



Variable frequency drive, 115 V AC, single-phase, 3.2 A, 0.5 kW, IP20/
NEMA0, Radio interference suppression filter, Additional PCB protection,
FS1B



Part no. **DB1-1D3D2FN-N2CC**
Catalog No. **199347**

Delivery program

Product range			Variable frequency drives
Part group reference (e.g. DIL)			DB1
Rated operational voltage	U_e		115 V AC, single-phase
Output voltage with V_e	U_2		230 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	110 (-10%) - 115 (+10%)
Rated operational current			
At 150% overload	I_e	A	3.2
Note			Rated operational current at an operating frequency of 8 kHz and an ambient air temperature of +60°C depending on cooling
Assigned motor rating			
Note			For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.5
150 % Overload	I_M	A	3.2
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.75
150 % Overload	I_M	A	3.2
Degree of Protection			IP20/NEMA0
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
Fitted with			Radio interference suppression filter Additional PCB protection
Parameterization			Keypad Fieldbus drivesConnect drivesConnect mobile (App)
Frame size			FS1B
Connection to SmartWire-DT			no

Technical data

General

Standards			General requirements: IEC/EN 61800-2 EMV requirements: IEC/EN 61800-3 Safety requirements: IEC/EN 61800-5-1
Certifications			CE, UL, cUL, RCM
Production quality			RoHS, ISO 9001
Climatic proofing	ρ_w	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	+60
			operation (with 150 % overload)
Storage	θ	°C	-40 - +60
Radio interference level			
Radio interference class (EMC)			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.
Environment (EMC)			1st and 2nd environments as per EN 61800-3

maximum motor cable length	l	m	C1 ≤ 1 m C2 ≤ 3 m C3 ≤ 10 m
Mechanical shock resistance		g	15 (11 m/s, EN 60068-2-27)
Vibration			EN 61800-5-1
Mounting position			As required depending on the cooling
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 2000 m
Degree of Protection			IP20/NEMA0
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)

Main circuit

Supply			
Rated operational voltage	U_e		115 V AC, single-phase
Notes			The mains voltage of 115 V is raised to 230 V (output voltage) through an internal voltage double connection.
Mains voltage (50/60Hz)	U_{LN}	V	110 (-10%) - 115 (+10%)
Input current (150% overload)	I_{LN}	A	11.4
System configuration			AC supply systems with earthed center point
Supply frequency	f_{LN}	Hz	50/60
Frequency range	f_{LN}	Hz	48 - 62
Mains switch-on frequency			Maximum of one time every 30 seconds
Power section			
Function			Variable frequency drive with internal DC link and IGBT inverter
Overload current (150% overload)	I_L	A	4.8
max. starting current (High Overload)	I_H	%	175
Note about max. starting current			for 3.75 seconds every 600 seconds
Output voltage with V_e	U_2		230 V AC, 3-phase
Output Frequency	f_2	Hz	0 - 50/60 (max. 500)
Switching frequency	f_{PWM}	kHz	8 adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation sensorless vector control (SLV) PM motors Synchronous reluctance motors BLDC motors
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	I_e	A	3.2
Note			Rated operational current at an operating frequency of 8 kHz and an ambient air temperature of +60°C depending on cooling
Power loss			
Heat dissipation at rated operational current $I_e = 150\%$	P_V	W	29
Efficiency	η	%	95
Heat dissipation at current/speed [%]			
Current = 100%			
Speed = 0 %	P_V	W	21.61
Speed = 50 %	P_V	W	36.59
Speed = 90 %	P_V	W	36.36
Current = 50 %			
Speed = 0 %	P_V	W	17.05
Speed = 50 %	P_V	W	25.14
Speed = 90 %	P_V	W	33.98
Current = 50 %			
Speed = 0 %	P_V	W	16.07
Speed = 50 %	P_V	W	20.45
Maximum leakage current to ground (PE) without motor	I_{PE}	mA	3.5 (115 V)

Fan			temperature controlled Tool-less swapping
Fitted with			Radio interference suppression filter Additional PCB protection
Frame size			FS1B
Motor feeder			
Note			For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.5
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.75
maximum permissible cable length	l	m	screened: 10
Apparent power			
Apparent power at rated operation 230 V	S	kVA	0.73
Apparent power at rated operation 240 V	S	kVA	0.76
Braking function			
Standard braking torque			max. 30 % MN
DC braking torque			Max. 100% of rated operational current I _e , variable

Control section

External control voltage	U _c	V	24 V DC (max. 100 mA)
Reference voltage	U _s	V	10 V DC (max. 10 mA)
Analog inputs			2, parameterizable, 0 - 10 V DC, 0/4 - 20 mA
Analog outputs			1, parameterizable, 0 - 10 V
Digital inputs			4, parameterizable, max. 30 V DC
Digital outputs			1, parameterizable, 24 V DC
Relay outputs			1, parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
Expansion slots			1

Assigned switching and protective elements

Power Wiring			
Safety device (fuse or miniature circuit-breaker)			
IEC (Type B, gG), 150 %			FAZ-B16/1N
UL (Class CC or J)		A	15
Mains contactor			
150 % overload (CT/I _H , at 50 °C)			DILM7-... + DILM12-XP1
Main choke			
150 % overload (CT/I _H , at 50 °C)			DX-LN1-013
Radio interference suppression filter (external, 150 %)			DX-EMC12-014-FS1
Motor feeder			
motor choke			
150 % overload (CT/I _H , at 50 °C)			DX-LM3-008
Sine filter			
150 % overload (CT/I _H , at 50 °C)			DX-SIN3-004

