


**Soft starter, 4 A, 200 - 480 V AC,  $U_s$ = 110 - 230 V AC, Frame size FS1**

**Part no.** **DS7-342SX004N0-N**  
**Catalog No.** **134925**  
**Alternate Catalog No.** **DS7-342SX004N0-N**  
**EL-Nummer (Norway)** **0004134267**

## Delivery program

|                                                             |          |      |                                     |
|-------------------------------------------------------------|----------|------|-------------------------------------|
| 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                                              | $U_s$    |      | 110 - 230 V AC                      |
| Control voltage                                             | $U_C$    |      | 110 - 230 V AC                      |
| <b>Assigned motor rating (Standard connection, In-Line)</b> |          |      |                                     |
| at 400 V, 50 Hz                                             | P        | kW   | 1.5                                 |
| at 460 V, 60 Hz                                             | P        | HP   | 2                                   |
| <b>Rated operational current</b>                            |          |      |                                     |
| AC-53                                                       | $I_e$    | A    | 4                                   |
| Rated operational voltage                                   | $U_e$    |      | 200 V<br>230 V<br>400 V<br>480 V    |
| Connection to SmartWire-DT                                  |          |      | no                                  |
| Frame size                                                  |          |      | FS1                                 |

## 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 |
| Ambient temperature                            |          |    |                                                                               |
| 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)        |          |    | A                                                                             |
| Static heat dissipation, non-current-dependent | $P_{vs}$ | W  | 0.2                                                                           |
| Weight                                         |          | kg | 0.4                                                                           |

### Main conducting paths

|                         |          |      |           |
|-------------------------|----------|------|-----------|
| Rated operating voltage | $U_e$    | V AC | 200 - 480 |
| Supply frequency        | $f_{LN}$ | Hz   | 50/60     |

|                                                                             |                |    |                             |
|-----------------------------------------------------------------------------|----------------|----|-----------------------------|
| Rated operational current                                                   | I <sub>e</sub> | A  |                             |
| AC-53                                                                       | I <sub>e</sub> | A  | 4                           |
| Assigned motor rating (Standard connection, In-Line)                        |                |    |                             |
| at 230 V, 50 Hz                                                             | P              | kW | 0.75                        |
| at 400 V, 50 Hz                                                             | P              | kW | 1.5                         |
| at 200 V, 60 Hz                                                             | P              | HP | 0.75                        |
| at 230 V, 60 Hz                                                             | P              | HP | 1                           |
| at 460 V, 60 Hz                                                             | P              | HP | 2                           |
| Overload cycle to IEC/EN 60947-4-2                                          |                |    |                             |
| AC-53a                                                                      |                |    | 4 A: AC-53a: 3 - 5: 75 - 10 |
| Internal bypass contacts                                                    |                |    | ✓                           |
| Short-circuit rating                                                        |                |    |                             |
| Type "1" coordination                                                       |                |    | PKM0-4 (+ CL-PKZ0)          |
| Type „2" coordination (additional with the fuses for coordination type „1") |                |    | 3 x 170M1359                |
|                                                                             |                |    |                             |
| 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           |                  |                  |                                  |
| AC operated               |                  | V AC             | 110 V AC - 15 % - 230 V AC +10 % |
| Current consumption 24 V  |                  | mA               |                                  |
| External 24 V             |                  | mA               | 1.6                              |
| Current consumption 230 V |                  | mA               | 4                                |
| Pick-up voltage           |                  | x U <sub>s</sub> |                                  |
| AC operated               |                  | V AC             | 108 - 253                        |
| Drop-out voltage          | x U <sub>s</sub> |                  |                                  |
| AC operated               |                  | V AC             | 0 - 15                           |
| Pick-up time              |                  |                  |                                  |
| AC operated               |                  | ms               | 250                              |
| Drop-out time             |                  |                  |                                  |
| AC operated               |                  | ms               | 350                              |
| Regulator supply          |                  |                  |                                  |
| Voltage                   | U <sub>s</sub>   | V                | 110 V AC -15 % - 230 V AC +10 %  |
| Current consumption       | I <sub>e</sub>   | mA               | 50                               |
| Notes                     |                  |                  | External supply voltage          |
| Relay outputs             |                  |                  |                                  |
| Number                    |                  |                  | 1 (TOR)                          |
| Voltage range             |                  | V AC             | = U <sub>s</sub>                 |
| 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

## Design verification as per IEC/EN 61439

|                                                                                                                        |                   |    |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------|
| Technical data for design verification                                                                                 |                   |    |                                                                                                                                  |
| Rated operational current for specified heat dissipation                                                               | I <sub>n</sub>    | A  | 4                                                                                                                                |
| Heat dissipation per pole, current-dependent                                                                           | P <sub>vid</sub>  | W  | 0                                                                                                                                |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 0.2                                                                                                                              |
| Static heat dissipation, non-current-dependent                                                                         | P <sub>vs</sub>   | W  | 0.2                                                                                                                              |
| Heat dissipation capacity                                                                                              | P <sub>diss</sub> | W  | 0                                                                                                                                |
| Operating ambient temperature min.                                                                                     |                   | °C | -5                                                                                                                               |
| 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  | 4                |  |
| Rated operating voltage U <sub>e</sub>                                                                                                                                                                                | V  | 230 - 460        |  |
| Rated power three-phase motor, inline, at 230 V                                                                                                                                                                       | kW | 0.75             |  |
| Rated power three-phase motor, inline, at 400 V                                                                                                                                                                       | kW | 1.5              |  |
| 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  | 110 - 230        |  |
| Rated control supply voltage U <sub>s</sub> at AC 60HZ                                                                                                                                                                | V  | 110 - 230        |  |
| Rated control supply voltage U <sub>s</sub> at DC                                                                                                                                                                     | V  | 0 - 0            |  |
| Voltage type for actuating                                                                                                                                                                                            |    | AC               |  |
| 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 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                                                                     |

Dimensions

