

BX 36/36E MPUs

BX-DM1-36ER-D

\$368.00

BRX MPU with Do-more! DM1 technology

- 24VDC required; serial port; microSD slot
- Discrete input: 20-point, sink/source
- Discrete output: 16-point, relay

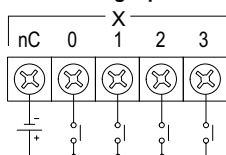
| CPU Specifications | |
|-------------------------------------|--|
| Program Memory Type | FLASH memory |
| User Data Memory Type | Battery-backed RAM, user configurable |
| Serial Port | RS-232/485 3-Pin, Software selectable |
| Pluggable Option Module | RS-232, RS-485, Ethernet 10/100 BASE-T (1 Mbps throughput max), USB 2.0 Type B |
| Data Logging/File Management | microSD card slot (32G max) |
| Expansion Modules | 8 max, as long as the MPU power budget is not exceeded |
| Real Time Clock Accuracy | ±2.6 s 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 |
| Custom Label Window Size | 0.75" x 2.25" (19mm x 57.2 mm) |
| MPU Weight | 458g (16.2 oz) |

| Discrete Input Specifications | |
|--------------------------------|--|
| Input Type | Sink/Source |
| Total Inputs per Module | 20 Total – 10 High Speed (X0...X9)* 10 Standard (X10...X19) *All inputs may be used as standard inputs |
| Commons | 5 (4 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 µs - High Speed |
| AC Frequency | 47–63 Hz (60–240Hz filter must be set in software for AC operation) |
| Input Impedance | 3kΩ @ 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 |

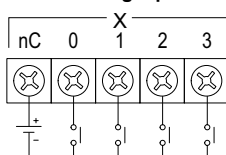
I/O Wiring

Discrete Input Wiring

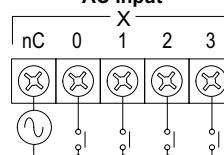
Sinking Input



Sourcing Input

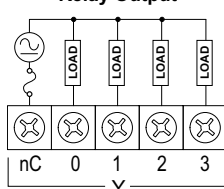


AC Input

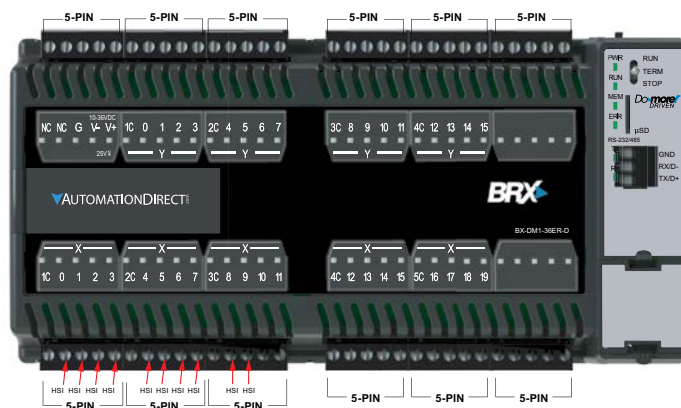
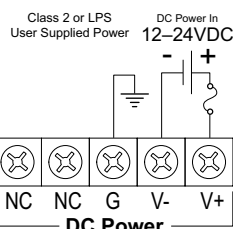


Discrete Output Wiring

Relay Output



Supply Power Wiring



I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 36/36E MPU Accessories page.)

| Discrete Output Specifications | |
|------------------------------------|--|
| Output Type | Relay Form A (SPST) |
| Total Outputs per Module | 16 Relay |
| Commons | 4 (4 points/common) Isolated |
| Maximum current per common | 8A |
| Nominal Voltage Ratings | 12–48 VDC, 24–240 VAC |
| Operating Voltage Range | 5–60 VDC, 5–264 VAC |
| Maximum Voltage | 60VDC, 264VAC |
| Minimum Output Current | 0.1 mA @ 24VAC/DC |
| Maximum Output Current | 2A |
| Maximum Leakage Current | 1uA (DC) 300uA (AC) due to RC Snubber Circuit |
| Maximum Switching Frequency | 10Hz |
| Status Indicators | Logic Side, Green |

