

# Eaton 9703-4004-00P

Eaton DG1 Variable frequency drive, 500 V AC, 3-phase, 41 A, 22 kW, IP21/NEMA1, DC link choke

<b>PRODUCT NAME</b>	Eaton DG1 variable frequency drive
<b>CATALOG NUMBER</b>	9703-4004-00P
<b>PRODUCT LENGTH/DEPTH</b>	294 mm
<b>PRODUCT HEIGHT</b>	630 mm
<b>PRODUCT WIDTH</b>	237.7 mm
<b>PRODUCT WEIGHT</b>	34.1 kg
<b>CERTIFICATIONS</b>	Certified by UL for use in Canada IEC/EN 61800-3 IEC/EN61800-5 RoHS, ISO 9001 Safety requirements: IEC/EN 61800-5 UkrSEPRO UL CUL EAC IEC/EN61800-3 UL report applies to both US and Canada UL Category Control No.: NMMS, NMMS7 UL File No.: E134360 CE CSA-C22.2 No. 274-13 UL508 C-Tick Specification for general requirements: IEC/EN 61800-2

<b>PRODUCT CATEGORY</b>	Variable frequency drives
<b>FEATURES</b>	Externally accessible fan Parameterization: Fieldbus  Parameterization: Keypad Parameterization: Power Xpert inControl
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications for the switchgear must be observed.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to

<a href="#">eaton-profinet-de1-dc1-da1-dg1-dm1-dx1-mn040062-en-en.pdf</a>
<a href="#">eaton-frequency-inverter-dg1-dimensions-004.eps</a>
<a href="#">eaton-frequency-inverter-dg1-3d-drawing-004.eps</a>

	be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>FITTED WITH:</b>	Radio interference suppression filter DC link choke IGBT inverter Internal DC link Additional PCB protection Multi-line graphic display PC connection Control unit
<b>POLLUTION DEGREE</b>	2
<b>CLIMATIC PROOFING</b>	< 95 average relative humidity (RH), no condensation, no corrosion
<b>CONNECTION TO SMARTWIRE-DT</b>	Yes In conjunction with DXG-NET-SWD SmartWire DT module
<b>OPERATING MODE</b>	U/f control Sensorless vector control (SLV) Torque regulation Speed control with slip

	compensation
<b>FRAME SIZE</b>	FS4
<b>AIR VOLUME CAPACITY</b>	260 m³/h
<b>ALTITUDE</b>	Max. 1000 m Above 1000 m with 1 % derating per 100 m Max. 2000 m
<b>ENVIRONMENTAL CLASS</b>	3C2, 3S2 (Air quality)
<b>APPLICATION IN DOMESTIC AND COMMERCIAL AREA PERMITTED</b>	Yes
<b>MAINS SWITCH-ON FREQUENCY</b>	Maximum of one time every 60 seconds
<b>APPLICATION IN INDUSTRIAL AREA PERMITTED</b>	Yes
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	50 °C
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-10 °C
<b>AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MAX</b>	50 °C
<b>AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MIN</b>	-30 °C
<b>AMBIENT STORAGE TEMPERATURE - MAX</b>	70 °C
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	-40 °C
<b>APPARENT POWER AT 600 V</b>	54 kVA
<b>MOUNTING POSITION</b>	Vertical
<b>RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ)</b>	100 kA
<b>RELATIVE SYMMETRIC NET FREQUENCY TOLERANCE</b>	10 %
<b>RELATIVE SYMMETRIC NET VOLTAGE TOLERANCE</b>	10 %
<b>PROTECTION</b>	Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
<b>HEAT DISSIPATION</b>	Operation (with 150 %

