Specifications

Eaton 9702-0203

Catalog Number: 9702-0203

Eaton DG1 Variable frequency drive, 400 V AC, 3-phase, 5.6 A, 2.2 kW, IP20, Brake chopper, DC link choke



General specifications

Product Name
Eaton DG1 variable frequency drive

Catalog Number
9702-0203

EAN
4015081939626

Product Length/Depth
173.5 mm

Product Height
268.7 mm

Product Width
127 mm

Product Weight
2.2 kg

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

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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

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

100 m, screened, maximum permissible, Motor feeder

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

Degree of protection

NEMA Other

IP20

Electromagnetic compatibility

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

Environmental class

3C2, 3S2 (Air quality)

Fitted with:

Internal DC link

Additional PCB protection

Radio interference suppression filter

Brake chopper

DC link choke

Multi-line graphic display

IGBT inverter

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

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, SIL1, PLc Cat 1)

Shock resistance

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

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
Max. 1000 m
Above 1000 m with 1 % derating per 100 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

97.15 % (η)

Heat dissipation at current/speed

42 W at 25% current and 0% speed
45 W at 25% current and 50% speed
51 W at 100% current and 50% speed
57 W at 50% current and 50% speed
61 W at 50% current and 90% speed
64 W at 100% current and 0% speed
83 W at 50% current and 0% speed
94 W at 100% current and 90% speed

Input current ILN at 110% overload

9.6 A

Input current ILN at 150% overload

7.1 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

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

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

8.36 A

Overload current IL at 150% overload

8.4 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

6.6 A

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

5 A

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

4.8 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

6.8 A

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

5.3 A

Assigned motor power at 460/480 V, 60 Hz

3 HP

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

5 HP

Apparent power

Apparent power at 400 V

5.3 kVA

Apparent power at 480 V

6.6 kVA

Braking function

Braking resistance

63 Ω

Braking torque

Max. 30 % MN, Standard - Main circuit
Max. 100 % of rated operational current Ie with external braking resistor - Main circuit
Adjustable to 150 %, DC - Main circuit
Adjustable to 150 % (I/Ie), DC - Main circuit

Switch-on threshold for the braking transistor

850 VDC

7.6 A

Rated operational current (Ie) at 150% overload

5.6 A

Rated operational power at 380/400 V, 50 Hz

2.2 kW

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

3 kW

Rated operational power at 500 V, 50 Hz

3 kW

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

4 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

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 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

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

Connection to SmartWire-DT

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

Protocol

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

Design verification

Equipment heat dissipation, current-dependent Pvid

115 W

Rated operational current for specified heat dissipation (In)

5.6 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

Smoke Mode and fire mode

PID controller

Connecting drives to generator supplies

Analog I/Os

Torque control

Real time clock and use of the timers

Dual Rating What exactly does that mean?

Load balancing in multi motor applications

Motor data and V/f curves

Operating at low temperatures

Digital I/Os

Electromagnetic compatibility (EMC)

DG1 in pump and fan applications

Starting, stopping and operation

Catalogs

Product Range Catalog Drives Engineering

Declarations of conformity

DA-DC-00004861.pdf

DA-DC-00004676

eCAD model

DA-CE-ETN.DG1-345D6EB-C20C

Manuals and user guides

MN040002_EN

mCAD model

DA-CS-dg1_fs0

DA-CD-dg1_fs0

Multimedia

Power XL General Purpose Drives

PowerXL DG1 Variable Frequency Drive - Setup via WebUI

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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