

# Specifications

## Eaton DC1-1D5D8NB-A6SOE1

Eaton DC1 Variable frequency - drive, 115 V AC, single-phase, 5.8 A, 1.5 HP, IP66/NEMA 4X, Brake chopper, 7-digital display assembly, Local controls, Additional PCB protection, UV resistant, FS2

### General specifications

|                             |                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton DC1 Variable frequency drive                                                                                                                                                                                                                                                                                                             |
| <b>CATALOG NUMBER</b>       | DC1-1D5D8NB-A6SOE1                                                                                                                                                                                                                                                                                                                             |
| <b>UPC</b>                  | 786689592356                                                                                                                                                                                                                                                                                                                                   |
| <b>PRODUCT LENGTH/DEPTH</b> | 182 mm                                                                                                                                                                                                                                                                                                                                         |
| <b>PRODUCT HEIGHT</b>       | 257 mm                                                                                                                                                                                                                                                                                                                                         |
| <b>PRODUCT WIDTH</b>        | 188 mm                                                                                                                                                                                                                                                                                                                                         |
| <b>PRODUCT WEIGHT</b>       | 3.5 kg                                                                                                                                                                                                                                                                                                                                         |
| <b>CERTIFICATIONS</b>       | UL report applies to both US and Canada<br>Certified by UL for use in Canada<br>CE marking<br>UkrSEPRO<br>IEC/EN 61800-2<br>UL<br>IEC/EN 61800-3<br>UL 508C<br>RCM<br>IEC/EN61800-5<br>UL Category Control No.: NMMS, NMMS7<br>EAC<br>UL Listed<br>CUL<br>UL File No.: E172143<br>IEC/EN 61800-5-1<br>CE<br>CSA-C22.2 No. 14<br>RoHS, ISO 9001 |

### CATALOG NOTES

- Assigned motor



Powering Business Worldwide

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rating: Overload  
cycle for 60 s every  
600 s

- For normal internally and externally ventilated four-pole three-phase asynchronous motors with 1500 rpm at 50 Hz and 1800 rpm at 60 Hz
- operation (with 150 % overload)
- The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different duty cycles) are available upon request.

## Product specifications

|                                                                          |                                                                                                                                                                                                          |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | Parameterization: Keypad<br>Parameterization: Fieldbus                                                                                                                                                   |
| <b>FEATURES</b>                                                          | Parameterization:<br>drivesConnect mobile<br>(App)<br>Parameterization:<br>drivesConnect                                                                                                                 |
| <b>FITTED WITH:</b>                                                      | Internal DC link<br>7-digital display assembly<br>Additional PCB protection<br>PC connection<br>Brake chopper<br>IGBT inverter<br>Breaking resistance<br>Control unit<br>Local controls<br>UV resistance |
| <b>CLIMATIC PROOFING</b>                                                 | < 95 average relative<br>humidity (RH), no<br>condensation, no<br>corrosion                                                                                                                              |
| <b>CONNECTION TO<br/>SMARTWIRE-DT</b>                                    | No                                                                                                                                                                                                       |
| <b>OPERATING MODE</b>                                                    | Speed control with slip<br>compensation<br>BLDC motors<br>PM motors<br>Synchronous reluctance<br>motors<br>U/f control<br>Sensorless vector control<br>(SLV)                                             |
| <b>FRAME SIZE</b>                                                        | FS2                                                                                                                                                                                                      |
| <b>ALTITUDE</b>                                                          | Max. 2000 m<br>Above 1000 m with 1 %<br>derating per 100 m<br>Max. 4000 m                                                                                                                                |
| <b>APPLICATION IN<br/>DOMESTIC AND<br/>COMMERCIAL AREA<br/>PERMITTED</b> | Yes                                                                                                                                                                                                      |
| <b>MAINS SWITCH-ON<br/>FREQUENCY</b>                                     | Maximum of one time<br>every 30 seconds                                                                                                                                                                  |
| <b>AMBIENT OPERATING<br/>TEMPERATURE - MAX</b>                           | 40 °C                                                                                                                                                                                                    |
| <b>AMBIENT OPERATING<br/>TEMPERATURE - MIN</b>                           | -20 °C                                                                                                                                                                                                   |
| <b>MAINS VOLTAGE - MAX</b>                                               | 115 V                                                                                                                                                                                                    |
| <b>OUTPUT VOLTAGE - MAX</b>                                              | 250 V                                                                                                                                                                                                    |

