Specifications







Eaton 174331

Eaton DE1 Variable speed starter, Rated operational voltage 230 V AC, 1-phase, Ie 7 A, 1.5 kW, 2 HP, Radio interference suppression filter

General specifications	
PRODUCT NAME	Eaton DE1 Variable speed starter
CATALOG NUMBER	174331
MODEL CODE	DE1-127D0FN-N20N
EAN	4015081707935
PRODUCT LENGTH/DEPTH	169 mm
PRODUCT HEIGHT	230 mm
PRODUCT WIDTH	45 mm
PRODUCT WEIGHT	1.06 kg
COMPLIANCES	CE Marked
CERTIFICATIONS	IEC/EN 61800-3 UL report applies to both US and Canada IEC/EN61800-3 Certified by UL for use in Canada UL 508C RCM UL Safety requirements: IEC/EN 61800-5-1 UL File No.: E172143 CUL UL Category Control No.: NMMS, NMMS7 CSA-C22.2 No. 14 Specification for general requirements: IEC/EN 61800-2 IEC/EN61800-5 RoHS, ISO 9001 CE
CATALOG NOTES	Overload cycle for 60 s every 600 s

Powering Business Worldwide

Apparent power

APPARENT POWER AT 230 V	2.79 kVA
APPARENT POWER AT 240 V	2.91 kVA

Braking function

BRAKING TORQUE	Adjustable to 100 %, DC - Main circuit Max. 30 % MN, Standard - Main circuit

Climatic environmental conditions

ALTITUDE	Max. 2000 m Above 1000 m with 1 % derating per 100 m
AMBIENT OPERATING TEMPERATURE - MAX	60 °C
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
AMBIENT OPERATING TEMPERATURE - MIN	-10 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MAX	60 °C
AMBIENT OPERATING TEMPERATURE AT 150% OVERLOAD - MIN	-10 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
CLIMATIC PROOFING	< 95 average relative humidity (RH), no condensation, no corrosion

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

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.
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	Does not apply, since the

Features & functions

FEATURES	Parameterization: drivesConnect Parameterization: drivesConnect mobile (App) Parameterization: Fieldbus Parameterization: Keypad
FITTED WITH:	Radio interference suppression filter PC connection

AGAINST ELECTRIC SHOCK	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.
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	59 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	7 A
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	0 W

General information

CABLE LENGTH	C3 ≤ 25 m, Radio interference level, maximum motor cable length C2 ≤ 10 m, Radio interference level, maximum motor cable length C1 ≤ 5 m, Radio interference level, maximum motor cable length
COMMUNICATION INTERFACE	OP-Bus (RS485), built in Modbus RTU, 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	FS1
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. C1: for conducted emissions only 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

Main circuit

HEAT DISSIPATION AT CURRENT/SPEED	37 W at 25% current and 0% speed 37 W at 25% current and 50% speed 44.6 W at 50% current and 0% speed 44.9 W at 50% current and 50% speed 51.6 W at 50% current and 90% speed 62.4 W at 100% current and 0% speed 68.9 W at 100% current and 50% speed 78.4 W at 100% current and 90% speed
INPUT CURRENT ILN AT 150% OVERLOAD	17.4 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 - MAX	240 V
MAINS VOLTAGE - MIN	200 V
OPERATING MODE	Speed control with slip compensation U/f control
OUTPUT FREQUENCY - MAX	300 Hz
OUTPUT FREQUENCY - MIN	0 Hz
OUTPUT VOLTAGE (U2)	230 V AC, 3-phase 240 V AC, 3-phase
OVERLOAD CURRENT IL AT 150% OVERLOAD	10.5 A
RATED CONTROL SUPPLY VOLTAGE	10 V DC (Us, max. 0.2 mA)
RATED FREQUENCY - MAX	66 Hz
RATED FREQUENCY - MIN	45 Hz
RATED OPERATIONAL CURRENT (IE)	7 A at 150% overload (at an operating frequency of 16 kHz and an ambient air temperature of +50 °C)
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	20 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	6.8 A
ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD	6.3 A

Resources

APPLICATION NOTES	eaton-powerxl-da1-dc1-de1-conformal-coating-ap040182-en-us.pdf eaton-powerxl-de1-fire-mode-ap040181-en-us.pdf eaton-powerxl-de1-accesslevel2-parameterlock-ap040020-en-us.pdf eaton-powerxl-da1-dc1-de1-internal-motor-protection-ap040016-en-us.pdf eaton-powerxl-vfd-dual-rating-ap040114-en-us.pdf eaton-powerxl-de1-starting-stopping-operation-ap040029-en-us.pdf eaton-powerxl-de1-io-configuration-ap040036-en-us.pdf eaton-powerxl-de1-setpoint-setting-ap040042-en-us.pdf eaton-powerxl-de1-motor-vf-curves-ap040017-en-us.pdf eaton-powerxl-dx-com-stick-3-ap040190-en-us.pdf eaton-powerxl-da1-dc1-db1-de1-rapidlink5-firmware-update-ap040214-en-us.pdf

	eaton-powerxl-da1-dc1-de1-system-bus-ap040022-en-us.pdf
BROCHURES	eaton-powerxl-variable-frequency-drives-hvac-brochure-br040012en-en-us.pdf eaton-powerxl-de1-variable-speed-starter-brochure-br040003en-en-us.pdf
CATALOGUES	eaton-drives-soft-starter-catalog-ca04020001zen-us.pdf_
DECLARATIONS OF CONFORMITY	eaton-variable-speed-starter-declaration-of-conformity-eu250596en.pdf eaton-variable-speed-starter-declaration-of-conformity-uk251079en.pdf
DRAWINGS	eaton-frequency-inverter-dimensions-009.eps eaton-frequency-inverter-3d-drawing-017.eps
ECAD MODEL	ETN.DE1-127D0FN-N20N.edz
INSTALLATION INSTRUCTIONS	IL040005ZU
INSTALLATION VIDEOS	PowerXL DE1 variable speed starter
MANUALS AND USER GUIDES	MN040018_EN eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf eaton-de1-variable-speed-starter-manual-mn040011en-us.pdf
MCAD MODEL	DA-CS-de1_fs1_ip20
PRODUCT NOTIFICATIONS	eaton-drives-ecodesign-directive-mz040046en-en.pdf
SOFTWARE, FIRMWARE, AND APPLICATIONS	eaton-powerxl-pcsoftware-drivesconnect-v1501.zip

	eaton-powerxl-de1-dc1-ethernetip-eds-v120.zip eaton-powerxl-dx-cbl-pc-3m0-usb-driver.zip eaton-powerxl-dc1-de1-swd-codesys-v3-library.zip eaton-powerxl-de1-firmware-release-note-mz040043en-us.pdf eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip eaton-powerxl-de1-dc1-profinet-gsdml-v240.zip eaton-powerxl-dx-comstick3-ble-drivers.zip

PROJECT NAME:	
PROJECT NUMBER:	
PREPARED BY:	
DATE:	

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