

Eaton 9702-5103-00P

Eaton DG1 Variable frequency drive, 400 V
AC, 3-phase, 105 A, 55 kW, IP54/NEMA12, DC
link choke

| | |
|-----------------------------|--|
| | |
| PRODUCT NAME | Eaton DG1 variable frequency drive |
| CATALOG NUMBER | 9702-5103-00P |
| PRODUCT LENGTH/DEPTH | 340.7 mm |
| PRODUCT HEIGHT | 888.5 mm |
| PRODUCT WIDTH | 288 mm |
| PRODUCT WEIGHT | 70.6 kg |
| CERTIFICATIONS | Certified by UL for use in Canada CSA-C22.2 No. 274-13 CE IEC/EN61800-3 IEC/EN61800-5 RoHS, ISO 9001 CUL UL File No.: E134360 UL508 Specification for general requirements: IEC/EN 61800-2 UL Category Control No.: NMMS, NMMS7 UL UkrSEPRO IEC/EN 61800-3 UL report applies to both US and Canada Safety requirements: IEC/EN 61800-5 C-Tick EAC |

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

| |
|---|
| 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: | Internal DC link PC connection Additional PCB protection Radio interference suppression filter DC link choke Multi-line graphic display Control unit IGBT inverter |
| 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 | Speed control with slip compensation U/f control |

| | |
|---|--|
| | Torque regulation Sensorless vector control (SLV) |
| FRAME SIZE | FS5 |
| AIR VOLUME CAPACITY | 395 m³/h |
| ALTITUDE | Max. 3000 m Above 1000 m with 1 % derating per 100 m Max. 2000 m for Corner Grounded TN Systems 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 400 V | 97 kVA |
| APPARENT POWER AT 480 V | 121.2 kVA |
| ASSIGNED MOTOR CURRENT IM AT 400 V, 50 HZ, 110% OVERLOAD | 134 A |
| ASSIGNED MOTOR CURRENT IM AT 400 V, 50 HZ, 150% OVERLOAD | 99 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 |
| RATED OPERATIONAL POWER AT 500 V, 50 HZ, 3-PHASE, 110% OVERLOAD | 90 kW |
| RESOLUTION | 0.01 Hz (Frequency resolution, setpoint value) |
| STATIC HEAT DISSIPATION, NON- CURRENT-DEPENDENT PVS | 30.74 W |
| SWITCH-ON THRESHOLD FOR THE BRAKING TRANSISTOR | 850 VDC |
| VOLTAGE RATING - MAX | 500 VAC |
| OVERVOLTAGE CATEGORY | III |
| COMMUNICATION INTERFACE | BACnet MS/TP, built in DeviceNet, optional SmartWire-DT, optional Ethernet IP, built in PROFIBUS, optional CANopen®, optional Modbus RTU, built in Modbus TCP, built in |
| CONVERTER TYPE | U converter |
| DEGREE OF PROTECTION | IP54 NEMA 12 |
| PROTOCOL | CAN PROFIBUS MODBUS PROFINET IO Other bus systems DeviceNet TCP/IP BACnet EtherNet/IP |
| ASSIGNED MOTOR CURRENT IM AT 440 - 480 | 96 A |

