



Soft starter, 16 A, 200 - 480 V AC, 24 V AC/DC, Frame size FS2, Ambient temperature Operation -40 - +40 °C

Part no. **DS7-340SX016N0-L**  
 Catalog No. **171744**  
 Alternate Catalog No. **DS7-340SX016N0-L**  
 EL-Nummer (Norway) **4110408**

### 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 - 480                           |
| Supply voltage  | U <sub>s</sub>  |      | 24 V AC/DC                          |
| Control voltage   | U <sub>C</sub>  |      | 24 V AC<br>24 V DC                  |
| <b>Assigned motor rating (Standard connection, In-Line)</b> |                 |      |                                     |
| at 400 V, 50 Hz   | P               | kW   | 7.5                                 |
| at 460 V, 60 Hz   | P               | HP   | 10                                  |
| <b>Rated operational current</b>                            |                 |      |                                     |
| AC-53   | I <sub>e</sub>  | A    | 16                                  |
| Rated operational voltage                                   | U <sub>e</sub>  |      | 200 V<br>230 V<br>400 V<br>480 V    |
| Connection to SmartWire-DT                                  |                 |      | no                                  |
| Frame size  |                 |      | FS2                                 |

### Technical data

|  |                 |    |   |
|--|-----------------|----|---|
| <b>General</b>                                 |                 |    |   |
| 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<br>Cold to EN 60068-2-1 |
| Ambient temperature                            |                 |    |   |
| Operation                                      | θ               | °C | -40 - +40<br>up to 60 at 2% derating per Kelvin temperature rise                                      |
| Storage  | θ               | °C | -40 - +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  | 0.8   |
| Weight   |                 | kg | 0.49  |

## Main conducting paths

|   |          |      |                              |
|---|----------|------|------------------------------|
| Rated operating voltage   | $U_e$    | V AC | 200 - 480                    |
| Supply frequency  | $f_{LN}$ | Hz   | 50/60                        |
| Rated operational current   | $I_e$    | A    |                              |
| AC-53   | $I_e$    | A    | 16                           |
| Assigned motor rating (Standard connection, In-Line)                        |          |      |                              |
| at 230 V, 50 Hz   | P        | kW   | 4                            |
| at 400 V, 50 Hz   | P        | kW   | 7.5                          |
| at 200 V, 60 Hz   | P        | HP   | 5                            |
| at 230 V, 60 Hz   | P        | HP   | 5                            |
| at 460 V, 60 Hz   | P        | HP   | 10                           |
| Overload cycle to IEC/EN 60947-4-2  |          |      |                              |
| AC-53a  |          |      | 16 A: AC-53a: 3 - 5: 75 - 10 |
| Internal bypass contacts  |          |      | ✓                            |
| Short-circuit rating  |          |      |                              |
| Type "1" coordination   |          |      | PKM0-16 (+ CL-PKZ0)          |
| Type „2“ coordination (additional with the fuses for coordination type „1“) |          |      | 3 x 170M1364                 |
| Fuse base (number x part no.)   |          |      | 3 x 170H1007                 |

## Terminal capacities

|                            |  |                 |                                     |
|----------------------------|--|-----------------|-------------------------------------|
| Cable lengths              |  |                 |                                     |
| Solid                      |  | mm <sup>2</sup> | 1 x (0.75 - 16)<br>2 x (0.75 - 10)  |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (0.75 - 16)<br>2 x (0.75 - 10)  |
| Stranded                   |  | mm <sup>2</sup> | 1 x 16                              |
| Solid or stranded          |  | AWG             | 18 - 6                              |
| Tightening torque          |  | Nm              | 3.2                                 |
| Screwdriver (PZ: Pozidriv) |  | mm              | PZ2; 1 x 6 mm                       |
| Control cables             |  |                 |                                     |
| Solid                      |  | mm <sup>2</sup> | 1 x (0.5 - 2.5)<br>2 x (0.5 - 1.0)  |
| Flexible with ferrule      |  | mm <sup>2</sup> | 1 x (0.5 - 1.5)<br>2 x (0.5 - 0.75) |
| 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 %    |
| Current consumption 24 V |         | mA      |                         |
| External 24 V            |         | mA      | 1.6                     |
| Pick-up voltage          |         | x $U_s$ |                         |
| DC-operated              |         | V DC    | 17.3 - 27               |
| AC operated              |         | V AC    | 17.3 - 27               |
| Drop-out voltage         | x $U_s$ |         |                         |
| 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              |       |      | 2 (TOR, Ready)          |
| Voltage range       |       | V AC | 250                     |
| AC-11 current range |       | A    | 1 A, AC-11              |