Design verification as per IEC/EN 61439

Technical data for design verification			
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	60

Technical data ETIM 7.0

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	99 - 126
Mains frequency		50/60 Hz

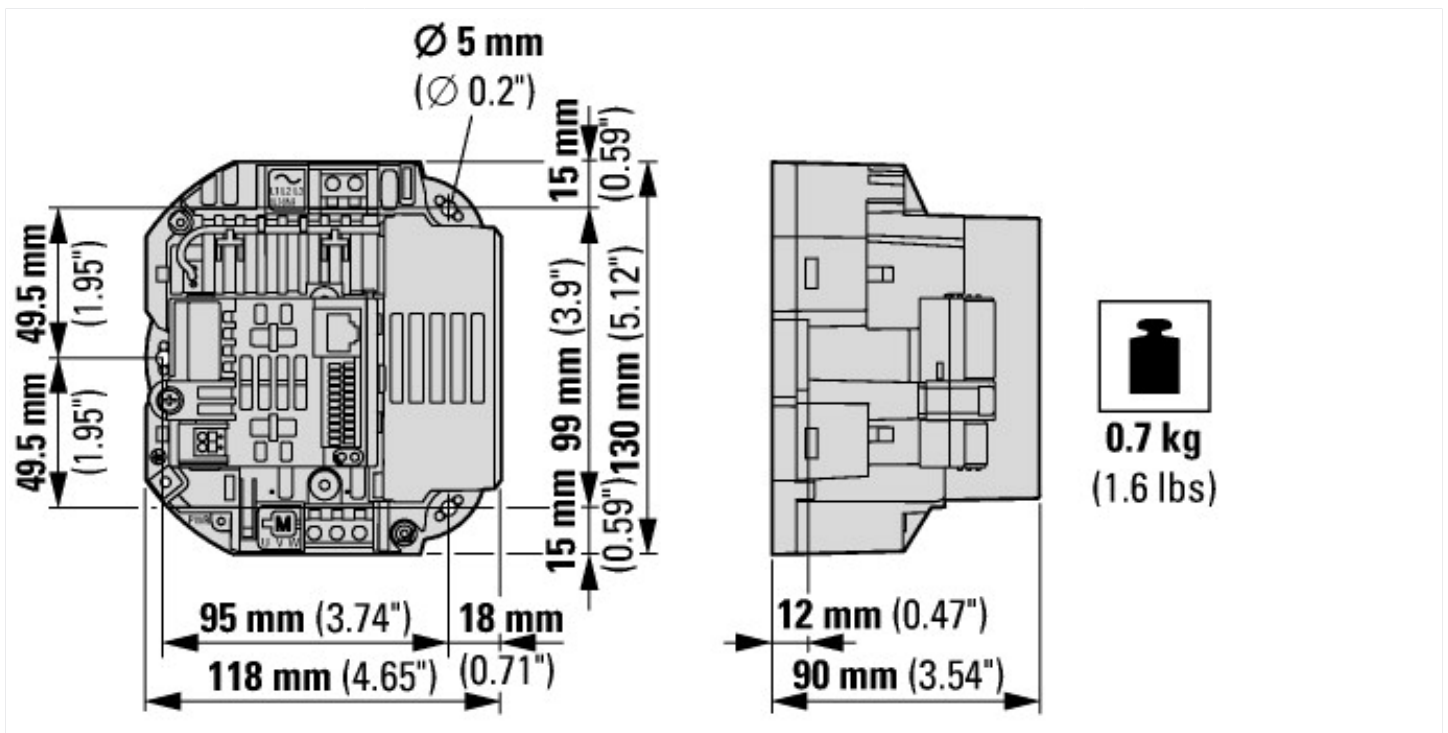
Number of phases input		1
Number of phases output		3
Max. output frequency	Hz	500
Max. output voltage	V	250
Nominal output current I2N	A	32
Max. output at quadratic load at rated output voltage	kW	0.55
Max. output at linear load at rated output voltage	kW	0.55
Relative symmetric net frequency tolerance	%	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 unit		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	85

Approvals

Product Standards		UL 508C; CSA-C22.2 No. 274; IEC/EN61800-2; IEC/EN61800-3; IEC/EN61800-5-1; CE marking
UL File No.		E172143
UL Category Control No.		NMMS2, NMMS8
CSA File No.		UL report applies to both US and Canada
North America Certification		UL listed, certified by UL for use in Canada
Specially designed for North America		No
Suitable for		Branch circuits
Max. Voltage Rating		1~ 120 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)
Degree of Protection		IEC: IP20, NEMA 0

Dimensions



Additional product information (links)

IL040044ZU DB1 variable frequency drive	
IL040044ZU DB1 variable frequency drive	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL040044ZU2020_10.pdf
IL040044ZU DB1 variable frequency drive	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL040044ZU2021_04.pdf
MN040031 DB1 variable frequency drives, Installation manual	
MN040031 Frequenzumrichter DB1, Installationshandbuch - Deutsch	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN040031_DE.pdf
MN040031 DB1 variable frequency drives, Installation manual - English	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN040031_EN.pdf
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