| | |
|--|--|
| V, 60 HZ, 150% OVERLOAD | |
| ASSIGNED MOTOR CURRENT IM AT 440/480 V, 60 HZ, 110% OVERLOAD | 124 A |
| ASSIGNED MOTOR CURRENT IM AT 500 V, 50 HZ, 110% OVERLOAD | 129 A |
| ASSIGNED MOTOR CURRENT IM AT 500 V, 50 HZ, 150% OVERLOAD | 79 A |
| 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 460/480 V, 60 HZ, 3-PHASE | 75 HP |
| ASSIGNED MOTOR POWER AT 460/480 V, 60 HZ, 3-PHASE, 110 % OVERLOAD | 100 HP |
| BRAKING RESISTANCE | 3.3 Ω |
| EQUIPMENT HEAT DISSIPATION, CURRENT- DEPENDENT PVID | 1289 W |
| HEAT DISSIPATION CAPACITY PDISS | 0 W |
| HEAT DISSIPATION PER POLE, CURRENT- DEPENDENT PVID | 0 W |
| INPUT CURRENT ILN AT 110% OVERLOAD | 129 A |
| INPUT CURRENT ILN AT 150% OVERLOAD | 97 A |
| MAINS CURRENT DISTORTION | 29.5 % |
| CURRENT LIMITATION | 0.1 - 2 x IH (CT), motor, main circuit |
| NUMBER OF SLOTS | 2 (expansion) |
| BRAKING TORQUE | Max. 30 % MN, Standard - Main circuit Max. 100 % of rated operational current Ie with external braking resistor - Main circuit Adjustable to 150 % (I/Ie), DC - Main circuit Adjustable to 150 %, DC - |

| | |
|---|--|
| | Main circuit |
| CABLE LENGTH | 200 m, screened, maximum permissible, Motor feeder C3 ≤ 50 m, Radio interference level, maximum motor cable length C2 ≤ 10 m, Radio interference level, maximum motor cable length |
| OUTPUT VOLTAGE (U2) | 480 V AC, 3-phase 500 V AC, 3-phase 400 V AC, 3-phase |
| NUMBER OF INPUTS (ANALOG) | 2 |
| NUMBER OF INPUTS (DIGITAL) | 8 |
| 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 |
| NUMBER OF OUTPUTS (DIGITAL) | 1 |
| STARTING CURRENT - MAX | 200 %, I _H , 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 | 1289 W |
| RATED CONTROL SUPPLY VOLTAGE | 10 V DC (U _s , max. 10 mA) |

| | |
|---|---|
| EFFICIENCY | 98.6 % (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 | 7.5 mA |
| MAINS VOLTAGE - MAX | 500 V |
| MAINS VOLTAGE - MIN | 380 V |
| NOMINAL OUTPUT CURRENT I_{2N} | 105 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 | 55 kW |
| OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX | 75 kW |
| OUTPUT FREQUENCY - MAX | 400 Hz |
| OUTPUT FREQUENCY - MIN | 0 Hz |
| OUTPUT VOLTAGE - MAX | 500 V |
| OVERLOAD CURRENT I_L AT 110% OVERLOAD | 154 A |
| OVERLOAD CURRENT I_L AT 150% OVERLOAD | 157.5 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 | 400 V AC, 3-phase 480 V AC, 3-phase 500 V AC, 3-phase |
| SHORT-CIRCUIT PROTECTION RATING | 175 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring |
| VIBRATION | Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak) 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 |
| RATED FREQUENCY - MAX | 66 Hz |
| RATED FREQUENCY - MIN | 45 Hz |
| RATED OPERATIONAL CURRENT (IE) AT 110% OVERLOAD | 140 A |
| RATED OPERATIONAL CURRENT (IE) AT 150% OVERLOAD | 105 A |
| RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN) | 105 A |
| RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 3-PHASE | 55 kW |
| RATED OPERATIONAL POWER AT 380/400 V, 50 HZ, 3-PHASE, 110% OVERLOAD | 75 kW |
| RATED OPERATIONAL POWER AT 500 V, 50 HZ, 3-PHASE | 55 kW |
| SAFETY FUNCTION/LEVEL | STO (Safe Torque Off, SIL1, PLc Cat 1) |

**HEAT DISSIPATION AT
CURRENT/SPEED**

1216 W at 50% current
and 0% speed
1346 W at 100% current
and 90% speed
440 W at 25% current and
0% speed
505 W at 25% current and
50% speed
586 W at 100% current
and 50% speed
696 W at 50% current and
50% speed
746 W at 50% current and
90% speed
827 W at 100% current
and 0% speed

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

:



Eaton House
30 Pembroke Road
Dublin 4,
Eaton.com

© 2025

Follow us on social media to get the
latest product and support
information.

