

Soft starter, 41 A, 200 - 480 V AC, 24 V DC, Frame size: FS3, Communication  
Interfaces: SmartWire-DT



Part no. **DS7-34DSX041N0-D**  
**134952**  
EL Number **4137339**  
(Norway)

| General specifications         |  |
|--------------------------------|--|
| Product name                   | Eaton DS7 Soft starter   |
| Part no.                       | DS7-34DSX041N0-D   |
| EAN                            | 4015081317677  |
| Product Length/Depth           | 156 millimetre   |
| Product height                 | 175 millimetre   |
| Product width                  | 93 millimetre  |
| Product weight                 | 1.8 kilogram   |
| Certifications                 | GB 14048.6<br>CSA-C22.2 No 14-05<br>CE<br>C-Tick<br>UL 508<br>UL<br>CSA-C22.2 No 0-M91<br>CSA22.2-14<br>UkrSEPRO<br>CSA<br>IEC/EN 60947-4-2<br>CSA<br>UL   |
| Product Tradename              | DS7  |
| Product Type                   | Soft starter   |
| Product Sub Type               | None   |
| Catalog Notes                  | Ambient Operating Temperature up to 60 at 2% derating per Kelvin temperature rise<br>External Reversing starter solution required<br>Regulator supply: External supply voltage   |
| Features & Functions           |  |
| Fault memory                   | 8 Faults   |
| Fitted with:                   | Internal bypass contacts<br>Internal bypass  |
| Functions                      | Single direction<br>Soft start function<br>Current limitation, with PKE<br>Min. ramp time 1 s - fast switching (semiconductor contactor)<br>Suppression of DC components for motors<br>Potential isolation between power and control sections<br>Suppression of closing transients |
| Interfaces                     | SmartWire-DT (built-in)  |
| General information            |  |
| Class                          | Other  |
| Connection to SmartWire-DT     | Yes  |
| Degree of protection           | IP20<br>NEMA 1   |
| Frame size                     | FS3  |
| Mains voltage - min            | 200 V  |
| Mains voltage - max            | 480 V  |
| Overvoltage category           | II   |
| Pollution degree               | 2  |
| Radio interference class       | Class B (EN 55011)   |
| Suitable for                   | Branch circuits, (UL/CSA)  |
| Type                           | Soft starter for three-phase loads   |
| Voltage type                   | DC   |
| Ambient conditions, mechanical |  |
| Mounting position              | Vertical   |
| Shock resistance               | 8 g, 11 ms, Mechanical   |

