



Variable frequency drives, 1-/single-phase 115 V, 10.5 A, 0.55 kW, braking transistor



Powering Business Worldwide™

Part no. DC1-S1011NB-A20CE1
Catalog No. 186076
Eaton Catalog No. DC1-S1011NB-A20CE1
EL-Nummer (Norway) 4137037

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		115 V AC, single-phase
Mains voltage (50/60Hz)	U_{LN}	V	110 (-10%) - 115 (+10%)
Rated operational current			
At 150% overload	I_e	A	10.5
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 AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor
Note			Overload cycle for 60 s every 600 s
Note			at 115 V, 50 Hz
150 % Overload	P	kW	0.55
150 % Overload	I_M	A	10.5
Note			at 110 - 120 V, 60 Hz
150 % Overload	P	HP	0.75
150 % Overload	I_M	A	9.8
Degree of Protection			IP20/NEMA 0
Interface/field bus (built-in)			OP bus (RS485)/Modbus RTU, CANopen®
Fieldbus connection (optional)			SmartWire-DT
Fitted with			Brake chopper 7-digital display assembly
Frame size			FS2
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, RCM, Ukr SEPPO, EAC
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 - +50
Storage	θ	°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

Supply			
Rated operational voltage	U_e		115 V AC, single-phase

Mains voltage (50/60Hz)	U_{LN}	V	110 (-10%) - 115 (+10%)
Input current (150% overload)	I_{LN}	A	19.2
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
Power section			
Function			Frequency inverter with internal DC link and IGBT inverter
Overload current (150% overload)	I_L	A	15.75
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		115 V AC, single-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
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	I_e	A	10.5
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C
Power loss			
Heat dissipation at rated operational current $I_e = 150\%$	P_V	W	22
Efficiency	η	%	96
Maximum leakage current to ground (PE) without motor	I_{PE}	mA	2.49
Fan			0
Fitted with			Brake chopper 7-digital display assembly
Frame size			FS2
Motor feeder			
Note			For AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor
Note			Overload cycle for 60 s every 600 s
Note			at 115 V, 50 Hz
150 % Overload	P	kW	0.55
Note			at 110 - 120 V, 60 Hz
150 % Overload	P	HP	0.75
maximum permissible cable length	l	m	screened: 100 screened, with motor choke: 200 unscreened: 150 unscreened, with motor choke: 300
Braking function			
DC braking torque			adjustable to 100 %
Braking torque with external braking resistance			Max. 100% of rated operational current I_e with external braking resistor
minimum external braking resistance	R_{min}	Ω	47

Control section

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®

Assigned switching and protective elements

Power Wiring			
IEC (Type B, gG), 150 %			FAZ-B25/1N
UL (Class CC or J)		A	25

150 % overload (CT/I _H , at 50 °C)				DX-LN1-024
10 % duty factor (DF)				DX-BR3-100

Design verification as per IEC/EN 61439

Technical data for design verification				
Rated operational current for specified heat dissipation	I _n	A		10.5
Heat dissipation per pole, current-dependent	P _{vid}	W		0
Equipment heat dissipation, current-dependent	P _{vid}	W		22
Static heat dissipation, non-current-dependent	P _{vs}	W		0
Heat dissipation capacity	P _{diss}	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				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

