

# Eaton 9702-4004-00P

Catalog Number: 9702-4004-00P

Eaton DG1 Variable frequency drive, 400 V AC, 3-phase, 61 A, 30 kW, IP21/NEMA1, DC link choke

## General specifications

Product Name	Catalog Number
Eaton DG1 variable frequency drive	9702-4004-00P
Model Code	EAN
DG1-34061FN-C21C	4015081721474
Product Length/Depth	Product Height
294 mm	630 mm
Product Width	Product Weight
237.7 mm	35.2 kg

## Certifications

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

## Product specifications

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

Mains voltage - max

500 V

Rated operational current for specified heat dissipation (In)

61 A

10.11 Short-circuit rating

Is the panel builder's responsibility. The specifications for the switchgear must be observed.

Rated operational voltage

400 V AC, 3-phase

500 V AC, 3-phase

480 V AC, 3-phase

10.4 Clearances and creepage distances

Meets the product standard's requirements.

Output at quadratic load at rated output voltage - max

37 kW

Output voltage - max

500 V

10.2.3.1 Verification of thermal stability of enclosures

Meets the product standard's requirements.

Ambient storage temperature - min

-40 °C

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

54 A

Mains voltage - min

380 V

Fitted with:

Radio interference suppression filter

IGBT inverter

Additional PCB protection

PC connection

Control unit

Internal DC link

DC link choke

Multi-line graphic display

Output frequency - min

0 Hz

## Resources

Application notes

DG1 in pump and fan applications

Digital I/Os

Connecting drives to generator supplies

Real time clock and use of the timers

Load balancing in multi motor applications

Analog I/Os

Operating at low temperatures

PID controller

Electromagnetic compatibility (EMC)

Dual Rating What exactly does that mean?

Starting, stopping and operation

Torque control

Smoke Mode and fire mode

Motor data and V/f curves

Brochures

DA-SW-DG1 Profibus ConfigFile

DA-SW-DG1 PowerXpert inControl

DA-SW-DG1 CANopen ConfigFile

DA-SW-DG1 DeviceNet ConfigFile

DA-SW-DG1 Ethernet/IP ConfigFile

Catalogs

Product Range Catalog Drives Engineering

Certification reports

DA-DC-00004620.pdf

DA-DC-00004676

Drawings

8230DIM-147

eaton-frequency-inverter-dg1-dimensions-004.eps

8230DRW-573

eaton-frequency-inverter-dg1-3d-drawing-004.eps

User guides

MZ040046\_EN

MN040002\_EN

Ambient operating temperature at 150% overload - max

50 °C

Starting current - max

200 %, IH, max. starting current (High Overload), For 2 seconds every 20 seconds, Power section

Rated conditional short-circuit current (I<sub>q</sub>)

100 kA

Ambient operating temperature - max

50 °C

Overload current I<sub>L</sub> at 110% overload

79.2 A

Rated operational power at 380/400 V, 50 Hz, 3-phase, 110% overload

37 kW

Communication interface

SmartWire-DT, optional

DeviceNet, optional

Modbus TCP, built in

Ethernet IP, built in

PROFIBUS, optional

CANopen®, optional

BACnet MS/TP, built in

Modbus RTU, built in

Output frequency - max

400 Hz

Output voltage (U<sub>2</sub>)

480 V AC, 3-phase

400 V AC, 3-phase

500 V AC, 3-phase

Switching frequency

3.6 kHz, 1 - 10 kHz adjustable, fPWM, Power section, Main circuit

Safety function/level

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

Features

Externally accessible fan

Temperature-controlled fan

Parameterization: Fieldbus

Parameterization: Keypad

Parameterization: Power Xpert inControl

Heat dissipation details

Operation (with 150 % overload), allow for derating

Ambient operating temperature - min

-10 °C

Braking resistance

6.5 Ω

Number of HW-interfaces (serial TTY)

0

10.6 Incorporation of switching devices and components

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

Nominal output current I<sub>2N</sub>

61 A

Input current I<sub>LN</sub> at 110% overload

65.7 A

10.2.6 Mechanical impact

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

10.3 Degree of protection of assemblies

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

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

45 kW

Assigned motor power at 460/480 V, 60 Hz, 3-phase, 110 % overload

50 HP

Product Category

Variable frequency drives

Radio interference class

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

C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.

Heat dissipation capacity P<sub>diss</sub>

0 W

Rated control voltage (U<sub>c</sub>)

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

Assigned motor power at 460/480 V, 60 Hz, 3-phase

40 HP

Number of HW-interfaces (RS-422)

0

Mains current distortion

31.5 %

Rated operational current (I<sub>e</sub>) at 150% overload

61 A

Protocol

BACnet

Other bus systems

CAN

TCP/IP

PROFINET IO

MODBUS

PROFIBUS

DeviceNet

EtherNet/IP

10.9.2 Power-frequency electric strength

Is the panel builder's responsibility.

