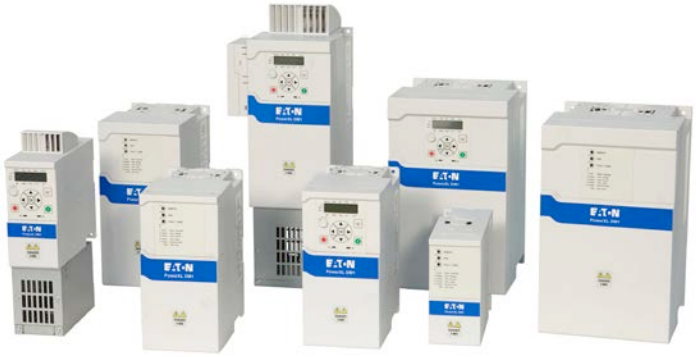
Next-generation drives for today's demands



The DM1 and DM1 Pro microdrives are part of Eaton's next generation PowerXL™ Series of adjustable frequency drives specifically engineered for today's more demanding commercial and industrial applications. The power unit makes use of the most sophisticated semiconductor technology and a highly modular construction that can be flexibly adapted to meet the customer's needs.

Powering Business Worldwide

Features

- Brake chopper standard
- Dual overload ratings:
  - 110% variable torque (I_L)
  - 150% constant torque (I_H)
- Drive can be powered by an external 24 Vdc supply to update firmware and parameters, and access fieldbus
- IP20 rating for base drive, NEMA® Type 1 with optional accessory kit
- Standard I/O:
  - 4x DI, 1x AI, 1x AO, 2x FC relays
- Integrated input surge protection
- On-board communication protocols:
  - DM1 and DM1 Pro: Modbus® RTU, Bluetooth
  - DM1 Pro only: EtherNet/IP, Modbus TCP, BACnet/IP, BACnet MS/TP
- EMI/RFI filters optional on all drives—meets EMC Category C2
- Seamless integration into EtherNet/IP networks via Add-On Instructions
- SNTP time clock supports internet time stamping of faults
- One expansion port for additional communication protocols as necessary
- Remote graphic LCD display and keypad supports simple menu navigation as well as on-screen diagnostics and troubleshooting
- LOCAL/REMOTE operation from keypad
- Conformal-coated control and power boards standard
- Safe Torque Off (STO) built-in with functional safety SIL2 Certification

Standards and certifications

- IEC/EN 61800-5-1, Immunity: IEC/EN 61800-3, UL-61800-5, IEC/EN 61800-5-2,Category C2
- cUL®
- UL®
- CE
- IEC 61508
- C-Tick
- EN 62061
- RoHS
- EN ISO 13849-1
- EAC
- Plenum rated

Software

- Built-in web server to update firmware, program and commission the DM1 over an Ethernet network
- Active Energy Control® minimizes energy losses in your motor, resulting in industry-leading energy efficiency for your application
- Quick Start Wizard upon initial power-up supports fast, easy installation
- Standard applications:
  - Standard
  - Fan
  - Pump
  - Multipurpose
- Copy/paste functionality on drive keypad allows for fast setup of multiple drives using remote keypad
- Preprogrammed I/O supports fast, easy installation for most applications
- Advanced PC Tool with diagnostic capabilities

Catalog numbering system

D M 1 – 3 4 4D3 E B – S 20 S – _

Basic naming
D = Drive

Device series
M = Machinery

Product generation
1 = First generation

Phase reference
1 = Single-phase input/ three-phase output
3 = Three-phase input/ three-phase output

Input voltage
1 = 115 V (100–120 V, +10%/–15%)
2 = 230 V (200–240 V, +10%/–15%)
4 = 400 V (380–480 V, +10%/–15%)
5 = 600 V (575–600 V, +10%/–15%)

Internal EMC filter
E = Internal EMC filter
N = No EMC filter

Internal brake chopper
B = Brake chopper
N = No brake chopper

Display option
N = No display
S = Multi-segment LCD display

IP rating
20 = IP20

Control options
B = No STO and no Ethernet communications
S = STO SI L2 and EtherNet/IP, Modbus TCP onboard

Region
Blank = U.S.
EM = EMEA
AP = APAC

Output current rating (single-phase)

100–120 V	200–240 V
1D6 = 1.6 A, 0.25 hp, 0.18 kW **3D0** = 3.0 A, 0.5 hp, 0.37 kW **4D8** = 4.8 A, 1.0 hp, 0.75 kW **6D9** = 6.9 A, 1.5 hp, 1.1 kW	**1D6** = 1.6 A, 0.25 hp, 0.18 kW **3D0** = 3.0 A, 0.5 hp, 0.27 kW **4D8** = 4.8 A, 1.0 hp, 0.75 kW **7D8** = 7.8 A, 2.0 hp, 1.5 kW **011** = 11 A, 3.0 hp, 2.2 kW **017** = 17.5 A, 5.0 hp, 4.0 kW

