

# Eaton 134940

Catalog Number: 134940

Eaton DS7 Soft starter, 160 A, 200 - 480 V AC, Us= 110 - 230 V AC, Frame size FS4



Photo is representative

## General specifications

<b>Product Name</b>	<b>Catalog Number</b>
Eaton DS7 Soft starter	134940
<b>Model Code</b>	<b>EAN</b>
DS7-342SX160N0-N	4015081317554
<b>Product Length/Depth</b>	<b>Product Height</b>
178 mm	215 mm
<b>Product Width</b>	<b>Product Weight</b>
108 mm	3.7 kg

## Certifications

CSA Class No.: 321106

UL

UL File No.: E251034

C-Tick

CSA-C22.2 No 0-M91

CSA22.2-14

CSA File No.: 2511305

GB 14048.6

UL 508

UkrSEPRO

IEC/EN 60947-4-2

CSA-C22.2 No 14-05

CE

CSA

## Features & Functions

### Fitted with:

Internal bypass contacts

Internal bypass

### Functions

Potential isolation between power and control sections

Min. ramp time 1 s - fast switching (semiconductor contactor)

Single direction

Suppression of closing transients

Soft start function

Suppression of DC components for motors

## General

### Class

Other

### Connection to SmartWire-DT

No

### Degree of protection

IP20

NEMA 1

### Frame size

FS4

### Mains voltage - max

480 V

### Mains voltage - min

200 V

### Overvoltage category

II

### Pollution degree

2

### Radio interference class

Class A (EN 55011)

### Suitable for

Branch circuits, (UL/CSA)

### Type

Soft starter for three-phase loads

### Voltage type

AC

## Ambient conditions, mechanical

### Mounting position

Vertical

### Shock resistance

8 g, 11 ms, Mechanical

### Vibration resistance

2M2 to EN 60721-3-2

## Climatic environmental conditions

### Altitude

Above 1000 m with 1 % derating per 100 m

Max. 2000 m

### Ambient operating temperature - max

40 °C

### Ambient operating temperature - min

-5 °C

### Climatic proofing

Damp heat, constant, to IEC 60068-2-3

Damp heat, cyclic, to IEC 60068-2-30

## Main conducting paths

### Overload cycle

AC-53a: 3 - 5: 75 - 10

### Rated operational current (I<sub>e</sub>) at AC-53

160 A

### Rated operational voltage (U<sub>e</sub>) - max

480 V

### Rated operational voltage (U<sub>e</sub>) - min

230 V

### Short-circuit protection rating

NZMN2-M200, Type "1" coordination, Main conducting paths  
3 x 170M5008, Type „2“ coordination (additional with the fuses  
for coordination type „1“), Main conducting paths

### Supply frequency

50/60 Hz, fLN, Main circuit

### Voltage rating - max

480 V

## Motor rating

Assigned motor power at 200/208 V, 60 Hz, 3-phase

50 HP

Assigned motor power at 220/230 V, 60 Hz, 3-phase

60 HP

Assigned motor power at 460/480 V, 60 Hz, 3-phase

125 HP

Rated operational power at 220/230 V, 50 Hz

45 kW

Rated operational power at 400 V, 50 Hz

90 kW

## Terminal capacities

### Terminal capacity (copper band)

2 x 9 x 0.8 mm, Main cables

10 x 16 x 0.8 mm, Main cables

### Terminal capacity (flexible with ferrule)

1 x (0.5 - 1.5) mm<sup>2</sup>, Control circuit cables

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

2 x (4 - 70) mm<sup>2</sup>, Main cables

1 x (4 - 185) mm<sup>2</sup>, Main cables

1 x (0.5 - 2.5) mm<sup>2</sup>, Control circuit cables

### Terminal capacity (solid/stranded AWG)

1 x (12 - 350 kcmil), Main cables

2 x (21 - 18), Control circuit cables

1 x (21 - 14), Control circuit cables

2 x (12 - 00), Main cables

### Terminal capacity (stranded)

1 x (0.5 - 1.5) mm<sup>2</sup>, Control circuit cables

2 x (0.5 - 1.0) mm<sup>2</sup>, Control circuit cables

2 x (4 - 70) mm<sup>2</sup>, Main cables  
1 x (4 - 185) mm<sup>2</sup>, Main cables

#### Screwdriver size

PZ2, 1 x 6 mm, Terminal screw, Standard screwdriver  
0.6 x 3.5 mm, Terminal screws, Control circuit cables

#### Tightening torque

14 Nm (> 10 mm<sup>2</sup>)  
5 Nm (≤ 10 mm<sup>2</sup>)  
0.4 Nm, Screw terminals, Control circuit cables

## Control circuit

#### Current consumption

0,6 A/50 ms, Control circuit, Regulator supply at peak performance (close bypass) at 24 V DC  
50 mA, Control circuit, Regulator supply  
1.6 mA, Control circuit, Digital inputs, External 24 V

#### Drop-out time

350 ms, Control circuit, Digital Inputs, AC operated

#### Drop-out voltage

AC operated: 0 - 15 V, AC operated

Rated control supply voltage (Us) at AC, 50 Hz - min  
110 V

Rated control supply voltage (Us) at AC, 50 Hz - min  
110 V

Rated control supply voltage (Us) at AC, 60 Hz - max  
230 V

Rated control supply voltage (Us) at AC, 60 Hz - min  
110 V

Rated control supply voltage (Us) at DC - max  
0 V

Rated control supply voltage (Us) at DC - min  
0 V

## Input/Output

#### Input current

4 mA (at 230 V AC, Digital inputs)

#### 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)

110 - 230 V AC (-15 %/+10 %)  
110 - 230 V AC

#### Rated operational current (Ie) at AC-11

## Soft start function

#### Application

1-phase motors: No  
3-phase motors: Yes  
Soft starting of three-phase asynchronous motors

#### Delay time

0 - 30 s, Soft start function, Ramp times

#### Ramp/run-up time

1 - 30 s

#### Start voltage

Min. 30 %, Soft start function, Start voltage = turn-off voltage  
Max. 100 %, Soft start function, Start voltage = turn-off voltage

## Design verification

Equipment heat dissipation, current-dependent  $P_{vid}$

30 W

Heat dissipation capacity  $P_{diss}$

0 W

Heat dissipation per pole, current-dependent  $P_{vid}$

0 W

Rated operational current for specified heat dissipation ( $I_n$ )

160 A

Static heat dissipation, non-current-dependent  $P_{vs}$

30 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.

## Resources

### Catalogues

[Product Range Catalog Drives Engineering](#)

[eaton-softstarter-s811-ds7-brochure-br039001en-en-us.pdf](#)

[Drives - Product range catalog](#)

[Product Range Catalog Drives Engineering-EN](#)

### Certification reports

[DA-DC-00004193.pdf](#)

[DA-DC-00003978.pdf](#)

### Drawings

[eaton-semiconductor-contactors-swd-ds7-soft-starter-dimensions.eps](#)

[eaton-semiconductor-contactors-softstarter-ds7-3d-drawing-006.eps](#)

### eCAD model

[DA-CE-ETN.DS7-342SX160N0-N](#)

### Installation instructions

[IL03902005Z2021\\_06.pdf](#)

### Installation videos

[Soft starter DS7 up to 32 A](#)

### Manuals and user guides

[MN03901001Z\\_EN](#)

### mCAD model

[DA-CD-ds7\\_4\\_100316](#)

[DA-CS-ds7\\_4\\_100316](#)