



Soft starter, 3p, 9A, 200-480VAC, us=24VAC/DC

Part no. **DS7-340SX009N0-N**  
Article no. **134910**  
Catalog No. **DS7-340SX009N0-N**

## Delivery programme

|  |          |      |   |
|--|----------|------|---|
| Description  |          |      | With internal bypass contacts   |
| Function   |          |      | Soft starters for three-phase loads   |
| Mains supply voltage (50/60 Hz)                      | $U_{LN}$ | V AC | 200 - 480   |
| Supply voltage                                       | $U_s$    |      | 24 V AC/DC  |
| Control voltage                                      | $U_C$    |      | 24 V AC<br>24 V DC  |
| Assigned motor rating (Standard connection, In-Line) |          |      |   |
| at 400 V, 50 Hz                                      | P        | kW   | 4   |
| at 460 V, 60 Hz                                      | P        | HP   | 5   |
| Rated operational current                            |          |      |   |
| Device (AC-53)                                       | $I_e$    | A    | 9   |
| Startup class  |          |      | CLASS 10 (star-delta replacement)<br>CLASS 20 (heavy starting duty $3 \times I_e$ for 45 s) |
| Rated operational voltage                            | $U_e$    |      | 200 V<br>230 V<br>400 V<br>480 V  |
| Connection to SmartWire-DT                           |          |      | no  |

## Approvals


|                                      |   |  |  |
|--------------------------------------|---|--|--|
| Product Standards                    | IEC/EN 60947-4-2; GB 14048.6; UL 508; CSA-C22.2 No 0-M91; CSA-C22.2 No 14-05 CE marking |  |  |
| UL File No.                          | E251034   |  |  |
| CSA File No.                         | 2511305   |  |  |
| CSA Class No.                        | 321106  |  |  |
| Specially designed for North America | No  |  |  |
| Suitable for                         | Branch circuits   |  |  |
| Current Limiting Circuit-Breaker     | No  |  |  |
| Max. Voltage Rating                  | 480 V   |  |  |
| Degree of Protection                 | IP20; UL/CSA Type 1   |  |  |

## General

|                      |   |    |   |
|----------------------|---|----|---|
| Standards            |   |    | IEC/EN 60947-4-2<br>UL 508<br>CSA22.2-14                                      |
| Approvals            |   |    | CE  |
| Approvals            |   |    | UL<br>CSA<br>C-Tick<br>UkrSEPRO   |
| Climatic proofing    |   |    | Damp heat, constant, to IEC 60068-2-3<br>Damp heat, cyclic, to IEC 60068-2-10 |
| Ambient temperature  |   | °C |   |
| Operation            | θ | °C | -5 - +40<br>up to 60 at 2% derating per Kelvin temperature rise               |
| Storage              | θ | °C | -25 - +60   |
| Altitude             |   | m  | 0 - 1000 m, above that 1 % derating per 100 m , up to 2000 m                  |
| Mounting position    |   |    | Vertical  |
| Degree of protection |   |    |   |
| Degree of Protection |   |    | IP20  |

|  |                 |    |                                |
|--|-----------------|----|--------------------------------|
| Protection against direct contact              |                 |    | Finger- and back-of-hand proof |
| Overvoltage category/pollution degree          |                 |    | II/2                           |
| Shock resistance                               |                 |    | 8 g/11 ms                      |
| Vibration resistance to EN 60721-3-2           |                 |    | 2M2                            |
| Radio interference level (IEC/EN 55011)        |                 |    | B                              |
| Static heat dissipation, non-current-dependent | P <sub>vs</sub> | W  | 0.45                           |
| Weight   |                 | kg | 0.35                           |

## Main conducting paths

|   |                 |      |   |
|---|-----------------|------|---|
| Rated operating voltage   | U <sub>e</sub>  | V AC | 200 - 480   |
| Supply frequency  | f <sub>LN</sub> | Hz   | 50/60   |
| Rated operational current   | I <sub>e</sub>  | A    |   |
| Device (AC-53)  | I <sub>e</sub>  | A    | 9   |
| Assigned motor rating (Standard connection, In-Line)                        |                 |      |   |
| at 230 V, 50 Hz   | P               | kW   | 2.2   |
| at 400 V, 50 Hz   | P               | kW   | 4   |
| at 200 V, 60 Hz   | P               | HP   | 2   |
| at 230 V, 60 Hz   | P               | HP   | 3   |
| at 460 V, 60 Hz   | P               | HP   | 5   |
| Overload cycle to IEC/EN 60947-4-2  |                 |      |   |
| AC-53a  |                 |      | 9 A: AC-53a: 3 - 5: 75 - 10   |
| Internal bypass contacts  |                 |      |  |
| Short-circuit rating  |                 |      |   |
| Type "1" coordination   |                 |      | PKM0-10 (+ CL-PKZ0)   |
| Type „2“ coordination (additional with the fuses for coordination type „1“) |                 |      | 3 x 170M1362  |
|   |                 |      |   |
| Fuse base (number x part no.)   |                 |      | 3 x 170H1007  |