BRX Micro PLC Overview

The BRX platform enables you to choose from various communications ports. All BRX MPU models have a built-in RS232C/485 (software-selectable) serial port. However, an RJ45 Ethernet port (10/100 Mbps) is provided on select units. With support for EtherNet/IP, Modbus TCP, Modbus RTU, ASCII, K-sequence (DirectLOGIC users) and custom protocols, the BRX MPU platform provides supreme

versatility for any application. BRX hardware is built to last and is engineered, assembled and supported right here in America; designed and fabricated by industrial automation veterans with hardware facilities in Tennessee and Florida. The compact modular architecture results in an outstanding controller package, with high performance, a small footprint, at a very low cost. The BRX

platform has built-in high-speed I/O, motion control, on-board analog I/O, and many other features that enable you to build the ideal controller for your application. Below is a quick look at some of the standard features available on the BRX Platform.



| 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 |

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



2 Year Warranty

All BRX PLCs are covered under a 2- year warranty.

BRX Micro PLC Overview

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) Programming and Monitoring |
| 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 3.5 mm 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 |

Removable connector included.



| Pinout | RS232 | RS485 |
|--------|-------|-------|
| 1 | GND | GND |
| 2 | RXD | D- |
| 3 | TXD | D+ |

*When using RS-485 a termination resistor is available and is software selectable.

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 |
| | Red | SD Card Installed and Not Mounted |
| ERR | OFF | CPU is functioning normally |
| | Red | CPU Fatal Hardware Error or Software Watchdog Error |

CPU Mode Switch

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



microSD Specifications

| | | | | |
|--|---|---------|---------|---------|
| Port Name | microSD Card Slot | | | |
| Description | Standard microSD socket for data logging or file read/write | | | |
| Maximum Card Capacity | 32GB | | | |
| Transfer Rate (ADATA microSDHC Class 4 memory card) | Mbps | Minimum | Typical | Maximum |
| | Read | 14.3 | 14.4 | 14.6 |
| | Write | 4.8 | 4.9 | 5.1 |
| Port Status LED | Green LED is illuminated when card is inserted/detected | | | |
| Optional microSD Card | ADC Part # MICSD-16G | | | |



| Pin | SD |
|-----|---------|
| 1 | DAT2 |
| 2 | CD/DAT3 |
| 3 | CMD |
| 4 | VDD |
| 5 | CLK |
| 6 | VSS |
| 7 | DAT0 |
| 8 | DAT1 |

AC Power Supply Specifications

| | |
|---|---|
| Nominal Voltage Rating | 120-240 VAC |
| Input Voltage Range (Tolerance) | 85-264 VAC |
| Rated Operating Frequency | 47-63 Hz |
| Maximum Input Power | 40VA |
| Cold Start Inrush Current | 1.5A, 2ms |
| Maximum Inrush Current (Hot Start) | 1.5A, 2ms |
| Internal Input Fuse Protection | Micro fuse 250V, 2A Non-replaceable |
| Isolated User 24VDC Output | 24VDC @ 0.3 A max, <1V P-P Ripple, Integrated self-resetting short circuit protection |
| Voltage Withstand (dielectric) | 1500VAC Power Inputs to Ground applied for 1 minute |
| | 1500VAC Ground to 24VDC applied for 1 minute |

DC Power Supply Specifications

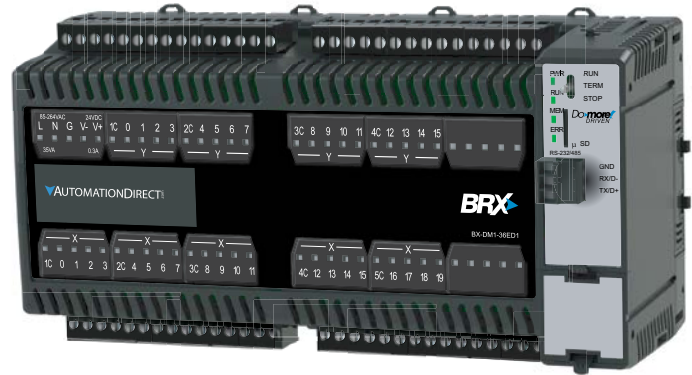
| | |
|---|---|
| Nominal Voltage Rating | 12-24 VDC |
| Input Voltage Range (Tolerance) | 10-36 VDC |
| Maximum Input Voltage Ripple | <± 10% |
| Maximum Input Power | 30W (14W for BX 10/10E MPUs) |
| Cold Start Inrush Current | 5A, 2ms |
| Maximum Inrush Current (Hot Start) | 5A, 2ms |
| Internal Input Protection | Reverse Polarity Protection and Undervoltage |
| Voltage Withstand (dielectric) | 1500VAC Power Inputs to Ground applied for 1 minute |

