

# Specifications



## Eaton 134916

Eaton DS7 Soft starter, 41 A, 200 - 480 V AC,  
Us= 24 V AC/DC, Frame size FS3

### General specifications

|                             |                        |
|-----------------------------|------------------------|
| <b>PRODUCT NAME</b>         | Eaton DS7 Soft starter |
| <b>CATALOG NUMBER</b>       | 134916                 |
| <b>MODEL CODE</b>           | DS7-340SX041N0-N       |
| <b>EAN</b>                  | 4015081317318          |
| <b>PRODUCT LENGTH/DEPTH</b> | 139 mm                 |
| <b>PRODUCT HEIGHT</b>       | 175 mm                 |
| <b>PRODUCT WIDTH</b>        | 93 mm                  |
| <b>PRODUCT WEIGHT</b>       | 1.8 kg                 |

### CERTIFICATIONS

CSA Class No.: 321106  
CSA-C22.2 No 0-M91  
CE  
UL 508  
GB 14048.6  
UL File No.: E251034  
CSA  
UkrSEPRO  
CSA-C22.2 No 14-05  
IEC/EN 60947-4-2  
CSA22.2-14  
CSA File No.: 2511305  
UL  
C-Tick

## Ambient conditions, mechanical

|                             |                        |
|-----------------------------|------------------------|
| <b>MOUNTING POSITION</b>    | Vertical               |
| <b>SHOCK RESISTANCE</b>     | 8 g, 11 ms, Mechanical |
| <b>VIBRATION RESISTANCE</b> | 2M2 to EN 60721-3-2    |

## Climatic environmental conditions

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| <b>ALTITUDE</b> | Max. 2000 m<br>Above 1000 m with 1 %<br>derating per 100 m |
|-----------------|------------------------------------------------------------|

|                                                |       |
|------------------------------------------------|-------|
| <b>AMBIENT OPERATING<br/>TEMPERATURE - MAX</b> | 40 °C |
|------------------------------------------------|-------|

|                                              |       |
|----------------------------------------------|-------|
| <b>AMBIENT STORAGE<br/>TEMPERATURE - MAX</b> | 60 °C |
|----------------------------------------------|-------|

|                                                |       |
|------------------------------------------------|-------|
| <b>AMBIENT OPERATING<br/>TEMPERATURE - MIN</b> | -5 °C |
|------------------------------------------------|-------|

|                                              |        |
|----------------------------------------------|--------|
| <b>AMBIENT STORAGE<br/>TEMPERATURE - MIN</b> | -25 °C |
|----------------------------------------------|--------|

|                          |                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------|
| <b>CLIMATIC PROOFING</b> | Damp heat, cyclic, to IEC<br>60068-2-30<br>Damp heat, constant, to<br>IEC 60068-2-3 |
|--------------------------|-------------------------------------------------------------------------------------|

## Control circuit

|                                                             |                                                                                                                                                                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CURRENT CONSUMPTION</b>                                  | 1.6 mA, Control circuit, Digital inputs, External 24 V<br>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 |
| <b>DROP-OUT TIME</b>                                        | 350 ms, Control circuit, Digital Inputs, DC operated                                                                                                                                               |
| <b>DROP-OUT VOLTAGE</b>                                     | AC operated: 0 - 3 V, AC operated<br>0 - 3 V, DC operated                                                                                                                                          |
| <b>PICK-UP TIME</b>                                         | 250 ms at DC<br>250 ms at AC                                                                                                                                                                       |
| <b>PICK-UP VOLTAGE</b>                                      | 17.3 - 27 V DC<br>17.3 - 27 V AC                                                                                                                                                                   |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX</b> | 24 V                                                                                                                                                                                               |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN</b> | 24 V                                                                                                                                                                                               |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX</b> | 24 V                                                                                                                                                                                               |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN</b> | 24 V                                                                                                                                                                                               |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX</b>        | 24 V                                                                                                                                                                                               |
| <b>RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN</b>        | 24 V                                                                                                                                                                                               |

