

**Variable frequency drive, 500 V AC, 3-phase, 100 A, 55 kW, IP21/NEMA1,  
Brake chopper, DC link choke**



**Part no. DG1-35100FB-C21C  
9703-5006-00P**

|                               |  |
|-------------------------------|--|
| Product name                  | Eaton DG1 variable frequency drive   |
| Part no.                      | DG1-35100FB-C21C   |
| EAN                           | 4015081772230  |
| Product Length/Depth          | 340.7 millimetre   |
| Product height                | 888.5 millimetre   |
| Product width                 | 288 millimetre   |
| Product weight                | 76.2 kilogram  |
| Certifications                | CSA-C22.2 No. 274-13<br>UL Category Control No.: NMMS, NMMS7<br>UL<br>UL report applies to both US and Canada<br>RoHS, ISO 9001<br>C-Tick<br>IEC/EN61800-3<br>UL508<br>UkrSEPRO<br>UL File No.: E134360<br>IEC/EN 61800-3<br>EAC<br>Specification for general requirements: IEC/EN 61800-2<br>Certified by UL for use in Canada<br>IEC/EN61800-5<br>CE<br>CUL<br>Safety requirements: IEC/EN 61800-5 |
| Product Tradename             | DG1  |
| Product Type                  | Variable frequency drive   |
| Product Sub Type              | None   |
| 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 available upon request.   |
| Features                      | Externally accessible fan<br>Parameterization: Fieldbus<br>Parameterization: Keypad<br>Parameterization: Power Xpert inControl   |
| Functions                     | 4-quadrant operation possible  |
| Air volume capacity           | 395 m <sup>3</sup> /h  |
| Cable length                  | C3 ≤ 10 m, Radio interference level, maximum motor cable length 200 m, screened, maximum permissible, Motor feeder   |
| Degree of protection          | NEMA 1<br>IP21   |
| Electromagnetic compatibility | 1st and 2nd environments (according to EN 61800-3)   |
| Environmental class           | 3C2, 3S2 (Air quality)   |
| Fitted with:                  | Control unit<br>Brake chopper<br>Multi-line graphic display<br>DC link choke<br>Additional PCB protection<br>Breaking resistance<br>PC connection<br>Radio interference suppression filter<br>Internal DC link<br>IGBT inverter  |
| Frame size                    | FS5  |
| Mounting position             | Vertical   |
| Number of slots               | 2 (expansion)  |
| Overvoltage category          | III  |
| Pollution degree              | 2  |
| Product Category              | Variable frequency drives  |