BX 36 MPUs

36 Discrete I/O Points: 20 Inputs, 16 Outputs

Features

- Models with DC inputs:
 - have 10 high-speed inputs up to 250kHz
 - can accept 12–24 nominal voltages AC or DC
 - can be wired as sinking or sourcing
- Models with AC inputs can accept 120–240 nominal voltages
- Output types available are DC sinking, DC sourcing, and relay
- Models with DC outputs have 8 high-speed outputs rated up to 250kHz
- Support for up to 8 additional Expansion Modules as long as the power budget is not exceeded.
- Onboard RS-232/485 port with removable 3-Pin connector
- microSD card slot



BX 36 Micro PLC Unit (MPU)
(No Built-in Analog or Ethernet port)

| BX 36 MPUs | | | | | |
|---------------------------------------|----------|----------------|--|---|--|
| Part Number | Price | External Power | Discrete Input | Discrete Output | Expansion Modules |
| <u>BX-DM1-36ED1</u> | \$423.00 | 120–240 VAC | 10 High-speed 10 Standard DC Sinking or Sourcing | 8 High-speed 8 Standard DC Sinking | 8, as long as the MPU power budget is not exceeded |
| <u>BX-DM1-36ED1-D</u> | \$406.00 | 12–24 VDC | | | |
| <u>BX-DM1-36ED2</u> | \$424.00 | 120–240 VAC | | 8 High-speed 8 Standard DC Sourcing | |
| <u>BX-DM1-36ED2-D</u> | \$405.00 | 12–24 VDC | | | |
| <u>BX-DM1-36ER</u> | \$420.00 | 120–240 VAC | | 16 Form A Relay | |
| <u>BX-DM1-36ER-D</u> | \$368.00 | 12–24 VDC | | | |
| <u>BX-DM1-36AR</u> | \$416.00 | 120–240 VAC | 20 AC | | |

BX 36/36E MPUs

Dimensions, inches[mm]



Clearances and Mounting Restrictions



BX 36/36E MPUs Accessories

BX 36/36E Wiring Termination Selection

The BX 36/36E MPUs ship without wiring terminals. This enables you to select the termination type that best suits your application. Several removable terminal

block options are available, including screw terminals, spring clamp terminals, as well as pre-wired **ZIPLink** module and cable solutions.

Terminal Block Connectors

The terminal block connectors are provided in kits and can be easily ordered as a single part number. Each kit contains all the terminal block connectors required: (12) 5-pin 5mm terminal blocks.

The BX 36/36E MPUs terminals are configured into groups consisting of 4 inputs and

4 outputs each with an isolated common. For example, inputs X0–X3 are grouped with a common terminal. The groups are isolated such that a single 5-pin connector can be removed without affecting another group of I/O or the external power source.



BX-RTB36

BX-RTB36 Screw Terminal Block Kit

This terminal block kit includes (12), 5-pin 5mm, 90-degree screw terminal blocks with 180-degree wire pass through. It fits all BRX 36-point MPUs.



