



BX-DM1-10ED2-D

BRX MPU with Do-more! DM1 technology
24 VDC required, serial port, microSD slot, Discrete Input: 6-point, sink / source, Discrete Output: 4-point, sourcing.

I/O Terminal Blocks sold separately.
(See Terminal Block Connection Options table).

| Document Name | Edition/Revision | Date |
|----------------|------------------|----------|
| BX-DM1-10ED2-D | 1st Ed. RevD | 9/8/2021 |

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General Specifications

| | |
|-----------------------|-------------------------------------------------------------------------|
| Operating Temperature | 0° to 60°C (32° to 140°F) |
| Storage Temperature | -20° to 85°C (-4° to 185°F) |
| Humidity | 5 to 95% (non-condensing) |
| Environmental Air | No corrosive gases permitted |
| Vibration | IEC60068-2-6 (Test Fc) |
| Shock | IEC60068-2-27 (Test Ea) |
| Enclosure Type | Open Equipment |
| Agency Approvals | UL61010-2 - UL File # E185989 Canada and USA CE Compliant EN61131-2* |
| Noise Immunity | NEMA ICS3-304 |
| EU Directive | See the "EU Directive" topic in the Help File |
| Weight | 169g (6 oz) |

*Meets EMC and Safety requirements. See the D.O.C. for details.

Power Supply Specifications

| | |
|------------------------------------|-----------------------------------------------------|
| Nominal Voltage Range* | 12-24 VDC |
| Input Voltage Range (Tolerance)* | 10-36 VDC |
| Maximum Input Voltage Ripple | <+/- 10% |
| Maximum Input Power | 14W |
| Cold Start Inrush Current | 5A, 2ms |
| Maximum Inrush Current (Hot Start) | 5A, 2ms |
| Internal Input Protection | Reverse Polarity Protection and Undervoltage |
| Heat Dissipation | 7.4W Max |
| Voltage Withstand (dielectric) | 1500VAC Power Inputs to Ground applied for 1 minute |

*Class 2 or LPS Power Supply required.

CPU Specifications

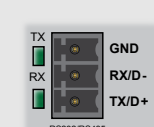
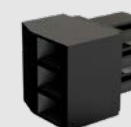
| | |
|---------------------------|-------------------------------------------------------------------------------|
| Program Memory Type | FLASH memory |
| User Data Memory Type | Battery Backed RAM, User configurable |
| Pluggable Option Module | RS-232, RS-485, Ethernet 10/100 BASE-T (1Mbps throughput max), USB 2.0 Type B |
| Expansion Modules | 2 expansion modules max |
| Real Time Clock Accuracy | ±2.6s per day typical at 25°C ±8s per day max at 60°C |
| Programming Software | Do-more Designer – Ver. 2.0 or higher |
| Programming Cable Options | BX-PGM-CBL |

Terminal Block Connection Options

| | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| BX-RTB10 | Terminal Block Kit, 90-degree screw type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs. |
| BX-RTB10-1 | Terminal Block Kit, 180-degree spring clamp type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs. |
| BX-RTB10-2 | Terminal Block Kit, 180-degree screw type, Fits all BRX 10-point PLCs and 16 point Expansion I/O Modules. Kit includes (2) 10-pin 3.8mm plugs. |
| ZL-BX-CBL20 | ZIPLink PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 0.5meter (1.6ft). |
| ZL-BX-CBL20-1 | ZIPLink PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 1meter (3.3ft). |
| ZL-BX-CBL20-2 | ZIPLink PLC I/O cable, 20-position terminal block to 24-pin connector, 24AWG, cable length 2meter (6.6ft). |
| ZL-BX-CBL20-1P | ZIPLink PLC I/O cable, 20-position terminal block to pigtail connection, 24AWG, cable length 1meter (3.3ft). |
| ZL-BX-CBL20-2P | ZIPLink PLC I/O cable, 20-position terminal block to pigtail connection, 24AWG, cable length 2meter (6.6ft). |
| ZL-RTB20 | ZIPLink Two Level Feedthrough Module, 20-pole, 35mm, DIN mount. |
| ZL-RTB20-1 | ZIPLink Three Level Feedthrough Module, 20-pole, 35mm, DIN mount. |

