DATASHEET - DC1-122D3FN-A20CE1



Variable frequency drives; 1-/3-phase 230 V; 2.3 A; 0.37 kW; EMC filters



Part no.DC1-122D3FN-A20CE1Catalog No.185803Eaton Catalog No.DC1-122D3FN-A20CE1EL-Nummer4137006



Technical data

General			
Standards			Specification for general requirements: IEC/EN 61800-2
orannain2			Specification for general requirements: IEC/EN 61800-2 EMC requirements: IEC/EN 61800-3 Safety requirements: IEC/EN 61800-5-1
Certifications			CE, UL, cUL, RCM, Ukr SEPRO, EAC
Production quality			RoHS, ISO 9001
Climatic proofing	ρ _w	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
operation (150 % overload)	θ	°C	-10 - +50
Storage	9	°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	I	m	$\begin{array}{l} C1 \leq 1 \mbox{ m} \\ C2 \leq 5 \mbox{ m} \\ C3 \leq 25 \mbox{ m} \end{array}$
Mounting position			Vertical
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 4000 m
Degree of Protection			IP20/NEMA 0
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)
Main circuit			
Supply			
Rated operational voltage	U _e		230 V AC, 1-phase 240 V AC, single-phase
Mains voltage (50/60Hz)	U _{LN}	V	200 (-10%) - 240 (+10%)
Input current (150% overload)	I _{LN}	А	3.7
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			Frequency inverter with internal DC link and IGBT inverter
Overload current (150% overload)	١L	A	3.45
max. starting current (High Overload)	Ι _Η	%	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 240 V AC, 3-phase
Output Frequency	f ₂	Hz	0 - 50/60 (max. 500)
Switching frequency	fpwm	kHz	16 adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation sensorless vector control (SLV)
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	Ι _e	А	2.3

Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C
Power loss			
Heat dissipation at rated operational current I $_{\rm e}$ =150 %	P _V	W	18.5
Efficiency	η	%	95
Maximum leakage current to ground (PE) without motor	I _{PE}	mA	4.8
Fitted with	11		Radio interference suppression filter
			7-digital display assembly
Frame size			FS1
Motor feeder			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm ⁻¹ at 50 Hz or 1800 min ⁻¹ at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	Р	kW	0.37
Note			at 220 - 240 V, 60 Hz
150 % Overload	Р	HP	0.5
maximum permissible cable length	I	m	screened: 50 screened, with motor choke: 100 unscreened: 75 unscreened, with motor choke: 150
Apparent power			
Apparent power at rated operation 230 V	S	kVA	0.92
Apparent power at rated operation 240 V	S	kVA	0.96
Braking function			
Standard braking torque			max. 30 % MN
DC braking torque			max. 100% of rated operational current l _e , variable
Control section			
Reference voltage	Us	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®
Assigned switching and protective elements			
Power Wiring			
IEC (Type B, gG), 150 %			FAZ-B10/1N
UL (Class CC or J)		А	10
150 % overload (CT/I _H , at 50 °C)			DX-LN1-006
Motor feeder			
150 % overload (CT/I _H , at 50 °C)			DX-LM3-005
150 % overload (CT/I _H , at 50 °C)			DX-SIN3-004

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	А	2.3
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P _{vid}	W	18.5
Static heat dissipation, non-current-dependent	P _{vs}	W	0
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	50
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
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 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric 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 Insulation properties	
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 6.0

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@ss8.1-27-02-31-01 [AKE177011])		
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
Rated output current I2N	А	2.3
Max. output at quadratic load at rated output voltage	kW	0.37
Max. output at linear load at rated output voltage	kW	0.37
With control unit		Yes
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		Yes

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 SafetyBUS p No Supporting protocol for other bus systems No Number of HW-interfaces RADFINET O Number of HW-interfaces RADFINET O Number of HW-interfaces RS-322 O Number of HW-interfaces RS-425 O Number of HW-interfaces RS-426 O Number of HW-interfaces RS-428 O			
Supporting protocol for PREPBUS-Safety Image: Supporting protocol for PROFISafe Image: Supporting protocol for Safety BUS p Image: Supporting protocol for Safety BUS p Image: Supporting protocol for other bus systems Image: Support systems <	Supporting protocol for AS-Interface Safety at Work		No
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Suporting protocol for other bus systems Main Yes Number of HW-interfaces industrial Ethemet 0 0 Number of HW-interfaces PR0FINET 0 0 Number of HW-interfaces RS-232 0 0 Number of HW-interfaces RS-422 0 0 Number of HW-interfaces RS-425 0 0 Number of HW-interfaces RS-426 0 0 Number of HW-interfaces RS-427 0 0 Number of HW-interfaces RS-428 0 0 Number of HW-interfaces RS-428 0 0 Number of HW-interfaces Staft 0 0 Number of HW-interfaces Staft 0 0 Number of HW-interfaces staft 0 0 Number of HW-interfaces other 0 0 Number of HW-interfaces other 0 0 Number of HW-interfaces other No 0 Numb	Supporting protocol for PROFIsafe		No
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Number of HW-interfaces parallel Image: Parallel	Number of HW-interfaces serial TTY		0
Number of HW-interfaces other Image: Biology of the status of the st	Number of HW-interfaces USB		0
With optical interfaceModeWith Optical interfaceModeWith PC connectionModeIntegrated breaking resistanceMode4-quadrant operation possibleModeType of converterModeDegree of protection (IP)ModeHeightModeWith ModeModeWith ModeModeModeModeWith Mode<	Number of HW-interfaces parallel		0
With PC connectionMainMainMainIntegrated breaking resistanceMainMainMain4-quadrant operation possibleMainMainMainType of converterMainMainMainDegree of protection (IP)MainMainMainWith MainMainMainMainDegthMainMainMainDegthMain <td>Number of HW-interfaces other</td> <td></td> <td>0</td>	Number of HW-interfaces other		0
Integrated breaking resistance Image: Provide status of the status of	With optical interface		No
4-quadrant operation possibleMo4-quadrant operation possibleMoType of converterU converterDegree of protection (IP)MoHeightMoWidthMoDepthMoMathematicationMo <td>With PC connection</td> <td></td> <td>Yes</td>	With PC connection		Yes
Type of converter Market Participation Market Participation Market Participation Market Participation Degree of protection (IP) Image: Participation Image: Partitipation Image:	Integrated breaking resistance		No
Degree of protection (IP) Mode Mode Height Mm 184 Withh Mm 16 Depth Mm 12	4-quadrant operation possible		No
Heightmm184Widthmm81Depthmm124	Type of converter		U converter
Width mm 81 Depth mm 124	Degree of protection (IP)		IP20
Depth mm 124	Height	mn	nm 184
	Width	mn	1m 81
Relative symmetric net frequency tolerance % 10	Depth	mn	124 International Internationa
	Relative symmetric net frequency tolerance	%	5 10
Relative symmetric net current tolerance % 10	Relative symmetric net current tolerance	%	5 1 0

Approvals

Product Standards	UL 508C; CSA-C22.2 No. 14; IEC/EN61800-3; IEC/EN61800-5; CE marking
UL File No.	E172143
UL Category Control No.	NMMS, NMMS7
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~ 240 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)
Degree of Protection	IEC: IP20



