Specifications

Eaton 185778

Catalog Number: 185778

Eaton DC1 Variable frequency drive, 230 V AC, 3-phase, 30 A, 7.5 kW, IP20/NEMA 0, Brake chopper, FS4



General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
185778

EAN
4015081812776

Product Length/Depth
211 mm

Product Height
418.5 mm

Product Width
173 mm

Product Weight
8.4 kg

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

Powering Business Worldwide

Catalog Notes

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

Brake chopper

PC connection

IGBT inverter

7-digital display assembly

Internal DC link

Control unit

Breaking resistance

Additional PCB protection

Functions

4-quadrant operation possible

General

Cable length

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

100 m, screened, maximum permissible, Motor feeder

150 m, unscreened, maximum permissible, Motor feeder

200 m, screened, with motor choke, 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

FS4

Mounting position

Vertical

Product category

Variable frequency drives

Protection

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

Protocol

Other bus systems

MODBUS

CAN

EtherNet/IP

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

33.3 A

Leakage current at ground IPE - max

6.9 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

Sensorless vector control (SLV)

Speed control with slip compensation

U/f control

BLDC motors

PM motors

Synchronous reluctance motors

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

240 V AC, 3-phase

230 V AC, 3-phase

Overload current IL at 150% overload

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)

30 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, 3-phase

240 V AC, 3-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

45 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

30 A

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

30 A

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

30 A

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

30 A

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

30 A

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

30 A

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

10 HP

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

10 HP

Assigned motor power at 460/480 V, 60 Hz

10 HP

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

10 HP

Apparent power

Apparent power at 230 V

6.9 kVA

Apparent power at 240 V

7.2 kVA

Braking function

Braking resistance

15 Ω

Braking torque

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

Switch-on threshold for the braking transistor

390 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

304 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)

30 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

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

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Operating Single Phase Motors

Operating Permanent Magnet and Brushless DC Motors

Low Temperature Applications

PI controller

I/O Configuration

Fire Mode

Starting, Stopping and Operation

Update DX-COM-STICK3

Connecting drives to generator supplies

Set Point Setting

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

DX-COM-STICK3_Connection

Conformal Coating

Dependency of the output current on switching frequency and ambient temperature

The OP System Bus - Parameterizing - Control

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-00004552.pdf

DA-DC-00004184.pdf

DA-DC-00003964.pdf

Drawings

eaton-frequency-inverter-dimensions-011.eps

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

eCAD model

DA-CE-ETN.DC1-32030NB-A20CE1

Installation instructions

IL040024ZU

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

Manuals and user guides

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

MN040003_EN

MN040018_EN

MN040023_EN

MN040059_EN

MN040022_EN

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

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