



**Soft starter 3p, 135A, U<sub>e</sub>= 200-600VAC**

**Part no. S801+R13N3S**  
**Article no. 169855**  
**Catalog No. S801PLUSR13N3S**

## Delivery program

|                                                             |                 |      |                                                                                                                                           |
|-------------------------------------------------------------|-----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                 |                 |      | With internal bypass contacts                                                                                                             |
| Function                                                    |                 |      | Soft starters for three-phase loads                                                                                                       |
| Mains supply voltage (50/60 Hz)                             | U <sub>LN</sub> | V AC | 200 - 600                                                                                                                                 |
| Supply voltage                                              | U <sub>s</sub>  |      | 24 V DC                                                                                                                                   |
| Control voltage                                             | U <sub>C</sub>  |      | 24 V DC                                                                                                                                   |
| <b>Assigned motor rating (Standard connection, In-Line)</b> |                 |      |                                                                                                                                           |
| at 400 V, 50 Hz                                             | P               | kW   | 75                                                                                                                                        |
| at 460 V, 60 Hz                                             | P               | HP   | 100                                                                                                                                       |
| <b>Rated operational current</b>                            |                 |      |                                                                                                                                           |
| AC-53                                                       | I <sub>e</sub>  | A    | 135                                                                                                                                       |
| Startup class                                               |                 |      | CLASS 10 (star-delta replacement)<br>CLASS 20 (heavy starting duty 3 x I <sub>e</sub> for 45 s)<br>CLASS 30 (6 x I <sub>e</sub> for 30 s) |
| Rated operational voltage                                   | U <sub>e</sub>  |      | 200 V<br>230 V<br>400 V<br>480 V<br>600 V                                                                                                 |
| Connection to SmartWire-DT                                  |                 |      | no                                                                                                                                        |
| Frame size                                                  |                 |      | R                                                                                                                                         |


## Technical data

### General

|                                                |                 |    |                                                                               |
|------------------------------------------------|-----------------|----|-------------------------------------------------------------------------------|
| Standards                                      |                 |    | IEC/EN 60947-4-2<br>UL 508<br>CSA22.2-14-1995<br>GB14048                      |
| Approvals                                      |                 |    | CE                                                                            |
| Approvals                                      |                 |    | UL<br>CSA<br>C-Tick<br>CCC                                                    |
| Climatic proofing                              |                 |    | Damp heat, constant, to IEC 60068-2-3<br>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 <sub>vs</sub> | W  | 25                                                                            |
| Weight                                         |                 | kg | 4.8                                                                           |

### Main conducting paths

|                           |                 |      |           |
|---------------------------|-----------------|------|-----------|
| 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                                                | I <sub>e</sub> | 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                                                                               |
| 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 <sup>2</sup> | 1 x (2.5 - 35)                   |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (2.5 - 35)                   |
| Stranded                   |  | mm <sup>2</sup> | 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 Innensechskant              |
| Control cables             |  |                 |                                  |
| Solid                      |  | mm <sup>2</sup> | 1 x (2.5 - 4)<br>2 x (1.0 - 2.5) |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (2.5 - 4)<br>2 x (1.0 - 2.5) |
| Stranded                   |  | mm <sup>2</sup> | 1 x (2.5 - 4)<br>2 x (1.0 - 2.5) |
| Solid or stranded          |  | AWG             | 50 x (12 - 14)<br>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 <sub>s</sub> |                         |
| DC-operated                                                       |                   | V DC             | 21.6 - 26.4             |
| Drop-out voltage                                                  | x U <sub>s</sub>  |                  |                         |
| 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 <sub>s</sub>    | V                | 24 V DC +10 %/- 10 %    |
| Current consumption                                               | I <sub>e</sub>    | mA               | 1000                    |
| Current consumption at peak performance (close bypass) at 24 V DC | I <sub>Peak</sub> | A/ms             | 10/150                  |
| Notes                                                             |                   |                  | External supply voltage |
| 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 <sub>n</sub>    | A  | 135                                        |
| Heat dissipation per pole, current-dependent                               | P <sub>vid</sub>  | W  | 0                                          |
| Equipment heat dissipation, current-dependent                              | P <sub>vid</sub>  | W  | 25                                         |
| Static heat dissipation, non-current-dependent                             | P <sub>vs</sub>   | W  | 25                                         |
| Heat dissipation capacity                                                  | P <sub>diss</sub> | 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 6.0

|                                                                                                                                                                                                                    |    |  |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--|-----------|
| 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@ss8.1-27-37-09-07 [AC0300008]) |    |  |           |
| Rated operation current Ie at 40 °C Tu                                                                                                                                                                             | A  |  | 135       |
| Rated operating voltage Ue                                                                                                                                                                                         | 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       |
| Internal bypass                                                                                                                                                                                                    |    |  | Yes       |
| With display                                                                                                                                                                                                       |    |  | No        |
| 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       |

## 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