## Resources

|                                      |                                                                                                            |
|--------------------------------------|------------------------------------------------------------------------------------------------------------|
|                                      | <a href="#">How does the internal motor protection work?</a>                                               |
|                                      | <a href="#">Electromagnetic compatibility (EMC)</a>                                                        |
| <b>APPLICATION NOTES</b>             | <a href="#">DX-COM-STICK3 Connection</a><br><a href="#">The OP System Bus - Parameterizing - Control</a>   |
| <b>BROCHURES</b>                     | <a href="#">eaton-powerxl-variable-frequency-drives-dc1-da1-brochure-br040001en-en-us.pdf</a>              |
| <b>CATALOGS</b>                      | <a href="#">Drives - Product range catalog</a><br><a href="#">Product Range Catalog Drives Engineering</a> |
| <b>INSTALLATION VIDEOS</b>           | <a href="#">Video PowerXL DA1</a><br><a href="#">PowerXL Variable Frequency Drives DC1 and DA1 - EN</a>    |
| <b>MULTIMEDIA</b>                    | <a href="#">Looking for variable frequency drives DC1 and DA1 which can be used in harsh environments?</a> |
| <b>SPECIFICATIONS AND DATASHEETS</b> | <a href="#">Eaton Specification Sheet - DC1-1D5D8NB-A6SOE1</a>                                             |

|                                                                         |                                                                                                  |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>RELATIVE SYMMETRIC<br/>NET FREQUENCY<br/>TOLERANCE</b>               | 10 %                                                                                             |
| <b>RELATIVE SYMMETRIC<br/>NET VOLTAGE<br/>TOLERANCE</b>                 | 10 %                                                                                             |
| <b>AMBIENT STORAGE<br/>TEMPERATURE - MAX</b>                            | 60 °C                                                                                            |
| <b>AMBIENT STORAGE<br/>TEMPERATURE - MIN</b>                            | -40 °C                                                                                           |
| <b>APPLICATION IN<br/>INDUSTRIAL AREA<br/>PERMITTED</b>                 | Yes                                                                                              |
| <b>PRODUCT CATEGORY</b>                                                 | Variable frequency drives                                                                        |
| <b>PROTECTION</b>                                                       | Finger and back-of-hand<br>proof, Protection against<br>direct contact (BGV A3,<br>VBG4)         |
| <b>RESOLUTION</b>                                                       | 0.1 Hz (Frequency<br>resolution, setpoint value)                                                 |
| <b>SWITCH-ON THRESHOLD<br/>FOR THE BRAKING<br/>TRANSISTOR</b>           | 390 VDC                                                                                          |
| <b>VOLTAGE RATING - MAX</b>                                             | 120 V                                                                                            |
| <b>MOUNTING POSITION</b>                                                | Vertical                                                                                         |
| <b>COMMUNICATION<br/>INTERFACE</b>                                      | CANopen®, built in<br>Modbus RTU, built in<br>OP-Bus (RS485), built in<br>SmartWire-DT, optional |
| <b>CONVERTER TYPE</b>                                                   | U converter                                                                                      |
| <b>DEGREE OF PROTECTION</b>                                             | NEMA 4X<br>IP66                                                                                  |
| <b>ASSIGNED MOTOR<br/>POWER AT 230/240 V, 60<br/>HZ, 1-PHASE</b>        | 1.5 HP                                                                                           |
| <b>BRAKING RESISTANCE</b>                                               | 100 Ω                                                                                            |
| <b>INPUT CURRENT ILN AT<br/>150% OVERLOAD</b>                           | 21.9 A                                                                                           |
| <b>ASSIGNED MOTOR<br/>CURRENT IM AT 230 V, 50<br/>HZ, 150% OVERLOAD</b> | 4.6 A                                                                                            |
| <b>PROTOCOL</b>                                                         | MODBUS<br>Other bus systems<br>CAN<br>EtherNet/IP                                                |
| <b>OVERLOAD CURRENT IL<br/>AT 150% OVERLOAD</b>                         | 8.7 A                                                                                            |
| <b>RATED FREQUENCY -</b>                                                | 62 Hz                                                                                            |

