DATASHEET - DE11-122D7FN-N20N



Speed starters, single-phase power supply connection, three-phase motor connection at 230 V, 2, 7 A and 0, 55 kW / 0, 5 HP, with integrated EMC filter

Powering Business Worldwide*

Part no. DE11-122D7FN-N20N

Catalog No. 180652

Eaton Catalog No. DE11-122D7FN-N20N

Technical data General

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Standards			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
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 - +60
Storage	9	°C	-40 - +70
Radio interference level			
Radio interference class (EMC) Environment (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. 1st and 2nd environments as per EN 61800-3
maximum motor cable length	I	m	C1 ≤ 5 m C2 ≤ 10 m C3 ≤ 25 m
Mechanical shock resistance		g	15 (11 m/s, EN 60068-2-27)
Vibration			EN 61800-5-1
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 2000 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}	Α	7.3
Supply frequency	f_{LN}	Hz	50/60
Frequency range	f _{LN}	Hz	45 - 66
Mains switch-on frequency			Maximum of one time every 30 seconds
Power section			
Overload current (150% overload)	IL	Α	4.05
max. starting current (High Overload)	I _H	%	200
Note about max. starting current			for 1.875 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. 300)
Switching frequency	f _{PWM}	kHz	16 adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation
Frequency resolution (setpoint value)	Δf	Hz	0.03

Rated operational current			
At 150% overload	I _e	Α	2.7
Note			Rated operational current at an operating frequency of 16 kHz and an ambient ai temperature of +50 $^{\circ}\text{C}$
Maximum leakage current to ground (PE) without motor	I _{PE}	mA	< 3.5 AC, < 10 DC
Fitted with			Radio interference suppression filter
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	P	kW	0.55
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.5
Apparent power			
Apparent power at rated operation 230 V	S	kVA	1.08
Apparent power at rated operation 240 V	S	kVA	1.12
Braking function			
Standard braking torque			max. 30 % M _N
DC braking torque			adjustable to 100 %
Control section			
Reference voltage	U_s	V	10 V DC (max. 0.2 mA)
Analog inputs			1, parameterizable, 0 - 10 V DC, 0/4 - 20 mA
Digital inputs			4, parameterizable, 10 - 30 V DC
Relay outputs			1, parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)
nterface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
Assigned switching and protective elements			
Power Wiring			
Safety device (fuse or miniature circuit-breaker)			547 P4444
IEC (Type B, gG), 150 %			FAZ-B10/1N
UL (Class CC or J)		А	10
Mains contactor			DUEM DIDUEM
150 % overload (CT/I _H , at 50 °C)			DILEM + P1DILEM
110 % overload (VT/I _L , at 40 °C)			DILM7 + DILM12-XP1
Main choke			
150 % overload (CT/I _H , at 50 °C)			DX-LN1-009
Motor feeder			

Design verification as per IEC/EN 61439

150 % overload (CT/I_H, at 50 °C)

motor choke

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	2.7
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P _{vid}	W	27
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	60
			Operation (with 150 % overload)
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.

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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 observed.
10.12 Electromagnetic compatibility	Is the panel builder's responsibility. The specifications for the switchgear must 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