## Terminal capacities

|                            |  |                 |                                      |
|----------------------------|--|-----------------|--------------------------------------|
| Cable lengths              |  |                 |                                      |
| Solid                      |  | mm <sup>2</sup> | 1 x (0.75 - 4)<br>2 x (0.75 - 2.5)   |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Solid or stranded          |  | AWG             | 18 - 10                              |
| Tightening torque          |  | Nm              | 1.2                                  |
| Screwdriver (PZ: Pozidriv) |  | mm              | PZ2; 1 x 6 mm                        |
| Control cables             |  |                 |                                      |
| Solid                      |  | mm <sup>2</sup> | 1 x (0.75 - 4)<br>2 x (0.75 - 2.5)   |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Solid or stranded          |  | AWG             | 18 - 10                              |
| Tightening torque          |  | Nm              | 1.2                                  |
| Screwdriver                |  | mm              | 0,8 x 5,5<br>1 x 6                   |

## Control circuit

|                          |                  |                  |                      |
|--------------------------|------------------|------------------|----------------------|
| Digital inputs           |                  |                  |                      |
| Control voltage          |                  |                  |                      |
| DC-operated              |                  | V DC             | 24 V DC +10 %/- 15 % |
| AC operated              |                  | V AC             | 24 V AC +10 %/- 15 % |
| Current consumption 24 V |                  | mA               |                      |
| External 24 V            |                  | mA               | 1.6                  |
| Pick-up voltage          |                  | x U <sub>s</sub> |                      |
| DC-operated              |                  | V DC             | 17.3 - 27            |
| AC operated              |                  | V AC             | 17.3 - 27            |
| Drop-out voltage         | x U <sub>s</sub> |                  |                      |
| DC operated              |                  | V DC             | 0 - 3                |
| AC operated              |                  | V AC             | 0 - 3                |

|                     |       |      |                         |
|---------------------|-------|------|-------------------------|
| Pick-up time        |       |      |                         |
| DC operated         |       | ms   | 250                     |
| AC operated         |       | ms   | 250                     |
| Drop-out time       |       |      |                         |
| DC operated         |       | ms   | 350                     |
| Regulator supply    |       |      |                         |
| Voltage             | $U_s$ | V    | 24 V AC/DC +10 %/- 15 % |
| Current consumption | $I_e$ | mA   | 50                      |
| Notes               |       |      | External supply voltage |
| Relay outputs       |       |      |                         |
| Number              |       |      | 1 (TOR)                 |
| Voltage range       |       | V AC | = $U_s$                 |
| AC-11 current range |       | A    | 1 A, AC-11              |

### Soft start function

|                                    |  |   |  |
|------------------------------------|--|---|--|
| Ramp times                         |  |   |  |
| Acceleration                       |  | s | 1 - 30   |
| Deceleration                       |  | s | 0 - 30   |
| Start voltage (= turn-off voltage) |  | % | 30 100   |
| Start pedestal                     |  | % | 30 - 100   |
| Fields of application              |  |   |  |
| Fields of application              |  |   | Soft starting of three-phase asynchronous motors |
| 1-phase motors                     |  |   | ●  |
| 3-phase motors                     |  |   | ✓  |

### Functions

|  |  |  |                            |
|--|--|--|----------------------------|
| Fast switching (semiconductor contactor)               |  |  | - (minimum ramp time 1s)   |
| Soft start function                                    |  |  | ✓                          |
| Reversing starter                                      |  |  | External solution required |
| Suppression of closing transients                      |  |  | ✓                          |
| Suppression of DC components for motors                |  |  | ✓                          |
| Potential isolation between power and control sections |  |  | ✓                          |

### Notes

Rated impulse withstand voltage:

