Specifications

Eaton 3-5020-004A

Catalog Number: 3-5020-004A

Eaton DM1 Variable frequency drive, 230 V AC, 3-phase, 17.5 A, 4 kW, IP20/NEMA0, Brake chopper, FS2



General specifications

Product Name
Eaton DM1 Variable frequency drive

Catalog Number
3-5020-004A

EAN
4015081980178

Product Length/Depth
180 mm

Product Height
220 mm

Product Width
109 mm

Product Weight
2.6 kg

Certifications
Certified by UL for use in Canada
CE marking
UL File No.: E134360
CE
RoHS, ISO 9001
C-Tick
UL
UL 508C
UL Listed
IEC/EN61800-5
CSA-C22.2 No. 274-13
UL report applies to both US and Canada
IEC/EN61800-3
UkrSEPRO
IEC/EN 61800-5-1
CSA-C22.2 No. 274-17
CUL
IEC/EN 61800-2
UL Category Control No.: NMMS, NMMS7
IEC/EN 61800-3

Powering Business Worldwide

General

Air volume capacity

42 m³/h

Communication interface

SmartWire-DT, optional
CANopen®, optional
Modbus RTU, built in
PROFIBUS, optional
DeviceNet, optional

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

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

Fitted with:

IGBT inverter
Internal DC link
Brake chopper
Breaking resistance
PC connection

Frame size

FS2

Mounting position

Vertical

Number of slots

1 (expansion)

Overvoltage category

III

Pollution degree

Climatic environmental conditions

Altitude

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

117 W at 50% current and 50% speed
132.6 W at 50% current and 90% speed
149.7 W at 100% current and 0% speed
203.2 W at 50% current and 0% speed
231.6 W at 100% current and 90% speed
77 W at 25% current and 0% speed
92.7 W at 25% current and 50% speed
96.4 W at 100% current and 50% speed

Input current ILN at 110% overload

29.1 A

Input current ILN at 150% overload

20.1 A

Mains current distortion

40 %

Mains switch-on frequency

Maximum of one time every 60 seconds

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.
C1: with external filter, for conducted emissions only
Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments

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

200 V

Mains voltage - max

240 V

Operating mode

U/f control

Output frequency - min

0 Hz

Output frequency - max

400 Hz

Output voltage (U2)

230 V AC, 3-phase
240 V AC, 3-phase

Overload current IL at 110% overload

27.5 A

Overload current IL at 150% overload

26.25 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

25 A

Rated operational current (Ie) at 150% overload

17.5 A

Rated operational power at 220/230 V, 50 Hz, 1-phase

4 kW

Rated operational power at 220/230 V, 50 Hz, 3-phase, 110% overload

5.5 kW

Rated operational voltage

240 V AC, 3-phase
230 V AC, 3-phase

Resolution

0.01 Hz (Frequency resolution, setpoint value)

Short-circuit protection rating

32 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

240 V

Motor rating

Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload

15.2 A

Assigned motor current IM at 230 V, 50 Hz, 110% overload

19.6 A

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

14.8 A

Assigned motor power at 230/240 V, 60 Hz, 1-phase

5 HP

Assigned motor power at 230/240 V, 60 Hz, 3-phase, 110 % overload

7.5 HP

Braking function

Braking resistance

16 Ω

Braking torque

Adjustable to 150 %, DC - Main circuit

Max. 100 % of rated operational current Ie with external braking resistor - Main circuit

Max. 30 % MN, Standard - Main circuit

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

Equipment heat dissipation, current-dependent Pvid

242.7 W

Rated operational current for specified heat dissipation (In)

25 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.

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

Resources

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

eaton-dm1-variable-frequency-drives-catalog-ca040002en-en-us.pdf

Declarations of conformity

DA-DC-00004863.pdf

DA-DC-00004644.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

fs2-89-1327.stp

fs2_89_1327.dwg

Multimedia

PowerXL DM1 Variable Frequency Drive - Setup via Software

PowerXL DM1 Variable Frequency Drive - Setup via WebUI

PowerXL DM1 Variable Frequency Drive - Configuration with keypad

PowerXL DM1 Variable Frequency Drive - PowerXpert inControl with Bluetooth

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

Product notifications

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

Sales notes

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

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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