

#### Variable Frequency Drive, 3-/3- 230 V, 18 A, 4 kW, EMC-Filter, Brake-Chopper

Powering Business Worldwide™

Part no. DC1-32018FB-A20N Article no. 169450 Catalog No. DC1-32018FB-A20N

#### **Technical data** General

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-Tick, UkrSepro, EAC
Production quality			RoHS, ISO 9001
Climatic proofing	$\rho_{W}$	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
operation (150 % overload)	9	°C	-10 - +50
Storage	9	°C	-40 - +60
Radio interference level			
Radio interference class (EMC)			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 as per EN 61800-3
maximum motor cable length	I	m	C2 ≤ 5 m C3 ≤ 25 m
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 <sub>e</sub>		230 V AC, 3-phase 240 V AC, 3-phase
Mains voltage (50/60Hz)	$U_LN$	V	200 (-10%) - 240 (+10%)
Input current (150% overload)	I <sub>LN</sub>	Α	20.9
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)	IL	Α	27
max. starting current (High Overload)	I <sub>H</sub>	%	175
Note about max. starting current			for 2 seconds every 20 seconds
Output voltage with V <sub>e</sub>	U <sub>2</sub>		230 V AC, 3-phase 240 V AC, 3-phase
Output Frequency	f <sub>2</sub>	Hz	0 - 50/60 (max. 500)
Switching frequency	f <sub>PWM</sub>	kHz	8 adjustable 4 - 24 (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 <sub>e</sub>	Α	18
Note			Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +50 $^{\circ}\text{C}$

Power loss			
Heat dissipation at rated operational current I $_{\text{e}}$ =150 $\%$	$P_V$	W	160
Efficiency	η	%	96
Maximum leakage current to ground (PE) without motor	I <sub>PE</sub>	mA	1.60
Fitted with			Radio interference suppression filter Brake chopper 7-digital display assembly
Frame size			FS3
otor feeder			
Note			for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm <sup>-1</sup> at 50 Hz or 1800 min <sup>-1</sup> at 60 Hz
Note			Overload cycle for 60 s every 600 s
Note			at 230 V, 50 Hz
150 % Overload	P	kW	4
Note			at 220 - 240 V, 60 Hz
150 % Overload	P	HP	5
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 230 V	S	kVA	7.17
Apparent power at rated operation 240 V	S	kVA	7.48
Braking function			
Standard braking torque			max. 30 % M <sub>N</sub>
DC braking torque			adjustable to 100 %
Braking torque with external braking resistance			Max. 100% of rated operational current I <sub>e</sub> with external braking resistor
minimum external braking resistance	R <sub>min</sub>	Ω	25
Switch-on threshold for the braking transistor	U <sub>DC</sub>	٧	390 V DC
ntrol section			
ference voltage	$U_s$	V	10 V DC (max. 10 mA)
alog inputs			2, parameterizable, 0 - 10 V DC, 0/4 - 20 mA
alog outputs			1, parameterizable, 0 - 10 V
gital inputs			4, parameterizable, max. 30 V DC
gital outputs			1, parameterizable, 24 V DC

### Interface/field bus (built-in)

Relay outputs

Assigned switching and protective elements		
Power Wiring		
IEC (Type B, gG), 150 %		FAZ-B20/3
UL (Class CC or J)	Α	20
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-LN3-025
Motor feeder		
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-LM3-035
150 % overload (CT/I <sub>H</sub> , at 50 °C)		DX-SIN3-023
10 % Einschaltdauer (ED)		DX-BR050-0K4
20 % duty factor (DF)		DX-BR050-0K8
40 % duty factor (DF)		DX-BR047-3K1

1, parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)

OP-Bus (RS485)/Modbus RTU, CANopen®

# Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	18
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	0
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	160
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-10

Operating ambient temperature max.	°C	50
C/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.
10.2.3.3Verification 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 switch gear must be observed. $\label{eq:constraint}$
10.12 Electromagnetic compatibility		Is the panel builder's responsibility. The specifications for the switch gear must be observed. $\label{eq:constraint}$
10.13 Mechanical function		The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

