DATASHEET - DE1-346D6NN-N20N

Variable speed starter, Rated operational voltage 400 V AC, 3-phase, Ie 6.6 A, 3 kW, 3 HP

Part no.	**DE1-346D6NN-N20N**
	177369
EL Number (Norway)	**4104010**

General specifications

Product name	Eaton DE1 Variable speed starter
Part no.	DE1-346D6NN-N20N
EAN	4015081718290
Product Length/Depth	169 millimetre
Product height	230 millimetre
Product width	90 millimetre
Product weight	1.6 kilogram
Certifications	UL report applies to both US and Canada CE UL Category Control No.: NMMS, NMMS7 CUL UL File No.: E172143 IEC/EN61800-3 UL 508C Specification for general requirements: IEC/EN 61800-2 Certified by UL for use in Canada IEC/EN 61800-3 CSA-C22.2 No. 14 RCM RoHS, ISO 9001 UL Safety requirements: IEC/EN 61800-5-1 IEC/EN61800-5
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: Keypad Parameterization: Fieldbus Parameterization: drivesConnect mobile (App) Parameterization: drivesConnect
Fitted with:	PC connection

General information

Cable length	C3 ≤ 25 m, Radio interference level, maximum motor cable length C2 ≤ 10 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	NEMA Other IP20
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	MODBUS Other bus systems EtherNet/IP
Radio interference class	Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary.
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	Above 1000 m with 1 % derating per 100 m Max. 2000 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	76 W at 100% current and 90% speed 69 W at 100% current and 50% speed 69 W at 100% current and 0% speed 55 W at 50% current and 90% speed 51 W at 50% current and 50% speed 51 W at 50% current and 0% speed 48 W at 25% current and 50% speed 48 W at 25% current and 0% speed
Input current ILN at 150% overload	8.5 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	380 V
Mains voltage - max	480 V
Operating mode	U/f control Speed control with slip compensation
Output frequency - min	0 Hz
Output frequency - max	300 Hz
Output voltage (U2)	480 V AC, 3-phase 400 V AC, 3-phase
Overload current IL at 150% overload	9.9 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)	6.6 A at 150% overload (at an operating frequency of 16 kHz and an ambient air temperature of +50 °C)
Rated operational power at 380/400 V, 50 Hz, 3-phase	3 kW
Rated operational voltage	480 V AC, 3-phase 400 V AC, 3-phase
Resolution	0.025 Hz (Frequency resolution, setpoint value)
Short-circuit protection rating	15 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	480 V

Motor rating

Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload	4.8 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload	6.6 A
Assigned motor current IM at 400 V, 50 Hz, 150% overload	6.6 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload	4.8 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 400 V	4.57 kV·A
Apparent power at 480 V	5.49 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		90 W
Heat dissipation capacity Pdiss		0 W
Heat dissipation per pole, current-dependent Pvid		0 W
Rated operational current for specified heat dissipation (In)		6.6 A
Static heat dissipation, non-current-dependent Pvs		0 W
Heat dissipation details		Operation (with 150 % overload)
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	380 - 480
Mains frequency		50/60 Hz
Number of phases input		3
Number of phases output		3
Max. output frequency	Hz	300
Max. output voltage	V	500
Nominal output current I2N	A	6.6
Max. output at quadratic load at rated output voltage	kW	3
Max. output at linear load at rated output voltage	kW	3
Power consumption	W	90
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

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