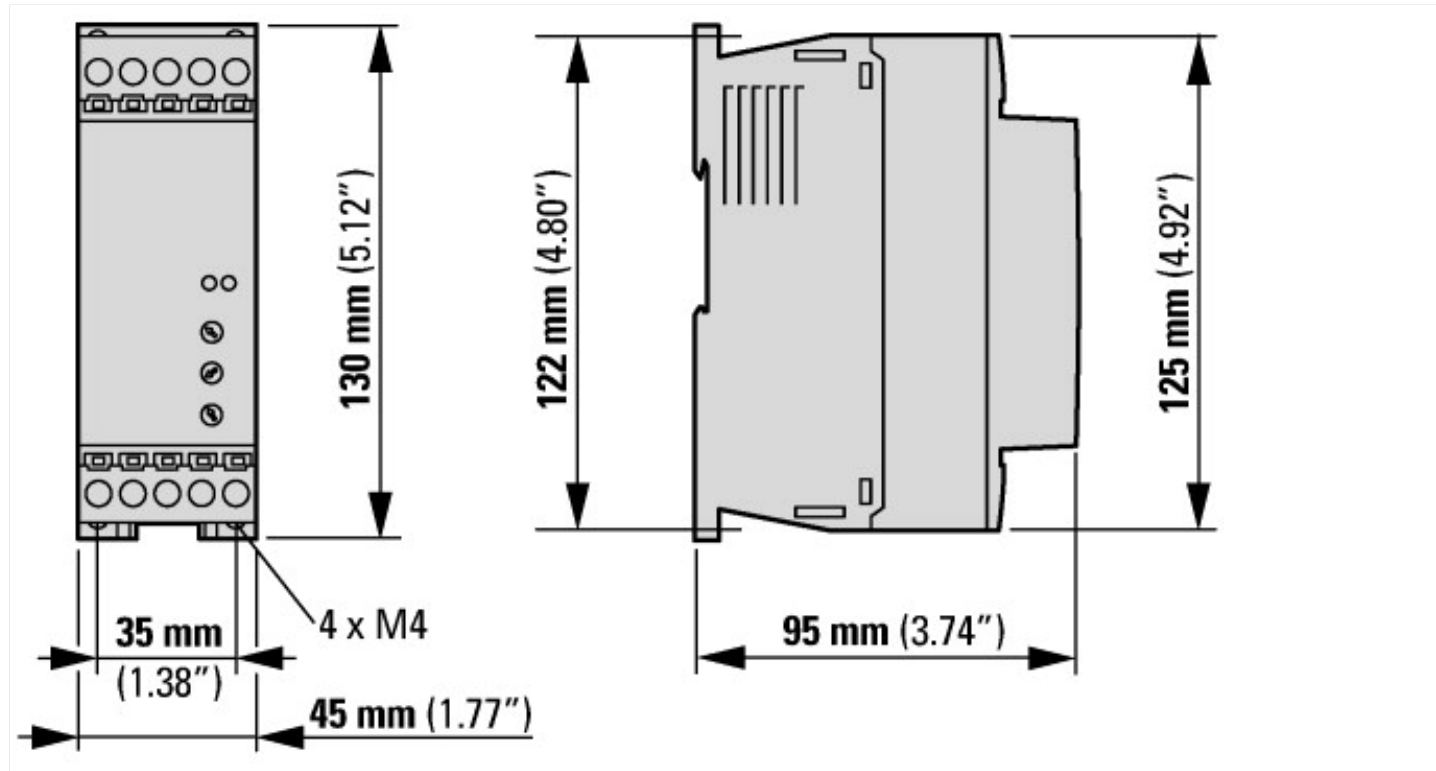
- 1.2 μs/50 μs (rise time/fall time of the pulse to IEC/EN 60947-2 or -3)
- Applies for control circuit/power section/enclosure

### Data for design verification according to IEC/EN 61439

|  |           |   |  |
|--|-----------|---|--|
| Technical data for design verification   |           |   |  |
| Rated operational current for specified heat dissipation   | $I_n$     | A | 9  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$ | W | 0.45   |
| Static heat dissipation, non-current-dependent   | $P_{vs}$  | W | 0.45   |
| 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.                         |

## Dimensions



## Additional product information (links)

|  |   |
|--|---|
| <b>IL03902003Z Instructions for DS7 Soft Starter</b> |   |
| IL03902003Z Instructions for DS7 Soft Starter        | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03902003Z2012_06.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03902003Z2012_06.pdf</a> |
| <b>MN03901001Z Manual DS7 soft starters</b>          |   |
| MN03901001Z Handbuch Softstarter DS7 - Deutsch       | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03901001Z_DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03901001Z_DE.pdf</a>                   |
| MN03901001Z Manual DS7 soft starters - English       | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03901001Z_EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03901001Z_EN.pdf</a>                   |