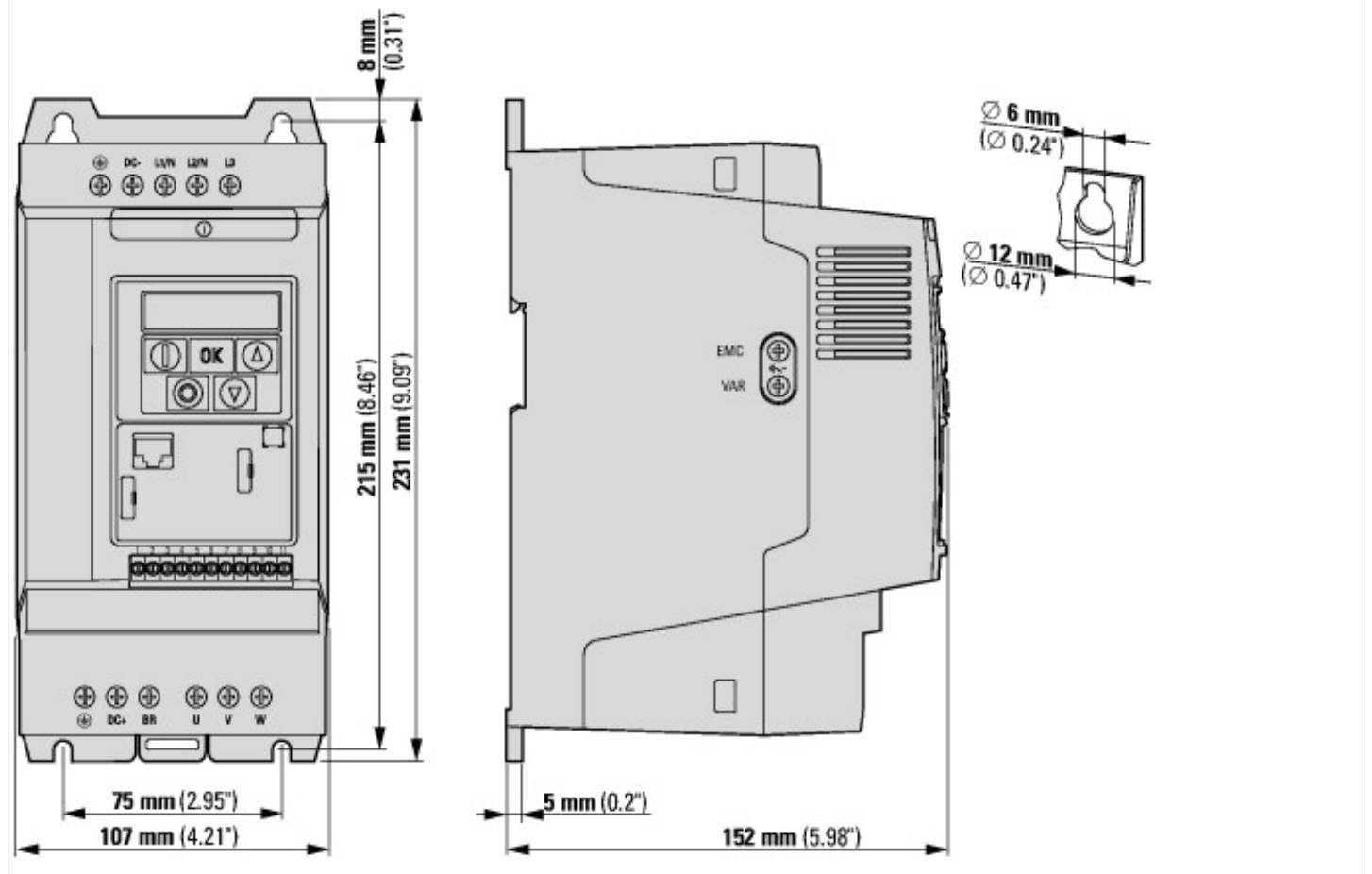
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)				
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])				
Mains voltage		V		110 - 115
Mains frequency				50/60 Hz
Number of phases input				1
Number of phases output				1
Max. output frequency		Hz		500
Max. output voltage		V		125
Rated output current I _{2N}		A		11
Max. output at quadratic load at rated output voltage		kW		0.55
Max. output at linear load at rated output voltage		kW		0.55
With control unit				Yes
Application in industrial area permitted				Yes
Application in domestic- and commercial area permitted				Yes

