Specifications

Eaton EP-400062

Catalog Number: EP-400062

Eaton DA1 Variable frequency drive, 500 V AC, 3-phase, 6.5 A, 4 kW, IP66/NEMA 4X, OLED display, Local controls, UV resistant

Photo is representative

General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
EP-400062

Model Code
DA1-356D5NB-B6SO

EAN
4015082950446

Product Length/Depth
182 mm

Product Height
257 mm

Product Width
188 mm

Product Weight
3.5 kg

Certifications
CE
Certified by UL for use in Canada
CSA-C22.2 No. 14
CUL
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
UL File No.: E172143
UL report applies to both US and

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

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

Fitted with:

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

Frame size

FS2

Functions

4-quadrant operation possible

Mounting position

Vertical

Product Category

Variable frequency drives

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 % (η)

Heat dissipation at current/speed

48 W at 100% current and 0% speed
49 W at 100% current and 50% speed
51 W at 100% current and 90% speed
48 W at 50% current and 0% speed
49 W at 50% current and 50% speed
51 W at 50% current and 90% speed
49 W at 25% current and 50% speed
48 W at 25% current and 0% speed

Input current ILN at 150% overload

8.6 A

Leakage current at ground IPE - max

6.5 mA

Mains switch-on frequency

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)

Maximum of one time every 30 seconds

Mains voltage - min

450 V

Mains voltage - max

660 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

3.15 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 500 V, 50 Hz, 3-phase

0.75 kW

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

4 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 rating

6 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

Apparent power

Apparent power at 600 V

6.75 kVA

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)

Motor rating

Assigned motor current IM at 500 V, 50 Hz, 150% overload

6.5 A

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

6.5 A

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

6.1 A

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

5 HP

Braking function

Braking resistance

150 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

975 VDC

Design verification

Equipment heat dissipation, current-dependent Pvid

120 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Static heat dissipation, non-current-dependent Pvs

0 W

Heat dissipation details

Operation (with 150 % overload)

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

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.

Resources

3D models

eaton-EP-400016-3d-model.stp

eaton-EP-400016-drawing.dwg

Application notes

Master slave operation

Start, Stopp und Betrieb

Closed Loop Vector Control

I/O Configuration

Operating Permanent Magnet and Brushless DC Motors

Starting, Stopping and Operation

Vector Control of Induction Motors

PID controller

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

Equal load sharing with the droop function

Hoist applications

Motor data Motor Protection V/f curves for induction motors

Dual Rating What exactly does that mean?

The OP System Bus - Parameterizing - Control

Conformal Coating

Dependency of the output current on switching frequency and ambient temperature

Connecting drives to generator supplies

Update DX-COM-STICK3

Setpoint Setting

DX-COM-STICK3_Connection

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

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-00005022.pdf

DA-DC-00005013.pdf

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.

Installation instructions

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

Installation videos

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Video PowerXL DA1

Manuals and user guides

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

mCAD model

eaton-cadenas-front_view-p2_ip66_size2_switched_front.pra

eaton-cadenas-side_view-p2_ip66_size2_switched_side.pra

eaton-cadenas-path-drives-p2_ip66_size2_switched.3db

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

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

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

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

eaton-powerxl-pcsoftware-drivesconnect-v1501.zip

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

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

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

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

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

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

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

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

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

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

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