DATASHEET - DE1-129D6FN-N20N

Variable speed starter, Rated operational voltage 230 V AC, 1-phase, Ie 9.6 A, 2.2 kW, 3 HP, Radio interference suppression filter

Powering Business Worldwide™

Part no.	**DE1-129D6FN-N20N**
	174332
EL Number (Norway)	**4110096**

General specifications			
Product name			Eaton DE1 Variable speed starter
Part no.			DE1-129D6FN-N20N
EAN			4015081707942
Product Length/Depth			169 millimetre
Product height			230 millimetre
Product width			90 millimetre
Product weight			1.68 kilogram
Certifications			RoHS, ISO 9001 Safety requirements: IEC/EN 61800-5-1 UL CUL UL Category Control No.: NMMS, NMMS7 IEC/EN61800-5 CE IEC/EN 61800-3 IEC/EN61800-3 CSA-C22.2 No. 14 UL File No.: E172143 UL 508C RCM Certified by UL for use in Canada UL report applies to both US and Canada Specification for general requirements: IEC/EN 61800-2
Product Tradename			DE1
Product Type			Variable speed starter
Product Sub Type			None
Catalog Notes			Overload cycle for 60 s every 600 s
Features & Functions			
Features			Parameterization: drivesConnect Parameterization: drivesConnect mobile (App) Parameterization: Fieldbus Parameterization: Keypad
Fitted with:			PC connection Radio interference suppression filter
General information			
Cable length			C2 ≤ 10 m, Radio interference level, maximum motor cable length C1 ≤ 5 m, Radio interference level, maximum motor cable length C3 ≤ 25 m, Radio interference level, maximum motor cable length
Communication interface			Modbus RTU, built in OP-Bus (RS485), built in
Connection to SmartWire-DT			In conjunction with DX-NET-SWD3 SmartWire DT module Yes
Degree of protection			IP20 NEMA Other
Electromagnetic compatibility			1st and 2nd environments (according to EN 61800-3)
Frame size			FS2
Product category			Variable speed starter
Protection			Finger and back-of-hand proof, Protection against direct contact (BGV A3, VBG4)
Protocol			Other bus systems EtherNet/IP MODBUS
Radio interference class			C1: for conducted emissions only C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments
Shock resistance			15 g, Mechanical, According to IEC/EN 60068-2-27, 11 ms
Suitable for			Branch circuits, (UL/CSA)

Vibration	Resistance: According to EN 61800-5-1
Climatic environmental conditions	
Altitude	Max. 2000 m Above 1000 m with 1 % derating per 100 m
Ambient operating temperature - min	-10 °C
Ambient operating temperature - max	60 °C
Ambient operating temperature at 150% overload - min	-10 °C
Ambient operating temperature at 150% overload - max	60 °C
Ambient storage temperature - min	-40 °C
Ambient storage temperature - max	70 °C
Climatic proofing	< 95 average relative humidity (RH), no condensation, no corrosion
Main circuit	
Heat dissipation at current/speed	30 W at 25% current and 0% speed 38 W at 25% current and 50% speed 46 W at 50% current and 0% speed 46 W at 50% current and 50% speed 55 W at 50% current and 90% speed 72 W at 100% current and 0% speed 72 W at 100% current and 50% speed 91 W at 100% current and 90% speed
Input current ILN at 150% overload	23.2 A
Leakage current at ground IPE - max	< 3.5 mA (AC-operated) < 10 mA (DC-operated)
Mains switch-on frequency	Maximum of one time every 30 seconds
Mains voltage - min	200 V
Mains voltage - max	240 V
Operating mode	Speed control with slip compensation U/f control
Output frequency - min	0 Hz
Output frequency - max	300 Hz
Output voltage (U2)	240 V AC, 3-phase 230 V AC, 3-phase
Overload current IL at 150% overload	14.4 A
Rated control supply voltage	10 V DC (Us, max. 0.2 mA)
Rated frequency - min	45 Hz
Rated frequency - max	66 Hz
Rated operational current (Ie)	9.6 A at 150% overload (at an operating frequency of 16 kHz and an ambient air temperature of +50 °C)
Rated operational power at 220/230 V, 50 Hz, 1-phase	2.2 kW
Rated operational voltage	230 V AC, 1-phase 240 V AC, 1-phase
Resolution	0.025 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating	35 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring
Starting current - max	200 %, IH, max. starting current (High Overload), For 1.875 seconds every 600 seconds, Power section
Supply frequency	50/60 Hz
Switching frequency	16 kHz, 4 - 32 kHz adjustable (audible), fPWM, Power section, Main circuit
Voltage rating - max	240 V
Motor rating	
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload	9.6 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload	8.7 A
Assigned motor current IM at 400 V, 50 Hz, 150% overload	8.7 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload	9.6 A
Assigned motor power at 230/240 V, 60 Hz, 1-phase	3 HP
Assigned motor power at 460/480 V, 60 Hz, 3-phase	3 HP
Apparent power	
Apparent power at 230 V	3.82 kV·A
Apparent power at 240 V	3.99 kV·A
Braking function	
Braking torque	Adjustable to 100 %, DC - Main circuit

			Max. 30 % MN, Standard - Main circuit
Control circuit			
Number of inputs (analog)			1 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)
Number of inputs (digital)			4 (parameterizable, 10 - 30 V DC)
Number of outputs (analog)			0
Number of outputs (digital)			0
Number of relay outputs			1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
Design verification			
Equipment heat dissipation, current-dependent Pvid			105 W
Heat dissipation capacity Pdiss			0 W
Heat dissipation per pole, current-dependent Pvid			0 W
Rated operational current for specified heat dissipation (In)			9.6 A
Static heat dissipation, non-current-dependent Pvs			0 W
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 Resist. of insul. mat. to abnormal heat/fire by internal elect. 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.
10.9.2 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 9.0

Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)			
Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency / Servo converter = < 1 kV (ecl@ss13-27-02-31-01 [AKE177019])			
Mains voltage		V	200 - 240
Mains frequency			50/60 Hz
Number of phases input			1
Number of phases output			3
Max. output frequency		Hz	300
Max. output voltage		V	250
Nominal output current I2N		A	9.6
Max. output at quadratic load at rated output voltage		kW	2.2
Max. output at linear load at rated output voltage		kW	2.2
Power consumption		W	105
Relative symmetric net frequency tolerance		%	10
Relative symmetric net voltage tolerance		%	10
Number of analogue outputs			0
Number of analogue inputs			1
Number of digital outputs			0

Number of digital inputs			4
With control element			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
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)			IP20
Degree of protection (NEMA)			Other
Height		mm	230
Width		mm	90
Depth		mm	169