Specifications

Eaton 3-5010-005A

Catalog Number: 3-5010-005A

Eaton DM1 Variable frequency drive, 400 V AC, 3-phase, 1.5 A, 0.55 kW, IP20/NEMA0, 7-digital display assembly, Setpoint potentiometer, Brake chopper, FS1



General specifications

Product Name
Eaton DM1 Variable frequency drive

Catalog Number
3-5010-005A

EAN
4015081980888

Product Length/Depth
180 mm

Product Height
152 mm

Product Width
72 mm

Product Weight
1.2 kg

Certifications
UL report applies to both US and Canada
IEC/EN61800-5
UL Listed
UL 508C
UL File No.: E134360
IEC/EN 61800-5-1
CE
IEC/EN 61800-2
IEC/EN 61800-3
IEC/EN61800-3
Certified by UL for use in Canada
UL Category Control No.: NMMS, NMMS7
CSA-C22.2 No. 274-17
RoHS, ISO 9001
CUL
UkrSEPRO
C-Tick
EAC
UL

Powering Business Worldwide

General

Air volume capacity

26 m³/h

Communication interface

DeviceNet, optional
Ethernet IP, built in
CANopen®, optional
Modbus TCP, built in
BACnet MS/TP, built in
BACnet TCP
PROFIBUS, optional
SmartWire-DT, optional
Modbus RTU, built in

Connection to SmartWire-DT

In conjunction with DXG-NET-SWD SmartWire DT module
Yes

Degree of protection

IP20
NEMA Other

Electromagnetic compatibility

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

Environmental class

3C2, 3S2 (Air quality)

Features

Temperature-controlled fan
Parameterization: Power Xpert inControl
Parameterization: Fieldbus
Parameterization: Keypad

Fitted with:

Setpoint potentiometer
IGBT inverter
Brake chopper
Internal DC link
7-digital display assembly
Breaking resistance
Control unit
PC connection

Frame size

FS1

Mounting position

Vertical

Climatic environmental conditions

Altitude

Max. 2000 m for Corner Grounded TN Systems
Max. 3000 m
Max. 1000 m
Above 1000 m with 1 % derating per 100 m

Ambient operating temperature - min

-10 °C

Ambient operating temperature - max

50 °C

Ambient storage temperature - min

-40 °C

Ambient storage temperature - max

70 °C

Climatic proofing

< 95 average relative humidity (RH), no condensation, no corrosion

Main circuit

Current limitation

0.1 - 2 x IH (CT), motor, main circuit

Heat dissipation at current/speed

13 W at 100% current and 50% speed
20 W at 50% current and 50% speed
22 W at 100% current and 0% speed
23 W at 50% current and 90% speed
24 W at 25% current and 0% speed
27 W at 50% current and 0% speed
28 W at 25% current and 50% speed
33 W at 100% current and 90% speed

Input current ILN at 110% overload

2.6 A

Input current ILN at 150% overload

1.8 A

Mains current distortion

40 %

Mains switch-on frequency

Maximum of one time every 60 seconds

Number of slots

1 (expansion)

Overvoltage category

III

Pollution degree

2

Product Category

Variable frequency drives

Protection

Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)

Radio interference class

C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.
Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments
C1: with external filter, for conducted emissions only

Safety function/level

STO (Safe Torque Off, SIL2, PLc Cat 2)

Shock resistance

0.75 mm (peak) at 10 - 57 Hz, max. 1 g at 57 - 150 Hz, according to EN 61800-5-1, EN 60068-2-6: 10 - 150 Hz

Suitable for

Branch circuits, (UL/CSA)

Mains voltage - min

380 V

Mains voltage - max

480 V

Operating mode

PM motors
Sensorless vector control (SLV)
U/f control
Torque regulation
Speed control with slip compensation

Output frequency - min

0 Hz

Output frequency - max

400 Hz

Output voltage (U2)

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

Overload current IL at 110% overload

2.42 A

Overload current IL at 150% overload

2.25 A

Rated conditional short-circuit current (Iq)

100 kA

Rated control supply voltage

10 V DC (Us, max. 10 mA)

Rated frequency - min

45 Hz

Rated frequency - max

66 Hz

Rated operational current (Ie) at 110% overload

2.2 A

Rated operational current (Ie) at 150% overload

1.5 A

Rated operational power at 380/400 V, 50 Hz, 110% overload

0.75 kW

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

0.55 kW

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

0.75 kW

Rated operational power at 500 V, 50 Hz, 3-phase, 110% overload

1.1 kW

Rated operational voltage

400 V AC, 3-phase

480 V AC, 3-phase

500 V AC, 3-phase

Resolution

0.01 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

4 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 2 seconds every 20 seconds, Power section

Supply frequency

50/60 Hz

Switching frequency

4 kHz, 1 - 16 kHz adjustable, fPWM, Power section, Main circuit

System configuration type

TN-S, TN-C, TN-C-S, TT, IT

Voltage rating - max

500 V

Motor rating

Assigned motor current IM at 230 V, 50 Hz, 150% overload

1.4 A

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

1.1 A

Assigned motor power at 460/480 V, 60 Hz

0.5 HP

Assigned motor power at 460/480 V, 60 Hz, 110% overload

1 HP

Braking function

Braking resistance

105 Ω

Braking torque

Adjustable to 150 %, 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

800 VDC

Control circuit

Number of inputs (analog)

1

Number of inputs (digital)

4

Number of outputs (analog)

1

Number of relay outputs

2 (parameterizable, 1 changeover contact and 1 N/O, 3 A (240 V AC) / 3 A (24 V DC))

Rated control voltage (Uc)

24 V DC (external, max. 100 mA options incl.)

Design verification

Resources

Equipment heat dissipation, current-dependent Pvid

43 W

Rated operational current for specified heat dissipation (In)

2.2 A

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.

10.5 Protection against electric shock

Does not apply, since the entire switchgear needs to be evaluated.

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.

Application notes

Dual Rating What exactly does that mean?

Electromagnetic compatibility (EMC)

Connecting drives to generator supplies

Brochures

eaton-powerxl-dm1-variable-frequency-drives-brochure-br040016en-en-us.pdf

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00004864.pdf

DA-DC-00004643.pdf

Installation instructions

DM1 IL PUB 53-675 TBG Change Request 12-24-21 Final (300 DPI).pdf

Installation videos

PowerXL Variable Frequency Drive DM1

Manuals and user guides

MN040049EN

MN040060EN

mCAD model

fs1-89-1309.stp

fs1_89_1309.dwg

Multimedia

PowerXL DM1 Variable Frequency Drive - Setup via WebUI

PowerXL DM1 Variable Frequency Drive - Setup via Software

PowerXL DM1 Variable Frequency Drive - PowerXpert inControl with Bluetooth

PowerXL DM1 Variable Frequency Drive - Establishing a Modbus TCP connection with software Power Xper

PowerXL DM1 Variable Frequency Drive - Configuration with keypad

Product notifications

eaton-drives-ecodesign-directive-mz040046en-en.pdf

Sales notes

eaton-powerxl-dm1-variable-frequency-drives-flyer-fl040006en-en-us.pdf

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.

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.

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