

# BRX ME MPUs

## Overview

The BX ME Micro PLC Unit (MPU) includes two different versions. Both have the same appearance and basic features, the only difference being that one unit is externally powered with 12–24 VDC and the other unit is externally powered with 120–240 VAC.

The units have no built-in I/O points. This allows you to customize the I/O to meet the needs of your application by adding selected BRX expansion modules. All BX ME MPUs can extend their capability with the addition of as many as eight (8) BRX expansion modules, allowing more flexibility while keeping control cost down.

## Features

- Serial port - RS232/485 communications
- RJ45 port - Ethernet communications
- MicroSD slot
- Pluggable Option Module (POM) for an additional communications port
- Support for 8 additional expansion modules



**BX-DM1E-M Micro PLC Unit (MPU)**  
120–240 VAC

## Power Supply Connector

The power supply terminal block connectors are included with this MPU. The power supply connectors are a screw type, removable terminal block.



**BX-DM1E-M-D Micro PLC Unit (MPU)**  
12–24 VDC

| BX ME MPUs         |          |                |                |                 |        |        |                   |
|--------------------|----------|----------------|----------------|-----------------|--------|--------|-------------------|
| Part Number        | Price    | External Power | Discrete Input | Discrete Output | Analog |        | Expansion Modules |
|                    |          |                |                |                 | Input  | Output |                   |
| <b>BX-DM1E-M</b>   | \$359.00 | 120–240 VAC    | N/A            | N/A             | N/A    | N/A    | 8                 |
| <b>BX-DM1E-M-D</b> | \$349.00 | 12–24 VDC      |                |                 |        |        |                   |

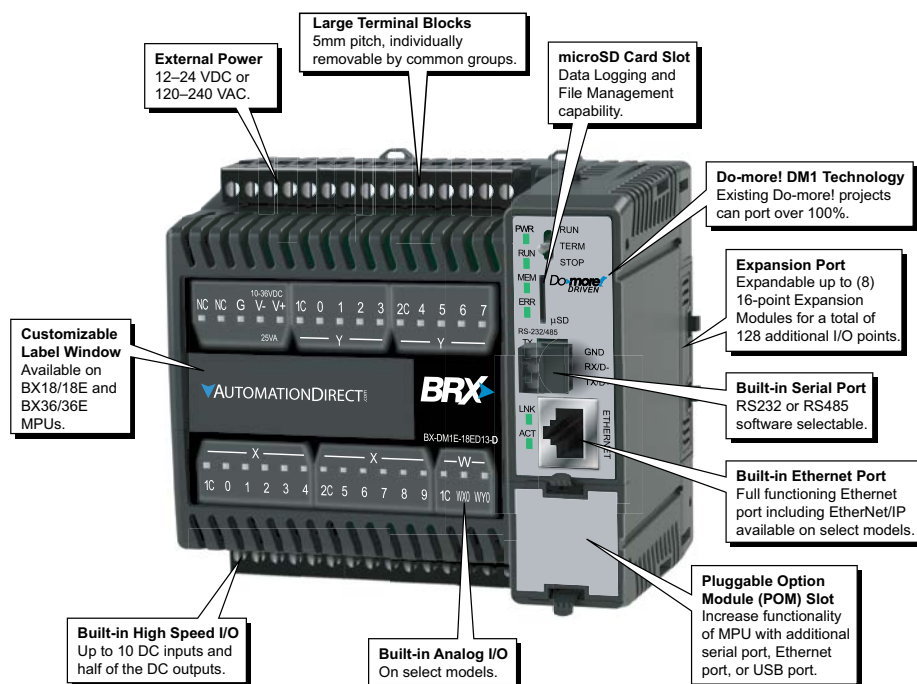
| Built-in Ethernet Specifications (BX-DM1E-M-D Only) |                                                                                                       |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Port Name</b>                                    | ETHERNET                                                                                              |
| <b>Description</b>                                  | Standard transformer isolated Ethernet port with built-in surge protection.                           |
| <b>Transfer Rate</b>                                | 10 Mbps (Yellow LED) and 100 Mbps (Green LED)                                                         |
| <b>Port Status LED</b>                              | LED is solid when network LINK is established. LED flashes when port is active (ACT).                 |
| <b>Supported Protocols</b>                          | Port:                                                                                                 |
|                                                     | Do-more! Protocol                                                                                     |
|                                                     | Modbus TCP                                                                                            |
|                                                     | TCP/IP                                                                                                |
|                                                     | Custom Protocol                                                                                       |
|                                                     | SNTP (Time Server)                                                                                    |
|                                                     | SMTP (Email)                                                                                          |
|                                                     | MQTT                                                                                                  |
|                                                     | MQTTS                                                                                                 |
|                                                     | HTTP                                                                                                  |
|                                                     | HTTPS                                                                                                 |
|                                                     | Embedded Web Server: HTTP (Unsecure)                                                                  |
|                                                     | FTP (Client)                                                                                          |
|                                                     | EtherNet/IP: Explicit Messaging (Scanner, Adapter)                                                    |
|                                                     | EtherNet/IP: Implicit Messaging (Scanner, Adapter) (requires Do-more! Designer version 2.10 or later) |
|                                                     | DHCP                                                                                                  |
|                                                     | Ethernet Remote I/O                                                                                   |
|                                                     | programming and monitoring                                                                            |
| <b>Cable Recommendation</b>                         | C5E-STxxx-xx from AutomationDirect.com                                                                |
| <b>Port Type</b>                                    | RJ45, Category 5, 10/100 BASE-T, Auto Crossover                                                       |