### Technical data ETIM 6.0

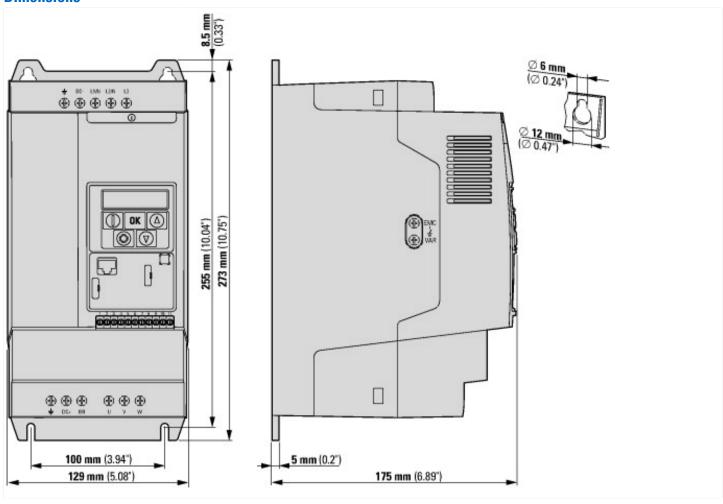
01857)	
atic frequency converte	er / Static frequency converter = < 1 kv (ecl@ss8.1-27-02-31-01 [AKE177011])
V	200 - 240
	50/60 Hz
	3
	3
Hz	500
V	230
А	18
kW	4
kW	4
	Yes
	Yes
	Yes
	No
	No
	Yes
	No
	No
	No
	Yes
	No
	No
	No
	No
	Hz V A

