

BX 36/36E MPUs

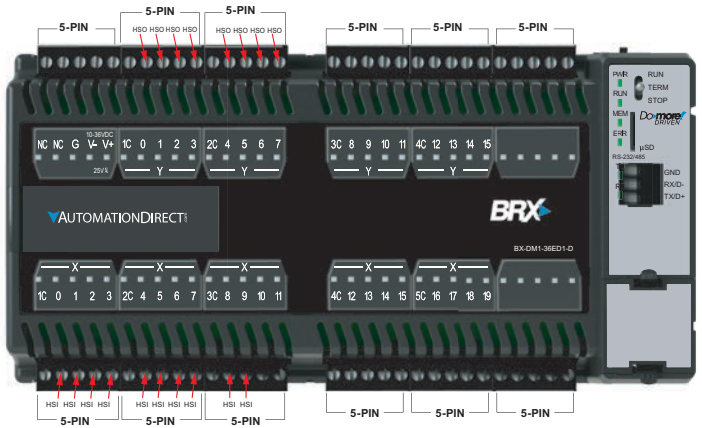
BX-DM1-36ED1-D \$429.00

BRX MPU with Do-more! DM1 technology

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

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 (32 GB max)
Expansion Modules	8 max, as long as the MPU power budget is not exceeded
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
Custom Label Window Size	0.75 x 2.25in [19 x 57.2mm]
MPU Weight	410g [14.5 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	0–250 kHz - High Speed
Minimum Pulse Width	0.5 µs - High Speed
AC Frequency	47–63 Hz (60–240 Hz filter must be set in software for AC operation)
Input Impedance	3 kΩ @ 24 VDC
Input Current (typical)	6 mA @ 24 VAC/DC
Maximum Input Current	12 mA @ 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

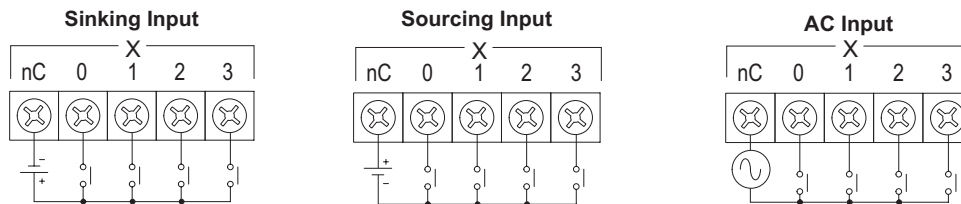


I/O Terminal Blocks sold separately.
(See Removable Terminal Block Specifications Table on BX 36/36E MPU Accessories page.)

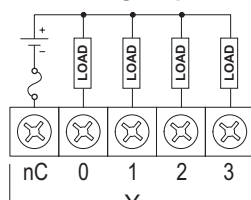
Discrete Output Specifications	
Output Type	Sinking
Total Outputs per Module	16 Total – 8 High Speed (Y0...Y7)* 8 Standard (Y8...Y15) *All outputs may be used as standard outputs
Commons	4 (4 points/common) Isolated
Maximum Current per Common	2A
Nominal Voltage Rating	12–24 VDC
Operating Voltage Range	5–36 VDC
Maximum Voltage	36 VDC
Minimum Output Current	0.1 mA @ 24 VDC
Maximum Output Current	0.5A per output, no derating over temperature range
Maximum Leakage Current	10 µA
Maximum Switching Frequency	1m cable 250 kHz 10m cable 100 kHz
Status Indicators	Logic Side, Green

