DATASHEET - DE1-345D0FN-N20N



Variable speed starter, Rated operational voltage 400 V AC, 3-phase, le 5 A, 2.2 kW, 3 HP, Radio interference suppression filter

DE1-345D0FN-N20N

FAT-N°

Powering Business Worldwide

6

Part no. DE1-345D0FN-N20N Catalog No. 174336

Alternate Catalog

EL-Nummer 4110100

(Norway)

Delivery program

Delivery program			
Product range			Variable speed starter
Part group reference (e.g. DIL)			DE1
Rated operational voltage	U _e		400 V AC, 3-phase 480 V AC, 3-phase
Output voltage with V _e	U ₂		400 V AC, 3-phase 480 V AC, 3-phase
Mains voltage (50/60Hz)	U_{LN}	V	380 (-10%) - 480 (+10%)
Rated operational current			
At 150% overload	I _e	Α	5
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 $^{\circ}\text{C}$
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 400 V, 50 Hz
150 % Overload	P	kW	2.2
150 % Overload	I_{M}	Α	5
Note			at 440 - 480 V, 60 Hz
150 % Overload	P	HP	3
150 % Overload	I _M	Α	4.8
Degree of Protection			IP20/NEMA0
Interface/field bus (built-in)			OP-Bus (RS485)/Modbus RTU
Fitted with			Radio interference suppression filter
Parameterization			Keypad Fieldbus drivesConnect drivesConnect mobile (App)
Frame size			FS2
Connection to SmartWire-DT			yes in conjunction with DX-NET-SWD3 SmartWire DT module

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, RCM
Production quality			RoHS, ISO 9001
Climatic proofing	ρ_{W}	%	< 95%, average relative humidity (RH), non-condensing, non-corrosive
Ambient temperature			
Operating ambient temperature min.		°C	-10
Operating ambient temperature max.		°C	+ 60
			operation (150 % overload); max. +60 °C
Storage	9	°C	-40 - +70
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		m	C2 ≤ 10 m
maximum motor cable length	•	""	C3 ≤ 25 m
Mechanical shock resistance		g	15 (11 m/s, EN 60068-2-27)
Vibration			EN 61800-5-1
Altitude		m	0 - 1000 m above sea level Above 1000 m: 1% derating for every 100 m max. 2000 m
Degree of Protection			IP20/NEMA0
Protection against direct contact			BGV A3 (VBG4, finger- and back-of-hand proof)
Main circuit			
Supply			
Rated operational voltage	U _e		400 V AC, 3-phase 480 V AC, 3-phase
Mains voltage (50/60Hz)	U _{LN}	٧	380 (-10%) - 480 (+10%)
Input current (150% overload)	I _{LN}	Α	7
Supply frequency	f _{LN}	Hz	50/60
Frequency range		Hz	45–66 (± 0%)
Mains switch-on frequency	f _{LN}	112	Maximum of one time every 30 seconds
Power section			Maximum of one time every 50 Seconds
Overload current (150% overload)	I.	Α	7.5
	IL		
max. starting current (High Overload)	IH	%	200
Note about max. starting current			for 1.875 seconds every 600 seconds
Output voltage with V _e	U ₂		400 V AC, 3-phase 480 V AC, 3-phase
Output Frequency	f_2	Hz	0 - 50/60 (max. 300)
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	0.025
Rated operational current			
At 150% overload	I _e	Α	5
Note			Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C
Maximum leakage current to ground (PE) without motor	I _{PE}	mA	< 3.5 AC, < 10 DC
Fitted with			Radio interference suppression filter
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 400 V, 50 Hz
150 % Overload	P	kW	2.2
Note			at 440 - 480 V, 60 Hz
150 % Overload	P	НР	3
Apparent power			
Apparent power at rated operation 400 V	S	kVA	3.46
Apparent power at rated operation 480 V	S	kVA	4.16
Braking function			
Standard braking torque			max. 30 % M _N
DC braking torque			adjustable to 100 %
Control section			
Reference voltage	U_s	V	10 V DC (max. 0.2 mA)
Analog inputs			1, parameterizable, 0 - 10 V DC, 0/4 - 20 mA
Digital inputs			4, parameterizable, 10 - 30 V DC

