# Eaton 9701-4103-00P

Eaton DG1 Variable frequency drive, 230 V AC, 3-phase, 61 A, 15 kW, IP54/NEMA12, DC link choke

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| **PRODUCT NAME** | Eaton DG1 variable frequency drive |
| **CATALOG NUMBER** | 9701-4103-00P |
| **PRODUCT LENGTH/DEPTH** | 294 mm |
| **PRODUCT HEIGHT** | 630 mm |
| **PRODUCT WIDTH** | 237.7 mm |
| **PRODUCT WEIGHT** | 34 kg |
| **CERTIFICATIONS** | CE<br>RoHS, ISO 9001<br>IEC/EN 61800-3<br>IEC/EN61800-3<br>Specification for general requirements: IEC/EN 61800-2<br>UL508<br>C-Tick<br>UL report applies to both US and Canada<br>Certified by UL for use in Canada<br>CSA-C22.2 No. 274-13<br>UL<br>IEC/EN61800-5<br>CUL<br>Safety requirements: IEC/EN 61800-5<br>UkrSEPRO<br>UL File No.: E134360<br>UL Category Control No.: NMMS, NMMS7<br>EAC |

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| **PRODUCT CATEGORY** | Variable frequency drives |
| **FEATURES** | Temperature-controlled fan<br>Externally accessible fan<br>Parameterization: Fieldbus<br><br>Parameterization: Keypad<br>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. |
| **10.2.6 MECHANICAL IMPACT** | Does not apply, since the entire switchgear needs to be evaluated. |

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| □□□□ | eaton-profinet-de1-dc1-da1-dg1-dm1-dx1-mn040062-en-en.pdf |
| □□ | eaton-frequency-inverter-dg1-dimensions-004.eps<br><br>eaton-frequency-inverter-dg1-3d-drawing-004.eps |

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| **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:** | Control unit<br>Multi-line graphic display<br>Radio interference suppression filter<br>Additional PCB protection<br>Internal DC link<br>PC connection<br>IGBT inverter<br>DC link choke |
| **POLLUTION DEGREE** | 2 |
| **CLIMATIC PROOFING** | < 95 average relative humidity (RH), no condensation, no corrosion |
| **CONNECTION TO SMARTWIRE-DT** | In conjunction with DXG-NET-SWD SmartWire DT module<br>Yes |
| **OPERATING MODE** | U/f control<br>Speed control with slip compensation<br>Torque regulation<br>Sensorless vector control (SLV) |
| **FRAME SIZE** | FS4 |
| **AIR VOLUME CAPACITY** | 260 m³/h |
| **ALTITUDE** | Max. 3000 m |

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| | Max. 2000 m for Corner Grounded TN Systems<br>Above 1000 m with 1 % derating per 100 m<br>Max. 1000 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** | 29.9 kVA |
| **APPARENT POWER AT 240 V** | 31.2 kVA |
| **ASSIGNED MOTOR CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD** | 54 A |
| **ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 110% OVERLOAD** | 71 A |
| **ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD** | 51 A |
| **ASSIGNED MOTOR CURRENT IM AT 230 V, 60 HZ, 110% OVERLOAD** | 68 A |
| **MOUNTING POSITION** | Vertical |
| **RATED CONDITIONAL SHORT-CIRCUIT CURRENT (IQ)** | 100 kA |
| **RELATIVE SYMMETRIC NET FREQUENCY** | 10 % |

| TOLERANCE | |
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| **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** | 17.1 W |
| **SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR** | 425 VDC |
| **VOLTAGE RATING - MAX** | 240 VAC |
| **OVERVOLTAGE CATEGORY** | III |
| **COMMUNICATION INTERFACE** | BACnet MS/TP, built in<br>SmartWire-DT, optional<br>DeviceNet, optional<br>PROFIBUS, optional<br>CANopen®, optional<br>Modbus RTU, built in<br>Modbus TCP, built in<br>Ethernet IP, built in |
| **CONVERTER TYPE** | U converter |
| **DEGREE OF PROTECTION** | IP54<br>NEMA 12 |
| **PROTOCOL** | TCP/IP<br>CAN<br>BACnet<br>Other bus systems<br>MODBUS<br>PROFINET IO<br>PROFIBUS<br>DeviceNet<br>EtherNet/IP |
| **ASSIGNED MOTOR POWER AT 230/240 V, 60 HZ, 1-PHASE** | 20 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 %** | 25 HP |

