



## Variable frequency drives; single-phase 115 V; 4.3 A; 0.75 kW

**Part no.** DC1-1D4D3NN-A20CE1  
**Catalog No.** 185768  
**Eaton Catalog No.** DC1-1D4D3NN-A20CE1  
**EL-Nummer (Norway)** 4137039

### Delivery program

Product range			Variable frequency drives
Part group reference (e.g. DIL)			DC1
Rated operational voltage	$U_e$		115 V AC, single-phase
Output voltage with $V_e$	$U_2$		230 V AC, 3-phase
Mains voltage (50/60Hz)	$U_{LN}$	V	110 (-10%) - 115 (+10%)
<b>Rated operational current</b>			
At 150% overload	$I_e$	A	4.3
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	0.75
150 % Overload	$I_M$	A	3.2
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	1
150 % Overload	$I_M$	A	4.2
Degree of Protection			IP20/NEMA 0
Interface/field bus (built-in)			OP bus (RS485)/Modbus RTU, CANopen®
Fieldbus connection (optional)			SmartWire-DT
Fitted with			7-digital display assembly
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, RCM, Ukr SEPRO, EAC
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 - +50
Storage	$\theta$	°C	-40 - +60
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

<b>Supply</b>			
Rated operational voltage	$U_e$		115 V AC, single-phase

Notes			The mains voltage of 115 V is raised to 230 V (output voltage) through an internal voltage double connection.
Mains voltage (50/60Hz)	$U_{LN}$	V	110 (-10%) - 115 (+10%)
Input current (150% overload)	$I_{LN}$	A	15.8
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
<b>Power section</b>			
Function			Frequency inverter with internal DC link and IGBT inverter
Overload current (150% overload)	$I_L$	A	6.45
max. starting current (High Overload)	$I_H$	%	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
Output Frequency	$f_2$	Hz	0 - 50/60 (max. 500)
Switching frequency	$f_{PWM}$	kHz	16 adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation sensorless vector control (SLV)
Frequency resolution (setpoint value)	$\Delta f$	Hz	0.1
<b>Rated operational current</b>			
At 150% overload	$I_e$	A	4.3
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C
<b>Power loss</b>			
Heat dissipation at rated operational current $I_e = 150\%$	$P_V$	W	37.5
Efficiency	$\eta$	%	95
Maximum leakage current to ground (PE) without motor	$I_{PE}$	mA	4.8
Fan			0
Fitted with			7-digital display assembly
Frame size			FS1
<b>Motor feeder</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	0.75
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	1
maximum permissible cable length	l	m	screened: 50 screened, with motor choke: 100 unscreened: 75 unscreened, with motor choke: 150
<b>Braking function</b>			
Standard braking torque			max. 30 % MN
DC braking torque			adjustable to 100 %
<b>Control section</b>			
Reference voltage	$U_s$	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®
<b>Assigned switching and protective elements</b>			
<b>Power Wiring</b>			
IEC (Type B, gG), 150 %			FAZ-B25/1N

UL (Class CC or J)		A	25
150 % overload (CT/I <sub>H</sub> , at 50 °C)			DX-LN1-018
Motor feeder			
150 % overload (CT/I <sub>H</sub> , at 50 °C)			DX-LM3-005
150 % overload (CT/I <sub>H</sub> , at 50 °C)			DX-SIN3-010

## Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	4.3
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	0
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	37.5
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature max.		°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			
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 and fire due to internal electric effects			
10.2.4 Resistance to ultra-violet (UV) radiation			
10.2.5 Lifting			
10.2.6 Mechanical impact			
10.2.7 Inscriptions			
10.3 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			
10.7 Internal electrical circuits and connections			
10.8 Connections for external conductors			
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			
10.9.3 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			

