Specifications

Eaton 185730



Catalog Number: 185730

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 5.8 A, 2.2 kW, IP20/NEMA 0, Brake chopper, FS2 DC1-345D8NB-A20CE1

General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
185730

EAN
4015081812295

Product Length/Depth
152 mm

Product Height
231 mm

Product Width
107 mm

Product Weight
2 kg

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

Powering Business Worldwide

Catalog Notes

Features & Functions

Features

Parameterization: drivesConnect
Parameterization: drivesConnect mobile (App)
Parameterization: Fieldbus
Parameterization: Keypad

Fitted with:

IGBT inverter
Brake chopper
Breaking resistance
Control unit
PC connection
7-digital display assembly
Internal DC link
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

Modbus RTU, built in
SmartWire-DT, optional
OP-Bus (RS485), 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

MODBUS
EtherNet/IP
Other bus systems
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

95.4 % (η)

Heat dissipation capacity Pdiss

0 W

Input current ILN at 150% overload

7.5 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 (U2)

480 V AC, 3-phase

400 V AC, 3-phase

Overload current IL at 150% overload

8.7 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)

5.8 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

2.2 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

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

System configuration type

AC supply systems with earthed center point

Voltage rating - max

480 V

Motor rating

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

4.8 A

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

5 A

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

4.8 A

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

5 A

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

5 A

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

4.8 A

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

3 HP

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

3 HP

Assigned motor power at 460/480 V, 60 Hz

3 HP

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

3 HP

Apparent power

Apparent power at 400 V

4.02 kVA

Apparent power at 480 V

4.82 kVA

Braking function

Braking resistance

200 Ω

Braking torque

Max. 30 % MN, Standard - Main circuit
Max. 100 % of rated operational current Ie, variable, DC - Main circuit
Max. 100 % of rated operational current Ie with external braking

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

resistor - 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 Pvid

101.2 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

5.8 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.

Resources

Application notes

Conformal Coating

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

Dependency of the output current on switching frequency and ambient temperature

The OP System Bus - Parameterizing - Control

DX-COM-STICK3_Connection

Operating Permanent Magnet and Brushless DC Motors

Low Temperature Applications

I/O Configuration

PI controller

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

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

Operating Single Phase Motors

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-00004552.pdf

DA-DC-00003964.pdf

DA-DC-00004184.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.DC1-345D8NB-A20CE1

Installation instructions

IL04020009Z

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

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-CD-dc1_fs2

DA-CS-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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