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

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



## 2 Year Warranty

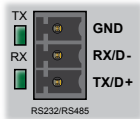
All BRX PLCs are covered under a 2- year warranty.

# BRX Micro PLC Overview

## Built-in RS-232/485 Port Specifications

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

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                                         |
|------------|--------|-----------------------------------------------------|
| <b>PWR</b> | OFF    | Base Power OFF                                      |
|            | Green  | Base Power ON                                       |
|            | Yellow | Low Battery                                         |
| <b>RUN</b> | OFF    | CPU is in STOP Mode                                 |
|            | Green  | CPU is in RUN Mode                                  |
|            | Yellow | Forces are Active                                   |
| <b>MEM</b> | 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                   |
| <b>ERR</b> | OFF    | CPU is functioning normally                         |
|            | Red    | CPU Fatal Hardware Error or Software Watchdog Error |

## CPU Mode Switch

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



## microSD Specifications

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

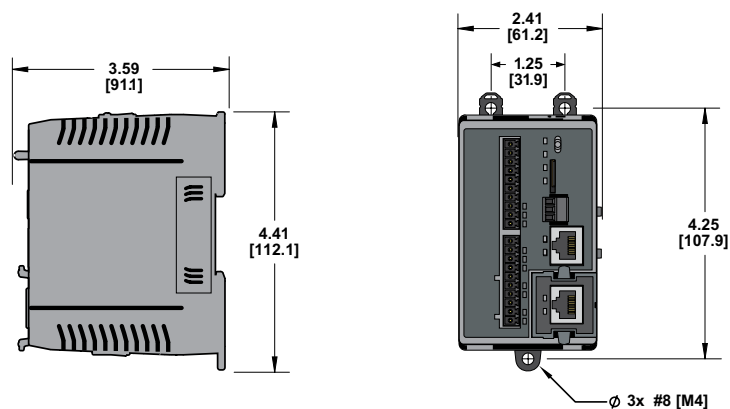
|                                           |                                                                                       |
|-------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Nominal Voltage Rating</b> 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

## DC Power Supply Specifications

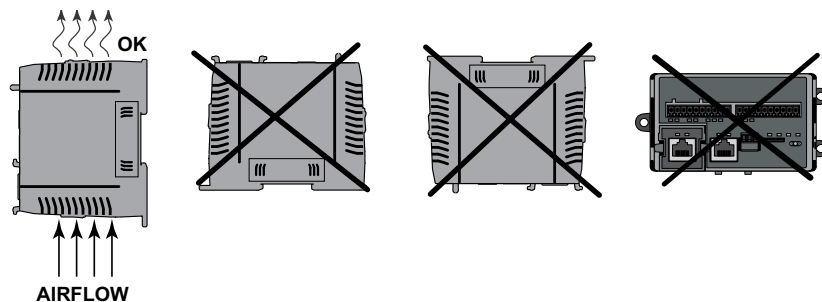
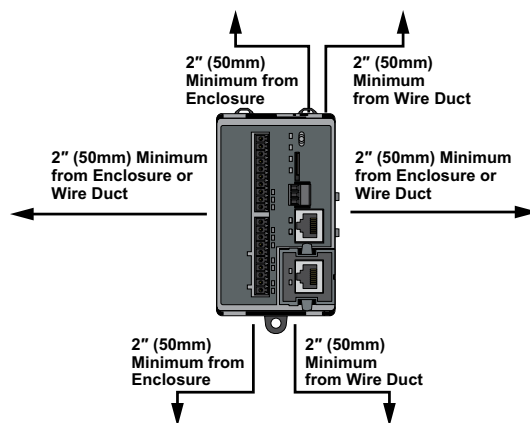
|                                           |                                                     |
|-------------------------------------------|-----------------------------------------------------|
| <b>Nominal Voltage Rating</b>             | 12-24 VDC                                           |
|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

