Specifications

Eaton 185784

Catalog Number: 185784

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 39 A, 18.5 kW, IP20/NEMA 0, Brake chopper, FS4



General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
185784

EAN
4015081812837

Product Length/Depth
211 mm

Product Height
418.5 mm

Product Width
173 mm

Product Weight
8.4 kg

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

Powering Business Worldwide

Catalog Notes

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

Control unit

7-digital display assembly

Brake chopper

PC connection

Breaking resistance

IGBT inverter

Internal DC link

Additional PCB protection

Functions

4-quadrant operation possible

General

Cable length

100 m, screened, maximum permissible, Motor feeder

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

150 m, unscreened, maximum permissible, Motor feeder

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

Communication interface

SmartWire-DT, optional

OP-Bus (RS485), built in

CANopen®, built in

Modbus RTU, built in

Connection to SmartWire-DT

In conjunction with DX-NET-SWD3 SmartWire DT module

Yes

Degree of protection

IP20

NEMA Other

Frame size

FS4

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

Heat dissipation capacity Pdiss

0 W

Input current ILN at 150% overload

44.1 A

Leakage current at ground IPE - max

12.9 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

Sensorless vector control (SLV)

U/f control

BLDC motors

PM motors

Synchronous reluctance motors

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

480 V AC, 3-phase

400 V AC, 3-phase

Overload current IL at 150% overload

58.5 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)

39 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

18.5 kW

Rated operational voltage

480 V AC, 3-phase

400 V AC, 3-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

60 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 - 24 kHz adjustable (audible), fPWM, Power section, Main circuit

System configuration type

AC supply systems with earthed center point

Voltage rating - max

240 V

Motor rating

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

39 A

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

39 A

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

39 A

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

39 A

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

39 A

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

39 A

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

25 HP

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

25 HP

Assigned motor power at 460/480 V, 60 Hz

25 HP

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

25 HP

Apparent power

Apparent power at 400 V

15.6 kVA

Apparent power at 480 V

18.72 kVA

Braking function

Braking resistance

22 Ω

Braking torque

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

Switch-on threshold for the braking transistor

780 VDC

Control circuit

Number of inputs (analog)

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

Number of inputs (digital)

Design verification

Equipment heat dissipation, current-dependent Pvid

728 W

Heat dissipation capacity Pdiss

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))

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

39 A

Static heat dissipation, non-current-dependent Pvs

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 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

PI controller

Update DX-COM-STICK3

Connecting drives to generator supplies

Fire Mode

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Starting, Stopping and Operation

Operating Permanent Magnet and Brushless DC Motors

I/O Configuration

Low Temperature Applications

Operating Single Phase Motors

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

DX-COM-STICK3_Connection

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

Set Point Setting

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-00003964.pdf

DA-DC-00004555.pdf

Drawings

eaton-frequency-inverter-dimensions-011.eps

eaton-frequency-inverter-3d-drawing-019.eps

eCAD model

DA-CE-ETN.DC1-34039NB-A20CE1

Installation instructions

IL040024ZU

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

Manuals and user guides

MN040018_EN

MN040022_EN

MN040023_EN

MN040059_EN

MN040003_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_fs4_ip20

DA-CS-dc1_fs4_ip20

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

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

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