Product specifications

Eaton 185800

Catalog Number: 185800

Eaton DC1 Variable frequency drive, 230 V AC, 1-phase, 15.3 A, 4 kW, IP20/NEMA 0, Brake chopper, FS3 DC1-12015NB-A20CE1

General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
185800

Model Code
DC1-12015NB-A20CE1

EAN
4015081812998

Product Length/Depth
175 mm

Product Height
273 mm

Product Width
129 mm

Product Weight
6 kg

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

Catalog Notes
Environmental class: 3C2, 3S2 Overload cycle for 60 s every 600 s

Model Code
DC1-12015NB-A20CE1

Features & Functions

Features

Parameterization: drivesConnect

Parameterization: drivesConnect mobile (App)

Parameterization: Fieldbus

Parameterization: Keypad

Fitted with:

7-digital display assembly

Control unit

Brake chopper

PC connection

Breaking resistance

IGBT inverter

Internal DC link

Additional PCB protection

Functions

4-quadrant operation possible

General

Cable length

150 m, unscreened, maximum permissible, Motor feeder

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

100 m, screened, maximum permissible, Motor feeder

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

Communication interface

CANopen®, built in

Modbus RTU, built in

OP-Bus (RS485), built in

SmartWire-DT, optional

Connection to SmartWire-DT

In conjunction with DX-NET-SWD3 SmartWire DT module

Yes

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

MODBUS

CAN

Other bus systems

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

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

96 % (η)

Input current ILN at 150% overload

29.2 A

Leakage current at ground IPE - max

4.7 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

U/f control

Speed control with slip compensation

Sensorless vector control (SLV)

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

22.9 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)

15.3 A at 150% overload

At a switching frequency of 8 kHz and an ambient air

temperature of +50 °C

Rated operational voltage

240 V AC, 1-phase

230 V AC, 1-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

50 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

15.2 A

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

14.8 A

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

15.2 A

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

14.8 A

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

14.8 A

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

15.2 A

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

5 HP

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

5 HP

Assigned motor power at 460/480 V, 60 Hz

5 HP

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

5 HP

Apparent power

Apparent power at 230 V

5.98 kVA

Apparent power at 240 V

6.24 kVA

Braking function

Braking resistance

25 Ω

Braking torque

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

Max. 100 % of rated operational current Ie with external braking resistor - Main circuit

Max. 30 % MN, Standard - Main circuit

Switch-on threshold for the braking transistor

390 VDC

Control circuit

Design verification

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

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))

Equipment heat dissipation, current-dependent Pvid

160 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

15 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.

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

Low Temperature Applications

Set Point Setting

Operating Single Phase Motors

Fire Mode

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

How does the internal motor protection work?

Update DX-COM-STICK3

Start, Stopp und Betrieb

I/O Configuration

Conformal Coating

Connecting drives to generator supplies

Operating Permanent Magnet and Brushless DC Motors

Starting, Stopping and Operation

Electromagnetic compatibility (EMC)

The OP System Bus - Parameterizing - Control

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

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

Brochures

Explore a World of Continous Efficiency PowerXL DC1 and DA1 variable frequency drives

DA-SW-drivesConnect USB Driver DX-COM-PCKIT

DA-SW-DC1 ModbusRTU V1_00 Library

DA-SW-USB Driver DX-COM-STICK3-KIT

DA-SW-DC1 CANopen ConfigFile 203

DA-SW-DC1 CANopen CODESYSV1_2 Library

DA-SW-drivesConnect - Installationshilfe

DA-SW-Codesys 2 SWD for DC1 and DE1

DA-SW-USB Driver PC Cable DX-CBL-PC-1M5

DA-SW-drivesConnect - installation help

DA-SW-DC1 CANopen CODESYSV2 Library

DA-SW-Driver DX-CBL-PC-3M0

DA-SW-DC1 CANopen ConfigFile 202

DA-SW-Codesys 3 SWD for DC1 and DE1

DA-SW-drivesConnect

Catalogues

Product Range Catalog Drives Engineering

Drives - Product range catalog

Certification reports

DA-DC-00004184.pdf

DA-DC-00003964.pdf

DA-DC-00004552.pdf

DA-DC-00004555.pdf

Drawings

eaton-frequency-inverter-dimensions-020.eps

8230DIM-77

8230DRW-337

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

eCAD model

DA-CE-ETN.DC1-12015NB-A20CE1

Installation instructions

IL04020009Z

Installation videos

Video PowerXL DA1

mCAD model

DA-CS-dc1_fs3

DA-CD-dc1_fs3

User guides

MN040019_EN

MN040018_EN

MN040059_EN

MZ040046_EN

MN040003_EN

MN040022_EN

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