|                                                             |                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MAX</b>                                                  |                                                                                                                                                                                                                                                                              |
| <b>RATED FREQUENCY - MIN</b>                                | 48 Hz                                                                                                                                                                                                                                                                        |
| <b>RATED OPERATIONAL POWER AT 220/230 V, 50 HZ, 1-PHASE</b> | 1.1 kW                                                                                                                                                                                                                                                                       |
| <b>SYSTEM CONFIGURATION TYPE</b>                            | AC supply systems with earthed center point                                                                                                                                                                                                                                  |
| <b>BRAKING TORQUE</b>                                       | <p>Max. 100 % of rated operational current <math>I_e</math> with external braking resistor - Main circuit</p> <p>Max. 30 % MN, Standard - Main circuit</p> <p>Max. 100 % of rated operational current <math>I_e</math>, variable, DC - Main circuit</p>                      |
| <b>CABLE LENGTH</b>                                         | <p>200 m, screened, with motor choke, maximum permissible cable length</p> <p>100 m, screened, maximum permissible cable length</p> <p>150 m, unscreened, maximum permissible cable length</p> <p>300 m, unscreened, with motor choke, maximum permissible, Motor feeder</p> |
| <b>OUTPUT VOLTAGE (U2)</b>                                  | 230 V AC, 3-phase                                                                                                                                                                                                                                                            |
| <b>NUMBER OF INPUTS (ANALOG)</b>                            | <p>2</p> <p>2 (parameterizable, 0 - 10 V DC, 0/4 - 20 mA)</p>                                                                                                                                                                                                                |
| <b>NUMBER OF INPUTS (DIGITAL)</b>                           | <p>4</p> <p>4 (parameterizable, max. 30 V DC)</p>                                                                                                                                                                                                                            |
| <b>RADIO INTERFERENCE CLASS</b>                             | Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments                                                                                                                                             |
| <b>NUMBER OF OUTPUTS (DIGITAL)</b>                          | <p>1 (parameterizable, 24 V DC)</p> <p>1</p>                                                                                                                                                                                                                                 |
| <b>STARTING CURRENT - MAX</b>                               | 175 % $I_H$                                                                                                                                                                                                                                                                  |
| <b>NUMBER OF PHASES (INPUT)</b>                             | 1                                                                                                                                                                                                                                                                            |
| <b>NUMBER OF RELAY OUTPUTS</b>                              | 1 (parameterizable, N/O, 6 A (250 V, AC-1) / 5 A (30 V, DC-1))                                                                                                                                                                                                               |

|                                                               |                                                                                    |
|---------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>NUMBER OF PHASES (OUTPUT)</b>                              | 3                                                                                  |
| <b>RATED CONTROL SUPPLY VOLTAGE</b>                           | 10 V DC (Us, max. 10 mA)                                                           |
| <b>EFFICIENCY</b>                                             | 97 % ( $\eta$ )                                                                    |
| <b>SUPPLY FREQUENCY</b>                                       | 50/60 Hz<br>50/60 Hz, fLN, Main circuit                                            |
| <b>LEAKAGE CURRENT AT GROUND IPE - MAX</b>                    | 4.8 mA                                                                             |
| <b>MAINS VOLTAGE - MIN</b>                                    | 110 V                                                                              |
| <b>NOMINAL OUTPUT CURRENT I2N</b>                             | 5.8 A                                                                              |
| <b>NUMBER OF HW-INTERFACES (INDUSTRIAL ETHERNET)</b>          | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (OTHER)</b>                        | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (PARALLEL)</b>                     | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (RS-232)</b>                       | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (RS-422)</b>                       | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (RS-485)</b>                       | 1                                                                                  |
| <b>NUMBER OF HW-INTERFACES (SERIAL TTY)</b>                   | 0                                                                                  |
| <b>NUMBER OF HW-INTERFACES (USB)</b>                          | 0                                                                                  |
| <b>NUMBER OF INTERFACES (PROFINET)</b>                        | 0                                                                                  |
| <b>NUMBER OF OUTPUTS (ANALOG)</b>                             | 1                                                                                  |
| <b>OUTPUT AT LINEAR LOAD AT RATED OUTPUT VOLTAGE - MAX</b>    | 1.1 kW                                                                             |
| <b>OUTPUT AT QUADRATIC LOAD AT RATED OUTPUT VOLTAGE - MAX</b> | 1.1 kW                                                                             |
| <b>OUTPUT FREQUENCY - MAX</b>                                 | 60 Hz                                                                              |
| <b>OUTPUT FREQUENCY - MIN</b>                                 | 0 Hz                                                                               |
| <b>SUITABLE FOR</b>                                           | Branch circuits, (UL/CSA)                                                          |
| <b>SWITCHING FREQUENCY</b>                                    | 8 kHz, 4 - 32 kHz<br>adjustable (audible),<br>fPWM, Power section,<br>Main circuit |

|                                        |                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>RATED OPERATIONAL CURRENT (IE)</b>  | 5.8 A at 150% overload (at an operating frequency of 6 kHz and an ambient air temperature of +40 °C) |
| <b>RATED OPERATIONAL VOLTAGE</b>       | 115 V AC, 1-phase                                                                                    |
| <b>SHORT-CIRCUIT PROTECTION RATING</b> | 35 A, UL (Class CC or J), Safety device (fuse or miniature circuit-breaker), Power Wiring            |

|                        |
|------------------------|
| <b>PROJECT NAME:</b>   |
| <b>PROJECT NUMBER:</b> |
| <b>PREPARED BY:</b>    |
| <b>DATE:</b>           |



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