Specifications

Eaton 197499

Catalog Number: 197499

Eaton DA1 Frequency inverter, 500 V AC, 3-phase, 28 A, 18.5 kW, IP20/NEMA 0, Additional PCB protection, FS4



General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197499

EAN
4015081940745

Product Length/Depth
241 mm

Product Height
419 mm

Product Width
173 mm

Product Weight
9.2 kg

Certifications
CUL
IEC/EN 61800-2
UL 508C
UL report applies to both US and Canada
IEC/EN61800-3
IEC/EN 61800-3
EAC
IEC/EN61800-5
UkrSEPRO
UL Category Control No.: NMMS, NMMS7
Certified by UL for use in Canada
RoHS, ISO 9001
Safety: EN 61800-5-1: 2003
CE
RCM
UL
UL File No.: E172143

Catalog Notes
The brake resistors are assigned based on the maximum rated power of the

General

Cable length

200 m, unscreened, with motor choke, maximum permissible cable length

200 m, screened, with motor choke, maximum permissible cable length

100 m, screened, maximum permissible cable length

150 m, unscreened, maximum permissible cable length

Communication interface

OP-Bus (RS485)

PROFIBUS, optional

Modbus RTU

PROFINET, optional

EtherCAT, optional

DeviceNet, optional

Modbus-TCP, optional

Ethernet IP, optional

CANopen®

SmartWire-DT, optional

Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD1 SmartWire DT module

Degree of protection

IP20

NEMA Other

Fitted with:

OLED display

IGBT inverter

Brake chopper

PC connection

Internal DC link

Breaking resistance

Additional PCB protection

Control unit

Frame size

FS4

Functions

4-quadrant operation possible

Mounting position

Vertical

Product Category

Variable frequency drives

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Max. 4000 m

Max. 1000 m

Above 1000 m with 1 % derating per 100 m

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

98.1 % (η)

Heat dissipation at current/speed

160 W at 25% current and 50% speed

167 W at 25% current and 0% speed

194 W at 50% current and 0% speed

195 W at 50% current and 50% speed

240 W at 50% current and 90% speed

306 W at 100% current and 0% speed

331 W at 100% current and 50% speed

399 W at 100% current and 90% speed

Input current ILN at 150% overload

34 A

Leakage current at ground IPE - max

28 mA

Mains switch-on frequency

Protection

Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)

Protocol

TCP/IP
PROFIBUS
EtherNet/IP
DeviceNet
CAN
PROFINET IO
MODBUS
Other bus systems

Safety function/level

STO (Safe Torque Off, SIL2, PLc Cat 2)

Suitable for

Branch circuits, (UL/CSA)

Maximum of one time every 30 seconds

Mains voltage - min

500 V

Mains voltage - max

600 V

Operating mode

Optional: Vector control with feedback (CLV)
U/f control
Sensorless vector control (SLV)
Speed control with slip compensation

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

500 V AC, 3-phase
600 V AC, 3-phase

Overload current IL at 150% overload

42 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) at 150% overload

28 A

Rated operational power at 500 V, 50 Hz, 3-phase

18.5 kW

Rated operational power at 525 V, 50 Hz, 3-phase

18.5 kW

Rated operational voltage

500 V AC, 3-phase
600 V AC, 3-phase

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection

LPJ fuse used together with J60060-3 fuse base, Power wiring, Assigned switching and protective elements

NH fuse used together with TB00-D fuse base, Power wiring, Assigned switching and protective elements

Short-circuit protection rating

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

Starting current - max

200 %, IH, max. starting current (High Overload), for 4 seconds every 40 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

600 VAC

Motor rating

Assigned motor current IM at 500 V, 50 Hz, 150% overload

28 A

Assigned motor current IM at 525 V, 50 Hz, 150% overload

27.6 A

Assigned motor current IM at 550 - 600 V, 60 Hz, 150% overload

27 A

Assigned motor power at 575/600 V, 60 Hz, 3-phase

25 HP

Apparent power

Apparent power at 600 V

29.1 kVA

Braking function

Braking resistance

33 Ω

Braking torque

Adjustable to 100 % (DC)

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

975 VDC

Control circuit

Number of inputs (analog)

2

Number of inputs (digital)

5

Number of outputs (analog)

2

Number of outputs (digital)

2

Number of relay outputs

Design verification

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.

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

Rated control voltage (Uc)

24 V DC (external, max. 100 mA)

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.

10.6 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

Vector Control of Induction Motors

The OP System Bus - Parameterizing - Control

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

Conformal Coating

Motor data Motor Protection V/f curves for induction motors

Hoist applications

How does the internal motor protection work?

Equal load sharing with the droop function

Electromagnetic compatibility (EMC)

Setpoint Setting

Dual Rating What exactly does that mean?

Closed Loop Vector Control

Update DX-COM-STICK3

Connecting drives to generator supplies

I/O Configuration

Master slave operation

Operating Permanent Magnet and Brushless DC Motors

Access to Parameter Level 2 and 3 Parameter Lock RESET

PID controller

Starting, Stopping and Operation

Use of multiple ramps

Brochures

eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf

DA-SW-DA1 Profinet ConfigFile

DA-SW-DA1 Profinet GSDML V2.25 Config File

DA-SW-drivesConnect

DA-SW-DA1 Profinet Library

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00005021.pdf

DA-DC-00004184.pdf

DA-DC-00003964.pdf

DA-DC-00005020.pdf

Drawings

eaton-frequency-inverter-dimensions-012.eps

eCAD model

DA-CE-ETN.DA1-35028NB-B20C

Installation instructions

eaton-da1-variable-frequency-drive-il040049zu.pdf

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

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

MN04020005Z_EN

MN040018_EN

MN04020006Z_EN

MN040003_EN

eaton-da1-variable-frequency-drive-mn040063-en-us.pdf

mCAD model

DA-CD-da1_fs4_ip20

DA-CS-da1_fs4_ip20

Multimedia

System solutions based on EtherCAT

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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