Output current rating (three-phase)

200–240 V	380–480 V	525–600 V
1D6 = 1.6 A, 0.25 hp, 0.18 kW **3D0** = 3.0 A, 0.5 hp, 0.37 kW **4D8** = 4.8 A, 1.0 hp, 0.75 kW **7D8** = 7.8 A, 2.0 hp, 1.5 kW **011** = 11 A, 3.0 hp, 2.2 kW **017** = 17.5 A, 5.0 hp, 4.0 kW **025** = 25.3 A, 7.5 hp, 5.5 kW **032** = 32.2 A, 10 hp, 7.5 kW **048** = 48.3 A, 15 hp, 11 kW	**1D5** = 1.5 A, 0.5 hp, 0.37 kW **2D2** = 2.2 A, 1 hp, 0.75 kW **4D3** = 4.3 A, 2 hp, 1.5 kW **5D6** = 5.6 A, 3 hp, 2.2 kW **7D6** = 7.6 A, 5 hp, 3 kW **012** = 12 A, 7.5 hp, 5.5 kW **016** = 16 A, 10 hp, 7.5 kW **023** = 23 A, 15 hp, 11 kW **031** = 31 A, 20 hp, 15 kW **038** = 38 A, 25 hp, 18.5 kW	**4D5** = 4.5 A, 3 hp, 2.2 kW **7D5** = 7.5 A, 5 hp, 3 kW **010** = 10 A, 7.5 hp, 5.5 kW **013** = 13.5 A, 10 hp, 7.5 kW **018** = 18 A, 15 hp, 11 kW **022** = 22 A, 20 hp, 15 kW

Input ratings

Description	Specification
Rated input voltage	1 = 115 V (100–120 V, +10%/–15%) 2 = 230 V (200–240 V, +10%/–15%) 4 = 400 V (380–480 V, +10%/–15%) 5 = 575 V (525–600 V, +10%/–15%)
Voltage tolerance	–15%/10%
Input frequency	50 Hz to 60 Hz (variation up to 45 Hz to 66 Hz)
Input THD	>120%
Connection to power	Once per minute or less frequent
Boot delay	3 s
Short-circuit withstand rating	100 kAIC (fuses and circuit breakers); 65 kAIC (Type E CMC); 14 kAIC (miniature breakers); 5 kAIC (all)
Power ride-through	100 ms
Logic control ride-through	0.5 s min, 2 s typical
Frequency tolerance	45 Hz to 65 Hz
Total watts loss typical	Typical efficiency 97.5% for three-phase

Output ratings

Description	Specification
Continuous output current	I_L: ambient temperature maximum 40 °C, up to 60 °C with derating, overload 1.1 x I_L (1 min/10 min) I_H: ambient temperature maximum 50 °C, up to 60 °C with derating, overload 1.5 x I_H (1 min/10 min)
Overload current	150% of drive rating for constant torque; 110% of drive rating for variable torque
Initial output current	200% (2 sec/20 sec)
Output frequency	0–400 Hz (standard)
Frequency resolution	0.01 Hz
Maximum cable length	See EMC guidelines in Installation Manual Without EMC considerations: 328 ft (100 m)

Ambient conditions

Description	Specification
Operating temperature	–10 °C (no frost) to +50 °C, up to +60 °C with derating (CT) –10 °C (no frost) to +40 °C, up to +60 °C with derating (VT)
Storage temperature	–40 °C to +70 °C
Relative humidity	0–95% RH, noncondensing, non-corrosive
Air quality: • Chemical vapors • Mechanical particles	Tested according to IEC 60068-2-60 test key: Flowing mixed gas corrosion test, method 1 (H2S [hydrogen sulfide] and SO2 [sulfur dioxide]) Designed according to: IEC 60721-3-3, unit in operation, Class 3C2
Vibration • EN 61800-5-1 • EN 60068-2-6	Vibration test at operating status Displacement amplitude: 0.075 mm (peak) at 10 Hz to 57 Hz Maximum acceleration amplitude: 1g at 57 Hz to 150 Hz
Shock: • EN 60068-2-27	Shock test at operating status Peak acceleration: 15 g Duration: 11 ms
Transportation • ISTA 1 A	Transported as a single device in a separate package Vibration test and drop test per ISTA 1A
Overvoltage	Overvoltage Category III
Pollution degree	Pollution Degree 2
Enclosure class	IP20 standard in entire kW/hp range; NEMA Type 1 with accessory kit
Immunity	EN 61800-3:2004/A1:2012, first and second environment
Altitude	100% load capacity (no derating) up to 3280 ft (1000 m) 1% derating for each 328 ft (100 m) above 3280 ft (1000 m) maximum 9842 ft (3000 m) (2000 m for corner grounded earth main systems)
MTBF	300,000 hours

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