Relay outputs		1, N/O contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1)
Interface/field bus (built-in)		OP-Bus (RS485)/Modbus RTU
Assigned switching and protective elements		
Power Wiring		
Safety device (fuse or miniature circuit-breaker)		
IEC (Type B, gG), 150 %		FAZ-B16/3
UL (Class CC or J)	Α	15
Mains contactor		
150 % overload (CT/I _H , at 50 °C)		DILM7
Main choke		
150 % overload (CT/I _H , at 50 °C)		DX-LN3-010
Radio interference suppression filter (external, 150 %)		DX-EMC34-008
Radio interference suppression filter, low leakage currents (external, 150 %)		DX-EMC34-008-L
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

Design verification as per IEC/EN 61439

observed.				
Heat dissipation per pole, current-dependent Ped W 56 Static heat dissipation, current-dependent Ped W 56 Static heat dissipation, current-dependent Ped W 56 Static heat dissipation, current-dependent Ped W 0 Heat dissipation capacity Heat dissipation capacity Ped W 0 Heat dissipation capacity Heat dissipation capacity Heat dissipation dissipation dispaticular max. Heat dissipation product standard's requirements. Heat the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Heat the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Heat the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Heat the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Heat the product standard's requirements. Heat the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Heat the product standard's requirements. Heat the produc	Technical data for design verification			
Equipment heart dissipation, current-dependent Peus W 0 Static heart dissipation, current-dependent Peus W 0 Operating ambient temperature min. Operating ambient temperature max. Operating ambient temperature max. OPERATION OPERATION OF Materials and parts 10.2 Strongth of materials and parts 10.2 Strongth of materials and parts 10.2 Strongth of materials and parts 10.2.2 Strongth of materials and parts 10.2.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects 10.2.3 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 Ulting 10.3 Ulting 10.4 Exercise on a display divise and connections 10.5 Ulting 10.5 Ulting 10.6 Ulting 10.6 Ulting 10.7 Ulting 10.8 Ulting 10.8 Ulting 10.9 Ulting	Rated operational current for specified heat dissipation	In	Α	5
Static heat dissipation, non-current-dependent Heat dissipation capacity Operating ambient temperature min. Operating ambient temperature min. Operating ambient temperature min. 10.2 Strongfing ambient temperature max. 10.2 Strongfing ambient temperature max. 10.2 Strongfing of materials and parts 10.2 Strongfin of materials and parts 10.2 Corrosion resistance 10.2.3 I Verification of thermal stability of enclosures 10.2.3 Verification of thermal stability of enclosures 10.2.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects 10.2.4 Resistance to ultra-violat (UV) radiation 10.2 Strongfin of materials and parts 10.2.5 Machanical impact 10.2.6 Machanical impact 10.2.7 Inscriptions 10.3 Degree of protection of ASSEMBLIES 10.4 Clearances and creepage distances 10.4 Clearances and creepage distances 10.4 Clearances and creepage distances 10.5 Protection against electric shock 10.6 Incorporation of exitching devices and components 10.7 Internal electrical circuits and connections 10.7 Internal electrical circuits and connections 10.8 Connections for external conductors 10.9 Insulation properties 10.1 Short-circuit rating 10.1 Short-circuit rating 10.1 Short-circuit rating 10.1 Webs the product standard's requirements. 10.2 Design and properties 10.3 Design and properties 10.4 Design and properties 10.5 Incorporation of external conductors 10.6 Incorporation of external conductors 10.7 Internal electrical circuits and connections 10.8 Incorporation of external conductors 10.9 Insulation properties 10.1 Electromagnetic compatibility 10.1 Short-circuit rating 10.1 Webs the product standard's requirements. 10.2 Design and papel, since the entire switchgear needs to be evaluated. 10.3 Insulation properties 10.4 Legance and creepage distances 10.5 Incorporation of external conduct	Heat dissipation per pole, current-dependent	P _{vid}	W	0
Heat dissipation capacity Operating ambient temperature min. Operating ambient temperature max. ***********************************	Equipment heat dissipation, current-dependent	P _{vid}	W	56
Operating ambient temperature min. Operating ambient temperature max. ***C*****C**** 60**** **EC/EN 81439 design varification 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 and fire due to internal electric effects 10.2.3.2 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 10.3.0 Egree of protection of ASSEMBLIES 10.4 Clearances and creepage distances 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 Power-frequency electric strength 10.9.1 Power-frequency electric strength 10.9.2 Power-frequency electric is responsibility. 10.9.3 Impulse withstand voltage 10.9.1 Temperature rise 10.9.1 Temperature rise 10.9.2 Power-frequency electric strength 10.9.3 Impulse withstand voltage 10.9.1 Temperature rise 10.9.2 Power-frequency electric strength 10.9.3 Impulse withstand voltage 10.9.4 Testing of onclessures made of insulating material 10.9.1 Temperature rise 10.9.2 Power-frequency electric strength 10.9.3 Impulse withstand voltage 10.9.4 Testing of onclessures made of insulating material 10.9.5 Temperature rise 10.9.5 Temperature rise calculation. Eaton will provide heat dissipation data for the devices. 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function 10.14 Mechanical function 10.15 Mechanical function 10.16 Weet the product standard's requirements. 10.2 Meets the product standard's requirements. 10.4 Meets the product standard's requirements. 10.5 Meets the product standard's requirements. 10.6 Meets the product standard's requirements. 10.	Static heat dissipation, non-current-dependent	P _{vs}	W	0