# BX ME MPUs

## Dimensions, inches[mm]



## Clearances and Mounting Restrictions



# BX ME MPUs Accessories

## Replacement Terminal Block Connectors

A 5mm removable screw type 90-degree terminal block is included with each BX ME unit. The power connector

replacement connector specifications are listed in the 2 charts below. Also listed in the tables are an optional spring

clamp terminal block and a screw type 180-degree terminal block that can also be used and are sold separately.

| BX-DM1E-M AC Power Supply Connector Specifications |                                                |                                           |                                           |
|----------------------------------------------------|------------------------------------------------|-------------------------------------------|-------------------------------------------|
| Part Number                                        | <b><i>BX-RTB05</i></b><br>(included with unit) | <b><i>BX-RTB05-1</i></b>                  | <b><i>BX-RTB05-2</i></b>                  |
| Price (each)                                       | \$8.50                                         | \$7.00                                    | \$8.00                                    |
| Connector Type                                     | Screw Type-90 deg                              | Spring Clamp Type-180 deg                 | Screw Type-180 deg                        |
| Wire Exit                                          | 180 deg                                        | 180 deg                                   | 180 deg                                   |
| Pitch                                              | 5.0 mm                                         | 5.0 mm                                    | 5.0 mm                                    |
| Screw Size                                         | M2.5                                           | N/A                                       | M2.5                                      |
| Recommended Screw Torque                           | < 3.98 lb-in (0.45 N-m)                        | N/A                                       | < 3.98 lb-in (0.45 N-m)                   |
| Screwdriver Blade Width                            | 3.5 mm                                         | 3.5 mm                                    | 3.5 mm                                    |
| Wire Gauge (Single wire)                           | 28-12 AWG                                      | 28-14 AWG                                 | 28-14 AWG                                 |
| Wire Gauge (Two wire)                              | 28-16 AWG                                      | 28-16 AWG<br>(Dual Wire Ferrule Required) | 28-16 AWG<br>(Dual Wire Ferrule Required) |
| Wire Strip Length                                  | 0.3 in (7.5 mm)                                | 0.37 in (9.5 mm)                          | 0.37 in (9.5 mm)                          |
| Equiv. Dinkle P/N                                  | 5ESDV-05P-BK                                   | 5ESDSR-05P-BK                             | 5ESDSR-05P-BK                             |



**BX-RTB05**



**BX-RTB05-1**



**BX-RTB05-2**

| BX-DM1E-M-D DC Power Supply Connector Specifications |                         |                                           |                          |
|------------------------------------------------------|-------------------------|-------------------------------------------|--------------------------|
| Part Number                                          | <b><i>BX-RTB03</i></b>  | <b><i>BX-RTB03-1</i></b>                  | <b><i>BX-RTB03-2</i></b> |
| Price (each)                                         | \$5.50                  | \$5.00                                    | \$4.50                   |
| Connector Type                                       | Screw Type-90 deg       | Spring Clamp Type-180 deg                 | Screw Type-180 deg       |
| Wire Exit                                            | 180 deg                 | 180 deg                                   | 180 deg                  |
| Pitch                                                | 5.0 mm                  | 5.0 mm                                    | 5.0 mm                   |
| Screw Size                                           | M2.5                    | N/A                                       | M2.5                     |
| Recommended Screw Torque                             | < 3.98 lb-in (0.45 N-m) | N/A                                       | < 3.98 lb-in (0.45 N-m)  |
| Screwdriver Blade Width                              | 3.5 mm                  | 3.5 mm                                    | 3.5 mm                   |
| Wire Gauge (Single wire)                             | 28-12 AWG               | 28-14 AWG                                 | 28-12 AWG                |
| Wire Gauge (Two wire)                                | 28-16 AWG               | 28-16 AWG<br>(Dual Wire Ferrule Required) | 28-16 AWG                |
| Wire Strip Length                                    | 0.3 in (7.5 mm)         | 0.37 in (9.5 mm)                          | 0.3 in (7.5 mm)          |
| Equiv. Dinkle P/N                                    | 5ESDV-03P-BK            | 5ESDSR-03P-BK                             | 5ESDF-03P                |



