# DATASHEET - DS7-340SX024N0-N



**Soft starter, 24 A, 200 - 480 V AC, Us= 24 V AC/DC, Frame size FS2**

| | |
|---|---|
| **Part no.** | **DS7-340SX024N0-N** |
| **Catalog No.** | **134913** |
| **Alternate Catalog No.** | **DS7-340SX024N0-N** |
| **EL-Nummer (Norway)** | **4134265** |

## 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 | $U_s$ | | 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 | 11 |
| at 460 V, 60 Hz | P | HP | 15 |
| **Rated operational current** | | | |
| AC-53 | $I_e$ | A | 24 |
| Rated operational voltage | $U_e$ | | 200 V<br>230 V<br>400 V<br>480 V |
| Connection to SmartWire-DT | | | no |
| Frame size | | | FS2 |

## 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) | | | B |
| Static heat dissipation, non-current-dependent | $P_{vs}$ | W | 1.1 |
| 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 | $I_e$ | A | |
| AC-53 | $I_e$ | A | 24 |
| Assigned motor rating (Standard connection, In-Line) | | | |
| at 230 V, 50 Hz | P | kW | 5.5 |
| at 400 V, 50 Hz | P | kW | 11 |
| at 200 V, 60 Hz | P | HP | 7.5 |
| at 230 V, 60 Hz | P | HP | 7.5 |
| at 460 V, 60 Hz | P | HP | 15 |
| Overload cycle to IEC/EN 60947-4-2 | | | |
| AC-53a | | | 24 A: AC-53a: 3 - 5: 75 - 10 |
| Internal bypass contacts | | | ✓ |
| Short-circuit rating | | | |
| Type “1” coordination | | | PKM0-25 (+ CL-PKZ0) |
| Type „2“ coordination (additional with the fuses for coordination type „1“) | | | 3 x 170M1365 |
| | | | |
| Fuse base (number x part no.) | | | 3 x 170H1007 |

## Terminal capacities

| | | | |
|---|---|---|---|
| Cable lengths | | | |
| Solid | | $mm^2$ | 1 x (0.75 - 16)<br>2 x (0.75 - 10) |
| Flexible with ferrule | | $mm^2$ | 1 x (0.75 - 16)<br>2 x (0.75 - 10) |
| Stranded | | $mm^2$ | 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 | | $mm^2$ | 1 x (0.5 - 2.5)<br>2 x (0.5 - 1.0) |
| Flexible with ferrule | | $mm^2$ | 1 x (0.5 - 1.5)<br>2 x (0.5 - 0.75) |
| Stranded | | $mm^2$ | 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 | 1.2 |
| Screwdriver | | mm | 0,6 x 3,5 |

## 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 $U_s$ | |
| 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 | 24 V AC/DC<br>250 V AC |
| 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 | $I_n$ | A | 24 |
| Heat dissipation per pole, current-dependent | $P_{vid}$ | W | 0 |
| Equipment heat dissipation, current-dependent | $P_{vid}$ | W | 1.1 |
| Static heat dissipation, non-current-dependent | $P_{vs}$ | W | 1.1 |
| Heat dissipation capacity | $P_{diss}$ | 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)

