# Specifications



**Photo is representative**





## Eaton 180653

Eaton DE11 Variable speed starters, Rated operational voltage 230 V AC, 1-phase, Ie 4.3 A, 0.75 kW, 1 HP, Radio interference suppression filter DE11-124D3FN-N20N

| General specifications | |
|---|---|
| **PRODUCT NAME** | Eaton DE11 Variable speed starter |
| **CATALOG NUMBER** | 180653 |
| **MODEL CODE** | DE11-124D3FN-N20N |
| **EAN** | 4015081758180 |
| **PRODUCT LENGTH/DEPTH** | 169 mm |
| **PRODUCT HEIGHT** | 230 mm |
| **PRODUCT WIDTH** | 45 mm |
| **PRODUCT WEIGHT** | 1.04 kg |
| **CERTIFICATIONS** | IEC/EN61800-5<br>CSA-C22.2 No. 14<br>Safety requirements: IEC/EN 61800-5-1<br>IEC/EN61800-3<br>CE<br>UL 508C<br>Specification for general requirements: IEC/EN 61800-2<br>IEC/EN 61800-3<br>UL<br>UL Category Control No.: NMMS, NMMS7<br>UL File No.: E172143<br>UL report applies to both US and Canada<br>Certified by UL for use in Canada<br>CUL<br>RCM<br>RoHS, ISO 9001 |
| **CATALOG NOTES** | Overload cycle for 60 s every 600 s |

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## Apparent power

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| **APPARENT POWER AT 230 V** | 1.71 kVA |
| **APPARENT POWER AT 240 V** | 1.79 kVA |

## Braking function

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| **BRAKING TORQUE** | Max. 30 % MN, Standard - Main circuit<br>Adjustable to 100 %, DC - Main circuit |

## Climatic environmental conditions

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| **ALTITUDE** | Above 1000 m with 1 % derating per 100 m<br>Max. 2000 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

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| **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

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| **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

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| **FEATURES** | Parameterization: drivesConnect<br>Parameterization: drivesConnect mobile (App)<br>Parameterization: Fieldbus<br><br>Parameterization: Keypad |
| **FITTED WITH:** | Radio interference suppression filter<br>PC connection |

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| **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** | 32 W |
| **HEAT DISSIPATION CAPACITY PDISS** | 0 W |
| **HEAT DISSIPATION DETAILS** | Operation (with 150 % overload) |
| **HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** | 0 W |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 4.3 A |
| **STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** | 0 W |

## General information

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| **CABLE LENGTH** | C1 ≤ 5 m, Radio interference level, maximum motor cable length<br>C3 ≤ 25 m, Radio interference level, maximum motor cable length<br>C2 ≤ 10 m, Radio interference level, maximum motor cable length |
| **COMMUNICATION INTERFACE** | CANopen®, built in<br>Modbus RTU, built in<br>OP-Bus (RS485), built in |
| **CONNECTION TO SMARTWIRE-DT** | Yes<br>In conjunction with DX-NET-SWD3 SmartWire DT module |
| **DEGREE OF PROTECTION** | IP20<br>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** | EtherNet/IP<br>MODBUS<br>Other bus systems<br>CAN |
| **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.<br>C1: for conducted emissions only<br>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) |

## Main circuit

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| **HEAT DISSIPATION AT CURRENT/SPEED** | 10.3 W at 25% current and 0% speed<br>10.3 W at 25% current and 50% speed<br>10.9 W at 50% current and 0% speed<br>12.3 W at 50% current and 50% speed<br>15.3 W at 50% current and 90% speed<br>28.9 W at 100% current and 50% speed<br>30.9 W at 100% current and 90% speed<br>31.8 W at 100% current and 0% speed |
| **INPUT CURRENT ILN AT 150% OVERLOAD** | 11.3 A |
| **LEAKAGE CURRENT AT GROUND IPE - MAX** | < 10 mA (DC-operated)<br>< 3.5 mA (AC-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<br>Speed control with slip compensation |
| **OUTPUT FREQUENCY - MAX** | 300 Hz |
| **OUTPUT FREQUENCY - MIN** | 0 Hz |
| **OUTPUT VOLTAGE (U2)** | 230 V AC, 3-phase<br>240 V AC, 3-phase |
| **OVERLOAD CURRENT IL AT 150% OVERLOAD** | 6.45 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)** | 4.3 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<br>240 V AC, 1-phase |
| **RESOLUTION** | 0.03 Hz (Frequency resolution, setpoint value) |
| **SHORT-CIRCUIT PROTECTION RATING** | 15 A, UL (Class CC or J), Safety device (fuse or |