Toomingar data ETTIVI 0.0		
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)		
Electric engineering, automation, process control engineering / Electrical drive / Static fre	quency converte	r / 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	300
Max. output voltage	V	250
Rated output current I2N	Α	2.7
Max. output at quadratic load at rated output voltage	kW	0.5
Max. output at linear load at rated output voltage	kW	0.5
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		No
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 other bus systems Yes Supporting protocol for other bus systems 0 Number of HW-interfaces ROFINET 0 Number of HW-interfaces RPOFINET 0 Number of HW-interfaces RS-422 0 Number of HW-interfaces RS-425 1 Number of HW-interfaces RS-428 1 Number of HW-interfaces Stafe 1 Number of HW-interfaces Stafe 0 With Optical interface No With Optical interface No With Optical interface No With Optical interface No Unsergated breaking resistance No A-quadrant operation			
Supporting protocol for INTERBUS-Safety No Supporting protocol for PROFISEFE No Supporting protocol for SafetyBUS p No Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 0 Number of HW-interfaces PROFINET 0 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-425 0 Number of HW-interfaces RS-485 1 Number of HW-interfaces Siral TTY 0 Number of HW-interfaces Supporting the interfaces Supporting Supp	Supporting protocol for AS-Interface Safety at Work		No
Supporting protocol for PR0FIsafe No Supporting protocol for SafetyBUS p Yes Number of HW-interfaces industrial Ethernet 0 Number of HW-interfaces PR0FINET 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 RS-485 0 Number of HW-interfaces parallel 0 Number of HW-interfaces Braffle No Number of HW-interfaces Braffle No With ptical interface No With ptical interface No A-quadrant operation possible No Type of converter Uconverter Degree of protection (IP) Interface Height <td< td=""><td>Supporting protocol for DeviceNet Safety</td><td></td><td>No</td></td<>	Supporting protocol for DeviceNet Safety		No
Supporting protocol for SafetyBUS p No Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 0 Number of HW-interfaces PROFINET 0 Number of HW-interfaces RS-232 0 Number of HW-interfaces RS-428 1 Number of HW-interfaces RS-488 0 Number of HW-interfaces USB 0 Number of HW-interfaces uses rial ITY 0 Number of HW-interfaces other 0 With potical interface 0 With pC connection 0 Integrated breaking resistance No 4-quadrant operation possible No Integrated breaking resistance Vo 4-quadrant operation possible No Integrated breaking resistance Vo 4-quadrant operation possible Vo Integrated breaking resistance Vo 4-quadrant operation possible Vo Integrated breaking resistance Vo 4-quadrant operation possible Vo Integrated breaking resistance Vo Integrated breaking re	Supporting protocol for INTERBUS-Safety		No
Supporting protocol for other bus systems Yes Number of HW-interfaces industrial Ethernet 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 RS-485 1 Number of HW-interfaces Staff TTY 0 Number of HW-interfaces usbs 0 Number of HW-interfaces usbs 0 Number of HW-interfaces other 0 With optical interfaces other 0 With optical interfaces other No With PC connection No Integrated breaking resistance No 4-quadrant operation possible No Type of converter U converter Degree of protection (IP) P20 Height mm 45 Width mm 45 Depth mm 168 Belative symmetric net frequency tolerance % 5	Supporting protocol for PROFIsafe		No
Number of HW-interfaces industrial Ethernet 0 Number of HW-interfaces RS-232 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 other 0 With optical interface 0 With optical interface No With PC connection No Integrated breaking resistance No 4-quadrant operation possible No Type of converter Uconverter Degree of protection (IP) IP20 Height mm 230 Width mm 45 Depth mm 45 Depth mm 168 Relative symmetric net frequency tolerance % 5	Supporting protocol for SafetyBUS p		No
Number of HW-interfaces PR0FINET 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 No Integrated breaking resistance No 4-quadrant operation possible No Type of converter U converter Degree of protection (IP) IP20 Height mm 230 With HM Character mm 45 Degree of protection (IP) mm 45 With HM Character mm 45 Degree of protection (IP) mm 45 With HM Character mm 45 Degree of protection (IP) mm 45 With HM Character mm 45 With HM Character (IP) mm 45	Supporting protocol for other bus systems		Yes
Number of HW-interfaces RS-232 Number of HW-interfaces RS-425 Number of HW-interfaces RS-485 Number of HW-interfaces serial TTY Number of HW-interfaces serial TTY Number of HW-interfaces serial TTY Number of HW-interfaces usbs Number of HW-interfaces parallel Number of HW-interfaces other O Number of HW-interfaces other No With optical interface With PC connection Integrated breaking resistance 4-quadrant operation possible No Type of converter Degree of protection (IP) Height Mind Mind Mind Mind Mind Mind Mind Mind	Number of HW-interfaces industrial Ethernet		0
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Number of HW-interfaces parallel Number of HW-interfaces other With optical interface With PC connection Integrated breaking resistance A-quadrant operation possible Type of converter Degree of protection (IP) Height With PC connection	Number of HW-interfaces serial TTY		0
Number of HW-interfaces other With optical interface With PC connection With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Height mm 45 Depth Relative symmetric net frequency tolerance 0 No No No No No No No No No	Number of HW-interfaces USB		0
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With PC connection Integrated breaking resistance A-quadrant operation possible Type of converter Degree of protection (IP) Height Depth Relative symmetric net frequency tolerance No No Voorverter U converter IP20 PRO No	Number of HW-interfaces other		0
Integrated breaking resistance 4-quadrant operation possible No Type of converter Degree of protection (IP) Height Mmm 230 Width Mmm 45 Depth Relative symmetric net frequency tolerance No No Voconverter U converter How and a suppose to protection (IP) Mmm 45 Selective symmetric net frequency tolerance No	With optical interface		No
A-quadrant operation possible Type of converter Degree of protection (IP) Height Width Depth Relative symmetric net frequency tolerance No V converter U converter IP20 IP20 IP20 IP30 IP30	With PC connection		No
Type of converter Degree of protection (IP) Height Mm Mm Mm Mm Mm Mm Mm Mm Mm M	Integrated breaking resistance		No
Degree of protection (IP) IP20 Height mm 230 Width mm 45 Depth mm 168 Relative symmetric net frequency tolerance % 5	4-quadrant operation possible		No
Height mm 230 Width mm 45 Depth mm 168 Relative symmetric net frequency tolerance % 5	Type of converter		U converter
Width mm 45 Depth mm 168 Relative symmetric net frequency tolerance % 5	Degree of protection (IP)		IP20
Depth mm 168 Relative symmetric net frequency tolerance % 5	Height	mm	230
Relative symmetric net frequency tolerance % 5	Width	mm	45
	Depth	mm	168
Relative symmetric net current tolerance % 10	Relative symmetric net frequency tolerance	%	5
	Relative symmetric net current tolerance	%	10

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

Dimensions