I/O Wiring

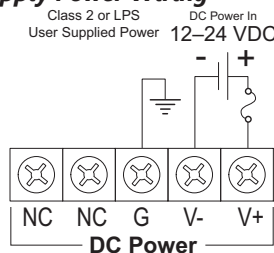
Discrete Input Wiring



Discrete Output Wiring Sinking Output



Supply Power Wiring

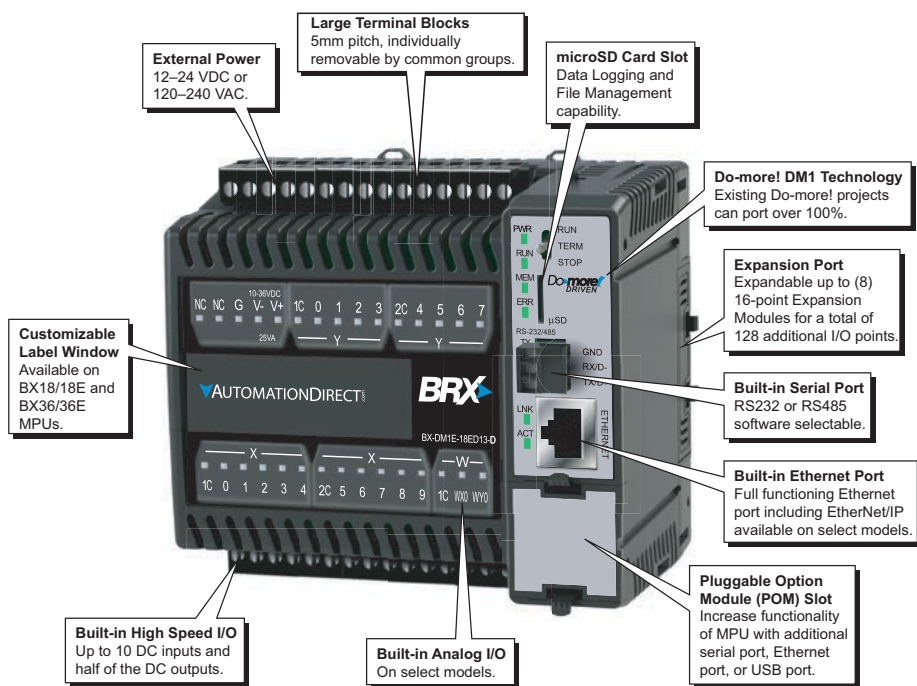


BRX Micro PLC Overview

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.



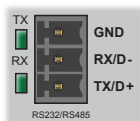
2 Year Warranty

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 3.5mm 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

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	32 GB			
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	40 VA
Cold Start Inrush Current	1.5A, 2 ms
Maximum Inrush Current (Hot Start)	1.5A, 2 ms
Internal Input Fuse Protection	Micro fuse 250V, 2A Non-replaceable
Isolated User 24 VDC Output	24 VDC @ 0.3A max, <1V P-P Ripple, Integrated self-resetting short circuit protection
Voltage Withstand (dielectric)	1500 VAC Power Inputs to Ground applied for 1 min 1500 VAC Ground to 24 VDC applied for 1 min

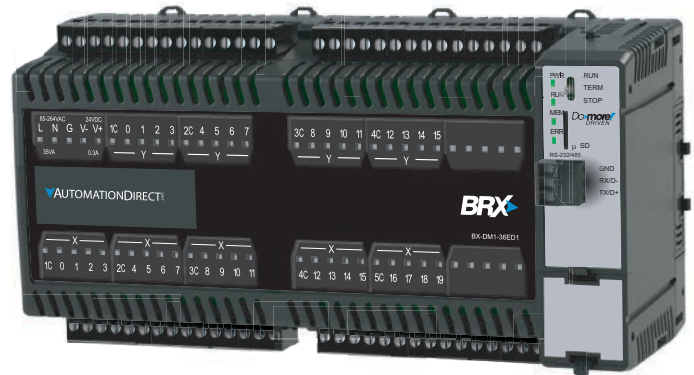
DC Power Supply Specifications	
Nominal Voltage Rating	12–24 VDC
Input Voltage Range (Tolerance)	10–36 VDC
Maximum Input Voltage Ripple	< ±10%
Maximum Input Power	30W (14W for BX 10/10E MPUs)
Cold Start Inrush Current	5A, 2 ms
Maximum Inrush Current (Hot Start)	5A, 2 ms
Internal Input Protection	Reverse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

BX 36 MPUs

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

Features

- Models with DC inputs:
 - have 10 high-speed inputs up to 250 kHz
 - 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 250 kHz
- 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

