Specifications

Eaton 199416

Catalog Number: 199416

Eaton DC1 Variable frequency drive, 230 V AC, 3-phase, 7 A, 1.5 kW, IP66/NEMA 4X, Radio interference suppression filter, 7-digital display assembly, Local controls, Additional PCB protection, UV resistant, FS1



General specifications

Product Name
Eaton DC1 Variable frequency drive

Catalog Number
199416

EAN
4015081978052

Product Length/Depth
162 mm

Product Height
232 mm

Product Width
161 mm

Product Weight
2.5 kg

Certifications
CUL
RCM
UL
EAC
UL File No.: E172143
Certified by UL for use in Canada
CE
UkrSEPRO
IEC/EN61800-5
UL 508C
CE marking
IEC/EN 61800-3
UL report applies to both US and Canada
IEC/EN 61800-2
CSA-C22.2 No. 14
UL Listed

Powering Business Worldwide

IEC/EN 61800-5-1
RoHS, ISO 9001
U
NMMS7

Features & Functions

Features

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

Fitted with:

Local controls
Internal DC link
PC connection
Radio interference suppression filter
Control unit
7-digital display assembly
IGBT inverter
UV resistance
Additional PCB protection

Catalog Notes

Environmental class: 3C3, 3S3
Overload cycle for 60 s every 600 s
For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz

General

Cable length

75 m, unscreened, maximum permissible, Motor feeder
150 m, unscreened, with motor choke, maximum permissible, Motor feeder
50 m, screened, maximum permissible, Motor feeder
100 m, screened, with motor choke, maximum permissible, Motor feeder

Communication interface

CANopen®, built in
OP-Bus (RS485), built in
SmartWire-DT, optional
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

Climatic environmental conditions

Altitude

Max. 4000 m
Above 1000 m with 1 % derating per 100 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

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

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)

0 W

Input current ILN at 150% overload

9.5 A

Leakage current at ground IPE - max

7.5 mA

Mains switch-on frequency

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

Sensorless vector control (SLV)
BLDC motors
U/f control
Synchronous reluctance motors
PM motors
Speed control with slip compensation

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

230 V AC, 3-phase
240 V AC, 3-phase

Overload current IL at 150% overload

10.5 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)

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

Rated operational voltage

240 V AC, 3-phase
230 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

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 110/120 V, 60 Hz, 150% overload

6.8 A

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

6.3 A

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

6.8 A

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

6.3 A

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

6.3 A

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

6.8 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

2 HP

Apparent power

Apparent power at 230 V

2.79 kVA

Apparent power at 240 V

2.91 kVA

Braking function

Braking torque

Max. 30 % MN, Standard - Main circuit

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

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

Operating Single Phase Motors

I/O Configuration

PI controller

Operating Permanent Magnet and Brushless DC Motors

Low Temperature Applications

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

The OP System Bus - Parameterizing - Control

Conformal Coating

DX-COM-STICK3_Connection

Dependency of the output current on switching frequency and ambient temperature

Update DX-COM-STICK3

Fire Mode

Set Point Setting

Connecting drives to generator supplies

Starting, Stopping and Operation

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

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-00004184.pdf

DA-DC-00003964.pdf

DA-DC-00004555.pdf

DA-DC-00004552.pdf

Drawings

eaton-frequency-inverter-dc1-dimensions.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

MN040018_EN

MN040022_EN

MN040059_EN

MN040003_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_mit_bedienelementen.stp

e3_s1_ip66_mit_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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