Eaton 9701-5105-00P

Eaton DG1 Variable frequency drive, 230 V AC, 3-phase, 143 A, 45 kW, IP54/NEMA12, Brake chopper, DC link choke

PRODUCT NAME	Eaton DG1 variable frequency drive
CATALOG NUMBER	9701-5105-00P
PRODUCT LENGTH/DEPTH	340.7 mm
PRODUCT HEIGHT	888.5 mm
PRODUCT WIDTH	288 mm
PRODUCT WEIGHT	73.6 kg
CERTIFICATIONS	CSA-C22.2 No. 274-13 CUL Specification for general requirements: IEC/EN 61800-2 Certified by UL for use in Canada Safety requirements: IEC/EN 61800-5 EAC IEC/EN 61800-3 RoHS, ISO 9001 UL508 CE C-Tick UL UL report applies to both US and Canada UkrSEPRO UL Category Control No.: NMMS, NMMS7 IEC/EN61800-3 IEC/EN61800-5 UL File No.: E134360
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

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	available upon request.

PRODUCT CATEGORY	Variable frequency drives
FEATURES	Externally accessible fan Temperature-controlled fan Parameterization: Fieldbus Parameterization: Keypad Parameterization: Power Xpert inControl
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.
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.

DECLARATIONS OF CONFORMITY	DA-DC-00004676
	eaton-profinet-de1-dc1-da1-dg1-dm1-dx1-mn040062-en-en.pdf
	eaton-frequency-inverter-dg1-dimensions-005.eps eaton-frequency-inverter-dg1-3d-drawing-005.eps

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.
10.5 PROTECTION AGAINST ELECTRIC SHOCK	Does not apply, since the entire switchgear needs to be evaluated.
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	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.
FITTED WITH:	DC link choke PC connection Internal DC link Multi-line graphic display IGBT inverter Radio interference suppression filter Breaking resistance Additional PCB protection Control unit Brake chopper
POLLUTION DEGREE	2
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
OPERATING MODE	U/f control

	Speed control with slip compensation Torque regulation Sensorless vector control (SLV)
FRAME SIZE	FS5
AIR VOLUME CAPACITY	395 m^3/h
ALTITUDE	Max. 2000 m for Corner Grounded TN Systems Max. 1000 m Max. 3000 m Above 1000 m with 1 % derating per 100 m
ENVIRONMENTAL CLASS	3C2, 3S2 (Air quality)
APPLICATION IN DOMESTIC AND COMMERCIAL AREA PERMITTED	Yes
MAINS SWITCH-ON FREQUENCY	Maximum of one time every 60 seconds
APPLICATION IN INDUSTRIAL AREA PERMITTED	Yes
AMBIENT OPERATING TEMPERATURE - MAX	50 °C
AMBIENT OPERATING TEMPERATURE - MIN	-10 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MAX	50 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MIN	-30 °C
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
APPARENT POWER AT 230 V	67.7 kVA
APPARENT POWER AT 240 V	70.7 kVA
ASSIGNED MOTOR CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD	130 A
ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 110% OVERLOAD	141 A
ASSIGNED MOTOR	141 A

CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD	
ASSIGNED MOTOR CURRENT IM AT 230 V, 60 HZ, 110% OVERLOAD	154 A
MOUNTING POSITION	Vertical
RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ)	100 kA
RELATIVE SYMMETRIC NET FREQUENCY TOLERANCE	10 %
RELATIVE SYMMETRIC NET VOLTAGE TOLERANCE	10 %
PROTECTION	Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
HEAT DISSIPATION DETAILS	Operation (with 150 % overload), allow for derating
RESOLUTION	0.01 Hz (Frequency resolution, setpoint value)
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	19.32 W
SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR	425 VDC
VOLTAGE RATING - MAX	240 VAC
OVERVOLTAGE CATEGORY	III
COMMUNICATION INTERFACE	PROFIBUS, optional Modbus TCP, built in SmartWire-DT, optional CANopen®, optional Modbus RTU, built in BACnet MS/TP, built in Ethernet IP, built in DeviceNet, optional
CONVERTER TYPE	U converter
DEGREE OF PROTECTION	IP54 NEMA 12
PROTOCOL	PROFIBUS PROFINET IO BACnet DeviceNet Other bus systems

