# DATASHEET - DE1-343D6NN-N20N

**Variable speed starter, Rated operational voltage 400 V AC, 3-phase, Ie 3.6 A, 1.5 kW, 2 HP**

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|---|---|
| **Part no.** | **DE1-343D6NN-N20N** |
| | **177367** |
| **EL Number (Norway)** | **4104008** |

## General specifications

| | |
|---|---|
| Product name | Eaton DE1 Variable speed starter |
| Part no. | DE1-343D6NN-N20N |
| EAN | 4015081718276 |
| Product Length/Depth | 169 millimetre |
| Product height | 230 millimetre |
| Product width | 45 millimetre |
| Product weight | 1 kilogram |
| Certifications | Specification for general requirements: IEC/EN 61800-2<br>Certified by UL for use in Canada<br>IEC/EN61800-3<br>CUL<br>UL 508C<br>RoHS, ISO 9001<br>RCM<br>UL report applies to both US and Canada<br>CSA-C22.2 No. 14<br>IEC/EN61800-5<br>UL Category Control No.: NMMS, NMMS7<br>UL File No.: E172143<br>IEC/EN 61800-3<br>UL<br>CE<br>Safety requirements: IEC/EN 61800-5-1 |
| Product Tradename | DE1 |
| Product Type | Variable speed starter |
| Product Sub Type | None |
| Catalog Notes | Overload cycle for 60 s every 600 s |

## Features & Functions

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| Features | Parameterization: Keypad<br>Parameterization: Fieldbus<br>Parameterization: drivesConnect mobile (App)<br>Parameterization: drivesConnect |
| Fitted with: | PC connection |

## General information

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|---|---|
| Cable length | C3 ≤ 25 m, Radio interference level, maximum motor cable length<br>C2 ≤ 10 m, Radio interference level, maximum motor cable length |
| Communication interface | OP-Bus (RS485), built in<br>Modbus RTU, built in |
| Connection to SmartWire-DT | Yes<br>In conjunction with DX-NET-SWD3 SmartWire DT module |
| Degree of protection | NEMA Other<br>IP20 |
| 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>Other bus systems<br>MODBUS |
| Radio interference class | Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments<br>C2, C3: depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. |
| 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

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|---|---|
| Altitude | Above 1000 m with 1 % derating per 100 m<br>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 | None up to a max. of 57 °C<br>None if I# ≤ 3.2 A<br>None if fPWM ≤ 16 kHz<br>Derating between 50 °C and 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

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|---|---|
| Heat dissipation at current/speed | 44.9 W at 100% current and 90% speed<br>44.7 W at 100% current and 50% speed<br>41.6 W at 100% current and 0% speed<br>30.4 W at 50% current and 90% speed<br>28.4 W at 50% current and 50% speed<br>26.6 W at 25% current and 50% speed<br>24.9 W at 25% current and 0% speed<br>22.3 W at 50% current and 0% speed |
| Input current ILN at 150% overload | 4.9 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 - min | 380 V |
| Mains voltage - max | 480 V |
| Operating mode | U/f control<br>Speed control with slip compensation |
| Output frequency - min | 0 Hz |
| Output frequency - max | 300 Hz |
| Output voltage (U2) | 400 V AC, 3-phase<br>480 V AC, 3-phase |
| Overload current IL at 150% overload | 5.4 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) | 3.6 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 | 1.5 kW |
| Rated operational voltage | 480 V AC, 3-phase<br>400 V AC, 3-phase |
| Resolution | 0.025 Hz (Frequency resolution, setpoint value) |
| Short-circuit protection rating | 6 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

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|---|---|
| Assigned motor current IM at 220 - 240 V, 60 Hz, 150% overload | 3.4 A |
| Assigned motor current IM at 230 V, 50 Hz, 150% overload | 3.6 A |
| Assigned motor current IM at 400 V, 50 Hz, 150% overload | 3.6 A |
| Assigned motor current IM at 440 - 480 V, 60 Hz, 150% overload | 3.4 A |
| Assigned motor power at 230/240 V, 60 Hz, 1-phase | 2 HP |
| Assigned motor power at 460/480 V, 60 Hz, 3-phase | 2 HP |

## Apparent power

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|---|---|
| Apparent power at 400 V | 2.49 kV·A |
| Apparent power at 480 V | 2.99 kV·A |

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| **Braking function** | | |
| Braking torque | | Max. 30 % MN, Standard - Main circuit<br>Adjustable to 100 %, DC - 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 | | 47 W |
| Heat dissipation capacity Pdiss | | 0 W |
| Heat dissipation per pole, current-dependent Pvid | | 0 W |
| Rated operational current for specified heat dissipation (In) | | 3.6 A |
| Static heat dissipation, non-current-dependent Pvs | | 0 W |
| Heat dissipation details | | Operation (with 150 % overload) |
| 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])

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|---|---|---|
| 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 | 3.6 |
| Max. output at quadratic load at rated output voltage | kW | 1.5 |
| Max. output at linear load at rated output voltage | kW | 1.5 |
| Power consumption | W | 47 |
| Relative symmetric net frequency tolerance | % | 10 |
| Relative symmetric net voltage tolerance | % | 10 |

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|---|---|---|
| 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 | 45 |
| Depth | mm | 169 |


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