Specifications

Eaton EP-400050

Catalog Number: EP-400050

Eaton DA1 Variable frequency drive, 400 V AC, 3-phase, 30 A, 15 kW, 20HP, IP66/NEMA 4X, Radio interference suppression filter, OLED display., Local controls, UV resistant

General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
EP-400050

Model Code
DA1-34030FB-B6SO

EAN
4015082950323

Product Length/Depth
262.5 mm

Product Height
360 mm

Product Width
240 mm

Product Weight
9.5 kg

Certifications
CE
Certified by UL for use in Canada
CSA-C22.2 No. 14
CUL
DNV
EAC
IEC/EN 61800-3
IEC/EN61800-3
IEC/EN61800-5
RCM
RoHS, ISO 9001
Safety: EN 61800-5-1: 2003
Specification for general requirements:
IEC/EN 61800-2
UkrSEPRO
UL
UL 508C
UL Category Control No.: NMMS,
NMMS7

Catalog Notes
The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different duty cycles) are available upon request.

Powering Business Worldwide

General

Cable length

100 m, screened, maximum permissible, Motor feeder
150 m, unscreened, maximum permissible, Motor feeder
200 m, screened, with motor choke, maximum permissible, Motor feeder
300 m, unscreened, with motor choke, maximum permissible, Motor feeder
C2 ≤ 5 m, Radio interference level, maximum motor cable length
C3 ≤ 25 m, Radio interference level, maximum motor cable length

Communication interface

CANopen®, built in
EtherCAT, optional
Ethernet IP, optional
Modbus RTU, built in
Modbus-TCP, optional
OP-Bus (RS485), built in
PROFIBUS, optional
PROFINET, optional
BACnet/IP, optional

Connection to SmartWire-DT

No

Degree of protection

IP66
NEMA 4X

Electromagnetic compatibility

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

Fitted with:

Additional PCB protection
Brake chopper
Breaking resistance
Control unit
IGBT inverter
Internal DC link
OLED display
PC connection
Radio interference suppression filter
Local controls

Frame size

FS4

Climatic environmental conditions

Altitude

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

Ambient operating temperature - min

-10 °C

Ambient operating temperature - max

40 °C

Ambient operating temperature at 150% overload - min

-10 °C

Ambient operating temperature at 150% overload - max

40 °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

278 W at 100% current and 0% speed
323 W at 100% current and 50% speed
359 W at 100% current and 90% speed
165 W at 50% current and 0% speed
194 W at 50% current and 50% speed
216 W at 50% current and 90% speed
165 W at 25% current and 50% speed
136 W at 25% current and 0% speed

Input current ILN at 150% overload

34.2 A

Leakage current at ground IPE - max

2.47 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
EtherNet/IP
MODBUS
Other bus systems
PROFIBUS
PROFINET IO
TCP/IP
BACnet/IP

Safety function/level

STO (Safe Torque Off, SIL3, PLe Cat 3)

Suitable for

Branch circuits, (UL/CSA)

Radio interference class

C1: for conducted emissions only
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.

Maximum of one time every 30 seconds

Mains voltage - min

342 V

Mains voltage - max

528 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)

400 V AC, 3-phase
480 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 power at 380/400 V, 50 Hz, 3-phase

15 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

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

480 VAC

Motor rating

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

29.3 A

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

27 A

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

20 HP

Apparent power

Apparent power at 400 V

20.78 kVA

Apparent power at 480 V

24.94 kVA

Braking function

Braking resistance

22 Ω

Braking torque

Max. 30 % MN, Standard - Main circuit
Max. 100 % of rated operational current Ie, variable, DC - 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

Equipment heat dissipation, current-dependent Pvid

375 W

Heat dissipation capacity Pdiss

0 W

Resources

3D models

eaton-EP-400031-3d-model.stp

eaton-EP-400031-drawing.dwg

Application notes

Heat dissipation per pole, current-dependent Pvid

0 W

Static heat dissipation, non-current-dependent Pvs

0 W

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.

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

Hoist applications

Motor data Motor Protection V/f curves for induction motors

Operating Permanent Magnet and Brushless DC Motors

Use of multiple ramps

PID controller

Access to Parameter Level 2 and 3 Parameter Lock RESET

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Master slave operation

Closed Loop Vector Control

Starting, Stopping and Operation

Start, Stopp und Betrieb

Equal load sharing with the droop function

Setpoint Setting

DX-COM-STICK3_Connection

The OP System Bus - Parameterizing - Control

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

Dual Rating What exactly does that mean?

Vector Control of Induction Motors

Update DX-COM-STICK3

Connecting drives to generator supplies

I/O Configuration

Brochures

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

Catalogues

Drives - Product range catalog

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00005013.pdf

DA-DC-00005022.pdf

Installation instructions

eaton-da1-variable-frequency-drive-il040061zu.pdf

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

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.

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

mCAD model

eaton-cadenas-path-drives-p2_ip66_size4_switched.3db

eaton-cadenas-side_view-p2_ip66_size4_switched_side.pra

eaton-cadenas-front_view-p2_ip66_size4_switched_front.pra

Multimedia

Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments?

System solutions based on EtherCAT

Software, firmware, and applications

eaton-powerxl-dx-comstick3-ble-drivers.zip

eaton-powerxl-da1-profinet-gsdml-v226.zip

eaton-powerxl-da1-ethercat-esi-for-omron-v311.zip

eaton-powerxl-da1-firmware-release-note-mz040041en-us.pdf

eaton-powerxl-da1-canopen-codesys-v3-library.zip

eaton-powerxl-da1-devicenet-eds-v100.zip

eaton-powerxl-pcsoftware-drivesconnect-v1501.zip

eaton-powerxl-da1-ethercat-esi-v310.zip

eaton-powerxl-da1-ethernetip-eds-v150.zip

eaton-powerxl-da1-swd-codesys-v3-library.zip

eaton-powerxl-da1-canopen-eds-v250.zip

eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip

eaton-powerxl-dx-cbl-pc-3m0-usb-driver.zip

eaton-powerxl-da1-profibus-gsd-v216.zip

eaton-powerxl-da1-profinet-tia-v12-library.zip

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