Specifications

Eaton 199431

Catalog Number: 199431

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 4.1 A, 1.5 kW, IP66/NEMA 4X, Radio interference suppression filter, 7-digital display assembly, Additional PCB protection, UV resistant, FS1



General specifications

Product Name	**Catalog Number**
Eaton DC1 Variable frequency drive	199431
EAN	**Product Length/Depth**
4015081978205	162 mm
Product Height	**Product Width**
232 mm	161 mm
Product Weight	**Certifications**
2.5 kg	UL IEC/EN 61800-2 RoHS, ISO 9001 UL Listed RCM UkrSEPRO CUL IEC/EN 61800-3 IEC/EN 61800-5-1 Certified by UL for use in Canada CE marking EAC UL 508C UL File No.: E172143 UL report applies to both US and Canada IEC/EN61800-5 CE UL Category Control No.: NMMS, NMMS7 CSA-C22.2 No. 14

Powering Business Worldwide

Features & Functions

Features

Parameterization: Keypad

Parameterization: drivesConnect mobile (App)

Parameterization: drivesConnect

Parameterization: Fieldbus

Fitted with:

Radio interference suppression filter

Internal DC link

7-digital display assembly

Control unit

PC connection

IGBT inverter

Additional PCB protection

UV resistance

General

Cable length

C3 ≤ 25 m, maximum motor cable length

75 m, unscreened, maximum permissible, Motor feeder

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

C2 ≤ 5 m, maximum motor cable length

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

50 m, screened, maximum permissible, Motor feeder

Communication interface

CANopen®, built in

SmartWire-DT, optional

OP-Bus (RS485), built in

Modbus RTU, built in

Connection to SmartWire-DT

No

Degree of protection

IP66

NEMA 4X

Electromagnetic compatibility

1st and 2nd environments (according to EN 61800-3)

Frame size

FS1

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

Other bus systems

MODBUS

CAN

Radio interference class

C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.

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

-20 °C

Ambient operating temperature - max

40 °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

5.6 A

Leakage current at ground IPE - max

13 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

380 V

Mains voltage - max

480 V

Operating mode

BLDC motors

Speed control with slip compensation

U/f control

Sensorless vector control (SLV)

Synchronous reluctance motors

Motor rating

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

3.4 A

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

3.6 A

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

3.4 A

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

3.6 A

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

3.6 A

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

3.4 A

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

2 HP

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

2 HP

Assigned motor power at 460/480 V, 60 Hz

2 HP

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

PM 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

6.15 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)

4.1 A at 150% overload (at an operating frequency of 6 kHz and an ambient air temperature of +40 °C)

Rated operational power at 380/400 V, 50 Hz, 3-phase

1.5 kW

Rated operational voltage

400 V AC, 3-phase

480 V AC, 3-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

6 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring

Starting current - max

175 % IH

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

2 HP

Apparent power

Apparent power at 400 V

2.84 kVA

Apparent power at 480 V

3.41 kVA

Braking function

Braking torque

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

Max. 30 % MN, Standard - Main circuit

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

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

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

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.

Voltage rating - max

480 V

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

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Low Temperature Applications

Operating Single Phase Motors

I/O Configuration

Operating Permanent Magnet and Brushless DC Motors

Fire Mode

PI controller

DX-COM-STICK3_Connection

Conformal Coating

The OP System Bus - Parameterizing - Control

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

Dependency of the output current on switching frequency and ambient temperature

Set Point Setting

Starting, Stopping and Operation

Update DX-COM-STICK3

Connecting drives to generator supplies

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-dc1-dimensions-002.eps

Installation instructions

eaton-powerxl-dc1-ip66-instruction-leaflet-il040059zu.pdf

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

MN040003_EN

MN040018_EN

MN040059_EN

MN040022_EN

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

mCAD model

e3_s1_ip66_ohne_bedienelementen.stp

e3_s1_ip66_ohne_bedienelementen.dwg

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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