BX-RTB36-1

BX-RTB36-1 Spring Terminal Block Kit

This terminal block kit includes (12) 5-pin, 5mm, 180-degree spring clamp wire terminal blocks. It fits all BRX 36-point MPUs.

| Removable Terminal Block Specifications | | |
|---|-------------------------|---|
| Part Number | <i>BX-RTB36</i> | <i>BX-RTB36-1</i> |
| Price | \$49.00 | \$49.00 |
| Connector Type | Screw Type-90-degree | Spring Clamp Type-180-degree |
| Wire Exit | 180-degree | 180-degree |
| Pitch | 5.0 mm | 5.0 mm |
| Screw Size | M2.5 | N/A |
| Screw Torque | < 3.98 lb·in (0.45 N·m) | N/A |
| Screwdriver Blade Width | 3.5 mm | 3.5 mm |
| Wire Gauge (Single Wire) | 28–12 AWG | 28–14 AWG |
| Wire Gauge (Dual Wire) | 28–16 AWG | 28–16 AWG (Dual wire ferrule required) |
| Wire Strip Length | 0.3 in (7.5 mm) | 0.37 in (9.5 mm) |
| Equiv. Dinkle P/N | 5ESDV-05P-BK | 5ESDSR-05P-BK |



Wiring Solutions

ZIPLink Pre-Wired Cable Solutions

ZIPLinks eliminate the normally tedious process of wiring between devices by utilizing prewired cables and DIN-rail mount connector modules. **ZIPLinks** are as simple as plugging in a cable connector at either end or terminating wires at only one end. Pre-wired cables keep installation clean and efficient, using less space at a fraction of the cost of standard terminal blocks. **ZIPLinks** pre-wired

cables connect directly from the MPU to a **ZIPLink** remote terminal block module or with the pigtail cable option, that enables for a convenient solution to wire the BRX platform to third-party devices. For the BX 36/36E MPUs four (4) cables and four (4) **ZIPLink** feedthrough modules are needed to connect all the onboard wiring termination points.

There are two (2) feed-through module options available, the [ZL-RTB20](#) and the [ZL-RTB20-1](#).

The [ZL-RTB20](#) is a standard feedthrough terminal module while the [ZL-RTB20-1](#) is a feedthrough terminal block having a more compact footprint, requiring less space in the control cabinet.

| BX 36/36E ZIPLink Selector | | | | | |
|-----------------------------------|----------------|---|---------------------|---|---------------------|
| MPU Part Number | Component Type | Module Part Number | Max Quantity Needed | Cable Part Number* | Max Quantity Needed |
| BX-DM1-36ED1 | Feedthrough | ZL-RTB20 (Standard) OR ZL-RTB20-1 (Compact) | 4 | ZL-BX-CBL15 ZL-BX-CBL15-1 ZL-BX-CBL15-2 | 4 |
| BX-DM1-36ED1-D | | | | | |
| BX-DM1-36ED2 | | | | | |
| BX-DM1-36ED2-D | | | | | |
| BX-DM1-36ER** | | | | | |
| BX-DM1-36ER-D** | | | | | |
| BX-DM1-36AR** | | | | | |
| BX-DM1E-36ED13 | | | | | |
| BX-DM1E-36ED13-D | | | | | |
| BX-DM1E-36ED23 | | | | | |
| BX-DM1E-36ED23-D | | | | | |
| BX-DM1E-36ER3** | | | | | |
| BX-DM1E-36ER3-D** | | | | | |
| BX-DM1E-36AR3** | | | | | |

* Select the cable length: Blank = 0.5 m, -1 = 1.0 m, -2 = 2.0 m.

Available pigtail cables: [ZL-BX-CBL15-1P](#) = 1.0 m, [ZL-BX-CBL15-2P](#) = 2.0 m.

** The relay outputs are derated not to exceed 2A per common when used with the **ZIPLink** wiring system.



Wiring Solutions

ZIPLink Pre-wired Cables

Custom molded **ZIPLink** pre-wired cables allow for fast and easy connection of field wiring to the BRX platform. The prewired cables are available in 0.5 meter, 1 meter

and 2 meter lengths. Pigtail cables are used to connect the BRX platform directly to third-party devices, reducing your wiring time and cost.

The pigtail cables are available in 1 meter and 2 meter lengths.



Pre-wired ZIPLink Cable



ZIPLink Pigtail Cable

ZIPLink Feedthrough Modules

Feedthrough modules provide low-cost and compact field wiring screw termination solutions for quickly connecting with the BRX platform.

