Specifications

Eaton 197494

Catalog Number: 197494

Eaton DA1 Frequency inverter, 400 V AC, 3-phase, 39 A, 18.5 kW, IP20/NEMA 0, Radio interference suppression filter, Additional PCB protection, FS4



General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
197494

EAN
4015081940691

Product Length/Depth
241 mm

Product Height
419 mm

Product Width
173 mm

Product Weight
9.2 kg

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

Catalog Notes
The brake resistors are assigned based

General

Cable length

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

C2 ≤ 5 m, maximum motor 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

Communication interface

EtherCAT, optional

Ethernet IP, optional

Modbus RTU

PROFIBUS, optional

PROFINET, optional

SmartWire-DT, optional

OP-Bus (RS485)

CANopen®

Modbus-TCP, optional

DeviceNet, 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:

Breaking resistance

OLED display

Control unit

IGBT inverter

Radio interference suppression filter

PC connection

Internal DC link

Brake chopper

Additional PCB protection

Frame size

FS4

Functions

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Max. 1000 m

Max. 4000 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

97.5 % (η)

Heat dissipation at current/speed

181 W at 25% current and 0% speed

202 W at 25% current and 50% speed

230 W at 50% current and 0% speed

258 W at 50% current and 50% speed

301 W at 50% current and 90% speed

386 W at 100% current and 0% speed

461 W at 100% current and 50% speed

536 W at 100% current and 90% speed

Input current ILN at 150% overload

47 A

Leakage current at ground IPE - max

2.47 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

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

380 V

Mains voltage - max

480 V

Operating mode

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

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

58.5 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

39 A

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

18.5 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

60 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

39 A

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

34 A

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

25 HP

Apparent power

Apparent power at 400 V

27.02 kVA

Apparent power at 480 V

32.42 kVA

Braking function

Braking resistance

22 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

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

Closed Loop Vector Control

Equal load sharing with the droop function

Hoist applications

Setpoint Setting

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

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

PID controller

Starting, Stopping and Operation

DX-COM-STICK3_Connection

Master slave operation

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

Dual Rating What exactly does that mean?

Operating Permanent Magnet and Brushless DC Motors

Update DX-COM-STICK3

Connecting drives to generator supplies

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.DA1-34039FB-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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