Commercial parabient temperature max. Commercial process Commercia	Heat dissipation capacity	P _{diss}	W	0
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 10.2.3.2 Verification of resistance of insulating materials to normal heat 10.2.3.2 Verification of resistance of insulating materials to abnormal heat 10.2.3.3 Verification of resistance of insulating materials to abnormal heat 10.2.3 Serification of resistance of insulating materials to abnormal heat 10.2.4 Resistance to ultra-violet (UV) rediation 10.2.5 Lifting 10.2.6 Mechanical impact 10.2.6 Mechanical impact 10.2.7 Inscriptions 10.3.0 Dees not apply, since the entire switchgear needs to be evaluated. 10.2.7 Inscriptions 10.3.0 Dees not apply, since the entire switchgear needs to be evaluated. 10.4 Clearances and creepage distances 10.5 Protection against electric shock 10.6 Incorporation of switching devices and components 10.5 Incorporation of switching devices and components 10.6 Incorporation of switching devices and components 10.8 Connections for external conductors 10.9 Insulation properties 10.9.2 Power-frequency electric strength 10.9 Insulation properties 10.9.3 Insulation properties 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise 10.10 Temperature rise calculation. Eaton will provide heat dissipation data for th	Operating ambient temperature min.		°C	-10
10.2 Strength of materials and parts 10.2 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 10.2.4 Resistance to ultra-violet (UV) radiation 10.2.5 Lifting 10.2.6 Meets the product standard's requirements. 10.2.7 Inscriptions 10.3 Degree of protection of ASSEMBLIES 10.4 Clearances and creepage distances 10.5 Protection against electric shock 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 Power-frequency electric strength 10.9 Jampulse withstand voltage 10.9 Jampulse withstand voltage 10.9 Testing of enclosures made of insulating material 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function Meets the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. 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. 10.9 Power-frequency electric strength 10.9 Power-frequency electric strength 10.9 Testing of enclosures made of insulating material 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function The device meets the requirements, provided the information in the instruction	Operating ambient temperature max.		°C	60
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 10.2.3.2 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 10.2.5 Lifting 10.2.6 Mechanical impact 10.2.7 Inscriptions 10.3.0 Egree of protection of ASSEMBLIES 10.4. Clearances and creepage distances 10.5 Protection against electric shock 10.6 Incorporation of switching devices and components 10.6 Incorporation of switching devices and components 10.7 Internal electrical circuits and connections 10.8 Connections for external conductors 10.9 Power-frequency electric strength 10.9. 2 Power-frequency electric strength 10.9. 3 Impulse withstand voltage 10.9. 10.1 Short-circuit rating 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function 10.14 Meets the product standard's requirements. 10.15 Protection against electric shock 10.6 Incorporation of switching devices and components 10.6 Incorporation of switching devices and components 10.7 Internal electrical circuits and connections 10.8 Line panel builder's responsibility. 10.9 Insulation properties 10.9.2 Power-frequency electric strength 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Inequal builder's responsibility. The specifications for the switchgear must be observed. 10.13 Mechanical function 10.14 Meets the product standard's requirements. 10.15 Meets the product standard's requirements. 10.16 Meets the product standard's requirements. 10.17 Meets the product standard's requirements. 10.18 Meets the product standard's requirements. 10.19 Insulation properties 10.10 Temperature rise calculation. Eaton will provide heat dissipation data for the devices.	IEC/EN 61439 design verification			
10.2.3.1 Verification of thermal stability of enclosures 10.2.3.2 Verification of resistance of insulating materials to normal heat 10.2.3.2 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 Mechanical impact 10.2.5 Mechanical impact 10.2.5 Mechanical impact 10.2.7 Inscriptions 10.3 Degree of protection of ASSEMBLIES 10.3 Degree of protection of ASSEMBLIES 10.4 Clearances and creepage distances 10.5 Protection against electric shock 10.6 Incorporation of swritching devices and components 10.7 Internal electrical circuits and connections 10.8 Connections for external conductors 10.9 Insulation properties 10.9.1 Sundation properties 10.9.2 Power-frequency electric strength 10.9.3 Impulse withstand voltage 10.9.1 Sundation properties 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 10.13 Mechanical function 10.13 Mechanical function 10.14 Electromagnetic compatibility 10.15 Mechanical function 10.16 Temperature rise 10.17 Internal electrication of the switchgear need to be evaluated. 10.8 Connections for external conductors 10.9 Insulation properties 10.9.1 Insulation properties 10.9.2 Power-frequency electric strength 10.10 Temperature rise 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function 10.13 Mechanical function 10.14 Mechanical function 10.15 Mechanical function 10.16 Meass the product standard's requirements. 10.17 Meeting the entire switchgear needs to be evaluated. 10.18 Meets the product standard's requirements. 10.19 Meeting the entire switchgear needs to be evaluated. 10.19 Meeting the entire switchgear needs to be evaluated. 10.19 Meeting the entire switchgear needs to be evaluated. 10.19 Insulation properties 10.19 Insulation properties 10.19 Insulation properties 10.19 Insulation properties 10.19 Insulation	10.2 Strength of materials and parts			