Supporting protocol for EtherNet/IP         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 INTERBUS-Safety         No           Supporting protocol for Polisafe         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-425         0           Number of HW-interfaces RS-425         1           Number of HW-interfaces serial TTY         0           Number of HW-interfaces uparallel         0           Number of HW-interfaces other         0           Number of HW-interfaces other         0           Number of HW-interfaces other         0           Vith optical interface         No           Number of HW-interfaces other         No           Vith optical interface         No           Vith optical interface			
Supporting protocol for SERCOS         No           Supporting protocol for Foundation Fieldbus         No           Supporting protocol for Enhant/IP         No           Supporting protocol for Sentent/IP         No           Supporting protocol for Sentent/IP         No           Supporting protocol for Pas-Interface Safety at Work         No           Supporting protocol for WITERBUS-Safety         No           Supporting protocol for MITERBUS-Safety         No           Supporting protocol for SafetyBUS p         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 INS-232         0           Number of HW-interfaces RS-422         0           Number of HW-interfaces RS-485         1           Number of HW-interfaces RS-485         0           Number of HW-interfaces parallel         0           Number of	Supporting protocol for PROFINET IO		No
Supporting protocol for Foundation Fieldbus         No           Supporting protocol for EtherNat/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 PRDFISEDS-Safety         No           Supporting protocol for SafetyBUS p         No           Supporting protocol for Other bus systems         No           Number of HW-interfaces industrial Ethernet         O           Number of HW-interfaces PROFINET         0           Number of HW-interfaces States         1           Number of HW-interfaces prailel         0           Number of HW-interfaces active         No           Number of HW-interfaces active         No           Numbe	Supporting protocol for PROFINET CBA		No
Supporting protocol for EherNet/IP         No           Supporting protocol for AS-Intarface Safety at Work         No           Supporting protocol for INTERBUS-Safety         No           Supporting protocol for INTERBUS-Safety         No           Supporting protocol for PROFIsale         No           Supporting protocol for SafetyBUS p         No           Supporting protocol for other bus systems         No           Number of HW-interfaces RROFINET         0           Number of HW-interfaces RROFINET         0           Number of HW-interfaces RR-322         0           Number of HW-interfaces RS-325         0           Number of HW-interfaces RS-326         1           Number of HW-interfaces RS-327         0           Number of HW-interfaces RS-328         1           Number of HW-interfaces RS-329         1           Number of HW-interfaces RS-329         0           Number of HW-interfaces RS-329         1           Number of HW-interfaces RS-329         1           Number of HW-interfaces RS-329         1           Number of HW-interfaces Brailel         0           Number of HW-interfaces RS-329         No           Number of HW-interfaces RS-329         No           Number of HW-interfaces RS-329         No	Supporting protocol for SERCOS		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 PROFISER         No           Supporting protocol for SafetyBUS p         No           Supporting protocol for SafetyBUS p         No           Supporting protocol for PROFISER         No           Number of HW-interfaces industrial Ethernet         0           Number of HW-interfaces PROFINET         0           Number of HW-interfaces RS-322         0           Number of HW-interfaces RS-422         0           Number of HW-interfaces RS-428         1           Number of HW-interfaces Serial TTY         0           Number of HW-interfaces serial TY         0           Number of HW-interfaces Safety         0           Number of HW-interfaces serial TY         0           Number of HW-interfaces Safety         0           With optical interface         Yes           With optical interface         Yes           Vita ptical interface         Yes           -quadrant operation possible         No           Engree of protection (IP)         IP20           Beight         Mm         23      <	Supporting protocol for Foundation Fieldbus		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 SS-232         0           Number of HW-interfaces RS-422         0           Number of HW-interfaces SS-485         1           Number of HW-interfaces SS-485         1           Number of HW-interfaces SB-485         1           Number of HW-interfaces SB-486         0           Number of HW-interfaces USB         1           Number of HW-interfaces SB-486         0           Number of HW-interfaces USB         0           Number of HW-interfaces USB         1           Number of HW-interfaces USB         No           With optical Interface         Ves           With Optical Interface         Ves           Vita optical Interface         Ves           Aquadrant operation possible         Interface In	Supporting protocol for EtherNet/IP		No