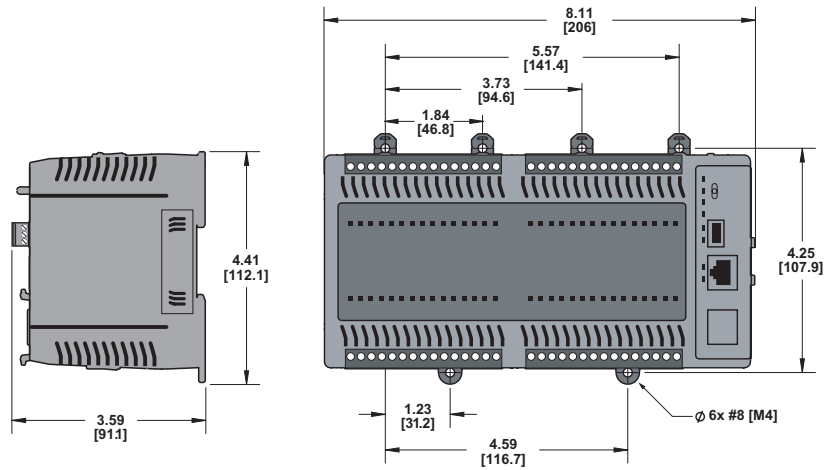


BX 36 Micro PLC Unit (MPU)
(No Built-in Analog or Ethernet port)

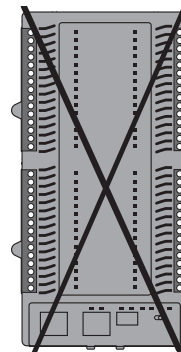
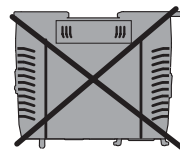
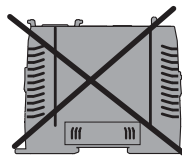
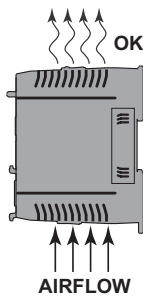
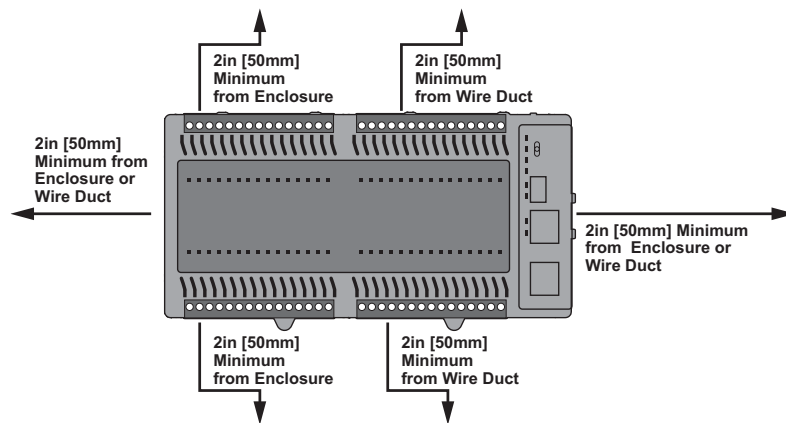
BX 36 MPUs					
Part Number	Price	External Power	Discrete Input	Discrete Output	Expansion Modules
<u>BX-DM1-36ED1</u>	\$448.00	120–240 VAC	10 High-speed 10 Standard DC Sinking or Sourcing	8 High-speed 8 Standard DC Sinking	8, as long as the MPU power budget is not exceeded
<u>BX-DM1-36ED1-D</u>	\$429.00	12–24 VDC		8 High-speed 8 Standard DC Sourcing	
<u>BX-DM1-36ED2</u>	\$449.00	120–240 VAC		16 Form A Relay	
<u>BX-DM1-36ED2-D</u>	\$428.00	12–24 VDC			
<u>BX-DM1-36ER</u>	\$444.00	120–240 VAC		20 AC	
<u>BX-DM1-36ER-D</u>	\$391.00	12–24 VDC			
<u>BX-DM1-36AR</u>	\$440.00	120–240 VAC			

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° screw terminal blocks with 180° 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° 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	\$53.00	\$53.00
Connector Type	Screw Type, 90°	Spring Clamp Type, 180°
Wire Exit	180°	180°
Pitch	5.0mm	5.0mm
Screw Size	M2.5	N/A
Screw Torque	< 3.98 lb·in [0.45 N·m]	N/A
Screwdriver Blade Width	3.5mm	3.5mm
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	0.3in [7.5mm]	0.37in [9.5mm]
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 **ZIPLinks** 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) **ZIPLinks** 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 = 0.5m, -1 = 1.0m, -2 = 2.0m.

