

Eaton 185727

Catalog Number: 185727

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 4.1 A, 1.5 kW, IP20/NEMA 0, Brake chopper, FS2 DC1-344D1NB-A20CE1



General specifications

Product Name

Eaton DC1 Variable frequency drive

Catalog Number

185727

EAN

4015081812264

Product Length/Depth

152 mm

Product Height

231 mm

Product Width

107 mm

Product Weight

1.2 kg

Certifications

Specification for general requirements:

IEC/EN 61800-2

UkrSEPRO

UL

Certified by UL for use in Canada

IEC/EN 61800-3

UL Category Control No.: NMMS,
NMMS7

CE

UL File No.: E172143

UL 508C

UL report applies to both US and
Canada

RCM

CSA-C22.2 No. 14

EAC

IEC/EN61800-5

RoHS, ISO 9001

Safety requirements: IEC/EN 61800-5-1

IEC/EN61800-3

CUL

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

7-digital display assembly

Internal DC link

Brake chopper

Breaking resistance

PC connection

Control unit

IGBT inverter

Additional PCB protection

Functions

4-quadrant operation possible

General

Cable length

100 m, screened, maximum permissible, Motor feeder

150 m, unscreened, maximum permissible, Motor feeder

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

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

Communication interface

SmartWire-DT, optional

OP-Bus (RS485), built in

Modbus RTU, built in

CANopen®, built in

Connection to SmartWire-DT

In conjunction with DX-NET-SWD3 SmartWire DT module

Yes

Degree of protection

IP20

NEMA Other

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

CAN

EtherNet/IP

MODBUS

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

94.9 % (η)

Heat dissipation capacity P_{diss}

0 W

Input current I_{LN} at 150% overload

5.6 A

Leakage current at ground IPE - max

12.6 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

380 V

Mains voltage - max

480 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)

400 V AC, 3-phase

480 V AC, 3-phase

Overload current I_L at 150% overload

6.15 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)

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

Rated operational power at 380/400 V, 50 Hz, 3-phase

1.5 kW

Rated operational voltage

400 V AC, 3-phase

480 V AC, 3-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

6 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

480 V

Motor rating

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

3.4 A

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

3.6 A

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

3.4 A

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

3.6 A

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

3.6 A

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

3.4 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

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 400 V

2.84 kVA

Apparent power at 480 V

3.41 kVA

Braking function

Braking resistance

250 Ω

Braking torque

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

Max. 100 % of rated operational current I_e with external braking resistor - 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

Max. 30 % MN, Standard - Main circuit

Switch-on threshold for the braking transistor

780 VDC

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}

76.5 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)

4.1 A

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

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.

Resources

Application notes

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

[Conformal Coating](#)

[DX-COM-STICK3_Connection](#)

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

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

[PI controller](#)

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

[Low Temperature Applications](#)

[I/O Configuration](#)

[Operating Single Phase Motors](#)

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

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

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

[Update DX-COM-STICK3](#)

[Fire Mode](#)

[Connecting drives to generator supplies](#)

[Set Point Setting](#)

[Starting, Stopping and Operation](#)

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-00004555.pdf](#)

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

[DA-DC-00003964.pdf](#)

[DA-DC-00004552.pdf](#)

Drawings

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.

[eaton-frequency-inverter-dimensions-026.eps](#)

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

[eaton-frequency-inverter-3d-drawing-006.eps](#)

eCAD model

[DA-CE-ETN.DC1-344D1NB-A20CE1](#)

Installation instructions

[IL04020009Z](#)

Installation videos

[Video PowerXL DA1](#)

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

Manuals and user guides

[MN040059_EN](#)

[MN040018_EN](#)

[MN040022_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-CS-dc1_fs2](#)

[DA-CD-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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