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| Protection   |  | Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)   |
| Radio interference class                                     |  | 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<br>C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. |
| Safety function/level  |  | STO (Safe Torque Off, SIL1, PLc Cat 1)  |
| 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)   |
| Vibration  |  | Resistance: 5 - 150 Hz, According to EN 61800-5-1, IEC/EN 60068-2-6<br>Resistance: 15.8 – 150 Hz, 1 g, Maximum acceleration amplitude<br>Resistance: 5 - 15.8 Hz, Amplitude 1 mm (peak)   |
| Altitude   |  | Above 1000 m with 1 % derating per 100 m<br>Max. 2000 m<br>Max. 1000 m  |
| Ambient operating temperature - min                          |  | -10 °C  |
| Ambient operating temperature - max                          |  | 50 °C   |
| Ambient operating temperature at 150% overload - min         |  | -30 °C  |
| Ambient operating temperature at 150% overload - max         |  | 50 °C   |
| Ambient storage temperature - min                            |  | -40 °C  |
| Ambient storage temperature - max                            |  | 70 °C   |
| Climatic proofing  |  | < 95 average relative humidity (RH), no condensation, no corrosion  |
| Current limitation   |  | 0.1 - 2 x I <sub>H</sub> (CT), motor, main circuit  |
| Efficiency   |  | 98.6 % (η)  |
| Heat dissipation at current/speed                            |  | 1013 W at 100% current and 0% speed<br>1223 W at 50% current and 0% speed<br>1357 W at 100% current and 90% speed<br>440 W at 25% current and 0% speed<br>512 W at 25% current and 50% speed<br>578 W at 100% current and 50% speed<br>699 W at 50% current and 50% speed<br>749 W at 50% current and 90% speed   |
| Input current I <sub>LN</sub> at 110% overload               |  | 114.1 A   |
| Input current I <sub>LN</sub> at 150% overload               |  | 93 A  |
| Leakage current at ground I <sub>PE</sub> - max              |  | 11.2 mA   |
| Mains current distortion                                     |  | 28.4 %  |
| Mains switch-on frequency                                    |  | Maximum of one time every 60 seconds  |
| Mains voltage - min  |  | 525 V   |
| Mains voltage - max  |  | 600 V   |
| Operating mode   |  | Speed control with slip compensation<br>Torque regulation<br>U/f control<br>Sensorless vector control (SLV)   |
| Output frequency - min                                       |  | 0 Hz  |
| Output frequency - max                                       |  | 400 Hz  |
| Output voltage (U <sub>2</sub> )                             |  | 600 V AC, 3-phase   |
| Overload current I <sub>L</sub> at 110% overload             |  | 137.5 A   |
| Overload current I <sub>L</sub> at 150% overload             |  | 150 A   |
| Rated conditional short-circuit current (I <sub>q</sub> )    |  | 100 kA  |
| Rated control supply voltage                                 |  | 10 V DC (U <sub>s</sub> , max. 10 mA)   |
| Rated frequency - min  |  | 45 Hz   |
| Rated frequency - max  |  | 66 Hz   |
| Rated operational current (I <sub>e</sub> ) at 110% overload |  | 125 A   |
| Rated operational current (I <sub>e</sub> ) at 150% overload |  | 100 A   |
| Rated operational voltage                                    |  | 600 V AC, 3-phase   |
| Resolution   |  | 0.01 Hz (Frequency resolution, setpoint value)  |
| Short-circuit protection rating                              |  | 175 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring  |
| Starting current - max                                       |  | 200 %, I <sub>H</sub> , max. starting current (High Overload), For 2 seconds every 20 seconds, Power section  |

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| Supply frequency   |  | 50/60 Hz   |
| Switching frequency  |  | 1.5 kHz, 1 - 6 kHz adjustable, fPWM, Power section, Main circuit   |
| System configuration type  |  | TN-S, TN-C, TN-C-S, TT, IT   |
| Voltage rating - max   |  | 600  |
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| Assigned motor current IM at 525 V, 50 Hz, 110% overload                         |  | 107 A  |
| Assigned motor current IM at 525 V, 50 Hz, 150% overload                         |  | 79 A   |
| Assigned motor current IM at 600 V, 50 Hz, 110% overload                         |  | 112 A  |
| Assigned motor current IM at 600 V, 50 Hz, 150% overload                         |  | 93.2 A   |
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| Apparent power at 600 V  |  | 129.9 kV-A   |
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| Braking resistance   |  | 7 Ω  |
| Braking torque   |  | Adjustable to 150 % (I/Ie), DC - Main circuit<br>Max. 100 % of rated operational current Ie with external braking resistor - Main circuit<br>Max. 30 % MN, Standard - Main circuit<br>Adjustable to 150 %, DC - Main circuit |
| Switch-on threshold for the braking transistor                                   |  | 1050   |
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| Number of inputs (analog)  |  | 2  |
| Number of inputs (digital)   |  | 8  |
| Number of outputs (analog)   |  | 2  |
| Number of outputs (digital)  |  | 1  |
| Number of relay outputs  |  | 3 (parameterizable, 2 changeover contacts and 1 N/O, 6 A (240 V AC) / 6 A (24 V DC))   |
| Rated control voltage (Uc)   |  | 24 V DC (external, max. 250 mA options incl.)  |
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| Communication interface  |  | DeviceNet, optional<br>SmartWire-DT, optional<br>Modbus TCP, built in<br>Ethernet IP, built in<br>Modbus RTU, built in<br>CANopen®, optional<br>BACnet MS/TP, built in<br>PROFIBUS, optional                                 |
| Connection to SmartWire-DT   |  | Yes<br>In conjunction with DXG-NET-SWD SmartWire DT module   |
| Protocol   |  | TCP/IP<br>MODBUS<br>CAN<br>PROFIBUS<br>PROFINET IO<br>DeviceNet<br>Other bus systems<br>BACnet<br>EtherNet/IP  |
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| Equipment heat dissipation, current-dependent Pvid                               |  | 1390 W   |
| Heat dissipation capacity Pdis   |  | 0 W  |
| Heat dissipation per pole, current-dependent Pvid                                |  | 0 W  |
| Rated operational current for specified heat dissipation (In)                    |  | 100 A  |
| Static heat dissipation, non-current-dependent Pvs                               |  | 27.23 W  |
| Heat dissipation details   |  | Operation (with 150 % overload), allow for derating  |
| 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.   |
| 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.   |

