DATASHEET - DE1-346D6FN-N20N

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

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Powering Business Worldwide™

Part no.	DE1-346D6FN-N20N
	174337
EL Number (Norway)	4110101

General specifications

Product name		Eaton DE1 Variable speed starter
Part no.		DE1-346D6FN-N20N
EAN		4015081707997
Product Length/Depth		169 millimetre
Product height		230 millimetre
Product width		90 millimetre
Product weight		1.6 kilogram
Certifications		Specification for general requirements: IEC/EN 61800-2
		UL 508C
		UL report applies to both US and Canada
		CSA-C22.2 No. 14
		CUL
		IEC/EN61800-5
		UL
		Certified by UL for use in Canada
		Safety requirements: IEC/EN 61800-5-1
		RoHS, ISO 9001
		IEC/EN61800-3
		IEC/EN 61800-3
		UL File No.: E172143
		CE
		RCM
		UL Category Control No.: NMMS, NMMS7
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
		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		MODBUS
		EtherNet/IP
		Other bus systems
Radio interference class		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		48 W at 25% current and 0% speed 48 W at 25% current and 50% speed 51 W at 50% current and 0% speed 51 W at 50% current and 50% speed 55 W at 50% current and 90% speed 69 W at 100% current and 0% speed 69 W at 100% current and 50% speed 76 W at 100% current and 90% speed
Input current ILN at 150% overload		8.5 A
Leakage current at ground IPE - max		< 10 mA (DC-operated) < 3.5 mA (AC-operated)
Mains switch-on frequency		Maximum of one time every 30 seconds
Mains voltage - min		380 V
Mains voltage - max		480 V
Operating mode		Speed control with slip compensation U/f control
Output frequency - min		0 Hz
Output frequency - max		300 Hz
Output voltage (U2)		400 V AC, 3-phase 480 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		400 V AC, 3-phase 480 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
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