

**Variable speed starter, single-phase mains connection, three-phase motor connection at 230 V, 1.4 A and 0.25 kW / 0.3 HP**



**Part no.** DE1-121D4NN-N20N  
**Article no.** 177359  
**Catalog No.** DE1-121D4NN-N20N

## Delivery program

Product range			Variable speed starter
Part group reference (e.g. DIL)			DE1
Rated operational voltage	$U_e$		230 V AC, 1-phase 240 V AC, single-phase
Output voltage with $V_e$	$U_2$		230 V AC, 3-phase 240 V AC, 3-phase
Mains voltage (50/60Hz)	$U_{LN}$	V	200 (-10%) - 240 (+10%)
<b>Rated operational current</b>			
At 150% overload	$I_e$	A	1.4
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
<b>Assigned motor rating</b>			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with $1500 \text{ rpm}^{-1}$ at 50 Hz or $1800 \text{ min}^{-1}$ at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.25
150 % Overload	$I_M$	A	1.4
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.33
150 % Overload	$I_M$	A	1.4
Degree of Protection			IP20/NEMA 0
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU
Frame size			FS1
Connection to SmartWire-DT			with SmartWire-DT module DX-NET-SWD3

## Technical data

<b>General</b>			
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	$\rho_w$	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
operation (150 % overload)	$\theta$	°C	-10 - +60
Storage	$\theta$	°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: 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)	$I_{LN}$	A	3.6
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	2.1
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)	$\Delta f$	Hz	0.025
Rated operational current			
At 150% overload	$I_e$	A	1.4
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
Frame size			FS1
Motor feeder			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with $1500 \text{ rpm}^{-1}$ at 50 Hz or $1800 \text{ min}^{-1}$ at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.25
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.33
Apparent power			
Apparent power at rated operation 230 V	S	kVA	0.56
Apparent power at rated operation 240 V	S	kVA	0.58
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)
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-B10/1N

UL (Class CC or J)	A	10
Mains contactor		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DILEM-... + P1DILEM
110 % overload (VT/I <sub>L</sub> , at 40 °C)		DILM7-... + DILM12-XP1
Main choke		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-LN1-006
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-LM3-005

## Design verification as per IEC/EN 61439

Technical data for design verification		
Operating ambient temperature min.	°C	-10
Operating ambient temperature max.	°C	50

## Technical data ETIM 6.0

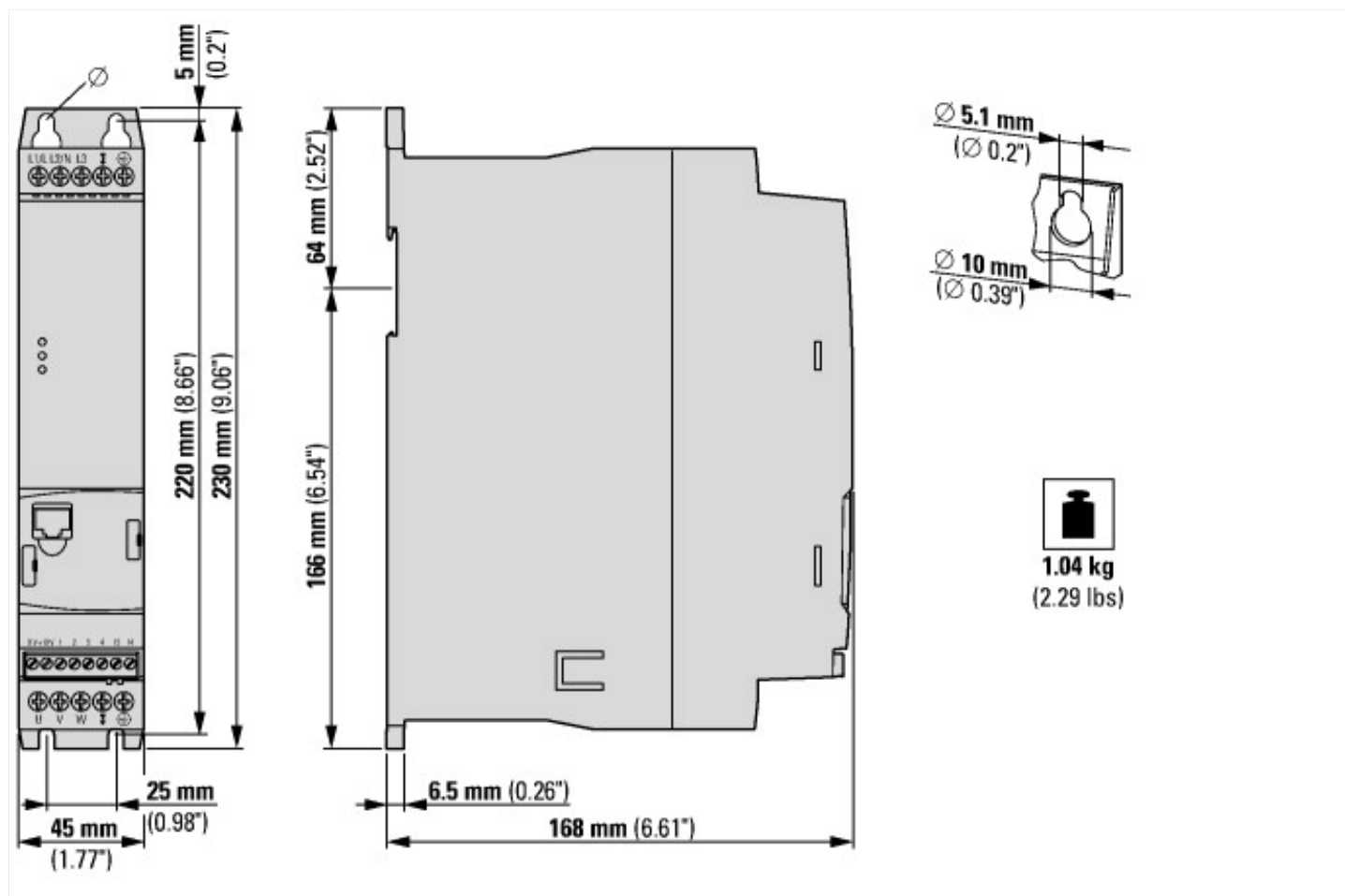
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)		
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])		
Mains voltage	V	200 - 240
Mains frequency		50/60 Hz
Number of phases input		1
Number of phases output		3
Max. output frequency	Hz	300
Max. output voltage	V	230
Rated output current I <sub>2N</sub>	A	1.4
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 DE1 variable frequency drive

IL040005ZU DE1 variable frequency drive [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL040005ZU2016\\_03.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL040005ZU2016_03.pdf)

### MN040011 DE1 Variable speed starter, Manual

MN040011 Drehzahlstarter DE1, Handbuch - Deutsch [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040011\\_DE.pdf](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](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](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](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](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](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_PL.pdf)

MN040011 DE1 Variable speed starter, Manual - русский [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040011\\_RU.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_RU.pdf)

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