

Variable frequency drive, 230 V AC, 1-phase, 4.3 A, 0.75 kW, IP20/NEMA 0,
Radio interference suppression filter, FS1



Powering Business Worldwide™

Part no. **DB1-124D3FN-N2CC**
197194

General specifications		
Product name		Eaton DB1 Variable frequency drive
Part no.		DB1-124D3FN-N2CC
EAN		4015080896920
Product Length/Depth		74 millimetre
Product height		130 millimetre
Product width		118 millimetre
Product weight		0.7 kilogram
Certifications		IEC/EN 61800-2 RoHS, ISO 9001 Safety: EN 61800-5-1: 2003 UL UL 508C UL report applies to both US and Canada CE UL Category Control No.: NMMS, NMMS7 CUL RCM IEC/EN61800-5 UL File No.: E172143 IEC/EN 61800-3 Certified by UL for use in Canada IEC/EN61800-3 CSA-C22.2 No. 14 CSA IEC/EN 61800-5-1 CE marking CSA-C22.2 No. 274
Product Tradename		DB1
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 depending on cooling Rated operational current at an operating frequency of 8 kHz and an ambient air temperature of +60°C
Features & Functions		
Features		Parameterization: Fieldbus Parameterization: Keypad Parameterization: drivesConnect Parameterization: drivesConnect mobile (App)
Fitted with:		PC connection IGBT inverter Internal DC link Radio interference suppression filter Additional PCB protection
General information		
Cable length		C2 ≤ 3 m, maximum motor cable length C3 ≤ 10 m, maximum motor cable length 10 m, screened, maximum permissible cable length C1 ≤ 1 m, maximum motor cable length
Communication interface		Modbus RTU CANopen® OP-Bus (RS485)
Connection to SmartWire-DT		No
Degree of protection		IP20 NEMA 0/other
Electromagnetic compatibility		1st and 2nd environments (according to EN 61800-3)
Frame size		FS1
Number of slots		1 (expansion)
Product Category		Variable frequency drives
Protection		Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)

Protocol		MODBUS CAN Other bus systems
Radio interference class		C1: 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.
Suitable for		Branch circuits, (UL/CSA)
Ambient conditions, mechanical		
Mounting position		Depending on the cooling As required
Shock resistance		15 g, Mechanical, According to IEC/EN 60068-2-27, 11 ms
Vibration		Resistance: According to EN 61800-5-1
Climatic environmental conditions		
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		-10 °C
Ambient operating temperature at 150% overload - max		60 °C
Ambient storage temperature - min		-40 °C
Ambient storage temperature - max		60 °C
Climatic proofing		< 95 average relative humidity (RH), no condensation, no corrosion
Main circuit		
Efficiency		96 % (η)
Heat dissipation at current/speed		31 W at 50% current and 0% speed 31.5 W at 25% current and 0% speed 36 W at 25% current and 50% speed 37 W at 100% current and 0% speed 39 W at 50% current and 50% speed 41.9 W at 100% current and 50% speed 43 W at 50% current and 90% speed 47.3 W at 100% current and 90% speed
Input current ILN at 150% overload		9.1 A
Leakage current at ground IPE - max		3.5 mA (at 230 V)
Mains switch-on frequency		Maximum of one time every 30 seconds
Mains voltage - min		200 V
Mains voltage - max		240 V
Operating mode		U/f control Speed control with slip compensation BLDC motors PM motors Sensorless vector control (SLV) Synchronous reluctance motors
Output frequency - min		0 Hz
Output frequency - max		500 Hz
Output voltage (U2)		230 V AC, 3-phase 240 V AC, 3-phase
Overload current IL at 150% overload		6.45 A
Rated control supply voltage		10 V DC (Us, max. 10 mA)
Rated frequency - min		48 Hz
Rated frequency - max		62 Hz
Rated operational current (Ie) at 150% overload		4.3 A
Rated operational power at 220/230 V, 50 Hz, 1-phase		0.75 kW
Rated operational voltage		230 V AC, 1-phase 240 V AC, 1-phase
Resolution		0.1 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating		15 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
Starting current - max		175 %, IH, max. starting current (High Overload), For 3.75 seconds every 600 seconds, Power section
Supply frequency		50/60 Hz
Switching frequency		8 kHz, 4 - 32 kHz adjustable (audible), fPWM, Power section, Main circuit
System configuration type		AC supply systems with earthed center point

Voltage rating - max		240 V AC
Motor rating		
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload		4.3 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload		4.3 A
Assigned motor power at 230/240 V, 60 Hz, 1-phase		1 HP
Apparent power		
Apparent power at 230 V		0.99 kV-A
Apparent power at 240 V		1.03 kV-A
Braking function		
Braking torque		Max. 100 % of rated operational current Ie, variable, DC - Main circuit Max. 30 % MN, Standard - Main circuit
Control circuit		
Number of inputs (analog)		2
Number of inputs (digital)		4
Number of outputs (analog)		1
Number of outputs (digital)		1
Number of relay outputs		1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
Rated control voltage (Uc)		24 V DC (external, max. 100 mA)
Design verification		
Equipment heat dissipation, current-dependent Pvid		60 W
Heat dissipation capacity Pdis		0 W
Heat dissipation per pole, current-dependent Pvid		0 W
Rated operational current for specified heat dissipation (In)		4.3 A
Static heat dissipation, non-current-dependent Pvs		0 W
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.
10.5 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.
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 9.0

Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)		
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency / Servo converter = < 1 kV (ecl@ss13-27-02-31-01 [AKE177019])		
Mains voltage	V	200 - 240
Mains frequency		50/60 Hz
Number of phases input		1

Number of phases output		3
Max. output frequency	Hz	500
Max. output voltage	V	250
Nominal output current I2N	A	4.3
Max. output at quadratic load at rated output voltage	kW	0.75
Max. output at linear load at rated output voltage	kW	0.75
Power consumption	W	60
Relative symmetric net frequency tolerance	%	10
Relative symmetric net voltage tolerance	%	10
Number of analogue outputs		1
Number of analogue inputs		2
Number of digital outputs		1
Number of digital inputs		4
With control element		No
Application in industrial area permitted		Yes
Application in domestic- and commercial area permitted		Yes
Supporting protocol for TCP/IP		No
Supporting protocol for PROFIBUS		No
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		No
Supporting protocol for SUCONET		No
Supporting protocol for LON		No
Supporting protocol for PROFINET IO		No
Supporting protocol for PROFINET CBA		No
Supporting protocol for SERCOS		No
Supporting protocol for Foundation Fieldbus		No
Supporting protocol for EtherNet/IP		No
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		No
Supporting protocol for other bus systems		Yes
Number of HW-interfaces industrial Ethernet		0
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		0
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)		IP20
Degree of protection (NEMA)		Other

Height	mm	130
Width	mm	118
Depth	mm	74