## Technical data ETIM 6.0

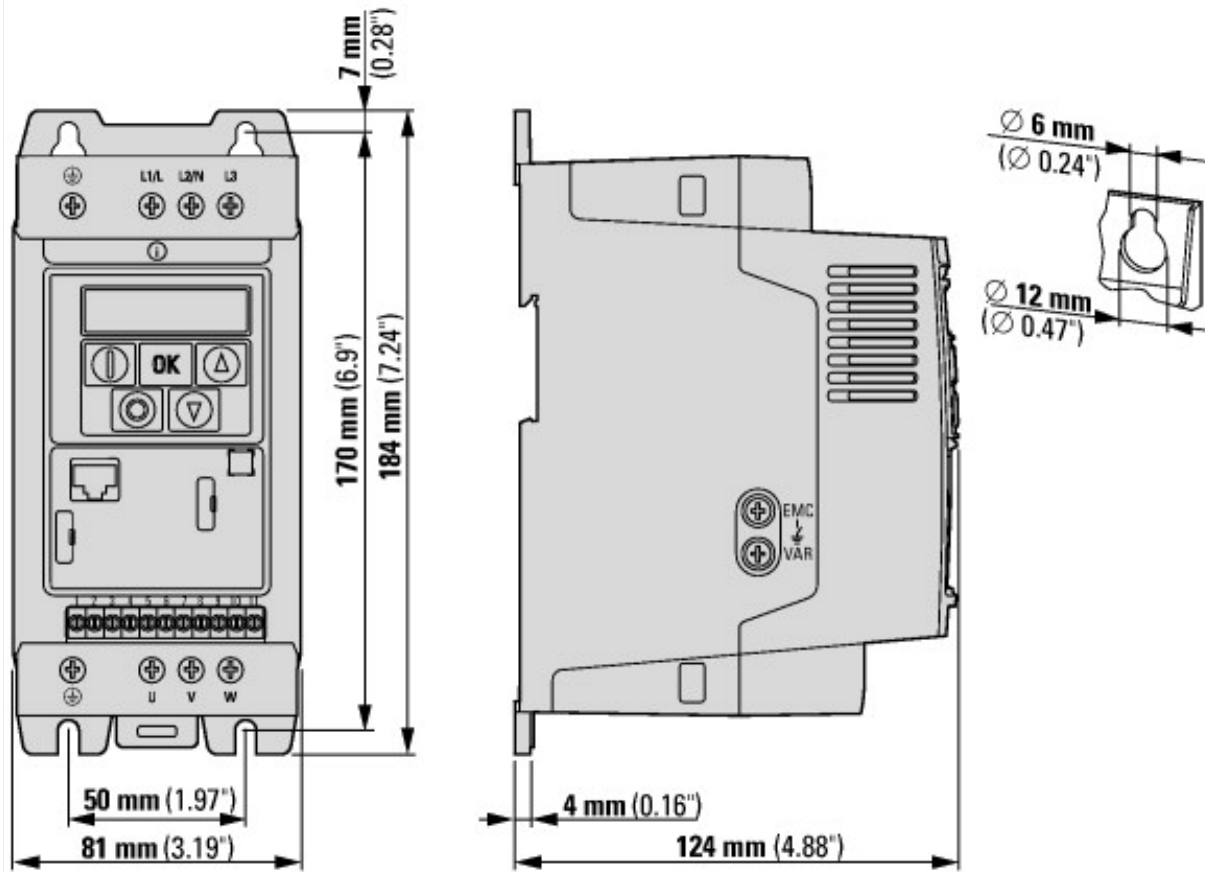
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)			
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])			
Mains voltage		V	110 - 115
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 I <sub>2N</sub>		A	4.3
Max. output at quadratic load at rated output voltage		kW	0.75
Max. output at linear load at rated output voltage		kW	0.75

