

# Eaton 185768

Catalog Number: 185768

Eaton DC1 Variable frequency drive, 115 V AC, single-phase, 4.3 A, 0.75 kW, IP20/NEMA 0, FS1 DC1-1D4D3NN-A20CE1

General specifications



Product Name	Catalog Number
Eaton DC1 Variable frequency drive	185768
EAN	Product Length/Depth
4015081812677	124 mm
Product Height	Product Width
184 mm	81 mm
Product Weight	Certifications
1.2 kg	UkrSEPRO
	CE
	UL report applies to both US and Canada
	UL Category Control No.: NMMS, NMMS7
	Specification for general requirements: IEC/EN 61800-2
	UL
	EAC
	CSA-C22.2 No. 14
	UL 508C
	IEC/EN61800-5
	CUL
	RoHS, ISO 9001
	UL File No.: E172143
	RCM
	Certified by UL for use in Canada
	IEC/EN61800-3
	IEC/EN 61800-3
	Safety requirements: IEC/EN 61800-5-1

## Features & Functions

### Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

### Fitted with:

7-digital display assembly

Control unit

PC connection

Internal DC link

IGBT inverter

Additional PCB protection

## General

### Cable length

100 m, screened, with motor choke, maximum permissible,

Motor feeder

150 m, unscreened, with motor choke, maximum permissible,

Motor feeder

75 m, unscreened, maximum permissible, Motor feeder

50 m, screened, maximum permissible, Motor feeder

### Communication interface

SmartWire-DT, optional

Modbus RTU, built in

OP-Bus (RS485), built in

CANopen®, built in

### Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD3 SmartWire DT module

### Degree of protection

IP20

NEMA Other

### Frame size

FS1

### Mounting position

Vertical

### Product category

Variable frequency drives

### Protection

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

### Protocol

CAN

MODBUS

EtherNet/IP

Other bus systems

### Radio interference class

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

Above 1000 m with 1 % derating per 100 m

Max. 4000 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 % (  $\eta$  )

### Heat dissipation capacity $P_{diss}$

0 W

### Input current $I_{LN}$ at 150% overload

15.8 A

### Leakage current at ground IPE - max

4.8 mA

### Mains switch-on frequency

Maximum of one time every 30 seconds

### Mains voltage - min

110 V

### Mains voltage - max

115 V

### Operating mode

Speed control with slip compensation

U/f control

Sensorless vector control (SLV)

BLDC motors

PM motors

Synchronous reluctance motors

### Output frequency - min

0 Hz

### Output frequency - max

500 Hz

### Output voltage ( $U_2$ )

230 V AC, 3-phase

### Overload current $I_L$ at 150% overload

6.45 A

### Rated control supply voltage

10 V DC ( $U_s$ , max. 10 mA)

### Rated frequency - min

48 Hz

### Rated frequency - max

62 Hz

### Rated operational current ( $I_e$ )

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

Rated operational voltage

115 V AC, 1-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

25 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

System configuration type

AC supply systems with earthed center point

Voltage rating - max

120 V

Motor rating

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

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

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

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

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

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

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

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

Assigned motor power at 460/480 V, 60 Hz  
1 HP

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

Braking function

Braking torque

Max. 30 % MN, Standard - Main circuit

Max. 100 % of rated operational current Ie, variable, DC - Main circuit

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))

Design verification

Resources

Equipment heat dissipation, current-dependent P<sub>vid</sub>

37.5 W

Heat dissipation capacity P<sub>diss</sub>

0 W

Heat dissipation per pole, current-dependent P<sub>vid</sub>

0 W

Rated operational current for specified heat dissipation (I<sub>n</sub>)

4.3 A

Static heat dissipation, non-current-dependent P<sub>vs</sub>

0 W

Heat dissipation details

Operation (with 150 % overload)

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

Application notes

[DX-COM-STICK3\\_Connection](#)

Dependency of the output current on switching frequency and ambient temperature

[Conformal Coating](#)

[Motor data - Motor Protection - V/f curves Slip Compensation](#)

[The OP System Bus - Parameterizing - Control](#)

[Set Point Setting](#)

[Fire Mode](#)

[Low Temperature Applications](#)

[I/O Configuration](#)

[PI controller](#)

[Operating Permanent Magnet and Brushless DC Motors](#)

[Operating Single Phase Motors](#)

[Electromagnetic compatibility \(EMC\)](#)

[Starting, Stopping and Operation](#)

[Access to Parameter Levels 2 + 3 Parameter Lock - Load Default](#)

[Update DX-COM-STICK3](#)

[Connecting drives to generator supplies](#)

[How does the internal motor protection work?](#)

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-00004552.pdf](#)

[DA-DC-00004555.pdf](#)

[DA-DC-00004184.pdf](#)

Drawings

[eaton-frequency-inverter-dimensions-017.eps](#)

[eaton-frequency-inverter-dimensions-016.eps](#)

[eaton-frequency-inverter-3d-drawing-003.eps](#)

eCAD model

[DA-CE-ETN.DC1-1D4D3NN-A20CE1](#)

Installation instructions

[IL04020009Z](#)

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.

#### Installation videos

[PowerXL Variable Frequency Drives DC1 and DA1 - EN](#)

[Video PowerXL DA1](#)

#### Manuals and user guides

[MN040059\\_EN](#)

[MN040022\\_EN](#)

[MN040018\\_EN](#)

[MN040003\\_EN](#)

[MN040023\\_EN](#)

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

#### mCAD model

[DA-CD-dc1\\_fs1](#)

[DA-CS-dc1\\_fs1](#)

#### 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](#)