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 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. 10.3 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. 10.9 Insulation properties 10.9.2 Power-frequency electric strength Is the panel builder's responsibility. 10.9.1 Insulation properties 10.9.2 Power-frequency electric strength Is the panel builder's responsibility. 10.9.1 Temperature rise 10.10 Temperature rise The panel builder's responsibility. 10.10 Temperature rise 10.11 Short-circuit rating 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function The device meets the requirements, 10.13 Mechanical function The device meets the requirements, 10.13 Mechanical function Meets the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. In the panel builder's responsibility. In the panel builder's responsibility. The specifications for the switchgear	10.2.2 Corrosion resistance			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 10.2.4 Resistance to ultra-violet (UV) radiation 10.2.5 Lifting Does not apply, since the entire switchgear needs to be evaluated. 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 Power-frequency electric strength 10.9.1 Rulation properties 10.9.2 Power-frequency electric strength 10.9.3 Impulse withstand voltage 10.10 Temperature rise 10.10 Temperature rise 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function Meets the product standard's requirements. Meets the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Is the panel builder's responsibility. It is the panel builder's responsibility. The specifications for the switchgear must be observed. In the device meets the requirements, provided the information in the instruction of the observed.	10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
and fire due to internal electric effects 10.2.4 Resistance to ultra-violet (UV) radiation 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. 10.9.2 Power-frequency electric strength In 9.9.4 Testing of enclosures made of insulating material 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise The panel builder's responsibility. 10.11 Short-circuit rating Lis the panel builder's responsibility. 10.12 Electromagnetic compatibility 10.13 Mechanical function The device meets the requirements, provided the information in the instruction	10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
Does not apply, since the entire switchgear needs to be evaluated. 10.2.6 Mechanical impact 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. 10.9.2 Power-frequency electric strength 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 Is the panel builder's responsibility. 10.15 Proposition of 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.				Meets the product standard's requirements.
10.2.6 Mechanical impact 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. 10.9.1 Insulation properties Insulation properties Insulation properties Is the panel builder's responsibility. 10.9.2 Power-frequency electric strength Is the panel builder's responsibility. 10.9.4 Testing of enclosures made of insulating material Insulation properties Insulation properties In the panel builder's responsibility. 10.10 Temperature rise In panel builder is responsibility. 10.11 Short-circuit rating Is the panel builder's responsibility. 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	10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
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. 10.9.1 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. 10.10 Temperature rise The panel builder's responsibility. 10.11 Short-circuit rating Is the panel builder's responsibility. The specifications for the switchgear must be observed. 10.12 Electromagnetic compatibility The device meets the requirements, provided the information in the instruction	10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.3 Degree of protection of ASSEMBLIES 10.4 Clearances and creepage distances Meets the product standard's requirements. 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 Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Is the panel builder's responsibility. Is the panel builder's responsibility. 10.11 Short-circuit rating Is the panel builder's responsibility. The specifications for the switchgear must be observed. 10.12 Electromagnetic compatibility The device meets the requirements, provided the information in the instruction	10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
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 Meets the product standard's requirements. Does not apply, since the entire switchgear needs to be evaluated. Is the panel builder's responsibility. In provide heat dissipation data for the devices. Is the panel builder's responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed.	10.2.7 Inscriptions			Meets the product standard's requirements.
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 10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise 10.11 Short-circuit rating 10.12 Electromagnetic compatibility 10.13 Mechanical function Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Does not apply, since the entire switchgear needs to be evaluated. Is the panel builder's responsibility. Is the panel builder's responsibility. The panel builder's responsibility. Is the panel builder is responsibility. Is the panel builder is responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed. The device meets the requirements, provided the information in the instruction	10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