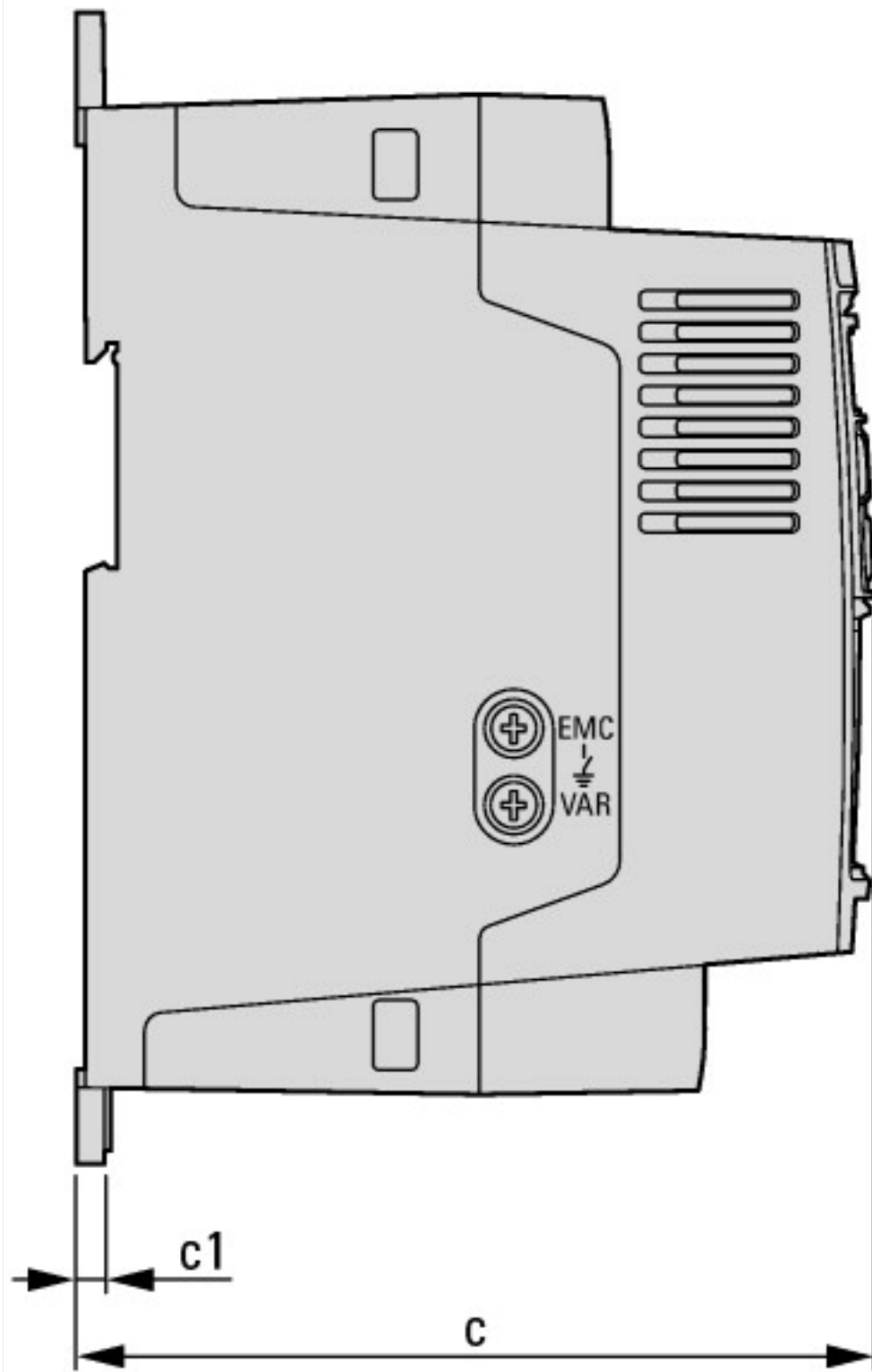
With control unit		Yes
Application in industrial area permitted		Yes
Application in domestic- and commercial area permitted		Yes
Supporting protocol for TCP/IP		No
Supporting protocol for PROFIBUS		No
Supporting protocol for CAN		Yes
Supporting protocol for INTERBUS		No
Supporting protocol for ASI		No
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 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	184
Width	mm	81
Depth	mm	124
Relative symmetric net frequency tolerance	%	10
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~ 120 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)

## Dimensions





## Additional product information (links)

### IL04020009Z DC1 variable frequency drive (FS1 - FS3, IP20)

IL04020009Z DC1 variable frequency drive (FS1 - FS3, IP20) [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL04020009Z2017\\_01.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020009Z2017_01.pdf)

### MN040023 DC1...E1 Installation manual

MN040023 DC1...E1 Handbuch Installation - Deutsch [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040023\\_DE.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040023_DE.pdf)

MN040023 DC1...E1 Installation manual - English [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040023\\_EN.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040023_EN.pdf)

MN040023 DC1...E1 manuale Installazione - italiano [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040023\\_IT.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040023_IT.pdf)

MN040023 DC1...E1 podręcznik instalacji - polski [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040023\\_PL.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040023_PL.pdf)

### MN040022 DC1...E1, Parameters manual

MN040022 DC1...E1, Handbuch Parameter - Deutsch [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN040022\\_DE.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_DE.pdf)

MN040022 DC1...E1, Parameters manual - English	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_EN.pdf</a>
MN040022 DC1...E1, manuale Parametri - italiano	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_IT.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_IT.pdf</a>
MN040022 DC1...E1, podręcznik parametrów - polski	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_PL.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_PL.pdf</a>
CA04020001Z-EN Product Range Catalog: Efficient Engineering for Starting and Controlling Motors	<a href="http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf">http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf</a>