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| **VIBRATION** | Resistance: According to EN 61800-5-1 |

## Motor rating

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| **ASSIGNED MOTOR CURRENT IM AT 220 - 240 V, 60 HZ, 150% OVERLOAD** | 3.2 A |
| **ASSIGNED MOTOR CURRENT IM AT 230 V, 50 HZ, 150% OVERLOAD** | 3.2 A |

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| | 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 |

## Resources

| | |
|---|---|
| APPLICATION NOTES | eaton-powerxl-da1-dc1-db1-de1-rapidlink5-firmware-update-ap040214-en-us.pdf<br>eaton-powerxl-dx-com-stick-3-ap040190-en-us.pdf<br>eaton-powerxl-de1-accesslevel2-parameterlock-ap040020-en-us.pdf<br>eaton-powerxl-de1-setpoint-setting-ap040042-en-us.pdf<br>eaton-powerxl-de1-starting-stopping-operation-ap040029-en-us.pdf<br>eaton-powerxl-de1-io-configuration-ap040036-en-us.pdf<br>eaton-powerxl-de1-fire-mode-ap040181-en-us.pdf<br>eaton-powerxl-da1-dc1-de1-conformal-coating-ap040182-en-us.pdf<br>eaton-powerxl-de1-motor-vf-curves-ap040017-en-us.pdf<br>eaton-powerxl-vfd-dual-rating-ap040114-en-us.pdf<br>eaton-powerxl-da1-dc1-de1-system-bus-ap040022-en-us.pdf |

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|---|---|
| | eaton-powerxl-da1-dc1-de1-internal-motor-protection-ap040016-en-us.pdf |
| BROCHURES | eaton-powerxl-variable-frequency-drives-hvac-brochure-br040012en-en-us.pdf<br><br>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<br><br>eaton-variable-speed-starter-declaration-of-conformity-uk251079en.pdf |
| DRAWINGS | eaton-frequency-inverter-dimensions-009.eps<br><br>eaton-frequency-inverter-3d-drawing-017.eps |
| ECAD MODEL | DA-CE-ETN.DE11-124D3FN-N20N |
| INSTALLATION INSTRUCTIONS | IL040005ZU |
| INSTALLATION VIDEOS | PowerXL DE1 variable speed starter |
| MANUALS AND USER GUIDES | eaton-de1-variable-speed-starter-manual-mn040011en-us.pdf<br><br>eaton-canopen-communication-manual-for-variable-frequency-drives-variable-speed-starters-da1-db1-dc1-de11-mn040019-en-us.pdf<br><br>MN040018_EN |
| MCAD MODEL | DA-CS-de1_fs1_ip20 |
| PRODUCT NOTIFICATIONS | eaton-drives-ecodesign-directive-mz040046en-en.pdf |
| SOFTWARE, FIRMWARE, AND APPLICATIONS | eaton-powerxl-dx-cbl-pc-1m5-usb-driver.zip |

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|---|---|
| | eaton-powerxl-de1-firmware-release-note-mz040043en-us.pdf<br><br>eaton-powerxl-de1-dc1-ethernetip-eds-v120.zip<br><br>eaton-powerxl-dx-cbl-pc-3m0-usb-driver.zip<br><br>eaton-powerxl-dx-comstick3-ble-drivers.zip<br><br>eaton-powerxl-de11-canopen-eds-v220.zip<br><br>eaton-powerxl-de1-dc1-profinet-gsdml-v240.zip<br><br>eaton-powerxl-dc1-de1-swd-codesys-v3-library.zip<br><br>eaton-powerxl-de11-canopen-codesys-v3-library.zip<br><br>eaton-powerxl-pcsoftware-drivesconnect-v1501.zip |

| | |
|---|---|
| **PROJECT NAME:** | |
| **PROJECT NUMBER:** | |
| **PREPARED BY:** | |
| **DATE:** | |

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