Built-in RS-232/485 Port Specifications

| | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Port Name | RS-232/RS-485 Serial Port |
| Description* | Non-isolated serial port that can communicate via RS-232 or RS-485 (software selectable). Includes ESD protection and built-in surge protection. |
| Supported Protocols | Do-more Protocol (Default) Modbus RTU (Master & Slave) K-Sequence (Slave) ASCII (In & Out) |
| Data Rates | 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 |
| Default Settings | RS-232, 115200 bps, No Parity, 8 Data Bits, 1 Stop Bit, Station #1 |
| Port Type | 3-pin terminal strip 3.5mm pitch |
| Port Status LED | Green LED is illuminated when active for TXD and RXD |
| RS-485 Station Addresses | 1-247 |
| Cable Recommendations | RS-232 use L19772-XXX from AutomationDirect.com RS-485 use L19827-XXX from AutomationDirect.com |
| Replacement Connector | ADC Part # BX-RTB03S |



| Pinout | RS232 | RS485 |
|--------|-------|-------|
| 1 | GND | GND |
| 2 | RX | D- |
| 3 | TX | D+ |

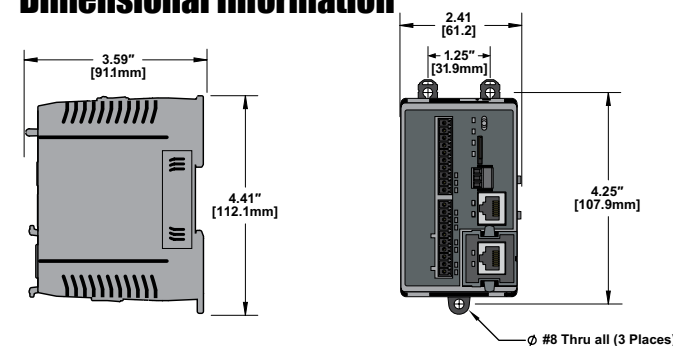
Removable connector included.

* NOTE: When using RS-485, a terminator resistor is built-in and software selectable.

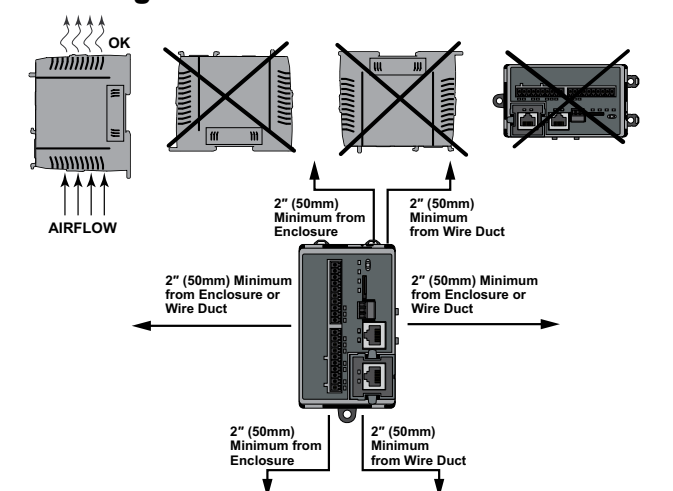
CPU Mode Switch Functions

| | |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| RUN position | CPU is forced into RUN Mode if no errors are encountered. |
| TERM position | RUN, PROGRAM and DEBUG modes are available. In this position, the mode of operation can be changed through the Do-more Designer Software. |
| STOP position | CPU is forced into STOP Mode. |