Does not apply, since the entire switchgear needs to be evaluated. 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 Does not apply, since the entire switchgear needs to be evaluated. Is the panel builder's responsibility. Is the panel builder's responsibility. Is the panel builder's responsibility. The panel builder is responsibility. Is the panel builder is responsibility. Is the panel builder is responsibility. Is the panel builder is responsibility. The panel builder is responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed. The device meets the requirements, provided the information in the instruction	10.4 Clearances and creepage distances			Meets the product standard's requirements.
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 Is the panel builder's responsibility. Is the panel builder's responsibility. Is the panel builder's responsibility. Is the panel builder is responsibility. Is the panel builder's responsibility. The specifications for the switchgear must be observed. In the panel builder's responsibility. The specifications for the switchgear must be observed. The panel builder's responsibility. The specifications for the switchgear must be observed. The device meets the requirements, provided the information in the instruction	10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
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 10.13 Mechanical function 10.14 the panel builder's responsibility. The specifications for the switchgear must be observed. 10.15 the panel builder's responsibility. The specifications for the switchgear must be observed. 10.16 Temperature rise 10.17 Electromagnetic compatibility 10.18 the panel builder's responsibility. The specifications for the switchgear must be observed. 10.19 The device meets the requirements, provided the information in the instruction	10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
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 10.13 Mechanical function Is the panel builder's responsibility. The panel builder is responsibility. The panel builder is responsibility. The specifications for the switchgear must be observed. The panel builder's responsibility. The specifications for the switchgear must be observed. The device meets the requirements, provided the information in the instruction	10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
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 10.13 Mechanical function Is the panel builder's responsibility. Is the panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. Is the panel builder's responsibility. The specifications for the switchgear must be observed. Is the panel builder's responsibility. The specifications for the switchgear must be observed. The device meets the requirements, provided the information in the instruction	10.8 Connections for external conductors			Is the panel builder's responsibility.
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 10.13 Mechanical function 10.14 Esting of enclosures made of insulating material 15 the panel builder's responsibility. 16 the panel builder's responsibility. The specifications for the switchgear must be observed. 17 the panel builder's responsibility. The specifications for the switchgear must be observed. 18 the panel builder's responsibility. The specifications for the switchgear must be observed. 19 the panel builder's responsibility. The specifications for the switchgear must be observed.	10.9 Insulation properties			
10.9.4 Testing of enclosures made of insulating material 10.10 Temperature rise The panel builder is responsibility. 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	10.9.2 Power-frequency electric strength			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	10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
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	10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
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	10.10 Temperature rise			
observed. 10.13 Mechanical function The device meets the requirements, provided the information in the instruction	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			· · · · · · · · · · · · · · · · · · ·

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]) ٧ 380 - 480 Mains voltage Mains frequency 50/60 Hz Number of phases input 3 3 Number of phases output Max. output frequency Н7 300 V Max. output voltage 500 5 Nominal output current I2N Α Max. output at quadratic load at rated output voltage kW 0.5 Max. output at linear load at rated output voltage kW 0.5 Relative symmetric net frequency tolerance % 10 % 10 Relative symmetric net voltage tolerance Number of analogue outputs 0 Number of analogue inputs Number of digital outputs 0 Number of digital inputs 4 With control unit No 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 No Supporting protocol for INTERBUS No No Supporting protocol for ASI No Supporting protocol for KNX 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 Nο 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 No Supporting protocol for SafetyBUS p Supporting protocol for BACnet Nο Yes Supporting protocol for other bus systems 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 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
Degree of protection (NEMA)		Other
Height	mm	230
Width	mm	90
Depth	mm	168

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~ 480 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)
Degree of Protection	IEC: IP20

Dimensions