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| **OVERLOAD** | |
| **BRAKING RESISTANCE** | 3.3 Ω |
| **EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID** | 689 W |
| **HEAT DISSIPATION CAPACITY PDISS** | 0 W |
| **HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** | 0 W |
| **INPUT CURRENT ILN AT 110% OVERLOAD** | 64.6 A |
| **INPUT CURRENT ILN AT 150% OVERLOAD** | 54.4 A |
| **MAINS CURRENT DISTORTION** | 25.6 % |
| **CURRENT LIMITATION** | 0.1 - 2 x IH (CT), motor, main circuit |
| **NUMBER OF SLOTS** | 2 (expansion) |
| **BRAKING TORQUE** | Max. 30 % MN, Standard - Main circuit<br>Max. 100 % of rated operational current Ie with external braking resistor - Main circuit<br>Adjustable to 150 % (I/Ie), DC - Main circuit<br>Adjustable to 150 %, DC - Main circuit |
| **CABLE LENGTH** | C3 ≤ 50 m, Radio interference level, maximum motor cable length<br>200 m, screened, maximum permissible, Motor feeder<br>C2 ≤ 10 m, Radio interference level, maximum motor cable length |
| **OUTPUT VOLTAGE (U2)** | 230 V AC, 3-phase<br>240 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. |

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| | Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments<br>C1: with external filter, for conducted emissions only |
| **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** | 689 W |
| **RATED CONTROL SUPPLY VOLTAGE** | 10 V DC (Us, max. 10 mA) |
| **EFFICIENCY** | 98 % (η) |
| **RATED CONTROL VOLTAGE (UC)** | 24 V DC (external, max. 250 mA options incl.) |
| **SUPPLY FREQUENCY** | 50/60 Hz |
| **LEAKAGE CURRENT AT GROUND IPE - MAX** | 6.2 mA |
| **MAINS VOLTAGE - MAX** | 240 V |
| **MAINS VOLTAGE - MIN** | 208 V |
| **NOMINAL OUTPUT CURRENT I2N** | 61 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-** | 0 |

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| **INTERFACES (USB)** | |
| **NUMBER OF INTERFACES (PROFINET)** | 0 |
| **NUMBER OF OUTPUTS (ANALOG)** | 2 |
| **OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX** | 15 kW |
| **OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX** | 18.5 kW |
| **OUTPUT FREQUENCY - MAX** | 400 Hz |
| **OUTPUT FREQUENCY - MIN** | 0 Hz |
| **OUTPUT VOLTAGE - MAX** | 240 V |
| **OVERLOAD CURRENT IL AT 110% OVERLOAD** | 82.5 A |
| **OVERLOAD CURRENT IL AT 150% OVERLOAD** | 91.5 A |
| **SHOCK RESISTANCE** | UPS drop test (for weights inside the UPS frame)<br>Storage and transportation: maximum 15 g, 11 ms (inside the packaging)<br>Mechanical, According to EN 61800-5-1, IEC/EN 60068-2-27 |
| **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<br>230 V AC, 3-phase |
| **SHORT-CIRCUIT PROTECTION RATING** | 100 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<br>Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak)<br>Resistance: 5 - 150 Hz, According to EN 61800-5-1, IEC/EN 60068-2-6 |
| **RATED FREQUENCY - MAX** | 66 Hz |
| **RATED FREQUENCY - MIN** | 45 Hz |
| **RATED OPERATIONAL CURRENT (IE) AT 110%** | 75 A |

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| **OVERLOAD** | |
| **RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD** | 61 A |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 61 A |
| **RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 1-PHASE** | 15 kW |
| **RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 3-PHASE, 110% OVERLOAD** | 22 kW |
| **SAFETY FUNCTION/LEVEL** | STO (Safe Torque Off, SIL1, PLc Cat 1) |
| **HEAT DISSIPATION AT CURRENT/SPEED** | 250 W at 25% current and 0% speed<br>270 W at 100% current and 50% speed<br>280 W at 25% current and 50% speed<br>339 W at 50% current and 50% speed<br>368 W at 50% current and 90% speed<br>454 W at 100% current and 0% speed<br>594 W at 50% current and 0% speed<br>686 W at 100% current and 90% speed |

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| **PROJECT NAME:** |
| **PROJECT NUMBER:** |
| **PREPARED BY:** |
| **□□:** |

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