



**Variable frequency drive, 115 V AC, single-phase, 2.3 A, 0.37 kW, IP66/
NEMA 4X, 7-digital display assembly, Additional PCB protection, UV
resistant, FS1**

Part no. DC1-1D2D3NN-A660E1
Catalog No. 199393

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%)
Rated operational current			
At 150% overload	I_e	A	2.3
Note			Rated operational current at an operating frequency of 6 kHz and an ambient air temperature of +40 °C
Assigned motor rating			
Note			For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.37
150 % Overload	I_M	A	2
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.5
150 % Overload	I_M	A	2.2
Degree of Protection			IP66/NEMA 4X
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
Fieldbus connection (optional)			SmartWire-DT
Fitted with			7-digital display assembly Additional PCB protection UV resistant
Parameterization			Keypad Fieldbus drivesConnect drivesConnect mobile (App)
Frame size			FS1
Connection to SmartWire-DT			no

Technical data

General

Standards			General requirements: IEC/EN 61800-2 EMV 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	ρ_w	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Air quality			3C3, 3S3
Ambient temperature			
Operating ambient temperature min.		°C	-20
Operating ambient temperature max.		°C	+ 40
			operation (with 150 % overload)
Storage	θ	°C	-40 - +60
Mounting position			Vertical
Altitude		m	0–2000 m above sea level Above 1000 m: 1% derating for every 100 m

Degree of Protection			max. 4000 m without UL
Protection against direct contact			IP66/NEMA 4X
			BGV A3 (VBG4, finger- and back-of-hand proof)
Main circuit			
Supply			
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	7.8
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
Power section			
Function			Variable frequency drive with internal DC link and IGBT inverter
Overload current (150% overload)	I_L	A	3.45
max. starting current (High Overload)	I_H	%	175
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	8 adjustable 4 - 32 (audible)
Operation Mode			U/f control Speed control with slip compensation sensorless vector control (SLV) PM motors Synchronous reluctance motors BLDC motors
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	I_e	A	2.3
Note			Rated operational current at an operating frequency of 6 kHz and an ambient air temperature of +40 °C
Power loss			
Heat dissipation at rated operational current $I_e = 150\%$	P_V	W	11.1
Efficiency	η	%	97
Maximum leakage current to ground (PE) without motor	I_{PE}	mA	4.8
Fitted with			7-digital display assembly Additional PCB protection UV resistant
Frame size			FS1
Motor feeder			
Note			For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	0.37
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	0.5
maximum permissible cable length	l	m	screened: 50 screened, with motor choke: 100 unscreened: 75 unscreened, with motor choke: 150
Braking function			
Standard braking torque			max. 30 % MN
DC braking torque			Max. 100% of rated operational current I_e , variable
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			
Safety device (fuse or miniature circuit-breaker)			
IEC (Type B, gG), 150 %			FAZ-B16/1N
UL (Class CC or J)		A	15
Mains contactor			
150 % overload (CT/I _H , at 50 °C)			DILEM-... + P1DILEM
Main choke			
150 % overload (CT/I _H , at 50 °C)			DX-LN1-009
Radio interference suppression filter (external, 150 %)			DX-EMC12-014-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
Sine filter			
150 % overload (CT/I _H , at 50 °C)			DX-SIN3-004

Design verification as per IEC/EN 61439

Technical data for design verification			
Operating ambient temperature min.		°C	-20
Operating ambient temperature max.		°C	40

Technical data ETIM 7.0

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@ss10.0.1-27-02-31-01 [AKE177014])			
Mains voltage		V	99 - 126
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
Nominal output current I _{2N}		A	2.3
Max. output at quadratic load at rated output voltage		kW	0.37
Max. output at linear load at rated output voltage		kW	0.37
Relative symmetric net frequency tolerance		%	10
Relative symmetric net voltage tolerance		%	10
Number of analogue outputs			1
Number of analogue inputs			2
Number of digital outputs			1
Number of digital inputs			4
With control unit			Yes
Application in industrial area permitted			Yes
Application in domestic- and commercial area permitted			No
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 BACnet			No
Supporting protocol for other bus systems			Yes
Number of HW-interfaces industrial Ethernet			0
Number of 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)			IP66
Degree of protection (NEMA)			4X
Height		mm	232
Width		mm	161
Depth		mm	147

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: IP66

Dimensions

