Specifications

# Eaton 185836

## Catalog Number: 185836

Eaton DC1 Variable frequency drive, 230 V AC, 3-phase, 7 A, 1.5 kW, IP20/NEMA 0, Radio interference suppression filter, Brake chopper, FS2 DC1-327D0FB-A20CE1



## General specifications

**Product Name**
Eaton DC1 Variable frequency drive

**Catalog Number**
185836

**EAN**
4015081813353

**Product Length/Depth**
152 mm

**Product Height**
231 mm

**Product Width**
107 mm

**Product Weight**
2 kg

**Certifications**
UkrSEPRO
UL
UL File No.: E172143
Certified by UL for use in Canada
UL report applies to both US and Canada
CE
EAC
CUL
RoHS, ISO 9001
Specification for general requirements: IEC/EN 61800-2
Safety requirements: IEC/EN 61800-5-1
CSA-C22.2 No. 14
UL Category Control No.: NMMS, NMMS7
RCM
UL 508C
IEC/EN61800-5
IEC/EN 61800-3
IEC/EN61800-3

Powering Business Worldwide

## Features & Functions

### Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

### Fitted with:

7-digital display assembly

IGBT inverter

Brake chopper

Control unit

Internal DC link

PC connection

Breaking resistance

Radio interference suppression filter

Additional PCB protection

### Functions

4-quadrant operation possible

## General

### Cable length

C2 ≤ 5 m, Radio interference level, maximum motor cable length

150 m, unscreened, maximum permissible, Motor feeder

C3 ≤ 25 m, Radio interference level, maximum motor cable length

200 m, screened, with motor choke, maximum permissible, Motor feeder

100 m, screened, maximum permissible, Motor feeder

300 m, unscreened, with motor choke, maximum permissible, Motor feeder

### Communication interface

SmartWire-DT, optional

Modbus RTU, built in

CANopen®, built in

OP-Bus (RS485), built in

### Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD3 SmartWire DT module

### Degree of protection

IP20

NEMA Other

### Electromagnetic compatibility

1st and 2nd environments (according to EN 61800-3)

### Frame size

FS2

### Mounting position

Vertical

### Product category

Variable frequency drives

### Protection

Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)

### Protocol

MODBUS

Other bus systems

CAN

EtherNet/IP

### Radio interference class

C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.
Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments

### Suitable for

Branch circuits, (UL/CSA)

## Climatic environmental conditions

### Altitude

Max. 4000 m
Above 1000 m with 1 % derating per 100 m

### Ambient operating temperature - min

-10 °C

### Ambient operating temperature - max

50 °C

### Ambient operating temperature at 150% overload - min

-10 °C

### Ambient operating temperature at 150% overload - max

50 °C

### Ambient storage temperature - min

-40 °C

### Ambient storage temperature - max

60 °C

### Climatic proofing

< 95 average relative humidity (RH), no condensation, no corrosion

## Main circuit

### Efficiency

95.9 % ( η)

### Heat dissipation capacity Pdiss

0 W

### Input current ILN at 150% overload

8.9 A

### Leakage current at ground IPE - max

7.2 mA

### Mains switch-on frequency

Maximum of one time every 30 seconds

### Mains voltage - min

200 V

### Mains voltage - max

240 V

### Operating mode

## Motor rating

### Assigned motor current IM at 110/120 V, 60 Hz, 150% overload

6.8 A

### Assigned motor current IM at 115 V, 50 Hz, 150% overload

6.3 A

### Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload

6.8 A

### Assigned motor current IM at 230 V, 50 Hz, 150% overload

6.3 A

### Assigned motor current IM at 400 V, 50 Hz, 150% overload

6.3 A

### Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload

6.8 A

### Assigned motor power at 115/120 V, 60 Hz, 1-phase

2 HP

### Assigned motor power at 230/240 V, 60 Hz, 1-phase

U/f control
Sensorless vector control (SLV)
Speed control with slip compensation
BLDC motors
PM motors
Synchronous reluctance motors

### Output frequency - min

0 Hz

### Output frequency - max

500 Hz

### Output voltage (U2)

230 V AC, 3-phase
240 V AC, 3-phase

### Overload current IL at 150% overload

10.5 A

### Rated control supply voltage

10 V DC (Us, max. 10 mA)

### Rated frequency - min

48 Hz

### Rated frequency - max

62 Hz

### Rated operational current (Ie)

7 A at 150% overload (at an operating frequency of 16 kHz and an ambient air temperature of +50 °C)

### Rated operational voltage

240 V AC, 3-phase
230 V AC, 3-phase

### Resolution

0.1 Hz (Frequency resolution, setpoint value)

### Short-circuit protection rating

10 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring

### Starting current - max

175 %, IH, max. starting current (High Overload), For 2.5 seconds every 600 seconds, Power section

### Supply frequency

50/60 Hz

### Switching frequency

8 kHz, 4 - 32 kHz adjustable (audible), fPWM, Power section, Main circuit

2 HP

### Assigned motor power at 460/480 V, 60 Hz

2 HP

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

2 HP

## Apparent power

### Apparent power at 230 V

2.79 kVA

### Apparent power at 240 V

2.91 kVA

## Braking function

### Braking resistance

100 Ω

### Braking torque

Max. 100 % of rated operational current Ie with external braking resistor - Main circuit
Max. 100 % of rated operational current Ie, variable, DC - Main circuit
Max. 30 % MN, Standard - Main circuit

### Switch-on threshold for the braking transistor

390 VDC

## Control circuit

### Number of inputs (analog)

2 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)

### Number of inputs (digital)

4 (parameterizable, 10 - 30 V DC)

### Number of outputs (analog)

1

### Number of outputs (digital)

1

### Number of relay outputs

1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))

System configuration type

AC supply systems with earthed center point

Voltage rating - max

240 V

## Design verification

Equipment heat dissipation, current-dependent Pvid

61.5 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

7 A

Static heat dissipation, non-current-dependent Pvs

0 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

### Application notes

Low Temperature Applications

Operating Permanent Magnet and Brushless DC Motors

I/O Configuration

Fire Mode

Update DX-COM-STICK3

Connecting drives to generator supplies

The OP System Bus - Parameterizing - Control

Motor data - Motor Protection - V/f curves Slip Compensation

Conformal Coating

Dependency of the output current on switching frequency and ambient temperature

Operating Single Phase Motors

PI controller

Set Point Setting

Starting, Stopping and Operation

DX-COM-STICK3_Connection

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Access to Parameter Levels 2 + 3 Parameter Lock - Load Default

### Brochures

eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf

DA-SW-drivesConnect

### Catalogs

Product Range Catalog Drives Engineering

### Declarations of conformity

DA-DC-00003964.pdf

DA-DC-00004555.pdf

DA-DC-00004184.pdf

DA-DC-00004552.pdf

### Drawings

eaton-frequency-inverter-dimensions-026.eps

eaton-frequency-inverter-dimensions-016.eps

eaton-frequency-inverter-3d-drawing-006.eps

### eCAD model

DA-CE-ETN.DC1-327D0FB-A20CE1

### Installation instructions

IL04020009Z

### Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

### Manuals and user guides

MN040003_EN

MN040018_EN

eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf

MN040059_EN

MN040022_EN

### mCAD model

DA-CD-dc1_fs2

DA-CS-dc1_fs2

### Multimedia

Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments?

### Product notifications

eaton-drives-ecodesign-directive-mz040046en-en.pdf

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