Specifications

Eaton 9702-0202

Catalog Number: 9702-0202

Eaton DG1 Variable frequency drive, 400 V AC, 3-phase, 4.3 A, 1.5 kW, IP20/NEMA0, Brake chopper



General specifications

Product Name
Eaton DG1 variable frequency drive

Catalog Number
9702-0202

EAN
4015081939633

Product Length/Depth
173.5 mm

Product Height
268.7 mm

Product Width
127 mm

Product Weight
2.2 kg

Certifications
C-Tick
CE
IEC/EN 61800-3
CUL
UL
UL Category Control No.: NMMS, NMMS7
EAC
RoHS, ISO 9001
UkrSEPRO
UL File No.: E134360
Specification for general requirements: IEC/EN 61800-2
Safety requirements: IEC/EN 61800-5

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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.

Features & Functions

Features

Tool-less swapping of fan

Temperature-controlled fan

Parameterization: Fieldbus

Parameterization: Keypad

Parameterization: Power Xpert inControl

Functions

4-quadrant operation possible

General

Air volume capacity

24 m³/h

Cable length

C2 ≤ 10 m, Radio interference level, maximum motor cable length

100 m, screened, maximum permissible, Motor feeder

C3 ≤ 50 m, Radio interference level, maximum motor cable length

Degree of protection

IP20

NEMA Other

Electromagnetic compatibility

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

Environmental class

3C2, 3S2 (Air quality)

Fitted with:

Radio interference suppression filter

DC link choke

Multi-line graphic display

IGBT inverter

Additional PCB protection

Brake chopper

Internal DC link

Breaking resistance

Control unit

PC connection

Frame size

FS0

Mounting position

Vertical

Number of slots

2 (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

C1: with external filter, for conducted emissions only
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

Safety function/level

STO (Safe Torque Off, SIL1, PLc Cat 1)

Shock resistance

UPS drop test (for weights inside the UPS frame)
Storage and transportation: maximum 15 g, 11 ms (inside the packaging)
Mechanical, According to EN 61800-5-1, IEC/EN 60068-2-27

Suitable for

Branch circuits, (UL/CSA)

Vibration

Resistance: 5 - 150 Hz, According to EN 61800-5-1, IEC/EN 60068-2-6
Resistance: 15.8 – 150 Hz, 1 g, Maximum acceleration amplitude
Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak)

Climatic environmental conditions

Altitude

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

Ambient operating temperature - min

-10 °C

Ambient operating temperature - max

50 °C

Ambient operating temperature at 150% overload - min

-30 °C

Ambient operating temperature at 150% overload - 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

Efficiency

97.27 % (η)

Heat dissipation at current/speed

34 W at 25% current and 0% speed
37 W at 25% current and 50% speed
39 W at 100% current and 50% speed
44 W at 50% current and 50% speed
46 W at 100% current and 0% speed
47 W at 50% current and 90% speed
61 W at 50% current and 0% speed
68 W at 100% current and 90% speed

Input current ILN at 110% overload

7.1 A

Input current ILN at 150% overload

5.5 A

Leakage current at ground IPE - max

0.2 mA

Mains current distortion

35.3 %

Mains switch-on frequency

Maximum of one time every 60 seconds

Mains voltage - min

380 V

Mains voltage - max

500 V

Operating mode

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

Output frequency - min

0 Hz

Output frequency - max

400 Hz

Output voltage (U2)

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

Overload current IL at 110% overload

6.16 A

Overload current IL at 150% overload

6.45 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

Motor rating

Assigned motor current IM at 400 V, 50 Hz, 110% overload

5 A

Assigned motor current IM at 400 V, 50 Hz, 150% overload

3.6 A

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

3.4 A

Assigned motor current IM at 440/480 V, 60 Hz, 110% overload

4.8 A

Assigned motor current IM at 500 V, 50 Hz, 110% overload

5.3 A

Assigned motor current IM at 500 V, 50 Hz, 150% overload

4 A

Assigned motor power at 460/480 V, 60 Hz

2 HP

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

3 HP

Apparent power

Apparent power at 400 V

3.9 kVA

Apparent power at 480 V

4.8 kVA

Braking function

Braking resistance

63 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
Adjustable to 150 % (I/Ie), DC - Main circuit

Switch-on threshold for the braking transistor

850 VDC

5.6 A

Rated operational current (Ie) at 150% overload

4.3 A

Rated operational power at 380/400 V, 50 Hz

1.5 kW

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

2.2 kW

Rated operational power at 500 V, 50 Hz

2.2 kW

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

3 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

10 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 - 12 kHz adjustable, fPWM, Power section, Main circuit

System configuration type

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

Voltage rating - max

500 VAC

Control circuit

Number of inputs (analog)

2

Number of inputs (digital)

8

Number of outputs (analog)

2

Number of outputs (digital)

1

Number of relay outputs

3 (parameterizable, 2 changeover contacts and 1 N/O, 6 A (240 V AC) / 6 A (24 V DC))

Rated control voltage (Uc)

24 V DC (external, max. 250 mA options incl.)

Communication

Communication interface

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

Connection to SmartWire-DT

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

Protocol

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

Design verification

Equipment heat dissipation, current-dependent Pvid

82 W

Rated operational current for specified heat dissipation (In)

4.3 A

Static heat dissipation, non-current-dependent Pvs

11.4 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

Resources

Application notes

PID controller

Smoke Mode and fire mode

Torque control

Analog I/Os

Real time clock and use of the timers

Electromagnetic compatibility (EMC)

Digital I/Os

Connecting drives to generator supplies

Load balancing in multi motor applications

Operating at low temperatures

Motor data and V/f curves

Dual Rating What exactly does that mean?

Starting, stopping and operation

DG1 in pump and fan applications

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00004676

DA-DC-00004861.pdf

eCAD model

DA-CE-ETN.DG1-344D3EB-C20C

Manuals and user guides

MN040002_EN

mCAD model

DA-CS-dg1_fs0

DA-CD-dg1_fs0

Multimedia

PowerXL DG1 Variable Frequency Drive - Setup via WebUI

Power XL General Purpose Drives

Product notifications

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

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

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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