## Design verification

|                                                                                         |                                                                                                                                  |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>10.10 TEMPERATURE RISE</b>                                                           | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| <b>10.11 SHORT-CIRCUIT RATING</b>                                                       | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>                                              | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.13 MECHANICAL FUNCTION</b>                                                        | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |
| <b>10.2.2 CORROSION RESISTANCE</b>                                                      | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>                         | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>       | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b> | Meets the product standard's requirements.                                                                                       |
| <b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>                                 | Meets the product standard's requirements.                                                                                       |
| <b>10.2.5 LIFTING</b>                                                                   | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| <b>10.2.6 MECHANICAL IMPACT</b>                                                         | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| <b>10.2.7 INSCRIPTIONS</b>                                                              | Meets the product standard's requirements.                                                                                       |
| <b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>                                          | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| <b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>                                           | Meets the product standard's requirements.                                                                                       |
| <b>10.5 PROTECTION</b>                                                                  | Does not apply, since the                                                                                                        |

|                                                                      |                                                                    |
|----------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>AGAINST ELECTRIC SHOCK</b>                                        | entire switchgear needs to be evaluated.                           |
| <b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>        | Does not apply, since the entire switchgear needs to be evaluated. |
| <b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>             | Is the panel builder's responsibility.                             |
| <b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>                      | Is the panel builder's responsibility.                             |
| <b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>                      | Is the panel builder's responsibility.                             |
| <b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>                              | Is the panel builder's responsibility.                             |
| <b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>      | Is the panel builder's responsibility.                             |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID</b>            | 7 W                                                                |
| <b>HEAT DISSIPATION CAPACITY PDISS</b>                               | 0 W                                                                |
| <b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>             | 0 W                                                                |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 41 A                                                               |
| <b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>            | 7 W                                                                |

## Features & functions

|                     |                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FITTED WITH:</b> | Internal bypass contacts<br>Internal bypass                                                                                                                                                                                                        |
| <b>FUNCTIONS</b>    | Soft start function<br>Suppression of closing transients<br>Suppression of DC components for motors<br>Potential isolation between power and control sections<br>Min. ramp time 1 s - fast switching (semiconductor contactor)<br>Single direction |

## General information

|                                   |                           |
|-----------------------------------|---------------------------|
| <b>CLASS</b>                      | Other                     |
| <b>CONNECTION TO SMARTWIRE-DT</b> | No                        |
| <b>DEGREE OF PROTECTION</b>       | IP20<br>NEMA 1            |
| <b>FRAME SIZE</b>                 | FS3                       |
| <b>MAINS VOLTAGE - MAX</b>        | 480 V                     |
| <b>MAINS VOLTAGE - MIN</b>        | 200 V                     |
| <b>OVERVOLTAGE CATEGORY</b>       | II                        |
| <b>POLLUTION DEGREE</b>           | 2                         |
| <b>RADIO INTERFERENCE CLASS</b>   | Class B (EN 55011)        |
| <b>SUITABLE FOR</b>               | Branch circuits, (UL/CSA) |

## Input/Output

|                                                |                                                                      |
|------------------------------------------------|----------------------------------------------------------------------|
| <b>NUMBER OF OUTPUTS</b>                       | 2 Relay Outputs (TOR, Ready)                                         |
| <b>OUTPUT VOLTAGE</b>                          | 250 V AC (relay outputs)                                             |
| <b>PROTECTION</b>                              | Finger and back-of-hand proof, Protection against direct contact     |
| <b>RATED CONTROL VOLTAGE (UC)</b>              | 24 V DC<br>24 V AC (-15 %/+10 %)<br>24 V DC (-15 %/+10 %)<br>24 V AC |
| <b>RATED OPERATIONAL CURRENT (IE) AT AC-11</b> | 1 A                                                                  |

## Motor rating

|                                                          |       |
|----------------------------------------------------------|-------|
| <b>ASSIGNED MOTOR POWER AT 200/208 V, 60 HZ, 3-PHASE</b> | 10 HP |
| <b>ASSIGNED MOTOR POWER AT 220/230 V, 60 HZ, 3-PHASE</b> | 15 HP |
| <b>ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE</b> | 30 HP |
| <b>RATED OPERATIONAL POWER AT 220/230 V, 50 HZ</b>       | 11 kW |
| <b>RATED OPERATIONAL POWER AT 400 V, 50 HZ</b>           | 22 kW |

## TYPE

Soft starter for three-phase loads

## VOLTAGE TYPE

AC/DC

## Main conducting paths

|                                                |                                                                                                                                                                                   |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OVERLOAD CYCLE</b>                          | AC-53a: 3 - 5: 75 - 10                                                                                                                                                            |
| <b>RATED OPERATIONAL CURRENT (IE) AT AC-53</b> | 41 A                                                                                                                                                                              |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MAX</b>    | 480 V                                                                                                                                                                             |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MIN</b>    | 230 V                                                                                                                                                                             |
| <b>SHORT-CIRCUIT PROTECTION RATING</b>         | 3 x 170M3013, Type „2“ coordination (additional with the fuses for coordination type „1“), Main conducting paths NZMN1-M50/PKZM4-49, Type “1” coordination, Main conducting paths |
| <b>SUPPLY FREQUENCY</b>                        | 50/60 Hz, fLN, Main circuit                                                                                                                                                       |
| <b>VOLTAGE RATING - MAX</b>                    | 480 V                                                                                                                                                                             |

