Specifications

Eaton 197497

Catalog Number: 197497

Eaton DA1 Frequency inverter, 400 V AC, 3-phase, 72 A, 37 kW, IP20/NEMA 0, Radio interference suppression filter, Additional PCB protection, DC link choke, FS5



General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197497

EAN
4015081940721

Product Length/Depth
261 mm

Product Height
485 mm

Product Width
234 mm

Product Weight
18.2 kg

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

Catalog Notes
The brake resistors are assigned based

General

Cable length

100 m, screened, maximum permissible cable length

C3 ≤ 25 m, maximum motor cable length

C2 ≤ 5 m, maximum motor 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

Modbus RTU

DeviceNet, optional

Ethernet IP, optional

PROFIBUS, optional

EtherCAT, optional

CANopen®

PROFINET, optional

Modbus-TCP, optional

SmartWire-DT, optional

OP-Bus (RS485)

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:

Radio interference suppression filter

Additional PCB protection

DC link choke

Internal DC link

Control unit

OLED display

Brake chopper

IGBT inverter

PC connection

Breaking resistance

Frame size

FS5

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Above 1000 m with 1 % derating per 100 m

Max. 1000 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

97.2 % (η)

Heat dissipation at current/speed

1050 W at 100% current and 90% speed

310 W at 25% current and 0% speed

310 W at 25% current and 50% speed

370 W at 50% current and 0% speed

460 W at 50% current and 50% speed

530 W at 50% current and 90% speed

720 W at 100% current and 0% speed

930 W at 100% current and 50% speed

Input current ILN at 150% overload

76.4 A

Leakage current at ground IPE - max

0.49 mA

Mains switch-on frequency

Functions

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
DeviceNet
TCP/IP
EtherNet/IP
MODBUS
PROFINET IO
PROFIBUS

Safety function/level

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

Suitable for

Branch circuits, (UL/CSA)

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

Maximum of one time every 30 seconds

Mains voltage - min

380 V

Mains voltage - max

480 V

Operating mode

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

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

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

Overload current IL at 150% overload

105 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

72 A

Rated operational power at 380/400 V, 50 Hz, 3-phase

37 kW

Rated operational voltage

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

Resolution

0.1 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

100 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

480 VAC

Motor rating

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

72 A

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

65 A

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

50 HP

Apparent power

Apparent power at 400 V

49.88 kVA

Apparent power at 480 V

59.86 kVA

Braking function

Braking resistance

12 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

780 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

Connecting drives to generator supplies

Update DX-COM-STICK3

Operating Permanent Magnet and Brushless DC Motors

Motor data Motor Protection V/f curves for induction motors

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

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

The OP System Bus - Parameterizing - Control

Dual Rating What exactly does that mean?

Master slave operation

I/O Configuration

Closed Loop Vector Control

Vector Control of Induction Motors

Hoist applications

Equal load sharing with the droop function

Setpoint Setting

Starting, Stopping and Operation

DX-COM-STICK3_Connection

PID controller

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Brochures

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

DA-SW-DA1 Profinet ConfigFile

DA-SW-drivesConnect

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

DA-SW-DA1 Profinet Library

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-013.eps

eCAD model

DA-CE-ETN.DA1-34072FB-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

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

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_fs5_ip20

DA-CS-da1_fs5_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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