Specifications

Eaton 197500

Catalog Number: 197500

Eaton DA1 Frequency inverter, 500 V AC, 3-phase, 34 A, 22 kW, IP20/NEMA 0, Additional PCB protection, FS4



General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197500

EAN
4015081940752

Product Length/Depth
241 mm

Product Height
419 mm

Product Width
173 mm

Product Weight
9.2 kg

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

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

General

Cable length

100 m, screened, maximum permissible cable length
200 m, screened, with motor choke, maximum permissible cable length
200 m, unscreened, with motor choke, maximum permissible cable length
150 m, unscreened, maximum permissible cable length

Communication interface

EtherCAT, optional
Modbus-TCP, optional
PROFINET, optional
SmartWire-DT, optional
Modbus RTU
Ethernet IP, optional
CANopen®
OP-Bus (RS485)
DeviceNet, optional
PROFIBUS, optional

Connection to SmartWire-DT

Yes
In conjunction with DX-NET-SWD1 SmartWire DT module

Degree of protection

IP20
NEMA Other

Fitted with:

Breaking resistance
Internal DC link
Control unit
Additional PCB protection
OLED display
PC connection
IGBT inverter
Brake chopper

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

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

173 W at 25% current and 0% speed
192 W at 25% current and 50% speed
223 W at 50% current and 0% speed
249 W at 50% current and 50% speed
278 W at 50% current and 90% speed
360 W at 100% current and 0% speed
417 W at 100% current and 50% speed
499 W at 100% current and 90% speed

Input current ILN at 150% overload

41.2 A

Leakage current at ground IPE - max

34 mA

Mains switch-on frequency

Protection

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

Protocol

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

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)
Sensorless vector control (SLV)
Speed control with slip compensation
U/f control

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

51 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

34 A

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

22 kW

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

22 kW

Rated operational voltage

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

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection

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

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

Short-circuit protection rating

63 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

34 A

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

31.4 A

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

32 A

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

30 HP

Apparent power

Apparent power at 600 V

35.33 kVA

Braking function

Braking resistance

22 Ω

Braking torque

Adjustable to 100 % (DC)

Max. 30 % MN, Standard - Main circuit

Max. 100 % of rated operational current Ie with external braking resistor - 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

Dependency of the output current on switching frequency and ambient temperature

DX-COM-STICK3_Connection

Motor data Motor Protection V/f curves for induction motors

Conformal Coating

The OP System Bus - Parameterizing - Control

Electromagnetic compatibility (EMC)

Equal load sharing with the droop function

How does the internal motor protection work?

Hoist applications

Vector Control of Induction Motors

I/O Configuration

Operating Permanent Magnet and Brushless DC Motors

Master slave operation

Closed Loop Vector Control

Connecting drives to generator supplies

Update DX-COM-STICK3

PID controller

Starting, Stopping and Operation

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

Setpoint Setting

Dual Rating What exactly does that mean?

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.DA1-35034NB-B20C

Installation instructions

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

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

Manuals and user guides

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

MN040018_EN

MN04020005Z_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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