Specifications

Eaton 186088

Catalog Number: 186088

Eaton DC1 Variable frequency drive, 230 V AC, 1-phase, 4.3 A, 0.37 kW, IP20/NEMA 0, Radio interference suppression filter, FS1
DC1-S24D3FN-A20CE1



General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
186088

EAN
4015081815890

Product Length/Depth
124 mm

Product Height
184 mm

Product Width
81 mm

Product Weight
1.2 kg

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

Powering Business Worldwide

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

7-digital display assembly

PC connection

Control unit

Radio interference suppression filter

Internal DC link

IGBT inverter

Additional PCB protection

General

Cable length

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

50 m, screened, maximum permissible, Motor feeder

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

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

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

75 m, unscreened, maximum permissible, Motor feeder

`C1 ≤ 1 m, Radio interference level, maximum motor cable length`

Communication interface

OP-Bus (RS485), built in

SmartWire-DT, optional

Modbus RTU, built in

CANopen®, built in

Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD3 SmartWire DT module

Degree of protection

IP20

NEMA 0

Electromagnetic compatibility

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

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

CAN

MODBUS

Other bus systems

Radio interference class

C1: for conducted emissions only
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 % (η)

Heat dissipation capacity Pdiss

0 W

Input current ILN at 150% overload

7.5 A

Leakage current at ground IPE - max

2.49 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 220 - 240 V, 60 Hz, 150% overload

4.3 A

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

4.3 A

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

0.5 HP

Apparent power

Apparent power at 230 V

0.99 kVA

Apparent power at 240 V

1.03 kVA

Braking function

U/f control

Speed control with slip compensation

BLDC motors

PM motors

Sensorless vector control (SLV)

Synchronous reluctance motors

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

240 V AC, single-phase

230 V AC, single-phase

Overload current IL at 150% overload

6.45 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)

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 %, 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

Braking torque

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

Control circuit

Number of inputs (analog)

2

Number of inputs (digital)

4

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 Pvid

18.5 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

4.3 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.

System configuration type

AC supply systems with earthed center point

Voltage rating - max

240 V

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

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Low Temperature Applications

Operating Single Phase Motors

PI controller

Fire Mode

Set Point Setting

The OP System Bus - Parameterizing - Control

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

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

Operating Permanent Magnet and Brushless DC Motors

DX-COM-STICK3_Connection

I/O Configuration

Connecting drives to generator supplies

Starting, Stopping and Operation

Update DX-COM-STICK3

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-00004184.pdf

DA-DC-00004552.pdf

DA-DC-00004555.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-S24D3FN-A20CE1

Installation instructions

IL04020014Z

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

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

MN040058_EN

MN040028_EN

MN040003_EN

MN040018_EN

mCAD model

DA-CS-dc1_fs1

DA-CD-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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