Specifications

# Eaton 199445

## Catalog Number: 199445

Eaton DC1 Variable frequency drive, 400 V AC, 3-phase, 30 A, 15 kW, IP66/NEMA 4X, Radio interference suppression filter, Brake chopper, 7-digital display assembly, Additional PCB protection, UV resistant, FS4



## General specifications

**Product Name**
Eaton DC1 Variable frequency drive

**Catalog Number**
199445

**EAN**
4015081978342

**Product Length/Depth**
275 mm

**Product Height**
360 mm

**Product Width**
240 mm

**Product Weight**
9.5 kg

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

Powering Business Worldwide

Canada
CE
U
CUL

## Features & Functions

### Features

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

### Fitted with:

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

### Functions

4-quadrant operation possible

### 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

100 m, screened, maximum permissible cable length
C3 ≤ 25 m, maximum motor cable length
150 m, unscreened, maximum permissible cable length
200 m, screened, with motor choke, maximum permissible cable length
C2 ≤ 5 m, maximum motor cable length
300 m, unscreened, with motor choke, maximum permissible, Motor feeder

### Communication interface

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

### Connection to SmartWire-DT

No

### Degree of protection

IP66
NEMA 4X

## 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

### Electromagnetic compatibility

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

### Frame size

FS4

### 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

Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.

### Suitable for

Branch circuits, (UL/CSA)

### Efficiency

97 % ( η)

### Heat dissipation capacity Pdiss

0 W

### Input current ILN at 150% overload

34.2 A

### Leakage current at ground IPE - max

12.9 mA

### Mains switch-on frequency

Maximum of one time every 30 seconds

### Mains voltage - min

380 V

### Mains voltage - max

480 V

### Operating mode

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

### Output frequency - min

0 Hz

### Output frequency - max

500 Hz

### Output voltage (U2)

400 V AC, 3-phase
480 V AC, 3-phase

### Overload current IL at 150% overload

45 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)

30 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

15 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

45 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

30 A

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

30 A

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

30 A

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

30 A

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

30 A

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

30 A

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

20 HP

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

20 HP

Assigned motor power at 460/480 V, 60 Hz

20 HP

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

20 HP

## Apparent power

Apparent power at 400 V

12 kVA

Apparent power at 480 V

14.4 kVA

## Braking function

Braking resistance

30 Ω

Braking torque

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

Switch-on threshold for the braking transistor

780 VDC

## Control circuit

Number of inputs (analog)

2 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)

Number of inputs (digital)

## Design verification

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

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))

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

Starting, Stopping and Operation

Operating Permanent Magnet and Brushless DC Motors

Low Temperature Applications

PI controller

I/O Configuration

Operating Single Phase Motors

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

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

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

Conformal Coating

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

The OP System Bus - Parameterizing - Control

Set Point Setting

Update DX-COM-STICK3

Fire Mode

Connecting drives to generator supplies

### 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-00004552.pdf

DA-DC-00003964.pdf

DA-DC-00004555.pdf

### Drawings

eaton-frequency-inverter-dc1-dimensions-008.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

MN040022_EN

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

MN040059_EN

## mCAD model

e3_s4_ip66_ohne_bedienelementen.stp

e3_s4_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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