



Frequency Inverters, 3-/3-phase 600 V, 3.1 A, 1.5 kW, Vector control, Brake-Chopper

Part no. DA1-353D1NB-B66C
Article no. 176985
Catalog No. DA1-353D1NB-B66C

Delivery program

Product range			Variable frequency drives
Part group reference (e.g. DIL)			DA1
Rated operational voltage	U_e		500 V AC, 3-phase 600 V AC, 3-phase
Output voltage with V_e	U_2		500 V AC, 3-phase 600 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	500 (-10%) - 600 (+10%)
Rated operational current			
At 150% overload	I_e	A	3.1
Note			Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40 °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 500 V, 50 Hz
150 % Overload	P	kW	1.5
150 % Overload	I_M	A	2.9
Note			at 525 V, 50 Hz
150 % Overload	P	kW	1.5
150 % Overload	I_M	A	2.8
Note			at 550 - 600 V, 60 Hz
150 % Overload	P	HP	2
150 % Overload	I_M	A	2.7
Degree of Protection			IP66/NEMA 4X
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU, CANopen®
Fieldbus connection (optional)			Ethernet IP DeviceNet PROFIBUS PROFINET Modbus-TCP EtherCAT
Fitted with			Brake chopper OLED display Additional PCB protection
Frame size			FS2
Connection to SmartWire-DT			with SmartWire-DT module DX-NET-SWD2

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-Track, UkrSepro, 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 - +40
Storage	θ	°C	-10 - +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			IP66/NEMA 4X
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)
Main circuit			
Supply			
Rated operational voltage	U_e		500 V AC, 3-phase 600 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	500 (-10%) - 600 (+10%)
Input current (150% overload)	I_{LN}	A	4.2
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	4.65
max. starting current (High Overload)	I_H	%	200
Note about max. starting current			for 4 seconds every 40 seconds
Output voltage with V_e	U_2		500 V AC, 3-phase 600 V AC, 3-phase
Output Frequency	f_2	Hz	0 - 50/60 (max. 500)
Switching frequency	f_{PWM}	kHz	8 adjustable 4 - 24 (audible)
Operation Mode			U/f control Speed control with slip compensation sensorless vector control (SLV) optional: Vector control with feedback (CLV)
Frequency resolution (setpoint value)	Δf	Hz	0.1
Rated operational current			
At 150% overload	I_e	A	3.1
Note			Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40 °C
Power loss			
Heat dissipation at rated operational current $I_e = 150\%$	P_V	W	45
Efficiency	η	%	97
Maximum leakage current to ground (PE) without motor	I_{PE}	mA	3,1
Fitted with			Brake chopper OLED display Additional PCB protection
Safety function			STO (Safe Torque Off, SIL1, PLc Cat 1)
Frame size			FS2
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 500 V, 50 Hz
150 % Overload	P	kW	1.5
Note			at 525 V, 50 Hz
150 % Overload	P	kW	1.5
Note			at 550 - 600 V, 60 Hz
150 % Overload	P	HP	2
maximum permissible cable length	l	m	screened: 100 screened, with motor choke: 200 unscreened: 150 unscreened, with motor choke: 300
Apparent power			
Apparent power at rated operation 600 V	S	kVA	3.22
Braking function			
Standard braking torque			max. 30 % M_N

DC braking torque			adjustable to 100 %
Braking torque with external braking resistance			Max. 100% of rated operational current I_g with external braking resistor
minimum external braking resistance	R_{min}	Ω	50
Switch-on threshold for the braking transistor	U_{DC}	V	975 V DC

Control section

External control voltage	U_c	V	24 V DC (max. 100 mA)
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			2, parameterizable, 0 - 10 V, 0/4 - 20 mA
Digital inputs			3, parameterizable, max. 30 VDC, max. 5 for non-parameterized analog inputs
Digital outputs			2, parameterizable, 24 V DC
Relay outputs			2, parameterizable, 1 N/O and 1 changeover contact, 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 %			6NHG000B
Notes			NH fuse used together with TB00-D fuse base
UL (Class CC or J)		A	6
Notes			LPJ fuse used together with J60060-3 fuse base
UL (Class CC or J)		A	LPJ-6SP
Mains contactor			
150 % overload (CT/I _H , at 50 °C)			DILM7
Main choke			
150 % overload (CT/I _H , at 50 °C)			DX-LN3-004
DC link connection			
Braking resistance			
10 % duty factor (DF)			DX-BR400-0K4

Design verification as per IEC/EN 61439

Technical data for design verification			
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	40

