#### **DATASHEET - DE1-127D0FN-N20N**



Variable speed starter, Rated operational voltage 230 V AC, 1-phase, le 7 A, 1.5 kW, 2 HP, Radio interference suppression filter

DE1-127D0FN-N20N

4110095

FAT•N°

Powering Business Worldwide

**6** 

Part no. DE1-127D0FN-N20N Catalog No. 174331

Alternate Catalog No.

EL-Nummer

(Norway)

**Delivery program** 

Delivery program			
Product range			Variable speed starter
Part group reference (e.g. DIL)			DE1
Rated operational voltage	U <sub>e</sub>		230 V AC, 1-phase 240 V AC, single-phase
Output voltage with $V_{\text{e}}$	U <sub>2</sub>		230 V AC, 3-phase 240 V AC, 3-phase
Mains voltage (50/60Hz)	$U_LN$	V	200 (-10%) - 240 (+10%)
Rated operational current			
At 150% overload	I <sub>e</sub>	Α	7
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 $^{\circ}\text{C}$
Assigned motor rating			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm <sup>-1</sup> at 50 Hz or 1800 min <sup>-1</sup> at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	Р	kW	1.5
150 % Overload	I <sub>M</sub>	Α	6.3
Note			at 220 - 240 V, 60 Hz
150 % Overload	Р	HP	2
150 % Overload	I <sub>M</sub>	Α	6.8
Degree of Protection			IP20/NEMA0
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU
Fitted with			Radio interference suppression filter
Parameterization			Keypad Fieldbus drivesConnect drivesConnect mobile (App)
Frame size			FS1
Connection to SmartWire-DT			yes in conjunction with DX-NET-SWD3 SmartWire DT module

#### **Technical data**

Genera

General			
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	$\rho_{\text{W}}$	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	+ 60
			operation (150 % overload); max. +60 °C
Storage	9	°C	-40 - +70

Radio interference level			
Radio interference class (EMC)			C1 (for conducted emissions only), C2, C3, depending on the motor cable length, the
Hadio interierence class (Livio)			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	C1 ≤ 5 m C2 ≤ 10 m C3 ≤ 25 m
Mechanical shock resistance		g	15 (11 m/s, EN 60068-2-27)
Vibration		9	EN 61800-5-1
Altitude		m	0 - 1000 m above sea level
Autuue		""	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 <sub>e</sub>		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 <sub>LN</sub>	Α	17.4
Supply frequency	f <sub>LN</sub>	Hz	50/60
Frequency range	f <sub>LN</sub>	Hz	45-66 (± 0%)
Mains switch-on frequency	·LIV		Maximum of one time every 30 seconds
			Maxilluli of othe time every 30 Seconds
Power section			
Overload current (150% overload)	IL	Α	10.5
max. starting current (High Overload)	I <sub>H</sub>	%	200
Note about max. starting current			for 1.875 seconds every 600 seconds
Output voltage with $V_{\text{e}}$	U <sub>2</sub>		230 V AC, 3-phase 240 V AC, 3-phase
Output Frequency	f <sub>2</sub>	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)  Rated operational current	Δf	Hz	0.025
At 150% overload	I <sub>e</sub>	Α	7
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air
			temperature of +50 °C
Maximum leakage current to ground (PE) without motor	I <sub>PE</sub>	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 <sup>-1</sup> at 50 Hz or 1800 min <sup>-1</sup> at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	1.5
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	НР	2
	•	111	-
Apparent power	0	LAZZA	2.70
Apparent power at rated operation 230 V	S	kVA	2.79
Apparent power at rated operation 240 V	S	kVA	2.91
Braking function			
Standard braking torque			max. 30 % M <sub>N</sub>
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
Analog inputs			1, parameterizable, 0 - 10 V DC, 0/4 - 20 mA

Relay outputs		1, N/O contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)
Interface/field bus (built-in)		OP-Bus (RS485)/Modbus RTU
Assigned switching and protective elements		
Power Wiring		
Safety device (fuse or miniature circuit-breaker)		
IEC (Type B, gG), 150 %		FAZ-B20/1N
UL (Class CC or J)	Α	20
Mains contactor		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DILM7 + DILM12-XP1
Main choke		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-LN1-018
Radio interference suppression filter (external, 150 %)		DX-EMC12-019-FS1
Note regarding radio interference suppression filter		Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments
Motor feeder		
motor choke		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-LM3-008