Dimensional Information



Mounting Restrictions



Terminal Block Connector Specifications

| Part Number | BX-RTB03S | BX-RTB10 | BX-RTB10-1 | BX-RTB10-2 |
|--------------------------|-----------------------|-----------------------|----------------------------------------|-----------------------|
| Connector Type | Screw Type-90° | Screw Type-90° | Spring Clamp Type-180° | Screw Type-180° |
| Wire Exit | 180° | 180° | 180° | 180° |
| Pitch | 3.5mm | 3.81mm | 3.81mm | 3.81mm |
| Screw Size | M2 | M2 | N/A | M2 |
| Recommended Screw torque | <1.77 lb-in (0.2 N-m) | <1.77 lb-in (0.2 N-m) | N/A | <1.77 lb-in (0.2 N-m) |
| Screwdriver Blade Width | 2.5mm | 2.5mm | 2.5mm | 2.5mm |
| Wire Gauge (Single Wire) | 28-16 AWG | 28-16 AWG | 28-18 AWG | 30-16 AWG |
| Wire Gauge (Dual Wire) | 28-16 AWG | 28-16 AWG | 30-20 AWG (Dual Wire Ferrule Required) | 30-18 AWG |
| Wire Strip Length | 0.24in (6mm) | 0.24in (6mm) | 0.35in (9mm) | 0.26in (6.5mm) |
| Equiv. Dinkle part # | EC350V-03P-BK | EC381V-10P-BK | ESC381V-10-BK | EC381F-10P-BK |

CPU Status Indicators

| Indicator | Status | Description |
|-----------|--------|-----------------------------------------------------|
| PWR | OFF | Base Power OFF |
| | Green | Base Power ON |
| | Yellow | Low Battery |
| RUN | OFF | CPU is in STOP Mode |
| | Green | CPU is in RUN Mode |
| | Yellow | Forces are Active |
| MEM | OFF | No ROM Activity, No SD Card |
| | Yellow | ROM Activity (Flash or SD Card) |
| | Green | SD Card Installed and Mounted |
| ERR | Red | SD Card Installed and Not Mounted |
| | OFF | CPU is functioning normally |
| | Red | CPU Fatal Hardware Error or Software Watchdog Error |

Do-more BRX Manual available at www.automationdirect.com/pn/doc/manual/BX-DM1-10ED2-D



IMPORTANT!



Hot-Swapping Information

Note: This device cannot be Hot Swapped.

Terminal and Front Panel Layout

CPU Mode Switch

Micro SD Card Slot

Serial Port

High Speed Output Over Current Fault Indicator

Pluggable Option Module (POM) Slot

Battery Replacement
Coin Battery CR2032
ADC Part # D0-MC-BAT.
Replacement batteries do not come with tape. To assist with future battery removal, reuse tape from the original battery or add new tape.

NOTE: DIP switches located in this compartment are used for debug and recovery functions only. Please refer to the BRX User Manual for full instructions on using these switches.

NOTE: Do not remove tape from battery.

POM Modules

| | |
|-----------------------|------------------------|
| BX-P-SER2-TERM | 3-Pin Serial RS-232 |
| BX-P-SER2-RJ12 | RJ12 Serial RS-232 |
| BX-P-SER4-TERM | 3-Pin Serial RS-485 |
| BX-P-USB-B | USB Type B |
| BX-P-ECOMLT | Ethernet 10/100 BASE-T |

NOTE: Only POM modules can be hot-swapped.

I/O Terminal Blocks sold separately.
(See Terminal Block Connection Options table).

| Discrete Input Specifications | |
|-------------------------------|---------------------------------------------------------------------|
| Input Type | Sink/Source |
| Total Inputs per Module | 6 High Speed – All inputs may be used as standard inputs |
| Commons | 2 (3 points/common) Isolated |
| Nominal Voltage Rating | 12–24 VAC/DC |
| Input Voltage Range | 9–30 VAC/DC |
| Maximum Voltage | 30 VAC/DC |
| DC Frequency | 0–250kHz - High Speed |
| Minimum Pulse Width | 0.5 μ s - High Speed |
| AC Frequency | 47–63 Hz (60–240Hz filter must be set in software for AC operation) |
| Input Impedance | 3k Ω @ 24VDC |
| Input Current (typical) | 6mA @ 24 VAC/DC |
| Maximum Input Current | 12mA @ 30 VAC/DC |
| Maximum OFF Current | 2.0 mA |
| ON Voltage Level | > 9.0 VAC/VDC |
| OFF Voltage Level | < 2.0 VAC/VDC |
| Status Indicators | Logic Side, Green |