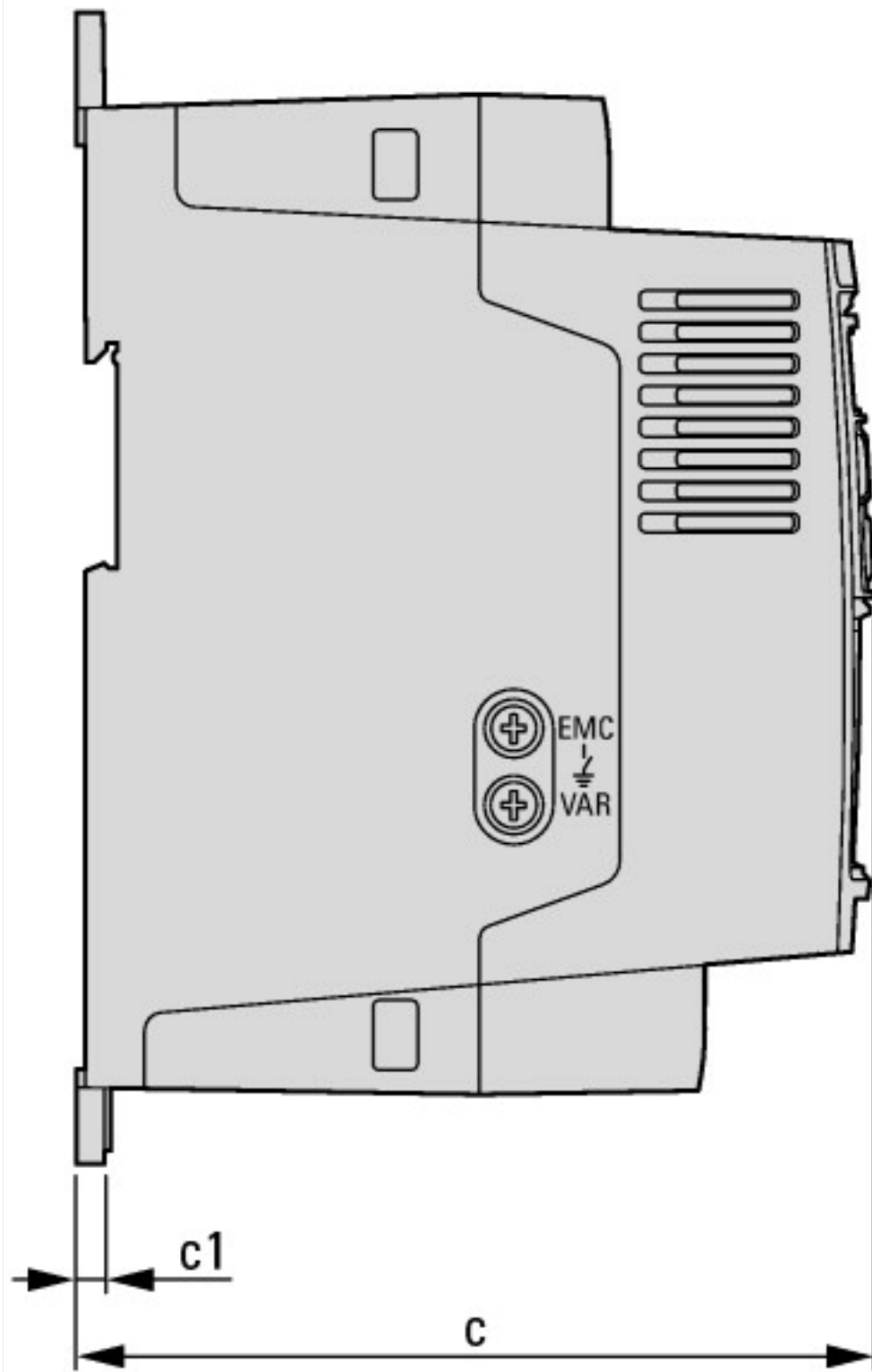
Supporting protocol for TCP/IP			No
Supporting protocol for PROFIBUS			No
Supporting protocol for CAN			Yes
Supporting protocol for INTERBUS			No
Supporting protocol for ASI			No
Supporting protocol for KNX			No
Supporting protocol for MODBUS			Yes
Supporting protocol for Data-Highway			No
Supporting 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			Yes
4-quadrant operation possible			No
Type of converter			U converter
Degree of protection (IP)			IP20
Height		mm	231
Width		mm	107
Depth		mm	152
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)
Degree of Protection			IEC: IP20

Dimensions





Additional product information (links)

IL04020014Z DC1 variable frequency drive (FS1 - FS3, IP20)

IL04020014Z DC1 variable frequency drive (FS1 - FS3, IP20) ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020014Z2017_01.pdf

MN040023 DC1...E1 Installation manual

MN040023 DC1...E1 Handbuch Installation - Deutsch 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

MN040023 DC1...E1 manuale Installazione - italiano 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

MN040022 DC1...E1, Parameters manual

MN040022 DC1...E1, Handbuch Parameter - Deutsch ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040022_DE.pdf

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