

Variable frequency drive, 500 V AC, 3-phase, 52 A, 30 kW, IP21/NEMA1, DC link choke



Powering Business Worldwide™

Part no. **DG1-35052FN-C21C**
9703-4008-00P

Product name	Eaton DG1 variable frequency drive
Part no.	DG1-35052FN-C21C
EAN	4015081772360
Product Length/Depth	294 millimetre
Product height	630 millimetre
Product width	237.7 millimetre
Product weight	34.1 kilogram
Certifications	Specification for general requirements: IEC/EN 61800-2 UL508 IEC/EN 61800-3 Certified by UL for use in Canada UL Category Control No.: NMMS, NMMS7 CE IEC/EN61800-5 IEC/EN61800-3 UL UL File No.: E134360 CSA-C22.2 No. 274-13 UL report applies to both US and Canada RoHS, ISO 9001 EAC C-Tick CUL UkrSEPRO Safety requirements: IEC/EN 61800-5
Product Tradename	DG1
Product Type	Variable frequency drive
Product Sub Type	None
Catalog Notes	Assigned motor rating: for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm at 50 Hz or 1800 min at 60 Hz Assigned motor rating: Overload cycle for 60 s every 600 s Rated operational current for a switching frequency of 1 - 6 kHz and an ambient temperature of +50 °C for a 150% overload and +40 °C for a 110% overload
Features	Externally accessible fan Parameterization: Fieldbus Parameterization: Keypad Parameterization: Power Xpert inControl
Air volume capacity	260 m ³ /h
Cable length	200 m, screened, maximum permissible, Motor feeder C3 ≤ 10 m, Radio interference level, maximum motor cable length
Degree of protection	IP21 NEMA 1
Electromagnetic compatibility	1st and 2nd environments (according to EN 61800-3)
Environmental class	3C2, 3S2 (Air quality)
Fitted with:	IGBT inverter Radio interference suppression filter DC link choke Internal DC link Multi-line graphic display PC connection Control unit Additional PCB protection
Frame size	FS4
Mounting position	Vertical
Number of slots	2 (expansion)
Overvoltage category	III
Pollution degree	2
Product Category	Variable frequency drives
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 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
Safety function/level		STO (Safe Torque Off, SIL1, PLc Cat 1)
Shock resistance		Mechanical, According to EN 61800-5-1, IEC/EN 60068-2-27 Storage and transportation: maximum 15 g, 11 ms (inside the packaging) UPS drop test (for weights inside the UPS frame)
Suitable for		Branch circuits, (UL/CSA)
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
Altitude		Max. 1000 m Above 1000 m with 1 % derating per 100 m Max. 2000 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 _H (CT), motor, main circuit
Efficiency		98.3 % (η)
Heat dissipation at current/speed		249 W at 25% current and 0% speed 267 W at 25% current and 50% speed 324 W at 100% current and 50% speed 382 W at 50% current and 50% speed 415 W at 50% current and 90% speed 544 W at 100% current and 0% speed 657 W at 50% current and 0% speed 732 W at 100% current and 90% speed
Input current I _{LN} at 110% overload		57.4 A
Input current I _{LN} at 150% overload		48.3 A
Leakage current at ground I _{PE} - max		6 mA
Mains current distortion		31.2 %
Mains switch-on frequency		Maximum of one time every 60 seconds
Mains voltage - min		525 V
Mains voltage - max		600 V
Operating mode		U/f control Torque regulation Sensorless vector control (SLV) Speed control with slip compensation
Output frequency - min		0 Hz
Output frequency - max		400 Hz
Output voltage (U ₂)		600 V AC, 3-phase
Overload current I _L at 110% overload		68.2 A
Overload current I _L at 150% overload		78 A
Rated conditional short-circuit current (I _q)		100 kA
Rated control supply voltage		10 V DC (U _s , max. 10 mA)
Rated frequency - min		45 Hz
Rated frequency - max		66 Hz
Rated operational current (I _e) at 110% overload		62 A
Rated operational current (I _e) at 150% overload		52 A
Rated operational voltage		600 V AC, 3-phase
Resolution		0.01 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating		80 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
Starting current - max		200 % I _H , max. starting current (High Overload), For 2 seconds every 20 seconds, Power section
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
Assigned motor current IM at 525 V, 50 Hz, 110% overload		54 A
Assigned motor current IM at 525 V, 50 Hz, 150% overload		44 A
Assigned motor current IM at 600 V, 50 Hz, 110% overload		57.1 A
Assigned motor current IM at 600 V, 50 Hz, 150% overload		47.3 A
Apparent power at 600 V		64.4 kV-A
Braking resistance		9 Ω
Braking torque		Max. 100 % of rated operational current Ie with external braking resistor - Main circuit Max. 30 % MN, Standard - Main circuit Adjustable to 150 %, DC - Main circuit Adjustable to 150 % (I/Ie), DC - Main circuit
Switch-on threshold for the braking transistor		1050
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.)
Communication interface		DeviceNet, optional PROFIBUS, optional BACnet MS/TP, built in CANopen®, optional Modbus RTU, built in SmartWire-DT, optional Ethernet IP, built in Modbus TCP, built in
Connection to SmartWire-DT		In conjunction with DXG-NET-SWD SmartWire DT module Yes
Protocol		CAN Other bus systems TCP/IP PROFIBUS MODBUS PROFINET IO DeviceNet BACnet EtherNet/IP
Equipment heat dissipation, current-dependent Pvid		884 W
Heat dissipation capacity Pdis		0 W
Heat dissipation per pole, current-dependent Pvid		0 W
Rated operational current for specified heat dissipation (In)		52 A
Static heat dissipation, non-current-dependent Pvs		24.65 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.
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

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 (ecl@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 _{2N}	A	52
Max. output at quadratic load at rated output voltage	kW	45
Max. output at linear load at rated output voltage	kW	37
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
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			No
4-quadrant operation possible			No
Type of converter			U converter
Degree of protection (IP)			IP21
Degree of protection (NEMA)			1
Height		mm	630
Width		mm	237.7
Depth		mm	294