Overvoltage category

III

Degree of protection

IP21

NEMA 1

Ambient storage temperature - max

70 °C

Pollution degree

2

Output at linear load at rated output voltage - max

30 kW

Leakage current at ground IPE - max

8.5 mA

Assigned motor current I<sub>M</sub> at 400 V, 50 Hz, 110% overload

68 A

Converter type

U converter

Frame size

FS4

10.2.2 Corrosion resistance

Meets the product standard's requirements.

#### Supply frequency

50/60 Hz

#### 10.2.4 Resistance to ultra-violet (UV) radiation

Meets the product standard's requirements.

#### 10.2.7 Inscriptions

Meets the product standard's requirements.

#### Shock resistance

Mechanical, According to EN 61800-5-1, IEC/EN 60068-2-27

UPS drop test (for weights inside the UPS frame)

Storage and transportation: maximum 15 g, 11 ms (inside the packaging)

#### Application in domestic and commercial area permitted

Yes

#### Apparent power at 480 V

62.4 kVA

#### Number of inputs (analog)

2

#### Number of phases (output)

3

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

65 A

#### Apparent power at 400 V

49.9 kVA

#### 10.12 Electromagnetic compatibility

Is the panel builder's responsibility. The specifications for the switchgear must be observed.

#### Number of slots

2 (expansion)

#### 10.2.5 Lifting

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

#### Number of HW-interfaces (RS-485)

1

#### Number of HW-interfaces (industrial ethernet)

1

#### Efficiency

98.3 % ( $\eta$ )

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

65 A

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

37 kW

System configuration type

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

10.8 Connections for external conductors

Is the panel builder's responsibility.

Switch-on threshold for the braking transistor

850 VDC

Protection

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

Number of relay outputs

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

Application in industrial area permitted

Yes

Climatic proofing

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

Connection to SmartWire-DT

Yes

In conjunction with DXG-NET-SWD SmartWire DT module

Static heat dissipation, non-current-dependent Pvs

24.42 W

10.9.3 Impulse withstand voltage

Is the panel builder's responsibility.

Voltage rating - max

500 VAC

Overload current IL at 150% overload

91.5 A

Input current ILN at 150% overload

55.7 A

Number of HW-interfaces (RS-232)

0

Number of inputs (digital)

8

#### Rated control supply voltage

10 V DC (Us, max. 10 mA)

#### Current limitation

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

#### Cable length

200 m, screened, maximum permissible, Motor feeder

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

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

#### 10.5 Protection against electric shock

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

#### Mounting position

Vertical

#### Mains switch-on frequency

Maximum of one time every 60 seconds

#### 10.13 Mechanical function

The device meets the requirements, provided the information in  
the instruction leaflet (IL) is observed.

#### 10.9.4 Testing of enclosures made of insulating material

Is the panel builder's responsibility.

#### Electromagnetic compatibility

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

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

0 W

#### Resolution

0.01 Hz (Frequency resolution, setpoint value)

#### Relative symmetric net voltage tolerance

10 %

#### Equipment heat dissipation, current-dependent Pvid

758 W

#### Number of outputs (analog)

2

#### Suitable for

Branch circuits, (UL/CSA)

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

30 kW



#### Number of HW-interfaces (USB)

0

#### Operating mode

Sensorless vector control (SLV)

Speed control with slip compensation

Torque regulation

U/f control

#### Rated frequency - min

45 Hz

#### Number of outputs (digital)

1

#### 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.

#### Number of HW-interfaces (other)

1

#### Rated operational current (I<sub>e</sub>) at 110% overload

72 A

#### Rated frequency - max

66 Hz

#### 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)

#### 10.7 Internal electrical circuits and connections

Is the panel builder's responsibility.

#### Braking torque

Adjustable to 150 % (I/I<sub>e</sub>), DC - Main circuit

Max. 100 % of rated operational current I<sub>e</sub> with external braking resistor - Main circuit

Max. 30 % MN, Standard - Main circuit

Adjustable to 150 %, DC - Main circuit

#### Ambient operating temperature at 150% overload - min

-30 °C

#### Relative symmetric net frequency tolerance

10 %

### 10.10 Temperature rise

The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.

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

55.2 A

#### Air volume capacity

260 m<sup>3</sup>/h

#### Number of HW-interfaces (parallel)

0

#### Number of phases (input)

3

#### Heat dissipation at current/speed

169 W at 25% current and 0% speed

280 W at 100% current and 50% speed

314 W at 25% current and 50% speed

414 W at 50% current and 50% speed

445 W at 50% current and 90% speed

479 W at 100% current and 0% speed

711 W at 50% current and 0% speed

777 W at 100% current and 90% speed

#### Short-circuit protection rating

100 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring

#### Number of interfaces (PROFINET)

0

#### Environmental class

3C2, 3S2 (Air quality)

#### Altitude

Above 1000 m with 1 % derating per 100 m

Max. 1000 m

Max. 2000 m for Corner Grounded TN Systems

Max. 3000 m



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