Specifications

Eaton 197488

Catalog Number: 197488

Eaton DA1 Frequency inverter, 230 V AC, 3-phase, 30 A, 7.5 kW, IP20/NEMA 0, Radio interference suppression filter, Brake chopper, Additional PCB protection, OLED display, FS4



General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197488

EAN
4015081940639

Product Length/Depth
241 mm

Product Height
419 mm

Product Width
173 mm

Product Weight
9.2 kg

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

Catalog Notes
The brake resistors are assigned based

General

Cable length

100 m, screened, maximum permissible cable length

150 m, unscreened, maximum permissible cable length

C3 ≤ 25 m, maximum motor cable length

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

C2 ≤ 5 m, maximum motor cable length

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

Communication interface

EtherCAT, optional

SmartWire-DT, optional

Modbus-TCP, optional

Modbus RTU

PROFIBUS, optional

PROFINET, optional

OP-Bus (RS485)

CANopen®

DeviceNet, optional

Ethernet IP, optional

Connection to SmartWire-DT

Yes

In conjunction with DX-NET-SWD1 SmartWire DT module

Degree of protection

IP20

NEMA Other

Electromagnetic compatibility

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

Fitted with:

PC connection

Control unit

Radio interference suppression filter

IGBT inverter

OLED display

Additional PCB protection

Internal DC link

Breaking resistance

Brake chopper

Frame size

FS4

Functions

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Max. 1000 m

Above 1000 m with 1 % derating per 100 m

Max. 4000 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

96.1 % (η)

Heat dissipation at current/speed

127 W at 25% current and 0% speed

130 W at 25% current and 50% speed

160 W at 50% current and 0% speed

171 W at 50% current and 50% speed

214 W at 50% current and 90% speed

284 W at 100% current and 0% speed

337 W at 100% current and 50% speed

410 W at 100% current and 90% speed

Input current ILN at 150% overload

36.4 A

Leakage current at ground IPE - max

1.42 mA

Mains switch-on frequency

4-quadrant operation possible

Mounting position

Vertical

Product Category

Variable frequency drives

Protection

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

Protocol

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

Safety function/level

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

Suitable for

Branch circuits, (UL/CSA)

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.

Maximum of one time every 30 seconds

Mains voltage - min

200 V

Mains voltage - max

240 V

Operating mode

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

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

240 V AC, 3-phase
230 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) at 150% overload

30 A

Rated operational power at 220/230 V, 50 Hz, 1-phase

7.5 kW

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

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

240 VAC

Motor rating

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

28 A

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

30 A

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

10 HP

Apparent power

Apparent power at 230 V

11.95 kVA

Apparent power at 240 V

12.47 kVA

Braking function

Braking resistance

22 Ω

Braking torque

Max. 30 % MN, Standard - Main circuit
Max. 100 % of rated operational current Ie with external braking resistor - Main circuit
Adjustable to 100 % (DC)

Switch-on threshold for the braking transistor

390 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

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)

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.

Resources

Application notes

Closed Loop Vector Control

Equal load sharing with the droop function

Setpoint Setting

PID controller

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.

10.6 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

Use of multiple ramps

Access to Parameter Level 2 and 3 Parameter Lock RESET

Dual Rating What exactly does that mean?

Starting, Stopping and Operation

DX-COM-STICK3_Connection

I/O Configuration

Vector Control of Induction Motors

Motor data Motor Protection V/f curves for induction motors

The OP System Bus - Parameterizing - Control

Conformal Coating

Dependency of the output current on switching frequency and ambient temperature

Hoist applications

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Operating Permanent Magnet and Brushless DC Motors

Master slave operation

Connecting drives to generator supplies

Update DX-COM-STICK3

Brochures

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

DA-SW-DA1 Profinet ConfigFile

DA-SW-DA1 Profinet Library

DA-SW-drivesConnect

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

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00005021.pdf

DA-DC-00005020.pdf

DA-DC-00003964.pdf

DA-DC-00004184.pdf

Drawings

eaton-frequency-inverter-dimensions-012.eps

eCAD model

DA-CE-ETN.DA1-32030FB-B20C

Installation instructions

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

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.

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

Manuals and user guides

MN040003_EN

MN040018_EN

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

MN04020006Z_EN

MN04020005Z_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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