### Soft start function

|                                    |  |   |  |
|------------------------------------|--|---|--|
| Ramp times                         |  |   |  |
| Acceleration                       |  | s |  |
| Ramp time, max.                    |  | s | 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 |  |  | ✓                          |

## Design verification as per IEC/EN 61439

|  |            |    |  |
|--|------------|----|--|
| Technical data for design verification   |            |    |  |
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 16   |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0.8  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 0.8  |
| Heat dissipation capacity  | $P_{diss}$ | W  | 0  |
| Operating ambient temperature min.   |            | °C | -40  |
| Operating ambient temperature max.   |            | °C | 40   |
| 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.                         |

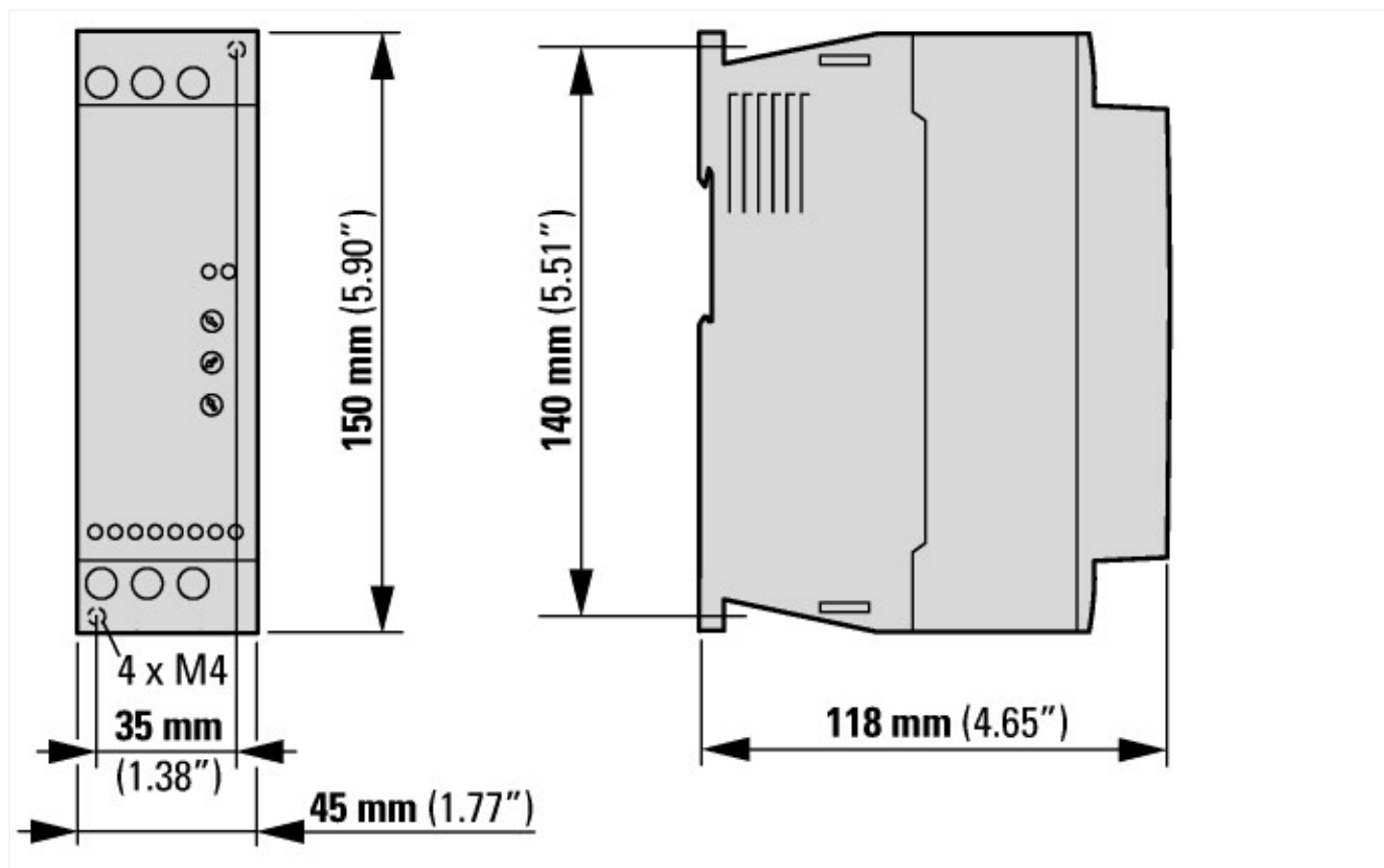
## Technical data ETIM 7.0

|   |    |                  |
|---|----|------------------|
| 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 (ec1@ss10.0.1-27-37-09-07 [ACO300011]) |    |                  |
| Rated operation current I <sub>e</sub> at 40 °C T <sub>u</sub>  | A  | 16               |
| Rated operating voltage U <sub>e</sub>  | V  | 230 - 460        |
| Rated power three-phase motor, inline, at 230 V   | kW | 4                |
| Rated power three-phase motor, inline, at 400 V   | kW | 7.5              |
| Rated power three-phase motor, inside delta, at 230 V   | kW | 0                |
| Rated power three-phase motor, inside delta, at 400 V   | kW | 0                |
| Function  |    | Single direction |
| Internal bypass   |    | Yes              |
| With display  |    | No               |
| Torque control  |    | No               |
| Rated surrounding temperature without derating  | °C | 40               |
| Rated control supply voltage U <sub>s</sub> at AC 50HZ  | V  | 24 - 24          |