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

** 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 0.5m, 1m and 2m

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 1m and 2m 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	1/8in [3.8mm] maximum	
Screw Torque	4.4 lb·in [0.5 N·m]	4.4 lb·in [0.5 N·m]



[ZL-RTB20](#)



[ZL-RTB20-1](#)



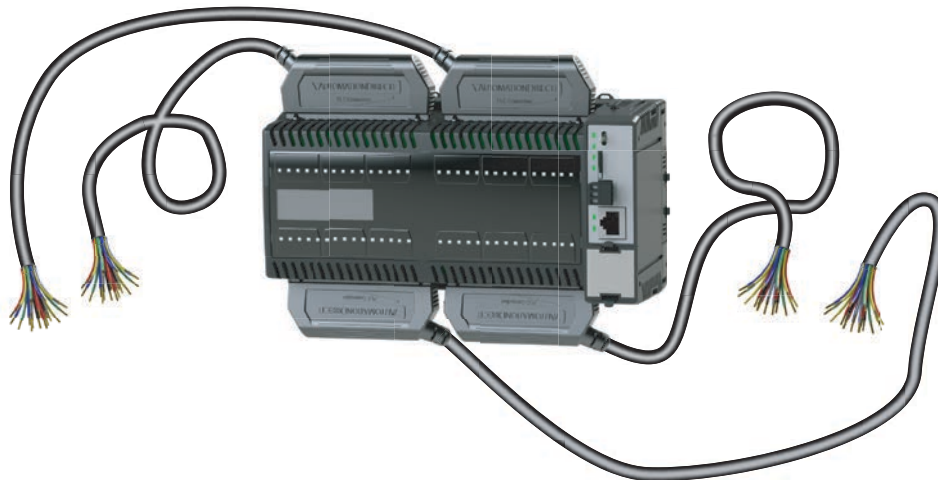
Wiring Solutions

ZIPLink System Examples

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



BX 36 MPU with **ZIP**Link pigtail cables installed.



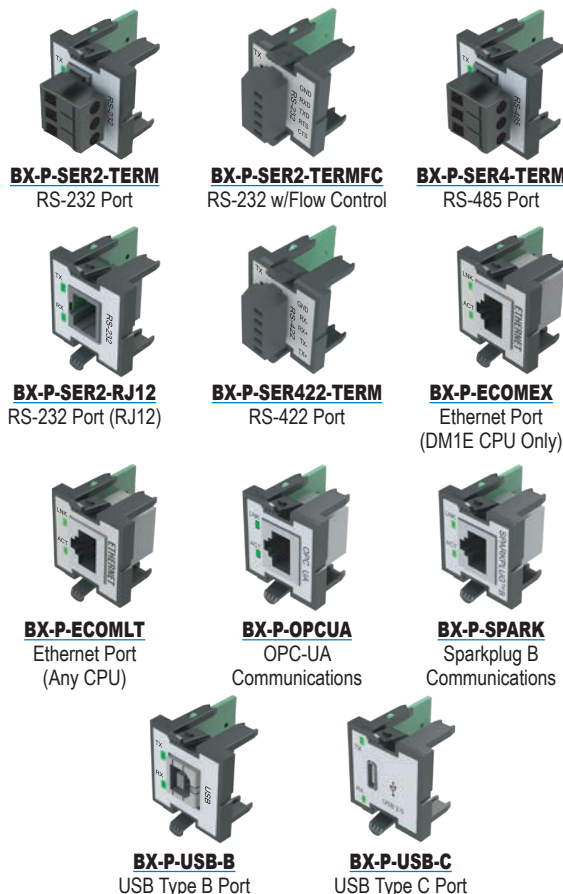
BRX Pluggable Option Modules (POM)

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
- USB Type C 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.