<b>DETAILS</b>	overload), allow for derating
<b>RATED OPERATIONAL POWER AT 525 V, 50 HZ, 3-PHASE</b>	22 kW
<b>RATED OPERATIONAL POWER AT 525 V, 50 HZ, 3-PHASE, 110% OVERLOAD</b>	30 kW
<b>RATED OPERATIONAL POWER AT 600 V, 50 HZ, 3-PHASE</b>	30 kW
<b>RATED OPERATIONAL POWER AT 600 V, 50 HZ, 3-PHASE, 110% OVERLOAD</b>	37 kW
<b>RESOLUTION</b>	0.01 Hz (Frequency resolution, setpoint value)
<b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>	24.65 W
<b>SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR</b>	1050 VDC
<b>VOLTAGE RATING - MAX</b>	600 VAC
<b>OVERVOLTAGE CATEGORY</b>	III
<b>COMMUNICATION INTERFACE</b>	SmartWire-DT, optional BACnet MS/TP, built in Ethernet IP, built in DeviceNet, optional Modbus TCP, built in CANopen®, optional PROFIBUS, optional Modbus RTU, built in
<b>CONVERTER TYPE</b>	U converter
<b>DEGREE OF PROTECTION</b>	IP21 NEMA 1
<b>PROTOCOL</b>	PROFIBUS DeviceNet Other bus systems CAN TCP/IP MODBUS PROFINET IO BACnet EtherNet/IP
<b>ASSIGNED MOTOR CURRENT IM AT 525 V, 50 HZ, 110% OVERLOAD</b>	44 A

<b>ASSIGNED MOTOR CURRENT IM AT 525 V, 50 HZ, 150% OVERLOAD</b>	33 A
<b>ASSIGNED MOTOR CURRENT IM AT 550 - 600 V, 60 HZ, 150% OVERLOAD</b>	32 A
<b>ASSIGNED MOTOR CURRENT IM AT 600 V, 50 HZ, 110% OVERLOAD</b>	47.3 A
<b>ASSIGNED MOTOR CURRENT IM AT 600 V, 50 HZ, 150% OVERLOAD</b>	38.4 A
<b>ASSIGNED MOTOR CURRENT IM AT 600 V, 60 HZ, 110% OVERLOAD</b>	41 A
<b>SYSTEM CONFIGURATION TYPE</b>	TN-S, TN-C, TN-C-S, TT, IT
<b>ELECTROMAGNETIC COMPATIBILITY</b>	1st and 2nd environments (according to EN 61800-3)
<b>ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE</b>	40 HP
<b>ASSIGNED MOTOR POWER AT 575/600 V, 60 HZ, 3-PHASE, 110 % OVERLOAD</b>	50 HP
<b>BRAKING RESISTANCE</b>	9 $\Omega$
<b>EQUIPMENT HEAT DISSIPATION, CURRENT- DEPENDENT PVID</b>	738 W
<b>HEAT DISSIPATION CAPACITY PDISS</b>	0 W
<b>HEAT DISSIPATION PER POLE, CURRENT- DEPENDENT PVID</b>	0 W
<b>INPUT CURRENT ILN AT 110% OVERLOAD</b>	48.1 A
<b>INPUT CURRENT ILN AT 150% OVERLOAD</b>	38.1 A
<b>MAINS CURRENT DISTORTION</b>	31.2 %
<b>CURRENT LIMITATION</b>	0.1 - 2 x IH (CT), motor, main circuit
<b>NUMBER OF SLOTS</b>	2 (expansion)
<b>BRAKING TORQUE</b>	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/le), DC - Main circuit
<b>CABLE LENGTH</b>	C3 ≤ 10 m, Radio interference level, maximum motor cable length 200 m, screened, maximum permissible, Motor feeder
<b>OUTPUT VOLTAGE (U2)</b>	600 V AC, 3-phase
<b>NUMBER OF INPUTS (ANALOG)</b>	2
<b>NUMBER OF INPUTS (DIGITAL)</b>	8
<b>RADIO INTERFERENCE CLASS</b>	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
<b>NUMBER OF OUTPUTS (DIGITAL)</b>	1
<b>STARTING CURRENT - MAX</b>	200 %, IH, max. starting current (High Overload), For 2 seconds every 20 seconds, Power section
<b>NUMBER OF PHASES (INPUT)</b>	3
<b>NUMBER OF RELAY OUTPUTS</b>	3 (parameterizable, 2 changeover contacts and 1 N/O, 6 A (240 V AC) / 6 A (24 V DC))
<b>NUMBER OF PHASES (OUTPUT)</b>	3
<b>POWER CONSUMPTION</b>	738 W
<b>RATED CONTROL SUPPLY VOLTAGE</b>	10 V DC (Us, max. 10 mA)