Two (2) modules are available for use with the BRX platform, the [ZL-RTB20](#) and the [ZL-RTB20-1](#). The [ZL-RTB20](#) is a standard 2-row, 20-pin, DIN-rail mountable

feedthrough module. The [ZL-RTB20-1](#) is a compact 3-row, 24-pin, DIN-rail mountable feedthrough module with a smaller footprint design.

| ZIPLink Module Specifications | | |
|-------------------------------|--|--|
| Part Number | ZL-RTB20 (Maximum of 4 needed) | ZL-RTB20-1 (Maximum of 4 needed) |
| Number of positions | 20 screw terminals, 2 rows | 24 screw terminals, 3 rows |
| Screwdriver Width | 1/8 in (3.8 mm) maximum | |
| Screw Torque | 4.4 lb-in (0.5 N·m) | 4.4 lb-in (0.5 N·m) |



ZL-RTB20



ZL-RTB20-1



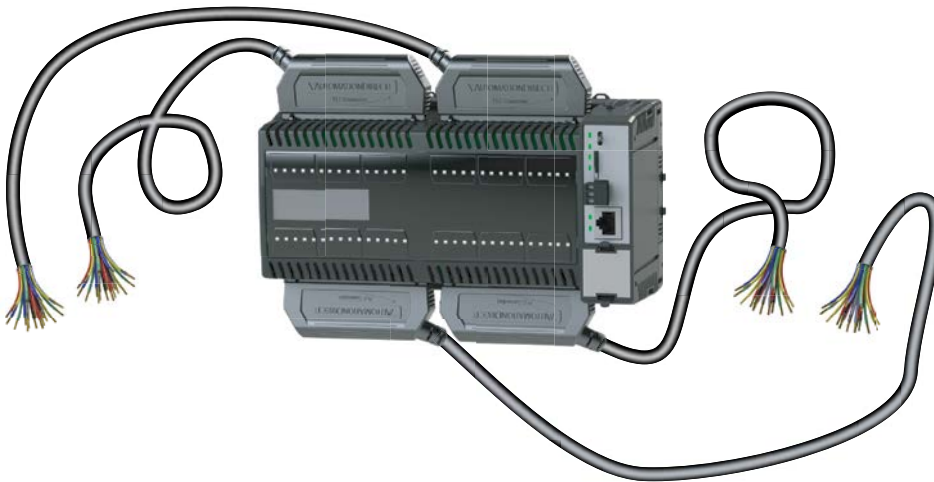
Wiring Solutions

ZIPLink System Examples

BX 36 MPU with **ZIPLink** pre-wired cables and **ZL-RTB20** feedthrough modules.



BX 36 MPU with **ZIPLink** pigtail cables installed.



BRX Pluggable Option Modules (POM)

Overview

All BRX Do-more! MPUs have an available slot to receive one BRX Pluggable Option Module (POM). Available POM configurations are:

- RS-232 3-pin serial port
- RS-232 5-pin serial port
- RS-232 RJ12 port
- RS-422 5-pin serial port
- RS-485 serial port
- Ethernet port (RJ45)
- USB Type B Port

POM modules are hot swappable giving you the ability to utilize different communication options while the system is running. For example, you can configure the system using a POM RJ45 Ethernet port to talk with a C-more panel. Then hot swap to the USB POM for programming. When programming is complete hot swap back to the RJ45 Ethernet POM without needing to power cycle or reconfigure the system.



NOTE: Pluggable Option Modules cannot be installed in BRX Remote I/O modules (e.g., BX-DMIO, BX-MBIO, BX-EBC100).



BX-P-SER2-TERM
RS-232 Port



BX-P-SER2-TERMFC
RS-232 Port
w/ Flow Control



BX-P-SER4-TERM
RS-485 Port



BX-P-SER422-TERM
RS-422 Port



BX-P-SER2-RJ12
RS-232 Port (RJ12)



BX-P-ECOMLT
Ethernet Port (RJ45)