Technical data ETIM 6.0

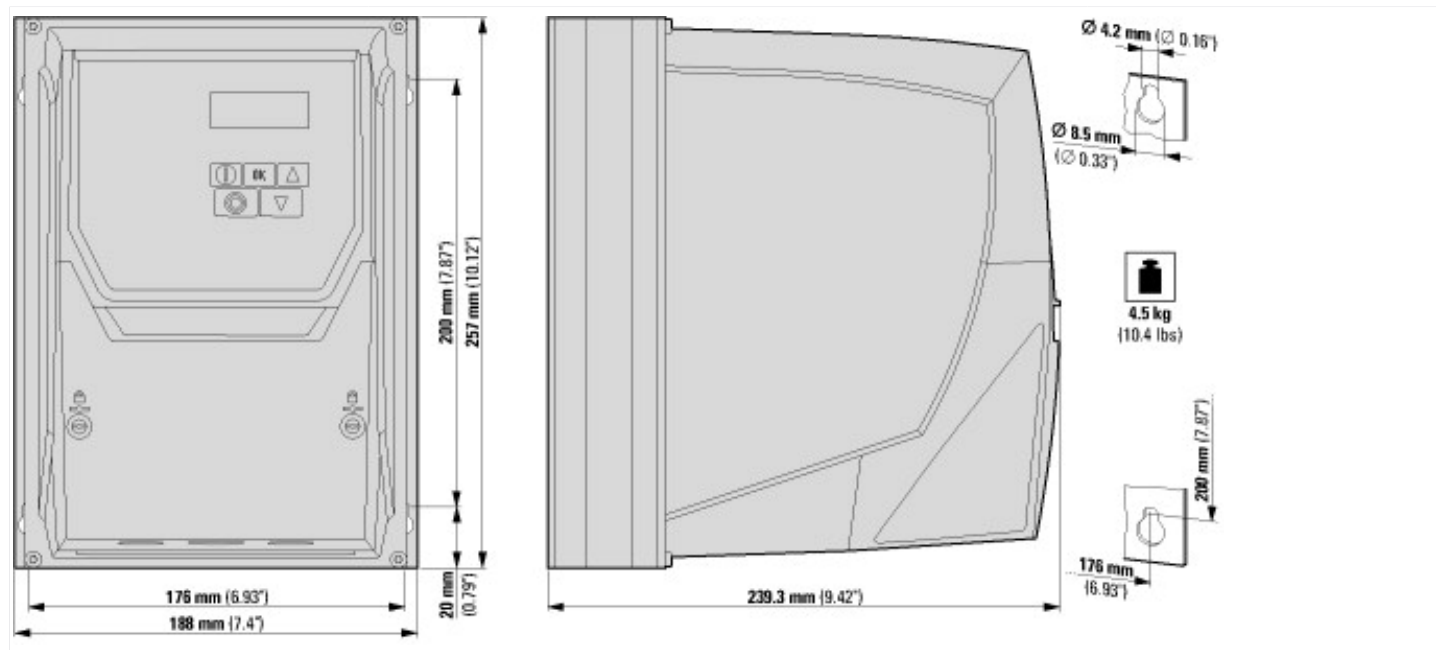
Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)			
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kv (ec@ss8.1-27-02-31-01 [AKE177011])			
Mains voltage		V	500 - 600
Mains frequency			50/60 Hz
Number of phases input			3
Number of phases output			3
Max. output frequency		Hz	500
Max. output voltage		V	500
Rated output current I _{2N}		A	3.1
Max. output at quadratic load at rated output voltage		kW	1.5
Max. output at linear load at rated output voltage		kW	1.5
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			Yes
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		Yes
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		No
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)		IP66
Height	mm	257
Width	mm	188
Depth	mm	239.3
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		3~ 600 V AC (+10 %) IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)
Degree of Protection		IEC: IP66

Dimensions



Additional product information (links)

IL04020011Z Variable frequency drives DA1 (FS4 - 7)

IL04020011Z Variable frequency drives DA1 (FS4 - 7) ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020011Z2013_10.pdf

MN04020005Z DA1 variable frequency drives, Installation manual

MN04020005Z Frequenzumrichter DA1, Handbuch - Deutsch ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020005Z_DE.pdf

MN04020005Z DA1 variable frequency drive, manual - English ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020005Z_EN.pdf

MN04020006Z DA1 variable frequency drives, Parameters manual

MN04020006Z DA1 variable frequency drives, Parameters manual - Deutsch ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020006Z_DE.pdf

MN04020006Z DA1 variable frequency drives, Parameters manual - English ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020006Z_EN.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