| Rated control supply voltage U <sub>s</sub> at AC 60HZ  | V  | 24 - 24          |
| Rated control supply voltage U <sub>s</sub> at DC   | V  | 24 - 24          |
| Voltage type for actuating  |    | AC/DC            |
| Integrated motor overload protection  |    | No               |
| Release class   |    | Other            |
| Degree of protection (IP)   |    | IP20             |
| Degree of protection (NEMA)   |    | 1                |

## 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 |
| UL File No.          |  | E251034   |
| CSA File No.         |  | 2511305   |
| CSA Class No.        |  | 321106  |
| Suitable for         |  | Branch circuits   |
| Max. Voltage Rating  |  | 480 V   |
| Degree of Protection |  | IP20; UL/CSA Type 1   |

## Dimensions



## Additional product information (links)

|  |   |
|--|---|
| <b>IL03902004Z Instructions for DS7 Soft Starter</b>   |   |
| IL03902004Z Instructions for DS7 Soft Starter  | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03902004Z2020_10.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03902004Z2020_10.pdf</a>                               |
| <b>MN03901001Z Manual DS7 soft starters</b>  |   |
| MN03901001Z Handbuch DS7 Sanftstarter - Deutsch  | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_DE.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_DE.pdf</a>   |
| MN03901001Z Manual DS7 soft starters - English   | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_EN.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_EN.pdf</a>   |
| MN03901001Z Manuale Softstarter DS7 - italiano   | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_IT.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN03901001Z_IT.pdf</a>   |
| CA04020001Z_EN-INT Product range catalog: Efficient Engineering for starting and controlling motors. | <a href="http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf">http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf</a> |