Specifications

Eaton 169054

Catalog Number: 169054

Eaton DA1 Variable frequency drive, 400 V AC, 3-phase, 9.5 A, 4 kW, IP20/NEMA 0, Radio interference suppression filter, 7-digital display assembly

General specifications

Product Name
Eaton DA1 Variable frequency drive

Catalog Number
169054

EAN
4015081655458

Product Length/Depth
186 mm

Product Height
231 mm

Product Width
107 mm

Product Weight
1.8 kg

Certifications
RoHS, ISO 9001
Certified by UL for use in Canada
UL Category Control No.: NMMS, NMMS7
CE
CUL
UL File No.: E172143
UL report applies to both US and Canada
IEC/EN61800-5
EAC
UkrSEPRO
IEC/EN61800-3
Specification for general requirements:
IEC/EN 61800-2
UL 508C
CSA-C22.2 No. 14
RCM
IEC/EN 61800-3
Safety: EN 61800-5-1: 2003
UL

Powering Business Worldwide

General

Cable length

200 m, screened, with motor choke, maximum permissible, Motor feeder

100 m, screened, maximum permissible, Motor feeder

C2 ≤ 5 m, Radio interference level, maximum motor cable length

150 m, unscreened, maximum permissible, Motor feeder

300 m, unscreened, with motor choke, maximum permissible, Motor feeder

C3 ≤ 25 m, Radio interference level, maximum motor cable length

Communication interface

EtherCAT, optional

PROFINET, optional

DeviceNet, optional

Modbus-TCP, optional

OP-Bus (RS485), built in

CANopen®, built in

PROFIBUS, optional

SmartWire-DT, optional

Modbus RTU, built in

Ethernet IP, 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:

Additional PCB protection

Radio interference suppression filter

PC connection

Control unit

Brake chopper

Breaking resistance

7-digital display assembly

IGBT inverter

Internal DC link

Frame size

FS2

Climatic environmental conditions

Ambient operating temperature - min

-10 °C

Altitude

Max. 4000 m

Above 1000 m with 1 % derating per 100 m

Max. 1000 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

96.6 % (η)

Heat dissipation at current/speed

111 W at 100% current and 50% speed

134 W at 100% current and 90% speed

56 W at 25% current and 0% speed

56 W at 25% current and 50% speed

59 W at 50% current and 0% speed

70 W at 50% current and 50% speed

85 W at 50% current and 90% speed

87 W at 100% current and 0% speed

Input current ILN at 150% overload

11.5 A

Leakage current at ground IPE - max

4.65 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

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

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

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

Output frequency - min

0 Hz

Output frequency - max

500 Hz

Output voltage (U2)

480 V AC, 3-phase
400 V AC, 3-phase

Overload current IL at 150% overload

14.25 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

9.5 A

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

4 kW

Rated operational voltage

400 V AC, 3-phase
480 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 - 32 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

8.5 A

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

7.6 A

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

5 HP

Apparent power

Apparent power at 400 V

6.58 kVA

Apparent power at 480 V

7.9 kVA

Braking function

Braking resistance

100 Ω

Braking torque

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

136 W

Heat dissipation capacity Pdiss

0 W

Resources

Application notes

Connecting drives to generator supplies

Update DX-COM-STICK3

Dual Rating What exactly does that mean?

Equal load sharing with the droop function

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

9.5 A

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

Setpoint Setting

Hoist applications

Motor data Motor Protection V/f curves for induction motors

Operating Permanent Magnet and Brushless DC Motors

Master slave operation

I/O Configuration

Starting, Stopping and Operation

PID controller

How does the internal motor protection work?

Electromagnetic compatibility (EMC)

Access to Parameter Level 2 and 3 Parameter Lock RESET

Use of multiple ramps

DX-COM-STICK3_Connection

Dependency of the output current on switching frequency and ambient temperature

Conformal Coating

The OP System Bus - Parameterizing - Control

Closed Loop Vector Control

Vector Control of Induction Motors

Brochures

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

DA-SW-DA1 Profinet GSDML V2.25 Config File

DA-SW-DA1 Profinet Library

DA-SW-drivesConnect

DA-SW-DA1 Profinet ConfigFile

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-027.eps

eaton-frequency-inverter-3d-drawing-012.eps

eCAD model

DA-CE-ETN.DA1-349D5FB-A20C

Installation instructions

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

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-il04020010z.pdf

Installation videos

Video PowerXL DA1

PowerXL Variable Frequency Drives DC1 and DA1 - EN

Manuals and user guides

MN040003_EN

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

MN04020005Z_EN

MN040018_EN

MN04020006Z_EN

eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf

mCAD model

DA-CS-da1_fs2_ip20

DA-CD-da1_fs2_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