Speed starters, single-phase power supply connection, three-phase motor connection at 230 V, 7 A and 1, 5 kW / 2 HP

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

Delivery programme

Product range			Variable speed starter
Part group reference (e.g. DIL)			DE1
Rated operational voltage	U_e		230 V AC, 1-phase
Output voltage with V_e	U_2		230 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	200 (-10%) - 240 (+10%)
Rated operational current			
At 150% overload	I_e	A	7
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C
Note			Overload cycle for 60 s every 600 s
Assigned motor rating			
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	1.5
150 % Overload	I_e	A	6.3
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	2
150 % Overload	I_e	A	6.8
Degree of Protection			IP20/NEMA 0
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU
Fitted with			Radio interference suppression filter
Frame size			FS1
Connection to SmartWire-DT			with SmartWire-DT module DX-NET-SWD3

Technical data

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, c-Tick
Production quality			RoHS, ISO 9001
Climatic proofing	ρ_w	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive (EN 50178)
Ambient temperature		°C	
operation (150 % overload)	ϑ	°C	-10 - +50, max. +60
Storage	ϑ	°C	-40 - +70
Radio interference level			
Radio interference class (EMC)			C1, 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
maximum motor cable length	l	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 with 1 % performance reduction per 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
Mains voltage (50/60Hz)	U_{LN}	V	200 (-10%) - 240 (+10%)
Input current (150% overload)	I_{LN}	A	17.4
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)	I_L	A	10.5
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
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	0.025
Rated operational current			
At 150% overload	I_e	A	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_{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	1.5
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	2
Apparent power			
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_N
DC braking torque			100 %, adjustable

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)
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 (Typ B, gG)			FAZ-B20/1N

UL (Class CC or J)		A	20
Mains contactor			
150 % overload (CT/I_H, at 50 °C)			DILEM-… + P1DILEM DILEM-…+P1DILEM
110 % overload (VT/I_L, at 40 °C)			DILM7-… + DILM12-XP1
Main choke			
150 % overload (CT/I_H, at 50 °C)			DX-LN1-018
Radio interference suppression filter (external)			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_H, at 50 °C)			DX-LM3-008

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	7
Heat dissipation per pole, current-dependent	P_{vid}	W	0
Equipment heat dissipation, current-dependent	P_{vid}	W	59
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

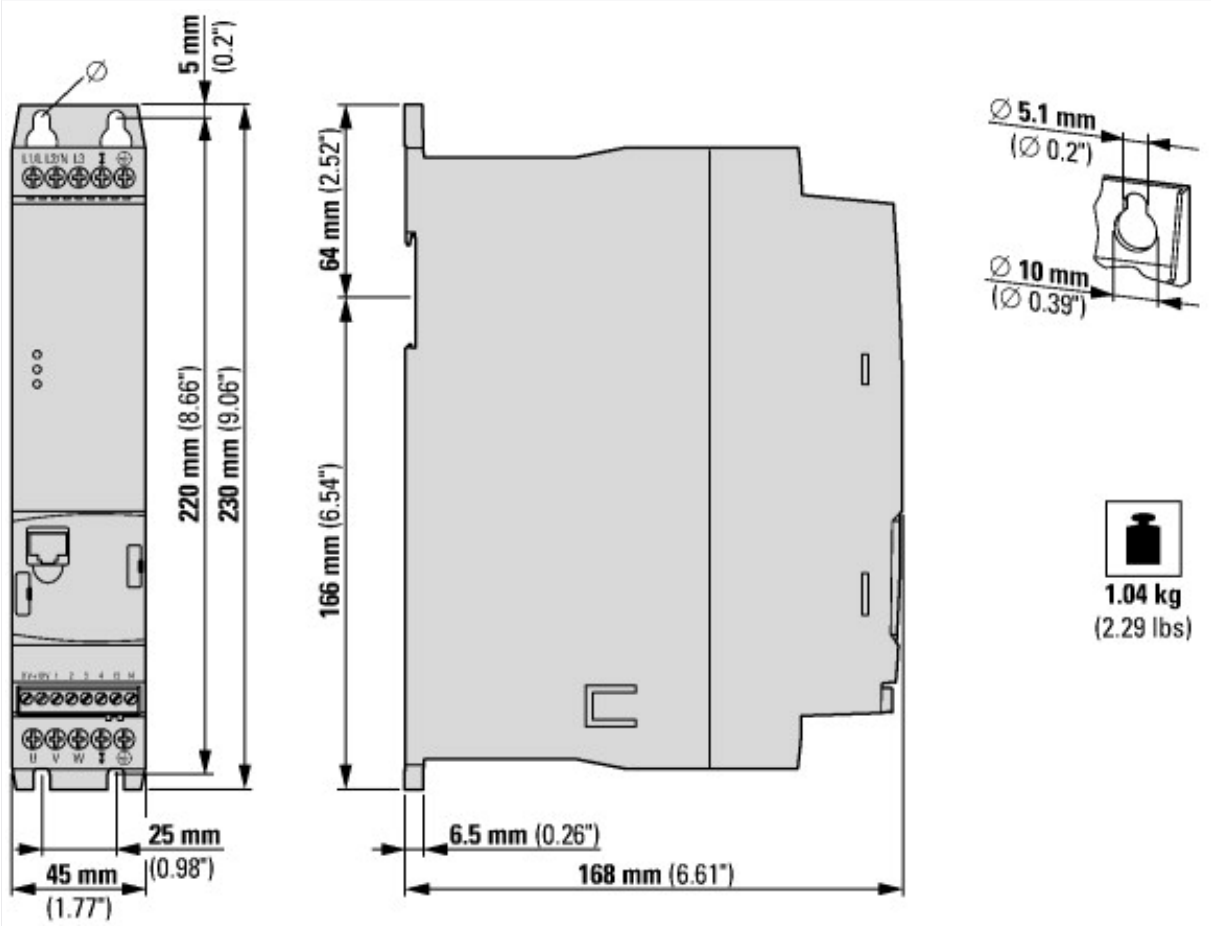
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)			
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])			
Mains voltage		V	200 - 240

Mains frequency		50/60 Hz
Number of phases input		1
Number of phases output		3
Max. output frequency	Hz	300
Max. output voltage	V	240
Rated output current I2N	A	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		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 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-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
Height	mm	230
Width	mm	45
Depth	mm	168
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



Additional product information (links)

IL040005ZU Variable frequency drives DE1	
IL040005ZU Variable frequency drives DE1	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL040005ZU2014_07.pdf
MN040011 DE1 Variable speed starter, Manual	
MN040011 Drehzahlstarter DE1, Handbuch - Deutsch	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_DE.pdf
MN040011 DE1 Variable speed starter, Manual - English	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_EN.pdf
MN040011 Démarreur à vitesse variable DE1, manuel d'utilisation - français	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_FR.pdf
MN040011 Avviatore a velocità variabile DE1, Manuale - italiano	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_IT.pdf
MN040011 DE1 Variable speed starter, Manual	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_NO.pdf
MN040011 Rozrusznik silnikowy z regulacją prędkości DE1, podręcznik - polski	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_PL.pdf
MN040011 DE1 Variable speed starter, Manual	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_RO.pdf
MN040011 DE1 Variable speed starter, Manual	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_SV.pdf
CA04020001Z-DE Sortimentskatalog: Antriebstechnik effizient gestalten, Motoren starten und steuern	http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238_de.pdf