| Discrete Output Specifications | |
|--------------------------------|---------------------------------------------------------------------------------------------------------|
| Output Type | Sourcing |
| Total Outputs per Module | 4 Total – 2 High Speed (Y0..Y1)* 2 Standard (Y2..Y3) *All outputs may be used as standard outputs |
| Commons | 2 (2 points/common) Isolated |
| Maximum Current per Common | 1A |
| Nominal Voltage Rating | 12–24 VDC |
| Operating Voltage Range | 5–36 VDC |
| Maximum Voltage | 36VDC |
| Minimum Output Current | 0.1mA @ 24VDC |
| Maximum Output Current | 0.5A per output, no derating over temperature range |
| Maximum Leakage Current | 10 μ A |
| Maximum Switching Frequency | 1m cable 250KHz 10m cable 100KHz |
| Status Indicators | Logic Side, Green |

| High Speed Input (HSI) Functions | | | | | |
|-------------------------------------|------------------------------|------------------------------------------|------------|------------|------------|
| Input Function | Inputs Required ¹ | | 10/ 10E | 18/ 18E | 36/ 36E |
| High-Speed Counting | 1 | Up counters | Up to (3) | | |
| | 1 | Down counters | | | |
| | 2 | Up/Down counters | | | |
| | 2 | Pulse/Direction (Bidirectional) counters | | | |
| | 2 | Quadrature (A and B) counters | | | |
| Position Scaling | 2 | Quadrature (A and B) counters | | | |
| | 3 | Quadrature (A and B with Z) counters | | | |
| Frequency Measurement | 1 | Single Input (Edge) timers | | | |
| | 2 | Dual Input (Dual Edge) timers | | | |
| Interval Measurement | 1 | Single Input (Edge) timers | | | |
| Duration Measurement | 1 | Single Input (Edge) timers | | | |
| Table-Driven Output(s) ² | | Programmable limit switches | | | |
| | | Preset tables | | | |
| Interrupt(s) | 4 | Input interrupts | Up to (4) | | |
| | 0 | Timer interrupts | | | |
| | 0 | Match register interrupts | | | |

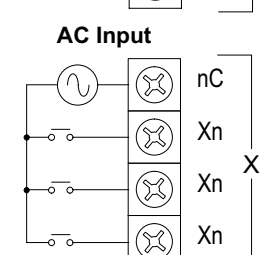
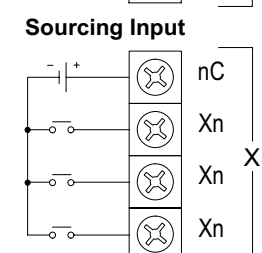
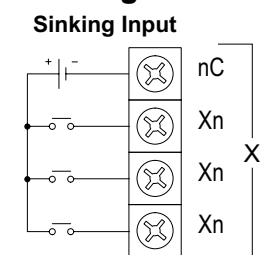
1. Standard inputs may be used with high-speed functions, but at lower response frequencies of approximately 120Hz.
2. Table Driven Output(s) are triggered by an Axis Position or a high-speed counter/timer accumulator value. It requires the selection of 1 discrete output. (see HSO Note 1 below)

| High Speed Output (HSO) Functions | | | | | |
|-----------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| | Outputs Required ¹ | Function ² | 10/ 10E | 18/ 18E | 36/ 36E |
| Pulse Mode | 0 | Virtual axis | 4 | 4 | 4 |
| | 2 | PTO linear step/direction outputs | 2 | 3 | 3 |
| | 2 | PTO rotary clockwise/counter-clockwise (CW/CCW) outputs | 2 | 3 | 3 |
| | 2 | PTO quadrature (A and B) output | 2 | 3 | 3 |
| | 1 | PWM pulse width modulation outputs | 4 | 4 | 4 |
| Axis Profile | | Relative/Absolute positioning, Velocity mode, Trapezoid, S-curve, Electronic gearing, Camming, Following, Homing, Jogging | | | |

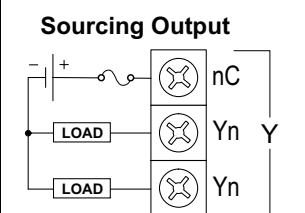
1. Standard outputs may be used for high-speed functions, but at lower response frequencies of approximately 110Hz. Use of relay outputs is not recommended.
2. This is the total number of functions. A combination of high-speed outputs and standard outputs may be used up to this total.

I/O Wiring

Discrete Input Wiring



Discrete Output Wiring



Supply Power Wiring

