



Soft starter, 135 A, 200 - 600 V AC, Us= 24 V DC, with control unit, Frame size R

Part no. **S811+R13N3S**
 Catalog No. **168982**
 Alternate Catalog No. **S811PLUSR13N3S**
 EL-Nummer (Norway) **4137466**

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 | 75 |
| at 460 V, 60 Hz | P | HP | 100 |
| Rated operational current | | | |
| AC-53 | I _e | A | 135 |
| AC-53, In-Delta | I _e | A | 234 |
| 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 | | | R |

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 | 55 |
| Weight | | kg | 4.8 |

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 | 234 |
| AC-53 | I_e | A | 135 |
| Assigned motor rating (Standard connection, In-Line) | | | |
| at 230 V, 50 Hz | P | kW | 37 |
| at 400 V, 50 Hz | P | kW | 75 |
| at 500 V, 50 Hz | P | kW | 90 |
| at 200 V, 60 Hz | P | HP | 40 |
| at 230 V, 60 Hz | P | HP | 50 |
| at 460 V, 60 Hz | P | HP | 100 |
| at 600 V, 60 Hz | P | HP | 125 |
| Assigned motor rating (delta connection) | | | |
| 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 230 V, 60 Hz | | HP | 75 |
| at 480 V, 60 Hz | | HP | 150 |
| at 600 V, 60 Hz | P | HP | 200 |
| Overload cycle to IEC/EN 60947-4-2 | | | |
| AC-53a | | | 135 A: AC-53a: 4.0 - 32: 99 - 3 |
| Internal bypass contacts | | | ✓ |
| Short-circuit rating | | | |
| Type "1" coordination | | | NZMN2-S160 |

Terminal capacities

| | | | |
|----------------------------|--|-----------------|----------------------------------|
| Cable lengths | | | |
| Solid | | mm ² | 1 x (2.5 - 95) |
| Flexible with ferrule | | mm ² | 1 x (2.5 - 95) |
| Stranded | | mm ² | 1 x (2.5 - 95) |
| Solid or stranded | | AWG | 1 x (14 - 4/0) |
| Tightening torque | | Nm | 11.3 |
| Screwdriver (PZ: Pozidriv) | | mm | 4 mm Hexagon socket-head screw |
| 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 | 7 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 | 135 |
| Heat dissipation per pole, current-dependent | P_{vid} | W | 0 |
| Equipment heat dissipation, current-dependent | P_{vid} | W | 55 |
| Static heat dissipation, non-current-dependent | P_{vs} | W | 55 |
| 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

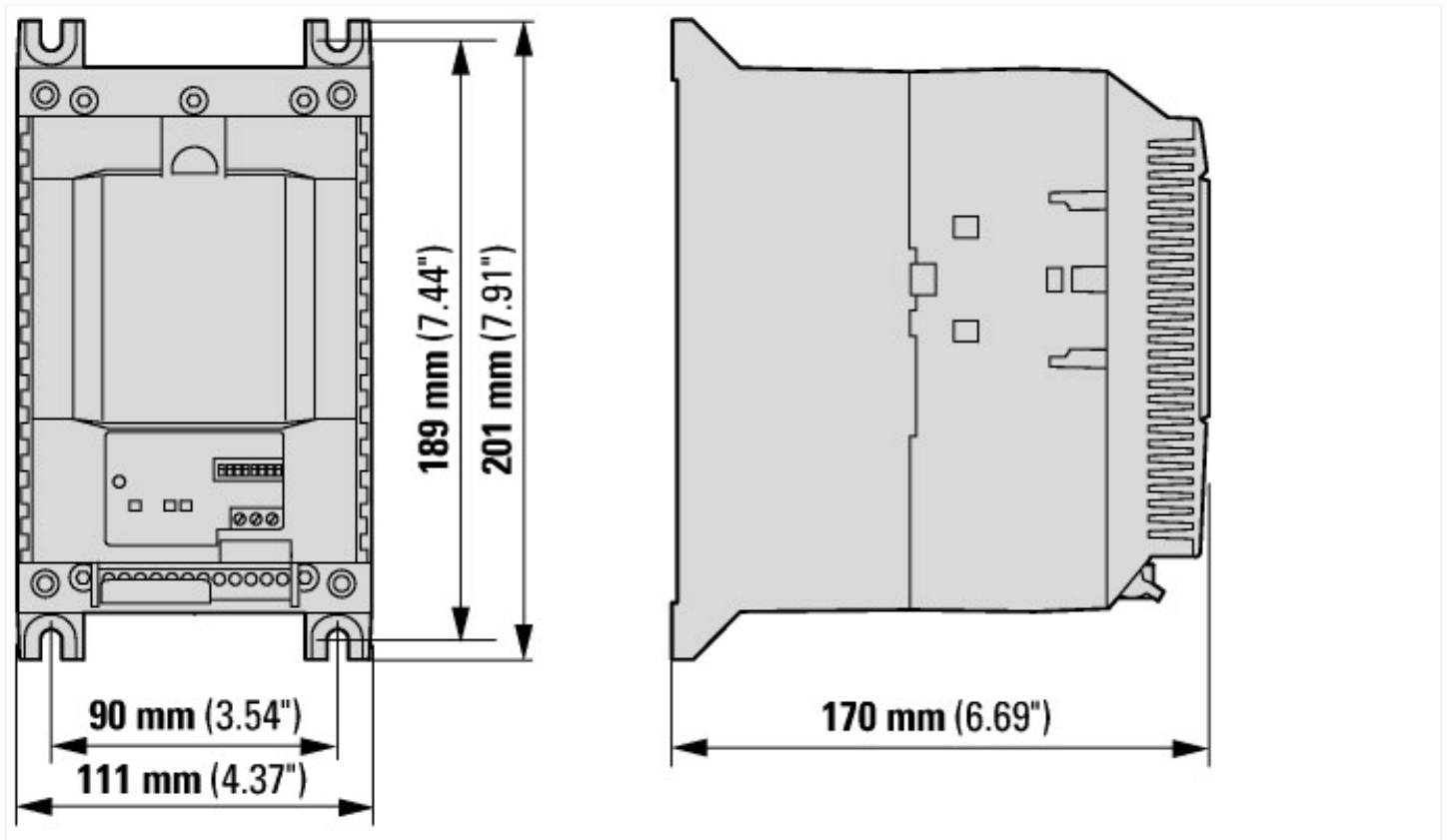
| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------------------|
| Low-voltage industrial components (EG000017) / Soft starter (EC000640) | | | |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecI@ss10.0.1-27-37-09-07 [ACO300011]) | | | |
| Rated operation current I_e at 40 °C T_u | | A | 135 |
| Rated operating voltage U_e | | V | 200 - 600 |
| Rated power three-phase motor, inline, at 230 V | | kW | 37 |
| Rated power three-phase motor, inline, at 400 V | | kW | 75 |
| Rated power three-phase motor, inside delta, at 230 V | | kW | 75 |
| Rated power three-phase motor, inside delta, at 400 V | | kW | 132 |
| 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 | http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/SoftStarters/S811/index.htm#tabs-4 |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|