BRX Pluggable Option Modules		
Part No.	Price	Description
<u>BX-P-SER2-TERM</u>	\$80.00	Non-isolated RS-232 serial port. Includes ESD protection and built-in surge protection.
<u>BX-P-SER2-TERMFC</u>	\$83.00	Non-isolated RS-232 serial port with flow control. Includes ESD protection and built-in surge protection.
<u>BX-P-SER4-TERM</u>	\$81.00	Non-isolated RS-485 serial port. Includes ESD protection and built-in surge protection.
<u>BX-P-SER422-TERM</u>	\$83.00	Non-isolated RS-422 serial port. Includes ESD protection and built-in surge protection.
<u>BX-P-SER2-RJ12</u>	\$80.00	Non-isolated RS-232serial port with RJ12 jack. Includes ESD protection and built-in surge protection.
<u>BX-P-USB-B</u>	\$48.50	USB Type B Port for programming.
<u>BX-P-USB-C</u>	\$55.00	USB Type C Port for programming.
<u>BX-P-ECOMLT</u>	\$105.00	Server-only standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection.
<u>BX-P-ECOMEX</u>	\$126.00	Client/Server standard transformer isolated Ethernet port (10/100 Mbps) with built-in surge protection.
<u>BX-P-OPCUA</u>	\$189.00	Transformer isolated Ethernet port for OPC UA protocol (10/100 Mbps) with built-in surge protection.
<u>BX-P-SPARK</u>	\$139.00	Transformer isolated Ethernet port for MQTT protocol with Sparkplug B framework (10/100 Mbps) with built-in surge protection.

General Specifications

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

General Specifications	
Operating Temperature	0–60 °C [32–140 °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.



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

BRX POM Capabilities											
	<u>BX-P-SER2-TERM</u>	<u>BX-P-SER2-TERMFC</u>	<u>BX-P-SER4-TERM</u>	<u>BX-P-SER422-TERM</u>	<u>BX-P-USB-B</u>	<u>BX-P-USB-C</u>	<u>BX-P-SER2-RJ12</u>	<u>BX-P-ECOMLT*</u>	<u>BX-P-ECOMEX*</u>	<u>BX-P-OPCUA*</u>	<u>BX-P-SPARK*</u>
Monitoring & Programming	X	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		
Sparkplug B											X
FTP									X		
EtherNet/IP									X		
OPC UA										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](#)

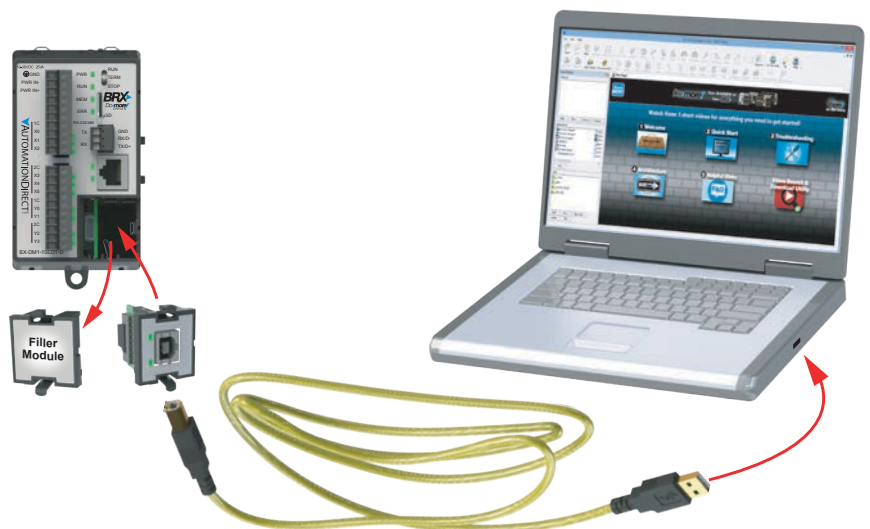
Do-more! Designer Programming software is a full-featured programming software for all BRX Series PLCs, Do-more! H2 Series PLCs and Do-more! T1H Series PLCs. Do-more! Designer Software is free. It can be downloaded from Automationdirect.com, or can be purchased on CD-ROM or USB.

FREE
\$13.00



[BX-PGM-CBL](#) \$51.00

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 \$3.25

A battery is included with all BRX MPUs and is used to retain the time and data along with any tagname 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 \$38.00

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 \$11.50

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.