## Soft start function

|                         |                                                                                                                                                             |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>APPLICATION</b>      | <ul style="list-style-type: none"> <li>1-phase motors: No</li> <li>3-phase motors: Yes</li> <li>Soft starting of three-phase asynchronous motors</li> </ul> |
| <b>DELAY TIME</b>       | 0 - 30 s, Soft start function, Ramp times                                                                                                                   |
| <b>RAMP/RUN-UP TIME</b> | 1 - 30 s                                                                                                                                                    |
| <b>START VOLTAGE</b>    | Max. 100 %, Soft start function, Start voltage = turn-off voltage<br>Min. 30 %, Soft start function, Start voltage = turn-off voltage                       |

## Terminal capacities

|                                                  |                                                                                                                                                                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SCREWDRIVER SIZE</b>                          | PZ2, 1 x 6 mm, Terminal screw, Standard screwdriver<br>0.6 x 3.5 mm, Terminal screws, Control circuit cables                                                                                                      |
| <b>TERMINAL CAPACITY (COPPER BAND)</b>           | 9 x 9 x 0.8 mm, Main cables<br>2 x 9 x 0.8 mm, Main cables                                                                                                                                                        |
| <b>TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)</b> | 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                                                                                             |
| <b>TERMINAL CAPACITY (SOLID)</b>                 | 2 x (6 - 25) mm <sup>2</sup> , Main cables<br>1 x (0.5 - 2.5) mm <sup>2</sup> , Control circuit cables<br>2 x (0.5 - 1.0) mm <sup>2</sup> , Control circuit cables<br>1 x (25 - 70) mm <sup>2</sup> , Main cables |
| <b>TERMINAL CAPACITY (SOLID/STRANDED AWG)</b>    | 2 x (21 - 18), Control circuit cables<br>1 x (12 - 2/0), Main cables<br>1 x (21 - 14), Control circuit cables                                                                                                     |
| <b>TERMINAL CAPACITY (STRANDED)</b>              | 1 x (0.5 - 1.5) mm <sup>2</sup> , Control circuit cables<br>2 x (6 - 25) mm <sup>2</sup> , Main cables<br>2 x (0.5 - 1.0) mm <sup>2</sup> , Control circuit cables<br>1 x (25 - 70) mm <sup>2</sup> , Main cables |
| <b>TIGHTENING TORQUE</b>                         | 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                                                                                          |

## Resources

|                            |                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BROCHURES                  | <a href="#">eaton-softstarter-s811-ds7-brochure-br039001en-en-us.pdf</a>                                                                                               |
| CATALOGUES                 | <a href="#">eaton-drives-soft-starter-catalog-ca04020001zen-us.pdf</a>                                                                                                 |
| DECLARATIONS OF CONFORMITY | <a href="#">eaton-soft-starter-declaration-of-conformity-eu250527en.pdf</a><br><a href="#">eaton-soft-starter-declaration-of-conformity-uk251010en.pdf</a>             |
| DRAWINGS                   | <a href="#">eaton-semiconductor-contactors-softstarter-ds7-dimensions-002.eps</a><br><a href="#">eaton-semiconductor-contactors-softstarter-ds7-3d-drawing-005.eps</a> |
| ECAD MODEL                 | <a href="#">DA-CE-ETN.DS7-340SX041N0-N</a>                                                                                                                             |
| INSTALLATION INSTRUCTIONS  | <a href="#">IL03902005Z2021_06.pdf</a>                                                                                                                                 |
| MANUALS AND USER GUIDES    | <a href="#">eaton-ds7-soft-starter-mn03901001z-en-us.pdf</a>                                                                                                           |
| MCAD MODEL                 | <a href="#">eaton-low-voltage-soft-starters-3d-models-ds7-3-100316.stp</a><br><a href="#">eaton-soft-starters-mcad-drawings-ds7-3-100316.dwg</a>                       |
| MULTIMEDIA                 | <a href="#">Soft starter DS7 up to 200 A</a>                                                                                                                           |

|                 |
|-----------------|
| PROJECT NAME:   |
| PROJECT NUMBER: |
| PREPARED BY:    |
| DATE:           |



**Eaton Corporation plc** Eaton House  
30 Pembroke Road  
Dublin 4, Ireland  
Eaton.com

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