Specifications

Eaton 186085

Catalog Number: 186085

Eaton DC1 Variable frequency drive, 230 V AC, 1-phase, 10.5 A, 1.1 kW, IP20/NEMA 0, Brake chopper, FS2 DC1-S2011NB-A20CE1



General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
186085

EAN
4015081815869

Product Length/Depth
152 mm

Product Height
231 mm

Product Width
107 mm

Product Weight
1.2 kg

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

Powering Business Worldwide

Features & Functions

Features

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

Fitted with:

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

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 0

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

EtherNet/IP
MODBUS
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

96 % (η)

Heat dissipation capacity Pdiss

0 W

Input current ILN at 150% overload

19.2 A

Leakage current at ground IPE - max

< 1 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

Speed control with slip compensation

U/f control

BLDC motors

PM motors

Sensorless vector control (SLV)

Synchronous reluctance motors

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

230 V AC, single-phase

240 V AC, single-phase

Overload current IL at 150% overload

15.75 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)

10.5 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, 1-phase
240 V AC, 1-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 - 32 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 220 - 240 V, 60 Hz, 150% overload

9.6 A

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

10.5 A

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

1.5 HP

Apparent power

Apparent power at 230 V

2.42 kVA

Apparent power at 240 V

2.52 kVA

Braking function

Braking resistance

100 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

Switch-on threshold for the braking transistor

390 VDC

Control circuit

Number of inputs (analog)

2

Number of inputs (digital)

4

Number of outputs (analog)

1

Number of outputs (digital)

1

Number of relay outputs

Design verification

Equipment heat dissipation, current-dependent Pvid

44 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

10.5 A

Static heat dissipation, non-current-dependent Pvs

1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))	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

I/O Configuration

Fire Mode

Connecting drives to generator supplies

Update DX-COM-STICK3

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

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

The OP System Bus - Parameterizing - Control

Operating Single Phase Motors

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Operating Permanent Magnet and Brushless DC Motors

Set Point Setting

Starting, Stopping and Operation

DX-COM-STICK3_Connection

Low Temperature Applications

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

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-00003964.pdf

DA-DC-00004555.pdf

DA-DC-00004184.pdf

DA-DC-00004552.pdf

Drawings

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-S2011NB-A20CE1

Installation instructions

IL04020014Z

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

MN040058_EN

MN040018_EN

MN040028_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_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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