	CAN TCP/IP EtherNet/IP MODBUS
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE	50 HP
SYSTEM CONFIGURATION TYPE	TN-S, TN-C, TN-C-S, TT, IT
ELECTROMAGNETIC COMPATIBILITY	1st and 2nd environments (according to EN 61800-3)
ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 3-PHASE, 110 % OVERLOAD	60 HP
BRAKING RESISTANCE	1.4 Ω
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	1336 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
INPUT CURRENT ILN AT 110% OVERLOAD	157 A
INPUT CURRENT ILN AT 150% OVERLOAD	132.2 A
MAINS CURRENT DISTORTION	25 %
CURRENT LIMITATION	0.1 - 2 x IH (CT), motor, main circuit
NUMBER OF SLOTS	2 (expansion)
BRAKING TORQUE	Adjustable to 150 %, DC - Main circuit Adjustable to 150 % (I/Ie), DC - Main circuit Max. 100 % of rated operational current Ie with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit
CABLE LENGTH	C2 ≤ 10 m, Radio interference level, maximum motor cable length 200 m, screened, maximum permissible, Motor feeder

	C3 ≤ 50 m, Radio interference level, maximum motor cable length
FUNCTIONS	4-quadrant operation possible
OUTPUT VOLTAGE (U2)	240 V AC, 3-phase 230 V AC, 3-phase
NUMBER OF INPUTS (ANALOG)	2
NUMBER OF INPUTS (DIGITAL)	8
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
NUMBER OF OUTPUTS (DIGITAL)	1
STARTING CURRENT - MAX	200 %, IH, max. starting current (High Overload), For 2 seconds every 20 seconds, Power section
NUMBER OF PHASES (INPUT)	3
NUMBER OF RELAY OUTPUTS	3 (parameterizable, 2 changeover contacts and 1 N/O, 6 A (240 V AC) / 6 A (24 V DC))
NUMBER OF PHASES (OUTPUT)	3
POWER CONSUMPTION	1336 W
RATED CONTROL SUPPLY VOLTAGE	10 V DC (Us, max. 10 mA)
EFFICIENCY	98.2 % (η)
RATED CONTROL VOLTAGE (UC)	24 V DC (external, max. 250 mA options incl.)
SUPPLY FREQUENCY	50/60 Hz
LEAKAGE CURRENT AT	5.4 mA

GROUND IPE - MAX	
MAINS VOLTAGE - MAX	240 V
MAINS VOLTAGE - MIN	208 V
NOMINAL OUTPUT CURRENT I2N	143 A
NUMBER OF HW-INTERFACES (INDUSTRIAL ETHERNET)	1
NUMBER OF HW-INTERFACES (OTHER)	1
NUMBER OF HW-INTERFACES (PARALLEL)	0
NUMBER OF HW-INTERFACES (RS-232)	0
NUMBER OF HW-INTERFACES (RS-422)	0
NUMBER OF HW-INTERFACES (RS-485)	1
NUMBER OF HW-INTERFACES (SERIAL TTY)	0
NUMBER OF HW-INTERFACES (USB)	0
NUMBER OF INTERFACES (PROFINET)	0
NUMBER OF OUTPUTS (ANALOG)	2
OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX	37 kW
OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX	45 kW
OUTPUT FREQUENCY - MAX	400 Hz
OUTPUT FREQUENCY - MIN	0 Hz
OUTPUT VOLTAGE - MAX	240 V
OVERLOAD CURRENT IL AT 110% OVERLOAD	187 A
OVERLOAD CURRENT IL AT 150% OVERLOAD	214.5 A
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)
SUITABLE FOR	Branch circuits, (UL/CSA)
SWITCHING FREQUENCY	3.6 kHz, 1 - 10 kHz adjustable, fPWM, Power section, Main circuit
RATED OPERATIONAL VOLTAGE	240 V AC, 3-phase 230 V AC, 3-phase
SHORT-CIRCUIT PROTECTION RATING	200 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
VIBRATION	Resistance: 15.8 – 150 Hz, 1 g, Maximum acceleration amplitude Resistance: 5 - 150 Hz, According to EN 61800-5-1, IEC/EN 60068-2-6 Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak)
RATED FREQUENCY - MAX	66 Hz
RATED FREQUENCY - MIN	45 Hz
RATED OPERATIONAL CURRENT (IE) AT 110% OVERLOAD	170 A
RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD	143 A
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	143 A
RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 1-PHASE	45 kW
RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 3-PHASE, 110% OVERLOAD	45 kW
SAFETY FUNCTION/LEVEL	STO (Safe Torque Off, SIL1, PLc Cat 1)
HEAT DISSIPATION AT CURRENT/SPEED	1243 W at 50% current and 0% speed 1455 W at 100% current and 90% speed 403 W at 25% current and 0% speed 527 W at 25% current and 50% speed 531 W at 100% current and 50% speed

	707 W at 50% current and 50% speed 792 W at 50% current and 90% speed 925 W at 100% current and 0% speed

PROJECT NAME:
PROJECT NUMBER:
PREPARED BY:
:

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