Specifications

Eaton 185739



Catalog Number: 185739

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 18 A, 7.5 kW, IP20/NEMA 0, Brake chopper, FS3 DC1-34018NB-A20CE1

General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
185739

EAN
4015081812387

Product Length/Depth
175 mm

Product Height
273 mm

Product Width
129 mm

Product Weight
6 kg

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

Powering Business Worldwide

Catalog Notes

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

Brake chopper

Internal DC link

Control unit

7-digital display assembly

Breaking resistance

IGBT inverter

PC connection

Additional PCB protection

Functions

4-quadrant operation possible

General

Cable length

100 m, screened, maximum permissible, Motor feeder

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

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

150 m, unscreened, maximum permissible, Motor feeder

Communication interface

SmartWire-DT, optional

CANopen®, built in

OP-Bus (RS485), built in

Modbus RTU, built in

Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD3 SmartWire DT module

Degree of protection

IP20

NEMA Other

Frame size

FS3

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

Other bus systems

MODBUS

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

97 % (η)

Heat dissipation capacity Pdiss

0 W

Input current ILN at 150% overload

21.2 A

Leakage current at ground IPE - max

12.7 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

380 V

Mains voltage - max

480 V

Operating mode

Sensorless vector control (SLV)

U/f control

Speed control with slip compensation

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

27 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)

18 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

7.5 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

25 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

480 V

Motor rating

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

14 A

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

15.2 A

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

14 A

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

15.2 A

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

15.2 A

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

14 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 400 V

12.47 kVA

Apparent power at 480 V

14.96 kVA

Braking function

Braking resistance

80 Ω

Braking torque

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

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

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

300 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

18 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

I/O Configuration

Set Point Setting

Operating Permanent Magnet and Brushless DC Motors

Low Temperature Applications

DX-COM-STICK3_Connection

Starting, Stopping and Operation

Fire Mode

Operating Single Phase Motors

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

The OP System Bus - Parameterizing - Control

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

Connecting drives to generator supplies

Update DX-COM-STICK3

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

PI controller

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

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-00004184.pdf

DA-DC-00003964.pdf

DA-DC-00004552.pdf

DA-DC-00004555.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-020.eps

eaton-frequency-inverter-3d-drawing-009.eps

eCAD model

DA-CE-ETN.DC1-34018NB-A20CE1

Installation instructions

IL04020009Z

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

MN040022_EN

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

MN040059_EN

MN040018_EN

MN040023_EN

MN040003_EN

mCAD model

DA-CS-dc1_fs3

DA-CD-dc1_fs3

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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