissipation, non-current-dependent Pvs W 33 | Operation | θ | °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 Pys W 33 | Storage | θ | °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 Protection 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 33 | 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 Protection against direct contact Finger- and back-of-hand proof II/3 Shock resistance Radio interference level (IEC/EN 55011) A Static heat dissipation, non-current-dependent Pvs W 33 | Mounting position | | | As required |
| Integrated Protection against direct contact Overvoltage category/pollution degree 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 33 | 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 Pvs W 33 | Degree of Protection | | | IP20 (terminals IP00) |
| Overvoltage category/pollution degree II/3 Shock resistance I5 g Radio interference level (IEC/EN 55011) A Static heat dissipation, non-current-dependent P _{vs} W 33 | 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 33 | 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 33 | Overvoltage category/pollution degree | | | 11/3 |
| Static heat dissipation, non-current-dependent P _{vs} W 33 | Shock resistance | | | 15 g |
| | Radio interference level (IEC/EN 55011) | | | A |
| Weight kg 2.6 | Static heat dissipation, non-current-dependent | P _{vs} | W | 33 |
| | 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 | le | Α | |
| AC-53, In-Delta | I _e | Α | 114 |
| AC-53 | I _e | Α | 66 |
| Assigned motor rating (Standard connection, In-Line) | | | |
| 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 200 V, 60 Hz | Р | НР | 20 |
| at 230 V, 60 Hz | Р | НР | 20 |
| at 460 V, 60 Hz | Р | НР | 50 |
| at 600 V, 60 Hz | Р | НР | 60 |
| Assigned motor rating (delta connection) | | | |
| at 230 V, 50 Hz | Р | kW | 30 |
| at 400 V, 50 Hz | P | kW | 55 |
| at 500 V, 50 Hz | Р | kW | 75 |
| at 230 V, 60 Hz | | HP | 40 |
| at 480 V, 60 Hz | | HP | 75 |
| at 600 V, 60 Hz | P | HP | 100 |
| Overload cycle to IEC/EN 60947-4-2 | | | |
| AC-53a | | | 66 A: AC-53a: 4.0 - 32: 99 - 3 |
| Internal bypass contacts | | | ✓ |
| Short-circuit rating | | | |
| Type "1" coordination | | | NZMN1-S80 |
| Terminal capacities Cable lengths | | | |
| Solid | | 2 | 1 x (2.5 - 35) |
| | | mm ² | |
| 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 mm²); 4.5 (≤ 10 mm²); 5 (≤ 25 mm²); 5.6 (> 25 mm²) |
| 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 | 4 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 | | 1110 | |
| DC operated | | ms | 100 |
| Regulator supply | | 1110 | |
| Voltage | U_s | V | 24 V DC +10 %/- 10 % |
| Current consumption | | | 1000 |
| | l _e | mA | |
| 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 | | Α | 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) | | % | 0 - 120 |
| Start voltage (= tani-on voltage) Start voltage, max. | | % | 85 |
| Start pedestal | | % | |
| Start voltage, max. | | % | 85 |
| Kickstart | | /0 | |
| Voltage | | % | |
| Kickstart voltage, max. | | % | 100 |
| Duration | | 70 | |
| 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 | | | V |
| 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 | 66 |
|--|-------------------|----|--|
| Heat dissipation per pole, current-dependent | P _{vid} | W | 0 |
| Equipment heat dissipation, current-dependent | P _{vid} | W | 33 |
| Static heat dissipation, non-current-dependent | P _{vs} | W | 33 |
| 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. |

Technical data ETIM 7.0

| Low-voltage industrial of | omnonents (FG000017) | / Soft starter (EC000640) | |
|---------------------------|----------------------|---------------------------|--|

Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecl@ss10.01-27-37-09-07 (ACO300011))

| 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 400 V Rated power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 400 V Rotel power three-phase motor, inside delta, at 230 V Rotel | (ecl@ss10.0.1-27-37-09-07 [ACO300011]) | | |
|--|---|----|------------------|
| 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 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 230 V Rated | Rated operation current le at 40 °C Tu | Α | 66 |
| 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 400 V Rated power three-phase motor, inside delta, at 400 V Rutcion Internal bypass With display Torque 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 Voltage type for actuating VW Voltage type for actuating VW Voltage Us at DC Voltage type for actuating VW Voltage Us at Control supply voltage Us at DC Voltage type for actuating VW Voltage Us at Control supply voltage Us at DC Voltage type for actuating VW Voltage Us at Control supply voltage Us at DC Voltage Us at DC Voltage Us at Control supply voltage Us at DC Voltage Us at Control supply voltage Us at DC Voltage Us at Control supply voltage Us at DC Voltage Us at Control Supply voltage Us at DC Voltage Us at Control Supply voltage Us at DC Voltage Us at Control Supply voltage Us at DC Voltage Us at Control Supply voltage Us at DC Voltage Voltage Us at DC Voltage Voltage Us at DC Voltage Voltage Us at Control Supply voltage Us at DC Voltage Voltage Us at Control Supply Voltage Us at Control Supply Voltage Us at DC Voltage Voltage Us at Control Supply Voltage Us at Control Supply Voltage Us at DC Voltage Voltage Us at Control Supply Voltage Us at Control Su | Rated operating voltage Ue | V | 200 - 600 |
| Rated power three-phase motor, inside delta, at 230 V Rated power three-phase motor, inside delta, at 400 V Runction Internal bypass With display Torque 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 Voltage type for actuating kW 30 Single direction Yes Single direction Yes Single direction Yos Single direction | Rated power three-phase motor, inline, at 230 V | kW | 18.5 |
| Rated power three-phase motor, inside delta, at 400 V Function Internal bypass With display Torque 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 Voltage type for actuating KW 55 Single direction Yes Yes Vos Vos 0 0 0 0 0 0 0 0 0 0 0 0 0 | Rated power three-phase motor, inline, at 400 V | kW | 30 |
| Function Internal bypass With display Torque 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 V V V Voltage type for actuating Single direction Yes Single direction Yes Ves Vos O O O O O O O O O O O O O O O O O O O | Rated power three-phase motor, inside delta, at 230 V | kW | 30 |
| Internal bypass With display Torque 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 V V Voltage type for actuating Ves No No O O O O O O O O O O O O O | Rated power three-phase motor, inside delta, at 400 V | kW | 55 |
| With display Yes Torque 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 V V V V V V V V V V V V V | Function | | Single direction |
| Torque control Rated surrounding temperature without derating 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 V 24 - 24 Voltage type for actuating D C | Internal bypass | | Yes |
| Rated surrounding temperature without derating CC S0 Rated control supply voltage Us at AC 50HZ Rated control supply voltage Us at AC 60HZ VU O-0 Rated control supply voltage Us at DC VU 24 - 24 Voltage type for actuating DC | With display | | Yes |
| Rated control supply voltage Us at AC 50HZ Rated control supply voltage Us at AC 60HZ Rated control supply voltage Us at DC 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 |
| Voltage 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 |
| Integrated 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