**BX-RTB03**



**BX-RTB03-1**



**BX-RTB03-2**

# 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                                                                                                                      |
| <b><u>BX-P-SER2-TERM</u></b>    | \$76.00  | Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.                    |
| <b><u>BX-P-SER2-TERMFC</u></b>  | \$79.00  | Non-isolated Serial port for communication via RS-232, with flow control. Includes ESD protection and built-in surge protection. |
| <b><u>BX-P-SER4-TERM</u></b>    | \$77.00  | Non-isolated Serial port for communication via RS-485. Includes ESD protection and built-in surge protection.                    |
| <b><u>BX-P-SER422-TERM</u></b>  | \$79.00  | Non-isolated Serial port that can communicate via RS-422. Includes ESD protection and built-in surge protection.                 |
| <b><u>BX-P-SER2-RJ12</u></b>    | \$76.00  | Non-isolated Serial port for communication via RS-232. Includes ESD protection and built-in surge protection.                    |
| <b><u>BX-P-ECOMLT</u></b>       | \$99.00  | Standard transformer isolated Ethernet port (1 Mbps throughput max) with built-in surge protection.                              |
| <b><u>BX-P-ECOMEX</u></b>       | \$119.00 | General-purpose standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection.                        |
| <b><u>BX-P-USB-B</u></b>        | \$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       |                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | 0° to 60°C (32° to 140°F)                                                                  |
| <b>Storage Temperature</b>   | -20° to 85°C (-4° to 185°F)                                                                |
| <b>Humidity</b>              | 5% to 95% (non-condensing)                                                                 |
| <b>Environmental Air</b>     | No corrosive gases permitted                                                               |
| <b>Vibration</b>             | IEC60068-2-6 (Test Fc)                                                                     |
| <b>Shock</b>                 | IEC60068-2-27 (Test Ea)                                                                    |
| <b>Enclosure Type</b>        | Open equipment                                                                             |
| <b>Agency Approvals</b>      | UL 61010-2 - UL File # E185989 Canada and USA<br>CE Compliant E185989*                     |
| <b>Noise Immunity</b>        | NEMA ICS3-304                                                                              |
| <b>EU Directive</b>          | See the "EU Directive" in Appendix B of the User Manual or topic DMD0331 in the Help File. |
| <b>Weight</b>                | 7g (0.25 oz)                                                                               |

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

## BRX POM Capabilities

|                                             | <b>BX-P-SER2-TERM</b> | <b>BX-P-SER2-TERMFC</b> | <b>BX-P-SER4-TERM</b> | <b>BX-P-SER422-TERM</b> | <b>BX-P-SER2-RJ12</b> | <b>BX-P-ECOMLT*</b> | <b>BX-P-ECOMEX</b> | <b>BX-P-USB-B</b> |
|---------------------------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|---------------------|--------------------|-------------------|
| <b>Monitoring &amp; Programming</b>         | X                     | X                       | X                     | X                       | X                     | X                   | X                  | X                 |
| <b>Do-more! Protocol</b>                    | X                     | X                       | X                     | X                       | X                     | X                   | X                  |                   |
| <b>Modbus RTU Master</b>                    | X                     | X                       | X                     | X                       | X                     |                     | X                  |                   |
| <b>Modbus RTU Slave</b>                     | X                     | X                       | X                     | X                       | X                     |                     | X                  |                   |
| <b>Modbus TCP (Server)</b>                  |                       |                         |                       |                         |                       | X                   | X                  |                   |
| <b>HTTP</b>                                 |                       |                         |                       |                         |                       |                     | X                  |                   |
| <b>MQTT Client</b>                          |                       |                         |                       |                         |                       |                     | X                  |                   |
| <b>FTP</b>                                  |                       |                         |                       |                         |                       |                     | X                  |                   |
| <b>EtherNet/IP</b>                          |                       |                         |                       |                         |                       |                     | X                  |                   |
| <b>Embedded Web Server: HTTP (Unsecure)</b> |                       |                         |                       |                         |                       |                     | X                  |                   |
| <b>K-Sequence (Slave)</b>                   | X                     | X                       | X                     | X                       | X                     | X                   | X                  |                   |
| <b>ASCII (In &amp; Out)</b>                 | X                     | X                       | X                     | X                       | X                     |                     | X                  |                   |
| <b>Custom Protocols</b>                     | 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](http://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><b>D0-MC-BAT</b></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.