4, parameterizable, 10 - 30 V DC

# Design verification as per IEC/EN 61439

Digital inputs

observed.				
Heat dissipation per pole, current-dependent Prod W 99  Static heat dissipation, current-dependent Prod W 99  Static heat dissipation, current-dependent Prod W 99  Static heat dissipation, current-dependent Prod W 99  Heat dissipation capacity Prod W 90  Heat dissipation capacity Prod W 90  Operating ambient temperature max. Prod Static heat dissipation capacity Prod W 90  Operating ambient temperature max. Prod W 90  ICC/EN 61439 design verification  10.2 Strongth of materials and parts  10.2.2 Verification of thermal stability of enclosures  10.2.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects  10.2.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects  10.2.4 Resistance to ultra-violet (LIV) radiation  10.2.5 Litting  10.2.6 Mechanical impact  10.2.7 Inscriptions  10.3 Degree of protection of ASSEMBLIES  10.3 Degree of protection of ASSEMBLIES  10.4 Clearances and creapage distances  10.5 Protoction against electric shock  10.6 Incorporation of switching devices and components  10.7 Internal electrical circuits and connections  10.8 Commoctons for external conductors  10.9 Insulation properties  10.1 Short-circuit rating  10.1 Short-circuit rating  10.2 Insulation properties  10.1 Short-circuit rating	Technical data for design verification			
Equipment heart dissipation, current-dependent P <sub>vid</sub> W 0 Static heart dissipation, current-dependent P <sub>vid</sub> W 0 Operating ambient temperature min. Operating ambient temperature max.  Operating ambient temperature max.  OPERATOR	Rated operational current for specified heat dissipation	In	Α	7
Static heat dissipation, non-current-dependent  Heat dissipation capacity  Operating ambient temperature min.  Operating ambient temperature min.  Operating ambient temperature min.  OPERATION of Marking and Park  10.2 Stronghy of materials and parts  10.2 Stronghy of materials and parts  10.2 Stronghy of materials and parts  10.2.2 Corrosion resistance  10.2.3.1 Verification of thermal stability of enclosures  10.2.3.2 Verification of resistance of insulating materials to normal heat  10.2.3.3 Verification of resistance of insulating materials to abnormal heat  10.2.4 Resistance to ultra-violet (UV) radiation  10.2.5 Mechanical impact  10.2.6 Mechanical impact  10.2.7 Inscriptions  10.3 Degree of protection of ASSEMBLIES  10.3 Does not apply, since the entire switchgear needs to be evaluated.  10.4 Clearances and creepage distances  10.5 Protection against electric shock  10.5 Protection against electric shock  10.6 Incorporation of switching devices and components  10.7 Internal electrical circuits and connections  10.8 Incorporation of external conductors  10.9 Insulation properties  10.9 Insulation pr	Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	0
Heat dissipation capacity  Operating ambient temperature min.  Operating ambient temperature max.  ***********************************	Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	59
Operating ambient temperature min.  Operating ambient temperature max.  **C = 60    Committee   Commit	Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
C   Fig.   Fig	Heat dissipation capacity	P <sub>diss</sub>	W	0
IEC/EN 61439 design verification  10.2 Strength of materials and parts  10.2.2 Corrosion resistance 10.2.3.1 Verification of thermal stability of enclosures 10.2.3.2 Verification of resistance of insulating materials to normal heat 10.2.3.2 Verification of resistance of insulating materials to normal heat 10.2.3.2 Verification of resistance of insulating materials to abnormal heat 10.2.3.3 Verification of resistance of insulating materials to abnormal heat 10.2.3.3 Verification of resistance of insulating materials to abnormal heat 10.2.4 Resistance to ultra-violet (UV) rediation 10.2.4 Resistance to ultra-violet (UV) rediation 10.2.5 Lifting 10.2.6 Mechanical impact 10.2.6 Mechanical impact 10.2.6 Mechanical impact 10.2.7 Inscriptions 10.3.0 Degree of protection of ASSEMBLIES 10.3.0 Degree of protection of ASSEMBLIES 10.4 Clearances and creepage distances 10.5 Protection against electric shock 10.6 Incorporation of switching devices and components 10.5 Incorporation of switching devices and components 10.6 Incorporation of switching devices and components 10.7 Internal electrical circuits and connections 10.8 Connections for external conductors 10.9 Insulation properties 10.9.2 Power-frequency electric strength 10.9 Insulation properties 10.9.3 Insulation properties 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise calculation rise instruction observed. 10.11 Short-circuit rating 10.12 Secondary of enclosu	Operating ambient temperature min.		°C	-10
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10.7 Internal electrical circuits and connections  1s the panel builder's responsibility.  10.8 Connections for external conductors  1s the panel builder's responsibility.  10.9 Insulation properties  10.9.2 Power-frequency electric strength  10.9.3 Impulse withstand voltage  1s the panel builder's responsibility.  1s the panel builder is responsibility.  1s the panel builder is responsibility.  1s the panel builder is responsibility.  1s the panel builder's responsibility. The specifications for the switchgear must be observed.  1s the panel builder's responsibility. The specifications for the switchgear must be observed.  1s the panel builder's responsibility. The specifications for the switchgear must be observed.  1s the panel builder's responsibility. The specifications for the switchgear must be observed.  1s the panel builder's responsibility. The specifications for the switchgear must be observed.	10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
10.8 Connections for external conductors  10.9 Insulation properties  10.9.2 Power-frequency electric strength  10.9.3 Impulse withstand voltage  10.9.4 Testing of enclosures made of insulating material  10.10 Temperature rise  10.11 Short-circuit rating  10.12 Electromagnetic compatibility  10.13 Mechanical function  10.13 Mechanical function  10.14 Sthe panel builder's responsibility. The specifications for the switchgear must be observed.  10.15 Mechanical function  10.16 The panel builder's responsibility. The specifications for the switchgear must be observed.  10.17 Electromagnetic compatibility  10.18 Mechanical function  10.19 Mechanical function  10.19 Mechanical function  10.10 The device meets the requirements, provided the information in the instruction	10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.9 Insulation properties  10.9.2 Power-frequency electric strength  10.9.3 Impulse withstand voltage  10.9.4 Testing of enclosures made of insulating material  10.10 Temperature rise  10.11 Short-circuit rating  10.12 Electromagnetic compatibility  10.13 Mechanical function  10.13 Mechanical function  Is the panel builder's responsibility.  The panel builder is responsibility.  The panel builder is responsibility. The specifications for the switchgear must be observed.  The panel builder's responsibility. The specifications for the switchgear must be observed.  The device meets the requirements, provided the information in the instruction	10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.9.2 Power-frequency electric strength  10.9.3 Impulse withstand voltage  10.9.4 Testing of enclosures made of insulating material  10.10 Temperature rise  10.11 Short-circuit rating  10.12 Electromagnetic compatibility  10.13 Mechanical function  Is the panel builder's responsibility.  Is the panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.  Is the panel builder's responsibility. The specifications for the switchgear must be observed.  Is the panel builder's responsibility. The specifications for the switchgear must be observed.  The device meets the requirements, provided the information in the instruction	10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage  10.9.4 Testing of enclosures made of insulating material  10.10 Temperature rise  10.11 Short-circuit rating  10.12 Electromagnetic compatibility  10.13 Mechanical function  10.13 Mechanical function  10.14 Esting of enclosures made of insulating material  15 the panel builder's responsibility.  16 the panel builder's responsibility. The specifications for the switchgear must be observed.  17 the panel builder's responsibility. The specifications for the switchgear must be observed.  18 the panel builder's responsibility. The specifications for the switchgear must be observed.  19 the panel builder's responsibility. The specifications for the switchgear must be observed.	10.9 Insulation properties			
10.9.4 Testing of enclosures made of insulating material  10.10 Temperature rise  The panel builder's responsibility.  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	10.9.2 Power-frequency electric strength			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	10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
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	10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
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	10.10 Temperature rise			
observed.  10.13 Mechanical function  The device meets the requirements, provided the information in the instruction	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 switch gear must be observed. $\label{eq:specifications}$
	10.13 Mechanical function			