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| 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.   |
| 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.                         |

## Technical data ETIM 8.0

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| Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)   |    |  |           |
| Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kV (ec@ss10.0.1-27-02-31-01 [AKE177014]) |    |  |           |
| Mains voltage   | V  |  | 525 - 600 |
| Mains frequency   |    |  | 50/60 Hz  |
| Number of phases input  |    |  | 3         |
| Number of phases output   |    |  | 3         |
| Max. output frequency   | Hz |  | 400       |
| Max. output voltage   | V  |  | 600       |
| Nominal output current I <sub>2N</sub>  | A  |  | 100       |
| Max. output at quadratic load at rated output voltage   | kW |  | 90        |
| Max. output at linear load at rated output voltage  | kW |  | 75        |
| Relative symmetric net frequency tolerance  | %  |  | 10        |
| Relative symmetric net voltage tolerance  | %  |  | 10        |
| Number of analogue outputs  |    |  | 2         |
| Number of analogue inputs   |    |  | 2         |
| Number of digital outputs   |    |  | 1         |
| Number of digital inputs  |    |  | 8         |
| With control element  |    |  | Yes       |
| Application in industrial area permitted  |    |  | Yes       |
| Application in domestic- and commercial area permitted  |    |  | Yes       |
| Supporting protocol for TCP/IP  |    |  | Yes       |
| Supporting protocol for PROFIBUS  |    |  | Yes       |
| Supporting protocol for CAN   |    |  | Yes       |
| Supporting protocol for INTERBUS  |    |  | No        |
| Supporting protocol for ASI   |    |  | No        |
| Supporting protocol for KNX   |    |  | No        |
| Supporting protocol for Modbus  |    |  | Yes       |
| Supporting protocol for Data-Highway  |    |  | No        |
| Supporting protocol for DeviceNet   |    |  | Yes       |
| Supporting protocol for SUCONET   |    |  | No        |
| Supporting protocol for LON   |    |  | No        |
| Supporting protocol for PROFINET IO   |    |  | Yes       |
| Supporting protocol for PROFINET CBA  |    |  | No        |
| Supporting protocol for SERCOS  |    |  | No        |
| Supporting protocol for Foundation Fieldbus   |    |  | No        |
| Supporting protocol for EtherNet/IP   |    |  | Yes       |
| Supporting protocol for AS-Interface Safety at Work   |    |  | No        |
| Supporting protocol for DeviceNet Safety  |    |  | No        |
| Supporting protocol for INTERBUS-Safety   |    |  | No        |
| Supporting protocol for PROFIsafe   |    |  | No        |
| Supporting protocol for SafetyBUS p   |    |  | No        |

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| Supporting protocol for BACnet              |  |    | Yes         |
| Supporting protocol for other bus systems   |  |    | Yes         |
| Number of HW-interfaces industrial Ethernet |  |    | 1           |
| Number of interfaces PROFINET               |  |    | 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 HW-interfaces parallel            |  |    | 0           |
| Number of HW-interfaces other               |  |    | 1           |
| With optical interface                      |  |    | No          |
| With PC connection                          |  |    | Yes         |
| Integrated breaking resistance              |  |    | Yes         |
| 4-quadrant operation possible               |  |    | Yes         |
| Type of converter                           |  |    | U converter |
| Degree of protection (IP)                   |  |    | IP21        |
| Degree of protection (NEMA)                 |  |    | 1           |
| Height                                      |  | mm | 888.5       |
| Width                                       |  | mm | 288         |
| Depth                                       |  | mm | 340.7       |