Specifications

# Eaton 9701-3001-00P

## Catalog Number: 9701-3001-00P

Eaton DG1 Variable frequency drive, 230 V AC, 3-phase, 48 A, 11 kW, IP21/NEMA1, Brake chopper, DC link choke



### General specifications

**Product Name**
Eaton DG1 variable frequency drive

**Catalog Number**
9701-3001-00P

**EAN**
4015081734092

**Product Length/Depth**
265.1 mm

**Product Height**
558 mm

**Product Width**
204.6 mm

**Product Weight**
22 kg

**Certifications**
CSA-C22.2 No. 274-13
IEC/EN 61800-3
UL
UL report applies to both US and Canada
RoHS, ISO 9001
UL File No.: E134360
EAC
UL Category Control No.: NMMS, NMMS7
UL508
IEC/EN61800-3
C-Tick
CUL
Certified by UL for use in Canada
IEC/EN61800-5
Safety requirements: IEC/EN 61800-5
CE
Specification for general requirements: IEC/EN 61800-2
UkrSEPRO

Powering Business Worldwide

**Catalog Notes**

## Features & Functions

### Features

Temperature-controlled fan

Tool-less swapping of fan

Parameterization: Fieldbus

Parameterization: Keypad

Parameterization: Power Xpert inControl

### Functions

4-quadrant operation possible

## General

### Air volume capacity

144 m³/h

### Cable length

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

150 m, screened, maximum permissible, Motor feeder

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

### Degree of protection

IP21

NEMA 1

### Electromagnetic compatibility

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

### Environmental class

3C2, 3S2 (Air quality)

### Fitted with:

Additional PCB protection

PC connection

Control unit

Radio interference suppression filter

Multi-line graphic display

Brake chopper

DC link choke

Breaking resistance

IGBT inverter

Internal DC link

### Frame size

FS3

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

### 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

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

### 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

97.2 % ( η)

### Heat dissipation at current/speed

168 W at 25% current and 0% speed
193 W at 25% current and 50% speed
229 W at 100% current and 50% speed
267 W at 50% current and 50% speed
302 W at 50% current and 90% speed
381 W at 100% current and 0% speed
500 W at 50% current and 0% speed
605 W at 100% current and 90% speed

### Input current ILN at 110% overload

56 A

Input current ILN at 150% overload

44.4 A

Leakage current at ground IPE - max

8.2 mA

Mains current distortion

30.8 %

Mains switch-on frequency

Maximum of one time every 60 seconds

Mains voltage - min

208 V

Mains voltage - max

240 V

Operating mode

Sensorless vector control (SLV)

Torque regulation

U/f control

Speed control with slip compensation

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

67.1 A

Overload current IL at 150% overload

72 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

61 A

## Motor rating

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

42 A

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

51 A

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

38 A

Assigned motor current IM at 230 V, 60 Hz, 110% overload

54 A

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

15 HP

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

20 HP

## Apparent power

Apparent power at 230 V

24.3 kVA

Apparent power at 240 V

25.4 kVA

## Braking function

Braking resistance

10 Ω

Braking torque

Adjustable to 150 %, DC - Main circuit

Adjustable to 150 % (I/Ie), 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

425 VDC

## Control circuit

Number of inputs (analog)

2

Rated operational current (Ie) at 150% overload

48 A

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

11 kW

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

15 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

80 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

240 VAC

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

DeviceNet, optional

Modbus RTU, built in

BACnet MS/TP, built in

Ethernet IP, built in

CANopen®, optional

PROFIBUS, optional

Modbus TCP, built in

Connection to SmartWire-DT

Yes

In conjunction with DXG-NET-SWD SmartWire DT module

Protocol

Other bus systems

DeviceNet

PROFINET IO

PROFIBUS

CAN

BACnet

MODBUS

TCP/IP

EtherNet/IP

## Design verification

Equipment heat dissipation, current-dependent Pvid

602 W

Heat dissipation capacity Pdiss

## Resources

Application notes

Operating at low temperatures

Motor data and V/f curves

0 W

### Heat dissipation per pole, current-dependent Pvid

0 W

### Rated operational current for specified heat dissipation (In)

48 A

### Static heat dissipation, non-current-dependent Pvs

18.15 W

### Heat dissipation details

Operation (with 150 % overload), allow for derating

### 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.

Digital I/Os

Electromagnetic compatibility (EMC)

Real time clock and use of the timers

Analog I/Os

Torque control

Connecting drives to generator supplies

DG1 in pump and fan applications

Dual Rating What exactly does that mean?

Starting, stopping and operation

PID controller

Smoke Mode and fire mode

Load balancing in multi motor applications

## Catalogs

Product Range Catalog Drives Engineering

## Declarations of conformity

DA-DC-00004861.pdf

DA-DC-00004676

## Drawings

eaton-frequency-inverter-dg1-dimensions-003.eps

eaton-frequency-inverter-dg1-3d-drawing-003.eps

## eCAD model

DA-CE-ETN.DG1-32048FB-C21C

## Manuals and user guides

MN040002_EN

## mCAD model

DA-CS-dg1_fs3

DA-CD-dg1_fs3

## Multimedia

Power XL General Purpose Drives

PowerXL DG1 Variable Frequency Drive - Setup via WebUI

## Product notifications

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

### 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

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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