## **Technical data ETIM 7.0**

ow-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC		
		ter / Static frequency converter = < 1 kV (ecl@ss10.0.1-27-02-31-01 [AKE177014])
Asias formanda	V	200 - 240
ains frequency		50/60 Hz
umber of phases input		1
umber of phases output		3
ax. output frequency	Hz	300
ax. output voltage	V	250
ominal output current I2N	A	7
ax. output at quadratic load at rated output voltage	kW	0.5
ax. output at linear load at rated output voltage	kW	0.5
lative symmetric net frequency tolerance	%	10
lative symmetric net voltage tolerance	%	10
mber of analogue outputs		0
mber of analogue inputs		1
mber of digital outputs		0
mber of digital inputs		4
th control unit		No
plication in industrial area permitted		Yes
plication in domestic- and commercial area permitted		Yes
pporting protocol for TCP/IP		No
pporting protocol for PROFIBUS		No
pporting protocol for CAN		No
pporting protocol for INTERBUS		No
pporting protocol for ASI		No
pporting protocol for KNX		No
pporting protocol for MODBUS		Yes
pporting protocol for Data-Highway		No
pporting protocol for DeviceNet		No
pporting protocol for SUCONET		No
pporting protocol for LON		No
pporting protocol for PROFINET IO		No
pporting protocol for PROFINET CBA		No
pporting protocol for SERCOS		No
pporting protocol for Foundation Fieldbus		No
pporting protocol for EtherNet/IP		Yes
pporting protocol for AS-Interface Safety at Work		No
pporting protocol for DeviceNet Safety		No
pporting protocol for INTERBUS-Safety		No
pporting protocol for PROFIsafe		No
pporting protocol for SafetyBUS p		No
pporting protocol for BACnet		No
oporting protocol for other bus systems		Yes
mber of HW-interfaces industrial Ethernet		0
mber of interfaces PROFINET		0
mber of HW-interfaces RS-232		0
mber of HW-interfaces RS-422		0
mber of HW-interfaces RS-485		1
mber of HW-interfaces serial TTY		0
mber of HW-interfaces USB		0
Imber of HW-interfaces parallel		0
Number of HW-interfaces other  With optical interface  With PC connection		0 No 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	230
Width	mm	45
Depth	mm	168

## **Approvals**

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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**

