

Eaton EP-400058

Catalog Number: EP-400058

Eaton DA1 Variable frequency drive, 500 V AC, 3-phase, 3.1 A, 1.5 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-400058

Model Code DA1-353D1NB-B6SO
EAN 4015082950408

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

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.

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

93 W at 100% current and 0% speed
102 W at 100% current and 50% speed
114 W at 100% current and 90% speed
82 W at 50% current and 0% speed
82 W at 50% current and 50% speed
84 W at 50% current and 90% speed
71 W at 25% current and 50% speed
71 W at 25% current and 0% speed

Input current ILN at 150% overload

4.2 A

Leakage current at ground IPE - max

3.1 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 I_L at 150% overload

9.75 A

Rated control supply voltage

10 V DC (U_s, max. 10 mA)

Rated frequency - min

48 Hz

Rated frequency - max

62 Hz

Rated operational power at 500 V, 50 Hz, 3-phase

4 kW

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

1.5 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

15 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring

Starting current - max

200 %, I_H, 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

3.22 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

2.9 A

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

2.8 A

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

2.7 A

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

2 HP

Braking function

Braking resistance

300 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

45 W

Heat dissipation capacity Pdis

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](#)

[Connecting drives to generator supplies](#)

[Update DX-COM-STICK3](#)

[Start, Stopp und Betrieb](#)

[I/O Configuration](#)

[Starting, Stopping and Operation](#)

[Motor data Motor Protection V/f curves for induction motors](#)

[Hoist applications](#)

[Dual Rating What exactly does that mean?](#)

[Vector Control of Induction Motors](#)

[DX-COM-STICK3_Connection](#)

[Conformal Coating](#)

[The OP System Bus - Parameterizing - Control](#)

[Dependency of the output current on switching frequency and ambient temperature](#)

[Setpoint Setting](#)

[Equal load sharing with the droop function](#)

[Use of multiple ramps](#)

[PID controller](#)

[Access to Parameter Level 2 and 3 Parameter Lock RESET](#)

[Electromagnetic compatibility \(EMC\)](#)

[How does the internal motor protection work?](#)

[Closed Loop Vector Control](#)

[Operating Permanent Magnet and Brushless DC Motors](#)

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-side_view-p2_ip66_size2_switched_side.pra](#)

[eaton-cadenas-path-drives-p2_ip66_size2_switched.3db](#)

[eaton-cadenas-front_view-p2_ip66_size2_switched_front.pra](#)

Multimedia

[System solutions based on EtherCAT](#)

[Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments?](#)

Software, firmware, and applications

[eaton-powerxl-da1-canopen-eds-v250.zip](#)

[eaton-powerxl-da1-swd-codesys-v3-library.zip](#)

[eaton-powerxl-da1-canopen-codesys-v3-library.zip](#)

[eaton-powerxl-da1-devicenet-eds-v100.zip](#)

[eaton-powerxl-da1-profinet-tia-v12-library.zip](#)

[eaton-powerxl-da1-profibus-gsd-v216.zip](#)

[eaton-powerxl-da1-ethercat-esi-for-omron-v311.zip](#)

[eaton-powerxl-dx-comstick3-ble-drivers.zip](#)

[eaton-powerxl-dx-cbl-pc-3m0-usb-driver.zip](#)

[eaton-powerxl-pcsoftware-drivesconnect-v1501.zip](#)

[eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip](#)

[eaton-powerxl-da1-profinet-gsdml-v226.zip](#)

[eaton-powerxl-da1-ethernetip-eds-v150.zip](#)

[eaton-powerxl-da1-firmware-release-note-mz040041en-us.pdf](#)

[eaton-powerxl-da1-ethercat-esi-v310.zip](#)



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