

Specifications



Eaton 174327

Eaton DE1 Variable speed starter, Rated operational voltage 230 V AC, 1-phase, Ie 1.4 A, 0.25 kW, 0.33 HP, Radio interference suppression filter

General specifications

PRODUCT NAME	Eaton DE1 Variable speed starter
CATALOG NUMBER	174327
MODEL CODE	DE1-121D4FN-N20N
EAN	4015081707898
PRODUCT LENGTH/DEPTH	169 mm
PRODUCT HEIGHT	230 mm
PRODUCT WIDTH	45 mm
PRODUCT WEIGHT	1.04 kg

CERTIFICATIONS

CE
IEC/EN61800-3
IEC/EN61800-5
UL
Specification for general requirements: IEC/EN 61800-2
IEC/EN 61800-3
UL File No.: E172143
CUL
Safety requirements:
IEC/EN 61800-5-1
UL report applies to both US and Canada
UL 508C
CSA-C22.2 No. 14
UL Category Control No.: NMMS, NMMS7
Certified by UL for use in Canada
RCM
RoHS, ISO 9001

CATALOG NOTES	Overload cycle for 60 s every 600 s
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Apparent power

APPARENT POWER AT 230 V	0.56 kVA
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APPARENT POWER AT 240 V	0.58 kVA
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Climatic environmental conditions

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

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

NUMBER OF INPUTS (ANALOG)	1 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)
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NUMBER OF INPUTS (DIGITAL)	4 (parameterizable, 10 - 30 V DC)
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NUMBER OF OUTPUTS (ANALOG)	0
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NUMBER OF OUTPUTS (DIGITAL)	0
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NUMBER OF RELAY OUTPUTS	1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))
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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:

PC connection
Radio interference
suppression filter

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	17 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)	1.4 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	Other bus systems EtherNet/IP MODBUS
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	10.5 W at 50% current and 0% speed
	10.9 W at 25% current and 0% speed
	10.9 W at 25% current and 50% speed
	11.6 W at 50% current and 50% speed
	12.6 W at 50% current and 90% speed
	13 W at 100% current and 0% speed
	13.5 W at 100% current and 50% speed
	16.4 W at 100% current and 90% speed
INPUT CURRENT ILN AT 150% OVERLOAD	3.6 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	U/f control Speed control with slip compensation
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	2.1 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)	1.4 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	10 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker),

Motor rating

**ASSIGNED MOTOR
CURRENT IM AT 220 - 240
V, 60 HZ, 150%
OVERLOAD**

1.4 A

**ASSIGNED MOTOR
CURRENT IM AT 230 V, 50
HZ, 150% OVERLOAD**

1.4 A

	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

Resources

[eaton-powerxl-da1-dc1-de1-system-bus-ap040022-en-us.pdf](#)

[eaton-powerxl-da1-dc1-db1-de1-rapidlink5-firmware-update-ap040214-en-us.pdf](#)

[eaton-powerxl-de1-motor-vf-curves-ap040017-en-us.pdf](#)

[eaton-powerxl-de1-starting-stopping-operation-ap040029-en-us.pdf](#)

[eaton-powerxl-de1-io-configuration-ap040036-en-us.pdf](#)

APPLICATION NOTES

[eaton-powerxl-de1-setpoint-setting-ap040042-en-us.pdf](#)

[eaton-powerxl-de1-accesslevel2-parameterlock-ap040020-en-us.pdf](#)

[eaton-powerxl-dx-com-stick-3-ap040190-en-us.pdf](#)

[How does the internal motor protection work?](#)

[Electromagnetic compatibility \(EMC\)](#)

[DX-COM-STICK3_Connection](#)

	The OP System Bus - Parameterizing - Control eaton-powerxl-da1-dc1-de1-internal-motor-protection-ap040016-en-us.pdf Start, Stopp und Betrieb eaton-powerxl-da1-dc1-de1-conformal-coating-ap040182-en-us.pdf eaton-powerxl-de1-fire-mode-ap040181-en-us.pdf eaton-powerxl-vfd-dual-rating-ap040114-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-uk251079en.pdf eaton-variable-speed-starter-declaration-of-conformity-eu250596en.pdf
DRAWINGS	eaton-frequency-inverter-dimensions-009.eps eaton-frequency-inverter-3d-drawing-017.eps
ECAD MODEL	DA-CE-ETN.DE1-121D4FN-N20N
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 eaton-micro-compact-drives-mcad-drawings-de1-fs1-ip20.dwg
PRODUCT NOTIFICATIONS	eaton-drives-ecodesign-directive-mz040046en-en.pdf
SOFTWARE, FIRMWARE, AND APPLICATIONS	eaton-powerxl-dx-comstick3-ble-drivers.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-pcsoftware-drivesconnect-v1501.zip eaton-powerxl-de1-firmware-release-note-mz040043en-us.pdf eaton-powerxl-de1-dc1-profinet-gsdml-v240.zip eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip

PROJECT NAME:

PROJECT NUMBER:

PREPARED BY:

DATE:



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