Specifications

Eaton EP-400065

Catalog Number: EP-400065

Eaton DA1 Variable frequency drive, 500 V AC, 3-phase, 12 A, 7.5 kW, IP66/NEMA 4X, OLED display, UV resistant

Photo is representative

General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
EP-400065

Model Code
DA1-35012NB-B66O

EAN
4015082950477

Product Length/Depth
235 mm

Product Height
310 mm

Product Width
210.5 mm

Product Weight
6.6 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

Frame size

FS2

Functions

4-quadrant operation possible

Mounting position

Vertical

Product Category

Variable frequency drives

Protection

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

15.1 A

Leakage current at ground IPE - max

12 mA

Mains switch-on frequency

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

9.75 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

4 kW

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

7.5 kW

Rated operational voltage

500 V AC, 3-phase
600 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 %, 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

12.47 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

12 A

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

11.6 A

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

11 A

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

10 HP

Braking function

Braking resistance

80 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

225 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-400027-3d-model.stp

eaton-EP-400027-drawing.dwg

Application notes

Dual Rating What exactly does that mean?

Setpoint Setting

Equal load sharing with the droop function

Hoist applications

Electromagnetic compatibility (EMC)

How does the internal motor protection work?

Start, Stopp und Betrieb

Vector Control of Induction Motors

I/O Configuration

Operating Permanent Magnet and Brushless DC Motors

Starting, Stopping and Operation

PID controller

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

Master slave operation

Closed Loop Vector Control

DX-COM-STICK3_Connection

Conformal Coating

The OP System Bus - Parameterizing - Control

Dependency of the output current on switching frequency and ambient temperature

Connecting drives to generator supplies

Update DX-COM-STICK3

Motor data Motor Protection V/f curves for induction motors

Brochures

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

Catalogues

Product Range Catalog Drives Engineering

Drives - Product range catalog

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-path-drives-p2_ip66_size3_non_switched.3db

eaton-cadenas-side_view-p2_ip66_size3_non_switched_side.pra

eaton-cadenas-front_view-p2_ip66_size3_non_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-da1-ethercat-esi-v310.zip

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

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

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

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

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

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

eaton-powerxl-pcsoftware-drivesconnect-v1501.zip

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

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

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

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

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

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

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

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

Eaton.com/socialmedia