<b>EFFICIENCY</b>	98.3 % ( $\eta$ )
<b>RATED CONTROL VOLTAGE (UC)</b>	24 V DC (external, max. 250 mA options incl.)
<b>SUPPLY FREQUENCY</b>	50/60 Hz
<b>LEAKAGE CURRENT AT GROUND IPE - MAX</b>	6 mA
<b>MAINS VOLTAGE - MAX</b>	600 V
<b>MAINS VOLTAGE - MIN</b>	525 V
<b>NOMINAL OUTPUT CURRENT I<sub>2N</sub></b>	41 A
<b>NUMBER OF HW-INTERFACES (INDUSTRIAL ETHERNET)</b>	1
<b>NUMBER OF HW-INTERFACES (OTHER)</b>	1
<b>NUMBER OF HW-INTERFACES (PARALLEL)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-232)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-422)</b>	0
<b>NUMBER OF HW-INTERFACES (RS-485)</b>	1
<b>NUMBER OF HW-INTERFACES (SERIAL TTY)</b>	0
<b>NUMBER OF HW-INTERFACES (USB)</b>	0
<b>NUMBER OF INTERFACES (PROFINET)</b>	0
<b>NUMBER OF OUTPUTS (ANALOG)</b>	2
<b>OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX</b>	30 kW
<b>OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX</b>	37 kW
<b>OUTPUT FREQUENCY - MAX</b>	400 Hz
<b>OUTPUT FREQUENCY - MIN</b>	0 Hz
<b>OUTPUT VOLTAGE - MAX</b>	600 V
<b>OVERLOAD CURRENT I<sub>L</sub> AT 110% OVERLOAD</b>	57.2 A
<b>OVERLOAD CURRENT I<sub>L</sub> AT 150% OVERLOAD</b>	61.5 A
<b>SHOCK RESISTANCE</b>	Storage and



	<p>transportation: maximum 15 g, 11 ms (inside the packaging)</p> <p>Mechanical, According to EN 61800-5-1, IEC/EN 60068-2-27</p> <p>UPS drop test (for weights inside the UPS frame)</p>
<b>SUITABLE FOR</b>	Branch circuits, (UL/CSA)
<b>SWITCHING FREQUENCY</b>	1.5 kHz, 1 - 6 kHz adjustable, fPWM, Power section, Main circuit
<b>RATED OPERATIONAL VOLTAGE</b>	600 V AC, 3-phase
<b>SHORT-CIRCUIT PROTECTION RATING</b>	70 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
<b>VIBRATION</b>	<p>Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak)</p> <p>Resistance: 15.8 - 150 Hz, 1 g, Maximum acceleration amplitude</p> <p>Resistance: 5 - 150 Hz, According to EN 61800-5-1, IEC/EN 60068-2-6</p>
<b>RATED FREQUENCY - MAX</b>	66 Hz
<b>RATED FREQUENCY - MIN</b>	45 Hz
<b>RATED OPERATIONAL CURRENT (IE) AT 110% OVERLOAD</b>	52 A
<b>RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD</b>	41 A
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	41 A
<b>SAFETY FUNCTION/LEVEL</b>	STO (Safe Torque Off, SIL1, PLc Cat 1)
<b>HEAT DISSIPATION AT CURRENT/SPEED</b>	<p>234 W at 25% current and 0% speed</p> <p>271 W at 25% current and 50% speed</p> <p>290 W at 100% current and 50% speed</p> <p>345 W at 50% current and 50% speed</p> <p>380 W at 50% current and 90% speed</p> <p>462 W at 100% current and 0% speed</p>

544 W at 50% current and  
0% speed  
614 W at 100% current  
and 90% speed

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

:



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