Supporting protocol for INTERBUS-Satety         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 industrial Ethernet         0           Number of HW-interfaces PROFINET         0           Number of HW-interfaces RS-232         0           Number of HW-interfaces RS-232         1           Number of HW-interfaces RS-485         1           Number of HW-interfaces RS-485         1           Number of HW-interfaces serial TTY         0           Number of HW-interfaces serial TTY         0           Number of HW-interfaces other         0           With pcc connection         No           With PC connection         Yes           Vittle pcc connection         No           Vittle pcc connection         No           Vittle pcc connection         Yes           Opegee of protection (IP)         Uconverter           Degree of protection (IP)         IP20           Height         mm         31           Width         Connection         mm         31 <t< td=""><td>Supporting protocol for AS-Interface Safety at Work</td><td></td><td>No</td></t<>	Supporting protocol for AS-Interface Safety at Work		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 RS-232         0           Number of HW-interfaces RS-428         0           Number of HW-interfaces RS-489         1           Number of HW-interfaces RS-489         1           Number of HW-interfaces Braffle         0           Number of HW-interfaces other         0           With optical interface         Yes           Vith optical interface         Yes           4-quadrant operation possible         Yes           4-quadrant operation possible         Yes           4-quadrant operation possible         Yes           4-quadrant operation (IP)         Yes           4-guadrant operation (IP)         Yes           4-quadrant operation (IP)         Yes           4-quadrant operation (I	Supporting protocol for DeviceNet Safety		No
Supporting protocol for SafetyBUS p         No           Supporting protocol for other bus systems         No           Number of HW-interfaces industrial Ethernet         Co           Number of HW-interfaces RS-232         Co           Number of HW-interfaces RS-422         Co           Number of HW-interfaces RS-485         Co           Number of HW-interfaces RS-485         Co           Number of HW-interfaces Strail TTY         Co           Number of HW-interfaces Strail TTY         Co           Number of HW-interfaces parallel         Co           Number of HW-interfaces parallel         Co           Number of HW-interfaces other         Co           Number of HW-interfaces other         Co           With optical interface         Co           Feed on overter         Co           Quadrant operation possible         Co           Eligible         M         23	Supporting protocol for INTERBUS-Safety		No
Supporting protocol for other bus systems         No           Number of HW-interfaces industrial Ethernet         Co           Number of HW-interfaces PROFINET         Co           Number of HW-interfaces RS-232         Co           Number of HW-interfaces RS-422         Co           Number of HW-interfaces RS-485         Co           Number of HW-interfaces serial TTY         Co           Number of HW-interfaces usb         Co           Number of HW-interfaces usb         Co           Number of HW-interfaces other         Co           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)         P20           Height         mm         373           Width         mm         311           Depth         mm         175           Beldive symmetric net frequency tolerance         mm         175           Beldive symmetric net frequency tolerance         mm         175	Supporting protocol for PROFIsafe		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         1           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         Uconverter           Degree of protection (IP)         P20           Height         mm         273           Width         mm         273           Width         mm         131           Depth         mm         175           Believe symmetric net frequency tolerance         %         10	Supporting protocol for SafetyBUS p		No
Number of HW-interfaces PR-232         0           Number of HW-interfaces RS-232         0           Number of HW-interfaces RS-422         1           Number of HW-interfaces RS-485         1           Number of HW-interfaces serial TTY         5           Number of HW-interfaces USB         1           Number of HW-interfaces parallel         0           Number of HW-interfaces other         0           With optical interface         No           With Connection         Yes           Integrated breaking resistance         Yes           4-quadrant operation possible         Yes           Type of converter         Voconverter           Degree of protection (IP)         Poconverter           Height         mm         273           Width         mm         31           Depth         mm         75           Better trequency tolerance         mm         75           Better trequency tolerance         mm         75	Supporting protocol for other bus systems		No
Number of HW-interfaces RS-232         0           Number of HW-interfaces RS-422         1           Number of HW-interfaces RS-485         1           Number of HW-interfaces serial TTY         0           Number of HW-interfaces USB         1           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         Uconverter           Degree of protection (IP)         IP20           Height         mm         273           Width         mm         31           Depth         mm         175           Belative symmetric net frequency tolerance         % De         10	Number of HW-interfaces industrial Ethernet		0
Number of HW-interfaces RS-425         1           Number of HW-interfaces RS-485         0           Number of HW-interfaces serial TTY         0           Number of HW-interfaces USB         1           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         Uconverter           Degree of protection (IP)         IP20           Height         mm         23           Width         mm         23           Width         mm         23           Width         mm         23           Belative symmetric net frequency tolerance         %         %	Number of HW-interfaces PROFINET		0
