

**Variable speed starter, Rated operational voltage 400 V AC, 3-phase, Ie 16 A, 7.5 kW, 10 HP, Radio interference suppression filter**



Powering Business Worldwide™

**Part no. DE1-34016FN-N20N**

**174340**

**EL Number**

**4110104**

**(Norway)**

General specifications		
Product name		Eaton DE1 Variable speed starter
Part no.		DE1-34016FN-N20N
EAN		4015081708024
Product Length/Depth		169 millimetre
Product height		230 millimetre
Product width		90 millimetre
Product weight		1.6 kilogram
Compliances		Contact Manufacturer
Certifications		Safety requirements: IEC/EN 61800-5-1 UL 508C UL File No.: E172143 IEC/EN61800-5 CUL RoHS, ISO 9001 CSA-C22.2 No. 14 UL Category Control No.: NMMS, NMMS7 Certified by UL for use in Canada CE IEC/EN61800-3 IEC/EN 61800-3 UL report applies to both US and Canada RCM UL 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 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
<b>Climatic environmental conditions</b>		
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		50 °C
Ambient operating temperature details		Derating between 50 °C and 60 °C: None if fPWM ≤ 14 kHz up to a max. of 50 °C None if fPWM ≤ 16 kHz up to a max. of 46 °C None if I# ≤ 10.6 A and fPWM ≤ 20 kHz None if I# ≤ 14.9 A and fPWM ≤ 10 kHz
Ambient storage temperature - min		-40 °C
Ambient storage temperature - max		70 °C
Climatic proofing		< 95 average relative humidity (RH), no condensation, no corrosion
<b>Main circuit</b>		
Heat dissipation at current/speed		116 W at 50% current and 0% speed 121 W at 50% current and 50% speed 126 W at 50% current and 90% speed 180 W at 100% current and 0% speed 198 W at 100% current and 50% speed 216 W at 100% current and 90% speed 78 W at 25% current and 0% speed 86 W at 25% current and 50% speed
Input current ILN at 150% overload		16.5 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)		400 V AC, 3-phase 480 V AC, 3-phase
Overload current IL at 150% overload		24 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)		16 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		7.5 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		25 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
<b>Motor rating</b>		
Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload		14 A
Assigned motor current IM at 230 V, 50 Hz, 150% overload		15.2 A
Assigned motor current IM at 400 V, 50 Hz, 150% overload		15.2 A
Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload		14 A
Assigned motor power at 230/240 V, 60 Hz, 1-phase		10 HP
Assigned motor power at 460/480 V, 60 Hz, 3-phase		10 HP
<b>Apparent power</b>		

Apparent power at 400 V		11.09 kV-A
Apparent power at 480 V		13.3 kV-A
<b>Braking function</b>		
Braking torque		Max. 30 % MN, Standard - Main circuit Adjustable to 100 %, DC - Main circuit
<b>Control circuit</b>		
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))
<b>Design verification</b>		
Equipment heat dissipation, current-dependent P <sub>vid</sub>		240 W
Heat dissipation capacity P <sub>diss</sub>		0 W
Heat dissipation per pole, current-dependent P <sub>vid</sub>		0 W
Rated operational current for specified heat dissipation (I <sub>n</sub> )		16 A
Static heat dissipation, non-current-dependent P <sub>vs</sub>		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 I <sub>2N</sub>	A	16
Max. output at quadratic load at rated output voltage	kW	7.5
Max. output at linear load at rated output voltage	kW	7.5
Power consumption	W	240
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