



**Soft starter, 41 A, 200 - 480 V AC, 24 V AC/DC, Frame size FS3, Ambient temperature Operation -40 - +40 °C**



**Part no.** DS7-340SX041N0-L  
**Catalog No.** 171747  
**Alternate Catalog No.** DS7-340SX041N0-L  
**EL-Nummer (Norway)** 4110411

## 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   | 22                                  |
| at 460 V, 60 Hz                                             | P               | HP   | 30                                  |
| <b>Rated operational current</b>                            |                 |      |                                     |
| AC-53                                                       | I <sub>e</sub>  | A    | 41                                  |
| 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                                                  |                 |      | FS3                                 |

## Technical data

### 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<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 (terminals IP00)                                                                                 |
| Integrated                                     |                 |    | Protection type IP40 can be achieved on all sides with covers from the NZM range.                     |
| 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  | 7                                                                                                     |
| Weight                                         |                 | kg | 1.8                                                                                                   |

### 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  |                              |
| AC-53                                                                       | I <sub>e</sub>  | A  | 41                           |
| Assigned motor rating (Standard connection, In-Line)                        |                 |    |                              |
| at 230 V, 50 Hz                                                             | P               | kW | 11                           |
| at 400 V, 50 Hz                                                             | P               | kW | 22                           |
| at 200 V, 60 Hz                                                             | P               | HP | 10                           |
| at 230 V, 60 Hz                                                             | P               | HP | 15                           |
| at 460 V, 60 Hz                                                             | P               | HP | 30                           |
| Overload cycle to IEC/EN 60947-4-2                                          |                 |    |                              |
| AC-53a                                                                      |                 |    | 41 A: AC-53a: 3 - 5: 75 - 10 |
| Internal bypass contacts                                                    |                 |    | ✓                            |
| Short-circuit rating                                                        |                 |    |                              |
| Type "1" coordination                                                       |                 |    | NZMN1-M50/PKZM4-49           |
| Type „2" coordination (additional with the fuses for coordination type „1") |                 |    | 3 x 170M3013                 |
|                                                                             |                 |    |                              |
| Fuse base (number x part no.)                                               |                 |    | 3 x 170H3004                 |

### Terminal capacities

|                            |  |                 |                                                      |
|----------------------------|--|-----------------|------------------------------------------------------|
| Cable lengths              |  |                 |                                                      |
| Solid                      |  | mm <sup>2</sup> | 1 x (25 - 70)<br>2 x (6 - 25)                        |
| Stranded                   |  | mm <sup>2</sup> | 1 x (25 - 70)<br>2 x (6 - 25)                        |
| Solid or stranded          |  | AWG             | 1 x (12 - 2/0)                                       |
| Copper band                |  | MM              | 2 x 9 x 0.8 9 x 9 x 0.8                              |
| Tightening torque          |  | Nm              | 6 (≤ 10 mm <sup>2</sup> ); 9 (> 10 mm <sup>2</sup> ) |
| 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)                  |
| Stranded                   |  | mm <sup>2</sup> | 1 x (0.5 - 1.5)<br>2 x (0.5 - 1.0)                   |
| Solid or stranded          |  | AWG             | 1 x (21 - 14)<br>2 x (21 - 18)                       |
| 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 %/- 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 <sub>s</sub>   | V                | 24 V AC/DC +10 %/- 15 % |
| Current consumption      | I <sub>e</sub>   | mA               | 50                      |

|                                                                   |                   |      |                         |
|-------------------------------------------------------------------|-------------------|------|-------------------------|
| Current consumption at peak performance (close bypass) at 24 V DC | I <sub>Peak</sub> | A/ms | 0,6/50                  |
| 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 <sub>n</sub>    | A  | 41                                                                 |
| Heat dissipation per pole, current-dependent                                                                           | P <sub>vid</sub>  | W  | 0                                                                  |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 7                                                                  |
| Static heat dissipation, non-current-dependent                                                                         | P <sub>vs</sub>   | W  | 7                                                                  |
| Heat dissipation capacity                                                                                              | P <sub>diss</sub> | 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 (ecI@ss10.0.1-27-37-09-07 [AC0300011]) |  |    |                  |
| Rated operation current I <sub>e</sub> at 40 °C T <sub>u</sub>                                                                                                                                                        |  | A  | 41               |
| Rated operating voltage U <sub>e</sub>                                                                                                                                                                                |  | V  | 230 - 460        |
| Rated power three-phase motor, inline, at 230 V                                                                                                                                                                       |  | kW | 11               |
| Rated power three-phase motor, inline, at 400 V                                                                                                                                                                       |  | kW | 22               |
| 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