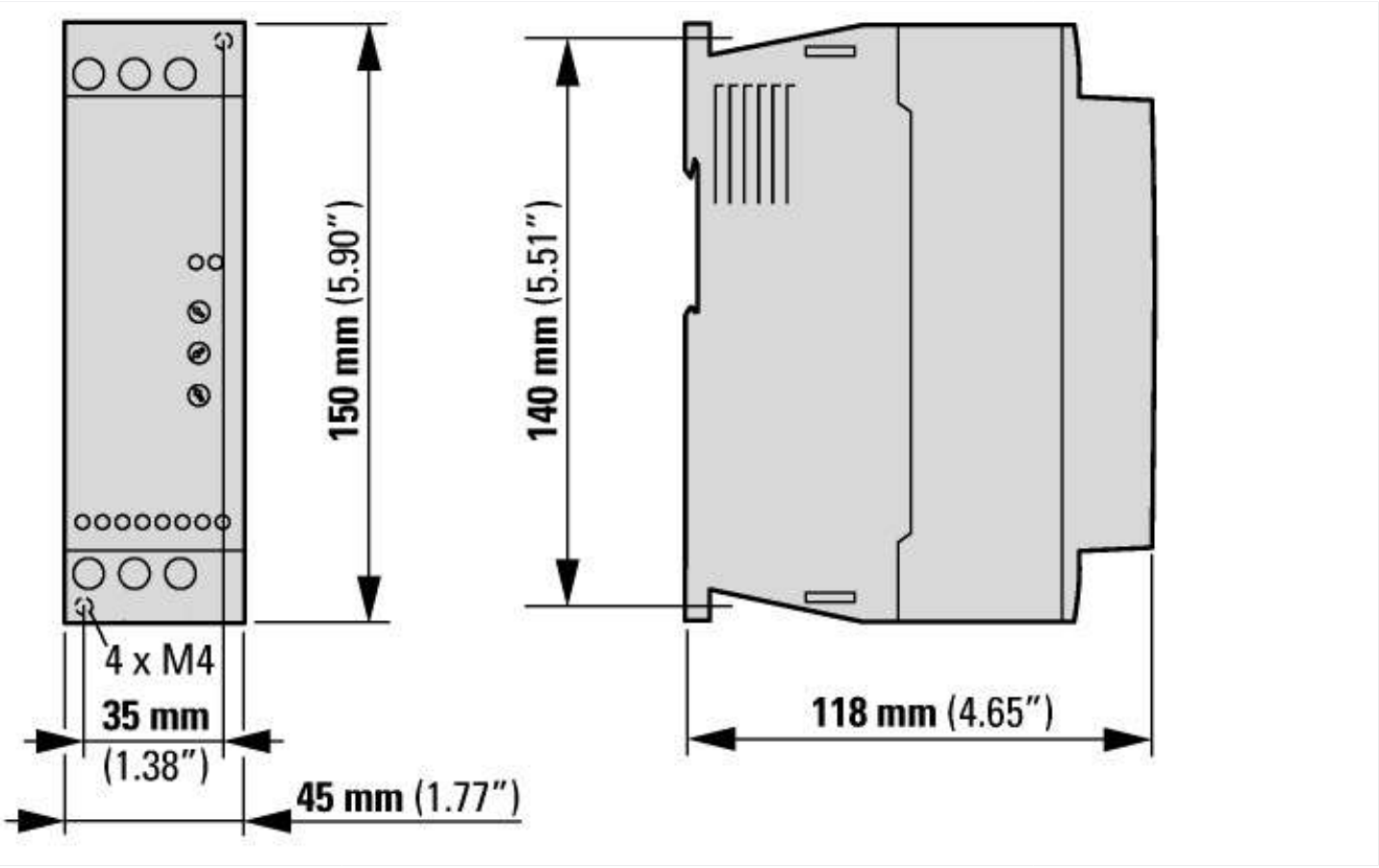
Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Semiconductor motor controller or soft starter (ecl@ss10.0.1-27-37-09-07 [ACO300011])

| | | | |
|---|---|---|---|
| Rated operation current Ie at 40 °C Tu | | A | 24 |
| Rated operating voltage Ue | | V | 230 - 460 |
| Rated power three-phase motor, inline, at 230 V | | kW | 5.5 |
| Rated power three-phase motor, inline, at 400 V | | kW | 11 |
| 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 Us at AC 50HZ | | V | 24 - 24 |
| Rated control supply voltage Us at AC 60HZ | | V | 24 - 24 |
| Rated control supply voltage Us 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 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




## Additional product information (links)

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


© 02/2021 by Eaton Industries GmbH