

Eaton 185788

Catalog Number: 185788

Eaton DC1 Variable frequency drive, 230 V AC, 1-phase, 4.3 A, 0.75 kW, IP20/NEMA 0, FS1 DC1-124D3NN-A20CE1



General specifications

Product Name	Catalog Number
Eaton DC1 Variable frequency drive	185788
EAN	Product Length/Depth
4015081812875	124 mm
Product Height	Product Width
184 mm	81 mm
Product Weight	Certifications
1.2 kg	IEC/EN61800-5
	CE
	UL
	RoHS, ISO 9001
	Specification for general requirements:
	IEC/EN 61800-2
	EAC
	UL report applies to both US and Canada
	UL 508C
	IEC/EN 61800-3
	UL File No.: E172143
	Certified by UL for use in Canada
	IEC/EN61800-3
	CSA-C22.2 No. 14
	Safety requirements: IEC/EN 61800-5-1
	UkrSEPRO
	RCM
	CUL
	UL Category Control No.: NMMS, NMMS7

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

PC connection

Internal DC link

IGBT inverter

7-digital display assembly

Control unit

Additional PCB protection

General

Cable length

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

Motor feeder

75 m, unscreened, maximum permissible, Motor feeder

50 m, screened, maximum permissible, Motor feeder

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

Motor feeder

Communication interface

OP-Bus (RS485), built in

Modbus RTU, built in

CANopen®, built in

SmartWire-DT, optional

Connection to SmartWire-DT

In conjunction with DX-NET-SWD3 SmartWire DT module

Yes

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

EtherNet/IP

Other bus systems

MODBUS

CAN

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

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

93.9 % (η)

Heat dissipation capacity P_{diss}

0 W

Input current I_{LN} at 150% overload

7.5 A

Leakage current at ground IPE - max

4.8 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

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 (U_2)

230 V AC, 3-phase

240 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

230 V AC, 1-phase

240 V AC, 1-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 %, I_H, 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

240 V

Apparent power

Apparent power at 230 V

1.71 kVA

Apparent power at 240 V

1.79 kVA

Motor rating

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

4.2 A

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

3.2 A

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

4.2 A

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

3.2 A

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

3.2 A

Assigned motor current I_M 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 % M_N, Standard - Main circuit

Max. 100 % of rated operational current I_e, 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

Equipment heat dissipation, current-dependent P_{vid}

45.75 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)

4.3 A

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

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

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

[Operating Single Phase Motors](#)

[I/O Configuration](#)

[Low Temperature Applications](#)

[PI controller](#)

[Set Point Setting](#)

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

[Dependency of the output current on switching frequency and ambient temperature](#)

[Fire Mode](#)

[DX-COM-STICK3_Connection](#)

[Conformal Coating](#)

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

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

[Update DX-COM-STICK3](#)

[Connecting drives to generator supplies](#)

[Starting, Stopping and Operation](#)

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

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

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-00004552.pdf](#)

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

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

[DA-DC-00003964.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.DC1-124D3NN-A20CE1](#)

Installation instructions

[IL04020009Z](#)

Installation videos

[Video PowerXL DA1](#)

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

Manuals and user guides

[MN040003_EN](#)

[MN040059_EN](#)

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

[MN040018_EN](#)

[MN040022_EN](#)

[MN040023_EN](#)

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](#)



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30 Pembroke Road
Dublin 4, Ireland
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