BX-P-ECOMEX
Ethernet Port



BX-P-USB-B
USB Type B Port

| BRX Programmable Option Modules | | |
|---------------------------------|----------|--|
| Expansion Module Part No. | Price | Description |
| <u>BX-P-SER2-TERM</u> | \$76.00 | Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection. |
| <u>BX-P-SER2-TERMFC</u> | \$79.00 | Non-isolated Serial port for communication via RS-232, with flow control. Includes ESD protection and built-in surge protection. |
| <u>BX-P-SER4-TERM</u> | \$77.00 | Non-isolated Serial port for communication via RS-485. Includes ESD protection and built-in surge protection. |
| <u>BX-P-SER422-TERM</u> | \$79.00 | Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection. |
| <u>BX-P-SER2-RJ12</u> | \$76.00 | Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection. |
| <u>BX-P-ECOMLT</u> | \$99.00 | Standard transformer isolated Ethernet port (1 Mbps throughput max) with built-in surge protection. |
| <u>BX-P-ECOMEX</u> | \$119.00 | General-purpose standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection. |
| <u>BX-P-USB-B</u> | \$46.00 | USB Type B Port for programming. |

General Specifications

General specifications common to all the POM modules are listed in the table below.

| 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 | UL 61010-2 - UL File # E185989 Canada and USA CE Compliant E185989* |
| Noise Immunity | NEMA ICS3-304 |
| EU Directive | See the "EU Directive" in Appendix B of the User Manual or topic DMD0331 in the Help File. |
| Weight | 7g (0.25 oz) |

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

BRX POM Capabilities

| | BX-P-SER2-TERM | BX-P-SER2-TERMFC | BX-P-SER4-TERM | BX-P-SER422-TERM | BX-P-SER2-RJ12 | BX-P-ECOMLT* | BX-P-ECOMEX | BX-P-USB-B |
|---|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|---------------------|--------------------|-------------------|
| Monitoring & Programming | X | X | X | X | X | X | X | X |
| Do-more! Protocol | X | X | X | X | X | X | X | |
| Modbus RTU Master | X | X | X | X | X | | X | |
| Modbus RTU Slave | X | X | X | X | X | | X | |
| Modbus TCP (Server) | | | | | | X | X | |
| HTTP | | | | | | | X | |
| MQTT Client | | | | | | | X | |
| FTP | | | | | | | X | |
| EtherNet/IP | | | | | | | X | |
| Embedded Web Server: HTTP (Unsecure) | | | | | | | X | |
| K-Sequence (Slave) | X | X | X | X | X | X | X | |
| ASCII (In & Out) | X | X | X | X | X | | X | |
| Custom Protocols | X | X | X | X | | | X | |

* Limited to 1 Mbps throughput max

BRX Programming Software & Cable Assembly

Do-more! Designer Programming Software

Free Download Part No. [DM-PGMSW-USB](#)

Do-more! Designer Programming software is a full-featured programming software for all BRX Series PLCs, Do-more! H2 Series PLCs and Do-more! T1H Series PLCs. Do-more! Designer Software is free. It can be downloaded from Automationdirect.com, or can be purchased on CD-ROM or USB.

FREE
\$13.00



[BX-PGM-CBL](#) \$49.00

The programming cable assembly connects your PC to any BRX MPU and enables you to program and configure the BRX MPU using the free Do-more! Designer software. BX-PGM-CBL includes (1) BX-P-USB-B USB POM module and (1) [USB-CBL-AB6](#) standard USB Type A to USB Type B connector cable.



BRX Accessories

Replacement Battery

D0-MC-BAT \$3.00

A battery is included with all BRX MPUs and is used to retain the time and data along with any tag names values that are set up as retentive. It is recommended that the battery be replaced once every five years or when one year of cumulative OFF time has been exceeded.



| Battery | |
|-------------------------|--|
| <u>D0-MC-BAT</u> | Coin type, 3.0V Lithium battery, number CR2032 |

BRX Blank Custom Slot Labels

BX-LBL-1 \$36.50

BRX Blank custom slot labels, package of 10. For use with 18-point and 36-point BRX PLCs. (10) labels and (1) custom label slot cover included.



BRX Access Cover Kit

BX-ACC-1 \$11.00

BRX Access cover kit, replacement. For use with all BRX PLCs. Includes (1) battery cover, (1) expansion slot cover, (1) blank POM slot insert and (1) custom label slot.