Number of HW-interfaces RS-485  Number of HW-interfaces serial TTY  Number of HW-interfaces USB  Number of HW-interfaces USB  Number of HW-interfaces USB  Number of HW-interfaces parallel  Number of HW-interfaces other  O  With optical interface  With PC connection  With PC connection  Integrated breaking resistance  4-quadrant operation possible  A-quadrant operation possible  Type of converter  Degree of protection (IP)  Height  Height  Mm  Mm  Midth  Depth  Relative symmetric net frequency tolerance  1 1  0 0  0 0  0 0  0 0  0 0  0 0  0	Number of HW-interfaces RS-232		0
Number of HW-interfaces Serial TTY  Number of HW-interfaces USB  Number of HW-interfaces parallel  Number of HW-interfaces other  Number of HW-interfaces other  Number of HW-interfaces other  Number of HW-interfaces other  No  With optical interface  With PC connection  Integrated breaking resistance  A-quadrant operation possible  Type of converter  Degree of protection (IP)  Height  Integrated breaking resistance  Integrated breaking resist	Number of HW-interfaces RS-422		0
Number of HW-interfaces USB  Number of HW-interfaces parallel  Number of HW-interfaces other  With optical interface  With PC connection  Integrated breaking resistance  4-quadrant operation possible  Type of converter  Degree of protection (IP)  Height  Width  Degree of protection (IP)  Height  Width  Degree of worder  Width  Degree of worder  Width  Degree of worder  Width  Mm  Width  Mm  Width  Mm  Width  Mm  Width  Mm  Width  Degth  Relative symmetric net frequency tolerance  Width  No  10  10  10  10  10  10  10  10  10  1	Number of HW-interfaces RS-485		1
Number of HW-interfaces parallel Number of HW-interfaces other  With optical interface With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Height Height Width Depth Relative symmetric net frequency tolerance  Degree of HW-interfaces parallel  No  Converter  Ves  Yes  No  Voonverter  Voonverter  U converter  P20  Mm 311  Mm 175  Mm	Number of HW-interfaces serial TTY		0
Number of HW-interfaces other  With optical interface With PC connection With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Height Midth Depth Relative symmetric net frequency tolerance  D 0  No  Ves  Yes  No  U converter U converter  1P20  1P20  131  155  156  157  158  158  159  159  159  159  159  159	Number of HW-interfaces USB		1
With optical interface With PC connection With PC connection Integrated breaking resistance 4-quadrant operation possible Type of converter Degree of protection (IP) Height With PC connection With PC con	Number of HW-interfaces parallel		0
With PC connection Integrated breaking resistance Integrated b	Number of HW-interfaces other		0
Integrated breaking resistance 4-quadrant operation possible 7ype of converter Degree of protection (IP) Height Width Depth Relative symmetric net frequency tolerance  Yes  No  10 converter 120  120  121  120  121  121  122  123  123	With optical interface		No
4-quadrant operation possible Type of converter Degree of protection (IP) Height Width Depth Relative symmetric net frequency tolerance  No Octonverter U converter P20 P20 P20 P20 P3 P3 P3 P3 P3 P5 P6 P6 P6 P7 P7 P8	With PC connection		Yes
Type of converter  Degree of protection (IP)  Height  Width  Depth  Relative symmetric net frequency tolerance  Loconverter  U converter  1P20  1P30	Integrated breaking resistance		Yes
Degree of protection (IP) Height Width Depth Relative symmetric net frequency tolerance  IP20  IP20  IP20  IP20  IP20  IP3  IP3  IP3  IP3  IP3  IP3  IP3  IP	4-quadrant operation possible		No
Height         mm         273           Width         mm         131           Depth         mm         175           Relative symmetric net frequency tolerance         %         10	Type of converter		U converter
Widthmm131Depthmm175Relative symmetric net frequency tolerance%10	Degree of protection (IP)		IP20
Depth mm 175 Relative symmetric net frequency tolerance % 10	Height	mm	273
Relative symmetric net frequency tolerance % 10	Width	mm	131
,	Depth	mm	175
Relative symmetric net current tolerance % 10	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	3~ 240 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)
Degree of Protection	IEC: IP20

## **Dimensions**



Additional product information (links)				
IL04020009Z DC1 variable frequency drives (FS1 - FS3, IP20)				
IL04020009Z DC1 variable frequency drives (FS - FS3, IP20)	1 ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020009Z2016_07.pdf			
MN04020003Z DC1 variable frequency drives, l	Installation manual			
MN04020003Z Frequenzumrichter DC1, Handbuch - Deutsch	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020003Z_DE.pdf			
MN04020003Z DC1 variable frequency drive, manual - English	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020003Z_EN.pdf			
MN04020003Z Frekvenční měnič DC1, manuál - čeština	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020003Z_CZ.pdf			
MN04020003Z Convertitori di frequenza DC1, manuale - italiano	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020003Z_IT.pdf			
MN04020004Z DC1 variable frequency drives, Parameters manual				
MN04020004Z DC1 variable frequency drives, Parameters manual - Deutsch	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020004Z_DE.pdf			
MN04020004Z DC1 variable frequency drives, Parameters manual - English	ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04020004Z_EN.pdf			
CA04020001Z-DE Sortimentskatalog: Antriebstechnik effizient gestalten, Motoren	http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238_de.pdf			

starten und steuern