|  |  |   |
|--|--|---|
| Vibration resistance                                 |  | 2M2 to EN 60721-3-2   |
| <b>Climatic environmental conditions</b>             |  |   |
| Altitude   |  | Above 1000 m with 1 % derating per 100 m<br>Max. 2000 m   |
| Ambient operating temperature - min                  |  | -5 °C   |
| Ambient operating temperature - max                  |  | 40 °C   |
| Ambient storage temperature - min                    |  | -25 °C  |
| Ambient storage temperature - max                    |  | 60 °C   |
| Climatic proofing                                    |  | Damp heat, constant, to IEC 60068-2-3<br>Damp heat, cyclic, to IEC 60068-2-30   |
| <b>Main conducting paths</b>                         |  |   |
| Overload cycle                                       |  | AC-53a: 3 - 5: 75 - 10  |
| Rated operational current (Ie) at AC-53              |  | 41 A  |
| Rated operational voltage (Ue) - min                 |  | 230 V   |
| Rated operational voltage (Ue) - max                 |  | 480 V   |
| Short-circuit protection rating                      |  | 3 x 170M3013, Type „2“ coordination (additional with the fuses for coordination type „1“), Main conducting paths<br>NZMN1-M50/PKZM4-49, Type “1” coordination, Main conducting paths                              |
| Supply frequency                                     |  | 50/60 Hz, fLN, Main circuit   |
| Voltage rating - max                                 |  | 480 V   |
| <b>Motor rating</b>                                  |  |   |
| Assigned motor power at 200/208 V, 60 Hz, 3-phase    |  | 10 HP   |
| Assigned motor power at 220/230 V, 60 Hz, 3-phase    |  | 15 HP   |
| Assigned motor power at 460/480 V, 60 Hz, 3-phase    |  | 30 HP   |
| Rated operational power at 220/230 V, 50 Hz          |  | 11 kW   |
| Rated operational power at 400 V, 50 Hz              |  | 22 kW   |
| <b>Terminal capacities</b>                           |  |   |
| Terminal capacity (copper band)                      |  | 2 x 9 x 0.8 mm, Main cables<br>9 x 9 x 0.8 mm, Main cables  |
| Terminal capacity (flexible with ferrule)            |  | 1 x (0.5 - 1.5) mm <sup>2</sup> , Control circuit cables<br>2 x (0.5 - 0.75) mm <sup>2</sup> , Control circuit cables   |
| Terminal capacity (solid)                            |  | 2 x (0.5 - 1.0) mm <sup>2</sup> , Control circuit cables<br>1 x (25 - 70) mm <sup>2</sup> , Main cables<br>2 x (6 - 25) mm <sup>2</sup> , Main cables<br>1 x (0.5 - 2.5) mm <sup>2</sup> , Control circuit cables |
| Terminal capacity (solid/stranded AWG)               |  | 2 x (21 - 18), Control circuit cables<br>1 x (12 - 2/0), Main cables<br>1 x (21 - 14), Control circuit cables   |
| Terminal capacity (stranded)                         |  | 2 x (6 - 25) mm <sup>2</sup> , Main cables<br>1 x (25 - 70) mm <sup>2</sup> , Main cables<br>2 x (0.5 - 1.0) mm <sup>2</sup> , Control circuit cables<br>1 x (0.5 - 1.5) mm <sup>2</sup> , Control circuit cables |
| Screwdriver size                                     |  | PZ2, 1 x 6 mm, Terminal screw, Standard screwdriver<br>0.6 x 3.5 mm, Terminal screws, Control circuit cables  |
| Tightening torque                                    |  | 6 Nm ( $\leq 10$ mm <sup>2</sup> )<br>9 Nm ( $> 10$ mm <sup>2</sup> )<br>0.4 Nm, Screw terminals, Control circuit cables  |
| <b>Control circuit</b>                               |  |   |
| Current consumption                                  |  | 0,6 A/50 ms, Control circuit, Regulator supply at peak performance (close bypass) at 24 V DC<br>50 mA, Control circuit, Regulator supply<br>1.6 mA, Control circuit, Digital inputs, External 24 V                |
| Drop-out time  |  | 350 ms, Control circuit, Digital Inputs, DC operated  |
| Drop-out voltage                                     |  | 0 - 3 V, DC operated  |
| Pick-up time   |  | 250 ms at DC  |
| Pick-up voltage                                      |  | 17.3 - 27 V DC  |
| Rated control supply voltage (Us) at AC, 50 Hz - min |  | 0 V   |
| Rated control supply voltage (Us) at AC, 50 Hz - max |  | 0 V   |
| Rated control supply voltage (Us) at AC, 60 Hz - min |  | 0 V   |
| Rated control supply voltage (Us) at AC, 60 Hz - max |  | 0 V   |
| Rated control supply voltage (Us) at DC - min        |  | 24 V  |
| Rated control supply voltage (Us) at DC - max        |  | 24 V  |

| Input/Output   |  |   |
|--|--|---|
| Number of outputs  |  | 2 Relay Outputs (TOR, Ready)  |
| Output voltage   |  | 250 V AC (relay outputs)  |
| Protection   |  | Finger and back-of-hand proof, Protection against direct contact  |
| Rated control voltage (Uc)   |  | 24 V DC<br>24 V DC (-15 %/+10 %) or via SmartWire-DT  |
| Rated operational current (Ie) at AC-11  |  | 1 A   |
| Soft start function  |  |   |
| Application  |  | 1-phase motors: No<br>3-phase motors: Yes<br>Soft starting of three-phase asynchronous motors   |
| Current limitation   |  | (0 - 8) x Ie, Soft start function   |
| Delay time   |  | 0 - 30 s, Soft start function, Ramp times   |
| Ramp/run-up time   |  | 1 - 30 s  |
| Start voltage  |  | Max. 100 %, Soft start function, Start voltage = turn-off voltage<br>Min. 30 %, Soft start function, Start voltage = turn-off voltage |
| Design verification  |  |   |
| Equipment heat dissipation, current-dependent Pvid                               |  | 7 W   |
| Heat dissipation capacity Pdis   |  | 0 W   |
| Heat dissipation per pole, current-dependent Pvid                                |  | 0 W   |
| Rated operational current for specified heat dissipation (In)                    |  | 41 A  |
| Static heat dissipation, non-current-dependent Pvs                               |  | 7 W   |
| 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 Resist. of insul. mat. to abnormal heat/fire by internal elect. 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.  |
| 10.9.2 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 9.0

| 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@ss13-27-37-09-07 [AC0300016]) |    |           |
| Rated operation current Ie at 40 °C Tu  | A  | 41        |
| Rated operating voltage Ue  | V  | 230 - 480 |
| 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 AC 50 Hz          |  | V  | 0 - 0            |
| Rated control supply voltage AC 60 Hz          |  | V  | 0 - 0            |
| Rated control supply voltage DC                |  | V  | 24 - 24          |
| Voltage type for actuating                     |  |    | DC               |
| Integrated motor overload protection           |  |    | No               |
| Release class                                  |  |    | Other            |
| Degree of protection (IP)                      |  |    | IP20             |
| Degree of protection (NEMA)                    |  |    | 1                |